FINAL
03 FEBRUARY 2017

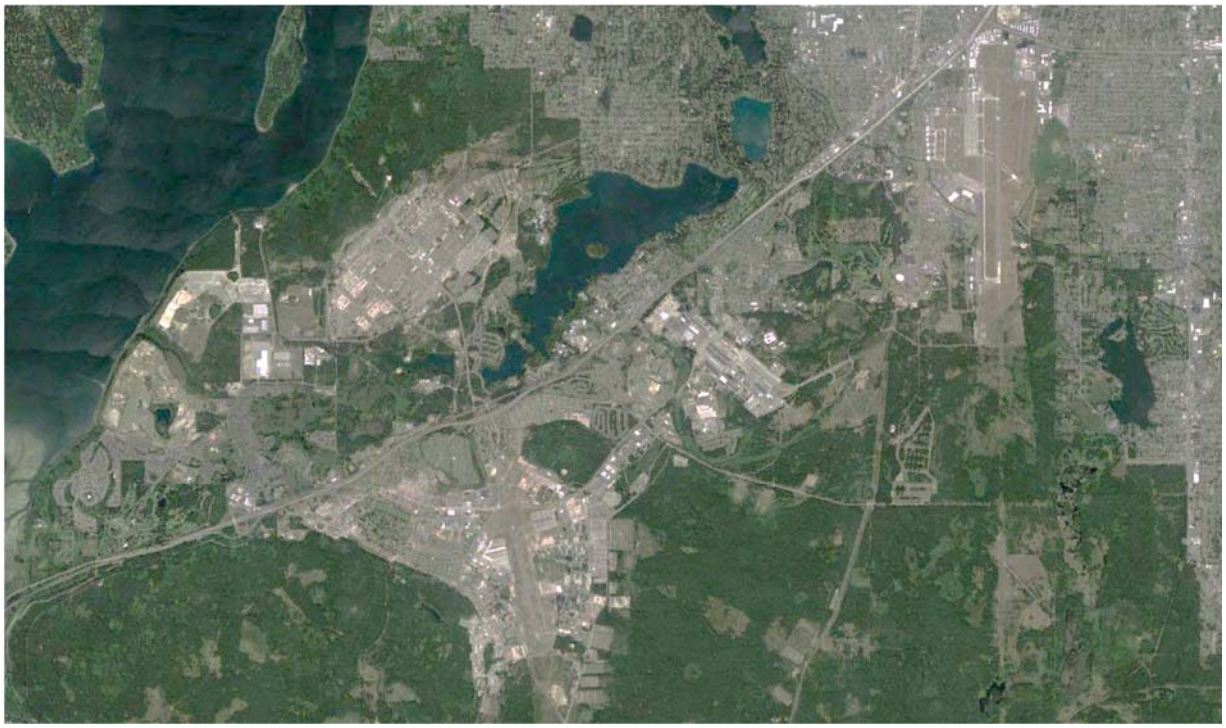
FORT LEWIS AGREED ORDER GROUNDWATER MONITORING REPORT – 2015

BUILDING 4131 FORMER UST SITE (AOC 8-2)
BUILDING A0111 FORMER UST SITE (AOC 8-4)
BUILDING A1033 FORMER UST SITE (AOC 9-2)
GRAY ARMY FUEL FACILITY (AOC 10-8)

Joint Base Lewis-McChord

Pierce County, Washington

Joint Base Lewis-McChord Public Works – Environmental Division
IMLM-PWE
MS 17 Box 339500
Joint Base Lewis-McChord, Washington 98433



DEPARTMENT OF THE ARMY
HEADQUARTERS, JOINT BASE LEWIS-MCCHORD
1010 LIGGETT AVENUE, BOX 339500, MAIL STOP 14A
JOINT BASE LEWIS-MCCHORD, WA 98433-9500

REPLY TO
ATTENTION OF

February 3, 2017

Public Works

Mr. Charles Hoffman, PE
Department of Ecology
Southwest Regional Office
PO Box 47775
Olympia, Washington 98504-7775

Dear Mr. Hoffman:

Enclosed for your files is one paper copy of the Final Fort Lewis Agreed Order Groundwater Monitoring Report – 2015; Building 4131 Former UST Site (AOC 8-2); Building A0111 Former UST Site (AOC 8-4); Building A1033 Former UST Site (AOC 9-2); Gray Army Fuel Facility (AOC 10-8), Joint Base Lewis-McChord. This final version incorporates revisions per your comments received on January 12, 2017.

If you have any questions or need clarification, please contact me at (253) 477-3742.

Sincerely,

GHEBRESLLASSIE.MESERET.C.1015675159
Digitally signed by GHEBRESLLASSIE.MESERET.C.1015675159
DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=GHEBRESLLASSIE.MESERET.C.1015675159
Date: 2017.02.03 11:27:46 -08'00'

Meseret C. Ghebresllassie
Installation Restoration Program Manager
Public Works Department

FINAL

FORT LEWIS AGREED ORDER
GROUNDWATER MONITORING REPORT – 2015

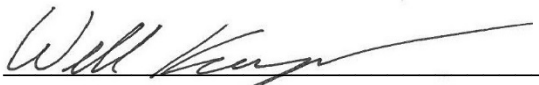
BUILDING 4131 FORMER UST SITE (AOC 8-2)
BUILDING A0111 FORMER UST SITE (AOC 8-4)
BUILDING A1033 FORMER UST SITE (AOC 9-2)
GRAY ARMY FUEL FACILITY (AOC 10-8)

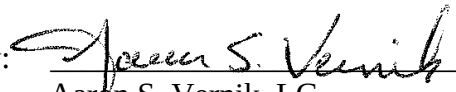
CONTRACT NO. W912DW-11-D-1031, TASK ORDER 0001

FEBRUARY 3, 2017

JOINT BASE LEWIS-MCCHORD
PIERCE COUNTY, WASHINGTON

SEALASKA ENVIRONMENTAL SERVICES, LLC
POULSBO, WASHINGTON

Prepared by: 
Will Kaage
Environmental Scientist
(360-930-3313)

Approved by: 
Aaron S. Vernik, LG
Senior Geologist
(360-930-3195)

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APPENDICES

FIGURES

TABLES

ACRONYMS AND ABBREVIATIONS

AOC	Area of Concern
AS	air sparge
bgs	below ground surface
BTEX	Benzene, Toluene, Ethylbenzene and total Xylenes
Ecology	Washington State Department of Ecology
ERS	Environmental Remediation Services
famsl	feet above mean sea level
FLAO	Fort Lewis Agreed Order
GAAF	Gray Army Airfield
IRP	Installation Restoration Program
JBLM	Joint Base Lewis-McChord
µg/L	micrograms per liter
MTCA	Model Toxics Control Act
MW	monitoring well
SAP	Sampling and Analysis Plan
Sealaska	Sealaska Environmental Services, LLC
SVE	soil vapor extraction
TPH-D	diesel-range total petroleum hydrocarbons
TPH-G	gasoline-range total petroleum hydrocarbons
TPH-HO	heavy oil-range total petroleum hydrocarbons
UST	underground storage tank
VOC	volatile organic compound

DATA QUALIFIER DEFINITIONS

B	The analyte was detected in an associated laboratory blank.
D	The reported result is from a dilution.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
J	The reported result is an estimated concentration.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
U	Analyte was not detected. Reported value is the quantitation limit.
UJ	Analyte was not detected. Reported value is the quantitation limit, which is estimated.
X	The reported result may have a slight high bias due to the presence of non-target components.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

1 INTRODUCTION

This Groundwater Monitoring Report was prepared for Joint Base Lewis-McChord Public Works, Joint Base Lewis-McChord (JBLM), Washington (Figure 1-1) by Sealaska Environmental Services, LLC (Sealaska). All work was completed in accordance with the 2014 Sampling and Analysis Plan (SAP) for the four Fort Lewis Agreed Order (FLAO) sites (Versar 2014). This report documents groundwater monitoring events conducted in April and August/September 2015 at four FLAO sites (Figure 1-2) being addressed in accordance with Washington State Department of Ecology (Ecology) Model Toxics Control Act (MTCA). The four FLAO sites are:

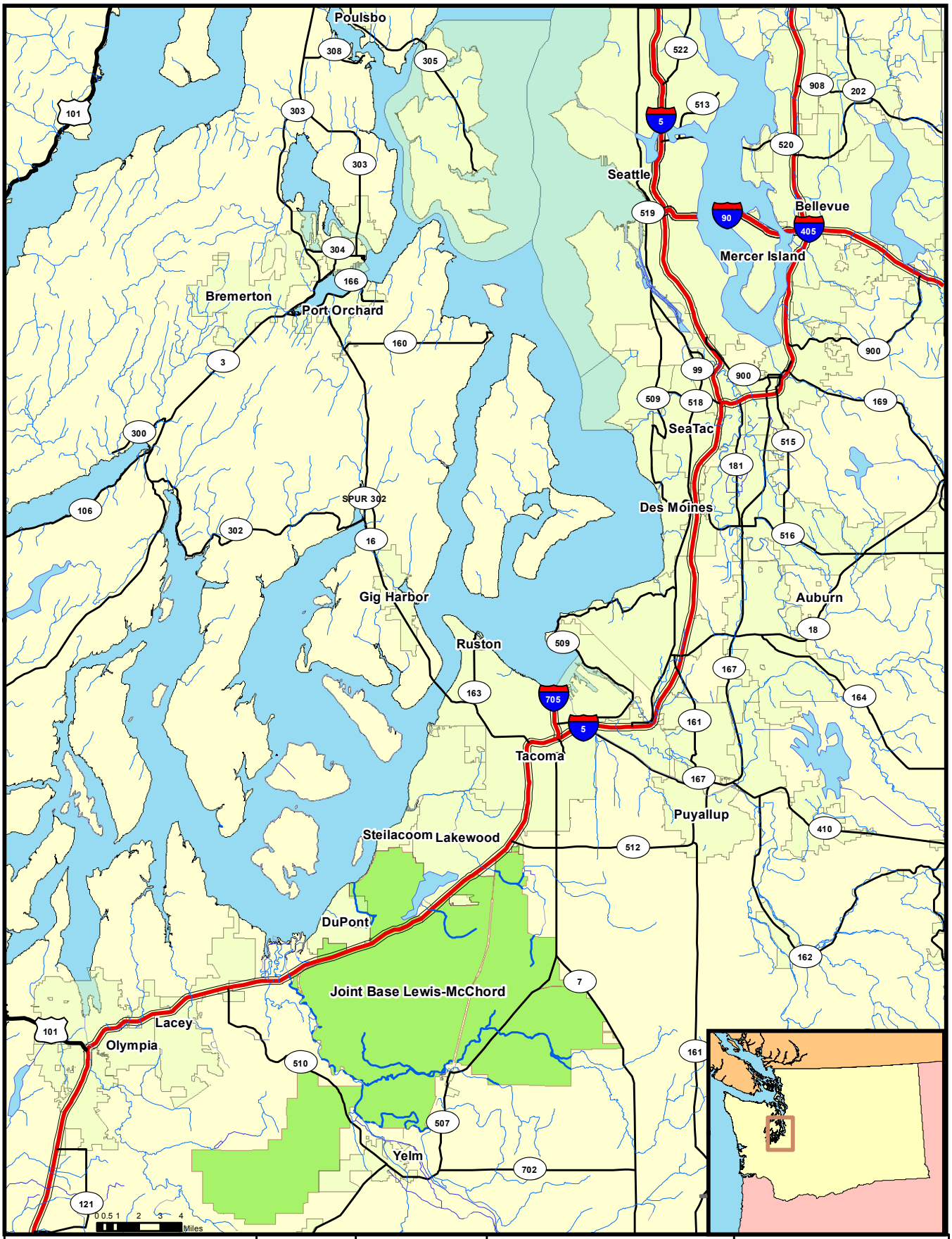
- Building 4131 Former Underground Storage Tank (UST) Site (Area of Concern [AOC] 8-2);
- Building A0111 Former UST Site (AOC 8-4);
- Building A1033 Former UST Site (AOC 9-2); and
- Gray Army Airfield (GAAF) Fuel Facility (AOC 10-8).

Field forms for both sampling events covered in this report are included in Appendix A. Laboratory analytical reports and data quality review for both sampling events are included in Appendix B.

1.1 SITE LOCATIONS AND USE

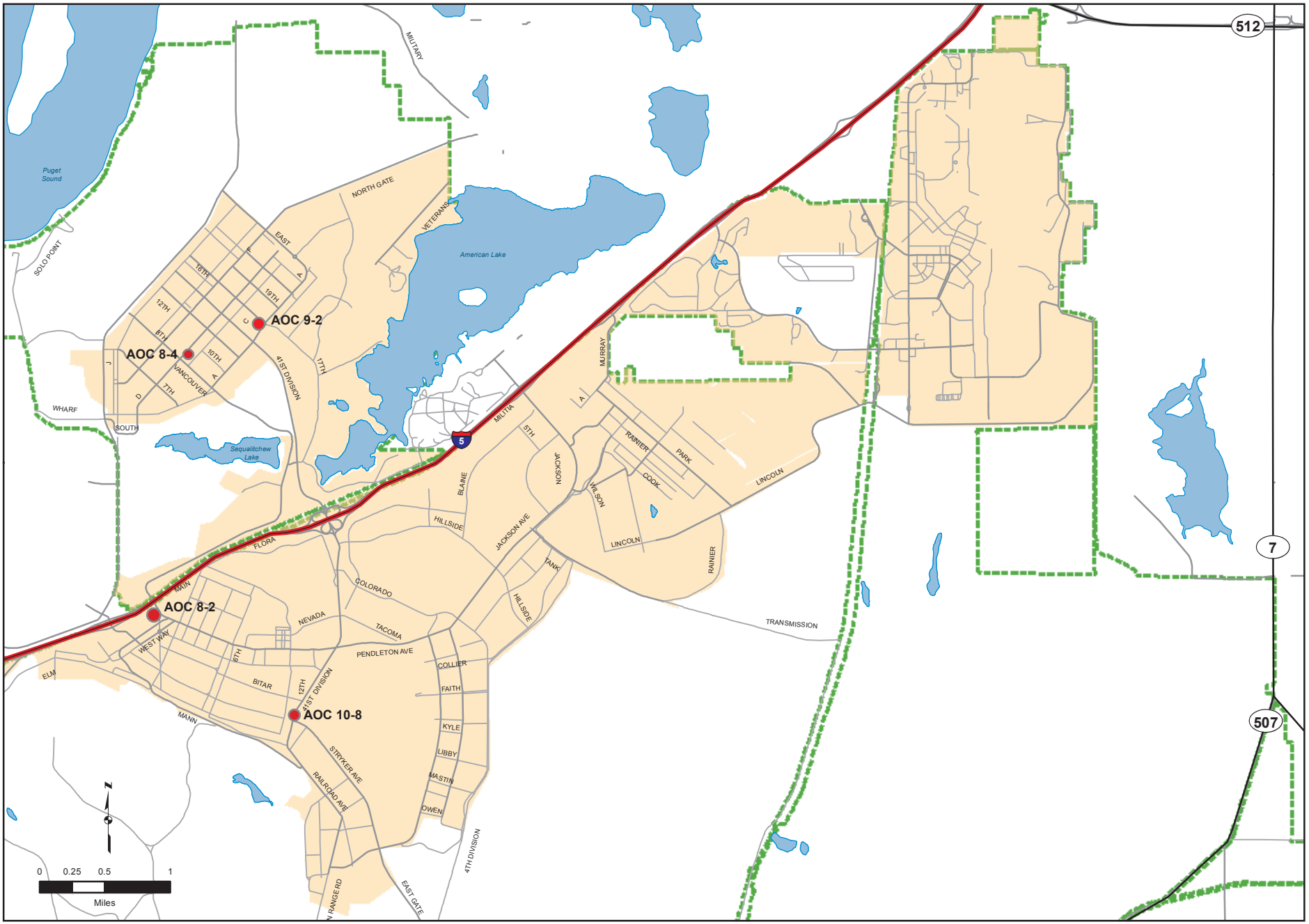
1.1.1 Building 4131 Former UST Site (AOC 8-2)

The site is located on Lewis Main near the Pendleton underpass under Interstate 5 at the intersection of Pendleton Avenue and Lewis Drive. A 500-gallon heating oil tank and associated soil contamination were removed from the former building location in 1996. Currently, the site is a vacant lot. The land use of the site is designated for Open Space in the JBLM Master Plan.



Date: 11/17/2019 Path: P:\Production\Fig\JBLM\ALL_FIG_1-1_JBLM_8.5X11.mxd

Map Data: Coordinate System: UTM Zone 10 Horizontal Datus: WGS 84	USACE	SEALASKA	**Figure 1-1** **Joint Base Lewis-McChord** **Location Map**	**Contract #** **W912DW-11-D-1031** **Task Order 0001**



Legend

Cantonment Area JBLM Boundary

Map Data:
Coordinate System: UTM, Zone 10
Horizontal Datum: WGS 84

USACE

SEALASKA

Figure 1-2
Projects Location Map

Path: H:\JBLM\MXD\FLAO_FIG_1-2_P_LOC.mxd
Date: 9/25/2014

1.1.2 Building A0111 Former UST Site (AOC 8-4)

The site is located on Lewis North near the intersection of 9th Street and D Street. A 300-gallon heating oil tank and associated soil contamination were removed from the former building location in 1996. A chemical battalion administration building was constructed on the site in 2010 and 2011. Most of the construction of the building and landscaping was completed in August 2011. The land use of the site is designated for Administration in the JBLM Master Plan.

1.1.3 Building A1033 Former UST Site (AOC 9-2)

The site is located on Lewis North near the intersection of 17th Street and A Street. Four 4,000-gallon gasoline USTs and associated soil contamination were removed from the former building location between 1990 and 1994. A credit union and Domino's Pizza are currently on the site. A combination air sparge (AS)/soil vapor extraction (SVE) system was constructed in 2009 under the building to intercept petroleum vapors in the vadose zone and prevent them from migrating into the building (Versar 2009a). The SVE system has been operating since February 2010. After a pilot test was conducted on the full AS/SVE system, the AS system was started up in 2013. The land use of the site is designated for Community Services in the JBLM Master Plan.

1.1.4 GAAF Fuel Facility (AOC 10-8)

The GAAF Fuel Facility is located on the northwest side of GAAF adjacent to Building 3034 on Lewis Main. Four 25,000-gallon jet fuel USTs and associated soil contamination were removed from the site in 1998. The site is currently a fenced and gated paved parking lot. The land use of the site is designated as Aviation in the JBLM Master Plan.

1.2 INVESTIGATION CHRONOLOGY

1.2.1 Building 4131 Former UST Site (AOC 8-2)

Detailed background information is included in the FLAO Remedial Investigation Report (Bussey 2008). In summary, six monitoring wells have been installed to date (designated as 4131-MW01 through 4131-MW06). Groundwater monitoring events have been conducted from 2005 to present.

1.2.2 Building A0111 Former UST Site (AOC 8-4)

Detailed background information is included in the FLAO Remedial Investigation Report (Bussey 2008). In summary, eight monitoring wells have been installed to date (designated

as A0111-MW01 through A0111-MW08) and groundwater monitoring events have been conducted from 2005 to present.

Monitoring wells A0111-MW01 through A0111-MW03 were decommissioned by Krazan and Associates in February 2010 because they were within the footprint of a new, chemical battalion administration building. Three new monitoring wells, designated as A0111-MW06 through A0111-MW08 were constructed and developed in February 2010 to replace the three decommissioned wells. Monitoring wells A0111-MW06 through A0111-MW08 were initially sampled on 1 March 2010 after development by Krazan Associates. These wells were initially sampled quarterly with exceptions due to monument or casing damage and construction or soil debris placement prohibiting access to all of the wells.

The three monitoring wells' sampling schedule was changed to semi-annual beginning with the March 2012 sampling event. As of August/September 2015, 14 sampling events have been completed. This does not include an event conducted in February 2011 when monitoring wells A0111-MW06 and A0111-MW07 could not be located and A0111-MW08's monument and casing were broken. Beginning with the June 2012 sampling event, all monitoring wells part of AOC 8-4's current sampling network have been repaired and there have been no access issues.

1.2.3 Building A1033 Former UST Site (AOC 9-2)

Detailed background information is included in the FLAO Remedial Investigation Report (Bussey 2008). In summary, eight monitoring wells have been installed to date (designated as 95-A17-1, 95-A17-2, 95-A17-3A, 95-A17-4, 96-A17-5, 96-A17-6, 07-A17-7, and 10-A17-08). Groundwater monitoring events have been conducted from 1995 to present. A combination AS/SVE system was constructed in 2009 to intercept volatile organic compound (VOC) vapors in soil under the new credit union and Domino's Pizza building (Versar 2009a). The SVE portion of the system was turned on in February 2010, prior to occupation of the building. The AS system was turned on later and both are currently operational. Field events and data regarding the AS/SVE system are included in separate reports from groundwater monitoring activities.

1.2.4 GAAF Fuel Facility (AOC 10-8)

Detailed background information is included in the FLAO Remedial Investigation Report (Bussey 2008). In summary, five monitoring wells have been installed from 2005 through 2009. The wells were designated as AOC 10-8-MW01 through AOC 10-8-MW04 and AOC 10-8-B05. Initially, the monitoring wells were designated as JP-MW-1 through JP-MW-4

and then changed to AOC 10-8-MW01 through AOC 10-8-MW04. Beginning with the August 2010 Monitoring Report (Versar 2009b), these monitoring wells have been referred to as JP-MW-1 through JP-MW-4 per the original numbering. Groundwater monitoring events were conducted from 1993 to 1995 and from 2004 to present. In 2007, the site was paved over and is currently a parking lot. During construction activities JP-MW-4 was paved over and is no longer accessible, and AOC 10-8-B05 was damaged. The AOC 10-8-B05 casing was cracked and bent, and personnel are unable to collect samples from the well using a pump. Due to these issues, since 2008, samples have been collected from AOC 10-8-B05 using a disposable bailer.

1.3 HYDROGEOLOGY

The aquifer of interest for all four sites is the upper Vashon Aquifer. The unconfined upper Vashon Aquifer consists of glacial outwash deposits generally underlain by lower permeability Vashon Till deposits. Depth to groundwater is typically 20 to 30 feet below ground surface (bgs) at AOC 8-2, 15 to 20 feet bgs at AOC 8-4, 20 to 30 feet bgs at AOC 9-2, and 35 to 45 feet bgs at AOC 10-8. The regional direction of groundwater flow in the Vashon Aquifer across the Fort Lewis Cantonment Area is generally to the west, with eventual discharge at Puget Sound. Local flow direction at each site is generally:

- To the southwest at AOC 8-2;
- To the northwest at AOC 8-4;
- To the west at AOC 9-2; and
- To the northwest at AOC 10-8.

The closest potential downgradient receptor to each site is:

- JBLM production well 17 and the City of DuPont's Bell Hill Wells are located approximately 1/4 mile southwest and 2/3 mile northwest of AOC 8-2, respectively. However, these wells are screened in deeper aquifers than the upper Vashon Aquifer;
- There are no potential receptors currently located downgradient of either AOC 8-4 or AOC 9-2; and
- JBLM production well 17 is located approximately 1.5 miles west of AOC 10-8 and is screened at a depth of approximately 460 to 480 feet bgs (below the upper Vashon Aquifer).

2 FIELD ACTIVITIES

Sealaska personnel conducted the spring 2015 sampling event from 20 to 28 April and the fall event between 31 August and 03 September. Copies of the completed field forms for both sampling events are included in Appendix A.

During each monitoring event, an electronic water level indicator was used to measure depth to water in all monitoring wells scheduled for static water level measurements to the nearest 0.01-foot from the top of the well's casing. Well construction details are presented in Table 2-1.

All monitoring wells at AOC 8-2, AOC 8-4, AOC 9-2, and AOC 10-8 except AOC 10-8-B05 (AOC 10-8) were purged using standard low-flow purging procedures prior to sampling. Because of obstructions in AOC 10-8-B05, a disposable bailer was used to purge three well volumes from this well prior to sampling during the April and August/September sampling events.

At AOC 8-2, dedicated stainless steel bladder pumps were used to purge and sample water from the monitoring wells. A variable frequency drive controller limited the purging flow rate to less than 1 liter per minute.

At AOC 8-4, all sampled wells were purged and sampled using a peristaltic pump and disposable sample tubing. Monitoring well A0111-MW06 is located within a landscaped area behind the chemical battalion administration building. The other monitoring wells were located in front of the building within a lawn.

At AOC 9-2, dedicated stainless steel bladder pumps were used to purge and sample water from the monitoring wells 95-A17-3A, 95-A17-4, and 07-A17-7. Monitoring well 95-A17-2 was purged and sampled using a peristaltic pump and disposable sample tubing. Monitoring well 10-A17-8 was purged and sampled using a submersible pump with dedicated tubing.

At AOC 10-8, AOC 10-8-B05 was purged and sampled using a disposable bailer (as noted above). JP-MW02 was purged and sampled using a submersible pump.

To verify stabilization during purging, relative water levels were taken and water quality parameters including pH, specific conductivity, temperature, and turbidity were measured with a calibrated Horiba U-22 or U-52 meter. The Horiba was calibrated at the beginning of each day prior to any sampling activities. In addition, dissolved oxygen and oxidation-reduction potential were monitored to support stabilization and provide natural attenuation data. Groundwater samples were collected immediately after field measurements had stabilized without turning off the pumping system.

During each event, two duplicate samples were collected from monitoring wells. During the April event, duplicates were collected from wells 4131-MW03 (AOC 8-2) and 10-A17-8 (AOC 9-2). During the August/September event, duplicates were collected from wells 4131-MW02 (AOC 8-2) and 10-A17-8 (AOC 9-2).

Groundwater samples collected from monitoring wells at AOC 8-2, AOC 8-4, and AOC 10-8 were analyzed for diesel-range total petroleum hydrocarbons (TPH-D) and heavy oil-range total petroleum hydrocarbons (TPH-HO), respectively, using Ecology Method NWTPH-Dx.

Groundwater samples collected from monitoring wells at AOC 9-2 were analyzed for gasoline-range TPH (TPH-G) using Ecology Method NWTPH-Gx. Samples were also analyzed for benzene, toluene, ethylbenzene, and total xylenes (BTEX) using United States Environmental Protection Agency Method 8260C.

Samples collected during the April and August/September events were sent via courier to ALS Environmental of Kelso, Washington. Copies of laboratory analytical reports are included in Appendix B.

2.1 INVESTIGATION-DERIVED WASTE

Investigation-derived waste was disposed of as follows:

- Purge water and decontamination water from all monitoring wells was collected in 5-gallon buckets and discharged at the Landfill 2 Pump-and-Treat System.
- Personal protective equipment and garbage was disposed of as solid waste.

2.2 DEVIATIONS FROM THE SAMPLING AND ANALYSIS PLAN

Groundwater monitoring events were completed in general accordance with the February 2014 SAP for the four FLAO sites (Versar 2014). Deviations from the 2014 SAP for 2015 were:

- AOC 8-2 – No deviations from the plan were noted.
- AOC 8-4 – No deviations from the plan were noted.
- AOC 9-2 – During construction of the Credit Union, the monument for 95-A17-2 was destroyed and replaced. The dedicated bladder pump was broken and personnel have been unable to retrieve the broken pump. During the April 2015 and August/September 2015 sampling events, samples were collected from 95-A17-2 using a peristaltic pump and dedicated disposable sample tubing.
- AOC 10-8 – No deviations from the plan were noted.

Table 2-1. Well Construction Details

Location ID	Northing WGS84	Easting WGS84	TOC Elevation (ft AMSL)	Well Depth (ft bgs)	Screen Top (ft bgs)	Screen Bottom (ft bgs)	Completion Date
Building 4131 AOC-8-2							
4131-MW01	5215634.5	529115.8	263.97	37.5	27.5	37.5	21-Feb-05
4131-MW02	5215643.6	529095.4	263.53	33	23	33	23-Feb-05
4131-MW03	5215656.6	529118.6	262.39	34	24	34	22-Feb-05
4131-MW04	5215614.5	529085.2	259.74	34	23	33	22-Dec-05
4131-MW05	5215644.6	529058.4	259.23	34	23	33	20-Dec-05
4131-MW06	5215676.9	529079.3	262.08	35	23	33	20-Dec-05
Building A0111 AOC-8-4							
A0111-MW04	5218894.39	529498.24	230.88	28.5	17	27	19-Dec-05
A0111-MW05	5218864.97	529469.978	230.84	29	17	27	19-Dec-05
A0111-MW06	5218832.28	529534.8	227.69	29	19	29	5-Mar-10
A0111-MW07	5218911.85	529523.91	230.88	30	20	30	5-Mar-10
A0111-MW08	5218871.71	529489.3	231.24	30	20	30	5-Mar-10
Building A1033 AOC 9-2							
95-A17-1	5219211.8	530441.04	236.9	42.5	27.1	42.1	18-Aug-95
95-A17-2	5219199.78	530377.39	235.9	42.2	27.0	42.0	17-Aug-95
95-A17-3A	5219229.15	530377.99	235.9	44.5	29.3	44.3	17-Aug-95
95-A17-4	5219240.22	530396.92	236.8	42.5	26.6	42.0	18-Aug-95
96-A17-5	5219268.15	530331.27	233.9	45.0	29.8	44.8	22-Jan-96
96-A17-6	5219288.6	530365.07	235.1	45.0	29.8	44.8	22-Jan-96
07-A17-7	5219226	530335	233.2	37	22	37	21-Jun-07
10-A17-8	5219219.2	530397.6	235.8	39	29	39	8-Oct-10
Building 3034 - GAAF Fuel Facility AOC 10-8							
AOC 10-8-B05	5214424.454	530833.657	281.39	47.5	37.5	47.5	1-May-05
JP-MW-01	5214386.4	530828.5	281.56	51.7	39.6	49.6	27-May-93
JP-MW-02	5214452.6	530794.3	279.33	50.0	39.2	49.2	27-May-93
JP-MW-03	5214456.9	530848.1	280.7	50.3	39.6	49.6	25-May-93
JP-MW-04	5214433	530832.67	281.12	51.3	40.8	50.8	27-May-93

Notes:
TOC – Top of casing
ft AMSL – Feet above mean sea level
ft bgs – Feet below ground surface

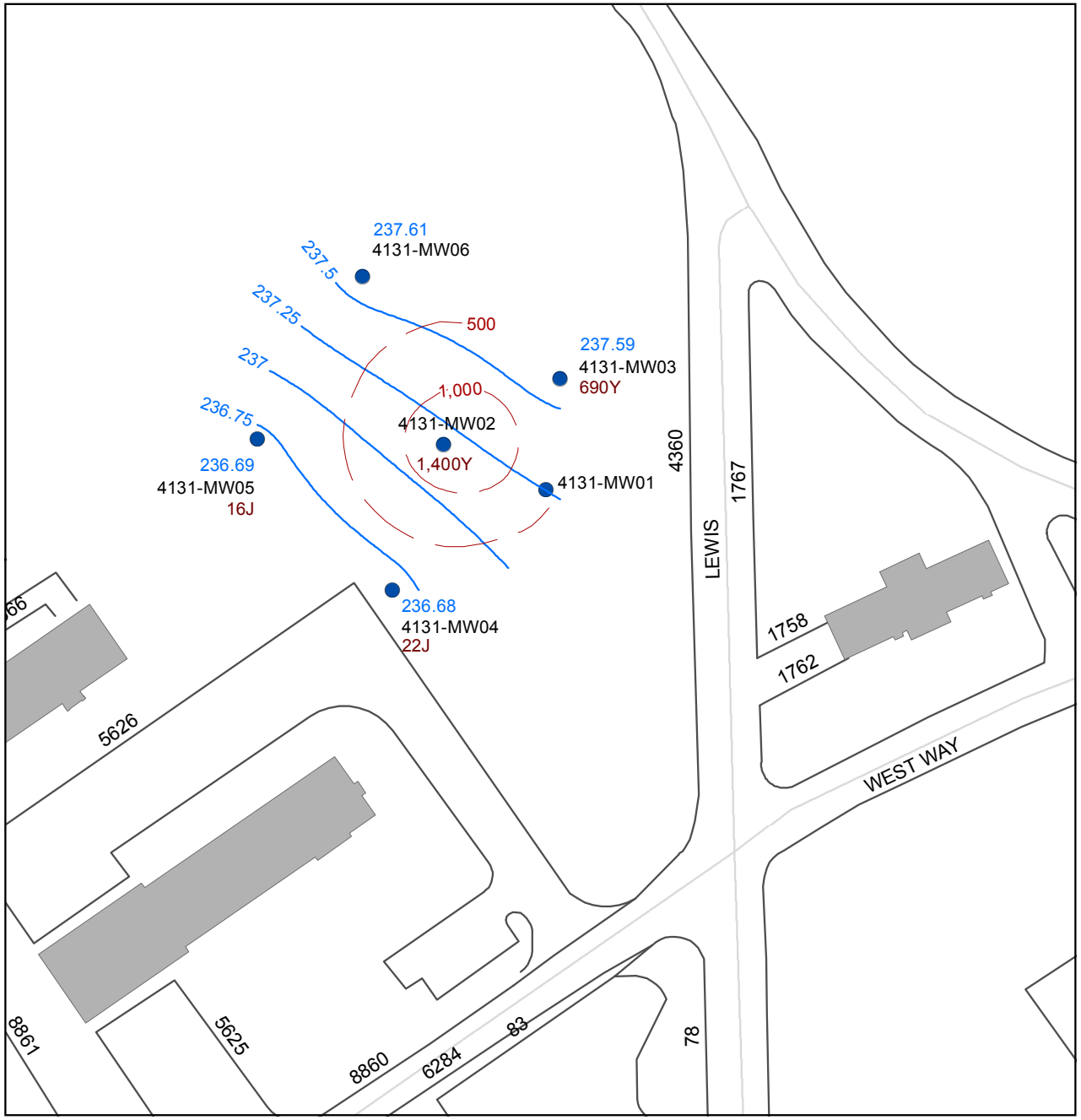
3 RESULTS AND DISCUSSION

3.1 BUILDING 4131 FORMER UST SITE (AOC 8-2)

Groundwater level and TPH-D concentration iso-contour lines are presented on Figure 3-1 (April) and Figure 3-2 (August/September). However, due to perceived in accuracies in casing elevation data at wells 4131-MW01 and 4131–MW02, data from these wells was not included in the generation of the groundwater contours. It appears that the current data is erroneous or the well casing elevations have changed due to unknown reasons. Table 3-1 presents depth to water measurements, TPH-D concentrations, and groundwater parameter field measurements for AOC 8-2. TPH-D concentrations are compared to Ecology's MTCA Method A cleanup level of 500 micrograms per liter (µg/L). Appendix B contains copies of laboratory analytical reports for both groundwater sampling events.

Historically, 4131-MW03 has been considered at or near the source area since it typically has the highest concentrations of TPH-D. Concentrations of TPH-D decrease to values well below MTCA cleanup levels in downgradient wells 4131-MW04 (south of 4131-MW03) and 4131-MW05 (southwest of 4131-MW03). These results are generally consistent with previous events. TPH-D concentrations detected in samples collected from monitoring wells 4131-MW02 and 4131-MW03 during 2015 were above 500 µg/L.

Figure 3-3 presents TPH-D concentrations in samples collected from monitoring wells 4131-MW02 and 4131-MW03 over time. During the April sampling event, TPH-D was detected at 1,400 µg/L (4131-MW02) and 690 µg/L from 4131-MW03 (Table 3-1). During the August/September sampling event, TPH-D was detected at 1,600 µg/L (4131-MW02) and 3,100 µg/L (4131-MW03).



Notes:

Depth to water measurements collected April 20, 2015.

Groundwater samples collected April 27, 2015.

Groundwater contour information for wells 4131-MW01 and 4131-MW02 not used due to perceived inaccuracies in casing elevation data.

Legend

- Monitoring Well
- Groundwater Elevation (famsl)
- TPH-D Concentraion (µg/L)

N

0 25 50 100

Feet

USACE	SEALASKA	**Figure 3-1** **AOC 8-2 Groundwater Elevation and TPH-D Concentration Contours April 2015**

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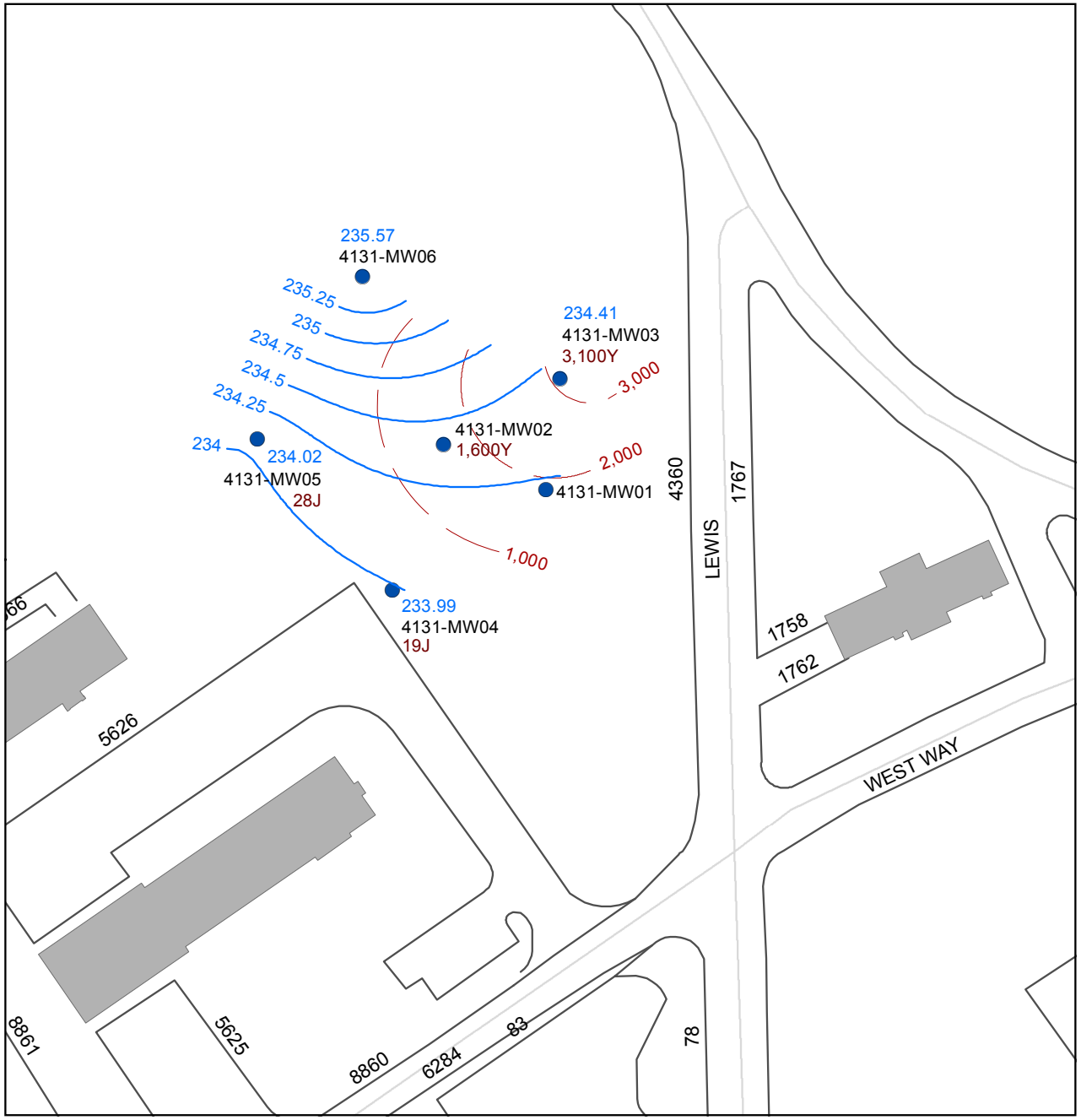
Date: 1/27/2016



Notes:

Depth to water measurements collected August 31, 2015.

Groundwater samples collected September 3, 2015.

Groundwater contour information for wells 4131-MW01 and 4131-MW02 not used due to perceived inaccuracies in casing elevation data.

Legend

- Monitoring Well
- Groundwater Elevation (famsl)
- TPH-D Concentraion (µg/L)

N

0 25 50 100

Feet

USACE | **SEALASKA**

Figure 3-2
AOC 8-2 Groundwater Elevation and TPH-D Concentration Contours August/September 2015

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Date: 1/27/2016

Figure 3-3. TPH-D Concentration Trends in 4131-MW02 and -MW03 (AOC 8-2)

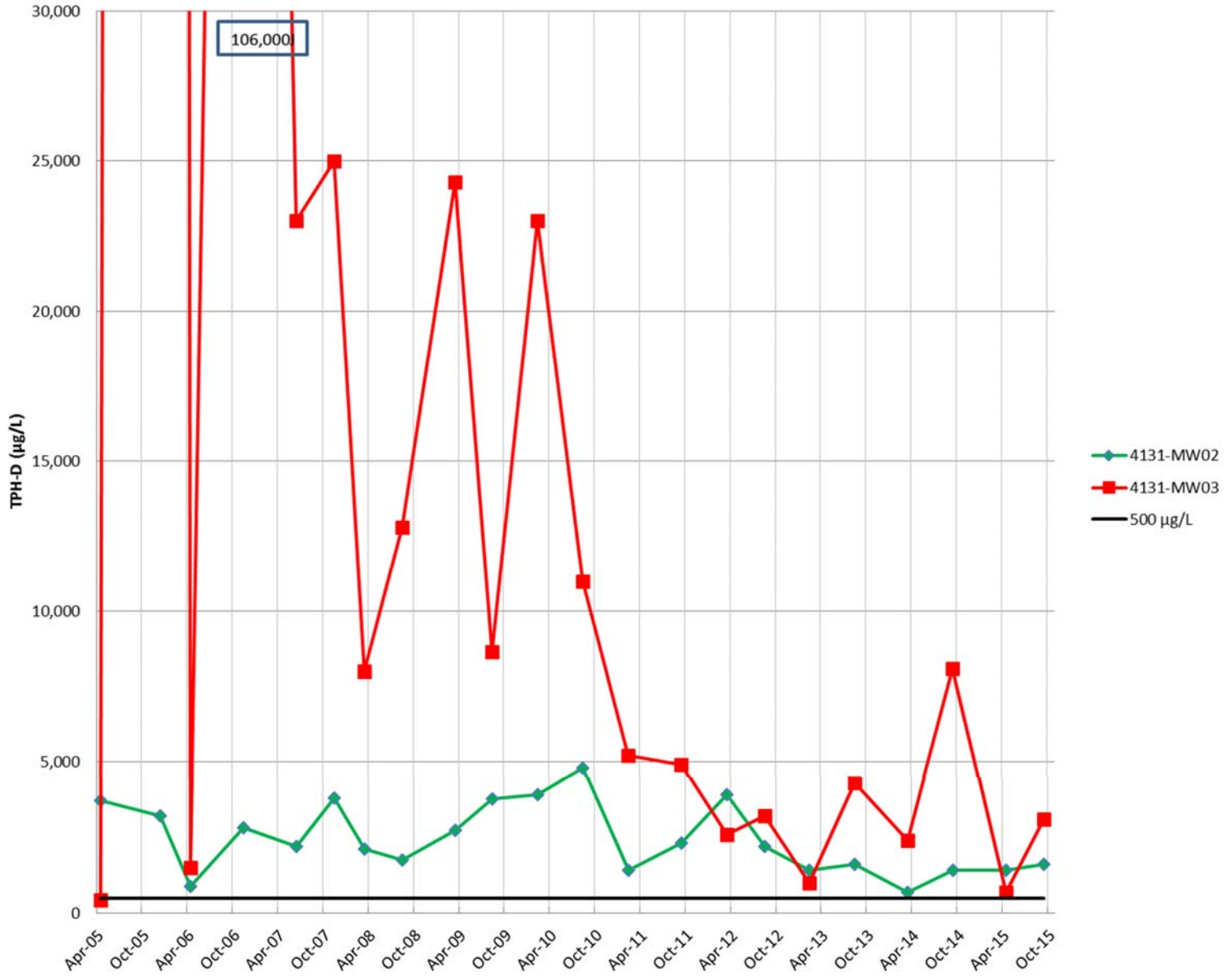


Table 3-1. AOC 8-2 Depth to Water Measurements, TPH-D Concentrations, and Groundwater Parameter Field Measurements

Well ID TOC Elevation	Date	DTW (ft bgs)	GWELEV (ft AMSL)	TPH-D (µg/L)	pH	Cond. (µS/cm)	DO (ppm)	ORP (mv)	Temp ºC
4131-MW01 263.97	11-Apr-05	28.14	235.83	250U	-	-	-	-	-
	29-Dec-05	28.22	235.75	250U	-	-	-	-	-
	4-Apr-06	24.09	239.88	250U	-	-	-	-	-
	3-Nov-06	28.69	235.28	-	-	-	-	-	-
	18-Jun-07	24.88	239.09	-	-	-	-	-	-
	16-Nov-07	27.86	236.11	-	-	-	-	-	-
	26-Mar-08	25.23	238.74	-	-	-	-	-	-
	25-Aug-08	28.00	235.97	-	-	-	-	-	-
	2-Mar-09	26.82	237.15	-	-	-	-	-	-
	25-Aug-09	28.15	235.82	-	-	-	-	-	-
	22-Feb-10	26.2	237.77	-	-	-	-	-	-
	23-Aug-10	27.18	236.79	-	-	-	-	-	-
	22-Feb-11	24.7	239.27	-	-	-	-	-	-
	8-Sep-11	26.14	237.83	-	-	-	-	-	-
	6-Mar-12	25.44	238.53	-	-	-	-	-	-
	15-Aug-12	26	237.97	-	-	-	-	-	-
	20-Feb-13	25.19	238.78	-	-	-	-	-	-
	12-Aug-13	26.75	237.22	-	-	-	-	-	-
	13-Mar-14	23.95	240.02	-	-	-	-	-	-
	22-Sep-14	26.19	237.78	-	-	-	-	-	-
	27-Apr-15	24.59	239.38	-	-	-	-	-	-
	3-Sep-15	27.26	236.71	-	-	-	-	-	-
4131-MW02 263.53	11-Apr-05	26.95	236.58	**3,700**	-	-	-	-	-
	29-Dec-05	27.04	236.49	**3,200**	-	-	-	-	-
	4-Apr-06	22.99	240.54	**890**	-	-	-	-	-
	3-Nov-06	27.55	235.98	**2,800**	6.37	0.37	-	-	13.00
	18-Jun-07	23.74	239.79	**2,200**	5.94	0.15	-	-	12.40
	16-Nov-07	26.69	236.84	**3,800J**	7.50	0.32	0.66	-	12.80
	26-Mar-08	24.05	239.48	**2,100**	7.19	0.17	2.75	11	161.00
	25-Aug-08	26.85	236.68	**1,750**	7.02	0.31	1.02	29	12.78
	2-Mar-09	25.67	237.86	**2,730**	6.37	0.23	0.55	-	12.68
	25-Aug-09	26.96	236.57	**3,760**	6.24	0.31	0.56	41	12.70
Duplicate	25-Aug-09	26.96	236.57	**3,430**	6.24	0.31	0.56	41	12.70
	22-Feb-10	25.00	238.53	**3,900**	6.59	0.27	0.44	35	12.50
Duplicate	22-Feb-10	25.00	238.53	**3,200**	6.59	0.27	0.44	35	12.50
	23-Aug-10	26.00	237.53	120U*	5.59	0.11	7.49	308	13.10
	22-Feb-11	23.62	239.91	**1,400**	6.14	0.17	1.17	-	11.90
	8-Sep-11	25.00	238.53	**2,300**	5.19	0.19	-	209	12.20
Duplicate	8-Sep-11	25.00	238.53	**2,200**	5.19	0.19	-	209	12.20
	6-Mar-12	24.26	239.27	**3,900**	7.05	-	0.32	16	12.30
	15-Aug-12	24.98	238.55	**2,200**	7.74	-	0.43	11	12.80
	20-Feb-13	24.10	239.43	**1,400**	7.62	-	5.07	23	13.20
	12-Aug-13	25.60	237.93	**1,600**	6.52	0.21	0.38	25	11.90

Table 3-1. AOC 8-2 Depth to Water Measurements, TPH-D Concentrations, and Groundwater Parameter Field Measurements (continued)

Well ID TOC Elevation	Date	DTW (ft bgs)	GWELEV (ft AMSL)	TPH-D (µg/L)	pH	Cond. (µS/cm)	DO (ppm)	ORP (mv)	Temp ºC
4131-MW02 (continued)	13-Mar-14	22.95	240.58	**680**	5.90	0.11	4.06	28	12.00
	22-Sep-14	24.98	238.55	**1,400**	6.30	0.16	1.40	26	12.80
	27-Apr-15	23.41	240.12	**1,400**	6.26	0.18	6.10	72	12.93
	3-Sep-15	26.11	237.42	**1,600**	5.77	0.24	0.00	80	14.00
4131-MW03 262.39	11-Apr-05	28.22	234.17	**430**	-	-	-	-	-
	29-Dec-05	25.00	237.39	**850,000**	-	-	-	-	-
	4-Apr-06	24.73	237.66	**1,500**	-	-	-	-	-
	3-Nov-06	29.48	232.91	**106,000J**	5.83	0.35	-	-	13.00
	18-Jun-07	25.10	237.29	**23,000**	6.16	0.28	-	-	12.60
	16-Nov-07	28.07	234.32	**25,000J**	-	-	-	-	-
	26-Mar-08	24.61	237.78	**8,000**	-	-	-	-	-
	25-Aug-08	27.62	234.77	**12,800**	6.92	0.27	1.15	61	13.43
	2-Mar-09	25.45	236.94	**24,300**	6.27	0.19	0.56	-	12.80
	25-Aug-09	26.22	236.17	**8,660**	6.10	0.19	0.72	217	12.90
	22-Feb-10	24.55	237.84	**23,000**	6.18	0.18	2.32	114	12.50
	23-Aug-10	25.68	236.71	**4,800***	5.98	0.28	0.46	141	12.60
	22-Feb-11	24.50	237.89	**5,200**	6.04	0.18	1.64	-	11.90
	8-Sep-11	25.55	236.84	**4,900**	4.96	0.15	1.64	-105	12.90
	6-Mar-12	24.65	237.74	**2,600**	7.05	-	2.59	47	11.20
Duplicate	6-Mar-12	24.65	237.74	**5,600**	7.05	-	2.59	47	11.20
	15-Aug-12	25.64	236.75	**3,200**	7.28	-	2.04	30	12.40
	20-Feb-13	24.94	237.45	**1,000**	7.16	-	2.39	35	12.40
	12-Aug-13	27.20	235.19	**4,300**	6.19	0.13	0.39	45	12.50
	13-Mar-14	24.25	238.14	**2,400**	6.08	0.16	3.63	44	12.20
	22-Sep-14	26.76	235.63	**8,100**	Pumped dry				
	27-Apr-15	24.80	237.59	**690**	6.04	0.17	8.01	-9	12.90
Duplicate	27-Apr-15	24.80	237.59	**990**	6.04	0.17	8.01	-9	12.90
	3-Sep-15	27.98	234.41	**3,100**	6.30	0.24	0.00	-25	13.23
4131-MW04 259.74	29-Dec-05	26.64	233.10	**1,200**	-	-	-	-	-
	4-Apr-06	22.59	237.15	250U	-	-	-	-	-
	3-Nov-06	27.17	232.57	100U	6.25	0.10	-	-	13.20
	18-Jun-07	23.34	236.40	100U	6.20	0.08	-	-	12.60
	16-Nov-07	26.31	233.43	100UJ	7.09	0.08	6.78	-	13.40
	21-Mar-08	23.70	236.04	100U	7.24	0.09	7.39	280	11.90
	25-Aug-08	26.48	233.26	100U	6.06	0.09	7.81	307	12.18
	2-Mar-09	25.31	234.43	100U	5.61	0.07	8.11	-	12.70
	25-Aug-09	26.60	233.14	100U	5.30	0.08	7.67	200	11.90
	22-Feb-10	24.67	235.07	120U	6.70	0.07	8.43	210	12.80
	23-Aug-10	25.65	234.09	120U	5.73	0.09	7.12	365	12.60
	22-Feb-11	23.23	236.51	120U	6.11	0.06	7.77	-	12.30
	8-Sep-11	24.45	235.29	**130**	4.38	0.08	-	146	12.60
	6-Mar-12	23.90	235.84	120U	7.04	-	7.51	25	12.70

Table 3-1. AOC 8-2 Depth to Water Measurements, TPH-D Concentrations, and Groundwater Parameter Field Measurements (continued)

Well ID TOC Elevation	Date	DTW (ft bgs)	GWELEV (ft AMSL)	TPH-D (µg/L)	pH	Cond. (µS/cm)	DO (ppm)	ORP (mv)	Temp ºC
4131-MW04 (continued)	15-Aug-12	25.60	234.14	120U	7.48	-	6.74	21	12.40
	20-Feb-13	23.90	235.84	100U	7.69	-	6.78	13	12.30
	12-Aug-13	25.30	234.44	100U	6.16	0.07	8.58	42	12.30
	13-Mar-14	22.60	237.14	100U	6.36	0.07	9.67	28	12.80
	22-Sep-14	24.60	235.14	15J	6.20	0.08	9.00	240	13.30
	27-Apr-15	23.06	236.68	22J	6.17	0.09	10.60	189	12.97
	3-Sep-15	25.75	233.99	19J	5.54	0.11	8.30	195	14.14
4131-MW05 259.23	29-Dec-05	26.10	233.13	250U	-	-	-	-	-
	4-Apr-06	22.04	237.19	250U	-	-	-	-	-
	3-Nov-06	26.62	232.61	100U	6.38	0.12	-	-	13.50
	18-Jun-07	22.81	236.42	100U	6.45	0.10	-	-	13.30
	16-Nov-07	25.78	233.45	100UJ	7.53	0.11	9.36	-	13.50
	21-Mar-08	23.16	236.07	100U	7.32	0.10	7.99	153	12.60
	25-Aug-08	25.93	233.30	100U	7.60	0.11	8.64	201	13.00
	2-Mar-09	24.75	234.48	100U	6.15	0.09	7.95	-	13.20
	25-Aug-09	26.07	233.16	100U	6.49	0.11	8.22	142	13.30
	22-Feb-10	24.15	235.08	120U	6.63	0.09	7.67	215	13.20
	23-Aug-10	25.14	234.09	**11,000***	5.49	0.16	1.74	-33	13.00
	22-Feb-11	22.65	236.58	120U	6.29	0.10	7.41	-	13.10
	8-Sep-11	24.09	235.14	120U	4.91	0.10	-	346	13.00
	6-Mar-12	26.36	232.87	120U	7.04	-	7.45	17	13.10
	15-Aug-12	24.50	234.73	120U	7.81	-	5.83	8	13.10
Duplicate	15-Aug-12	24.50	234.73	120U	7.81	-	5.83	8	13.10
	20-Feb-13	23.19	236.04	100U	7.84	-	6.70	7	12.90
	12-Aug-13	24.72	234.51	100U	6.44	0.08	9.01	31	12.60
	13-Mar-14	22.50	236.73	100U	6.51	0.12	9.30	21	13.00
	22-Sep-14	24.08	235.15	15J	6.40	0.10	9.50	255	13.50
	27-Apr-15	22.54	236.69	16J	6.40	0.14	10.29	208	13.32
	3-Sep-15	25.21	234.02	28J	6.00	0.15	8.89	150	14.60
4131-MW06 262.08	29-Dec-05	24.97	237.11	250U	-	-	-	-	-
	4-Apr-06	23.98	238.10	250U	-	-	-	-	-
	3-Nov-06	28.50	233.58	-	-	-	-	-	-
	18-Jun-07	24.75	237.33	-	-	-	-	-	-
	16-Nov-07	27.64	234.44	-	-	-	-	-	-
	21-Mar-08	25.06	237.02	-	-	-	-	-	-
	25-Aug-08	27.62	234.46	-	-	-	-	-	-
	2-Mar-09	25.51	236.57	-	-	-	-	-	-
	25-Aug-09	27.58	234.50	-	-	-	-	-	-
	22-Feb-10	25.20	236.88	-	-	-	-	-	-
	23-Aug-10	25.70	236.38	-	-	-	-	-	-
	22-Feb-11	24.50	237.58	-	-	-	-	-	-
	8-Sep-11	25.56	236.52	-	-	-	-	-	-

Table 3-1. AOC 8-2 Depth to Water Measurements, TPH-D Concentrations, and Groundwater Parameter Field Measurements (continued)

Well ID TOC Elevation	Date	DTW (ft bgs)	GWELEV (ft AMSL)	TPH-D (µg/L)	pH	Cond. (µS/cm)	DO (ppm)	ORP (mv)	Temp ºC
4131-MW06	6-Mar-12	25.17	236.91	-	-	-	-	-	-
(continued)	15-Aug-12	26.62	235.46	-	-	-	-	-	-
	20-Feb-13	25.05	237.03	-	-	-	-	-	-
	12-Aug-13	25.62	236.46	-	-	-	-	-	-
	13-Mar-14	24.00	238.08	-	-	-	-	-	-
	22-Sep-14	25.64	236.44	-	-	-	-	-	-
	27-Apr-15	24.47	237.61	-	-	-	-	-	-
	3-Sep-15	26.51	235.57	-	-	-	-	-	-
MTCA Method A Cleanup Level				**500**					

Notes:
TOC – Top of casing
DTW (ft bgs) – Depth to water (feet below ground surface)
GWELEV (ft AMSL) – Groundwater elevation (feet above mean sea level)
TPH-D (µg/L) – Diesel-range total petroleum hydrocarbons (micrograms per liter)
Cond. (µS/cm) – Conductivity (microsiemens per centimeter)
DO (ppm) – Dissolved oxygen (parts per million)
ORP (mv) – Oxygen / reduction potential (millivolts)
Temp. (ºC) – Temperature (degrees Celsius)
BOLD – Analyte detected at or above laboratory practical quantification limit
BOLD – TPH-D detected at or above MTCA Method A cleanup level of 500 µg/L
J – Value estimated
U – Analyte not detected above practical quantification limit reported
- – No data, not applicable
* It is suspected that three samples were mislabeled. The sample collected from well 4131-MW02 was labeled as 4131-MW03. The sample collected from well 4131-MW03 was labeled as 4131-MW05, and the sample collected from well 4131-MW05 was labeled as 4131-MW02.

3.2 BUILDING A0111 FORMER UST SITE (AOC 8-4)

Groundwater level and TPH-D concentration iso-contour lines for the April and August/September sampling events are presented on Figures 3-4 and 3-5, respectively. Table 3-2 presents depth to water measurements, TPH-D concentrations, and groundwater parameter field measurements. Appendix B contains copies of laboratory analytical reports for both groundwater sampling events.

Historically, A0111-MW02 had been considered at or near the source since it consistently had the highest detected concentrations of TPH-D in any onsite monitoring wells ranging from 791 µg/L to 7,600 µg/L. However, A0111-MW02 was one of the three wells decommissioned in 2010 during construction activities of the chemical battalion administration building.

TPH-D was detected at 91J µg/L (A0111-MW04), 29J µg/L (A0111-MW05), 32J µg/L (A0111-MW06), 42J µg/L (A0111-MW07) and 180 µg/L (A0111-MW08) during the April sampling event. In the August/September event, well A0111-MW-04 was not sampled due to the well being dry. TPH-D was detected at 25J µg/L (A0111-MW06), 68J µg/L (A0111-MW07) and 350 µg/L (A0111-MW08) during the August/September sampling event. Well A0111-MW05 was not sampled in August/September per the SAP. Figure 3-6 presents TPH-D concentration trends in monitoring wells at AOC 8-4 over time.

Information on lab data qualifiers is included in the beginning of this document - Data Qualifier Definitions.

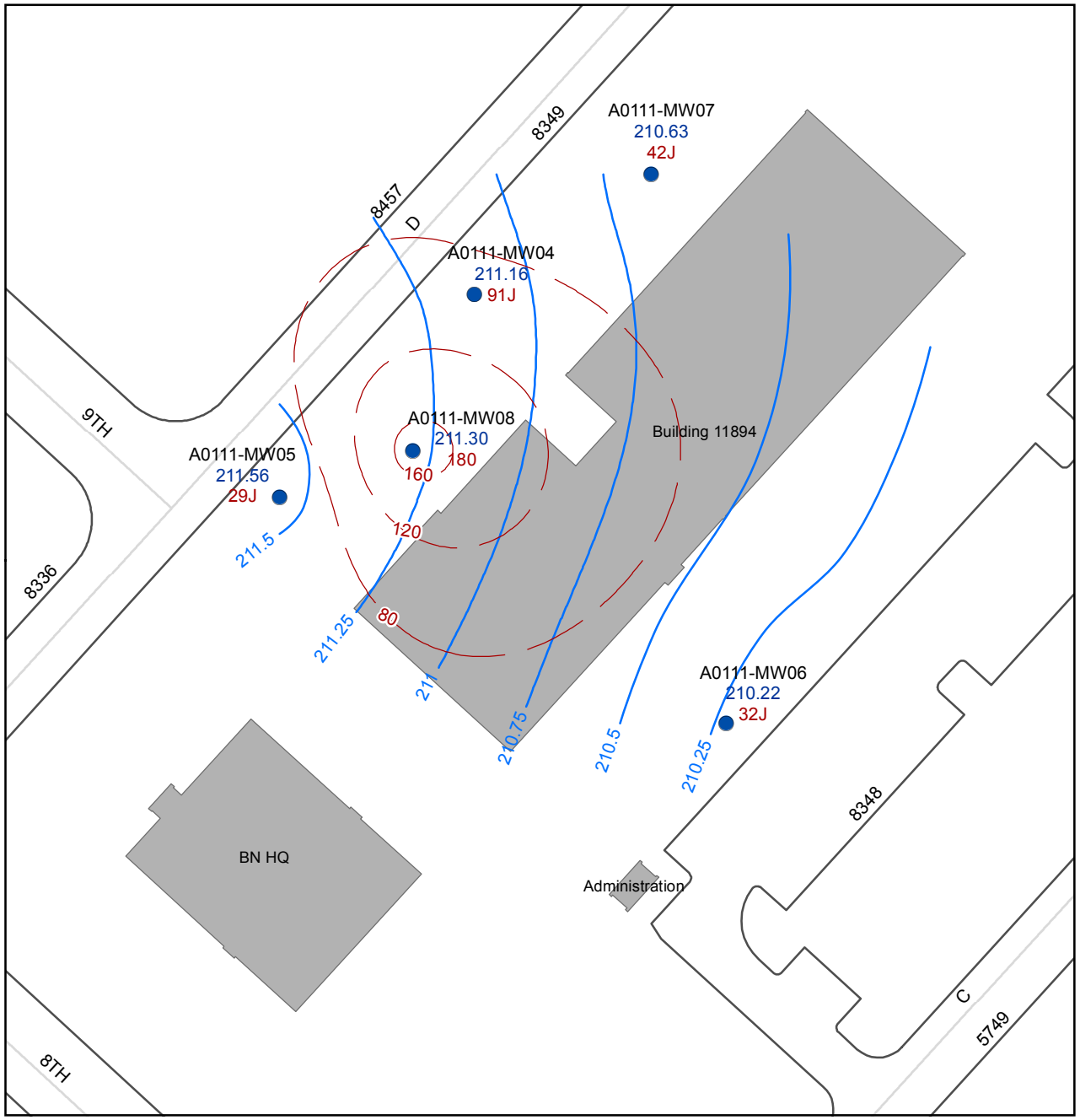
Notes:

Depth to water measurements collected April 20, 2015.

Groundwater samples collected April 23-28, 2015

Legend

- Monitoring Well
- Groundwater Elevation (famsl)
- TPH-D Concentraion (µg/L)



0 15 30 60
Feet

USACE | **SEALASKA**

Figure 3-4
AOC 8-4 Groundwater Elevation and TPH-D Concentration Contours April 2015

Path: P:\Production\Fig\JBLM\TO 01A\FLAO\FLAO 2015 Annual GW Report\Maps\FLAO_2015_AnnualGW_FIG_3-4.mxd
Date: 3/9/2016

Notes:

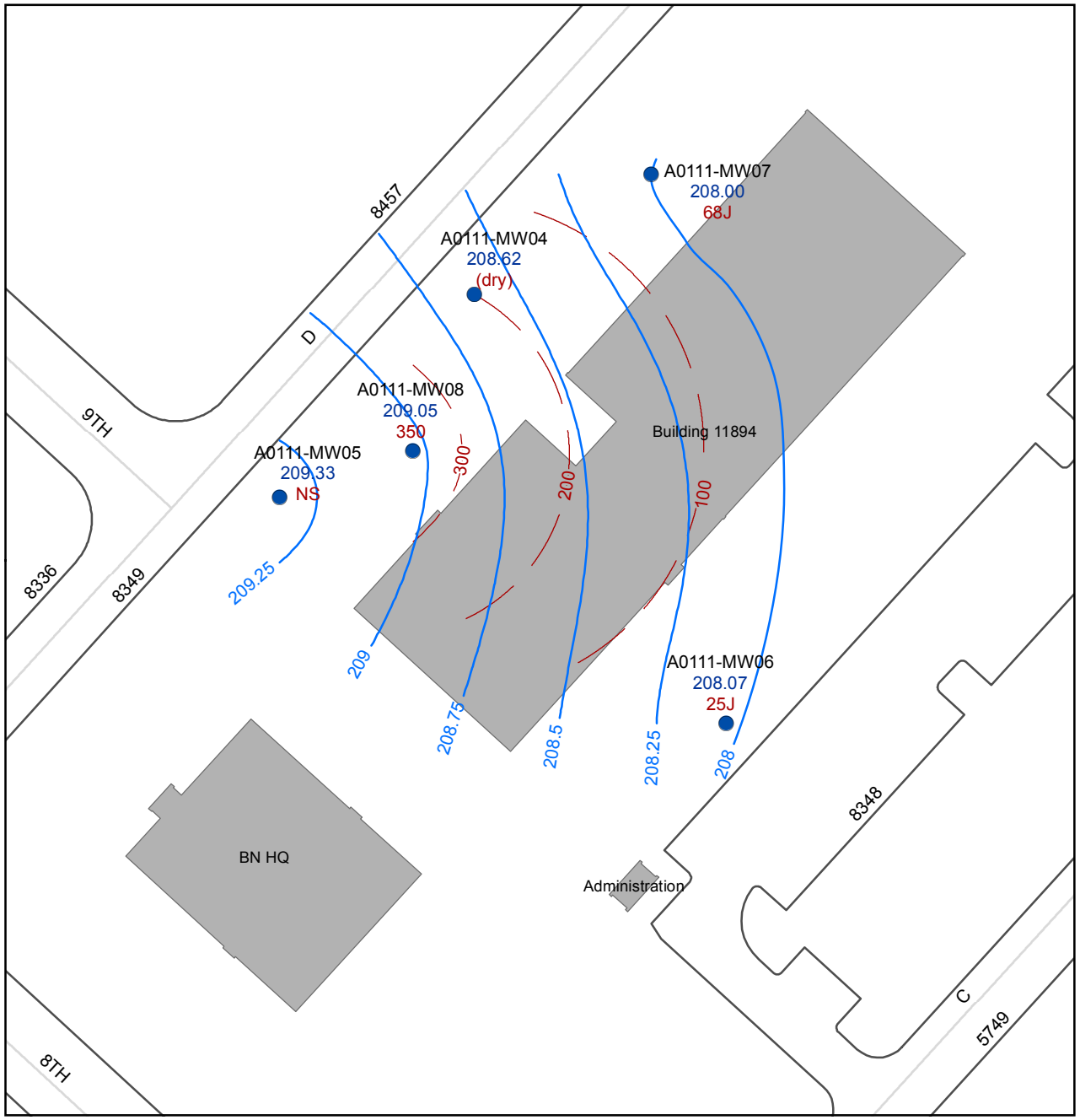
Depth to water measurements collected August 31, 2015.

Groundwater samples collected August 31-September 1, 2015.

NS - Not planned for sampling.

Legend

- Monitoring Well
- Groundwater Elevation (famsl)
- TPH-D Concentraion (µg/L)



N

0 15 30 60

Feet

USACE | **SEALASKA**

Figure 3-5
AOC 8-4 Groundwater Elevation and TPH-D Concentration Contours August/September 2015

Path: P:\Production\Fig\JBLM\TO 01A\FLAO\FLAO 2015 Annual GW Report\Maps\FLAO_2015_AnnualGW_FIG_3-5.mxd
Date: 3/9/2016

Figure 3-6. TPH-D Concentration Trends in AO111-MW01, -MW02, -MW-04, -MW-08 (AOC 8-4)

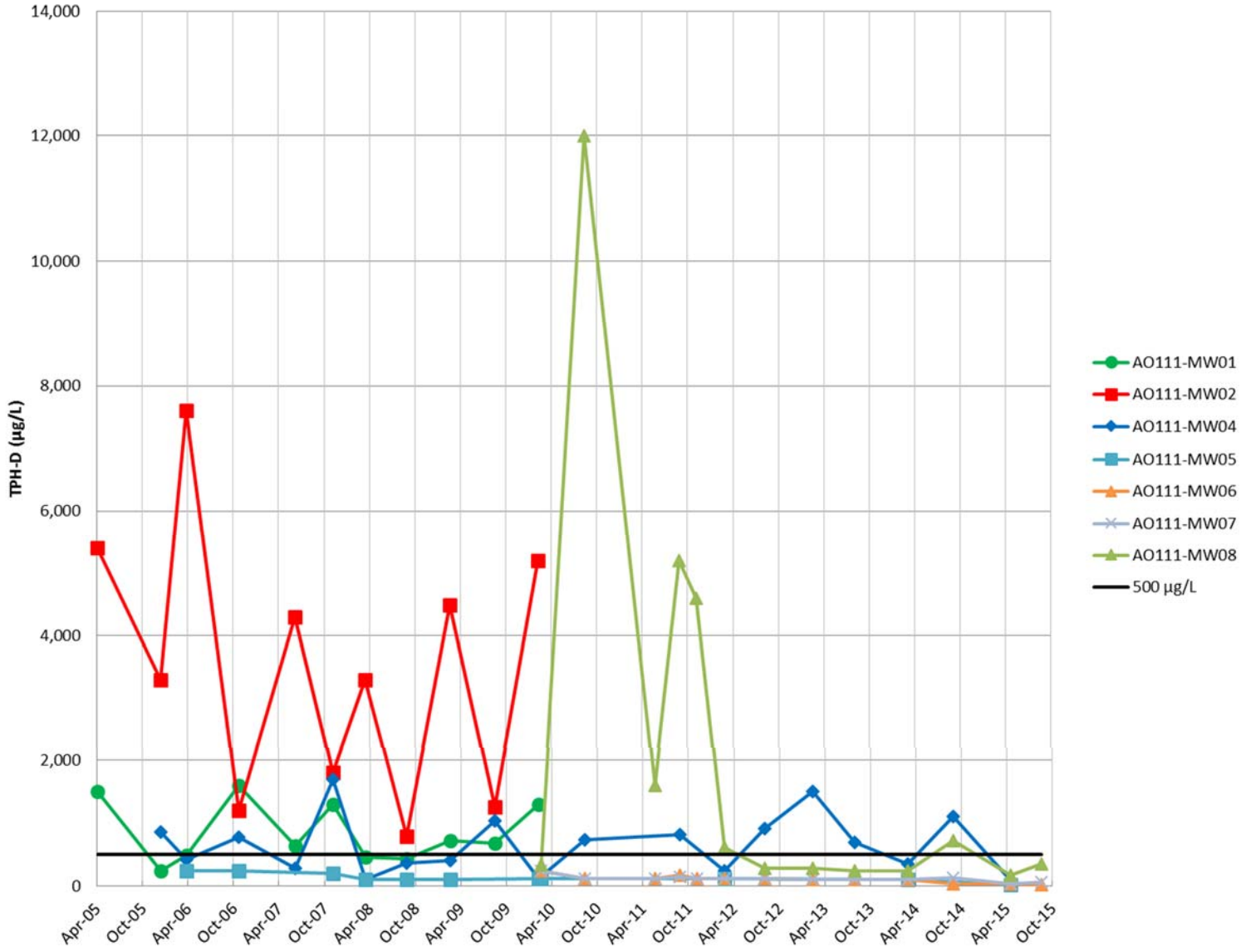


Table 3-2. AOC 8-4 Depth to Water Measurements, TPH-D Concentrations, and Groundwater Parameter Field Measurements

Well ID TOC Elevation	Date	DTW (ft bgs)	GWELEV (ft AMSL)	TPH-D (µg/L)	pH	Cond. (µS/cm)	DO (ppm)	ORP (mv)	Temp ºC
A0111-MW01 101.64 (Decommissioned)	14-Apr-05	19.95	81.69	1,500	-	-	-	-	-
	27-Dec-05	19.56	82.08	250U	-	-	-	-	-
	7-Apr-06	18.79	82.85	**490**	-	-	-	-	-
	2-Nov-06	22.52	79.12	1,600	6.01	0.20	-	-	13.10
	19-Jun-07	19.45	82.19	640	5.41	0.11	-	-	12.90
	16-Nov-07	20.99	80.65	1,300J	6.90	0.17	0.41	-	13.20
	28-Mar-08	19.03	82.61	**460**	6.55	0.13	1.80	207	11.30
	8-Sep-08	21.57	80.07	**437**	6.60	0.18	0.47	79	12.65
	2-Mar-09	19.97	81.67	723	5.85	0.14	0.26	91	12.40
	26-Aug-09	21.70	79.94	678	5.73	0.18	0.40	118	12.80
	19-Feb-10	-*	-	1,300	-	-	-	-	-
A0111-MW02 102.02 (Decommissioned)	14-Apr-05	20.23	81.79	5,400	-	-	-	-	-
	27-Dec-05	20.21	81.81	3,300	-	-	-	-	-
	7-Apr-06	19.18	82.84	7,600	-	-	-	-	-
	2-Nov-06	22.73	79.29	1,200	6.93	0.21	-	-	12.70
	19-Jun-07	19.83	82.19	4,300	5.43	0.12	-	-	12.30
	16-Nov-07	21.34	80.68	1,800J	6.86	0.21	-	-	13.00
	28-Mar-08	19.45	82.57	3,300	6.31	0.12	0.62	158	11.60
	8-Sep-08	21.72	80.3	791	6.80	0.17	0.51	-7	12.35
	2-Mar-09	20.29	81.73	4,480	5.49	0.10	0.45	60	12.60
	26-Aug-09	21.80	80.22	1,250	5.63	0.19	0.23	15	12.70
	17-Feb-10	19.03	82.99	5,200	4.30	0.11	0.75	165	12.00
A0111-MW03 100 (Decommissioned)	14-Apr-05	18.17	81.83	250U	-	-	-	-	-
	27-Dec-05	18.05	81.95	250U	-	-	-	-	-
	7-Apr-06	17.08	82.92	250U	-	-	-	-	-
	2-Nov-06	20.80	79.2	-	-	-	-	-	-
	19-Jun-07	17.78	82.22	-	-	-	-	-	-
	16-Nov-07	19.25	80.75	-	-	-	-	-	-
	28-Mar-08	17.39	82.61	-	-	-	-	-	-
	8-Sep-08	19.61	80.39	-	-	-	-	-	-
	2-Mar-09	18.25	81.75	-	-	-	-	-	-
	26-Aug-09	19.84	80.16	-	-	-	-	-	-
	17-Feb-10	16.97	83.03	-	-	-	-	-	-
A0111-MW04 230.88	27-Dec-05	20.18	81.93	860	-	-	-	-	-
	7-Apr-06	19.34	82.77	**420**	-	-	-	-	-
	2-Nov-06	23.21	78.9	780	6.10	0.19	-	-	13.00
	19-Jun-07	20.00	82.11	**290**	5.54	0.10	-	-	12.10
	16-Nov-07	21.70	80.41	1,700J	6.88	0.16	-	-	13.20
	28-Mar-08	19.61	82.5	100U	6.40	0.09	6.91	257	11.70
	8-Sep-08	22.20	79.91	**366**	6.03	0.16	1.02	160	13.38

Table 3-2. AOC 8-4 Depth to Water Measurements, TPH-D Concentrations, and Groundwater Parameter Field Measurements (continued)

Well ID TOC Elevation	Date	DTW (ft bgs)	GWELEV (ft AMSL)	TPH-D (µg/L)	pH	Cond. (µS/cm)	DO (ppm)	ORP (mv)	Temp ºC
A0111-MW04 230.88 (continued)	2-Mar-09	20.52	81.59	**414**	6.00	0.12	1.87	191	12.40
	26-Aug-09	22.28	205.10	**1,040**	5.38	0.49	0.45	89	12.80
	17-Feb-10	19.21	208.17	120U	4.51	0.09	6.59	239	12.20
	24-Aug-10	21.42	205.96	**730**	Well pumped dry				
	23-Feb-11	18.87	208.51		No sample collected				
	2-Jun-11	19.20	208.27	-	-	-	-	-	-
	8-Sep-11	21.58	205.89	**820**	5.66	0.25	1.92	198	15.30
	6-Mar-12	19.59	207.88	**250**	-	-	-	-	-
	16-Aug-12	21.69	205.78	**910**	7.09	-	3.44	37	14.10
	25-Feb-13	20.04	207.43	**1,500**	7.00	-	5.57	42	11.60
	13-Aug-13	22.00	208.88	**690**	Water very turbid, field parameters not measured				
	13-Mar-14	18.00	212.88	**350**	5.73	0.17	8.26	59.00	12.10
	11-Sep-14	21.95	208.93	**1,100**	Sample collected by bailer - No parameters				
	28-Apr-15	19.72	211.16	91J	5.83	0.19	7.55	224	12.87
	31-Aug-15	22.26	208.62		Well dry, no sample collected				
A0111-MW05 230.84	27-Dec-05	20.24	81.83	250U	-	-	-	-	-
	7-Apr-06	19.32	82.75	250U	-	-	-	-	-
	2-Nov-06	22.88	79.19	-	-	-	-	-	-
	19-Jun-07	19.97	82.1	100U	5.68	0.10	-	-	11.60
	16-Nov-07	21.52	80.55	-	-	-	-	-	-
	28-Mar-08	19.65	82.42	100U	6.59	0.11	6.65	254	11.40
	8-Sep-08	21.93	80.14	100U	6.42	0.11	7.34	200	12.33
	2-Mar-09	20.47	81.6	100U	6.00	0.12	6.74	359	12.80
	26-Aug-09	21.93	205.41	-	-	-	-	-	-
	17-Feb-10	19.24	208.10	120U	-	-	-	-	-
	27-Aug-10	21.27	206.07	120U	5.0	0.12	6.7	302	13
	23-Feb-11	18.93	208.41		No sample collected				
	2-Jun-11	18.72	208.23	-	-	-	-	-	-
	6-Mar-12	19.18	207.77	120U	-	-	-	-	-
	16-Aug-12	21.00	205.95	-	-	-	-	-	-
	25-Feb-13	19.62	207.72	-	-	-	-	-	-
	13-Aug-13	22.75	208.09	-	-	-	-	-	-
	13-Mar-14	17.55	213.29	100U	6.01	0.16	9.43	44.00	11.60
	11-Sep-14	21.24	209.60	-	-	-	-	-	-
	28-Apr-15	19.28	211.56	29J	5.96	0.15	9.17	241	13.27
	31-Aug-15	21.51	209.33	-	-	-	-	-	-

Table 3-2. AOC 8-4 Depth to Water Measurements, TPH-D Concentrations, and Groundwater Parameter Field Measurements (continued)

Well ID TOC Elevation	Date	DTW (ft bgs)	GWELEV (ft AMSL)	TPH-D (µg/L)	pH	Cond. (µS/cm)	DO (ppm)	ORP (mv)	Temp ºC
A0111-MW06 227.69	1-Mar-10**	20.50	203.69	250U	-	-	-	-	-
	25-Jun-10	16.65	207.54	120U	4.86	0.14	5.22	53***	12.0
	24-Aug-10	18.00	206.19	120U	5.48	0.15	5.22	356	12.9
	23-Feb-11	Could not locate well							
	2-Jun-11	16.92	208.29	120U	Water very turbid, field parameters not measured				
	8-Sep-11	19.15	206.06	**170**	5.87	0.18	2.02	356	12.90
	18-Nov-11	-	-	120U	-	-	-	-	-
	6-Mar-12	17.29	207.92	120U	-	-	-	-	-
	16-Aug-12	19.12	206.09	120U	7.36	-	4.18	28.00	13.60
	25-Feb-13	17.83	207.38	**100**	7.00	-	5.45	42.00	11.10
	13-Aug-13	19.60	208.09	100U	-	-	-	-	-
	13-Mar-14	15.70	211.99	100U	5.93	0.23	7.05	49.00	11.50
	11-Sep-14	19.53	208.16	**34J**	Sample collected by bailer - No parameters				
	23-Apr-15	17.47	210.22	32J	5.96	0.14	7.78	216	12.55
	31-Aug-15	19.62	208.07	25J	5.88	0.253	3.8	190	14.09
A0111-MW07 230.88	1-Mar-10**	19.30	207.45	250U	-	-	-	-	-
	25-Jun-10	19.97	206.78	120U	5.30	0.15	4.16	355	12.8
	24-Aug-10	21.42	205.33	120U	Very turbid water, never cleared up				
	23-Feb-11	Could not locate well							
	2-Jun-11	19.68	208.20	120U	Water very turbid, field parameters not measured				
	8-Sep-11	22.10	205.78	**150**	5.15	0.19	1.56	340	13.8
	18-Nov-11	22.40	205.48	120U	-	-	-	-	-
	6-Mar-12	20.25	207.63	**120**	Water very turbid, field parameters not measured				
	16-Aug-12	22.10	205.78	120U	Water very turbid, field parameters not measured				
	25-Feb-13	20.69	207.19	100U	7.27	-	4.41	30.00	11.50
	13-Aug-13	21.45	209.43	100U	Water very turbid, field parameters not measured				
	13-Mar-14	18.50	212.38	100U	6.09	0.22	7.19	42.00	10.80
	11-Sep-14	22.59	208.29	**140J**	Sample collected by bailer - No parameters				
	27-Apr-15	20.25	210.63	42J	5.98	0.23	8.44	218	14
	31-Aug-15	22.88	208.00	68J	6.10	0.27	1.64	186	13.91
A0111-MW08 231.24	1-Mar-10**	18.10	209.60	**340**	-	-	-	-	-
	25-Jun-10	Well monument broken, casing bent							
	24-Aug-10	21.60	206.10	**12,000**	-	-	-	-	-
	23-Feb-11	Well monument and casing broken							
	2-Jun-11	19.36	208.34	**1,600**	Water very turbid, field parameters not measured				
	8-Sep-11	22.65	205.05	**5,200**	5.19	0.15	1.58	245.00	14.00
	18-Nov-11	21.85	205.85	**4,600**	-	-	-	-	-

Table 3-2. AOC 8-4 Depth to Water Measurements, TPH-D Concentrations, and Groundwater Parameter Field Measurements (continued)

Well ID TOC Elevation	Date	DTW (ft bgs)	GWELEV (ft AMSL)	TPH-D (µg/L)	pH	Cond. (µS/cm)	DO (ppm)	ORP (mv)	Temp ºC
A0111-MW08	6-Mar-12	19.86	207.84	**610**	-	-	-	-	-
(continued)	16-Aug-12	21.96	205.74	**280**	-	-	-	-	-
	25-Feb-13	20.25	207.45	**280**	7.05	-	3.06	40.00	12.50
	13-Aug-13	22.12	209.12	**240**	Well pumped dry				
	13-Mar-14	18.20	213.04	**250**	6.07	0.19	6.94	41.00	12.40
	11-Sep-14	22.00	209.24	**720**	Sample collected by bailer - No parameters				
Duplicate	11-Sep-14	22.00	209.24	**590**	Sample collected by bailer - No parameters				
	28-Apr-15	19.94	211.30	**180**	5.84	0.19	6.60	231	13.53
	1-Sep-15	22.19	209.05	**350**	5.84	0.18	0.10	194	15.91
MTCA Method A Cleanup Level				**500**					

Notes:
TOC – Top of casing
DTW (ft bgs) – Depth to water (feet below ground surface)
GWELEV (ft AMSL) – Groundwater elevation (feet above mean sea level)
TPH-D (µg/L) – Diesel-range total petroleum hydrocarbons (micrograms per liter)
Cond. (µS/cm) – Conductivity (microsiemens per centimeter)
DO (ppm) – Dissolved oxygen (parts per million)
ORP (mv) – Oxygen / reduction potential (millivolts)
Temp. (ºC) – Temperature (degrees Celsius)
BOLD – Analyte detected at or above laboratory practical quantification limit
BOLD – Analyte detected at or above MTCA Method A cleanup level of 500 µg/L
J – Value estimated
U – Analyte not detected above practical quantification limit reported
- – No data, not applicable
* Monument was destroyed and casing was bent before DTW was measured. No accurate measurement could be made. Sample was collected using a disposable bailer.
** Groundwater samples collected by Krazan and Associates after well development.
*** Cap was on ORP sensor, value is most likely wrong. Monitoring wells A0111-MW04 through A0111-MW08 elevations were re-surveyed on 26 July 2011. New TOC elevations were used to measure groundwater elevations on 02 June 11.

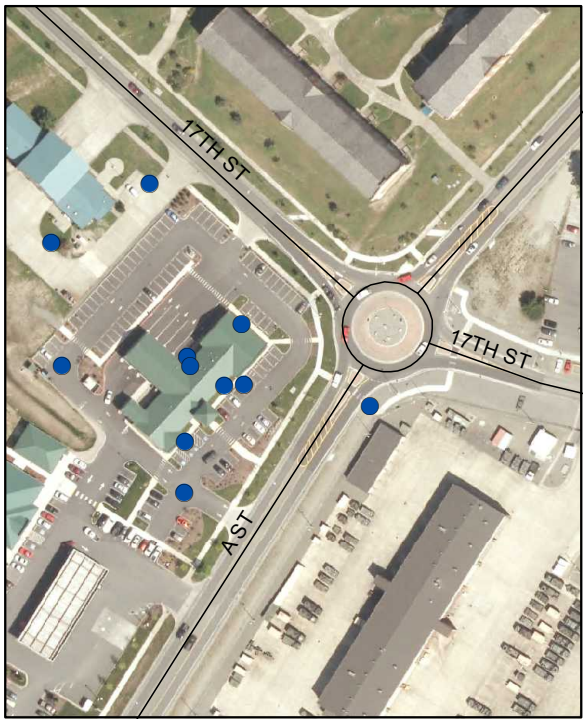
3.3 BUILDING A1033 FORMER UST SITE (AOC 9-2)

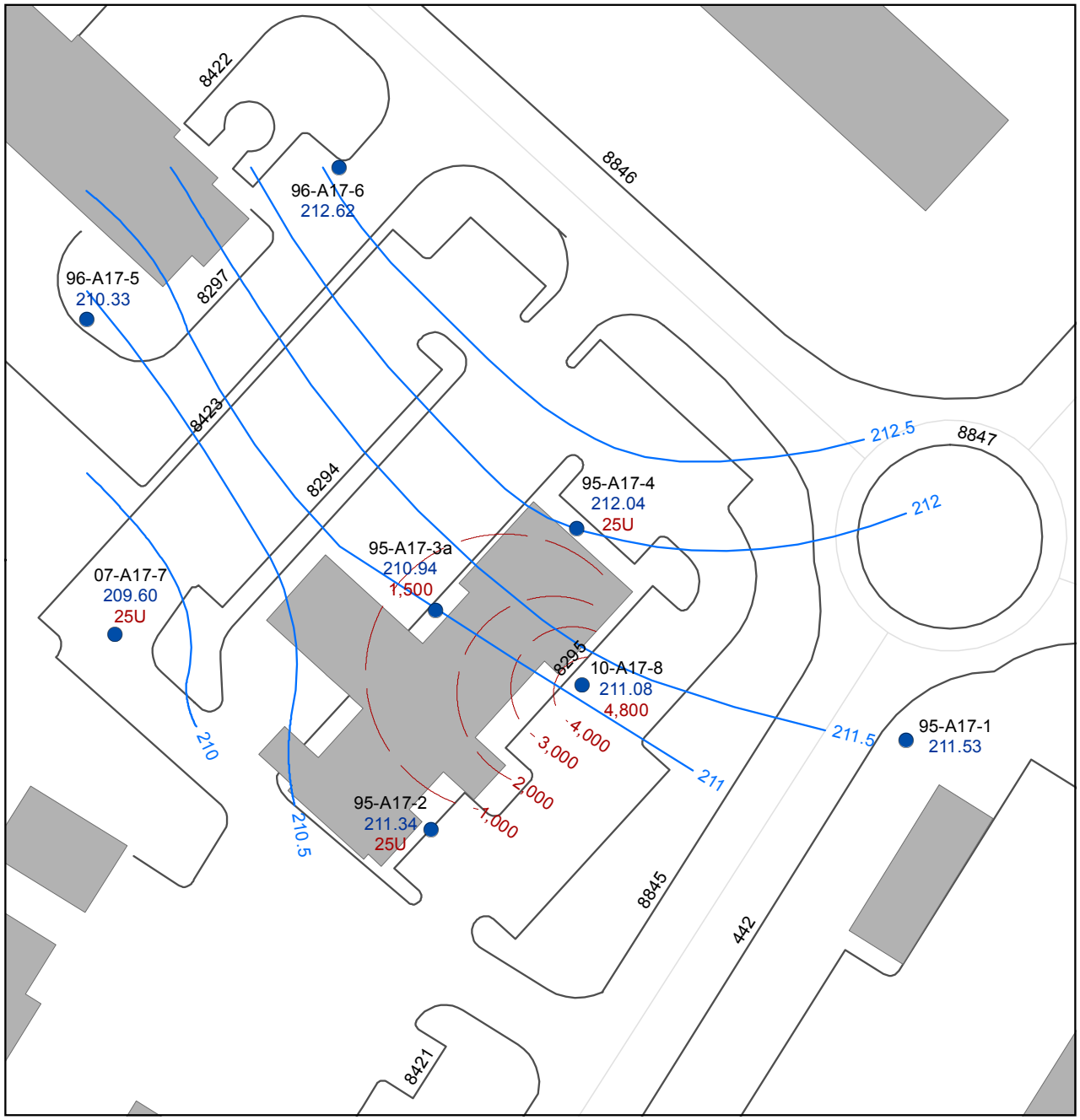
Groundwater level and TPH-G concentration iso-contour lines for the April and September sampling events are presented on Figures 3-7 and 3-8, respectively. Table 3-3 presents depth to water and groundwater parameter measurements. Table 3-4 presents TPH-G and BTEX concentrations relative to Ecology's MTCA Method A cleanup levels. Appendix B contains copies of laboratory analytical reports for both groundwater sampling events.

Historically, 95-A17-3A has been considered at or near the source area since it had the highest detected concentrations of TPH-G ranging from 1,400 µg/L (September 2014) to 35,000 µg/L (March 2008). In October 2010, monitoring well 10-A17-8 was completed within the boundary of the historical UST excavation. TPH-G was detected in samples collected from 10-A17-8 ranging from 3,500 µg/L (September 2014) to 74,000 µg/L (November 2011). Samples collected from 95-A17-3A during April and September 2015 had TPH-G detected in them at 1,500 µg/L and 3,400 µg/L, respectively. TPH-G was detected at 4,800 µg/L (April) and 25,000 µg/L (September) in samples collected from 10-A17-8. A duplicate sample was collected during both the April and September sampling events from well 10-A17-8. Sample results are consistent with the primary samples (5,000 µg/L in April and 24,000 µg/L in September).

Benzene concentrations detected in samples collected from 95-A17-3A during 2015 were 21 µg/L (April) and 28 µg/L (September). Samples collected from 10-A17-8 had benzene detected in them at 470 µg/L (April) and 170 µg/L (September). A duplicate sample was collected during the April and August/September sampling events from well 10-A17-8. Sample results are consistent with the primary sample (380 µg/L in April and 180 µg/L in September).

Both benzene and TPH-G were either not detected or detected below their respective cleanup levels in samples collected from all the other monitoring wells during 2015. Figure 3-9 presents TPH-G and benzene concentrations in monitoring wells at AOC 9-2 over time.





Notes:

Depth to water measurements collected April 2, 2015.

Groundwater samples collected April 22-23, 2015.

Legend

- Monitoring Well
- Groundwater Elevation (famsl)
- TPH-G Concentraion (µg/L)

N

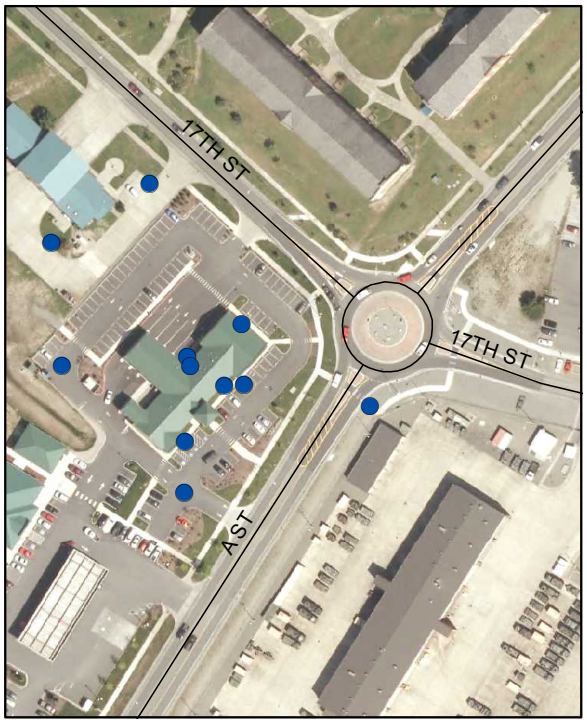
0 15 30 60

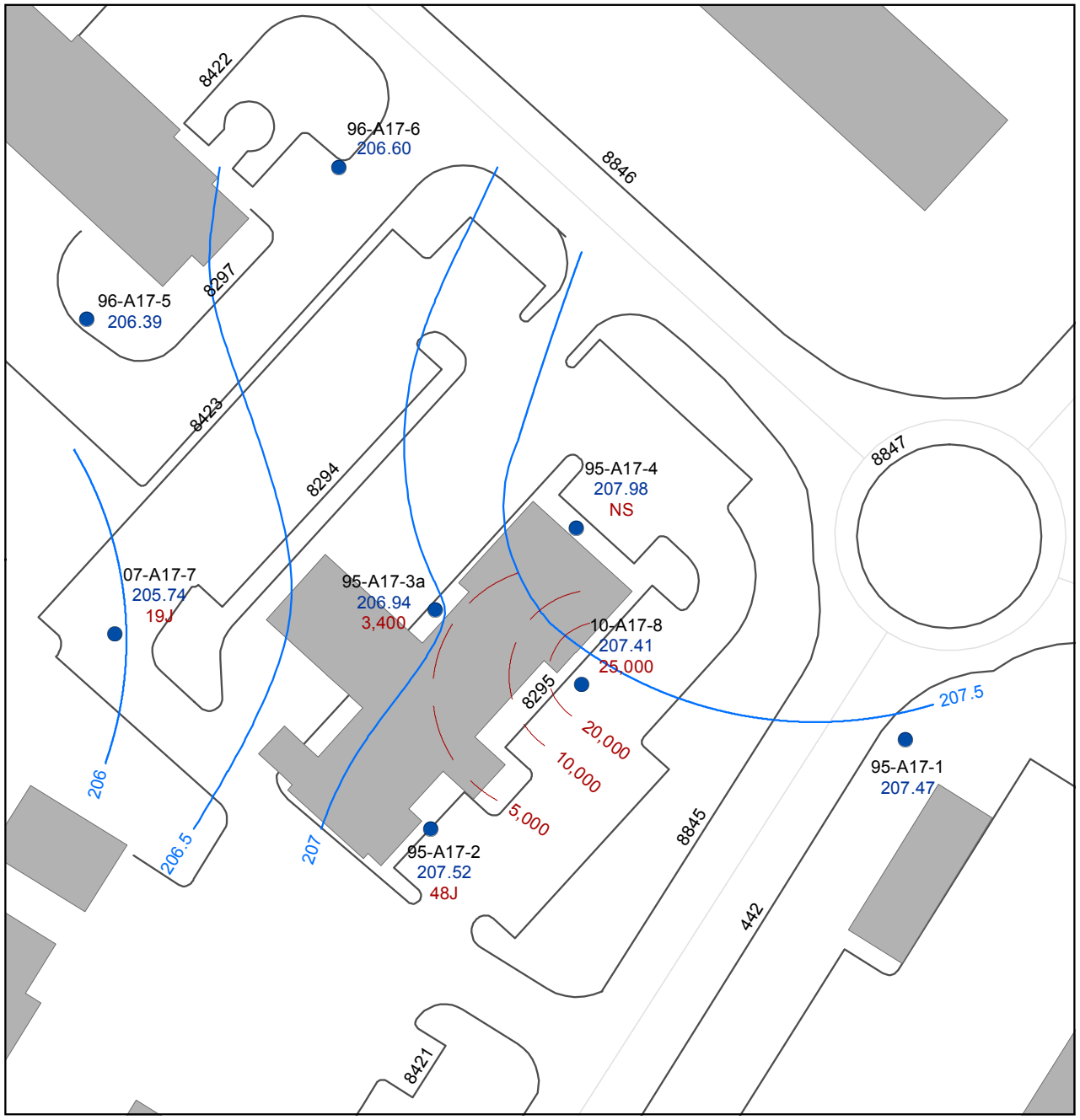
Feet

USACE | **SEALASKA**

Figure 3-7
AOC 9-2 Groundwater Elevation and TPH-G Concentration Contours April 2015

Path: E:\JBLM\TO 01A\FLAO\Maps\FLAO_2015_AnnualGW_FIG_3-7.mxd
Date: 1/27/2016





Notes:

Depth to water measurements collected September 1, 2015.

Groundwater samples collected September 1-2, 2015.

NS - Not planned for sampling.

Legend

- Monitoring Well
- Groundwater Elevation (famsl)
- TPH-G Concentraion (µg/L)

N

0 15 30 60

Feet

USACE | **SEALASKA**

Figure 3-8
AOC 9-2 Groundwater Elevation and TPH-G Concentration Contours September 2015

Path: E:\JBLM\TO 01A\FLAO\Maps\FLAO_2015_AnnualGW_FIG_3-8.mxd
Date: 1/27/2016

Figure 3-9. TPH-G and Benzene Concentration Trends (AOC 9-2)

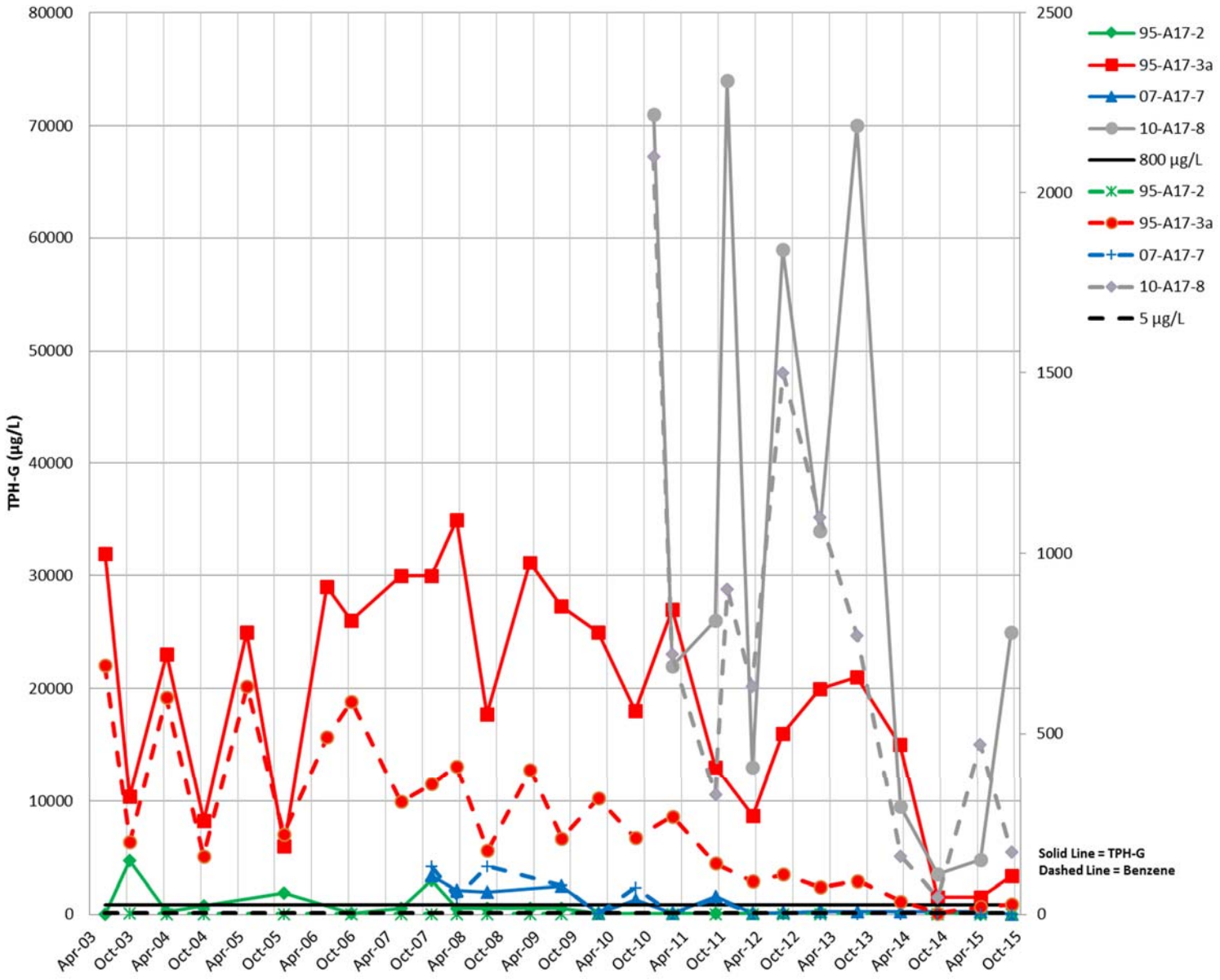


Table 3-3. AOC 9-2 Depth to Water and Groundwater Parameter Measurements

Well ID TOC Elevation	Date	DTW (ft bgs)	GWELEV (ft AMSL)	pH	Cond. (µS/cm)	DO (ppm)	ORP (mv)	Temp ºC
95-A17-1 236.9	1-Aug-95	30.49	204.77	-	-	-	-	-
	1-Feb-96	24.21	211.05	-	-	-	-	-
	1-Sep-96	28.2	207.06	-	-	-	-	-
	1-Mar-97	22.8	212.46	-	-	-	-	-
	1-Aug-97	26.4	208.86	-	-	-	-	-
	1-Mar-98	24.06	211.2	-	-	-	-	-
	1-Sep-98	29.2	206.06	-	-	-	-	-
	1-Mar-99	21.1	214.16	-	-	-	-	-
	1-Aug-99	27.01	208.25	-	-	-	-	-
	1-Mar-00	23.93	211.33	-	-	-	-	-
	1-Sep-00	28.99	206.27	-	-	-	-	-
	1-Mar-01	29.51	205.75	-	-	-	-	-
	1-Aug-02	29.6	205.66	-	-	-	-	-
	28-Oct-03	30.11	205.15	-	-	-	-	-
	20-Oct-04	30.94	204.32	-	-	-	-	-
	9-Nov-05	30.51	204.75	-	-	-	-	-
	14-Jun-07	26.33	208.93	-	-	-	-	-
	21-Mar-08	26.33	208.93	-	-	-	-	-
	8-Aug-08	29.78	205.48	-	-	-	-	-
	9-Mar-09	27.57	207.69	-	-	-	-	-
	25-Aug-09	29.87	207.03	-	-	-	-	-
	22-Feb-10	26.1	210.8	-	-	-	-	-
	24-Aug-10	28.6	208.3	-	-	-	-	-
	24-Feb-11	25.1	211.8	-	-	-	-	-
	9-Sep-11	Could not locate						
	14-Mar-12	25.5	211.4	-	-	-	-	-
	16-Aug-12	27.9	209	-	-	-	-	-
	21-Feb-13	24.28	212.62	-	-	-	-	-
	13-Aug-13	28.8	208.1	-	-	-	-	-
	10-Mar-14	23.6	213.3	-	-	-	-	-
	22-Sep-14	28.67	208.23	-	-	-	-	-
	21-Apr-15	25.37	211.53	-	-	-	-	-
	1-Sep-15	29.43	207.47	-	-	-	-	-
95-A17-2 235.9	1-Aug-95	30.2	204.59	-	-	-	-	-
	1-Feb-96	24.24	210.55	-	-	-	-	-
	1-Sep-96	27.71	207.08	-	-	-	-	-
	1-Mar-97	22.34	212.45	-	-	-	-	-
	1-Aug-97	26.08	208.71	-	-	-	-	-
	1-Mar-98	23.82	210.97	-	-	-	-	-
	1-Sep-98	28.7	206.09	-	-	-	-	-
	1-Mar-99	20.6	214.19	-	-	-	-	-
	1-Aug-99	26.55	208.24	-	-	-	-	-
	1-Mar-00	23.49	211.30	-	-	-	-	-
	1-Sep-00	28.51	206.28	-	-	-	-	-
	1-Mar-01	29.09	205.70	-	-	-	-	-
	1-Aug-02	28.92	205.87	-	-	-	-	-
	28-Oct-03	29.65	205.14	-	-	-	-	-
	28-Apr-04	27.97	206.82	-	-	-	-	-

Table 3-3. AOC 9-2 Depth to Water and Groundwater Parameter Measurements (continued)

Well ID TOC Elevation	Date	DTW (ft bgs)	GWELEV (ft AMSL)	pH	Cond. (µS/cm)	DO (ppm)	ORP (mv)	Temp ºC
95-A17-2 235.9 (continued)	20-Oct-04	30.47	204.32	-	-	-	-	-
	9-Nov-05	30	204.79	-	-	-	-	-
	31-Oct-06	30.38	204.41	6.89	0.155	-	-	13.30
	14-Jun-07	26.03	208.76	6.90	0.153	-	-	13.30
	21-Mar-08	26.02	208.77	7.32	0.139	-	-	12.43
	8-Aug-08	29.37	205.42	7.19	0.114	1.45	195.33	12.57
	9-Mar-09	27.21	207.58	7.24	0.124	0.62	148.75	13.33
	25-Aug-09	29.49	206.41	6.66	0.106	0.76	252.00	13.10
	22-Feb-10	25.5	210.40	-*	-	-	-	-
	24-Aug-10	27.82	208.08	-*	-	-	-	-
	24-Feb-11	24.4	211.50	5.48*	0.126	3.06	-	12.80
	9-Sep-11	27.25	208.65	6.27	0.111	3.60	230.00	16.00
	14-Mar-12	24.73	211.17	-	-	5.96	26.00	11.20
	16-Aug-12	27.03	208.87	-	-	-	-	-
	21-Feb-13	25.37	210.53	7.45	-	5.07	23.00	13.20
	13-Aug-13	28.4	207.50	6.60	0.176	0.47	24.00	13.60
	10-Mar-14	Low water level, unable to collect sample						
	22-Sep-14	27.7	208.20	6.50	0.147	5.90	173.00	17.20
	23-Apr-15	24.56	211.34	6.26	0.191	8.30	206	14.71
	1-Sep-15	28.38	207.52	6.49	0.196	9.40	125	16.83
95-A17-3A 235.9	1-Aug-95	30.41	204.81	-	-	-	-	-
	1-Feb-96	24.65	210.57	-	-	-	-	-
	1-Sep-96	28.06	207.16	-	-	-	-	-
	1-Mar-97	22.31	212.91	-	-	-	-	-
	1-Aug-97	26.1	209.12	-	-	-	-	-
	1-Mar-98	23.51	211.71	-	-	-	-	-
	1-Sep-98	28.7	206.52	-	-	-	-	-
	1-Mar-99	20	215.22	-	-	-	-	-
	1-Aug-99	26.44	208.78	-	-	-	-	-
	1-Mar-00	23.16	212.06	-	-	-	-	-
	1-Sep-00	28.54	206.68	-	-	-	-	-
	1-Mar-01	29.51	205.71	-	-	-	-	-
	1-Aug-02	29.14	206.08	-	-	-	-	-
	30-Jun-03	28.94	206.28	-	-	-	-	-
	28-Oct-03	29.85	205.37	-	-	-	-	-
	28-Apr-04	28.06	207.16	-	-	-	-	-
	20-Oct-04	30.88	204.34	-	-	-	-	-
	24-May-05	28.75	206.47	-	-	-	-	-
	9-Nov-05	30.32	204.90	-	-	-	-	-
	14-Jun-06	26.99	208.23	-	-	-	-	-
	31-Oct-06	30.86	204.36	6.49	0.253	-	-	12.60
	14-Jun-07	26.09	209.13	6.51	0.252	-	-	12.60
	21-Nov-07	29.21	206.01	6.05	0.205	-	-	13.00
	21-Mar-08	26	209.22	7.35	0.237	0.70	-	12.37
	8-Aug-08	29.42	205.80	7.16	0.214	0.97	-25.75	12.28
	9-Mar-09	27.07	208.15	7.04	0.227	0.71	-177.00	12.88
	25-Aug-09	29.46	206.44	6.03	0.199	0.77	233.00	13.10
	22-Feb-10	25.6	210.30	6.52	0.205	0.47	-196.00	12.80

Table 3-3. AOC 9-2 Depth to Water and Groundwater Parameter Measurements (continued)

Well ID TOC Elevation	Date	DTW (ft bgs)	GWELEV (ft AMSL)	pH	Cond. (µS/cm)	DO (ppm)	ORP (mv)	Temp ºC
95-A17-3A 235.9 (continued)	23-Aug-10	29.1	206.80	4.80	0.200	1.17	-125.00	13.10
	24-Feb-11	24.55	211.35	5.86	0.191	0.73	-	13.00
	9-Sep-11	27.62	208.28	6.07	0.177	4.87	-98.00	14.40
	14-Mar-12	24.85	211.05	-	-	-	-	-
	16-Aug-12	27.47	208.43	-	-	-	-	-
	21-Feb-13	25.66	210.24	-	-	-	-	-
	13-Aug-13	27.85	208.05	-	-	-	-	-
	14-Mar-14	22.9	213.00	6.36	0.223	7.70	26.00	13.60
	23-Sep-14	28.07	207.83	6.30	0.147	2.90	42.00	14.70
	22-Apr-15	24.96	210.94	6.5	0.329	5.20	0	14.5
	2-Sep-15	28.96	206.94	6.57	0.403	0.0	-56	15.50
95-A17-4 236.8	1-Aug-95	29.91	205.24	-	-	-	-	-
	1-Feb-96	23.65	211.50	-	-	-	-	-
	1-Sep-96	27.56	207.59	-	-	-	-	-
	1-Mar-97	21.75	213.40	-	-	-	-	-
	1-Aug-97	25.85	209.30	-	-	-	-	-
	1-Mar-98	23.35	211.80	-	-	-	-	-
	1-Sep-98	28.7	206.45	-	-	-	-	-
	1-Mar-99	19.7	215.45	-	-	-	-	-
	1-Aug-99	26.33	208.82	-	-	-	-	-
	1-Mar-00	22.93	212.22	-	-	-	-	-
	1-Sep-00	28.1	207.05	-	-	-	-	-
	1-Mar-01	29.05	206.10	-	-	-	-	-
	1-Aug-02	29.04	206.11	-	-	-	-	-
	28-Oct-03	29.51	205.64	-	-	-	-	-
	20-Oct-04	30.5	204.65	-	-	-	-	-
	9-Nov-05	29.8	205.35	-	-	-	-	-
	14-Jun-07	25.72	209.43	-	-	-	-	-
	21-Mar-08	25.77	209.38	6.15	0.13	-	-	14.37
	8-Aug-08	29.31	205.84	7.15	0.14	6.81	130.00	12.00
	9-Mar-09	26.91	208.24	7.12	0.14	7.03	228.25	13.83
	25-Aug-09	29.32	207.48	-	-	-	-	-
	21-Feb-10	25.38	211.42	5.95	0.14	4.97	285.00	13.30
	24-Aug-10	27.95	208.85	-	-	-	-	-
	24-Feb-11	24.37	212.43	6.01	0.14	6.91	-	13.30
	9-Sep-11	27.45	209.35	6.09	0.13	5.90	353.00	14.30
	14-Mar-12	24.89	211.91	-	-	6.36	26.00	11.20
	16-Aug-12	27.29	209.51	-	-	-	-	-
	21-Feb-13	25.49	211.31	6.69	-	6.47	-146.00	13.50
	13-Aug-13	27.85	208.95	-	-	-	-	-
	14-Mar-14	22.5	214.30	6.26	0.18	8.55	32.00	13.50
	23-Sep-14	27.99	208.81	-	-	-	-	-
	22-Apr-15	24.76	212.04	6.31	0.18	9.4	206	14.4
	1-Sep-15	28.82	207.98	-	-	-	-	-
96-A17-5 233.9	1-Feb-96	22.44	211.14	-	-	-	-	-
	1-Sep-96	26.2	207.38	-	-	-	-	-
	1-Mar-97	20.75	212.83	-	-	-	-	-
	1-Aug-97	24.6	208.98	-	-	-	-	-

Table 3-3. AOC 9-2 Depth to Water and Groundwater Parameter Measurements (continued)

Well ID TOC Elevation	Date	DTW (ft bgs)	GWELEV (ft AMSL)	pH	Cond. (µS/cm)	DO (ppm)	ORP (mv)	Temp ºC
96-A17-5 233.9 (continued)	1-Mar-98	22.25	211.33	-	-	-	-	-
	1-Sep-98	27.3	206.28	-	-	-	-	-
	1-Mar-99	18.9	214.68	-	-	-	-	-
	1-Aug-99	25.05	208.53	-	-	-	-	-
	1-Mar-00	21.92	211.66	-	-	-	-	-
	1-Sep-00	27.07	206.51	-	-	-	-	-
	1-Mar-01	27.76	205.82	-	-	-	-	-
	1-Aug-02	27.68	205.90	-	-	-	-	-
	28-Oct-03	28.3	205.28	-	-	-	-	-
	9-Nov-05	28.47	205.11	-	-	-	-	-
	14-Jun-07	24.47	209.11	-	-	-	-	-
	21-Mar-08	24.48	209.10	-	-	-	-	-
	8-Aug-08	27.93	205.65	-	-	-	-	-
	9-Mar-09	25.71	207.87	-	-	-	-	-
	25-Aug-09	28.03	205.87	-	-	-	-	-
	21-Feb-10	24.29	209.61	-	-	-	-	-
	24-Aug-10	26.66	207.24	-	-	-	-	-
	24-Feb-11	23.26	210.64	-	-	-	-	-
	9-Sep-11	26.15	207.75	-	-	-	-	-
	14-Mar-12	25.7	208.20	-	-	-	-	-
	16-Aug-12	26.01	207.89	-	-	-	-	-
	21-Feb-13	24.28	209.62	-	-	-	-	-
	13-Aug-13	26.93	206.97	-	-	-	-	-
	10-Mar-14	21.85	212.05	-	-	-	-	-
	23-Sep-14	26.66	207.24	-	-	-	-	-
	1-Mar-98	22.25	211.33	-	-	-	-	-
	1-Sep-98	27.3	206.28	-	-	-	-	-
96-A17-6 235.1	1-Feb-96	22.95	209.66	-	-	-	-	-
	1-Mar-01	28.18	204.43	-	-	-	-	-
	28-Oct-03	27.25	205.36	-	-	-	-	-
	9-Nov-05	27.41	205.20	-	-	-	-	-
	14-Jun-07	23.41	209.20	-	-	-	-	-
	21-Mar-08	23.43	209.18	-	-	-	-	-
	8-Aug-08	26.91	205.70	-	-	-	-	-
	9-Mar-09	24.62	207.99	-	-	-	-	-
	25-Aug-09	26.98	208.12	-	-	-	-	-
	21-Feb-10	23.2	211.90	-	-	-	-	-
	24-Aug-10	25.5	209.60	-	-	-	-	-
	25-Feb-11	22.14	212.96	-	-	-	-	-
	9-Sep-11	25.11	209.99	-	-	-	-	-
	14-Mar-12	22.56	212.54	-	-	-	-	-
	16-Aug-12	24.93	210.17	-	-	-	-	-
	21-Feb-13	23.2	211.90	-	-	-	-	-
	13-Aug-13	25.85	209.25	-	-	-	-	-
	10-Mar-14	20.6	214.50	-	-	-	-	-
	23-Sep-14	26.59	208.51	-	-	-	-	-
	21-Apr-15	22.48	212.62	-	-	-	-	-
	1-Sep-15	28.5	206.60	-	-	-	-	-

Table 3-3. AOC 9-2 Depth to Water and Groundwater Parameter Measurements (continued)

Well ID TOC Elevation	Date	DTW (ft bgs)	GWELEV (ft AMSL)	pH	Cond. (µS/cm)	DO (ppm)	ORP (mv)	Temp ºC
07-A17-7 233.2	16-Nov-07	27.85	206.20	7.27	0.170	-	-	12.80
	26-Mar-08	24.88	209.17	7.18	0.138	0.79	38.33	12.67
	26-Aug-08	28.33	205.72	7.25	0.161	0.35	-158.25	12.85
	3-Mar-09	26.09	207.96	-	-	-	-	-
	25-Aug-09	28.46	204.74	6.70	0.132	0.23	172	13.20
	21-Feb-10	24.30	208.90	5.82	0.067	0.24	131	11.9
	24-Aug-10	26.71	206.49	5.64	0.132	0.37	76	14.1
	24-Feb-11	23.20	210.00	5.24	0.038	5.66	-	10.6
	9-Sep-11	26.20	207.00	6.05	0.125	1.82	243	16.5
	14-Mar-12	23.63	209.57	-	-	6.8	26	9.5
	16-Aug-12	26.02	207.18	7.34	-	1.06	28	18.6
	21-Feb-13	24.28	208.92	7.48	-	2.49	22	9.9
	13-Aug-13	27.00	206.20	5.97	0.099	0.59	57	13.3
	14-Mar-14	21.45	211.75	5.97	0.059	6.3	46	11.6
	23-Sep-14	26.74	206.46	6.2	0.101	2	2	14
	22-Apr-15	23.60	209.60	6.17	0.130	4.9	28	12.8
	2-Sep-15	27.46	205.74	6.55	0.180	0.0	49	14.85
10-A17-8 235.8	29-Nov-10	26.87	208.93	-	-	-	-	-
	25-Feb-11	24.30	211.50	-	-	-	-	-
	9-Sep-11	26.68	209.12	5.82	0.208	1.99	230	16
	18-Nov-11	29.00	206.80	-	-	-	-	-
	14-Mar-12	24.81	210.99	-	-	-	-	-
	16-Aug-12	27.18	208.62	-	-	-	-	-
	21-Feb-13	25.53	210.27	-	-	-	-	-
	13-Aug-13	28.02	207.78	6.6	0.176	0.48	24	13.6
	10-Mar-14	22.85	212.95	6.01	-	2	47	14.7
	22-Sep-14	27.13	208.67	6.4	0.159	4.4	-21	18.9
Duplicate	22-Sep-14	27.13	208.67	6.4	0.159	4.4	-21	18.9
	22-Apr-15	24.72	211.08	6.43	0.297	4.53	-11	17.3
Duplicate	22-Apr-15	24.72	211.08	6.43	0.297	4.53	-11	17.3
	1-Sep-15	28.39	207.41	6.31	0.371	3.40	-35	19.54
Duplicate	1-Sep-15	28.39	207.41	6.31	0.371	3.40	-35	19.54

Notes:
TOC – Top of casing
DTW (ft bgs) – Depth to water (feet below ground surface)
GWELEV (ft AMSL) – Groundwater elevation (feet above mean sea level)
Cond. (µS/cm) – Conductivity (microsiemens per centimeter)
DO (ppm) – Dissolved oxygen (parts per million)
ORP (mv) – Oxygen / reduction potential (millivolts)
Temp. (ºC) – Temperature (degrees Celsius)
- – No data, not applicable
* – Pump is broken and caught in well. Well casing is possibly bent. Sample collected using a disposable bailer.
New TOC elevations surveyed on 11 June 2010 were used beginning with August 2009 data.

Table 3-4. MTCA Method A Cleanup Levels for TPH-G and BTEX Concentrations

Well ID	Date	TPH-G (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
95-A17-1	28-Oct-03	100U	0.5U	0.5U	0.5U	1U
	20-Oct-04	100U	1U	1U	1U	3U
	9-Nov-05	100U	1U	1U	1U	3U
95-A17-2	28-Oct-03	**4,700**	**1.6**	**2.9**	**102**	**184**
	28-Apr-04	200U	**1**	1U	**1**	3U
	20-Oct-04	**760**	**1**	1U	**18**	**2**
	9-Nov-05	**1,900**	1U	**2**	**54**	**67**
	31-Oct-06	100U	1U	1U	1U	3U
	14-Jun-07	500U	1U	1U	1U	3U
	7-Nov-07	**3,000**	1U	**1**	**12**	**12**
	8-Mar-08	500U	1U	1U	1U	3U
	26-Aug-08	500U	1U	1U	1U	3U
	9-Mar-09	500U	1U	1U	1U	3U
	25-Aug-09	500U	1U	1U	1U	3U
	26-Mar-10	50U	1U	1U	1U	3U
	24-Aug-10	No sample collected				
	24-Feb-11	50U	1U	1U	1U	3U
	9-Sep-11	50U	1U	1U	1U	3U
	14-Mar-12	50U	1U	1U	1U	2U
	16-Aug-12	50U	1U	1U	1U	2U
	21-Feb-13	250U	0.20U	0.20U	0.20U	0.40U
	13-Aug-13	No sample collected				
	10-Mar-14	No sample collected				
	22-Sep-14	250U	0.5U	**0.080J**	0.5U	0.5U
	23-Apr-15	25U	0.1U	0.1U	0.1U	0.2U
	1-Sep-15	48J	0.1U	0.08J	0.07J	0.37J
95-A17-3A	30-Jun-03	**32,000**	**690**	**1,200**	**1,100**	**4,800**
	28-Oct-03	**10,400**	**200**	**270**	**270**	**1,200**
	28-Apr-04	**23,000**	**600**	**800**	**780**	**3,500**
	20-Oct-04	**8,200**	**160**	**100**	**310**	**740**
	24-May-05	**25,000**	**630**	**650**	**810**	**3,400**
	9-Nov-05	**6,000**	**220**	**170**	**280**	**940**
	14-Jun-06	**29,000**	**490**	**500**	**840**	**4,000**
	31-Oct-06	**26,000**	**590**	**380**	**840**	**3,000**
	14-Jun-07	**30,000**	**310**	**360**	**610**	**2,700**
	7-Nov-07	**30,000**	**360**	**270**	**730**	**2,700**
	8-Mar-08	**35,000**	**410**	**400**	**870**	**3,600**
	26-Aug-08	**17,700**	**175**	**162**	**517**	**1,819**
	9-Mar-09	**31,200**	**399**	**335**	**772**	**2,762**
	25-Aug-09	**27,300**	**209**	**245**	**629**	**2,370**
	22-Feb-10	**25,000**	**320**	**390**	**990**	**3,650**
	24-Aug-10*	**1,300**	**73**	**12**	**42**	**24**
	24-Feb-11	**27,000**	**270**	**350**	**1,100**	**3,970**

Table 3-4. MTCA Method A Cleanup Levels for TPH-G and BTEX Concentrations (continued)

Well ID	Date	TPH-G (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
95-A17-3A (continued)	9-Sep-11	**13,000**	**140**	**110**	**480**	**1,620**
	14-Mar-12	**8,700**	**91**	**170**	**350**	**330**
	16-Aug-12	**16,000**	**110**	**240**	**610**	**2,440**
	21-Feb-13	**20,000**	**75**	**190**	**480**	**1,880**
	13-Aug-13**	**21,000**	**92**	**460**	**460**	**2,100**
	14-Mar-14	**15,000**	**36**	**100**	**230**	**1,210**
	23-Sep-14	**1,400**	**3.7**	**15**	**16**	**216**
	22-Apr-15	**1,500**	**21**	**25**	**33**	**166**
	2-Sep-15	**3,400**	**28**	**34**	**120**	**242**
95-A17-4	28-Oct-03	100U	0.5U	0.5U	0.5U	1U
	20-Oct-04	100U	1U	1U	1U	3U
	9-Nov-05	100U	1U	1U	1U	3U
	14-Jun-07	500U	1U	1U	1U	3U
	8-Mar-08	500U	1U	1U	1U	3U
	26-Aug-08	**300**	1U	1U	1U	3U
	9-Mar-09	500U	1U	1U	1U	3U
	21-Feb-10	50U	1U	1U	1U	3U
	9-Sep-11	50U	1U	1U	1U	3U
	14-Mar-12	50U	1U	1U	1U	2U
	21-Feb-13	250U	0.20U	0.20U	0.20U	0.40U
	14-Mar-14	250U	0.20U	0.20U	0.20U	0.40U
	22-Apr-15	25U	0.1U	0.1U	0.1U	0.2U
96-A17-5	28-Oct-03	100U	0.5U	0.5U	0.5U	1U
	9-Nov-05	100U	1U	1U	1U	3U
Duplicate	7-Nov-07	**3,400**	**130**	**6.8**	**130**	**31**
	8-Mar-08	**2,100**	**47**	**3.8**	**120**	**8.3**
	26-Aug-08	**1,990**	**132**	**5.7**	**199**	**4.6**
	25-Aug-09	2,500U	**79.1**	5U	**94.1**	15U
	25-Aug-09	2,500U	**79.5**	5U	**95**	15U
	21-Feb-10	50U	**2.5**	1U	1U	3U
	24-Aug-10*	**18,000**	**210**	**220**	**690**	**2,500**
07-A17-7	24-Feb-11	50U	1U	1U	1U	3U
	9-Sep-11	**1,600**	**44**	**15**	**79**	**46**
	14-Mar-12	50U	1U	1U	1U	2U
	16-Aug-12	**150**	**4.7**	**3.9**	1U	3U
	21-Feb-13	250U	0.20U	**1.6**	0.20U	0.40U
	13-Aug-13	250U	**0.6**	**0.85**	0.2U	0.4U
Duplicate	13-Aug-13	250U	**0.57**	**0.63**	**0.25**	0.4U
	14-Mar-14	250U	0.20U	**0.25**	0.20U	0.4U
	23-Sep-14	250U	0.5U	0.5U	0.5U	0.5U
	22-Apr-15	25U	0.1U	0.1U	0.1U	0.2U
	2-Sep-15	19J	0.1U	0.1U	0.05J	0.2U

Table 3-4. MTCA Method A Cleanup Levels for TPH-G and BTEX Concentrations (continued)

Well ID	Date	TPH-G (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
10-A17-8	29-Nov-10	**71,000**	**2,100**	**8,400**	**1,900**	**9,600**
	25-Feb-11	**22,000**	**720**	**1,000**	**490**	**2,220**
Duplicate	25-Feb-11	**21,000**	**730**	**1,100**	**490**	**2,210**
	9-Sep-11	**26,000**	**330**	**300**	**740**	**4,200**
	18-Nov-11	**74,000**	**900**	**6,200**	**2,200**	**11,500**
	14-Mar-12	**19,000**	**710**	**1,300**	**490**	**2,000**
	22-May-12	**13,000**	**630**	**830**	**350**	**2,050**
	16-Aug-12	**59,000**	**1,500**	**3,400**	**1,600**	**8,800**
	21-Feb-13	**34,000**	**1,100**	**2,000**	**640**	**3,700**
	13-Aug-13	**70,000**	**770**	**3,600**	**1,700**	**8,900**
	10-Mar-14	**9,500**	**160**	**330**	**160**	**1,030**
	22-Sep-14	**3,500**	**46**	**90**	**61**	**410**
Duplicate	22-Sep-14	**3,700**	**50**	**110**	**65**	**440**
	22-Apr-15	**4,800**	**470**	**260**	**100**	**810**
Duplicate	22-Apr-15	**5,000**	**380**	**210**	**89**	**670**
	1-Sep-15	**25,000**	**170**	**800**	**740**	**3,750**
Duplicate	1-Sep-15	**24,000**	**180**	**870**	**770**	**3,920**
MTCA Cleanup Level		**800**	**5**	**1,000**	**700**	**1,000**

Notes:
TPH-G – Gasoline-range total petroleum hydrocarbons
µg/L – Micrograms per liter
BOLD – Analyte detected above practical quantification limit
BOLD – Analyte detected above MTCA Method A cleanup level
U – Analyte not detected above practical quantification limit reported
- – No data, not applicable
* It is suspected that these samples' labels were switched.
** Sample was labeled as 95-A17-2 by mistake.

3.4 GAAF FUEL FACILITY (AOC 10-8)

Groundwater level iso-contour lines and TPH-D concentrations detected in monitoring wells at AOC 10-8-B05 for the April and August/September 2015 sampling events are presented on Figures 3-10 and 3-11, respectively. Table 3-5 presents depth to water measurements, TPH-D concentrations, and groundwater parameter field measurements for AOC 10-8. TPH-D concentrations are compared to Ecology's MTCA Method A cleanup level of 500 µg/L. Appendix B contains copies of laboratory analytical reports for both groundwater sampling events.

Historically, AOC 10-8-B05 has been considered at or near the source area since it has the highest detected concentrations of TPH-D. Concentrations of TPH-D decrease to non-detectable amounts in downgradient well AOC 10-8-MW02 to the northwest. Prior to the well being paved over in 2007, TPH-D was non-detect in downgradient well AOC 10-8-MW04 located approximately 30 feet northwest of AOC 10-8-B05.

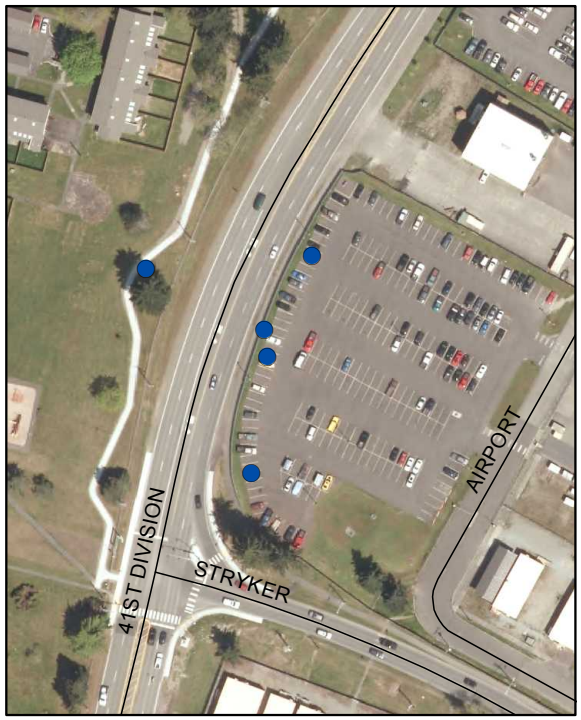
Results from the 2015 groundwater sampling events are generally consistent with results from previous events. TPH-D remains in AOC 10-8-B05 at concentrations above the MTCA Method A groundwater cleanup level. The concentration fell below the MTCA Method A cleanup levels for the first time in March 2014 (440 µg/L), but rose again in September 2014 and remained above the cleanup method during the 2015 sampling events (2,300 µg/L in both April and August/September 2015). Figure 3-12 presents TPH-D concentrations in AOC 10-8-B05 over time.

3.5 DESCRIPTIVE STATISTICS

Summary statistics for each site were calculated using Microsoft Excel's Descriptive Statistics tool. Results are presented in Table 3-6. No constituents were detected at their highest concentrations in samples collected during 2015 at any of the four sites.

3.6 DATA QUALITY REVIEW AND VERIFICATION

The data quality review and verification documentation is included in Appendix B. Data quality objectives for both 2015 groundwater events were met. The data is deemed acceptable for use and comparison with other site data.



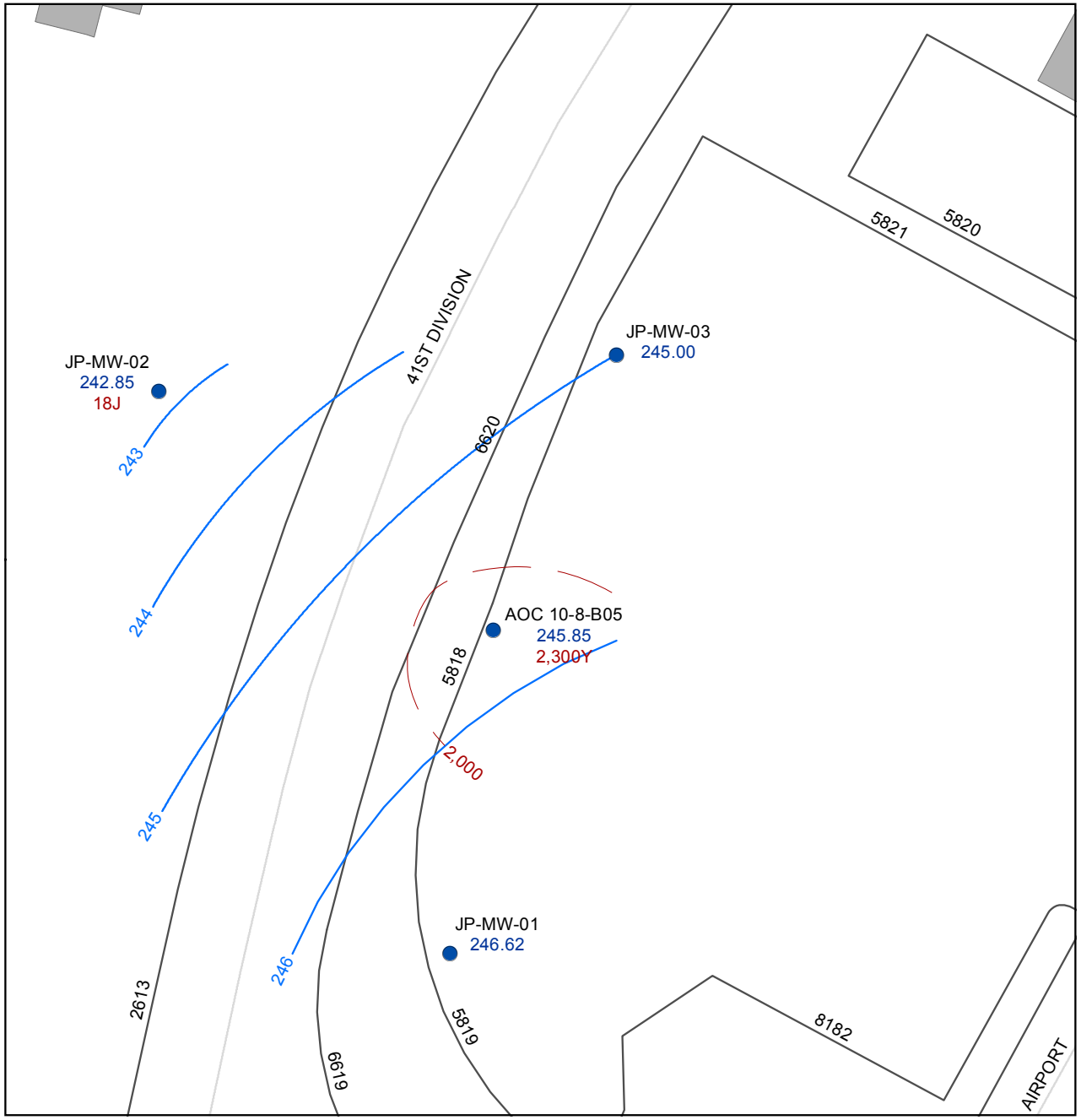
Notes:

Depth to water measurements collected April 20, 2015.

Groundwater samples collected April 23, 2015.

Legend

- Monitoring Well
- Groundwater Elevation (famsl)
- TPH-D Concentraion (µg/L)



N

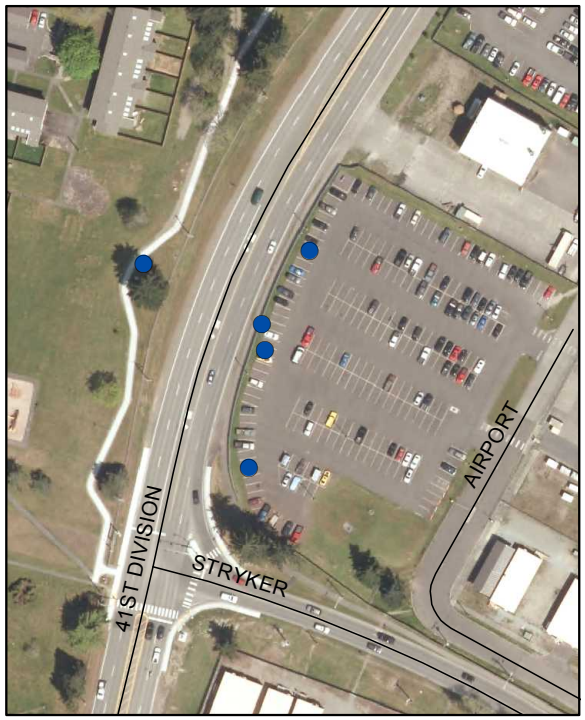
0 15 30 60

Feet

USACE | **SEALASKA**

Figure 3-10
AOC 10-8 Groundwater Elevation and TPH-D Concentration Contours April 2015

Path: E:\JBLM\TO 01A\FLAO\Maps\FLAO_2015_AnnualGW_FIG_3-10.mxd
Date: 1/27/2016



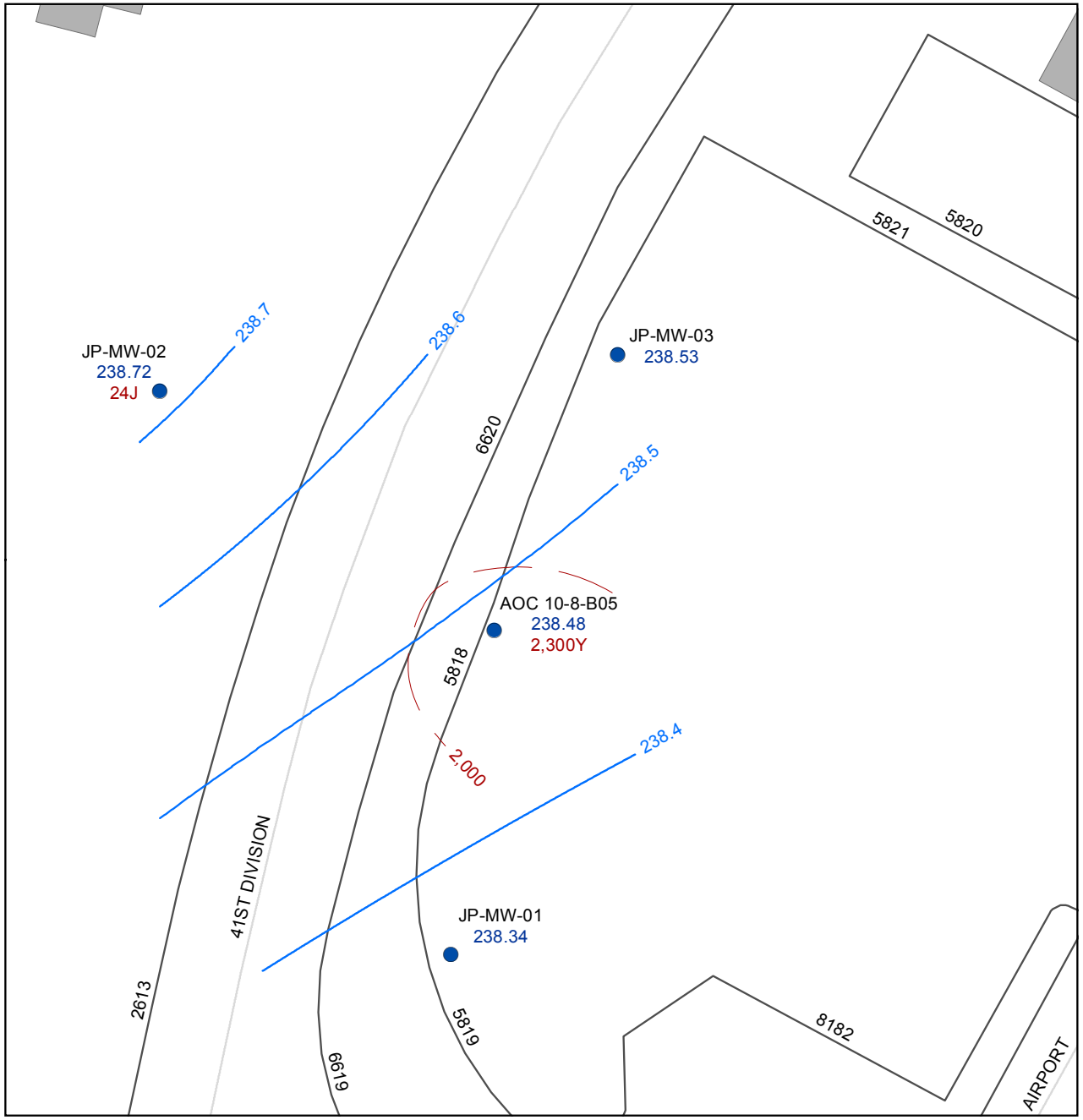
Notes:

Depth to water measurements collected August 31, 2015.

Groundwater samples collected September 1, 2015.

Legend

- Monitoring Well
- Groundwater Elevation (famsl)
- TPH-D Concentraion (µg/L)



N

0 15 30 60

Feet

USACE | **SEALASKA**

Figure 3-11
AOC 10-8 Groundwater Elevation and TPH-D Concentration Contours August/September 2015

Path: E:\JBLM\TO 01A\FLAO\Maps\FLAO_2015_AnnualGW_FIG_3-11.mxd
Date: 1/25/2016

Figure 3-12. TPH-D Concentration Trends in AOC 10-8-B05 (AOC 10-8)

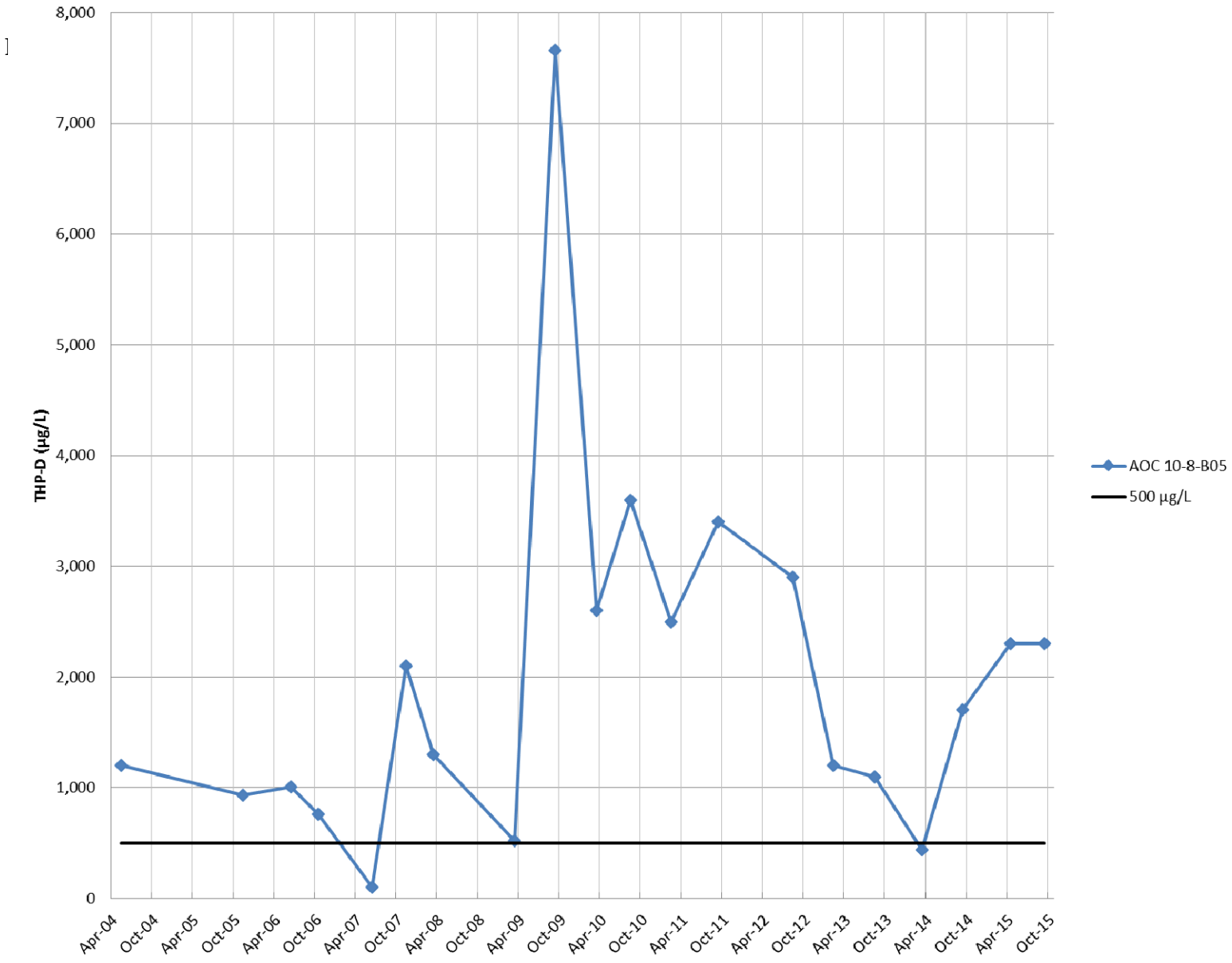


Table 3-5. GAAF Fuel Facility (AOC 10-8) Depth to Water Measurements

Well ID TOC Elevation	Date	DTW (ft bgs)	GWELEV (ft AMSL)	TPH-D (µg/L)	pH	Cond. (µS/cm)	DO (ppm)	ORP (mv)	Temp ºC
JP-MW01 281.56	1-Jun-93	42.1	239.46	250U	-	-	-	-	-
	1-Dec-93	45.94	235.62	250U	-	-	-	-	-
	1-Mar-94	43.84	237.72	250U	-	-	-	-	-
	1-Jun-94	44.68	236.88	250U	-	-	-	-	-
	1-Oct-94	47.1	234.46	250U	-	-	-	-	-
	1-Jan-95	42.92	238.64	250U	-	-	-	-	-
	1-Apr-95	37.01	244.55	250U	-	-	-	-	-
	1-May-04	40.12	241.44	250U	-	-	-	-	-
	14-Nov-05	44.96	236.6	100U	-	-	-	-	-
	13-Jun-06	36.29	245.27	100U	-	-	-	-	-
	12-Jun-07	33.22	248.34	-	-	-	-	-	-
	21-Mar-08	35.98	245.58	-	-	-	-	-	-
	27-Aug-08	Could not locate							
	14-Sep-09	Could not locate							
	9-Mar-10	38.25	243.31	-	-	-	-	-	-
	23-Aug-10	41.52	240.04	-	-	-	-	-	-
	22-Feb-11	34.40	247.16	-	-	-	-	-	-
	9-Sep-11	38.95	242.61	-	-	-	-	-	-
	25-Mar-12	35.62	245.94	-	-	-	-	-	-
	15-Aug-12	39.00	242.56	-	-	-	-	-	-
	20-Feb-13	36.46	245.10						
	12-Aug-13	No access, vehicle over well							
	10-Mar-14	33.80	247.76	-	-	-	-	-	-
	24-Sep-14	40.48	241.08	-	-	-	-	-	-
	20-Apr-15	34.94	246.62	-	-	-	-	-	-
	31-Aug-15	43.22	238.34	-	-	-	-	-	-
JP-MW02 279.33	1-Jun-93	40.40	238.93	250U	-	-	-	-	-
	1-Dec-93	43.74	235.59	250U	-	-	-	-	-
	1-Mar-94	41.46	237.87	250U	-	-	-	-	-
	1-Jun-94	42.65	236.68	250U	-	-	-	-	-
	1-Oct-94	44.82	234.51	250U	-	-	-	-	-
	1-Jan-95	41.06	238.27	250U	-	-	-	-	-
	1-Apr-95	37.49	241.84	250U	-	-	-	-	-
	1-May-04	39.52	239.81	250U	-	-	-	-	-
	14-Nov-05	42.80	236.53	100U	-	-	-	-	-
	13-Jun-06	37.77	241.56	100U	-	-	-	-	-
	12-Jun-07	36.46	242.87	100U	6.56	0.13	-	-	15.0
	21-Mar-08	37.57	241.76	100U	7.38	0.13	6.49	112.0	12.6
	27-Aug-08	41.62	237.71	-	-	-	-	-	-
	3-Mar-09	39.79	239.54	100U	6.46	0.13	5.09	243.0	13.8
	14-Sep-09	41.97	237.36	-	-	-	-	-	-
	9-Mar-10	38.52	240.81	120U	6.73	0.13	4.79	95.0	13.4
	27-Aug-10	40.45	238.88	120U	5.73	0.14	4.07	203.0	14.2

Table 3-5. GAAF Fuel Facility (AOC 10-8) Depth to Water Measurements (continued)

Well ID TOC Elevation	Date	DTW (ft bgs)	GWELEV (ft AMSL)	TPH-D (µg/L)	pH	Cond. (µS/cm)	DO (ppm)	ORP (mv)	Temp ºC
JP-MW02 279.33 (continued)	22-Feb-11	36.72	242.61	120U	6.32	0.14	4.70	-	12.3
	9-Sep-11	38.88	240.45	-	-	-	-	-	-
	25-Mar-12	37.33	242.00	-	-	-	-	-	-
	15-Aug-12	38.83	240.50	120U	-	-	-	-	-
	20-Feb-13	37.67	241.66	100U	8.75	-	4.84	31.00	13.10
	20-Feb-13	37.67	241.66	100U	8.75	-	4.84	31.00	13.10
	13-Mar-14	35.10	244.23	100U	6.72	0.14	6.71	10.00	13.80
Duplicate	13-Mar-14	35.10	244.23	100U	6.72	0.14	6.71	10.00	13.80
	24-Sep-14	39.29	240.04	**38J**	6.40	0.12	7.90	125.00	16.10
	23-Apr-15	36.48	242.85	18J	6.60	0.14	8.89	91	15.50
	1-Sep-15	40.61	238.72	24J	6.36	0.16	5.80	104	16.70
JP-MW03 280.7	1-Dec-93	44.37	235.92	250U	-	-	-	-	-
	1-Mar-94	42.03	238.26	250U	-	-	-	-	-
	1-Jun-94	43.24	237.05	250U	-	-	-	-	-
	1-Oct-94	45.57	234.72	250U	-	-	-	-	-
	1-Jan-95	41.46	238.83	250U	-	-	-	-	-
	1-Apr-95	36.71	243.58	250U	-	-	-	-	-
	1-May-04	39.30	240.99	250U	-	-	-	-	-
	14-Nov-05	43.35	236.94	100U	-	-	-	-	-
	13-Jun-06	36.39	243.90	100U	-	-	-	-	-
	12-Jun-07	33.82	246.47	-	-	-	-	-	-
	21-Mar-08	36.01	244.28	-	-	-	-	-	-
	27-Aug-08	41.95	238.34	-	-	-	-	-	-
	3-Mar-09	40.95	239.34	-	-	-	-	-	-
	14-Sep-09	42.48	237.81	-	-	-	-	-	-
	9-Mar-10	37.81	242.48	-	-	-	-	-	-
	23-Aug-10	40.39	239.90	-	-	-	-	-	-
	22-Feb-11	36.14	244.15	-	-	-	-	-	-
	9-Sep-11	39.50	240.79	-	-	-	-	-	-
	25-Mar-12	35.98	244.31	-	-	-	-	-	-
	15-Aug-12	38.42	241.87	-	-	-	-	-	-
	20-Feb-13	36.45	243.84	-	-	-	-	-	-
	10-Mar-14	33.85	246.85	-	-	-	-	-	-
	23-Sep-14	39.65	241.05	-	-	-	-	-	-
	20-Apr-15	35.70	245.00	-	-	-	-	-	-
	31-Aug-15	42.17	238.53	-	-	-	-	-	-
JP-MW04 281.12	1-Jun-93	41.60	239.52	250U	-	-	-	-	-
	1-Dec-93	45.24	235.88	250U	-	-	-	-	-
	1-Mar-94	43.21	237.91	250U	-	-	-	-	-
	1-Jun-94	44.00	237.12	250U	-	-	-	-	-
	1-Oct-94	46.45	234.67	250U	-	-	-	-	-
	1-Jan-95	42.38	238.74	250U	-	-	-	-	-
	1-Apr-95	37.34	243.78	250U	-	-	-	-	-

Table 3-5. GAAF Fuel Facility (AOC 10-8) Depth to Water Measurements (continued)

Well ID / TOC Elevation	Date	DTW (ft bgs)	GWELEV (ft AMSL)	TPH-D (µg/L)	pH	Cond. (µS/cm)	DO (ppm)	ORP (mv)	Temp ºC
JP-MW04 (continued)	1-May-04	40.02	241.10	250U	-	-	-	-	-
	14-Nov-05	44.30	236.82	100U	-	-	-	-	-
	13-Jun-06	36.84	244.28	100U	-	-	-	-	-
	31-Oct-06	Well lost or destroyed							
AOC 10-8-B05 281.39	1-May-04	39.87	241.52	**1,200**	-	-	-	-	-
	14-Nov-05	44.62	236.77	**930**	-	-	-	-	-
	13-Jun-06	36.75	244.64	**1,010**	-	-	-	-	-
	31-Oct-06	43.91	237.48	**760**	-	-	-	-	-
	12-Jun-07	33.4	247.99	100UJ	-	-	-	-	-
	16-Nov-07	41.82	239.57	**2,100J**	-	-	-	-	-
	21-Mar-08	35.65	245.74	**1,300J**	-	-	-	-	-
	27-Aug-08	No access, vehicle over well							
	3-Mar-09	39.65	241.74	**521**	7.17	0.331	4.02	207	12.4
	14-Sep-09	43	238.39	**7,660**	-	-	-	-	-
	9-Mar-10	38.8	242.59	**2,600**	6.61	0.75	1.66	-11	13.2
	23-Aug-10	42.78	238.61	**3,600**	6.08	0.69	1.84	216	15.8
Duplicate	23-Aug-10	42.78	238.61	**3,900**	6.08	0.69	1.84	216	15.8
	22-Feb-11	36.25	245.14	**2,500**	6.22	0.76	1.16	-	13.7
	9-Sep-11	39	242.39	**3,400**	6.16	0.74	1.64	200	16.6
	25-Mar-12	37.22	244.17	-	-	-	-	-	-
	15-Aug-12	40.26	241.13	**2,900**	-	-	-	-	-
	20-Feb-13	38.13	243.26	**1,200**	8.24	-	3.46	11	13.1
	12-Aug-13	42	239.39	**1,100**	6.75	0.50	1.14	13	18.0
Duplicate	12-Aug-13	42	239.39	**1,100**	6.75	0.50	1.14	13	18.0
	13-Mar-14	34.7	246.69	**440**	6.79	0.52	1.47	7	13.6
	25-Sep-14	40.65	240.74	**1,700**	Sample collected by bailer - No parameters				
	23-Apr-15	35.54	245.85	**2,300**	Sample collected by bailer - No parameters				
	1-Sep-15	42.91	238.48	**2,300**	Sample collected by bailer - No parameters				
MTCA Method A Cleanup Level				**500**					

Notes:
TOC – Top of casing
DTW (ft bgs) – Depth to water (feet below ground surface)
GWELEV (ft AMSL) – Groundwater elevation (feet above mean sea level)
TPH-D (µg/L) – Diesel-range total petroleum hydrocarbons (micrograms per liter)
Cond. (µS/cm) – Conductivity (microsiemens per centimeter)
DO (ppm) – Dissolved oxygen (parts per million)
ORP (mv) – Oxygen / reduction potential (millivolts)
Temp. (ºC) – Temperature (degrees Celsius)
BOLD – Analyte detected at or above laboratory practical quantification limit
BOLD – Analyte detected at or above MTCA Method A cleanup level of 500 µg/L
J – Value estimated
U – Analyte not detected above practical quantification limit reported
- – No data, not applicable

Table 3-6. Descriptive Statistics

Well ID	Constituent	Number of Samples	Number of Non-Detects	Sample Mean	Standard Deviation	Minimum Conc. (µg/L)	Maximum Conc. (µg/L)	Date of Maximum Conc.
				AOC 8-2				
4131-MW02	TPH-D	22	1	2,432.27	1,149.88	680	4,800	23-Aug-10
4131-MW03		22	0	51,326.36	179,768.11	430	850,000	29-Dec-05
4131-MW04		21	16	-	-	15J	1,200	29-Dec-05
4131-MW05		21	17	-	-	-	-	-
				AOC 8-4				
A0111-MW04	TPH-D	19	2	659.53	459.96	91J	1,700	16-Nov-07
A0111-MW05		11	10	-	-	-	-	-
A0111-MW06		12	8	-	-	25J	170	8-Sep-11
A0111-MW07		12	8	-	-	42J	150	8-Sep-11
A0111-MW08		13	0	2,050.00	3,434.69	180	12,000	22-Aug-10
				AOC 9-2				
95-A17-2	TPH-G	20	15	-	-	48J	4,700	28-Oct-03
	Benzene	20	17	-	-	0.2U	1.6	28-Oct-03
95-A17-3A	TPH-G	26	0	19,261.54	10,154.21	1,400	35,000	8-Mar-08
	Benzene	26	0	263.07	203.88	3.7	690	30-Jun-03
95-A17-4	TPH-G	14	13	-	-	50U	300	26-Aug-08
	Benzene	14	14	-	-	-	-	
07-A17-7	TPH-G	16	9	903.69	1,086.48	19J	3,400	7-Nov-07
	Benzene	16	17	32.30	47.18	0.2U	132	26-Aug-08
10-A17-8	TPH-G	13	0	33,138.46	26,170.10	3,500	74,000	18-Nov-11
	Benzene	13	0	738.92	575.95	46	2,100	29-Nov-10
				AOC 10-8				
JP-MW02	TPH-D	23	20	-	-	-	-	-
AOC 10-8-B05		20	1	1,981.05	1,665.79	100UJ	7,600	14-Sep-09

Notes:
TPH-D – Diesel-range total petroleum hydrocarbons (AOC 8-2, AOC 8-4, and AOC 10-8)
TPH-G – Gasoline-range total petroleum hydrocarbons (AOC 9-2)
Conc. (µg/L) – Concentration in micrograms per liter
U – Analyte not detected above practical quantification limit reported
J – Result reported is an estimated concentration
- – Not applicable

4 REFERENCES

Bussey, Troy. 2008. Fort Lewis Agreed Order Final Remedial Investigation Report. February 2008.

Versar. 2009a. Design Report, Air Sparge and Soil Vapor Extraction System, Fort Lewis Area of Concern 9-2, North Fort Credit Union. 2009.

Versar. 2009b. Fort Lewis Agreed Order Groundwater Monitoring Report for August 2010 and Quarterly Sampling Conducted in 2011. June 2012.

Versar. 2014. Fort Lewis Agreed Order Groundwater Sampling and Analysis Plan; Building 4131 Former UST Site (AOC 8-2), Building A0111 Former UST Site (AOC 8-4), Building A1033 Former UST Site (AOC 9-2), Gary Army Fuel Facility (AOC 10-8); Joint Base Lewis McChord, Washington 98433. February 2014.

APPENDIX A

COMPLETED FIELD FORMS

08-31-15 JBLM TO OIA FLAO

0800 W KNAGE + TOM. MALAMAKAL ON SITE LF2 FOR MOB

0825 + HORIBA CALIBRATION (STATASICA U52)
pH: 4.01 ORP: 301 mV COND: 4.51 mS/cm TURB: 0.0 NTU
SAL: 0.24 % TEMP: 24.26°C DO: 8.51 mg/L

0845 TM., W.K OFFSITE LF2. HEAD TO FEDEX

0915 TM, WK ONSITE FEDEX FOR COOLERS.

0935 OFFSITE FEDEX

0950 TM, WK ONSITE LF2 FOR COOLER ORGANIZATION + MOB

1017 TM, WK OFFSITE LF2.

1035 TM, WK ONSITE GAS STATION FOR FUEL + AIR.

1045 TM. WK OFFSITE

1052 TM, WK ONSITE AOC 8-4.

1055 ONSITE WELL AOIII-MW06

1058 DTW = 19.62

1123 BEGIN PURGE

1125 CONNECT FLOW CELL

1128 BEGIN TAKING PARAMETERS.

1147 PARAMETERS STABILIZE
pH: 5.88 SP.COND: 0.253 mS/cm TURB = 8.5
DO = 4.10 mg/L TEMP: 14.04°C ORP = 190 mV

1205 SAMPLE: AOC05083 1AOIII MW06 (TPH-D/TPH-O)

1223 DECON HORIBA + PROBE.

1230 ONSITE WELL AOIII-MW07

1233 DTW = 22.88

1242 BEGIN PURGE 350 mL/min

08-31-15 JBLM TO OIA FLAO

1244 CONNECT FLOW CELL

1247 BEGIN TAKING PARAMETERS

1302 PARAMETERS STABILIZE
pH: 6.10 SP.COND = 0.266 mS/cm TURB: 16.1 NTU
DO = 1.64 mg/L TEMP: 13.41°C ORP = 186 mV

1303 SAMPLE AOC150831AOIII MW07 (TPH-D/TPH-O)

1317 DECON HORIBA + PROBE

1320 ONSITE WELL AOIII-MW04.

1330 DTW = 22.26'
PREVIOUS DTB = 22.7'; WILL TRY PUMPING TO SEE IF RECHARGE

1350 UNABLE TO GET ANY WATER FROM WELL. WELL DRY.

1400 ONSITE WELL AOII-MW08

1401 DTW = 22.19

1413 PUMP LOSS OF POWER, CHARGING NOT ENOUGH. NEED OVER-NIGHT CHARGE

1433 ONSITE WELL AOII-MW05
DTW = 21.51

1445 TM, WK OFF SITE AOC 8-4

1505 TM, WK ONSITE AOC 8-2 (FOR DTW/DTB)

1507 4131-MW02 DTW = 26.11 DTB = 27.40 (DUMP)

1510 4131-MW04 DTW = 25.75 DTB = 28.34

1515 4131-MW05 DTW = 25.21 DTB = 27.67

1520 4131-MW06 DTW = 26.51 DTB = 32.85

1525 4131-MW03 DTW = 27.98 DTB = 29.72

1530 4131-MW01 DTW = 27.26 DTB = 37.14

08-31-15 JBLM TO OIA FLAO

1535 TM, WK OFFSITE AOC 8-2
1545 TM, WK ONSITE AOC 10-8 (FOR DTW/DTB)
1547 AOC 10-8-BOS DTW = 42.91' DTB = 46.21'
1550 JP-MW-01 DTW = 43.22 DTB = 51.00
1558 JP-MW-03 DTW = 42.17 DTB = 51.14'
1615 JP-MW-02 DTW = 40.61 DTB = 49.80
1622 TM, WK OFFSITE AOC 10-8
1642 TM, WK ONSITE LF2 FOR DEMOB
1648 CALIBRATION (SEALASKA U52)
pH: 4.00 COND = 4.52 mS/cm TURB = 0.0
DO = 9.01 TEMP = 21.19 ORP = 302 SAL = 0.24
1710 TM, WK OFFSITE LF2. END OF DAY

PLANS FOR 9-1-15

SAMPLE AOC-10-8 (SUB + BAILER)
COMPLETE AOC 8-4 (P.P.)
SAMPLE SUB + P.P AT AOC 9-2

8-31-15

09-01-15 JBLM TO OIA FLAO

0735 TM, WK ONSITE LF2
0740 H+S BRIEFING (WK IS SSHO)
0750 BEGIN MOBILIZATION
0800 CALIBRATE HORIBA (SEALASKA U52)
pH: 4.00 SP COND = 4.52 mS/cm TURB = 0.0 NTU DO = 9.53 mg/L
TEMP = 20.34°C ORP = 327 mV SAL = 0.24%
0826 TM, WK OFFSITE LF2
0900 TM, WK ONSITE AOC 10-8
0902 ONSITE WELL AOC 10-8-BOS
0905 MEASURE DTW FOR CASING VOLUME DTW = 42.94'
DTW MEASURED ON 08-31-15. THAT VALUE IS ON MATRIX
0910 STARTED BAILING 3x CASING VOLUME (5.88L)
0922 APPROX ~~XX~~ 5 GALLON BUCKET BAILED (≈ 2 GAL)
0925 SAMPLE AOC150901AOC10BB05 (TPH-D/TPH-O)
0945 ONSITE WELL JP-MW02
0948 DTW MEASURED FOR FIELD FORM DTW = 40.62
DTW MEASURED 8-31-15 IS VALUE IN MATRIX
1010 BEGIN PURGING = 400mL/MIN
1015 CONNECT FLOW CELL
1017 BEGIN TAKING PARAMETERS
1035 PARAMETERS STABILIZE
pH = 6.36 SP COND = 0.159 mS/cm TURB = 3.5 NTU
DO = 5.80 mg/L TEMP = 16.70° ORP = 104 mV
1040 SAMPLE: AOC150901JPMW02 (TPH-D/TPH-O)
1046 DECON HORIBA, PROBE & SUB PUMP

9-1-15 JBLM TO OIA FLAO

1100 TM, WK OFFSITE AOC 10-8
1110 TM, WK ONSITE AOC 8-4
1111 ONSITE WELL A0111-MW08
1116 DTW = 22.24 (FOR SAMPLING PURPOSES ONLY
(DTW ON MATRIX TAKEN ON 8-31-15)
1132 BEGIN PUMPING = 200mL/MIN
1134 CONNECT FLOW CELL
1138 BEGIN TAKING PARAMETERS
1143 3x CASING BUT CONTINUE TAKING PARAMETERS
UNTIL 1153
1155 SAMPLE: AOC15090IA0111MW08 (TPH-D/TPH-O)
1210 DTB = 22.95
1211 DECON HORIBA & PROBE.
1220 TM, WK OFFSITE AOC 8-4
1225 TM, WK ONSITE AOC 9-2 PID CAL = 99.8 PPB
1240 ONSITE FOR DTW AT ALL WELLS
1242 07-A17-7 = 27.46 DTB = 28.66 PID = 0
1250 96-A17-5 = 27.51 DTB = 45.35 PID = 0
1255 96-A17-6 = 28.50 DTB = 42.81 PID = 0
1257 95-A17-4 = 28.82 DTB = 3.17 PID = 0
1301 10-A17-8 = 28.39 DTB = 37.71 PID = 0
1309 95-A17-1 = 29.45 DTB = 41.60 PID = 0
1318 95-A17-3 = 28.96 DTB = 32.21 PID = 0
1323 95-A17-2 = 28.38 DTB = 37.48 PID = 0
1325 ONSITE WELL 10-A17-8

9-1-15 JBLM TO OIA FLAO

1337 BEGIN PUMPING
1339 CONNECT FLOW
1342 BEGIN PARAMETERS
1417 PARAMETERS STABILIZE
pH = 6.31 SP. COND = 0.371 TURB = 10.5 NTU
DO = 3.90 mg/L TEMP = 19.54°C ORP = -35 mV
1420 SAMPLE: AOC15090110A178 MS 9-1-15 (BTEX/TPH-G)
1430 DUPE: AOC15090110A1718 (BTEX/TPH-G)
1440 DECON HORIBA, PROBE, PUMP
1445 ONSITE WELL 95-A17-2
1515 BEGIN PUMPING FLOW = 200mL/MIN
1517 CONNECT FLOW CELL
1520 BEGIN PARAMETERS
1535 PARAMETERS STABILIZE
~~SAMPLE~~ MS 9-1-15: pH = 6.49 SP. COND = 0.196 S/cm TURB = 0.9 NTU
DO = 9.40 mg/L TEMP = 16.83°C ORP = 125
1540 SAMPLE: AOC15090195A172 (BTEX/TPH-G)
1550 DECON PROBE & HORIBA
1555 TM, WK OFFSITE AOC 9-2
1610 TM, WK ONSITE LF2 TO DEMOB & CALIBRATE
HORIBA: pH = 4.00 SP. COND = 4.54 TURB = 0.0
DO = 9.81 TEMP = 19.18 ORP = 275 SAL = 0.29
1629 SAMPLE FRIDGE TEMP = ~~0~~ 9-1-15 SW2 4°C
1633 TRANSFER IDW TO IDW TANK AT LF2 PLANT
≈ 27 GAL.
1640 TM, WK OFFSITE LF2. END OF DAY

9-2-15 JBLM TO OIA FLAO

0745 TM, WK ONSITE LF2 FOR MOBILIZATION
0800 H+S BRIEFING (W. KAAGE SSHO)
0830 CALIBRATE HORIBA (SEALASKA US2)
pH = 3.99 SP COND = 4.50 TURB = 0.0 NTU
DO = 9.55 mg/L TEMP = 17.94°C ORP = 280 mV SAL = 0.24%
0834 SAMPLE FRIDGE: 3°C
0850 TM, WK OFFSITE LF2
0912 TM, WK ONSITE AOC 9-2
0915 ONSITE WELL 95-A17-3A
DTW MEASURED FOR SAMPLING PURPOSES (ON FIELD FORM)
DTW MEASURED ON 9-1-15 FOR ENTIRE SITE (ON MATRIX)
0927 BEGIN PURGE. FLOW = 280 mL/MIN
0929 CONNECT FLOW CELL
0932 BEGIN TAKING PARAMETERS
0947 PARAMETERS STABILIZE
pH = 6.57 SP. COND = 0.403 mS/cm TURB = 1.5 NTU
DO = 0.0 mg/L TEMP = 15.50°C ORP = -56 mV
0950 SAMPLE: AOC15090295A173A MS/MSD (BTEX/TPH-G)
1005 DECON HORIBA + PROBE
1020 ONSITE WELL 07-A17-7
DTW MEASURED FOR SAMPLING PURPOSES (ON FIELD FORM)
DTW MEASURED FOR ENTIRE SITE 9-1-15 (ON MATRIX)
1027 BEGIN PURGE, FLOW = 180 mL/MIN
1033 CONNECT FLOW CELL
1035 BEGIN COLLECTING PARAMETERS.

WK

9-2-15 JBLM TO OIA FLAO

1055 PARAMETERS STABILIZE
pH = 6.55 SP. COND = 0.180 mS/cm TURB = 5.0 NTU
DO = 0.0 mg/L TEMP = 14.85°C ORP = 49 mV
1100 SAMPLE: AOC15090207A177 (BTEX/TPH-G)
1130 DECON PROBE + HORIBA
1204 TM, WK OFFSITE AOC 9-2
1300 TM, WK ONSITE PUBLIC WORKS TO OBTAIN DIG PERMIT FOR BUILDING 9001 SITE INVESTIGATION.
1356 TM, WK OFFSITE PUBLIC WORKS
1402 TM, WK ONSITE RANGE SUPPORT FOR AIA SAMPLING PERMIT
1406 TM, WK OFFSITE
1426 TM, WK ONSITE BUILDING 9001 FOR DTW AT WELLS
1428 NEAREST ROAD = 19.48'
1433 NEAREST FENCE = 19.81'
1440 TM, WK OFFSITE
1452 TM, WK ONSITE LF2 FOR DEMOB
1458 HORIBA CAL (SEALASKA US2)
pH = 4.0 SP. COND = 455 S/cm TURB = 0 NTU
DO = 9.77 mg/L TEMP = 23.16°C ORP = 285 mV SAL = 0.24%
1459 SAMPLE REFRIDGERATOR TEMP = 3°C
1505 TRANSFER IDW TO IDW TANK. ~4 GAL
1509 TM, WK OFFSITE LF2 END OF SAMPLING DAY

9-2-15
WK

9-3-15 JBLM TO OIA FLAO

0810 TM. WK ONSITE LF2 FOR MOB.
0820 H+S BRIEFING (W. KAEGE SSHO)
0825 CALIBRATE HORIBA (SEALASKA US2
pH=3.99 SP. COND=4.50 mS/cm TURB=0.0 NTU DO=9.52 mg/L
TEMP=16.20°C ORP=283 mV SAL=0.24%
0835 TM. WK OFFSITE LF2
0848 ONSITE FOR GASOLINE FILLUP
0900 OFFSITE EXPRESS GAS STATION
0907 ONSITE AOC 8-2
0908 ONSITE WELL 4131-MW03
DTW TAKEN FOR SAMPLING PURPOSES ONLY (FIELD FORM)
DTW TAKEN ACROSS ENTIRE SITE 8-31-15 (MATRIX)
0918 BEGIN PURGE. FLOW=240 mL/min. RED PARTICULATE DURING PURGE. (SAME AS PREVIOUS EVENT)
0924 CONNECT FLOW CELL
0928 BEGIN COLLECTING PARAMETERS
*FIRST FEW PUMPS OF BLADDER PUMP GIVE CLEAR H_2O. AFTER THAT, THE RED PARTICULATE IS VERY HIGH IN CONCENTRATION. TURBIDITY IS >1000 NTU. PARTICULATE CONCENTRATION BEGIN TO DECREASE AS PUMPING CONTINUED.
0933 WATER IN TUBING FROM BLADDER PUMP NOTICABLY CLEARER.
0948 3x CASING VOLUME PURGED
0955 SAMPLE: AOC150903413IMW03 (TPH-D/TPH-O)
0958 DECON HORIBA & RECALIBRATE DUE TO PARTICULATE
pH=4.00 SP. COND=4.51 mS/cm TURB=0.5 NTU DO=12.15 g/L
TEMP=16.62°C ORP=280 mV SAL=0.24%

9-3-15 JBLM TO OIA FLAO

1005 ONSITE WELL 4131-MW02
DTW TAKEN FOR SAMPLING PURPOSE ONLY (FIELD FORM)
DTW FOR ENTIRE SITE TAKEN 8-31-15 (MATRIX)
1013 START PURGE. FLOW=200 mL/min
1015 CONNECT FLOW CELL
1020 BEGIN COLLECTING PARAMETERS
1050 PARAMETERS STABILIZE!
pH=5.77 SP. COND=0.239 mS/cm TURB=15.3 NTU
DO=0.0 mg/L TEMP=14.00 ORP=80.4 mV
1055 SAMPLE AOC150903413IMW02 (TPH-D/TPH-O)
1105 DUP AOC150903413IMW12 (TPH-D/TPH-O)
1118 DECON HORIBA + PROBE
1125 ONSITE WELL 4131-MW05
DTW TAKEN FOR SAMPLING PURPOSES ONLY (FIELD FORM)
DTW FOR ENTIRE SITE TAKEN 08-31-15 (MATRIX
1127 START PURGE. FLOW=220 mL/min
1130 CONNECT FLOW CELL
1134 BEGIN COLLECTION OF PARAMETERS
1154 PARAMETERS STABILIZE
pH=6.00 SP. COND=0.149 mS/cm TURB=0.0 NTU
DO=8.89 mg/L TEMP=14.60°C ORP=150 mV
1200 SAMPLE AOC150903413IMW05
1218 DECON HORIBA + PROBE
1230 ONSITE WELL 4131-MW04
DTW TAKEN FOR SAMPLING PURPOSES ONLY (FIELD FORM)
DTW MEASURED FOR ENTIRE SITE 08-31-15

9-3-15 JBLM TO OIA FLAO

WELL 4131-MW04 CONT'D

1247 BEGIN PURGE. FLOW = 280 ML/MIN

1250 CONNECT FLOW CELL

1254 BEGIN COLLECTION OF PARAMETERS.

1314 PARAMETERS STABILIZE

pH=5.54 SP. COND = 0.108 mS/cm TURB = 5.3 NTU

DO=8.30 mg/L TEMP=14.14°C ORP=195 mV

1315 SAMPLE AOC150903413 1MW04 MS/MSD (TPH-D/TPH-O)

1338 DECON HORIBA + PROBE

1350 TM, WK OFFSITE AOC 8-2

1405 TM, WK ONSITE LF2 FOR DEMOB

SAMPLE REFRIDGERATOR = 3°C

1415 CALIBRATE HORIBA

pH=4.01 SP. COND = 4.56 mS/cm TURB = 0.0 NTU

DO=9.20 mg/L TEMP=18.45°C ORP=292 mV SAL=0.24%

TRANSFER IDW TO IDW TANK AT LF2 PLANT.

≈ 8 GAL

1435 TM, WK OFFSITE LF2

FILLING COCs, PREPWORK FOR SAMPLE

SHIPMENT W/ MC DELIVERY @ 1000

ON 9-4-15

9-3-15

9-4-15 JBLM TO OIA FLAO

0845 TM ONSITE LF2 FOR PACKING SAMPLES FOR SHIPPING.

SAMPLE REFRIDGERATOR = 3° C

0938 TM OFFSITE LF2

0950 TM ONSITE DUPONT 76 GAS STATION

1000 DELIVERY OF SAMPLES

1010 TM OFFSITE 76 GAS STATION

9-4-15

9-8-15 JBLM TO O1A LGC

0730 T. MALAMAKALA, W. KAAGE ONSITE SEALASKA TRAILER
0735 H+S BRIEFING (W. KAAGE SSHO)
0748 TM, WK ONSITE LF2 FOR MOBILIZATION
PLANNED ACTIVITIES: DTW/DTB MEASUREMENTS, DEPLOY PDBS, FIX ~~IM~~ ISSUES FOUND
0758 TM, WK OFFSITE LF2
0810 TM, WK ONSITE LGC

	WELL ID	DTW	DTB	PDB
0817	LC-94D-1	144.22	196.81	—
0830	LC-95D-1	150.89	—	X
0840	LC-95D-2	150.42	—	X
0855	LC-93D-1	165.16	—	X
0905	LC-93D-2	—	—	X
0925	LC-92D-1	172.31	—	—
0933	LC-88D-1	159.01	—	X
0939	LC-88D-2	—	—	X
0953	LC-91D-1	147.21	—	—
1008	LC-86D-1	120.06	—	X
1013	LC-86D-2	—	—	X
1035	LC-102D-1	137.67	—	X
1045	LC-102D-2	—	—	X
1205	LC-90D-1	123.17	—	—
1213	LC-84D-1	123.08	—	—
1225	LC-101D-1	127.15	—	X
1232	LC-101D-2	—	—	X

9-8-15 JBLM TO O1A LGC

	WELL ID	DTW	DTB	PDB
1240	LC-76D	134.61	—	—
1243	(GPS PT TAKEN AT LC-76D. NOT ON MAP)			
1247	LC-97D	119.38	—	—
1315	LC-99D	124.11	—	X
1325	LC-103D	121.75	—	X
	LARGE SURROUNDING BULLDOZED CONSTRUCTION ON GOING			
1340	LC-74D	128.05	—	X
1353	LC-96D	126.04	—	X
1405	LC-98D-1	129.40	—	X
1410	LC-98D-2	—	—	X
1425	LC-85D-1	132.53	—	—
1437	85-PA-384	30.41	61.20	X
1445	LC-75D	47.30	—	—
1455	LC67D	93.30	—	—
1508	85-PA-382	13.80	62.12	X
1515	85-PA-381	14.61	56.32	—
1533	T-15	27.13	—	X
1540	CM-2	22.75	33.80	—
1558	LC-87D-1	127.41	—	—
1610	T-06	29.56	70.11	X
1620	T-11B	36.98	78.96	X
1630	T-10	35.88	—	X
1640	T-04	30.75	—	X
1650	T-05	26.20	—	X

9-8-15 JBLM TO 01A LGC

	WELL ID	DTW	DTB	PDB
1700	LC-225	40.13	—	X
1710	LC-226	33.19	—	X
1720	T-13B	36.61	78.83	X
1800	TM. WK OFFSITE LGC, DEMOB			

END OF DAY

9-8-15

9-9-15 JBLM TO 01A LGC

0700 TM. WK ONSITE SEALASKA TRAILER FOR MOB.

0709 TM. WK ONSITE LOGISTICS CENTER.

0710 H+S BRIEFING (W. KANGA SSHO)

	WELL ID	DTW	DTB	PDB
0730	LC-218	9.16	19.91	X
0738	FL-1	10.98	X	X
0745	LC-224	9.83	18.00	X
0750	LC-223	12.30	17.80	X
0800	LC-222	13.20	18.71	—
0805	LC-178	11.77	19.51	P.P (PERISTALTIC
0815	FL-4B	13.11	38.37	—
0825	LC-68D	29.86	—	—
0910	LC-34	28.76	40.77	—
0930	LC-61B	27.51	—	X
0945	LC-124	24.73	48.40	X
1018	LC-16	14.79	—	X
1040	LC-03	20.50	59.00	AP (AIR PUMP)
1045	LC-01	18.81	—	X
1055	LC-06	26.57	60.32	AP
1100	LC-66D	93.59	195.69	—
1105	LC-66B	31.15	74.44	—
1113	LC-132	31.47	52.21	—
1135	LC-111B	28.34	—	X
1145	LC-116B	30.23	—	X
1200	LC-167	31.09	—	—
1215	LC-122B	24.86	—	X

9-8-15 JBLM TO O1A LGC

	WELL ID	DTW	DTB	PDB
1320	LC-109	17.11	—	X
1330	FL-6		—	—
	└ COMPLETELY ENGULFED BY BLACKBERRY BUSHES.			
1350	LC-137B	27.43	52.92	—
1357	MT-1	28.42	—	X
1405	LC-21C	16.94	141.30	—
1415	LC-24	20.13	—	—
1435	LC-26D	10.16	—	—
1450	LC-108(30)	16.82	—	X
1450	LC-108(60)	—	—	X
1450	LC-108(85)	—	—	X
1508	LC-135	15.21	35.70	X
1525	MT-4	15.51	22.52	X
1530	MT-3	16.20	23.70	X
1535	LC-27	12.65	—	—
1545	LC-160	15.60	88.08	—
1557	MT-2	15.56	—	X
1625	TM, WK OFFSITE. END OF DAY			

9-10-15 JBLM TO O1A LGC

	~~WELL ID~~	~~DTW~~	~~DTB~~
0730	TM, WK ONSITE		
0735	H+S BRIEFING (W. KAAGE SSHO)		
0745	TM, WK ONSITE LGC FOR GWM		

	WELL ID	DTW	DTB
0826	LF4-MW-02C	124.58	—
0830	AT PARK GATE FOR WELL 166D, PARK OPEN 1200-1700 HRS.		
0845	LF4-MW-12B	149.34	—
0856	LF4-MW-14	150.07	—
0905	LF4-MW-09B	147.58	—
0910	LF4-MW-04	153.81	—
0930	SRCMW-01B	137.92	—
0951	LC-81D	NEED SMALL PROBE CASING DOES THIS: ⊗	
1015	TM, WK OFFSITE FOR FEDEX PICKUP OF COOLERS FOR BUILDING 9001 SAMPLING		
1050	TM, WK ONSITE LF2 FOR COOLER INVENTORY.		
1055	NOTICE SMALL DIAMETER PROBE NEEDED FOR LC-81D WAS THE ONE TAKEN FOR USE BY T. LYNOTT. EMAILED T.L. TO HAVE HIM TAKE MEASUREMENT.		
1125	TM, WK OFFSITE LF2, ONSITE LGC		

	WELL ID	DTW	DTB
1150	LC-80D		—
1210	LC-166D	35.55	—

(BLUE TANKS FROM SCRPP HOT + TESTED POSITIVE FOR DIESEL + HEAVY OIL)

9-10-15 JBLM TO OIA LGC

	WELL ID	DTW	DTB
1310	LC-81D		—
	↳MALFUNCTION OF SMALLER PROBE. ALL CMT WELLS IN QUESTION		
1540	LC-73D	117.16	—
1343	LC-72D	110.46	—
1345	FL-3	16.31	45.92
1357	LC-40	27.85	72.92
1403	LC-40D	120.16	—
1410	LC-05	28.39	57.18
1417	LC-168	21.46	31.27
1425	LC-123	24.78	48.45
1435	LC-77D	106.53	—
1440	LC-14A	16.23	—
1448	LC-39	22.18	43.97
1500	LC-53	11.30	—
1507	LC-50	7.55	27.12
1511	LC-50D	9.22	162.70
1523	FL-2	14.63	45.14
1530	LC-170	16.64	22.41
1550	LC-182	5.70	24.00 (P.PUMP)
	↳TREE FALLS ALL AROUND WELL, SUGGEST CHAINSAW TO REMOVE + CLEAR PATH TO WELL		
	↳WHY NOT USE LC-171? CLOSER + WIDE OPEN		
1620	LC-180	6.80	12.68

253-967-7112 DISK SAT.

9-10-15 JBLM TO OIA LGC

LC-104 ACCESS#: 967-3107/08/09.

	WELL ID	DTW	DTB
1655	LC-10	26.86	38.86
1700	LC-49	DRY	4.02
1705	LC-47A	22.46	32.89
1710	LC-47D	28.93	—
1730	JM, WK OFFSITE LGC, END OF DAY		

9-10-15

9-11-15 JBLM TO 01/4 LGC

0700 TM, WK ONSITE

0730 H+S BRIEFING (WK SSHO)

~~LC-2~~ NR 9-11-15

	WELL ID	DTW	DTB
0745	LC-26	6.65	—
0755	LC-177	14.51	—
0807	MT-6	13.81	—
0815	LC-57	18.26	—
0823	MT-5	15.20	—
0830	LC-64A	~~13.67~~ 12.70	30.05
0900	LC-20	28.45	43.11
0950	LC-35D	28.30	—
1002	LC-19A	25.77	—
1208	LC-69D	32.90	—
1214	LC-41A	29.51	95.31
1228	LC-70D	55.30	—
1238	LC-41D	38.05	—

ACCESS FOR 41B # 253 966-0654

1300	LC-18	21.45	43.10
1340	LC-126	113.03	—
1352	LC-110	19.88	47.11
1356	LC-111A	21.17	45.00
1400	LC-112	22.77	48.94

LC-11B - GRAVEL RECENTLY LAYED ON TOP.

1422	LC-113	22.95	43.75

9-11-15 JBLM TO 01/4 LGC

	WELL ID	DTW	DTB
1428	LC-114	22.17	48.80
1433	LC-115	21.27	48.86
1442	LC-116	22.66	—
1446	LC-117	DUMPSTER ON TOP	
1447	LC-118	23.94	—
1450	LC-119	LID CEMENTED IN FROM NEW PAD	
1458	LC-121	18.81	—
1500	TM, WK	OFFSITE. END OF DAY	

9-11-15

9-14-15 JBLM TO 014 LF5

0740 WK, TM ONSITE LF2 FOR MOBILIZATION
0745 H+S BRIFFING (W KAGE SSHO)
0750 CALIBRATE HORIBA:
pH=4.00 SP. COND=4.48 mS/cm TURB=0.0 NTU
DO=9.42 mg/L TEMP=17.03°C ORP=285 mV SAL=0.24%
0845 WK, TM OFFSITE LF2
0940 WK, TM ONSITE LF5
ONSITE WELL 88-LS-AM-VD
0955 DTW=20.29'
0956 STARTED PURGE, FLOW=300mL/min
1012 CONNECTED FLOW CELL
1015 BEGAN COLLECTING PARAMETERS
1035 PARAMETERS STABILIZE:
pH=6.16 SP.COND=0.551 mS/cm TURB=0.6 NTU
DO=0.30 mg/L TEMP=15.82 ORP=-63 mV
1040 SAMPLE: LF5150914885LSAMVD-1
14 BOTTLES PER MATRIX
1145 DECON HORIBA + PROBE
1155 ONSITE WELL C5-3
1200 DTW=24.56
1202 STARTED PURGE, FLOW=340mL/min
1205 CONNECT FLOW CELL
1206 BEGAN COLLECTING PARAMETERS
1238 PARAMETERS STABILIZE
pH=6.04 SP. COND=0.269 mS/cm TURB=0.0 NTU
DO=0.0 mg/L TEMP=17.44°C ORP=55

9-14-15 JBLM TO 014 LF5

1240 SAMPLE: LF5150914C53-1
14 BOTTLES PER MATRIX
DECON HORIBA + PROBE
1320 ONSITE WELL 93-2-VD
1325 DTW=17.24
1326 START PURGE, 300mL/min FLOW
1329 CONNECT FLOW CELL
1332 BEGIN TAKING PARAMETERS
1352 GENERATOR OUT OF GAS.
1422 GENERATOR REFUELED + PURGE RESTARTS. FLOW=300 mL/min
1425 CONTINUE COLLECTING PARAMETERS
1445 3x CASING VOLUME PURGED
pH=6.36 SP.COND=0.167 mS/cm TURB=0.0 NTU
DO=3.15 mg/L TEMP=19.64°C ORP=114 mV
1450 SAMPLE: LF5150914932VD-1 (MS/MSD)
42 BOTTLES PER MATRIX
1510 SAMPLE: LF5150914 9312VD-1 (DUP)
14 BOTTLES PER MATRIX
1530 DECON HORIBA + PROBE
1552 TM, WK OFFSITE LF5
1617 TM, WK ONSITE LF2 FOR DEMOB
1625 CALIBRATE HORIBA:
pH=4.00 SP.COND=4.50 mS/cm TURB=0 NTU DO=10.46 mg/L
TEMP=18.98°C ORP=281 mV SAL=0.24%
1640 DUMP IDW @LF2 PLANT, ≈ 28 GAL
1648 TM, WK OFFSITE LF2. END OF DAY

9-14-15

9-15-15 JBLM TO O/A LFS/LGC

0708 TM, WK ONSITE LF2 FOR MOBILIZATION
0712 SAMPLE FRIDGE TEMP 2°/°C
0745 MOBILIZATION AFTER PACKING SAMPLES FOR SHIPPING
0750 CALIBRATE HORIBA:
pH=3.99 SP COND=4.50 mS/cm TURB=0.0 NTU
DO=9.78 mg/L TEMP=14.01°C ORP=276 mV SAL=0.24%
0807 TM, WK OFFSITE LF2
0820 H+S BRIEFING (W. KAUCG SSHO)
0845 TM, WK ONSITE DUPONT 76 FOR SAMPLE SHIPMENT
0905 SAMPLES RELINQUISHED TO MC DELIVERY
0920 TM, WK ONSITE LGC
0930 ONSITE WELL LC-41B,
0935 DTW = 29.87'
0957 ONSITE IS PLANT FOR STRAINER CLEANING
1053 OFFSITE I-5 PLANT
1100 ONSITE ~~FL-6~~ WELL FL-6. VEGETATION CONTROL PERFORMED
1147 DTW = 16.19'
NO CABLE OR TIE FOR PDB (FUTURE)
1200 T.M, WK OFFSITE LGC
1222 TM, WK ONSITE LFS
1223 ONSITE WELL LC-104D
1225 DTW = 140.71'
1237 ONSITE WELL AEP-1 DTW=18.73 DTB=31.23
1245 WELL AEP-2 DTW=18.23 DTB=26.46
1310 WELL C5-4 DTW=23.86

9-15-15 JBLM TO O/A LFS

	WELL ID	DTW	DTB	
1315	MW-2008-2	32.06	—	
1320	MW-2008-3	35.14	—	
1325	MW-2008-4	25.47	—	
1335	D-1	20.61	—	
1345	MW-2008-1	25.60	—	
1350	92-1-VD	24.47	30.11	TOP OF PUMP
1355	92-3-VD	23.10	30.10	TOP OF PUMP
1400	92-2-VD	18.16	27.57	TOP OF PUMP
1406	C5-1A	21.00	—	
1410	C5-2	20.01	—	
1430	D-3	14.91	—	
1433	D-2	19.64	—	
1435	93-1-VD	17.03	~~20.60~~ (TAKEN AFTER SAMPLE)	
1440	ONSITE WELL 93-3-VD			
1445	DTW=21.46'	DTB=29.60 (TAKEN AFTER SAMPLE)		
1455	STARTED PUMP. FLOW 260 mL/min			
1457	CONNECT HORIBA			
1500	BEGIN TAKING PARAMETERS			
1525	PARAMETERS STABILIZE			
	pH=6.12 SP.COND=0.220 S/cm TURB=0.0 NTU			
	DO=0.0 mg/L TEMP=17.48°C ORP=65 mV			
1530	SAMPLE: LFS150915933VD-1			
	14 BOTTLES PER MATRIX			
1558	DECON HORIBA + PROBE			

9-15-15 JBLM TO OIA LF5

1602 ONSITE WELL 93-1-VD
1615 BEGIN PUMPING, FLOW = 270mL/MIN
1620 CONNECT FLOW CELL
1623 BEGIN COLLECTING PARAMETERS
1643 PARAMETERS STABILIZE
pH = 5.98 SP. COND = 0.240mS/cm TURB = 20.0 NTU
DO = 2.70mg/L TEMP = 16.11°C ORP = 169mV
1645 SAMPLE: LF5150915 93VD-1
14 BOTTLES PER MATRIX DTB = 24.37 (AFTER SAMPLE)
1705 DECON HORIBA + PROBE
1715 TM, WK OFFSITE LF5
1745 TM, WK ONSITE LF2 FOR DEMOB. SAMPLE FRIDGE ≈ 2°C
1806 HORIBA CAL
pH = 4.00 SP. COND = 4.52mS/cm TURB = 0.0 NTU DO = 10.38mg/L
TEMP = 18.32°C ORP = 287mV SAL = 0.24%
1813 IDW TRANSFER TO IDW TANK. ≈ 6 gal
1820 TM, WK OFFSITE LF2 END OF DAY

9-15-15

9-16-15 JBLM TO OIA LF5/LGC

0715 TM, WK ONSITE LF2 FOR MOBILIZATION/SHIPPING
0717 H+S BRIEFING (W. KRAGE SSHO)
0743 CALIBRATE HORIBA
pH = 4.00 SP. COND = 4.50mS/cm TURB = 0.0 NTU
DO = 10.35mg/L TEMP = 14.38°C ORP = 276mV SAL = 0.24%
0747 SAMPLE FRIDGE ≈ 1°C
0802 TM, WK OFFSITE LF2
0840 TM, WK ONSITE DUPONT 76 FOR MC DELIVERY.
0900 SAMPLES DELIVERED TO MC DELIVERY.
0915 TM, WK ONSITE LF5
0919 ONSITE WELL AEP-1
0942 BEGIN PURGE. FLOW = 300mL/MIN
0946 CONNECT FLOW CELL
0950 BEGIN COLLECTING PARAMETERS
1010 PARAMETERS STABILIZE
pH = 5.49 SP. COND = 0.188mS/cm TURB = 0.0 NTU
DO = 5.47mg/L TEMP = 15.31 ORP = 220mV
1015 SAMPLE: LF5150916AEP1-1
14 BOTTLES PER MATRIX
1042 DECON HORIBA + PROBE
1051 ONSITE WELL AEP-2
1110 BEGIN PURGE. FLOW = 280mL/MIN
1113 CONNECT FLOW CELL
1116 BEGIN COLLECTION OF PARAMETERS
1131 PARAMETERS STABILIZE: pH = 6.05 SP. COND = 0.206mS/cm
TURB = 0.0 NTU DO = 4.03mg/L TEMP = 15.01°C ORP = 170mV

A-14

9-16-15 JBLM TO 014 LF5/LGC

(WELL AEP-2 CONT.)

1136 SAMPLE: LF5150916AEP2-1

14 BOTTLES PER MATRIX

1205 DECON HORIBA + PROBE.

1207 TM, WK OFFSITE LF5

1230 ONSITE WELL LC-8D DTW=

↳ DTW PORT OF WELL TOO SMALL FOR 3/8" PROBE

THAT IS MALFUNCTIONING

1320 TM, WK ONSITE LF5

1322 ONSITE WELL D-3

1331 BEGIN PURGE. FLOW = 406 mL/min

1333 CONNECT FLOW CELL

1338 BEGIN COLLECTING PARAMETERS

1413 3x CASING VOLUME

↳ ALL PARAMETERS STABLE EXCEPT DO. VERY LOW

+ DROPPING SLIGHTLY

1415 SAMPLE: LF5150916D3-1

14 BOTTLES PER MATRIX

1440 DECON HORIBA + PROBE.

1450 TM, WK OFFSITE LF5

1510 TM, WK ONSITE LF2 FOR DEMOB

1511 SAMPLE REFRIDGE ~ 1°C

1515 CAL HORIBA

pH 4.00 Sp.cond = 4.51 mS/cm TURB = 0.0 NTU

DO = 9.32 mg/L TEMP = 21.62°C ORP = 272 mV SAL = 0.24%

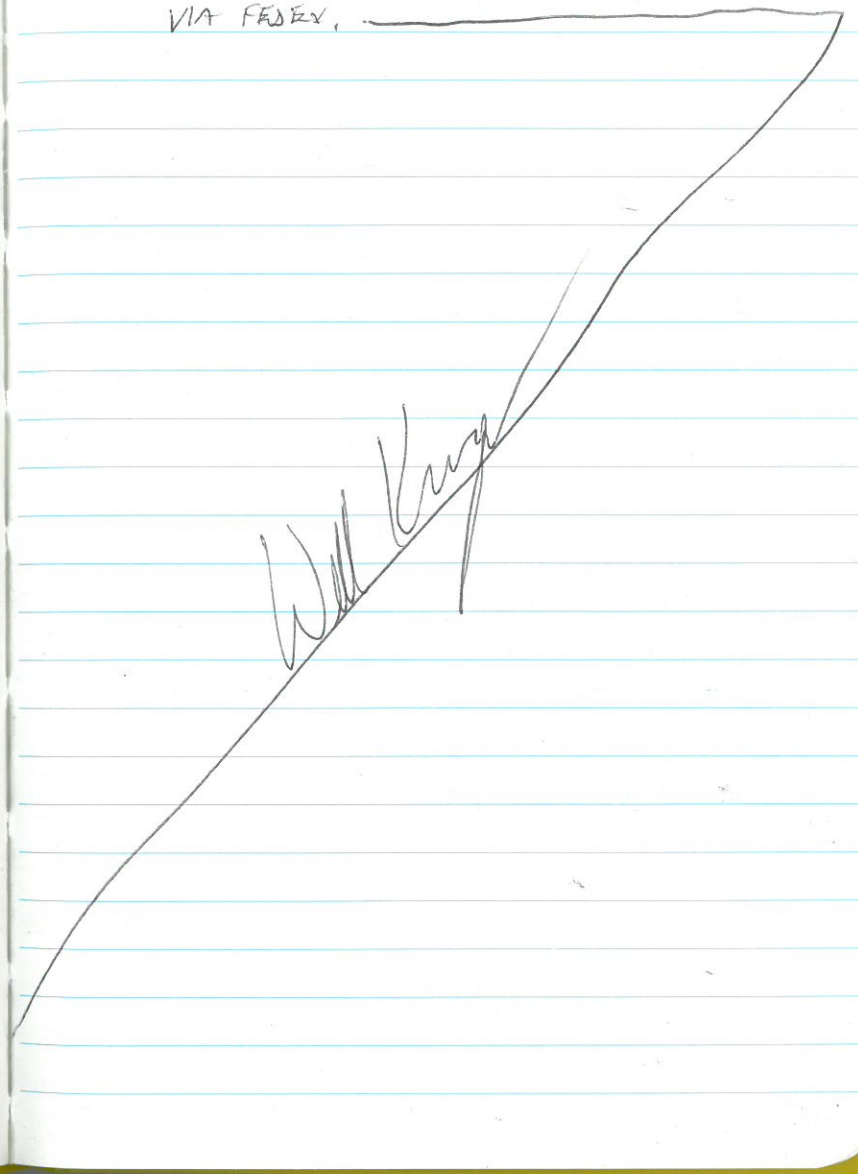
1528 DISPOSE OF IDW @ LF2 PLANT ~ 12 GAL

9-16-15 JBLM TO 014 LF5

1532 TM, WK OFFSITE LF2

1600 WK RETURN RENTAL WL INDICATOR TO GEOTECH

VIA FEDEX.



9-17-15 JBLM TO O/A LF3

0745 TM, WK ONSITE LF2 FOR MOBILIZATION + SHIPPING
0800 SAMPLE FRIDGE ≈ 1°C
0801 CALIBRATE HORIBA
pH=4.00 Sp. cond = 4.50 mS/cm TURB = 0.0 NTU
DO=9.88 mg/L TEMP=16.88°C ORP=252 mV SAL=0.24%
0835 TM, WK OFFSITE LF2
0855 ONSITE DUPONT 76.
0900 SAMPLES DELIVERED TO MC DELIVERY
0906 TM, WK ONSITE LF5
0913 ONSITE WELL 92-1-VD
0920 BEGAN PURGE. FLOW = 220 mL/MIN
0922 CONNECT FLOW CELL
0925 BEGIN TAKING PARAMETERS
0955 PARAMETERS STABILIZE
pH=5.52 Sp. cond = 0.232 mS/cm TURB = 0.5 NTU
DO=3.06 mg/L TEMP=17.45°C ORP=188 mV
1000 COLLECT SAMPLE
14 BOTTLES PER MATRIX
1023 DECON HORIBA + PROBE
1025 ONSITE WELL 92-3-VD
1030 TRIED PUMPING BUT SUBMERSIBLE NOT WORKING. POSSIBLE FOR PUMP TO BE ABOVE H_2O. TRAVEL TO LF2 SHED TO RETRIEVE PERISTALTIC PUMP
1050 TM, WK OFFSITE LF5
1105 TM, WK ONSITE LF2

9-17-15 JBLM TO O/A LF5

1115 TM, WK OFFSITE LF2
1130 TM, WK ONSITE LF5
1131 ONSITE WELL 92-3-VD
1144 BEGIN PURGE. FLOW = 300 mL/MIN
1145 CONNECT FLOW CELL
1148 BEGIN COLLECTING PARAMETERS
1213 PARAMETERS STABILIZE
pH=5.78 Sp. cond = 0.153 mS/cm TURB = 0.0 NTU
DO=4.08 mg/L TEMP=14.45°C ORP=226 mV
1215 SAMPLE LF5150917923VD-1
14 BTLS PER MATRIX.
1240 DECON HORIBA + PROBE
1245 ONSITE WELL 92-2-VD
1250 BEGIN PURGE. FLOW = 300 mL/MIN
1255 CONNECT FLOW CELL
1258 BEGIN COLLECTING PARAMETERS
1318 PARAMETERS STABILIZE
pH=6.15 Sp. cond = 0.139 mS/cm TURB = 0.5 NTU
DO=1.90 mg/L TEMP=16.59°C ORP=161 mV
1320 SAMPLE LF5150917922VD-1
14 BTLS PER MATRIX
1340 DECON HORIBA + PROBE
1347 TM, WK OFFSITE LF5
1409 TM, WK ONSITE LF2 FOR DEMOB.
1411 SAMPLE FRIDGE ≈ 2°C

9-17-15 JBLM TO 01a LF5

1425 CALIBRATE HORIBA
pH=4.00 Sp. Cond = 4.50 mS/cm TURB = 0.0
DO=10.62 TEMP = 18.87°C ORP = 279 mV SAL=0.24%

1433 DISPOSE OF IDW @ LF2 PLANT

~~1435~~ WM2 9-17-15 ≈ 9 GAL

1500 TM, WK OFFSITE LF2. END OF DAY.

9-17-15

9-18-15 JBLM TO 01a LF5

0715 TM, WK ONSITE LF2 FOR PREP, MOB & SHIPPING
0716 SAMPLE FRIDGE ≈1°C
0750 TM, WK OFFSITE LF2
0815 TM, WK ONSITE LF5
0823 ONSITE LM-6
0845 SAMPLE: LF5150918LM6-1 (EFFERVESCENCE W/HCL)
LMS/MSD FOR NO_2, BOD, COD, CN
0915 DUP: LF5150918LM16-1
1048 TM, WK OFFSITE LF5
1100 TM, WK ONSITE 76 STATION FOR MC DELIVERY
1105 RELINQUISH SAMPLES TO MC DELIVERY.
1130 TM, WK OFFSITE 76.
1150 TM, WK ONSITE LF2 FOR DEMOB
1155 IDW TRANSFERRED TO LF2 IDW TANK. ≈2 GAL
1207 TM, WK OFFSITE LF2. END OF DAY.

9-18-15

9-21-15 JBLM TO OIA LGL

0730 TM. WK ONSITE LF2 FOR MOB
0800 H+S BRIEFING (WK SSHO)
0805 ONSITE LGC FOR SPIGOT SAMPLES

	WELL ID	SAMPLE ID (VOCs 8260C)
0910	WELL-13	LGC150921WELL13-1
0955	MAMC-3	LGC150921MAMC3-1
1000	MAMC-4	LGC150921MAMC4-1
1014	MAMC-1	LGC150921MAMC1-1
1022	MAMC-6	LGC150921MAMC6-1
1040	SLAP-6	LGC150921SLAP6-1
1100	SLAP-5	LGC150921SLAP5-1
1110	SLAP-4	LGC150921SLAP4-1
1120	SLAP-3	LGC150921SLAP3-1
1130	SLAP-2	LGC150921SLAP2-1
1140	SLAP-1	LGC150921SLAP1-1
1200	LX-15	LGC150921LX15-1
1210	LX-14	LGC150921LX14-1
1220	LX-13	LGC150921LX13-1
1225	LX-12	LGC150921LX12-1
1230	LX-11	LGC150921LX11-1
1240	LX-10	LGC150921LX10-1
1250	LX-9	LGC150921LX9-1
1300	LX-8	LGC150921LX8-1
1305	LX-81 (DUP)	LGC150921LX81-1
1310	LX-7	LGC150921LX7-1

9-21-15 JBLM TO OIA LGC

	WELL ID	SAMPLE ID
1320	LX-6	LGC150921LX6-1
1330	LX-5	LGC150921LX5-1
1335	LX-4	LGC150921LX4-1
1340	LX-3	LGC150921LX3-1
1345	LX-2	LGC150921LX2-1
1455	PW-1	LGC150921PW1-1
1505	PW-2	LGC150921PW2-1
1520	PW-3	LGC150921PW3-1
1530	PW-4 (DUP)	LGC150921PW4-1 1535 LGC150921PW41-1
1540	PW-5	LGC150921PW5-1
1550	PW-6	LGC150921PW6-1
1600	PW-7	LGC150921PW7-1
1610	PW-8	LGC150921PW8-1

1625 TM. WK @ LF2 SHED FOR DEMOB
1628 SAMPLES FRIDGE ≈ 3°C
1635 TM. WK OFFSITE LF2, END OF DAY

9-21-15

9-22-15 JBLM TO OIA LGC

0750 TM, WK ONSITE LF2 FOR MOBILIZATION
0755 H+S BRIEFING (W. KNAGG SSHO)
0800 CALIBRATE HORIBA (SAMPLE TEMP ~ 2°C)
pH=4.00 SP. COND = 4.52 mS/cm TURB = 0.0 NTU
DO = 10.21 mg/L TEMP = 13.15°C ORP = 268 mV SAL = 0.24%
0810 TM, WK OFFSITE LF2
0818 ONSITE MAMC-OF-2
0830 SAMPLE: LGC150922MAMCOF2-1 (MS/MSD)
0905 ONSITE WELL LC-03
0938 BEGIN PURGE. FLOW = 400 mL/MIN
0943 CONNECT FLOW CELL
0946 BEGIN COLLECTING PARAMETERS
1011 PARAMETERS STABILIZE
pH = 6.22 SP. COND = 0.163 mS/cm TURB = 0.0 NTU
DO = 4.94 mg/L TEMP = 13.40°C ORP = 193
1015 COLLECT SAMPLE LGC150922LC03-1
1022 DECON HORIBA + PROBE
1030 ONSITE WELL LC-06
1035 BEGIN PURGE. FLOW = 380 mL/MIN
1038 CONNECT FLOW CELL
1041 BEGIN COLLECTION OF PARAMETERS.
1101 PARAMETERS STABILIZE
pH = 6.48 SP. COND = 0.178 mS/cm TURB = 0.0
DO = 6.65 mg/L TEMP = 13.90°C ORP = 172 mV
1105 SAMPLE: LGC150922LC06-1
1114 DECON HORIBA + PROBE

9-22-15 JBLM TO OIA LGC

1123 ONSITE WELL LC-178
1130 BEGIN PURGE. FLOW: 200 mL/MIN
1132 CONNECT FLOW CELL
1135 BEGIN COLLECTING PARAMETERS
1200 PARAMETERS STABILIZE
pH = 6.97 SP. COND = 0.187 mS/cm TURB = 13.6 NTU
DO = 4.25 mg/L TEMP = 15.24°C ORP = 125
1205 SAMPLE: LGC150922LC178-1
1237 ONSITE WELL LC-182
1240 BEGIN PURGE FLOW = 240 mL/MIN
1242 CONNECT FLOW CELL
1245 BEGIN PARAMETER COLLECTION
1305 PARAMETERS STABILIZE
pH = 7.66 SP. COND = 0.144 mS/cm TURB = 111 NTU
DO = 0.0 mg/L TEMP = 12.00°C ORP = -153 mV
1310 SAMPLE: LGC150922LC182-1
1320 DUPE: LGC150922LC1821-1
1335 DECON HORIBA.
1348 ONSITE WELL LC-180
1354 BEGIN PURGE. FLOW = 306 mL/MIN
1358 CONNECT FLOW CELL
1401 BEGIN COLLECTING PARAMETERS
1416 3x CASING VOLUME
pH = 6.52 SP. COND = 0.164 mS/cm TURB = 12.6 NTU
DO = 4.90 mg/L TEMP = 12.55°C ORP = 159 mV
1420 SAMPLE: LGC150922LC180-1

9-22-15 JBLM TO 01A LGC

PDB SAMPLING

~~LG10~~	WELL ID	SAMPLE ID
1510	LC-95D-1	LGC150922LC95D1-1
1520	LC-95D-2	LGC150922LC95D2-1
1540	LC-93D-1	LGC150922LC93D1-1
1550	LC-93D-2	LGC150922LC93D2-1
1619	TM, WK ONSITE LF2 FOR DEMOB	
1622	SAMPLE FRIDGE ≈1°C	
1628	CALIBRATE HORIBA	

pH=3.99 SP. COND=4.52mS/cm TURB=0.8NTU
DO=9.78mg/L TEMP=19.18°C ORP=279mV SAL=0.21%

1633 DISPOSE OF IDW @ LF2 PAD, ≈9 gal

TM, WK OFFSITE END OF DAY

9-22-15

9-23-15 JBLM TO 01A LGC/9001

0718 TM, WK ONSITE LF2 FOR MOB
0723 SAMPLE FRIDGE ≈1°C
0725 CALIBRATE HORIBA

pH=4.00 SP. COND=4.50mS/cm TURB=0.0NTU DO=10.80mg/L
TEMP=13.63°C ORP=271mV SAL=0.24%

0740 TM, WK OFFSITE LF2

	WELL ID	SAMPLE ID
0815	LC-88D-1	LGC150923LC88D1-1
0820	LC-88D-2	LGC150923LC88D2-1
0840	LC-102D-1	LGC150923LC102D1-1
0845	LC-102D-2	LGC150923LC102D2-1
0905	LC-86D-1	LGC150923LC86D1-1
0910	LC-86D-2	LGC150923LC86D2-1
0950	T-11B	LGC150923T11B-1 (MS/MSD)
1010	T-06	LGC150923T06-1
1020	BC-1	LGC150923BC1-1 (MS/MSD)
1040	T04	LGC150923T04-1
1050	T-10	LGC150923T10-1
1100	T-05	LGC150923T05-1
1113	LC-225	LGC150923LC225-1
1115	L DUP	LGC150923LC2251-1
1130	LC-226	LGC150923LC226-1
1140	T-13B	LGC150923T13B-1
1150	T-15	LGC150923T15-1
1200	L DUP	LGC150923T151-1

9-23-15 JBLM TO O/A LGC/9001

	WELL ID	SAMPLE ID
1240	LC-61B	LGC150923LC61B-1
1245	L DUP	LGC150923LC61B-1
1247	ONSITE 9001	
1248	ONSITE WELL 09001-MW01	
1255	DTW = 19.86'	
1300	BEGIN PURGE, FLOW = 220mL/MIN	
1302	CONNECT FLOW CELL	
1305	BEGIN COLLECTION OF PARAMETERS	
1335	PARAMETERS STABILIZE	
	pH=6.35 SP.COND=0.192mS/cm TURB=0.0NTU	
	DO=3.29mg/L TEMP=16.00°C ORP=165mV	
1340	COLLECT SAMPLE: 9001-MW01 (MS/MSD)	
	LTPH-G, TPH-D/HO, BTEX	
1423	DECON HORIBA & PROBE	
1428	ONSITE WELL 09001-MW02	
1429	DTW = 20.20'	
1435	BEGIN PURGE, FLOW = 240mL/MIN	
1443	BEGIN COLLECTING PARAMETERS	
1458	PARAMETERS STABILIZE	
	pH=6.47 SP.COND=0.181mS/cm TURB=0.0NTU	
	DO=3.33mg/L TEMP=15.52°C ORP=157mV	
1505	SAMPLE: 9001-MW02 (TPH-G, TPH-D/HO, BTEX)	
1520	DUP: 9001-MW12 "	
1533	DECON HORIBA	
1540	TM, WK OFFSITE 9001	

9-24-15 JBLM TO O/1 LGC

	WELL ID	SAMPLE ID
1555	LC-98D-1	LGC150923LC98D1-1
1605	LC-98D-2	LGC150923LC98D2-1
1620	LC-101D-1	LGC150923LC101D1-1
1625	LC-101D-2	LGC150923LC101D2-1
1645	TM, UK ONSITE LF2 FOR DEMOB	
1648	SAMPLE FRIDGE ≈ 2°C	
1654	CALIBRATE HORIBA	
	pH=4.00 SP.COND=4.48mS/cm TURB=0.0NTU	
	DO=10.81mg/L TEMP=19.16°C ORP=265mV SAL=0.24%	
1702	DISPOSE OF IDW @ LF2 PLANT ≈ 5GAL	
1710	TM, WK OFFSITE, END OF DAY.	

9-23-15

9-24-15 JBLM TO 01A LGL

0745 TM, WK OFFSITE LF2 FOR MOBILIZATION
0802 H+S BRIEFING (WILL KAAGS SSHO)
0805 TM, WK OFFSITE LF2

	WELL ID	SAMPLE ID
0820	LC-109	LGC150924LC109-1
0840	85-PA-382	LGC1509248585PA382-1
0855	85-PA-384	LGC1509248585PA384-1
0910	LC-96D	LGC150924LC96D-1 (MS/MSD)
0925	LC-74D	LGC150924LC74D-1
0930	L DUP	LGC150924LC741D-1
0945	LC-99D	LGC150924LC99D-1
1000	LC-103D	LGC150924LC103D-1
1030	LC-111B	LGC150924LC111B-1
1045	LC-116B	LGC150924LC116B-1
1100	LC-122B	LGC150924LC122B-1
1130	LC-124	LGC150924LC124-1
1200	LC-16	LGC150924LC16-1 (MS/MSD)
1230	LC-01	LGC150924LC01-1
1250	LC-218	LGC150924LC218-1
1300	FL-1	LGC150924FL1-1
1310	LC-223	LGC150924LC223-1
1315	LC-224	LGC150924LC224-1
1330	MT-2	LGC150924MT2-1
1340	MT-1	LGC150924MT1-1
1350	LC-108(30)	LGC150924LC10830-1

9-24-15 JBLM TO 01A LGL

	WELL ID	SAMPLE ID
1355	LC-108(60)	LGC150924LC10860-1
1400	LC-108(85)	LGC150924LC10885-1
1410	LC-135	LGC150924LC135-1
1415	L DUP	LGC150924LC1351-1
1430	MT-4	LGC150924LCMT4-1
1440	MT-3	LGC150924MT3-1
1445	OFFSITE LF2 SHED FOR DEMOB. END OF DAY	

1441 DISPOSE OF IDW. ~ 1 GAL

9-24-15

9-25-15 JBLM TO OLA LGL

0800 TM, WK ONSITE LF2 FOR SHIPPING

0802 SAMPLE FRIDGE 2½°C

0910 TM, WK OFFSITE LF2

0930 TM, WK ONSITE DUPONT 76 FOR SAMPLES

~~1035~~ DROPOFF TO MC DELIVERY (#53 CHRIS)

1055 SAMPLES RELINQUISHED TO MC DELIVERY

2040 TM, WK OFFSITE DUPONT 76

9-25-15

SEALASKA ENVIRONMENTAL

Sealaska Environmental Services
Marine Science Center, P.O. Box 869
18743 Front Street, NE, Suite 201
Poulsbo, WA 98370

FLAO Spring 2015
Sampling Matrix Form

Well ID	DTW	Previous DTW	DTB	Previous DTB	Date	Time	PID	Sample ID	Date	Time	TPH-D/ TPH-O NWTPH-Dx 1 L Amber w/HCl	TPH-G NWTPH-Gx 40 mL VOA w/HCl	BTEX 8260C 40 mL VOA w/HCl	Purge Volume (L)
								AOC 8-2						
4131-MW01	24.59	26.19	37.00	37.70	4-20-15	1156	-	-	-	-	-	-	-	-
4131-MW02	23.41	24.98	27.11	27.42		1200	-	AOC150427 4131MW02	4-27-15	1135	2	-	-	8.32
4131-MW03	24.80	26.76	29.75	30.0		1204	-	AOC150427 4131MW03		1027	2	-	-	10.8
4131-MW03	-	-	-	-	-	-	-	AOC150427 4131MW13		1037	2	-	-	-
4131-MW04	23.06	24.60	27.50	27.40		1150	-	AOC150427 4131MW04		1245	2	-	-	8.91
4131-MW05	22.54	24.08	26.84	27.60		1211	-	AOC150427 4131MW05		0920	6	-	-	7.28
4131-MW06	24.47	25.64	32.41	33.12		1206	-	-	-	-	-	-	-	-
								AOC 8-4						
A0111-MW04	19.72	21.95	22.70	22.83	4-20-15	1224	-	AOC150425A0111MW04	4-25-15	0955	2	-	-	5.72
A0111-MW05	19.28	21.24	27.21	-		1232	-	AOC150428A0111MW05	4-28-15	1207	2	-	-	7.75
A0111-MW06	17.47	19.53	25.50	25.83		1238	-	AOC150423A0111MW06	4-23-15	1255	2	-	-	9.36
A0111-MW07	20.25	22.59	28.72	29.00		1220	-	AOC150427A0111MW07	4-27-15	1515	2	-	-	10.50
A0111-MW08	19.94	22.00	22.91	23.15		1227	-	AOC150428A0111MW08	4-28-15	1055	2	-	-	6.2
							(PPM)	AOC 9-2						
95-A17-1	25.37	28.67	41.55		4-21-15	1410	0.00	-	-	-	-	-	-	-
95-A17-2	24.56	27.7	37.49	37.70		1325	0.00	AOC150423 95A172	4-23-15	0910	-	3	3	7.2
95-A17-3A	24.96	28.07	32.22	31.31 (top of pump)		1345	0.00	AOC150422 95A173A	4-22-15	1355	-	3	3	11.75
95-A17-4	24.76	27.99	30.12	30.64 (top of pump)		1330	0.01	AOC150422 95A174	4-22-15	1300	-	3	3	13.5
96-A17-5	23.57	26.66	43.29	46.10		1355	0.00	-	-	-	-	-	-	-
96-A17-6	22.48	26.59	42.81	43.20		1358	0.00	-	-	-	-	-	-	-
07-A17-7	23.60	26.74	28.29	28.34 (top of pump)		1350	0.00	AOC150422 07A177	4-22-15	1140	-	9	9	6.5
10-A17-8	24.72	27.13	37.70	38.30		1319	0.02	AOC150422 10A178	4-22-15	1455	-	3	3	10.0
10-A17-8	-	-	-	-	-	-	-	AOC150422 10A1718	4-22-15	1505	-	3	3	-
TRIP BLANK	NA	NA	NA	NA	NA	NA	NA	TB-150422	4-22-15	1140	-	2	2	NA
								AOC 10-8						
AOC 10-8-B05	35.54	40.65	46.24	48.00	4-20-15	1330	-	AOC150423 AOC108B05	4-23-15	1030	2	-	-	20
JP-MW01	39.94	40.48	51.02	-		1337	-	-	-	-	-	-	-	-
JP-MW02	36.48	39.29	49.80	51.0		1355	-	AOC150423JPMW02	4-23-15	1115	2	-	-	9.66
JP-MW03	35.70	39.65	52.32	-		1320	-	-	-	-	-	-	-	-
Total											28	26	26	

Laboratory: ALS **PO#:** PO-01281 AJ **Turnaround Time (TAT):** Standard

DTW = Depth to water DTB = Depth to bottom Duplicate MSMSD

Bottle Order:

30 1 L amber w/HCl
50 40 mL VOA w/HCl
8 Trip blanks
Bubble wrap
4 Coolers
Gel packs

PID CAL: 4-21-15 @ 1305 = 10.0 PPM

SEALASKA ENVIRONMENTAL

Sealaska Environmental Services

Marine Science Center, P.O. Box 869
18743 Front Street, NE, Suite 201
Poulsbo, WA 98370

Well Inspection, Purging, and Field Measurement Form

Contract Number: _____ Task Order: 01 Installation: JBLM Site Name: FLAO

Well Data

Well ID: 413I-MW02 Measuring Point (MP): (Top of Casing), Rim Monument, Other: _____

Total Well Depth (ft below MP): 27.11 Pooled Water in Well Head: Y: ___ N: ✓ Well Casing Volume (liters/ft): 0.6

Depth to Water (ft below MP): 23.41 Inner Casing Straight and Clear:: Y: ✓ N: ___ Well Volume (liters): 2.22

Length of Water Column in well (ft): 3.7 Well Head Locked: Y: ✓ N: ___ 3 x Well Volume (liters): 6.66

Diameter of well casing (inches): 2" Exterior Seal Good Y: ✓ N: ___ Volume Purged (liters): 8.32

Purge Method: Peristaltic/Submersible/(Bladder)/Other: _____ Remarks: DTW/DTB TAKEN 4-20-15

Water Sample Data

Sample ID: AOC150427413IMW02 Type: FD Date: 4-27-15 Time: 1135 # Containers: 2

QC Sample ID: - Type: - Date: - Time: - # Containers: -

Sampling Personnel: KW, WK Sampling Method: Low flow grab

Remarks (color, odor, etc.): rust colored water, odorless. CLEARED DURING PURGE

Time	Purge Vol. (liters)	Depth to Water (ft btoc)	pH	Spec. Cond. (ms/cm)	Turbidity (NTU)	DO (mg/L)	Temp. (°C)	ORP (mv)	Notes
Stabilization Requirements		(± 0.5)	(± 2.0)	(± 10%)	(± 10% or <20)	(± 10%)	(± 10%)	(± 10)	
	0	23.58	Initial Depth to Water (Pre-pumping)						
1058	START	PUMP FLOW = 260 ml/min							
1101	CONNECT FLOW CELL								
1105	1.82	clear	horiba, re-connect flow cell						
1110	3.12		6.23	0.150	534	10.18	12.99	126	
1115	4.42		6.22	0.154	408	8.39	12.86	115	
1120	5.72		6.21	0.163	322	7.03	12.85	92	
1125	7.02		6.25	0.169	264	6.46	12.92	80	
1130	8.32		6.26	0.175	239	6.10	12.93	72	
			(3x casing volume)						

Well Volume Calculation

Well volume (liters) = [Well casing volume (liters/ft)] x [Length of water column (ft)]

Well casing diameter (in) → Well casing volume (liters/ft)

1.25" → 0.3 1.5" → 0.4 2" → 0.6 2.5" → 1 3" → 1.4 3.5" → 2 4" → 2.5 6" → 5.5

Meter Model: U22

Revision: Nov. 2014

SEALASKA ENVIRONMENTAL

Sealaska Environmental Services
Marine Science Center, P.O. Box 869
18743 Front Street, NE, Suite 201
Poulsbo, WA 98370

Well Inspection, Purging, and Field Measurement Form

Contract Number: _____ Task Order: 01 Installation: JBLM Site Name: FLAO

Well Data

Well ID: 4131-MW03 Measuring Point (MP): (Top of Casing), Rim Monument, Other: _____

Total Well Depth (ft below MP): 29.75 Pooled Water in Well Head: Y: X N: * Well Casing Volume (liters/ft): 0.6

Depth to Water (ft below MP): 24.80 Inner Casing Straight and Clear:: Y: X N: ___ Well Volume (liters): 2.97

Length of Water Column in well (ft): 4.95 Well Head Locked: Y: X N: ___ 3 x Well Volume (liters): 8.91

Diameter of well casing (inches): 2" Exterior Seal Good Y: X N: ___ Volume Purged (liters): 10.8

Purge Method: Peristaltic/Submersible/Bladder/Other: _____ Remarks: DTW/DTB TAKEN 4-20 15

Water Sample Data

Sample ID: AOC150427413 1MW03 Type: GW Date: 4-27-15 Time: 1027 # Containers: 2

QC Sample ID: AOC150427413MW13 Type: DUP Date: 4-27-15 Time: 1037 # Containers: 2

Sampling Personnel: WK, KW Sampling Method: Low flow grab

Remarks (color, odor, etc.): high turbidity and red color, rust colored floce throughout, odorless

Time	Purge Vol. (liters)	Depth to Water (ft btoc)	pH	Spec. Cond. (ms/cm)	Turbidity (NTU)	DO (mg/L)	Temp. (°C)	ORP (mv)	Notes
	Stabilization Requirements	(± 0.5)	(± 2.0)	(± 10%)	(± 10% or <20)	(± 10%)	(± 10%)	(± 10)	
	0	24.91	Initial Depth to Water (Pre-pumping)						
0956	START PUMP	FLOW = 400 ml/min							
0958	CONNECT FLOW CELL								
1001	REMOVE FLOW CELL & CLEAN PROBE FROM RED PARTICULATE								
1016	RECONNECT FLOW CELL								
1018	8.8		6.02	0.170	365	9.02	12.93	27	
1023	10.8		6.04	0.170	191	8.01	12.90	-9	
		(3x CASING VOLUME)							

Well Volume Calculation

Well volume (liters) = [Well casing volume (liters/ft)] x [Length of water column (ft)]

Well casing diameter (in) → Well casing volume (liters/ft)

1.25" → 0.3 1.5" → 0.4 2" → 0.6 2.5" → 1 3" → 1.4 3.5" → 2 4" → 2.5 6" → 5.5

Meter Model: U22

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Well Inspection, Purging, and Field Measurement Form

Contract Number: _____ Task Order: 01 Installation: JBLM Site Name: FLAO

Well Data

Well ID: 4131-MW04 Measuring Point (MP): (Top of Casing), Rim Monument, Other: _____

Total Well Depth (ft below MP): 27.50 Pooled Water in Well Head: Y: __ N: ✓ Well Casing Volume (liters/ft): 0.6

Depth to Water (ft below MP): 23.06 Inner Casing Straight and Clear:: Y: ✓ N: __ Well Volume (liters): 2.66

Length of Water Column in well (ft): 4.44 Well Head Locked: Y: ✓ N: __ 3 x Well Volume (liters): 7.98

Diameter of well casing (inches): 2" Exterior Seal Good Y: ✓ N: __ Volume Purged (liters): 8.91

Purge Method: Peristaltic/Submersible/(Bladder)/Other: _____ Remarks: DIV/DTR TAKAV 4-20-15

Water Sample Data

Sample ID: AOC1504274131MW04 Type: ENV Date: 04-27-15 Time: 1245 # Containers: 2

QC Sample ID: - Type: - Date: - Time: - # Containers: -

Sampling Personnel: KW, WK Sampling Method: Low flow grab

Remarks (color, odor, etc.): odorless, cloudy at start of purge, cleared during purge.

Time	Purge Vol. (liters)	Depth to Water (ft btoc)	pH	Spec. Cond. (ms/cm)	Turbidity (NTU)	DO (mg/L)	Temp. (°C)	ORP (mv)	Notes
	Stabilization Requirements	(± 0.5)	(± 2.0)	(± 10%)	(± 10% or <20)	(± 10%)	(± 10%)	(± 10)	
1207	0	23.21	Initial Depth to Water (Pre-pumping)						
1208	START PUMP FLOW = 270 ml/min								
1210	CONNECT FLOW CELL								
1215	2.16		6.36	0.102	420	10.96	12.92	164	
1220	3.51		6.28	0.096	278	10.63	12.96	169	
1225	4.86		6.24	0.093	206	10.55	13.06	176	
1230	6.21		6.21	0.091	162	10.60	12.92	182	
1235	7.56		6.19	0.091	133	10.60	13.01	187	
1240	8.91		6.17	0.090	121	10.60	12.97	189	
			(3x casing volume)						

Well Volume Calculation

Well volume (liters) = [Well casing volume (liters/ft)] x [Length of water column (ft)]

Well casing diameter (in) → Well casing volume (liters/ft)

1.25" → 0.3 1.5" → 0.4 2" → 0.6 2.5" → 1 3" → 1.4 3.5" → 2 4" → 2.5 6" → 5.5

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Well Inspection, Purging, and Field Measurement Form

Contract Number: _____ Task Order: 01 Installation: JBLM Site Name: FLAO

Well Data

Well ID: 413I-MW05 Measuring Point (MP): (Top of Casing), Rim Monument, Other: _____

Total Well Depth (ft below MP): 26.84 Pooled Water in Well Head: Y: ✓ N: __ Well Casing Volume (liters/ft): 0.6

Depth to Water (ft below MP): 22.54 Inner Casing Straight and Clear:: Y: ✓ N: __ Well Volume (liters): 2.58

Length of Water Column in well (ft): 4.3 Well Head Locked: Y: ✓ N: __ 3 x Well Volume (liters): 7.74

Diameter of well casing (inches): 2 " Exterior Seal Good Y: ✓ N: __ Volume Purged (liters): 7.28

Purge Method: Peristaltic/Submersible/(Bladder)/Other: _____ Remarks: DW/DUP TAKEN 4-27-15

Water Sample Data

Sample ID: AOC150427413IMW05 Type: MS/MSD Date: 4-27-15 Time: 0920 # Containers: 6

QC Sample ID: — Type: — Date: — Time: — # Containers: —

Sampling Personnel: KW, WK Sampling Method: Low flow grab

Remarks (color, odor, etc.): colorless, odorless

Time	Purge Vol. (liters)	Depth to Water (ft btoc)	pH	Spec. Cond. (ms/cm)	Turbidity (NTU)	DO (mg/L)	Temp. (°C)	ORP (mv)	Notes
Stabilization Requirements		(± 0.5)	(± 2.0)	(± 10%)	(± 10% or <20)	(± 10%)	(± 10%)	(± 10)	
	0	22.67	Initial Depth to Water (Pre-pumping)						
0850	START PUMP		FLOW =	280 ml/min					
0852	CONNECT FLOW CELL								
0856	1.68		6.06	0.189	14	10.94	13.49	199	
0901	3.09		6.23	0.168	8	10.68	13.35	198	
0906	4.49		6.34	0.146	10	10.48	13.31	201	
0911	5.88		6.37	0.143	5	10.37	13.31	205	
0916	7.28		6.40	0.138	4	10.29	13.32	208	

Well Volume Calculation

Well volume (liters) = [Well casing volume (liters/ft)] x [Length of water column (ft)]

Well casing diameter (in) → Well casing volume (liters/ft)

1.25" → 0.3 1.5" → 0.4 2" → 0.6 2.5" → 1 3" → 1.4 3.5" → 2 4" → 2.5 6" → 5.5

Meter Model: 422

Revision: Nov. 2014

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Well Inspection, Purging, and Field Measurement Form

Contract Number: _____ Task Order: 01 Installation: JBLM Site Name: FLAO

Well Data

Well ID: A0111-MW04 Measuring Point (MP): (Top of Casing), Rim Monument, Other: _____

Total Well Depth (ft below MP): 22.70 Pooled Water in Well Head: Y: ___ N: ~ Well Casing Volume (liters/ft): 0.6

Depth to Water (ft below MP): 19.72 Inner Casing Straight and Clear:: Y: ~ N: ___ Well Volume (liters): 1.79

Length of Water Column in well (ft): 2.98 Well Head Locked: Y: ~ N: ___ 3 x Well Volume (liters): 5.37

Diameter of well casing (inches): 2" Exterior Seal Good Y: ~ N: ___ Volume Purged (liters): 5.72

Purge Method: (Peristaltic)/Submersible/Bladder/Other: _____ Remarks: DIW/DIB TAKA 4-20-15

Water Sample Data

Sample ID: A0C150428A0111MW04 Type: GNV Date: 4-28-15 Time: 0955 # Containers: 2

QC Sample ID: ~ Type: ~ Date: ~ Time: ~ # Containers: ~

Sampling Personnel: KW, CWK Sampling Method: Low flow grab

Remarks (color, odor, etc.): COLORLESS/ODORLESS

Time	Purge Vol. (liters)	Depth to Water (ft btoc)	pH	Spec. Cond. (ms/cm)	Turbidity (NTU)	DO (mg/L)	Temp. (°C)	ORP (mv)	Notes
	Stabilization Requirements	(± 0.5)	(± 2.0)	(± 10%)	(± 10% or <20)	(± 10%)	(± 10%)	(± 10)	
0928	0	19.91	Initial Depth to Water (Pre-pumping)						
0931	START PUMP		FLOW = 260 ml/min						
0934	CONNECT FLOW CELL								
0938	1.82	19.93	5.73	0.244	36.7	10.40	12.96	209	
0943	3.12	|	5.81	0.213	18	8.67	12.88	216	
0948	4.42	|	5.83	0.193	0	7.84	12.86	221	
0953	5.72	|	5.83	0.193	0	7.55	12.87	224	
			(3X well volume)						

Well Volume Calculation

Well volume (liters) = [Well casing volume (liters/ft)] x [Length of water column (ft)]

Well casing diameter (in) → Well casing volume (liters/ft)

1.25" → 0.3 1.5" → 0.4 2" → 0.6 2.5" → 1 3" → 1.4 3.5" → 2 4" → 2.5 6" → 5.5

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Well Inspection, Purging, and Field Measurement Form

Contract Number: _____ Task Order: 01 Installation: JBLM Site Name: FLAO

Well Data

Well ID: FOIII-MW05 Measuring Point (MP): (Top of Casing), Rim Monument, Other: _____

Total Well Depth (ft below MP): 27.21 Pooled Water in Well Head: Y: ✓ N: ___ Well Casing Volume (liters/ft): 0.6

Depth to Water (ft below MP): 19.28 Inner Casing Straight and Clear:: Y: ✓ N: ___ Well Volume (liters): 4.76

Length of Water Column in well (ft): 7.93 Well Head Locked: Y: ✓ N: ___ 3 x Well Volume (liters): 14.28

Diameter of well casing (inches): 2" Exterior Seal Good Y: ✓ N: ___ Volume Purged (liters): 7.75

Purge Method: (Peristaltic)/Submersible/Bladder/Other: _____ Remarks: DTW/DTB TAKEN 4-20-15

Water Sample Data

Sample ID: AOC150428AOIIIMW05 Type: ENV Date: 4-28-15 Time: 1207 # Containers: 2

QC Sample ID: ~ Type: ~ Date: ~ Time: ~ # Containers: ~

Sampling Personnel: KW, KW Sampling Method: Low flow grab

Remarks (color, odor, etc.): COLORLESS/ODORLESS

Time	Purge Vol. (liters)	Depth to Water (ft btoc)	pH	Spec. Cond. (ms/cm)	Turbidity (NTU)	DO (mg/L)	Temp. (°C)	ORP (mv)	Notes
	Stabilization Requirements	(± 0.5)	(± 2.0)	(± 10%)	(± 10% or <20)	(± 10%)	(± 10%)	(± 10)	
1131	0	19.45	Initial Depth to Water (Pre-pumping)						
1132	START PUMP	FLOW = 250 ml/min							
1136	CONNECT FLOW CELL								
1138	1.50	19.45	5.98	0.150	11	10.62	13.09	253	
1143	2.75	|	5.93	0.150	51	9.97	13.14	252	
1148	4.00	|	5.94	0.151	139	11.37	13.26	249	
1153	5.25	|	5.95	0.152	144	9.31	13.21	243	
1158	6.50	|	5.94	0.152	134	9.27	13.24	242	
1203	7.75	|	5.96	0.152	142	9.17	13.27	241	

Well Volume Calculation

Well volume (liters) = [Well casing volume (liters/ft)] x [Length of water column (ft)]

Well casing diameter (in) → Well casing volume (liters/ft)

1.25" → 0.3 1.5" → 0.4 2" → 0.6 2.5" → 1 3" → 1.4 3.5" → 2 4" → 2.5 6" → 5.5

Meter Model: U22

Revision: Nov. 2014

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Poulsbo, WA 98370

Well Inspection, Purging, and Field Measurement Form

Contract Number: _____ Task Order: 01 Installation: JBLM Site Name: FLAO

Well Data

Well ID: AOIII-MW06 Measuring Point (MP): (Top of Casing), Rim Monument, Other: _____

Total Well Depth (ft below MP): 25.50 Pooled Water in Well Head: Y: __ N: ~~✓~~ Well Casing Volume (liters/ft): 0.6

Depth to Water (ft below MP): 17.47 Inner Casing Straight and Clear:: Y: ✓ N: __ Well Volume (liters): 4.82

Length of Water Column in well (ft): 8.03 Well Head Locked: Y: ✓ N: __ 3 x Well Volume (liters): 14.46

Diameter of well casing (inches): 2" Exterior Seal Good Y: ✓ N: __ Volume Purged (liters): 9.36

Purge Method: (Peristaltic)/Submersible/Bladder/Other: _____ Remarks: DTW/DTD TAKEN 4-21-15

Water Sample Data

Sample ID: AOC150423AOIIIMW06 Type: ENV Date: 4-23-15 Time: 1255 # Containers: 2

QC Sample ID: — Type: — Date: — Time: — # Containers: —

Sampling Personnel: TM, WK Sampling Method: Low flow grab

Remarks (color, odor, etc.): COLORLESS, ODORLESS

Time	Purge Vol. (liters)	Depth to Water (ft btoc)	pH	Spec. Cond. (ms/cm)	Turbidity (NTU)	DO (mg/L)	Temp. (°C)	ORP (mv)	Notes
	Stabilization Requirements	(± 0.5)	(± 2.0)	(± 10%)	(± 10% or <20)	(± 10%)	(± 10%)	(± 10)	
	0		Initial Depth to Water (Pre-pumping)						
1217	START	PUMP	FLOW > 200 mL/MIN						
1219	CONNECT FLOW CELL								
1223	1.56	17.61	6.16	0.135	153	10.11	12.45	202	
1228	2.86		5.97	0.135	110	8.79	12.52	209	
1233	4.16		5.94	0.136	128	8.30	12.46	212	
1238	5.46		5.94	0.136	130	8.06	12.53	213	
1243	6.76		5.96	0.136	61.4	7.87	12.58	213	
1248	8.06		5.95	0.137	61.2	7.79	12.55	215	
1253	9.36		5.96	0.138	62.8	7.78	12.55	216	

Well Volume Calculation

Well volume (liters) = [Well casing volume (liters/ft)] x [Length of water column (ft)]

Well casing diameter (in) → Well casing volume (liters/ft)

1.25" → 0.3 1.5" → 0.4 2" → 0.6 2.5" → 1 3" → 1.4 3.5" → 2 4" → 2.5 6" → 5.5

Meter Model: U22 Page 1 of 1 Revision: Nov. 2014

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Well Inspection, Purging, and Field Measurement Form

Contract Number: _____ Task Order: 01 Installation: JBLM Site Name: FLAO

Well Data

Well ID: AOIII-MW07 Measuring Point (MP): (Top of Casing), Rim Monument, Other: _____

Total Well Depth (ft below MP): ~~22.79~~ 28.77 MZ 4-27-15 Pooled Water in Well Head: Y: ___ N: X Well Casing Volume (liters/ft): 0.6

Depth to Water (ft below MP): 20.25 Inner Casing Straight and Clear:: Y: X N: ___ Well Volume (liters): 5.11

Length of Water Column in well (ft): 8.52 Well Head Locked: Y: X N: ___ 3 x Well Volume (liters): 15.33

Diameter of well casing (inches): 2" Exterior Seal Good Y: X N: ___ Volume Purged (liters): 10.50

Purge Method: (Peristaltic/Submersible/Bladder/Other): _____ Remarks: DTW/DTB MKW 4-20-15

Water Sample Data

Sample ID: ADC150427AOIIIMW07 Type: ENV Date: 4-27-15 Time: 1515 # Containers: 2

QC Sample ID: — Type: — Date: — Time: — # Containers: —

Sampling Personnel: KW, WK Sampling Method: Low flow grab

Remarks (color, odor, etc.): COLORLESS (SLIGHTLY TURBID) / ODORLESS

Time	Purge Vol. (liters)	Depth to Water (ft btoc)	pH	Spec. Cond. (ms/cm)	Turbidity (NTU)	DO (mg/L)	Temp. (°C)	ORP (mv)	Notes
	Stabilization Requirements	(± 0.5)	(± 2.0)	(± 10%)	(± 10% or <20)	(± 10%)	(± 10%)	(± 10)	
1428	0	20.38	Initial Depth to Water (Pre-pumping)						
1433	START PUMP		FLOW =	250 ml/min					
1436	CONNECT FLOW CELL								
1445	4.25	20.40	6.01	0.234	276	12.86	13.75	204	
1450	5.50		5.99	0.234	234	10.80	13.72	210	
1455	6.75		5.98	0.235	207	9.83	13.74	214	
1500	8.00		5.97	0.234	191	9.14	13.67	216	
1505	9.25		5.97	0.234	182	8.62	13.68	218	
1510	10.50		5.98	0.234	177	8.44	13.71	218	

Well Volume Calculation

Well volume (liters) = [Well casing volume (liters/ft)] x [Length of water column (ft)]

Well casing diameter (in) → Well casing volume (liters/ft)

1.25" → 0.3 1.5" → 0.4 2" → 0.6 2.5" → 1 3" → 1.4 3.5" → 2 4" → 2.5 6" → 5.5

Meter Model: U22

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Well Inspection, Purging, and Field Measurement Form

Contract Number: _____ Task Order: 01 Installation: JBLM Site Name: FLAO

Well Data

Well ID: AOIII-MW08 Measuring Point (MP): (Top of Casing), Rim Monument, Other: _____

Total Well Depth (ft below MP): 22.91 Pooled Water in Well Head: Y: K N: ___ Well Casing Volume (liters/ft): 0.6

Depth to Water (ft below MP): 19.94 Inner Casing Straight and Clear:: Y: K N: ___ Well Volume (liters): 1.78

Length of Water Column in well (ft): 2.97 Well Head Locked: Y: K N: ___ 3 x Well Volume (liters): 5.34

Diameter of well casing (inches): 2" Exterior Seal Good Y: K N: ___ Volume Purged (liters): 6.2

Purge Method: Peristaltic/Submersible/Bladder/Other: _____ Remarks: DTW/DTB TAKEN 4-20-15

Water Sample Data

Sample ID: A0515042 8AOIIIMW08 Type: ENV Date: 4-28-15 Time: 1055 # Containers: 2

QC Sample ID: ~ Type: ~ Date: — Time: — # Containers: —

Sampling Personnel: KW, WK Sampling Method: Low flow grab

Remarks (color, odor, etc.): COLORLESS/ODORLESS

Time	Purge Vol. (liters)	Depth to Water (ft btoc)	pH	Spec. Cond. (ms/cm)	Turbidity (NTU)	DO (mg/L)	Temp. (°C)	ORP (mv)	Notes
	Stabilization Requirements	(± 0.5)	(± 2.0)	(± 10%)	(± 10% or <20)	(± 10%)	(± 10%)	(± 10)	
1017	0	21.10	Initial Depth to Water (Pre-pumping)						
1019	START	PUMP FLOW = 200	ml/min						
1022	CONNECT FLOW CELL								
1025	1.2	21.11	5.88	0.217	5	10.09	13.75	231	
1030	2.2	|	5.87	0.215	0	8.25	13.65	231	
1035	3.2	|	5.87	0.211	5	7.44	13.61	226	
1040	4.2	|	5.85	0.206	12	7.04	13.59	223	
1045	5.2	|	5.86	0.200	20	6.70	13.54	224	
1050	6.2	—	5.84	0.193	18	6.60	13.53	231	

Well Volume Calculation

Well volume (liters) = [Well casing volume (liters/ft)] x [Length of water column (ft)]

Well casing diameter (in) → Well casing volume (liters/ft)

1.25" → 0.3 1.5" → 0.4 2" → 0.6 2.5" → 1 3" → 1.4 3.5" → 2 4" → 2.5 6" → 5.5

Meter Model: U22

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Well Inspection, Purging, and Field Measurement Form

Contract Number: _____ Task Order: 01 Installation: JBLM Site Name: FLAO

Well Data

Well ID: 95-A17-2 Measuring Point (MP): (Top of Casing), Rim Monument, Other: _____

Total Well Depth (ft below MP): 37.49 Pooled Water in Well Head: Y: ___ N: X Well Casing Volume (liters/ft): 0.6

Depth to Water (ft below MP): 24.56 Inner Casing Straight and Clear:: Y: X N: ___ Well Volume (liters): 7.76

Length of Water Column in well (ft): 12.93 Well Head Locked: Y: X N: ___ 3 x Well Volume (liters): 23.28

Diameter of well casing (inches): 2" Exterior Seal Good Y: X N: ___ Volume Purged (liters): 7.2

Purge Method: Peristaltic/Submersible/Bladder/Other: _____ Remarks: DTW/DTB TAKEN 4-21-15

Water Sample Data

Sample ID: AOC150422-95A172 Type: FN Date: 4-22-15 Time: 0910 # Containers: 6

QC Sample ID: — Type: — Date: — Time: — # Containers: —

Sampling Personnel: JM, WK Sampling Method: Low flow grab

Remarks (color, odor, etc.): COLORLESS/ODORLESS

Time	Purge Vol. (liters)	Depth to Water (ft btoc)	pH	Spec. Cond. (ms/cm)	Turbidity (NTU)	DO (mg/L)	Temp. (°C)	ORP (mv)	Notes
	Stabilization Requirements	(± 0.5)	(± 2.0)	(± 10%)	(± 10% or <20)	(± 10%)	(± 10%)	(± 10)	
	0		Initial Depth to Water (Pre-pumping)						
8:40	START PUMP		FLOW =	240 ml/min					
8:42	CONDUCT FLOW		CELL						
8:46	1.4	24.68	5.92	0.185	37	9.7	14.6	196	
8:51	2.6		6.10	0.192	36.8	9.1	14.7	197	
8:56	3.8		6.20	0.194	35.3	8.58	14.67	201	
9:01	5.0		6.24	0.192	33.0	8.40	14.69	204	
9:06	7.2		6.26	0.191	33.3	8.30	14.71	206	
9:11	8.4								

Well Volume Calculation

Well volume (liters) = [Well casing volume (liters/ft)] x [Length of water column (ft)]

Well casing diameter (in) → Well casing volume (liters/ft)

1.25" → 0.3 1.5" → 0.4 2" → 0.6 2.5" → 1 3" → 1.4 3.5" → 2 4" → 2.5 6" → 5.5

Meter Model: U22

Revision: Nov. 2014

* CASING DAMAGED. SUBMERSIBLE NOT FEASIBLE

SEALASKA ENVIRONMENTAL

Sealaska Environmental Services

Marine Science Center, P.O. Box 869
18743 Front Street, NE, Suite 201
Poulsbo, WA 98370

Well Inspection, Purging, and Field Measurement Form

Contract Number: _____ Task Order: 01 Installation: JBLM Site Name: FLAO

Well Data

Well ID: 95-A17-3A Measuring Point (MP): (Top of Casing), Rim Monument, Other: _____

Total Well Depth (ft below MP): 32.32 Pooled Water in Well Head: Y: X N: _____ Well Casing Volume (liters/ft): 0.6

Depth to Water (ft below MP): 24.96 Inner Casing Straight and Clear:: Y: X N: _____ Well Volume (liters): 4.36

Length of Water Column in well (ft): 7.26 Well Head Locked: Y: K N: _____ 3 x Well Volume (liters): 13.08

Diameter of well casing (inches): 2" Exterior Seal Good Y: K N: _____ Volume Purged (liters): 11.75

Purge Method: Peristaltic/Submersible/(Bladder)/Other: _____ Remarks: DTW TAKEN 4-21-15

Water Sample Data

Sample ID: AOC150422951A173A Type: ENV Date: 4-22-15 Time: _____ # Containers: 6

QC Sample ID: — Type: — Date: — Time: — # Containers: —

Sampling Personnel: TM, WIL Sampling Method: Low flow grab

Remarks (color, odor, etc.): COLORLESS / LIGHT PETROLEUM

Time	Purge Vol. (liters)	Depth to Water (ft btoc)	pH	Spec. Cond. (ms/cm)	Turbidity (NTU)	DO (mg/L)	Temp. (°C)	ORP (mv)	Notes
Stabilization Requirements		(± 0.5)	(± 2.0)	(± 10%)	(± 10% or <20)	(± 10%)	(± 10%)	(± 10)	
	0		Initial Depth to Water (Pre-pumping)						
1323		STARTED	PUMP	FLOW =	390 ML/MIN				
1328	2	CONNED	FLOW CELL						
1331	3.95		6.4	0.313	61	8.7	14.5	-2	
1336	5.9		6.4	0.318	65	6.7	14.5	0	
1341	7.85		6.5	0.325	40.8	5.7	14.5	-6	
1346	9.8		6.5	0.329	39.6	5.26	14.5	-2	
1351	11.75		6.5	0.329	38.4	5.20	14.5	0	

Well Volume Calculation

Well volume (liters) = [Well casing volume (liters/ft)] x [Length of water column (ft)]

Well casing diameter (in) → Well casing volume (liters/ft)

1.25" → 0.3 1.5" → 0.4 2" → 0.6 2.5" → 1 3" → 1.4 3.5" → 2 4" → 2.5 6" → 5.5

Meter Model: U22

Revision: Nov. 2014

SEALASKA ENVIRONMENTAL

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Marine Science Center, P.O. Box 869
18743 Front Street, NE, Suite 201
Poulsbo, WA 98370

Well Inspection, Purging, and Field Measurement Form

Contract Number: _____ Task Order: 01 Installation: JBLM Site Name: FLAO

Well Data

Well ID: 95-A17-4 Measuring Point (MP): (Top of Casing), Rim Monument, Other: _____

Total Well Depth (ft below MP): 30.12 Pooled Water in Well Head: Y: ___ N: A Well Casing Volume (liters/ft): 0.6

Depth to Water (ft below MP): 24.76 (4-21-15) Inner Casing Straight and Clear:: Y: K N: ___ Well Volume (liters): 3.22

Length of Water Column in well (ft): 5.36 Well Head Locked: Y: A N: ___ 3 x Well Volume (liters): 9.66

Diameter of well casing (inches): 2" Exterior Seal Good Y: K N: ___ Volume Purged (liters): 13.5

Purge Method: Peristaltic/Submersible/(Bladder)/Other: _____ Remarks: DTW TAKEN 4-21-15

Water Sample Data

Sample ID: AOC15042295A174 Type: ENV Date: 4-22-15 Time: 1300 # Containers: 6

QC Sample ID: — Type: — Date: — Time: — # Containers: _____

Sampling Personnel: TM, WK Sampling Method: Low flow grab

Remarks (color, odor, etc.): VERY TURBID AT BEGINNING.

Time	Purge Vol. (liters)	Depth to Water (ft btoc)	pH	Spec. Cond. (ms/cm)	Turbidity (NTU)	DO (mg/L)	Temp. (°C)	ORP (mv)	Notes
	Stabilization Requirements	(± 0.5)	(± 2.0)	(± 10%)	(± 10% or <20)	(± 10%)	(± 10%)	(± 10)	
	0		Initial Depth to Water (Pre-pumping)						
12:12		START PUMP FLOW = 300 ml/min							
12:22	3.0	CONNECT FLOW CELL							
12:27	4.5		6.18	0.179	508	9.9	14.5	199	
12:32	6.0		6.28	0.179	300	9.4	14.4	199	
12:37	7.5		6.28	0.179	215	9.4	14.4	200	
12:42	9.0		6.30	0.179	~~210~~ 166	9.4	14.4	200	
12:47	10.5		6.30	0.179	139	9.4	14.4	203	
12:52	12.0		6.30	0.179	138	9.4	14.4	205	
12:57	13.5		6.31	0.179	135	9.4	14.4	206	

Well Volume Calculation

Well volume (liters) = [Well casing volume (liters/ft)] x [Length of water column (ft)]

Well casing diameter (in) → Well casing volume (liters/ft)

1.25" → 0.3 1.5" → 0.4 2" → 0.6 2.5" → 1 3" → 1.4 3.5" → 2 4" → 2.5 6" → 5.5

Meter Model: U22 Page 1 of 1 Revision: Nov. 2014

SEALASKA ENVIRONMENTAL

Sealaska Environmental Services

Marine Science Center, P.O. Box 869
18743 Front Street, NE, Suite 201
Poulsbo, WA 98370

Well Inspection, Purging, and Field Measurement Form

Contract Number: _____ Task Order: 01 Installation: JBLM Site Name: FLAO

Well Data

Well ID: ~~07-A17-A~~ RB 1/11/16 07-A17-7 Measuring Point (MP): (Top of Casing), Rim Monument, Other: _____

Total Well Depth (ft below MP): 28.24 Pooled Water in Well Head: Y: __ N: X Well Casing Volume (liters/ft): 0.6

Depth to Water (ft below MP): 23.66 Inner Casing Straight and Clear:: Y: X N: __ Well Volume (liters): 2.75

Length of Water Column in well (ft): 4.58 Well Head Locked: Y: X N: __ 3 x Well Volume (liters): 8.25

Diameter of well casing (inches): 2" Exterior Seal Good Y: X N: __ Volume Purged (liters): 6.5

Purge Method: Peristaltic/Submersible/(Bladder)/Other: _____ Remarks: DTB TAGGED 4-24-15

Water Sample Data

Sample ID: AOC1504220TA177 Type: MS/MSD Date: 4-22-15 Time: 1140 # Containers: 18 4-22-15

QC Sample ID: — Type: — Date: — Time: — # Containers: —

Sampling Personnel: TM, WL Sampling Method: Low flow grab

Remarks (color, odor, etc.): COLORLESS / MODERATE PETROLEUM SHEEN

Time	Purge Vol. (liters)	Depth to Water (ft btoc)	pH	Spec. Cond. (ms/cm)	Turbidity (NTU)	DO (mg/L)	Temp. (°C)	ORP (mv)	Notes
	Stabilization Requirements	(± 0.5)	(± 2.0)	(± 10%)	(± 10% or <20)	(± 10%)	(± 10%)	(± 10)	
1105	0	23.66	Initial Depth to Water (Pre-pumping)						
1111	START PUMP	FLOW =	300 ml/min						
11 15	CONNECT FLOW	CELL							
11 20	1.5		6.09	0.144	173	8.3	12.9	5	
11 25	3.0		6.15	0.137	103	6.11	12.9	5	
11 30	4.5		6.17	0.135	70	5.3	12.9	22	
11 35	5.0		6.17	0.133	69.7	4.9	12.8	22	
11 40	6.5		6.17	0.130	70.0	4.9	12.8	28	

Well Volume Calculation

Well volume (liters) = [Well casing volume (liters/ft)] x [Length of water column (ft)]

Well casing diameter (in) → Well casing volume (liters/ft)

1.25" → 0.3 1.5" → 0.4 2" → 0.6 2.5" → 1 3" → 1.4 3.5" → 2 4" → 2.5 6" → 5.5

Meter Model: U22

Revision: Nov. 2014

SEALASKA ENVIRONMENTAL

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Poulsbo, WA 98370

Well Inspection, Purging, and Field Measurement Form

Contract Number: _____ Task Order: 01 Installation: JBLM Site Name: FLAO

Well Data

Well ID: 10-A17-8 Measuring Point (MP): (Top of Casing), Rim Monument, Other: _____

Total Well Depth (ft below MP): 37.70 Pooled Water in Well Head: Y: ___ N: X Well Casing Volume (liters/ft): 0.6

Depth to Water (ft below MP): 24.72 Inner Casing Straight and Clear:: Y: X N: ___ Well Volume (liters): 7.79

Length of Water Column in well (ft): 12.98 Well Head Locked: Y: X N: ___ 3 x Well Volume (liters): 23.37

Diameter of well casing (inches): 2" Exterior Seal Good Y: X N: ___ Volume Purged (liters): 10

Purge Method: Peristaltic/(Submersible)/Bladder/Other: _____ Remarks: DTW/DTB TAKEN 4-21-15

Water Sample Data

Sample ID: AOC150422210A178 Type: ENV Date: 4-22-15 Time: 1355 # Containers: 6

QC Sample ID: AOC150422210A1718 Type: DUP Date: 4-22-15 Time: 1405 # Containers: 6

Sampling Personnel: JM, WK Sampling Method: Low flow grab

Remarks (color, odor, etc.): LOTS OF BLACK PARTICULATE. MODERATE PETROLEUM SMELL.

Time	Purge Vol. (liters)	Depth to Water (ft btoc)	pH	Spec. Cond. (ms/cm)	Turbidity (NTU)	DO (mg/L)	Temp. (°C)	ORP (mv)	Notes
Stabilization Requirements		(± 0.5)	(± 2.0)	(± 10%)	(± 10% or <20)	(± 10%)	(± 10%)	(± 10)	
	0		Initial Depth to Water (Pre-pumping)						
14:20	START	PUMP	FLOW =	400 ml/min					
14:25	CONNECT	FLOW CELL							
14:30	2	24.85	6.5	0.294	51.9	6.72	16.5	1	
14:35	4	24.85	6.44	0.297	30.4	5.47	16.9	-4	
14:40	6		6.42	0.296	28.0	4.78	17.2	-8	
14:45	8		6.43	0.295	26.2	4.58	17.3	-10	
14:50	10		6.43	0.297	26.4	4.53	17.3	-11	

Well Volume Calculation

Well volume (liters) = [Well casing volume (liters/ft)] x [Length of water column (ft)]

Well casing diameter (in) → Well casing volume (liters/ft)

1.25" → 0.3 1.5" → 0.4 2" → 0.6 2.5" → 1 3" → 1.4 3.5" → 2 4" → 2.5 6" → 5.5

Meter Model: U22

Revision: Nov. 2014

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Marine Science Center, P.O. Box 869
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Poulsbo, WA 98370

Well Inspection, Purging, and Field Measurement Form

Contract Number: _____ Task Order: 01 Installation: JBLM Site Name: FLAO

Well Data

Well ID: AOC 10-8-BOS Measuring Point (MP): (Top of Casing), Rim Monument, Other: _____

Total Well Depth (ft below MP): 46.24 Pooled Water in Well Head: Y: __ N: X Well Casing Volume (liters/ft): 0.6

Depth to Water (ft below MP): 35.54 Inner Casing Straight and Clear:: Y: X N: __ Well Volume (liters): 6.42

Length of Water Column in well (ft): 10.7 Well Head Locked: Y: X N: __ 3 x Well Volume (liters): 19.26

Diameter of well casing (inches): 2" Exterior Seal Good Y: X N: __ Volume Purged (liters): 20

Purge Method: Peristaltic/Submersible/Bladder/Other: BAILER Remarks: DTW/DTB TAKEN 4-21-15

Water Sample Data

Sample ID: AOC150423AOC10BOS Type: ENV Date: 4-23-15 Time: 1030 # Containers: 2

QC Sample ID: — Type: — Date: — Time: — # Containers: —

Sampling Personnel: TM, WK Sampling Method: Low flow grab

Remarks (color, odor, etc.): SHEEN OBSERVED / MILD ODOR

Time	Purge Vol. (liters)	Depth to Water (ft btoc)	pH	Spec. Cond. (ms/cm)	Turbidity (NTU)	DO (mg/L)	Temp. (°C)	ORP (mv)	Notes
	Stabilization Requirements	(± 0.5)	(± 2.0)	(± 10%)	(± 10% or <20)	(± 10%)	(± 10%)	(± 10)	
	0		Initial Depth to Water (Pre-pumping)						
		BAILER = 3x CASING VOLUME							

Well Volume Calculation

Well volume (liters) = [Well casing volume (liters/ft)] x [Length of water column (ft)]

Well casing diameter (in) → Well casing volume (liters/ft)

1.25" → 0.3 1.5" → 0.4 2" → 0.6 2.5" → 1 3" → 1.4 3.5" → 2 4" → 2.5 6" → 5.5

Meter Model: _____ Page _____ of _____ Revision: Nov. 2014

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Sealaska Environmental Services

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Poulsbo, WA 98370

Well Inspection, Purging, and Field Measurement Form

Contract Number: _____ Task Order: 01 Installation: JBLM Site Name: FLAO

Well Data

Well ID: JP-MW02 Measuring Point (MP): (Top of Casing), Rim Monument, Other: _____

Total Well Depth (ft below MP): 49.80 Pooled Water in Well Head: Y: ___ N: X Well Casing Volume (liters/ft): 2.5

Depth to Water (ft below MP): 36.48 Inner Casing Straight and Clear:: Y: X N: ___ Well Volume (liters): 33.3

Length of Water Column in well (ft): 13.32 Well Head Locked: Y: X N: ___ 3 x Well Volume (liters): 99.9

Diameter of well casing (inches): 4" Exterior Seal Good Y: X N: ___ Volume Purged (liters): 9.66

Purge Method: Peristaltic/(Submersible)/Bladder/Other: _____ Remarks: DTW/DTB TAKEN 4-21-15

Water Sample Data

Sample ID: AOC150423JPMW02 Type: ENV Date: 4-23-15 Time: 1115 # Containers: 2

QC Sample ID: — Type: — Date: — Time: — # Containers: —

Sampling Personnel: TM, WK Sampling Method: Low flow grab

Remarks (color, odor, etc.): COLORLESS/ODORLESS

Time	Purge Vol. (liters)	Depth to Water (ft btoc)	pH	Spec. Cond. (ms/cm)	Turbidity (NTU)	DO (mg/L)	Temp. (°C)	ORP (mv)	Notes
Stabilization Requirements		(± 0.5)	(± 2.0)	(± 10%)	(± 10% or <20)	(± 10%)	(± 10%)	(± 10)	
	0	36.58	Initial Depth to Water (Pre-pumping)						
1050	START PUMP FLOW = 460 mL/min								
1052	CONNECT FLOW CELL								
1056	2.76	36.58	6.52	0.140	0.0	9.53	14.63	94	
1101	5.06		6.48	0.135	0.0	9.02	15.28	89	
1106	7.36		6.54	0.136	0.0	9.00	15.44	88	
1111	9.66		6.60	0.139	0.0	8.89	15.50	91	

Well Volume Calculation

Well volume (liters) = [Well casing volume (liters/ft)] x [Length of water column (ft)]

Well casing diameter (in) → Well casing volume (liters/ft)

1.25" → 0.3 1.5" → 0.4 2" → 0.6 2.5" → 1 3" → 1.4 3.5" → 2 4" → 2.5 6" → 5.5

Meter Model: U22

Revision: Nov. 2014

SEALASKA ENVIRONMENTAL

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Marine Science Center, P.O. Box 869
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Poulsbo, WA 98370

FLAO Fall 2015
Sampling Matrix Form

Well ID	DTW	Previous DTW (Spring)	DTB	Previous DTB (Spring)	Date	Time	PID	Sample ID	Date	Time	TPH-D/ TPH-O NWTPH-Dx 1 L Amber w/HCl	TPH-G NWTPH-Gx 40 mL VOA w/HCl	BTEX 8260C 40 mL VOA w/HCl	Purge Volume (L)
AOC 8-2														
4131-MW01	27.26	24.59	37.14	37.00	8-31-15	1530	-	-	-	-	-	-	-	-
4131-MW02	26.11	23.41	27.40	27.11		1507	-	AOC150903 4131MW02	9-3-15	1055	2	-	-	
4131-MW02	-	-	-	-		-	-	AOC150903 4131MW12	9-3-15	1105	2	-	-	-
4131-MW03	27.98	24.8	29.72	29.8		1525	-	AOC150903 4131MW03	9-3-15	0955	2	-	-	
4131-MW04	25.75	23.06	28.34	27.50		1510	-	AOCYYMMDD 4131MW04	9-3-15	1315	6	-	-	
4131-MW05	25.21	22.54	27.67	26.84		1515	-	AOC150903 4131MW05	9-3-15	1200	2	-	-	
4131-MW06	26.51	24.47	32.85	32.41		1520	-	-	-	-	-	-	-	-
AOC 8-4														
A0111-MW04	22.26	19.72	22.7	22.7	8-31-15	1330	-	~~AOC A0111MW04~~	DRY	WELL	2	-	-	
A0111-MW05	21.51	19.28	27.20	27.21		1440	-	-	-	-	-	-	-	
A0111-MW06	19.62	17.47	25.49	25.5		1058	-	AOC150831 A0111MW06	8-31-15	1205	2	-	-	
A0111-MW07	22.88	20.25	28.90	28.72		1233	-	AOC150831 A0111MW07	8-31-15	1303	2	-	-	
A0111-MW08	22.19	19.94	22.95	22.91		1401	-	AOC150901 A0111MW08	9-1-15	1155	2	-	-	
AOC 9-2														
95-A17-1	29.43	25.37	41.60	41.55	9-1-15	1309	0	-	-	-	-	-	-	-
95-A17-2	28.38	24.56	37.48	37.49		1323	0	AOC150901 95A172	9-1-15	1540	-	3	3	
95-A17-3A	28.96	24.96	32.21	32.22 (top of pump)		1318	0	AOCYYMMDD 95A173A	9-2-15	0950	-	9	9	
95-A17-4	28.82	24.76	30.17	30.12 (top of pump)		1257	0	-	-	-	-	-	-	
96-A17-5	27.51	23.57	45.39	45.29		1250	0	-	-	-	-	-	-	-
96-A17-6	28.50	22.48	42.81	42.81		1255	0	-	-	-	-	-	-	-
07-A17-7	27.46	23.6	28.66	28.29 (top of pump)		1242	0	AOC150902 07A177	9-2-15	1100	-	3	3	
10-A17-8	28.39	24.72	37.71	37.70		1301	0	AOC150901 10A178	9-1-15	1420	-	3	3	
10-A17-8	-	-	-	-	-	-	-	AOC150901 10A1718	9-1-15	1430	-	3	3	
TRIP BLANK	NA	NA	NA	NA	NA	NA	NA	TB-150901	9-1-15	0815	-	2	2	NA
AOC 10-8														
AOC 10-8-B05	42.91	40.65	46.21	46.24	8-31-15	1547	-	AOC150901 AOC108B05	9-1-15	0925	2	-	-	
JP-MW01	43.22	40.48	51.00	51.02		1550	-	-	-	-	-	-	-	-
JP-MW02	40.61	39.29	49.80	49.8		1615	-	AOC150901 JPMW02	9-1-15	1040	2	-	-	
JP-MW03	42.17	39.65	51.14	52.32		1558	-	-	-	-	-	-	-	-
Total											26	23	23	

Laboratory: ALS **PO#:** ~~PO-0120140~~ AU **Turnaround Time (TAT):** Standard

Duplicate MSMSD

DTW = Depth to water
DTB = Depth to bottom

Bottle Order:

31 1 L amber w/HCl
55 40 mL VOA w/HCl
8 Trip blanks
Bubble wrap
4 Coolers
Gel packs

Note: Put correct PO# on COCs

SEALASKA ENVIRONMENTAL

Sealaska Environmental Services

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Poulsbo, WA 98370

Well Inspection, Purging, and Field Measurement Form

Contract Number: _____ Task Order: 01 Installation: JBLM Site Name: FLAO Sites

Well Data

Well ID: 4131-MW02 Measuring Point (MP): (Top of Casing), Rim Monument, Other: _____

Total Well Depth (ft below MP): 33 (CONSTRUCTION DETAILS) Pooled Water in Well Head: Y: ___ N: ✓ Well Casing Volume (liters/ft): 0.6

Depth to Water (ft below MP): 26.15 Inner Casing Straight and Clear:: Y: ✓ N: ___ Well Volume (liters): 4.05

Length of Water Column in well (ft): 6.75 Well Head Locked: Y: ✓ N: ___ 3 x Well Volume (liters): 12.15

Diameter of well casing (inches): 2" Exterior Seal Good Y: ✓ N: ___ Volume Purged (liters): 7.4

Purge Method: Peristaltic/Submersible/Bladder/Other: _____ Remarks: _____

Water Sample Data

Sample ID: AOC150903413IMW02 Type: ENV Date: 9-3-15 Time: 1055 # Containers: 2

QC Sample ID: AOC150903413IMW02 Type: DUP Date: 9-3-15 Time: 1105 # Containers: 2

Sampling Personnel: TM, WK Sampling Method: Low flow grab

Remarks (color, odor, etc.): LIGHT RED PARTICULATE

Time	Purge Vol. (liters)	Depth to Water (ft btoc)	pH	Spec. Cond. (ms/cm)	Turbidity (NTU)	DO (mg/L)	Temp. (°C)	ORP (mv)	Notes
	Stabilization Requirements	(± 0.5)	(± 2.0)	(± 10%)	(± 10% or <20)	(± 10%)	(± 10%)	(± 10)	
1011	0	26.15	Initial Depth to Water (Pre-pumping)						
1013	START	PUMP	FLOW	= 200	ml/min				
1015	CONNECT	TO	FLOW CELL						
1020	1.4		5.97	0.238	75	0.86	14.20	93	
1025	2.4		5.83	0.232	47.3	0.36	14.0	88	
1030	3.4		5.80	0.230	35.0	0.24	13.88	91	
1035	4.4		5.75	0.232	26.5	0.1	13.83	91	
1040	5.4		5.75	0.235	19.0	0.0	13.81	89	
1045	6.4		5.75	0.237	17.3	0.0	13.90	84	
1050	7.4		5.77	0.239	15.3	0.0	14.00	80	

Well Volume Calculation

Well volume (liters) = [Well casing volume (liters/ft)] x [Length of water column (ft)]

Well casing diameter (in) → Well casing volume (liters/ft)

1.25" → 0.3 1.5" → 0.4 2" → 0.6 2.5" → 1 3" → 1.4 3.5" → 2 4" → 2.5 6" → 5.5

Meter Model: U52 Page 1 of ___ Revision: Nov. 2014

* DTW MEASURED FOR SAMPLING PURPOSES ONLY ON THIS FORM. DTW FOR ENTIRE SITE MEASURED 8-31-15

SEALASKA ENVIRONMENTAL

Sealaska Environmental Services

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18743 Front Street, NE, Suite 201
Poulsbo, WA 98370

Well Inspection, Purging, and Field Measurement Form

Contract Number: _____ Task Order: 01 Installation: JBLM Site Name: FLAO Sites

Well Data

Well ID: 4131-MW03 Measuring Point (MP): (Top of Casing), Rim Monument, Other: _____

Total Well Depth (ft below MP): 34 (CONSTRUCTION DETAILS) Pooled Water in Well Head: Y: X N: _____ Well Casing Volume (liters/ft): 0.6

Depth to Water (ft below MP): 28.11 Inner Casing Straight and Clear:: Y: X N: _____ Well Volume (liters): 3.53

Length of Water Column in well (ft): 5.89 Well Head Locked: Y: X N: _____ 3 x Well Volume (liters): 10.6

Diameter of well casing (inches): 2" Exterior Seal Good Y: X N: _____ Volume Purged (liters): 12.0

Purge Method: Peristaltic/Submersible/(Bladder)/Other: _____ Remarks: _____

Water Sample Data

Sample ID: AOC150903 4131MW03 Type: ENV Date: 9-3-15 Time: 0955 # Containers: 2

QC Sample ID: — Type: — Date: — Time: — # Containers: —

Sampling Personnel: TM, WK Sampling Method: Low flow grab

Remarks (color, odor, etc.): HEAVY RED PARTICULATE, LIGHT PETROLEUM ODOR

Time	Purge Vol. (liters)	Depth to Water (ft btoc)	pH	Spec. Cond. (ms/cm)	Turbidity (NTU)	DO (mg/L)	Temp. (°C)	ORP (mv)	Notes
	Stabilization Requirements	(± 0.5)	(± 2.0)	(± 10%)	(± 10% or <20)	(± 10%)	(± 10%)	(± 10)	
0910	0	28.11	Initial Depth to Water (Pre-pumping)						
0918	START	PUMP	FLOW =	240	ml/min				
0924	CONNECT	FLOW	CELL						
0928	2.4		6.09	0.269	>1000	0.43	13.55	8	
0933	4.8		6.28	0.258	430	0.0	13.50	-11	
0938	7.2		6.32	0.246	260	0.0	13.35	-18	
0943	9.6		6.31	0.245	170	0.0	13.31	-24	
0948	12.0		6.30	0.244	83	0.0	13.23	-25	

Well Volume Calculation

Well volume (liters) = [Well casing volume (liters/ft)] x [Length of water column (ft)]

Well casing diameter (in) → Well casing volume (liters/ft)

1.25" → 0.3 1.5" → 0.4 2" → 0.6 2.5" → 1 3" → 1.4 3.5" → 2 4" → 2.5 6" → 5.5

Meter Model: U52 Page 1 of _____ Revision: Nov. 2014

* DTW ON FIELD FORM FOR SAMPLING PURPOSES ONLY. DTW TAKEN FOR ENTIRE SITE 08-31-15

SEALASKA ENVIRONMENTAL

Sealaska Environmental Services
Marine Science Center, P.O. Box 869
18743 Front Street, NE, Suite 201
Poulsbo, WA 98370

Well Inspection, Purging, and Field Measurement Form

Contract Number: _____ Task Order: 01 Installation: JBLM Site Name: FLAO Sites

Well Data

Well ID: 4131-MW04 Measuring Point (MP): (Top of Casing), Rim Monument, Other: _____

Total Well Depth (ft below MP): 34 (CONSTRUCTION DETAILS) Pooled Water in Well Head: Y: ___ N: X Well Casing Volume (liters/ft): 0.6

Depth to Water (ft below MP): 25.81 Inner Casing Straight and Clear:: Y: X N: ___ Well Volume (liters): 4.91

Length of Water Column in well (ft): 8.19 Well Head Locked: Y: X N: ___ 3 x Well Volume (liters): 14.73

Diameter of well casing (inches): 2" Exterior Seal Good Y: X N: ___ Volume Purged (liters): 7.53

Purge Method: Peristaltic/Submersible/(Bladder)/Other: _____ Remarks: _____

Water Sample Data

Sample ID: AOC150903413IMW04 Type: MS/MSD Date: 9-3-15 Time: 1315 # Containers: 6

QC Sample ID: ~ Type: ~ Date: ~ Time: ~ # Containers: ~

Sampling Personnel: TM, WK Sampling Method: Low flow grab

Remarks (color, odor, etc.): COLORLESS, ODORLESS

Time	Purge Vol. (liters)	Depth to Water (ft btoc)	pH	Spec. Cond. (ms/cm)	Turbidity (NTU)	DO (mg/L)	Temp. (°C)	ORP (mv)	Notes
	Stabilization Requirements	(± 0.5)	(± 2.0)	(± 10%)	(± 10% or <20)	(± 10%)	(± 10%)	(± 10)	
1245	0	25.81	Initial Depth to Water (Pre-pumping)						
1247	START PUMP		FLOW = 250 ml/min						
1250	CONNECT TO FLOW CELL								
1254	1.96		6.15	0.114	20.0	7.84	14.72	155	
1259	3.36		5.74	0.111	14.2	8.15	14.33	180	
1304	4.73		5.60	0.109	8.5	8.28	14.30	188	
1309	6.13		5.55	0.108	6.5	8.35	14.20	190	
1314	7.53		5.54	0.108	5.3	8.30	14.14	195	

Well Volume Calculation

Well volume (liters) = [Well casing volume (liters/ft)] x [Length of water column (ft)]

Well casing diameter (in) → Well casing volume (liters/ft)

1.25" → 0.3 1.5" → 0.4 (2" → 0.6) 2.5" → 1 3" → 1.4 3.5" → 2 4" → 2.5 6" → 5.5

Meter Model: U52 Page 1 of 1 Revision: Nov. 2014

* DTW MEASURED FOR SAMPLING PURPOSES ONLY

DTW FOR ENTIRE SITE MEASURED 08-31-15 (MANUAL)

SEALASKA ENVIRONMENTAL

Sealaska Environmental Services

Marine Science Center, P.O. Box 869
18743 Front Street, NE, Suite 201
Poulsbo, WA 98370

Well Inspection, Purging, and Field Measurement Form

Contract Number: _____ Task Order: 01 Installation: JBLM Site Name: FLAO Sites

Well Data

Well ID: 4131-MW05 Measuring Point (MP): (Top of Casing), Rim Monument, Other: _____

Total Well Depth (ft below MP): 34 (CONSTRUCTION DETAILS) Pooled Water in Well Head: Y: __ N: ✓ Well Casing Volume (liters/ft): 0.6

Depth to Water (ft below MP): 25.26 Inner Casing Straight and Clear:: Y: ✓ N: __ Well Volume (liters): 5.24

Length of Water Column in well (ft): 8.74 Well Head Locked: Y: ✓ N: __ 3 x Well Volume (liters): 15.72

Diameter of well casing (inches): 2" Exterior Seal Good Y: ✓ N: __ Volume Purged (liters): 4.84

Purge Method: Peristaltic/Submersible/(Bladder)/Other: _____ Remarks: _____

Water Sample Data

Sample ID: AOC150903413IMW05 Type: ENV Date: 9-3-15 Time: 1200 # Containers: 2

QC Sample ID: ~ Type: ~ Date: — Time: — # Containers: —

Sampling Personnel: TM, WK Sampling Method: Low flow grab

Remarks (color, odor, etc.): COLORLESS, ODORLESS

Time	Purge Vol. (liters)	Depth to Water (ft btoc)	pH	Spec. Cond. (ms/cm)	Turbidity (NTU)	DO (mg/L)	Temp. (°C)	ORP (mv)	Notes
	Stabilization Requirements	(± 0.5)	(± 2.0)	(± 10%)	(± 10% or <20)	(± 10%)	(± 10%)	(± 10)	
1126	0	25.26	Initial Depth to Water (Pre-pumping)						
11:27	START	PUMP FLOW =		220 ml/min					
11:30	CONNECT	FLOW CELL							
11:34	1.54		6.29	0.145	0.0	9.5	15.50	131	
11:39	2.64		5.94	0.146	0.0	9.05	15.25	146	
11:44	3.74		5.90	0.149	0.0	9.0	15.00	149	
11:49	4.84		5.95	0.148	0.0	9.0	15.00	150	
~~11:54~~ (*)	~~5.94~~								
11:54	5.94		6.00	0.149	0.0	8.89	14.60	150	

Well Volume Calculation

Well volume (liters) = [Well casing volume (liters/ft)] x [Length of water column (ft)]

Well casing diameter (in) → Well casing volume (liters/ft)

1.25" → 0.3 1.5" → 0.4 2" → 0.6 2.5" → 1 3" → 1.4 3.5" → 2 4" → 2.5 6" → 5.5

Meter Model: US2 Page 1 of _____ Revision: Nov. 2014

* DTW MEASURED FOR SAMPLING PURPOSES ONLY

DTW MEASURED ON ENTIRE SITE 8.31.15 (ON MAY)

SEALASKA ENVIRONMENTAL

Sealaska Environmental Services

Marine Science Center, P.O. Box 869
18743 Front Street, NE, Suite 201
Poulsbo, WA 98370

Well Inspection, Purging, and Field Measurement Form

Contract Number: _____ Task Order: 01 Installation: JBLM Site Name: FLAO Sites

Well Data

Well ID: A0111-MW04 Measuring Point (MP): (Top of Casing), Rim Monument, Other: _____

Total Well Depth (ft below MP): 22.70' Pooled Water in Well Head: Y: ___ N: X Well Casing Volume (liters/ft): _____

Depth to Water (ft below MP): 22.26' Inner Casing Straight and Clear:: Y: X N: ___ Well Volume (liters): _____

Length of Water Column in well (ft): 0.44 Well Head Locked: Y: X N: ___ 3 x Well Volume (liters): _____

Diameter of well casing (inches): 2" Exterior Seal Good Y: X N: ___ Volume Purged (liters): _____

Purge Method: (Peristaltic)/Submersible/Bladder/Other: _____ Remarks: _____

Water Sample Data

Sample ID: — Type: — Date: — Time: — # Containers: —

QC Sample ID: _____ Type: _____ Date: _____ Time: _____ # Containers: _____

Sampling Personnel: — Sampling Method: Low flow grab

Remarks (color, odor, etc.): —

Time	Purge Vol. (liters)	Depth to Water (ft btoc)	pH	Spec. Cond. (ms/cm)	Turbidity (NTU)	DO (mg/L)	Temp. (°C)	ORP (mv)	Notes
	Stabilization Requirements	(± 0.5)	(± 2.0)	(± 10%)	(± 10% or <20)	(± 10%)	(± 10%)	(± 10)	
1330	0	22.26	Initial Depth to Water (Pre-pumping)						
			UNABLE TO SAMPLE, NOT ENOUGH						
			WATER IN WELL. WELL IS DRY						

Well Volume Calculation

Well volume (liters) = [Well casing volume (liters/ft)] x [Length of water column (ft)]

Well casing diameter (in) → Well casing volume (liters/ft)

1.25" → 0.3 1.5" → 0.4 2" → 0.6 2.5" → 1 3" → 1.4 3.5" → 2 4" → 2.5 6" → 5.5

Meter Model: US2 Page 1 of 1 Revision: Nov. 2014

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Poulsbo, WA 98370

Well Inspection, Purging, and Field Measurement Form

Contract Number: _____ Task Order: 01 Installation: JBLM Site Name: FLAO Sites

Well Data

Well ID: AOIII-MW06 Measuring Point (MP): (Top of Casing), Rim Monument, Other: _____

Total Well Depth (ft below MP): 25.50 (25.49) Pooled Water in Well Head: Y: ___ N: X Well Casing Volume (liters/ft): 0.6

Depth to Water (ft below MP): 19.62 Inner Casing Straight and Clear:: Y: X N: ___ Well Volume (liters): 3.528

Length of Water Column in well (ft): 5.88 Well Head Locked: Y: X N: ___ 3 x Well Volume (liters): 10.58

Diameter of well casing (inches): 2" Exterior Seal Good Y: X N: ___ Volume Purged (liters): 7.25

Purge Method: Peristaltic/Submersible/Bladder/Other: _____ Remarks: _____

Water Sample Data

Sample ID: AOC150831AOIIIMW06 Type: ENV Date: 8.31.15 Time: 1205 # Containers: 2

QC Sample ID: — Type: — Date: — Time: — # Containers: —

Sampling Personnel: TM, WK Sampling Method: Low flow grab

Remarks (color, odor, etc.): CLEAR, NO ODOR

Time	Purge Vol. (liters)	Depth to Water (ft btoc)	pH	Spec. Cond. (ms/cm)	Turbidity (NTU)	DO (mg/L)	Temp. (°C)	ORP (mv)	Notes
	Stabilization Requirements	(± 0.5)	(± 2.0)	(± 10%)	(± 10% or <20)	(± 10%)	(± 10%)	(± 10)	
1058	0	19.62	Initial Depth to Water (Pre-pumping)						
1123	BEGIN	PUMPING	290mL/min						
1125	CONNECTED TO FLOW CELL								
1128	1.45	19.62	5.92	0.262	39.4	5.55	14.40	166	
1132	2.9	"	5.94	0.251	16.1	4.63	14.29	171	
1137	4.35	"	5.90	0.249	9.6	4.10	14.18	180	
1142	5.8	"	5.89	0.251	9.0	3.99	14.10	186	
1147	7.25	"	5.88	0.253	8.5	3.80	14.09	190	

Well Volume Calculation

Well volume (liters) = [Well casing volume (liters/ft)] x [Length of water column (ft)]

Well casing diameter (in) → Well casing volume (liters/ft)

1.25" → 0.3 1.5" → 0.4 2" → 0.6 2.5" → 1 3" → 1.4 3.5" → 2 4" → 2.5 6" → 5.5

Meter Model: U52

Revision: Nov. 2014

SEALASKA ENVIRONMENTAL

Sealaska Environmental Services

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Poulsbo, WA 98370

Well Inspection, Purging, and Field Measurement Form

Contract Number: _____ Task Order: 01 Installation: JBLM Site Name: FLAO Sites

Well Data

Well ID: AOIII-MW07 Measuring Point (MP): (Top of Casing,) Rim Monument, Other: _____

Total Well Depth (ft below MP): 28.7 Pooled Water in Well Head: Y: ___ N: X Well Casing Volume (liters/ft): 0.6

Depth to Water (ft below MP): 22.88 Inner Casing Straight and Clear:: Y: X N: ___ Well Volume (liters): 3.492

Length of Water Column in well (ft): 5.82 Well Head Locked: Y: X N: ___ 3 x Well Volume (liters): 10.476

Diameter of well casing (inches): 2" Exterior Seal Good Y: X N: ___ Volume Purged (liters): 7.0

Purge Method: (Peristaltic)/Submersible/Bladder/Other: _____ Remarks: _____

Water Sample Data

Sample ID: AOG150831AOIIIMW07 Type: ENV Date: 8-31-15 Time: 1303 # Containers: 2

QC Sample ID: — Type: — Date: — Time: — # Containers: —

Sampling Personnel: JM.WK Sampling Method: Low flow grab

Remarks (color, odor, etc.): CLEAR, NO ODOR

Time	Purge Vol. (liters)	Depth to Water (ft btoc)	pH	Spec. Cond. (ms/cm)	Turbidity (NTU)	DO (mg/L)	Temp. (°C)	ORP (mv)	Notes
	Stabilization Requirements	(± 0.5)	(± 2.0)	(± 10%)	(± 10% or <20)	(± 10%)	(± 10%)	(± 10)	
1233	0	22.88	Initial Depth to Water (Pre-pumping)						
1242	BEGIN	PURGE	FLOW=	350mL/min					
1244	CONNECT	FLOW CELL							
1247	1.75	22.91	6.22	0.274	24.1	2.50	14.11	176	
1252	3.5	↓	6.12	0.269	19.3	1.75	13.96	181	
1257	5.25	↓	6.11	0.266	17.4	1.66	13.98	184	
1302	7	↓	6.10	0.266	16.1	1.64	13.91	186	

Well Volume Calculation

Well volume (liters) = [Well casing volume (liters/ft)] x [Length of water column (ft)]

Well casing diameter (in) → Well casing volume (liters/ft)

1.25" → 0.3 1.5" → 0.4 2" → 0.6 2.5" → 1 3" → 1.4 3.5" → 2 4" → 2.5 6" → 5.5

Meter Model: U52 Page 1 of 1 Revision: Nov. 2014

SEALASKA ENVIRONMENTAL

Sealaska Environmental Services

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18743 Front Street, NE, Suite 201
Poulsbo, WA 98370

Well Inspection, Purging, and Field Measurement Form

Contract Number: _____ Task Order: 01 Installation: JBLM Site Name: FLAO Sites

Well Data

Well ID: A0111-MW08 (22.91) Measuring Point (MP): (Top of Casing), Rim Monument, Other: _____

Total Well Depth (ft below MP): 22.95 Pooled Water in Well Head: Y: X N: ___ Well Casing Volume (liters/ft): 0.6

Depth to Water (ft below MP): 22.24 Inner Casing Straight and Clear:: Y: X N: ___ Well Volume (liters): 0.402

Length of Water Column in well (ft): 0.67 Well Head Locked: Y: X N: ___ 3 x Well Volume (liters): 1.21

Diameter of well casing (inches): 2" Exterior Seal Good Y: X N: ___ Volume Purged (liters): _____

Purge Method: (Peristaltic)/Submersible/Bladder/Other: _____ Remarks: DTW ON MATRIX FOR CONTROL USE

Water Sample Data

Sample ID: A0C150901A0111MW08 Type: ENV Date: 9-1-15 Time: 11:55 # Containers: 2

QC Sample ID: — Type: — Date: — Time: — # Containers: —

Sampling Personnel: TM. WK Sampling Method: Low flow grab

Remarks (color, odor, etc.): SLIGHTLY TURBID, ODORLESS

Time	Purge Vol. (liters)	Depth to Water (ft btoc)	pH	Spec. Cond. (ms/cm)	Turbidity (NTU)	DO (mg/L)	Temp. (°C)	ORP (mv)	Notes
	Stabilization Requirements	(± 0.5)	(± 2.0)	(± 10%)	(± 10% or <20)	(± 10%)	(± 10%)	(± 10)	
1116	0	22.24	Initial Depth to Water (Pre-pumping)						
1132			BEGIN PUMP		260mL/min				
1134			CONNECT FLOW CELL						
~~1135~~ 1138	1.56		5.89	0.176	42.4	1.10	16.85	196	
1143	3.12		5.86	0.181	34.6	0.22	16.21	195	
1148	4.68		5.84	0.184	36.6	0.10	15.91	194	
1153	6.24		3X	CASING					
~~1158~~	~~7.8~~								

Well Volume Calculation

Well volume (liters) = [Well casing volume (liters/ft)] x [Length of water column (ft)]

Well casing diameter (in) → Well casing volume (liters/ft)

1.25" → 0.3 1.5" → 0.4 2" → 0.6 2.5" → 1 3" → 1.4 3.5" → 2 4" → 2.5 6" → 5.5

Meter Model: _____ Page _____ of _____ Revision: Nov. 2014

* PERISTALTIC DIED BEFORE PUMPING. RETURN 9-1-15 TO SAMPLE (DTW ON 9-1-15 =

SEALASKA ENVIRONMENTAL

Sealaska Environmental Services

Marine Science Center, P.O. Box 869
18743 Front Street, NE, Suite 201
Poulsbo, WA 98370

Well Inspection, Purging, and Field Measurement Form

Contract Number: _____ Task Order: 01 Installation: JBLM Site Name: FLAO Sites

Well Data

Well ID: 95-A17-2 Measuring Point (MP): (Top of Casing), Rim Monument, Other: _____

Total Well Depth (ft below MP): 37.48 Pooled Water in Well Head: Y: __ N: X Well Casing Volume (liters/ft): 0.6

Depth to Water (ft below MP): 28.38 Inner Casing Straight and Clear:: Y: X N: __ Well Volume (liters): 5.46

Length of Water Column in well (ft): 9.1 Well Head Locked: Y: X N: __ 3 x Well Volume (liters): 16.38

Diameter of well casing (inches): 2" Exterior Seal Good Y: X N: __ Volume Purged (liters): _____

Purge Method: (Peristaltic)/Submersible/Bladder/Other: _____ Remarks: _____

Water Sample Data

Sample ID: AOC150901195A172 Type: ENV Date: 9-1-15 Time: 15:40 # Containers: 6

QC Sample ID: ~ Type: ~ Date: ~ Time: ~ # Containers: ~

Sampling Personnel: TM, WK Sampling Method: Low flow grab

Remarks (color, odor, etc.): COLORLESS ODORLESS

Time	Purge Vol. (liters)	Depth to Water (ft btoc)	pH	Spec. Cond. (ms/cm)	Turbidity (NTU)	DO (mg/L)	Temp. (°C)	ORP (mv)	Notes
	Stabilization Requirements	(± 0.5)	(± 2.0)	(± 10%)	(± 10% or <20)	(± 10%)	(± 10%)	(± 10)	
1323	0	28.38	Initial Depth to Water (Pre-pumping)						
1515	START PUMP		FLOW = 200 ml/min						
1517	CONNECT FLOW CELL								
1520	1.0		6.47	0.199	1.0	11.32	16.79	117	
1525	2.0		6.43	0.195	1.0	9.79	16.84	120	
1530	3.0		6.45	0.193	0.4	9.58	16.81	125	
1535	4.0		6.49	0.196	0.9	9.40	16.83	125	

Well Volume Calculation

Well volume (liters) = [Well casing volume (liters/ft)] x [Length of water column (ft)]

Well casing diameter (in) → Well casing volume (liters/ft)

1.25" → 0.3 1.5" → 0.4 2" → 0.6 2.5" → 1 3" → 1.4 3.5" → 2 4" → 2.5 6" → 5.5

Meter Model: _____ Page 1 of 1 Revision: Nov. 2014

SEALASKA ENVIRONMENTAL

Sealaska Environmental Services

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18743 Front Street, NE, Suite 201
Poulsbo, WA 98370

Well Inspection, Purging, and Field Measurement Form

Contract Number: _____ Task Order: 01 Installation: JBLM Site Name: FLAO Sites

Well Data

Well ID: 95-A17-3A Measuring Point (MP): (Top of Casing), Rim Monument, Other: _____

Total Well Depth (ft below MP): 32.21 Pooled Water in Well Head: Y: ___ N: X Well Casing Volume (liters/ft): 0.6

Depth to Water (ft below MP): 28.87 Inner Casing Straight and Clear:: Y: X N: ___ Well Volume (liters): 2.00

Length of Water Column in well (ft): 3.34 Well Head Locked: Y: X N: ___ 3 x Well Volume (liters): 6.00

Diameter of well casing (inches): 2" Exterior Seal Good Y: X N: ___ Volume Purged (liters): _____

Purge Method: Peristaltic/Submersible/(Bladder)/Other: _____ Remarks: _____

Water Sample Data

Sample ID: AOC150902 95A173A Type: ~~FD~~ 9.2.15 MS/MSD Date: 9.2.15 Time: 0950 # Containers: 18

QC Sample ID: — Type: ~~MS/MSD~~ MS 9.2.15 Date: — Time: — # Containers: —

Sampling Personnel: TM, WK Sampling Method: Low flow grab

Remarks (color, odor, etc.): COLORLESS, STRONG PETROLEUM ODOR

Time	Purge Vol. (liters)	Depth to Water (ft btoc)	pH	Spec. Cond. (ms/cm)	Turbidity (NTU)	DO (mg/L)	Temp. (°C)	ORP (mv)	Notes
	Stabilization Requirements	(± 0.5)	(± 2.0)	(± 10%)	(± 10% or <20)	(± 10%)	(± 10%)	(± 10)	
0923	0	28.87	Initial Depth to Water (Pre-pumping)						
0927		BEGAN	PUMPING	280mL/min					
0929		CONNECT FLOW CELL							
0932	1.4		6.11	0.425	6.2	0.60	15.50	3	
0937	2.8		6.52	0.402	2.8	0.0	15.48	-46	
0942	4.2		6.54	0.401	2.1	0.0	15.49	-54	
0947	5.6		6.57	0.403	1.5	0.0	15.50	-56	

Well Volume Calculation

Well volume (liters) = [Well casing volume (liters/ft)] x [Length of water column (ft)]

Well casing diameter (in) → Well casing volume (liters/ft)

1.25" → 0.3 1.5" → 0.4 2" → 0.6 2.5" → 1 3" → 1.4 3.5" → 2 4" → 2.5 6" → 5.5

Meter Model: U52 Page 1 of 1 Revision: Nov. 2014

DTW MEASURED ON FIELD FORM FOR SAMPLING PURPOSES ONLY. DTW MEASURED ON 9-1-15 FOR ENTIRE SITE

SEALASKA ENVIRONMENTAL

Sealaska Environmental Services

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18743 Front Street, NE, Suite 201
Poulsbo, WA 98370

Well Inspection, Purging, and Field Measurement Form

Contract Number: _____ Task Order: 01 Installation: JBLM Site Name: FLAO Sites

Well Data

Well ID: 07-A17-7 Measuring Point (MP): (Top of Casing), Rim Monument, Other: _____

Total Well Depth (ft below MP): 28.66 (PUMP TOP) Pooled Water in Well Head: Y: ___ N: X Well Casing Volume (liters/ft): 0.6

CONST. DETAILS = 37'

Depth to Water (ft below MP): 27.35 Inner Casing Straight and Clear:: Y: X N: ___ Well Volume (liters): 5.79

Length of Water Column in well (ft): 4.65 Well Head Locked: Y: X N: ___ 3 x Well Volume (liters): 17.37

Diameter of well casing (inches): 2" Exterior Seal Good Y: X N: ___ Volume Purged (liters): 5.04

Purge Method: Peristaltic/Submersible/(Bladder)/Other: _____ Remarks: _____

Water Sample Data

Sample ID: AOC1S090207A177 Type: ENV Date: 9-2-15 Time: 11:00 # Containers: 6

QC Sample ID: — Type: — Date: — Time: — # Containers: —

Sampling Personnel: TM, WK Sampling Method: Low flow grab

Remarks (color, odor, etc.): COLORLESS, ODORLESS

Time	Purge Vol. (liters)	Depth to Water (ft btoc)	pH	Spec. Cond. (ms/cm)	Turbidity (NTU)	DO (mg/L)	Temp. (°C)	ORP (mv)	Notes
	Stabilization Requirements	(± 0.5)	(± 2.0)	(± 10%)	(± 10% or <20)	(± 10%)	(± 10%)	(± 10)	
1025	0	27.35	Initial Depth to Water (Pre-pumping)						
1027	START PUMP		FLOW = 180 ml/min						
1033	CONNECT TO		FLOW CELL						
1035	1.44		6.27	0.188	33.5	1.30	15.61	82	
1040	2.34		6.27	0.187	25.5	0.0	15.30	60	
1045	3.24		6.57	0.184	14.5	0.0	14.90	43	
1050	4.14		6.57	0.182	7.5	0.0	14.87	46	
1055	5.04		6.55	0.180	5.0	0.0	14.85	49	

Well Volume Calculation

Well volume (liters) = [Well casing volume (liters/ft)] x [Length of water column (ft)]

Well casing diameter (in) → Well casing volume (liters/ft)

1.25" → 0.3 1.5" → 0.4 2" → 0.6 2.5" → 1 3" → 1.4 3.5" → 2 4" → 2.5 6" → 5.5

Meter Model: YSI

Page 1 of 1

Revision: Nov. 2014

* DTW MEASURED FOR SAMPLING PURPOSES
DTW FOR FUTURE SITE TAKEN 9-1-15

SEALASKA ENVIRONMENTAL

Sealaska Environmental Services

Marine Science Center, P.O. Box 869
18743 Front Street, NE, Suite 201
Poulsbo, WA 98370

Well Inspection, Purging, and Field Measurement Form

Contract Number: _____ Task Order: 01 Installation: JBLM Site Name: FLAO Sites

Well Data

Well ID: MW-A17-8 Measuring Point (MP): (Top of Casing), Rim Monument, Other: _____

Total Well Depth (ft below MP): 37.71 Pooled Water in Well Head: Y: ___ N: X Well Casing Volume (liters/ft): 0.6

Depth to Water (ft below MP): 28.39 Inner Casing Straight and Clear:: Y: X N: ___ Well Volume (liters): 5.59

Length of Water Column in well (ft): 9.32 Well Head Locked: Y: X N: ___ 3 x Well Volume (liters): 16.77

Diameter of well casing (inches): 2" Exterior Seal Good Y: X N: ___ Volume Purged (liters): _____

Purge Method: Peristaltic/(Submersible)/Bladder/Other: _____ Remarks: _____

Water Sample Data

Sample ID: AOC150901104178 Type: ENV Date: 9-1-15 Time: 14:20 # Containers: 6

QC Sample ID: AOC150901104178 Type: DUP Date: 9-1-15 Time: 14:30 # Containers: 6

Sampling Personnel: TM. WK Sampling Method: Low flow grab

Remarks (color, odor, etc.): COLORLESS, STRONG PETROLEUM ODOR

Time	Purge Vol. (liters)	Depth to Water (ft btoc)	pH	Spec. Cond. (ms/cm)	Turbidity (NTU)	DO (mg/L)	Temp. (°C)	ORP (mv)	Notes
	Stabilization Requirements	(± 0.5)	(± 2.0)	(± 10%)	(± 10% or <20)	(± 10%)	(± 10%)	(± 10)	
1301	0	28.39	Initial Depth to Water (Pre-pumping)						
1337			BEGIN	PUMP	FLOW = 300mL				
1339			CONNECT	FLOW	CELL				
1342	1.5	28.5	6.34	0.377	80.0	8.55	18.51	-14	
1347	3.0	28.5	6.37	0.386	63.1	6.75	18.97	-31	
1352	4.5	28.5	6.37	0.389	62.6	5.90	19.40	-34	
1357	6.0	28.5	6.35	0.386	54.9	5.08	19.53	-35	
1402	7.5	28.5	6.33	0.379	19.4	4.36	19.54	-35	
1407	9.0	28.5	6.31	0.375	19.3	3.60	19.53	-34	
1412	10.5	28.5	6.31	0.371	19.3	3.45	19.53	-34	
1417	12.0	28.5	6.31	0.371	10.5	3.40	19.54	-35	

Well Volume Calculation

Well volume (liters) = [Well casing volume (liters/ft)] x [Length of water column (ft)]

Well casing diameter (in) → Well casing volume (liters/ft)

1.25" → 0.3 1.5" → 0.4 2" → 0.6 2.5" → 1 3" → 1.4 3.5" → 2 4" → 2.5 6" → 5.5

Meter Model: U52 Page ____ of ____ Revision: Nov. 2014

SEALASKA ENVIRONMENTAL

Sealaska Environmental Services

Marine Science Center, P.O. Box 869
18743 Front Street, NE, Suite 201
Poulsbo, WA 98370

Well Inspection, Purging, and Field Measurement Form

Contract Number: _____ Task Order: 01 Installation: JBLM Site Name: FLAO Sites

Well Data

Well ID: AOC 10-8-B05 Measuring Point (MP): (Top of Casing), Rim Monument, Other: _____

Total Well Depth (ft below MP): 46.21 Pooled Water in Well Head: Y: ___ N: X Well Casing Volume (liters/ft): 0.6

Depth to Water (ft below MP): 42.94 Inner Casing Straight and Clear:: Y: X N: ___ Well Volume (liters): 1.96

Length of Water Column in well (ft): 3.27 Well Head Locked: Y: X N: ___ 3 x Well Volume (liters): 5.88

Diameter of well casing (inches): 2" Exterior Seal Good Y: X N: ___ Volume Purged (liters): _____

Purge Method: Peristaltic/Submersible/Bladder/(Other): BAILER Remarks: DTW 4250 MEASURED 8-31-15 (42.94)

Water Sample Data

Sample ID: AOC10901AOC10B05 Type: ENV Date: 9-1-15 Time: 0925 # Containers: 2

QC Sample ID: — Type: — Date: — Time: — # Containers: —

Sampling Personnel: JM. WK Sampling Method: Low flow grab BAILER

Remarks (color, odor, etc.): COLORLESS, LIGHT PETROLEUM ODOR LIGHTLY CLOUDY

Time	Purge Vol. (liters)	Depth to Water (ft btoc)	pH	Spec. Cond. (ms/cm)	Turbidity (NTU)	DO (mg/L)	Temp. (°C)	ORP (mv)	Notes
	Stabilization Requirements	(± 0.5)	(± 2.0)	(± 10%)	(± 10% or <20)	(± 10%)	(± 10%)	(± 10)	
0905	0	42.94	Initial Depth to Water (Pre-pumping)						
			BAILER						

Well Volume Calculation

Well volume (liters) = [Well casing volume (liters/ft)] x [Length of water column (ft)]

Well casing diameter (in) → Well casing volume (liters/ft)

1.25" → 0.3 1.5" → 0.4 2" → 0.6 2.5" → 1 3" → 1.4 3.5" → 2 4" → 2.5 6" → 5.5

Meter Model: — Page 1 of 1 Revision: Nov. 2014

SEALASKA ENVIRONMENTAL

Sealaska Environmental Services

Marine Science Center, P.O. Box 869
18743 Front Street, NE, Suite 201
Poulsbo, WA 98370

Well Inspection, Purging, and Field Measurement Form

Contract Number: _____ Task Order: 01 Installation: JBLM Site Name: FLAO Sites

Well Data

Well ID: JP-MW02 Measuring Point (MP): (Top of Casing,) Rim Monument, Other: _____

Total Well Depth (ft below MP): 49.80 Pooled Water in Well Head: Y: ___ N: X Well Casing Volume (liters/ft): 2.5

Depth to Water (ft below MP): 40.62 Inner Casing Straight and Clear:: Y: X N: ___ Well Volume (liters): 22.45

Length of Water Column in well (ft): 9.18 Well Head Locked: Y: X N: ___ 3 x Well Volume (liters): 68.85

Diameter of well casing (inches): 4" Exterior Seal Good Y: X N: ___ Volume Purged (liters): _____

Purge Method: Peristaltic/Submersible/Bladder/Other: _____ Remarks: PW ALSO [illegible] 8-31-15

Water Sample Data

Sample ID: AOC150901JPMW02 Type: ENV Date: 9-1-15 Time: 1040 # Containers: 2

QC Sample ID: — Type: — Date: — Time: — # Containers: —

Sampling Personnel: TM, WK Sampling Method: Low flow grab

Remarks (color, odor, etc.): COLORLESS ODORLESS

Time	Purge Vol. (liters)	Depth to Water (ft btoc)	pH	Spec. Cond. (ms/cm)	Turbidity (NTU)	DO (mg/L)	Temp. (°C)	ORP (mv)	Notes
	Stabilization Requirements	(± 0.5)	(± 2.0)	(± 10%)	(± 10% or <20)	(± 10%)	(± 10%)	(± 10)	
0948	0	40.62	Initial Depth to Water (Pre-pumping)						
1000		BEGIN	PURGE	400mL/min					
1015		CONNECT	FLOW	CELL					
1017	2.8	40.7	6.19	0.173	0.0	7.81	16.32	164	
1022	4.8	40.7	6.33	0.155	0.0	6.12	16.48	134	
1027	6.8	40.7	6.33	0.157	2.0	5.89	16.57	114	
1032	8.8	40.7	6.34	0.158	3.3	5.82	16.70	104	
1035	10.8	40.7	6.36	0.159	3.5	5.80	16.70	104	

Well Volume Calculation

Well volume (liters) = [Well casing volume (liters/ft)] x [Length of water column (ft)]

Well casing diameter (in) → Well casing volume (liters/ft)

1.25" → 0.3 1.5" → 0.4 2" → 0.6 2.5" → 1 3" → 1.4 3.5" → 2 4" → 2.5 6" → 5.5

Meter Model: U52 Page 1 of 1 Revision: Nov. 2014

APPENDIX B

LABORATORY ANALYTICAL REPORTS

AND

DATA QUALITY REVIEW

(PROVIDED ON DISC)

ALS Environmental
ALS Group USA, Corp
1317 South 13th Avenue
Kelso, WA 98626
T : +1 360 577 7222
F : +1 360 636 1068
www.alsglobal.com

June 09, 2015

Analytical Report for Service Request No: K1504515

Scott Elkind
Sealaska Environmental Services, LLC
18743 Front Street NE
P.O. Box 869
Poulsbo, WA 98370

RE: JBLM FLAO SITES / TO 001

Dear Scott,

Enclosed are the results of the sample(s) submitted to our laboratory April 29, 2015
For your reference, these analyses have been assigned our service request number **K1504515.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3376. You may also contact me via email at gregory.salata@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Gregory Salata, Ph.D.
Client Services
Manager

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Table of Contents

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEC UST	http://dec.alaska.gov/applications/eh/ehllabreports/USTLabs.aspx	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L14-51
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	Not available	-
Idaho DHW	http://www.healthandwelfare.idaho.gov/Health/Labs/CertificationDrinkingWaterLabs/tabid/1833/Default.aspx	-
ISO 17025	http://www.pjlabs.com/	L14-50
Louisiana DEQ	http://www.deq.louisiana.gov/portal/DIVISIONS/PublicParticipationandPermitSupport/LouisianaLaboratoryAccreditationProgram.aspx	03016
Maine DHS	Not available	WA01276
Michigan DEQ	http://www.michigan.gov/deq/0,1607,7-135-3307_4131_4156---,00.html	9949
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Montana DPHHS	http://www.dphhs.mt.gov/publichealth/	CERT0047
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/oqa/	WA005
North Carolina DWQ	http://www.dwqlab.org/	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/envserv/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wisconsin DNR	http://dnr.wi.gov/	998386840
Wyoming (EPA Region 8)	http://www.epa.gov/region8/water/dwhome/wyomingdi.html	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.
Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Case Narrative

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

ALS ENVIRONMENTAL

Client:	Sealaska Environmental Services, LLC	**Service Request No.:**	K1504515
Project:	JBLM FLAO SITES/ TO 001	**Date Received:**	04/29/15
Sample Matrix:	Water		

Case Narrative

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier IV validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Twenty-seven water samples were received for analysis at ALS Environmental on 04/29/15. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4ºC upon receipt at the laboratory.

Diesel Range Organics by Method NWTPH-Dx

Sample Notes and Discussion:
Manual integration of one or more chromatographic peaks required to correct the integration performed by the automated data processing program. The manual integration was performed in accordance with ALS policy, which is consistent with the National Environmental Laboratory Accreditation Program (NELAP), Department of Defense (DOD), and other certifying agencies. The analytes that required manual integrations are identified on each sample report contained in this data package.

Relative Percent Difference Exceptions:
The Relative Percent Difference (RPD) criterion for the replicate analysis of Diesel Range Organics (DRO) and Residual Range Organics (RRO) in sample AOC150427413MW05 was not applicable because the analyte concentration was not significantly greater than the Method Reporting Limit (MRL). Analytical values derived from measurements close to the detection limit are not subject to the same accuracy and precision criteria as results derived from measurements higher on the calibration range for the method.

No other anomalies associated with the analysis of these samples were observed.

Gasoline Range Organics by Method NWTPH-Gx

Sample Notes and Discussion:
Manual integration of one or more chromatographic peaks was required to correct the integration performed by the automated data processing program. The manual integrations were performed in accordance with ALS policy, which is consistent with the National Environmental Laboratory Accreditation Program (NELAP), Department of Defense (DOD), and other certifying agencies. The analytes that required manual integrations are identified on each sample report contained in this data package.

No other anomalies associated with the analysis of these samples were observed.

Approved by_____

Volatile Organic Compounds by EPA Method 8260

Initial Calibration Exceptions:
The ALS minimum relative response factor criterion for Trichloroethene and Bromodichloromethane was not met in Initial Calibration (ICAL) ID 13970. In accordance with ALS standard operating procedures, a Method Reporting Limit (MRL) check standard containing the analyte of concern was analyzed each day of analysis. The MRL check standard verified instrument sensitivity was adequate to detect the analyte at the MRL on the day of analysis. Because the sensitivity was shown to be adequate to detect the compound the data quality was not significantly affected. No further corrective action was appropriate.

Calibration Verification Exceptions:
The following analytes were flagged as outside the control criterion for Continuing Calibration Verification (CCV) J:\MS18\0504F036.D: Bromomethane. In accordance with the EPA Method, 80% or more of the CCV analytes must pass within 20% of the true value. The ALS SOP allows for 40% difference for the remaining analytes. The CCV met these criteria. The quality of the sample data was not significantly affected. No further corrective action was required.

The ALS minimum relative response factor criterion for Bromomethane and Trichloroethene (TCE) was not met in Continuing Calibration Verification (CCV) J:\MS18\0504F036.D. In accordance with ALS standard operating procedures, a Method Reporting Limit (MRL) check standard containing the analyte of concern was analyzed each day of analysis. The MRL check standard verified instrument sensitivity was adequate to detect the analyte at the MRL on the day of analysis. Because the sensitivity was shown to be adequate to detect the compound in question the data quality was not significantly affected. No further corrective action was appropriate.

Lab Control Sample Exceptions:
The control criterion was exceeded for Trichlorofluoromethane in Laboratory Control Sample (LCS) KWG1504094-4. The result was within the marginal exceedance limits listed in the DOD QAPP. No further corrective action was required.

Matrix Spike Recovery Exceptions:
The matrix spike recovery of Styrene for sample Batch QC was outside control criteria. Positive detections in the parent sample are flagged, as per the DOD QAPP. No further corrective action was appropriate.

No other anomalies associated with the analysis of these samples were observed.

Explosives by EPA Method 8330

Surrogate Exceptions:
The upper control criterion was exceeded by 2% for the surrogate 1-Chloro-3-nitrobenzene in sample AIAIDW150427. The error associated with elevated recovery equates to a potential slight bias. The result was flagged to indicate the issue. No further corrective action was taken.

Sample Notes and Discussion:
Manual integration of one or more chromatographic peaks was required to correct the integration performed by the automated data processing program. The manual integration was performed in accordance with ALS policy, which is consistent with the National Environmental Laboratory Accreditation Program (NELAP), Department of Defense (DOD), and other certifying agencies. The analytes that required manual integrations are identified on each sample report contained in this data package.

Insufficient sample volume was received to perform a Matrix Spike/Matrix Spike Duplicate (MS/MSD). A Laboratory Control Sample/Duplicate Laboratory Control Sample (LCS/DLCS) was analyzed and reported in lieu of the MS/MSD for these samples.

No other anomalies associated with the analysis of these samples were observed.

Approved by_____ Gregory Salata

Chain of Custody

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Chain of Custody PAGE 1 OF 3

ADDRESS 1317 South 13th Ave., Kelso, WA 98626
PHONE 1 360 577 7222 FAX 1 360 636 1068

Part of the ALS Group A Campbell Brothers Limited Company

Work Order No.: K1504515

Project Manager:	SCOTT ELKIND		**Bill to:**		
Client Name:	SEALASKA ENVIRONMENTAL		**Company:**		
Address:	18743 FRONT ST NE, STE. 201		**Address:**		
City, State ZIP:	POULSBO, WA 98370		**City, State ZIP:**		
Email:	SCOTT.ELKIND@SEALASKA.COM	**Phone:** (360)930-3187	**Email:**		**po#**
Project Name:	JBLM FLAO SITES				
Project Number:	TO 001				
P.O. Number:	PO-01281AJ				
Sampler's Name:	WILL KAAGE				

SAMPLE RECEIPT

Temperature (°C):		**Temp Blank Present**			
Received Intact:	Yes	No	N/A	**Wet Ice / Blue Ice**	
Cooler Custody Seals:	Yes	No	N/A	**Total Containers:**	
Sample Custody Seals:	Yes	No	N/A		

REQUESTED ANALYSIS

TAT

- [x] Routine ~~21 day~~ 15 NO IDA
- [ ] Same Day 100%
- [ ] Next Day ***
- [ ] 3 Day
- [ ] 5 Day 50%

Surcharges. Please call for availability

Due Date:

Sample Identification	Matrix	Date Sampled	Time Sampled	Lab ID	No. of Containers	TPH-D/TPH-O NWTPH-Dx	TPH-G NWTPH-Gx	BTEX 8260C	Comments
AOC150427413IMW02	GW	4-27-15	1135	1	2	2			
AOC150427413IMW03		4-27-15	1027	2	2	2			
AOC150427413IMW13		4-27-15	1037	3	2	2			
AOC150427413IMW04		4-27-15	1245	4	2	2			
AOC150427413IMW05		4-27-15	0920	5	6	6			MS/MSD
AOC150423AOC108B05		4-23-15	1030	6	2	2			
AOC150423JPMW02		4-23-15	1115	7	2	2			
AOC1504 2395A172		4-23-15	0910	8	6		3	3	
AOC1504 2295A173A		4-22-15	1355	9	6		3	3	
AOC150422295A174		4-22-15	1300	10	6		3	3	
AOC150422207A177		4-22-15	1140	11	18		9	9	MS/MSD

Dissolved	Ag, Al, As, B, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, K, Li, Mg, Mn, Mo, Na, Ni, P, Pb, Sb, Se, Si, Sn, Sr, Tl, V, Zn, Zr	**Additional Methods Available Upon Request**
Total	Ag, Al, As, B, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, K, Li, Mg, Mn, Mo, Na, Ni, P, Pb, Sb, Se, Si, Sn, Sr, Tl, V, Zn, Zr	

RELINQUISHED BY			**RECEIVED BY**		
Print Name	Signature	Date/Time	Print Name	Signature	Date/Time
WILL KAAGE		4-29-15 1000	MC DELIVERY		
MC DELIVERY			SWOLF		4/29/15 1530

* AS PER CONTRACT

Revised: 4/28/2015

Chain of Custody

K1504519

ADDRESS 1317 South 13th Ave., Kelso, WA 98626
PHONE 1 360 577 7222 FAX 1 360 636 1068

Part of the ALS Group A Campbell Brothers Limited Company

Work Order No.:

Project Manager:	SCOTT ELKIND	**Bill to:**	
Client Name:	SEALASKA ENVIRONMENTAL	**Company:**	
Address:	18743 FRONT ST. NE, STE. 201	**Address:**	
City, State ZIP:	POULSBO, WA 98370	**City, State ZIP:**	
Email:	SCOTT.ELKIND@SEALASKA.COM **Phone:** (360)930-3187	**Email:**	**po#**
Project Name:	JBLM FLAO SITES		
Project Number:	TO 001		
P.O. Number:	PO-0128|AJ		
Sampler's Name:	WILL KAAGE		

SAMPLE RECEIPT

Temperature (°C):		**Temp Blank Present**			
Received Intact:	Yes	No	N/A	**Wet Ice / Blue Ice**	
Cooler Custody Seals:	Yes	No	N/A	**Total Containers:**	
Sample Custody Seals:	Yes	No	N/A		

REQUESTED ANALYSIS

TAT

- [x] Routine ~~21 day~~ 15 WDs
- [ ] Same Day 100% D4
- [ ] Next Day ***
- [ ] 3 Day
- [ ] 5 Day 50%

Surcharges. Please call for availability

Due Date:

Comments

Sample Identification	Matrix	Date Sampled	Time Sampled	Lab ID	No. of Containers	TPH-G NWTPH-Gx	BTEX 8260C	NITROAROMATICS/NITRAMINES EPA SW846-8330	TPH-D/TPH-O NWTPH-Dx	VOCs 8260C	Comments
AOC150422210A178	GW	4-22-15	1455	12	6	3	3				
AOC150422210A1718	GW	4-22-15	1505	13	6	3	3				
TB-150422	GW	4-22-15	1140	14	4	2	2				
AIAIDW150427	GW	4-27-15	1620	15	2			12			
AOC150428AOIIIMW04	GW	4-28-15	0955	16	2				2		
AOC150428AOIIIMW05	GW	4-28-15	1207	17	2				2		(AOC150428AOIIIMW05)
AOC150423AOIIIMW06	GW	4-23-15	1255	18	2				2		(AOC150423AOIIIMW06)
AOC150427AOIIIMW07	GW	4-27-15	1515	19	2				2		
AOC150428AOIIIMW08	GW	4-28-15	1055	20	2				2		
LGC150428EGDYI-1	GW	4-28-15	1205	21	3					3	
LGC150428EGDYE-1	GW	4-28-15	1210	22	3					3	

Dissolved	Ag, Al, As, B, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, K, Li, Mg, Mn, Mo, Na, Ni, P, Pb, Sb, Se, Si, Sn, Sr, Tl, V, Zn, Zr
Total	Ag, Al, As, B, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, K, Li, Mg, Mn, Mo, Na, Ni, P, Pb, Sb, Se, Si, Sn, Sr, Tl, V, Zn, Zr

Additional Methods Available Upon Request

RELINQUISHED BY			**RECEIVED BY**		
Print Name	**Signature**	**Date/Time**	**Print Name**	**Signature**	**Date/Time**
WILL KAAGE		4-29-15 1000	MC DELIVERY		
MC DELIVERY					4-29-15 1130

* AS PER CONTRACT

Revised: 4/28/2015

Chain of Custody

ADDRESS 1317 South 13th Ave., Kelso, WA 98626
PHONE 1 360 577 7222 FAX 1 360 636 1068

Part of the ALS Group A Campbell Brothers Limited Company

Work Order No.: K1504515

Project Manager:	SCOTT ELKIND	**Bill to:**	
Client Name:	SEALASKA ENVIRONMENTAL	**Company:**	
Address:	18743 FRONT ST. NE, STE. 201	**Address:**	
City, State ZIP:	POULSBO, WA 98370	**City, State ZIP:**	
Email:	SCOTT.ELKIND@SEALASKA.COM **Phone:** (360)930-3187	**Email:**	**po#**
Project Name:	JBLM FLAG SITES		
Project Number:	TO 001		
P.O. Number:	PO-01281AJ		
Sampler's Name:	WILL KAAGE		

SAMPLE RECEIPT

Temperature (°C):		Temp Blank Present		
Received Intact:	Yes	No	N/A	Wet Ice / Blue Ice
Cooler Custody Seals:	Yes	No	N/A	Total Containers:
Sample Custody Seals:	Yes	No	N/A	

REQUESTED ANALYSIS

TAT

- [x] Routine 2 day 15 WDs
- [ ] Same Day 100%
- [ ] Next Day ***
- [ ] 3 Day
- [ ] 5 Day 50%

Surcharges. Please call for availability

Due Date:

Sample Identification	Matrix	Date Sampled	Time Sampled	Lab ID	No. of Containers	VOCs 8260C	Comments
LGC1504281SI-1	GW	4-28-15	1435	23	3	3	
LGC1504281SE-1	GW	4-28-15	1440	24	3	3	
LGC1504281SLAPTI-1	GW	4-28-15	1500	25	3	3	
LGC1504281SLAPTE-1	GW	4-28-15	1505	26	3	3	
LGC1504281DUP-1	GW	4-28-15	1445	27	3	3	

Dissolved	Ag, Al, As, B, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, K, Li, Mg, Mn, Mo, Na, Ni, P, Pb, Sb, Se, Si, Sn, Sr, Tl, V, Zn, Zr
Total	Ag, Al, As, B, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, K, Li, Mg, Mn, Mo, Na, Ni, P, Pb, Sb, Se, Si, Sn, Sr, Tl, V, Zn, Zr

Additional Methods Available Upon Request

RELINQUISHED BY			RECEIVED BY		
Print Name	Signature	Date/Time	Print Name	Signature	Date/Time
WILL KAAGE		4-29-15 1000	MC DELIVERY		
MC DELIVERY					42915 11:30

* AS PER COMM...

PC Greg

Cooler Receipt and Preservation Form

Client / Project: Sealaska Service Request *K15* 04515

Received: 42915 Opened: 42915 By: DW Unloaded: 42915 By: DW

1. Samples were received via? *Mail* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered* MC Delivery
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA (Y) N If yes, how many and where? 1 Front / 1 Back
   If present, were custody seals intact? (Y) N If present, were they signed and dated? (Y) N

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID (NA)	Tracking Number NA	Filed
-0.3	-0.2	0.9	1.0	+0.1	354		591225	
0.7	0.6	1.2	1.1	-0.1	349		↓	
2.4	2.4	0.1	0.1	0	322			
1.3	1.2	1.6	1.5	-0.1	358			

4. Packing material: (*Inserts*) (*Baggies*) (*Bubble Wrap*) (*Gel Packs*) *Wet Ice* *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N
6. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA (Y) N
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA (Y) N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA (Y) N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* (NA) Y N
11. Were VOA vials received without headspace? *Indicate in the table below.* NA (Y) N
12. Was C12/Res negative? (NA) Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

Page ____ *of* ____

Diesel and Residual Range Organics

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Client: Sealaska Environmental Services, LLC **Service Request:** K1504515
Project: JBLM FLAO SITES/TO 001

Cover Page - Organic Analysis Data Package
Diesel and Residual Range Organics

Sample Name	Lab Code	Date Collected	Date Received
AOC1504274131MW02	K1504515-001	04/27/2015	04/29/2015
AOC1504274131MW03	K1504515-002	04/27/2015	04/29/2015
AOC1504274131MW13	K1504515-003	04/27/2015	04/29/2015
AOC1504274131MW04	K1504515-004	04/27/2015	04/29/2015
AOC1504274131MW05	K1504515-005	04/27/2015	04/29/2015
AOC150423AOC108B05	K1504515-006	04/23/2015	04/29/2015
AOC150423JPMW02	K1504515-007	04/23/2015	04/29/2015
AOC150428AO111MW04	K1504515-016	04/28/2015	04/29/2015
AOC150428AO111MW05	K1504515-017	04/28/2015	04/29/2015
AOC150423AO111MW06	K1504515-018	04/23/2015	04/29/2015
AOC150427AO111MW07	K1504515-019	04/27/2015	04/29/2015
AOC150428AO111MW08	K1504515-020	04/28/2015	04/29/2015
AOC1504274131MW02	KWG1504022-1	04/27/2015	04/29/2015
AOC1504274131MW05	KWG1504022-2	04/27/2015	04/29/2015
AOC1504274131MW05MS	KWG1504022-3	04/27/2015	04/29/2015
AOC1504274131MW05DMS	KWG1504022-4	04/27/2015	04/29/2015

Analytical Results

Client:	Sealaska Environmental Services, LLC	**Service Request:**	K1504515
Project:	JBLM FLAO SITES/TO 001	**Date Collected:**	04/27/2015
Sample Matrix:	Water	**Date Received:**	04/29/2015

Diesel and Residual Range Organics

Sample Name:	AOC1504274131MW02	**Units:**	ug/L
Lab Code:	K1504515-001	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**1400**	Y	120	20	11	1	05/07/15	05/19/15	KWG1504022	
Residual Range Organics (RRO)	**590**	L	240	50	19	1	05/07/15	05/19/15	KWG1504022	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	116	50-150	05/19/15	Acceptable
n-Triacontane	116	50-150	05/19/15	Acceptable

Comments:

Analytical Results

Client:	Sealaska Environmental Services, LLC	**Service Request:**	K1504515
Project:	JBLM FLAO SITES/TO 001	**Date Collected:**	04/27/2015
Sample Matrix:	Water	**Date Received:**	04/29/2015

Diesel and Residual Range Organics

Sample Name:	AOC1504274131MW03	**Units:**	ug/L
Lab Code:	K1504515-002	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**690**	Y	130	20	11	1	05/07/15	05/19/15	KWG1504022	
Residual Range Organics (RRO)	**250**	L	250	50	19	1	05/07/15	05/19/15	KWG1504022	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	119	50-150	05/19/15	Acceptable
n-Triacontane	119	50-150	05/19/15	Acceptable

Comments:

Analytical Results

Client:	Sealaska Environmental Services, LLC	**Service Request:**	K1504515
Project:	JBLM FLAO SITES/TO 001	**Date Collected:**	04/27/2015
Sample Matrix:	Water	**Date Received:**	04/29/2015

Diesel and Residual Range Organics

Sample Name:	AOC1504274131MW13	**Units:**	ug/L
Lab Code:	K1504515-003	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**990**	Y	120	20	11	1	05/07/15	05/20/15	KWG1504022	
Residual Range Organics (RRO)	**270**	L	240	50	19	1	05/07/15	05/20/15	KWG1504022	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	126	50-150	05/20/15	Acceptable
n-Triacontane	130	50-150	05/20/15	Acceptable

Comments:

Analytical Results

Client:	Sealaska Environmental Services, LLC	**Service Request:**	K1504515
Project:	JBLM FLAO SITES/TO 001	**Date Collected:**	04/27/2015
Sample Matrix:	Water	**Date Received:**	04/29/2015

Diesel and Residual Range Organics

Sample Name:	AOC1504274131MW04	**Units:**	ug/L
Lab Code:	K1504515-004	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**22**	J	120	20	11	1	05/07/15	05/20/15	KWG1504022	
Residual Range Organics (RRO)	**57**	J	240	50	19	1	05/07/15	05/20/15	KWG1504022	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	123	50-150	05/20/15	Acceptable
n-Triacontane	127	50-150	05/20/15	Acceptable

Comments:

Analytical Results

Client:	Sealaska Environmental Services, LLC	**Service Request:**	K1504515
Project:	JBLM FLAO SITES/TO 001	**Date Collected:**	04/27/2015
Sample Matrix:	Water	**Date Received:**	04/29/2015

Diesel and Residual Range Organics

Sample Name:	AOC1504274131MW05	**Units:**	ug/L
Lab Code:	K1504515-005	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**16**	J	120	20	11	1	05/07/15	05/20/15	KWG1504022	
Residual Range Organics (RRO)	**39**	J	240	50	19	1	05/07/15	05/20/15	KWG1504022	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	122	50-150	05/20/15	Acceptable
n-Triacontane	126	50-150	05/20/15	Acceptable

Comments:

Analytical Results

Client:	Sealaska Environmental Services, LLC	**Service Request:**	K1504515
Project:	JBLM FLAO SITES/TO 001	**Date Collected:**	04/23/2015
Sample Matrix:	Water	**Date Received:**	04/29/2015

Diesel and Residual Range Organics

Sample Name:	AOC150423AOC108B05	**Units:**	ug/L
Lab Code:	K1504515-006	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**2300**	Y	120	20	11	1	05/07/15	05/20/15	KWG1504022	
Residual Range Organics (RRO)	**290**	L	240	50	19	1	05/07/15	05/20/15	KWG1504022	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	134	50-150	05/20/15	Acceptable
n-Triacontane	143	50-150	05/20/15	Acceptable

Comments:

Analytical Results

Client:	Sealaska Environmental Services, LLC	**Service Request:**	K1504515
Project:	JBLM FLAO SITES/TO 001	**Date Collected:**	04/23/2015
Sample Matrix:	Water	**Date Received:**	04/29/2015

Diesel and Residual Range Organics

Sample Name:	AOC150423JPMW02	**Units:**	ug/L
Lab Code:	K1504515-007	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**18**	J	130	20	11	1	05/07/15	05/19/15	KWG1504022	
Residual Range Organics (RRO)	**36**	J	250	50	19	1	05/07/15	05/19/15	KWG1504022	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	104	50-150	05/19/15	Acceptable
n-Triacontane	102	50-150	05/19/15	Acceptable

Comments:

Analytical Results

Client:	Sealaska Environmental Services, LLC	**Service Request:**	K1504515
Project:	JBLM FLAO SITES/TO 001	**Date Collected:**	04/28/2015
Sample Matrix:	Water	**Date Received:**	04/29/2015

Diesel and Residual Range Organics

Sample Name:	AOC150428AO111MW04	**Units:**	ug/L
Lab Code:	K1504515-016	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**91**	J	130	20	11	1	05/07/15	05/19/15	KWG1504022	
Residual Range Organics (RRO)	**94**	J	250	50	19	1	05/07/15	05/19/15	KWG1504022	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	90	50-150	05/19/15	Acceptable
n-Triacontane	89	50-150	05/19/15	Acceptable

Comments:

Analytical Results

Client:	Sealaska Environmental Services, LLC	**Service Request:**	K1504515
Project:	JBLM FLAO SITES/TO 001	**Date Collected:**	04/28/2015
Sample Matrix:	Water	**Date Received:**	04/29/2015

Diesel and Residual Range Organics

Sample Name:	AOC150428AO111MW05	**Units:**	ug/L
Lab Code:	K1504515-017	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**29**	J	120	20	11	1	05/07/15	05/19/15	KWG1504022	
Residual Range Organics (RRO)	**56**	J	240	50	19	1	05/07/15	05/19/15	KWG1504022	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	107	50-150	05/19/15	Acceptable
n-Triacontane	106	50-150	05/19/15	Acceptable

Comments:

Analytical Results

Client:	Sealaska Environmental Services, LLC	**Service Request:**	K1504515
Project:	JBLM FLAO SITES/TO 001	**Date Collected:**	04/23/2015
Sample Matrix:	Water	**Date Received:**	04/29/2015

Diesel and Residual Range Organics

Sample Name:	AOC150423AO111MW06	**Units:**	ug/L
Lab Code:	K1504515-018	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**32**	J	130	20	11	1	05/07/15	05/19/15	KWG1504022	
Residual Range Organics (RRO)	**94**	J	250	50	19	1	05/07/15	05/19/15	KWG1504022	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	106	50-150	05/19/15	Acceptable
n-Triacontane	102	50-150	05/19/15	Acceptable

Comments:

Analytical Results

Client:	Sealaska Environmental Services, LLC	**Service Request:**	K1504515
Project:	JBLM FLAO SITES/TO 001	**Date Collected:**	04/27/2015
Sample Matrix:	Water	**Date Received:**	04/29/2015

Diesel and Residual Range Organics

Sample Name:	AOC150427AO111MW07	**Units:**	ug/L
Lab Code:	K1504515-019	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**42**	J	120	20	11	1	05/07/15	05/19/15	KWG1504022	
Residual Range Organics (RRO)	**74**	J	240	50	19	1	05/07/15	05/19/15	KWG1504022	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	107	50-150	05/19/15	Acceptable
n-Triacontane	107	50-150	05/19/15	Acceptable

Comments:

Analytical Results

Client:	Sealaska Environmental Services, LLC	**Service Request:**	K1504515
Project:	JBLM FLAO SITES/TO 001	**Date Collected:**	04/28/2015
Sample Matrix:	Water	**Date Received:**	04/29/2015

Diesel and Residual Range Organics

Sample Name:	AOC150428AO111MW08	**Units:**	ug/L
Lab Code:	K1504515-020	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**180**	Y	130	20	11	1	05/07/15	05/19/15	KWG1504022	
Residual Range Organics (RRO)	**130**	J	250	50	19	1	05/07/15	05/19/15	KWG1504022	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	100	50-150	05/19/15	Acceptable
n-Triacontane	99	50-150	05/19/15	Acceptable

Comments:

Analytical Results

Client:	Sealaska Environmental Services, LLC	**Service Request:**	K1504515
Project:	JBLM FLAO SITES/TO 001	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

Diesel and Residual Range Organics

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1504022-6	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	ND	U	120	20	11	1	05/07/15	05/19/15	KWG1504022	
Residual Range Organics (RRO)	**23**	J	240	50	19	1	05/07/15	05/19/15	KWG1504022	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	87	50-150	05/19/15	Acceptable
n-Triacontane	86	50-150	05/19/15	Acceptable

Comments:

Gasoline Range Organics

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Client: Sealaska Environmental Services, LLC **Service Request:** K1504515
Project: JBLM FLAO SITES/TO 001

Cover Page - Organic Analysis Data Package
Gasoline Range Organics

Sample Name	Lab Code	Date Collected	Date Received
AOC15042395A172	K1504515-008	04/23/2015	04/29/2015
AOC15042295A173A	K1504515-009	04/22/2015	04/29/2015
AOC15042295A174	K1504515-010	04/22/2015	04/29/2015
AOC15042207A177	K1504515-011	04/22/2015	04/29/2015
AOC15042210A178	K1504515-012	04/22/2015	04/29/2015
AOC15042210A1718	K1504515-013	04/22/2015	04/29/2015
TB-150422	K1504515-014	04/22/2015	04/29/2015
AOC15042207A177	KWG1503824-1	04/22/2015	04/29/2015

Analytical Results

Client:	Sealaska Environmental Services, LLC	**Service Request:**	K1504515
Project:	JBLM FLAO SITES/TO 001	**Date Collected:**	04/23/2015
Sample Matrix:	Water	**Date Received:**	04/29/2015

Gasoline Range Organics

Sample Name:	AOC15042395A172	**Units:**	ug/L
Lab Code:	K1504515-008	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	NWTPH-Gx		

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTPH	ND	U	250	25	13	1	04/30/15	04/30/15	KWG1503824	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	103	50-150	04/30/15	Acceptable

Comments:

Analytical Results

Client:	Sealaska Environmental Services, LLC	**Service Request:**	K1504515
Project:	JBLM FLAO SITES/TO 001	**Date Collected:**	04/22/2015
Sample Matrix:	Water	**Date Received:**	04/29/2015

Gasoline Range Organics

Sample Name:	AOC15042295A173A	**Units:**	ug/L
Lab Code:	K1504515-009	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	NWTPH-Gx		

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTPH	**1500**	Y	250	25	13	1	04/30/15	04/30/15	KWG1503824	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	111	50-150	04/30/15	Acceptable

Comments:

Analytical Results

Client:	Sealaska Environmental Services, LLC	**Service Request:**	K1504515
Project:	JBLM FLAO SITES/TO 001	**Date Collected:**	04/22/2015
Sample Matrix:	Water	**Date Received:**	04/29/2015

Gasoline Range Organics

Sample Name:	AOC15042295A174	**Units:**	ug/L
Lab Code:	K1504515-010	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	NWTPH-Gx		

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTPH	ND	U	250	25	13	1	04/30/15	04/30/15	KWG1503824	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	100	50-150	04/30/15	Acceptable

Comments:

Analytical Results

Client:	Sealaska Environmental Services, LLC	**Service Request:**	K1504515
Project:	JBLM FLAO SITES/TO 001	**Date Collected:**	04/22/2015
Sample Matrix:	Water	**Date Received:**	04/29/2015

Gasoline Range Organics

Sample Name:	AOC15042207A177	**Units:**	ug/L
Lab Code:	K1504515-011	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	NWTPH-Gx		

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTPH	ND	U	250	25	13	1	04/30/15	04/30/15	KWG1503824	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	100	50-150	04/30/15	Acceptable

Comments:

Analytical Results

Client:	Sealaska Environmental Services, LLC	**Service Request:**	K1504515
Project:	JBLM FLAO SITES/TO 001	**Date Collected:**	04/22/2015
Sample Matrix:	Water	**Date Received:**	04/29/2015

Gasoline Range Organics

Sample Name:	AOC15042210A178	**Units:**	ug/L
Lab Code:	K1504515-012	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	NWTPH-Gx		

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTPH	**4800**	Y	250	25	13	1	04/30/15	04/30/15	KWG1503824	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	110	50-150	04/30/15	Acceptable

Comments:

Analytical Results

Client:	Sealaska Environmental Services, LLC	**Service Request:**	K1504515
Project:	JBLM FLAO SITES/TO 001	**Date Collected:**	04/22/2015
Sample Matrix:	Water	**Date Received:**	04/29/2015

Gasoline Range Organics

Sample Name:	AOC15042210A1718	**Units:**	ug/L
Lab Code:	K1504515-013	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	NWTPH-Gx		

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTPH	**5000**	Y	250	25	13	1	04/30/15	04/30/15	KWG1503824	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	115	50-150	04/30/15	Acceptable

Comments:

Analytical Results

Client:	Sealaska Environmental Services, LLC	**Service Request:**	K1504515
Project:	JBLM FLAO SITES/TO 001	**Date Collected:**	04/22/2015
Sample Matrix:	Water	**Date Received:**	04/29/2015

Gasoline Range Organics

Sample Name:	TB-150422	**Units:**	ug/L
Lab Code:	K1504515-014	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	NWTPH-Gx		

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTPH	**13**	J	250	25	13	1	04/30/15	04/30/15	KWG1503824	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	104	50-150	04/30/15	Acceptable

Comments:

Analytical Results

Client:	Sealaska Environmental Services, LLC	**Service Request:**	K1504515
Project:	JBLM FLAO SITES/TO 001	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

Gasoline Range Organics

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1503824-3	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	NWTPH-Gx		

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTPH	ND	U	250	25	13	1	04/30/15	04/30/15	KWG1503824	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	103	50-150	04/30/15	Acceptable

Comments:

Volatile Organic Compounds

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Client: Sealaska Environmental Services, LLC **Service Request:** K1504515
Project: JBLM FLAO SITES/TO 001

Cover Page - Organic Analysis Data Package
Volatile Organic Compounds

Sample Name	Lab Code	Date Collected	Date Received
AOC15042395A172	K1504515-008	04/23/2015	04/29/2015
AOC15042295A173A	K1504515-009	04/22/2015	04/29/2015
AOC15042295A174	K1504515-010	04/22/2015	04/29/2015
AOC15042207A177	K1504515-011	04/22/2015	04/29/2015
AOC15042210A178	K1504515-012	04/22/2015	04/29/2015
AOC15042210A1718	K1504515-013	04/22/2015	04/29/2015
TB-150422	K1504515-014	04/22/2015	04/29/2015
LGC150428EGDYI-1	K1504515-021	04/28/2015	04/29/2015
LGC150428EGDYE-1	K1504515-022	04/28/2015	04/29/2015
LGC150428I5I-1	K1504515-023	04/28/2015	04/29/2015
LGC150428I5E-1	K1504515-024	04/28/2015	04/29/2015
LGC150428SLAPTI-1	K1504515-025	04/28/2015	04/29/2015
LGC150428SLAPTE-1	K1504515-026	04/28/2015	04/29/2015
LGC150428DUP-1	K1504515-027	04/28/2015	04/29/2015
AOC15042207A177MS	KWG1503902-1	04/22/2015	04/29/2015
AOC15042207A177DMS	KWG1503902-2	04/22/2015	04/29/2015

Analytical Results

Client:	Sealaska Environmental Services, LLC	**Service Request:**	K1504515
Project:	JBLM FLAO SITES/TO 001	**Date Collected:**	04/23/2015
Sample Matrix:	Water	**Date Received:**	04/29/2015

Volatile Organic Compounds

Sample Name:	AOC15042395A172	**Units:**	ug/L
Lab Code:	K1504515-008	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C		

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	ND	U	0.50	0.10	0.062	1	05/04/15	05/05/15	KWG1503902	
Toluene	ND	U	0.50	0.10	0.054	1	05/04/15	05/05/15	KWG1503902	
Ethylbenzene	ND	U	0.50	0.10	0.050	1	05/04/15	05/05/15	KWG1503902	
m,p-Xylenes	ND	U	0.50	0.20	0.11	1	05/04/15	05/05/15	KWG1503902	
o-Xylene	ND	U	0.50	0.20	0.074	1	05/04/15	05/05/15	KWG1503902	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,2-Dichloroethane-d4	99	70-120	05/05/15	Acceptable
Dibromofluoromethane	104	85-115	05/05/15	Acceptable
Toluene-d8	103	85-120	05/05/15	Acceptable
4-Bromofluorobenzene	97	75-120	05/05/15	Acceptable

Comments:

Analytical Results

Client:	Sealaska Environmental Services, LLC	**Service Request:**	K1504515
Project:	JBLM FLAO SITES/TO 001	**Date Collected:**	04/22/2015
Sample Matrix:	Water	**Date Received:**	04/29/2015

Volatile Organic Compounds

Sample Name:	AOC15042295A173A	**Units:**	ug/L
Lab Code:	K1504515-009	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C		

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	**21**		0.50	0.10	0.062	1	05/04/15	05/05/15	KWG1503902	
Toluene	**25**		0.50	0.10	0.054	1	05/04/15	05/05/15	KWG1503902	
Ethylbenzene	**33**		0.50	0.10	0.050	1	05/04/15	05/05/15	KWG1503902	
m,p-Xylenes	**91**		0.50	0.20	0.11	1	05/04/15	05/05/15	KWG1503902	
o-Xylene	**75**		0.50	0.20	0.074	1	05/04/15	05/05/15	KWG1503902	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,2-Dichloroethane-d4	98	70-120	05/05/15	Acceptable
Dibromofluoromethane	100	85-115	05/05/15	Acceptable
Toluene-d8	103	85-120	05/05/15	Acceptable
4-Bromofluorobenzene	100	75-120	05/05/15	Acceptable

Comments:

Analytical Results

Client:	Sealaska Environmental Services, LLC	**Service Request:**	K1504515
Project:	JBLM FLAO SITES/TO 001	**Date Collected:**	04/22/2015
Sample Matrix:	Water	**Date Received:**	04/29/2015

Volatile Organic Compounds

Sample Name:	AOC15042295A174	**Units:**	ug/L
Lab Code:	K1504515-010	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C		

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	ND	U	0.50	0.10	0.062	1	05/04/15	05/05/15	KWG1503902	
Toluene	ND	U	0.50	0.10	0.054	1	05/04/15	05/05/15	KWG1503902	
Ethylbenzene	ND	U	0.50	0.10	0.050	1	05/04/15	05/05/15	KWG1503902	
m,p-Xylenes	ND	U	0.50	0.20	0.11	1	05/04/15	05/05/15	KWG1503902	
o-Xylene	ND	U	0.50	0.20	0.074	1	05/04/15	05/05/15	KWG1503902	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,2-Dichloroethane-d4	100	70-120	05/05/15	Acceptable
Dibromofluoromethane	103	85-115	05/05/15	Acceptable
Toluene-d8	103	85-120	05/05/15	Acceptable
4-Bromofluorobenzene	98	75-120	05/05/15	Acceptable

Comments:

Analytical Results

Client:	Sealaska Environmental Services, LLC	**Service Request:**	K1504515
Project:	JBLM FLAO SITES/TO 001	**Date Collected:**	04/22/2015
Sample Matrix:	Water	**Date Received:**	04/29/2015

Volatile Organic Compounds

Sample Name:	AOC15042207A177	**Units:**	ug/L
Lab Code:	K1504515-011	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C		

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	ND	U	0.50	0.10	0.062	1	05/04/15	05/05/15	KWG1503902	
Toluene	ND	U	0.50	0.10	0.054	1	05/04/15	05/05/15	KWG1503902	
Ethylbenzene	ND	U	0.50	0.10	0.050	1	05/04/15	05/05/15	KWG1503902	
m,p-Xylenes	ND	U	0.50	0.20	0.11	1	05/04/15	05/05/15	KWG1503902	
o-Xylene	ND	U	0.50	0.20	0.074	1	05/04/15	05/05/15	KWG1503902	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,2-Dichloroethane-d4	96	70-120	05/05/15	Acceptable
Dibromofluoromethane	100	85-115	05/05/15	Acceptable
Toluene-d8	102	85-120	05/05/15	Acceptable
4-Bromofluorobenzene	97	75-120	05/05/15	Acceptable

Comments:

Analytical Results

Client:	Sealaska Environmental Services, LLC	**Service Request:**	K1504515
Project:	JBLM FLAO SITES/TO 001	**Date Collected:**	04/22/2015
Sample Matrix:	Water	**Date Received:**	04/29/2015

Volatile Organic Compounds

Sample Name:	AOC15042210A178	**Units:**	ug/L
Lab Code:	K1504515-012	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C		

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	**470**	D	5.0	1.0	0.62	10	05/04/15	05/05/15	KWG1503902	
Toluene	**260**	D	5.0	1.0	0.54	10	05/04/15	05/05/15	KWG1503902	
Ethylbenzene	**100**	D	5.0	1.0	0.50	10	05/04/15	05/05/15	KWG1503902	
m,p-Xylenes	**500**	D	5.0	2.0	1.1	10	05/04/15	05/05/15	KWG1503902	
o-Xylene	**310**	D	5.0	2.0	0.74	10	05/04/15	05/05/15	KWG1503902	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,2-Dichloroethane-d4	97	70-120	05/05/15	Acceptable
Dibromofluoromethane	99	85-115	05/05/15	Acceptable
Toluene-d8	103	85-120	05/05/15	Acceptable
4-Bromofluorobenzene	99	75-120	05/05/15	Acceptable

Comments:

Analytical Results

Client:	Sealaska Environmental Services, LLC	**Service Request:**	K1504515
Project:	JBLM FLAO SITES/TO 001	**Date Collected:**	04/22/2015
Sample Matrix:	Water	**Date Received:**	04/29/2015

Volatile Organic Compounds

Sample Name:	AOC15042210A1718	**Units:**	ug/L
Lab Code:	K1504515-013	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C		

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	**380**	D	5.0	1.0	0.62	10	05/04/15	05/05/15	KWG1503902	
Toluene	**210**	D	5.0	1.0	0.54	10	05/04/15	05/05/15	KWG1503902	
Ethylbenzene	**89**	D	5.0	1.0	0.50	10	05/04/15	05/05/15	KWG1503902	
m,p-Xylenes	**420**	D	5.0	2.0	1.1	10	05/04/15	05/05/15	KWG1503902	
o-Xylene	**250**	D	5.0	2.0	0.74	10	05/04/15	05/05/15	KWG1503902	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,2-Dichloroethane-d4	96	70-120	05/05/15	Acceptable
Dibromofluoromethane	102	85-115	05/05/15	Acceptable
Toluene-d8	103	85-120	05/05/15	Acceptable
4-Bromofluorobenzene	97	75-120	05/05/15	Acceptable

Comments:

Analytical Results

Client:	Sealaska Environmental Services, LLC	**Service Request:**	K1504515
Project:	JBLM FLAO SITES/TO 001	**Date Collected:**	04/22/2015
Sample Matrix:	Water	**Date Received:**	04/29/2015

Volatile Organic Compounds

Sample Name:	TB-150422	**Units:**	ug/L
Lab Code:	K1504515-014	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C		

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	ND	U	0.50	0.10	0.062	1	05/04/15	05/05/15	KWG1503902	
Toluene	ND	U	0.50	0.10	0.054	1	05/04/15	05/05/15	KWG1503902	
Ethylbenzene	ND	U	0.50	0.10	0.050	1	05/04/15	05/05/15	KWG1503902	
m,p-Xylenes	ND	U	0.50	0.20	0.11	1	05/04/15	05/05/15	KWG1503902	
o-Xylene	ND	U	0.50	0.20	0.074	1	05/04/15	05/05/15	KWG1503902	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,2-Dichloroethane-d4	98	70-120	05/05/15	Acceptable
Dibromofluoromethane	101	85-115	05/05/15	Acceptable
Toluene-d8	102	85-120	05/05/15	Acceptable
4-Bromofluorobenzene	97	75-120	05/05/15	Acceptable

Comments:

Tetra Tech, Inc.
Data Review Report

Project Name:	JBLM/Areas of Concern (AOCs)
Project Number	K1504515
Collection Date:	04/22/15 - 04/28/15
Laboratory:	ALS Environmental, Kelso, WA

DATA REVIEW

- Twenty-six water samples were collected and analyzed for volatile organic compounds by EPA method SW-846 8260C, explosives by EPA method SW-846 8330, and diesel range and gasoline range organics by EPA method SW-846 8015. One trip blank was also collected to assess potential contamination during sample transport. A review was performed of the following parameters as applicable:

- Chain-of-custody (C-O-C) documentation
- Holding time compliance
- Blank sample data
- Spike sample recovery
- Duplicate samples
- Surrogate recoveries

Sample Identification:

AOC1504274131MW02
AOC1504274131MW03
AOC1504274131MW13
AOC1504274131MW04
AOC1504274131MW05
AOC150423AOC108B05
AOC150423JPMW02
AOC15042395A172
AOC15042295A173A
AOC15042207A177
AOC15042210A178
AOC15042210A1718
TB-150422
AIAIDW150427
AOC150428AO111MW04
AOC150428AO111MW05
AOC150423AO111MW06
AOC150427AO111MW07
AOC150428AO111MW08
LGC150428EGDYI-1
LGC150428EGDYE-1
LGC150428I5I-1
LGC150428I5E-1
LGC150428SLAPTI-1
LGC150428SLAPTE-1
LGC150428DUP-1
AOC15042295A174

Review Summary

1. Holding Time

All holding times were met. All coolers arrived at an acceptable temperature level. All chain of custody documentation and sample labels were in order.

2. Matrix Spikes

Sample AOC1504274131MW05 was analyzed as the matrix spike and matrix spike duplicate for diesel range organics. Both recoveries were within recommended limits of control. Sample AOC15042207A177 was selected as the matrix spike and matrix spike duplicate for BTEX. All recoveries were within recommended limits of control. A batch QC matrix spike and spike duplicate was analyzed for the full suite of volatile organic compounds. Only styrene was out of control low and was not detected in any of the samples. No matrix spike or spike duplicate was analyzed for gasoline range organics or explosives.

3. Blanks

Two method blanks were reported for volatile organic compounds along with the one trip blank that was submitted. Both method blanks had a reported detections of methylene chloride (0.15 ug/L, 0.14 ug/L). There were no detections for methylene chloride in any of the samples. The trip blank was analyzed for BTEX and gasoline range organics. There were no detections for any of these compounds. The method blanks for diesel range organics and explosives were free of contamination.

4. Duplicates

For diesel range organics, sample AOC1504274131MW13 was collected as a field duplicate for sample AOC1504274131MW03. The field duplicate precision for diesel range organics was high (35%). The fingerprint for the sample and duplicate resembled a petroleum product eluting in the same carbon range as diesel even though it did not match the standard. Sample results may be considered to be estimated. For gasoline range organics, sample AOC15042210A1718 was collected as a field duplicate for sample AOC15042210A178. The field duplicate precision was within recommended limits of control. One field duplicate was collected for the full suite of volatile organic compounds and one field duplicate was collected for BTEX. For BTEX, sample AOC15042210A1718 was collected as a field duplicate for sample AOC15042210A178 and for VOC's sampleLGC150428DUP-1 was collected as a duplicate of sample LGC150428I5I. All reported results above reporting limits for both sets of field duplicates were within recommended limits of control. No duplicate was collected for the explosives sample. The LCS/LCSD and the MS/MSD RPD's were within recommended limits of control.

5. Laboratory Control Samples

The laboratory control samples for diesel range organics, gasoline range organics, and explosives were within the recommended limits of control. Two sets of laboratory control samples were reported for volatile organic compounds. All recoveries were within recommended limits of control with the exception of trichlorofluoromethane in one of the laboratory control samples. There were no detections in any of the samples and no action was required.

6. Surrogates

For explosives, the surrogate recovery was outside of the recommended limits of control high. The reported concentration for RDX may be considered to be biased high. All other surrogate recoveries for all other methods were within acceptable limits of control.

7. Comments

Manual integration was performed to correct the automated data program integration. The manual integration was performed in accordance with NELAP and DOD QA/QC protocol. For diesel range and gasoline range organics, the laboratory indicated that the chromatographic patterns resembled petroleum products in the same carbon range as the standards, but that the pattern did not match the standards. The concentrations may be considered to be estimated values. All data are complete and usable.

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F : +1 360 636 1068
www.alsglobal.com

September 24, 2015 **Analytical Report for Service Request No:** K1509795

Scott Elkind
Sealaska Environmental Services, LLC
18743 Front Street NE
P.O. Box 869
Poulsbo, WA 98370

RE: JBLM FLAO / TO 01A

Dear Scott,

Enclosed are the results of the sample(s) submitted to our laboratory September 04, 2015
For your reference, these analyses have been assigned our service request number **K1509795.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3376. You may also contact me via email at gregory.salata@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Gregory Salata, Ph.D.
Client Services
Manager

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Table of Contents

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEC UST	http://dec.alaska.gov/applications/eh/ehllabreports/USTLabs.aspx	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L14-51
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	Not available	-
Idaho DHW	http://www.healthandwelfare.idaho.gov/Health/Labs/CertificationDrinkingWaterLabs/tabid/1833/Default.aspx	-
ISO 17025	http://www.pjlabs.com/	L14-50
Louisiana DEQ	http://www.deq.louisiana.gov/portal/DIVISIONS/PublicParticipationandPermitSupport/LouisianaLaboratoryAccreditationProgram.aspx	03016
Maine DHS	Not available	WA01276
Michigan DEQ	http://www.michigan.gov/deq/0,1607,7-135-3307_4131_4156---,00.html	9949
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Montana DPHHS	http://www.dphhs.mt.gov/publichealth/	CERT0047
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/oqa/	WA005
North Carolina DWQ	http://www.dwqlab.org/	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/envserv/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wisconsin DNR	http://dnr.wi.gov/	998386840
Wyoming (EPA Region 8)	http://www.epa.gov/region8/water/dwhome/wyomingdi.html	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.
Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Case Narrative

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
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ALS ENVIRONMENTAL

Client:	Sealaska Environmental Services, LLC	**Service Request No.:**	K1509795
Project:	JBLM FLAO/ TO 01A	**Date Received:**	09/04/15
Sample Matrix:	Water		

Case Narrative

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier IV validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Sixteen water samples were received for analysis at ALS Environmental on 09/04/15. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4ºC upon receipt at the laboratory.

Diesel Range Organics by Method NWTP-Dx

Sample Notes and Discussion:
Manual integration of one or more chromatographic peaks was required to correct the integration performed by the automated data processing program. The manual integration was performed in accordance with ALS policy, which is consistent with the National Environmental Laboratory Accreditation Program (NELAP), Department of Defense (DOD), and other certifying agencies. The analytes that required manual integrations are identified on each sample report contained in this data package.

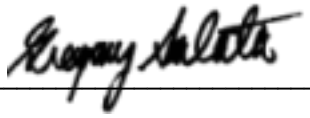
Relative Percent Difference Exceptions:
The Relative Percent Difference (RPD) criterion for the replicate analysis of Diesel Rnage Organics (DRO) and Residual Range Organics (RRO) in sample AOC1509034131MW04 was not applicable because the analyte concentration was not significantly greater than the Method Reporting Limit (MRL). Analytical values derived from measurements close to the detection limit are not subject to the same accuracy and precision criteria as results derived from measurements higher on the calibration range for the method.

No other anomalies associated with the analysis of these samples were observed.

Gasoline Range Organics by Method NWTPH-Gx

Sample Notes and Discussion:
Manual integration of one or more chromatographic peaks was required to correct the integration performed by the automated data processing program. The manual integrations were performed in accordance with ALS policy, which is consistent with the National Environmental Laboratory Accreditation Program (NELAP), Department of Defense (DOD), and other certifying agencies. The analytes that required manual integrations are identified on each sample report contained in this data package.

No other anomalies associated with the analysis of these samples were observed.

Approved by 

Volatile Organic Compounds by EPA Method 8260

Matrix Spike Recovery Exceptions:
The Matrix Spike/Duplicate Matrix Spike (MS/DMS) recoveries of all analytes for sample AOC15090295A173A were outside control criteria. Positive detections in the parent sample are flagged as per the DOD QAPP. No further corrective action was appropriate.

Sample Notes and Discussion:
Manual integration of one or more chromatographic peaks was required to correct the integration performed by the automated data processing program. The manual integrations were performed in accordance with ALS policy, which is consistent with the National Environmental Laboratory Accreditation Program (NELAP), Department of Defense (DOD), and other certifying agencies. The analytes that required manual integrations are identified on each sample report contained in this data package.

No other anomalies associated with the analysis of these samples were observed.

Approved by_____

Chain of Custody

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www.alsglobal.com

ALS Environmental

CHAIN OF CUSTODY
63023

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SR# 1150997795

COC Set 1 of 2

COC#

1317 South 13th Ave, Kelso, WA 98626 Phone (360) 577-7222 / 800-695-7222 / FAX (360) 636-1068
www.alsglobal.com

Project Name: JBLM FLAO	Project Number: TO 01A
Project Manager: SCOTT ELKIND	
Company: SEALASKA ENVIRONMENTAL	
Address: 18743 FRONT ST. NE STE 201	
Phone #: (360) 930-3187	email: SCOTT.ELKIND@SEALASKA.COM
Sampler Signature:	Sampler Printed Name: WILL KAAGE

CLIENT SAMPLE ID	LABID	SAMPLING Date	Time	Matrix	NUMBER OF CONTAINERS	6H: SM 9221 B / Tot Coli MT	48H: 300.0 / NO2	48H: 300.0 / NO3	48H: 300.0 / NO3 Diss	48H: SM 5210 B / BOD 5 Day	7D: SM 2540 C / TDS	7D: SM 2540 D / TSS	14D: 8260C / VOC FP BTEX	14D: NWTPH-Dx / NW_TPH	14D: ~~SM2320B Alkalinity~~ GX_TPH: G	14D: SM 2320 B / Bicarb Alk	14D: SM 4500-CN- E / CN T	28D: 300.0 / Cl D	28D: 300.0 / SO4 D	28D: 353.2 / NO2 NO3 T	28D: 7470A / Hg T	28D: 9060 / TOC T	28D: SM 4500-NH3 G / Ammonia	28D: SM 5220 C / COD T	180D: 6010C / Metals D	180D: 6010C / Metals T	999D: Filter Met / Filter Met		Remarks
1 AOC150831A0111MW06		08-31-15	1705	GW	2									2															
2 AOC150831A0111MW07		08-31-15	1303	GW	2									2															
3 TB-150901		09-01-15	0815	W	4								2		2														
4 AOC150901AOC108B05		09-01-15	0925	GW	2									2															
5 AOC150901JPMW02		09-01-15	1040	GW	2									2															
6 AOC150901A0111MW08		09-01-15	1155	GW	2									2															
7 AOC150901110A178		09-01-15	1420	GW	6								3		3														
8 AOC150901110A1718		09-01-15	1430	GW	6								3		3														
9 AOC150901195A172		09-01-15	1540	GW	6								3		3														
10 AOC150902195A173A		09-02-15	0950	GW	18								9		9														MS/MSD

Report Requirements

___ I. Routine Report: Method Blank, Surrogate, as required

___ II. Report Dup., MS, MSD as required

___ III. CLP Like Summary (no raw data)

___ IV. Data Validation Report

___ V. EDD

Invoice Information

P.O.# PO-01281 AU

Bill To:

Turnaround Requirements

___ 24 hr. ___ 48 hr.

___ 5 Day

X Standard

Requested Report Date

Circle which metals are to be analyzed

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Special Instructions/Comments:

*Indicate State Hydrocarbon Procedure: AK CA WI Northwest Other____(Circle One)

*AS PER CONTRACT

Relinquished By:	Received By:	Relinquished By:	Received By:	Relinquished By:	Received By:
Signature: Tom Malamakal	Signature	Signature	Signature: Les Kennedy	Signature	Signature
Printed Name: TOM MALAMAKAL	Printed Name	Printed Name	Printed Name: Les Kennedy	Printed Name	Printed Name
Firm: SEALASKA ENVIRONMENTAL	Firm: MC DELIVERY	Firm: MC DELIVERY	Firm: ALS	Firm	Firm
Date/Time: 9/4/15 10:00	Date/Time	Date/Time	Date/Time: 9/4/15 @ 1135	Date/Time	Date/Time

LW 9/4/15

ALS Environmental

CHAIN OF CUSTODY
63023

001

SR# K1509795

COC Set 2 of 2

COC#

1317 South 13th Ave, Kelso, WA 98626 Phone (360) 577-7222 / 800-695-7222 / FAX (360) 636-1068
www.alsglobal.com

Project Name: JBLM FLAO	Project Number: TO 04
Project Manager: SCOTT ELKIND	
Company: SEALASKA ENVIRONMENTAL	
Address: 18743 FRONT ST. NE STE 201	
Phone #: (360) 930-3187	email: SCOTT.ELKIND@SEALASKA.COM
Sampler Signature:	Sampler Printed Name: WILL KAAGE

CLIENT SAMPLE ID	LABID	SAMPLING Date	SAMPLING Time	Matrix	NUMBER OF CONTAINERS	6H: SM 9221 B / Tot Coli MT	48H: 300.0 / NO2	48H: 300.0 / NO3	48H: 300.0 / NO3 Diss	48H: SM 6210 B / BOD 5 Day	7D: SM 2540 C / TDS	7D: SM 2540 D / TSS	14D: 8260C / VOC FP BTEX	14D: NWTPH-Dx / NW_TPH	14D: ~~SM 5520 B / Hexane~~ NWTPH-G	14D: SM 2320 B / Bicarb Alk	14D: SM 4500-CN- E / CN T	28D: 300.0 / Cl D	28D: 300.0 / SO4 D	28D: 353.2 / NO2 NO3 T	28D: 7470A / Hg T	28D: 9060 / TOC T	28D: SM 4500-NH3 G / Ammonia	28D: SM 5220 C / COD T	180D: 6010C / Metals D	180D: 6010C / Metals T	999D: Filter Met / Filter Met	1	Remarks
1. AOC15090207A177		09-02-15	1100	GW	6								3		3														
2. AOC15090341311MW03		09-03-15	0955	GW	2									2															
3. AOC15090341311MW02		09-03-15	1055	GW	2									2															
4. AOC15090341311MW12		09-03-15	1105	GW	2									2															
5. AOC15090341311MW05		09-03-15	1200	GW	2									2															
6. AOC15090341311MW04		09-03-15	1315	GW	6									6															MS/MSD
7.																													
8.																													
9.																													
10.																													

Report Requirements

- ___ I. Routine Report: Method Blank, Surrogate, as required
- ___ II. Report Dup., MS, MSD as required
- ___ III. CLP Like Summary (no raw data)
- ___ IV. Data Validation Report
- ___ V. EDD

Invoice Information

P.O.# PO-01281 AU

Bill To:

Turnaround Requirements

- ___ 24 hr.
- ___ 48 hr.
- ___ 5 Day
- X Standard

Requested Report Date

Circle which metals are to be analyzed

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Special Instructions/Comments: *Indicate State Hydrocarbon Procedure: AK CA WI Northwest Other____(Circle One)

* AS PER CONTRACT

Relinquished By:	Received By:	Relinquished By:	Received By:	Relinquished By:	Received By:
Signature:	Signature	Signature	Signature	Signature	Signature
Printed Name: TOM MALAMAKAL	Printed Name	Printed Name	Printed Name: Les Kennedy	Printed Name	Printed Name
Firm: SEALASKA ENVIRONMENTAL	Firm: MC DELIVERY	Firm: MC DELIVERY	Firm: ALS	Firm	Firm
Date/Time: 9/4/15 1000	Date/Time	Date/Time	Date/Time: 9/4/15 1135	Date/Time	Date/Time

PC GS

Cooler Receipt and Preservation Form

Client / Project: Sealaska Service Request *K15* 09795

Received: 9/4/15 Opened: 9/4/15 By: UL Unloaded: 9/4/15 By: UL

1. Samples were received via? *Mail* *Fed Ex* *UPS* *DHL* *PDX* (*Courier*) *Hand Delivered*
2. Samples were received in: (circle) (*Cooler*) *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA (Y) N If yes, how many and where? 1 front / back
   If present, were custody seals intact? (Y) N If present, were they signed and dated? (Y) N

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
0.7	0.8	3.3	3.4	+0.1	351	63023		
0.5	0.4	0.0	-0.1	-0.1	354			
-0.4	-0.4	-0.3	-0.3	0	349			
-1.2	-1.0	0.4	0.6	+0.2	352			

4. Packing material: *Inserts* (*Baggies*) (*Bubble Wrap*) (*Gel Packs*) *Wet Ice* *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N
6. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA (Y) N
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA (Y) N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA (Y) N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* (NA) Y N
11. Were VOA vials received without headspace? *Indicate in the table below.* NA (Y) N
12. Was C12/Res negative? (NA) Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

Page ____ *of* ____

Diesel and Residual Range Organics

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Client: Sealaska Environmental Services, LLC **Service Request:** K1509795
Project: JBLM FLAO/TO 01A

Cover Page - Organic Analysis Data Package
Diesel and Residual Range Organics

Sample Name	Lab Code	Date Collected	Date Received
AOC150831A0111MW06	K1509795-001	08/31/2015	09/04/2015
AOC150831A0111MW07	K1509795-002	08/31/2015	09/04/2015
AOC150901AOC108B05	K1509795-004	09/01/2015	09/04/2015
AOC150901JPMW02	K1509795-005	09/01/2015	09/04/2015
AOC150901A0111MW08	K1509795-006	09/01/2015	09/04/2015
AOC1509034131MW03	K1509795-012	09/03/2015	09/04/2015
AOC1509034131MW02	K1509795-013	09/03/2015	09/04/2015
AOC1509034131MW12	K1509795-014	09/03/2015	09/04/2015
AOC1509034131MW05	K1509795-015	09/03/2015	09/04/2015
AOC1509034131MW04	K1509795-016	09/03/2015	09/04/2015
AOC1509034131MW04	KWG1508751-1	09/03/2015	09/04/2015
AOC1509034131MW04MS	KWG1508751-2	09/03/2015	09/04/2015
AOC1509034131MW04DMS	KWG1508751-3	09/03/2015	09/04/2015

Analytical Results

Client:	Sealaska Environmental Services, LLC	**Service Request:**	K1509795
Project:	JBLM FLAO/TO 01A	**Date Collected:**	08/31/2015
Sample Matrix:	Water	**Date Received:**	09/04/2015

Diesel and Residual Range Organics

Sample Name:	AOC150831A0111MW06	**Units:**	ug/L
Lab Code:	K1509795-001	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**25**	J	97	20	11	1	09/14/15	09/17/15	KWG1508751	
Residual Range Organics (RRO)	**62**	J	97	50	19	1	09/14/15	09/17/15	KWG1508751	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	96	50-150	09/17/15	Acceptable
n-Triacontane	99	50-150	09/17/15	Acceptable

Comments:

Analytical Results

Client:	Sealaska Environmental Services, LLC	**Service Request:**	K1509795
Project:	JBLM FLAO/TO 01A	**Date Collected:**	08/31/2015
Sample Matrix:	Water	**Date Received:**	09/04/2015

Diesel and Residual Range Organics

Sample Name:	AOC150831A0111MW07	**Units:**	ug/L
Lab Code:	K1509795-002	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**68**	J	97	20	11	1	09/14/15	09/17/15	KWG1508751	
Residual Range Organics (RRO)	**130**	L	97	50	19	1	09/14/15	09/17/15	KWG1508751	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	94	50-150	09/17/15	Acceptable
n-Triacontane	97	50-150	09/17/15	Acceptable

Comments:

Analytical Results

Client:	Sealaska Environmental Services, LLC	**Service Request:**	K1509795
Project:	JBLM FLAO/TO 01A	**Date Collected:**	09/01/2015
Sample Matrix:	Water	**Date Received:**	09/04/2015

Diesel and Residual Range Organics

Sample Name:	AOC150901AOC108B05	**Units:**	ug/L
Lab Code:	K1509795-004	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**2300**	Y	97	20	11	1	09/14/15	09/17/15	KWG1508751	
Residual Range Organics (RRO)	**470**	Z	97	50	19	1	09/14/15	09/17/15	KWG1508751	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	94	50-150	09/17/15	Acceptable
n-Triacontane	106	50-150	09/17/15	Acceptable

Comments:

Analytical Results

Client:	Sealaska Environmental Services, LLC	**Service Request:**	K1509795
Project:	JBLM FLAO/TO 01A	**Date Collected:**	09/01/2015
Sample Matrix:	Water	**Date Received:**	09/04/2015

Diesel and Residual Range Organics

Sample Name:	AOC150901JPMW02	**Units:**	ug/L
Lab Code:	K1509795-005	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**24**	J	97	20	11	1	09/14/15	09/17/15	KWG1508751	
Residual Range Organics (RRO)	**69**	J	97	50	19	1	09/14/15	09/17/15	KWG1508751	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	101	50-150	09/17/15	Acceptable
n-Triacontane	104	50-150	09/17/15	Acceptable

Comments:

Analytical Results

Client:	Sealaska Environmental Services, LLC	**Service Request:**	K1509795
Project:	JBLM FLAO/TO 01A	**Date Collected:**	09/01/2015
Sample Matrix:	Water	**Date Received:**	09/04/2015

Diesel and Residual Range Organics

Sample Name:	AOC150901A0111MW08	**Units:**	ug/L
Lab Code:	K1509795-006	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**350**	Y	97	20	11	1	09/14/15	09/17/15	KWG1508751	
Residual Range Organics (RRO)	**160**	L	97	50	19	1	09/14/15	09/17/15	KWG1508751	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	99	50-150	09/17/15	Acceptable
n-Triacontane	102	50-150	09/17/15	Acceptable

Comments:

Analytical Results

Client:	Sealaska Environmental Services, LLC	**Service Request:**	K1509795
Project:	JBLM FLAO/TO 01A	**Date Collected:**	09/03/2015
Sample Matrix:	Water	**Date Received:**	09/04/2015

Diesel and Residual Range Organics

Sample Name:	AOC1509034131MW03	**Units:**	ug/L
Lab Code:	K1509795-012	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**3100**	Y	95	20	11	1	09/14/15	09/17/15	KWG1508751	
Residual Range Organics (RRO)	**640**	L	95	50	19	1	09/14/15	09/17/15	KWG1508751	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	102	50-150	09/17/15	Acceptable
n-Triacontane	106	50-150	09/17/15	Acceptable

Comments:

Analytical Results

Client:	Sealaska Environmental Services, LLC	**Service Request:**	K1509795
Project:	JBLM FLAO/TO 01A	**Date Collected:**	09/03/2015
Sample Matrix:	Water	**Date Received:**	09/04/2015

Diesel and Residual Range Organics

Sample Name:	AOC1509034131MW02	**Units:**	ug/L
Lab Code:	K1509795-013	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**1600**	Y	95	20	11	1	09/14/15	09/17/15	KWG1508751	
Residual Range Organics (RRO)	**750**	L	95	50	19	1	09/14/15	09/17/15	KWG1508751	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	102	50-150	09/17/15	Acceptable
n-Triacontane	104	50-150	09/17/15	Acceptable

Comments:

Analytical Results

Client:	Sealaska Environmental Services, LLC	**Service Request:**	K1509795
Project:	JBLM FLAO/TO 01A	**Date Collected:**	09/03/2015
Sample Matrix:	Water	**Date Received:**	09/04/2015

Diesel and Residual Range Organics

Sample Name:	AOC1509034131MW12	**Units:**	ug/L
Lab Code:	K1509795-014	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**1900**	Y	95	20	11	1	09/14/15	09/17/15	KWG1508751	
Residual Range Organics (RRO)	**890**	L	95	50	19	1	09/14/15	09/17/15	KWG1508751	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	93	50-150	09/17/15	Acceptable
n-Triacontane	98	50-150	09/17/15	Acceptable

Comments:

Analytical Results

Client:	Sealaska Environmental Services, LLC	**Service Request:**	K1509795
Project:	JBLM FLAO/TO 01A	**Date Collected:**	09/03/2015
Sample Matrix:	Water	**Date Received:**	09/04/2015

Diesel and Residual Range Organics

Sample Name:	AOC1509034131MW05	**Units:**	ug/L
Lab Code:	K1509795-015	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**28**	J	95	20	11	1	09/14/15	09/17/15	KWG1508751	
Residual Range Organics (RRO)	**100**	Z	95	50	19	1	09/14/15	09/17/15	KWG1508751	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	104	50-150	09/17/15	Acceptable
n-Triacontane	106	50-150	09/17/15	Acceptable

Comments:

Analytical Results

Client:	Sealaska Environmental Services, LLC	**Service Request:**	K1509795
Project:	JBLM FLAO/TO 01A	**Date Collected:**	09/03/2015
Sample Matrix:	Water	**Date Received:**	09/04/2015

Diesel and Residual Range Organics

Sample Name:	AOC1509034131MW04	**Units:**	ug/L
Lab Code:	K1509795-016	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**19**	J	95	20	11	1	09/14/15	09/17/15	KWG1508751	
Residual Range Organics (RRO)	**51**	J	95	50	19	1	09/14/15	09/17/15	KWG1508751	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	92	50-150	09/17/15	Acceptable
n-Triacontane	94	50-150	09/17/15	Acceptable

Comments:

Analytical Results

Client:	Sealaska Environmental Services, LLC	**Service Request:**	K1509795
Project:	JBLM FLAO/TO 01A	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

Diesel and Residual Range Organics

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1508751-5	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	ND	U	95	20	11	1	09/14/15	09/17/15	KWG1508751	
Residual Range Organics (RRO)	**33**	J	95	50	19	1	09/14/15	09/17/15	KWG1508751	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	99	50-150	09/17/15	Acceptable
n-Triacontane	102	50-150	09/17/15	Acceptable

Comments:

Gasoline Range Organics

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Client: Sealaska Environmental Services, LLC **Service Request:** K1509795
Project: JBLM FLAO/TO 01A

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Gasoline Range Organics

Sample Name	Lab Code	Date Collected	Date Received
TB-150901	K1509795-003	08/31/2015	09/04/2015
AOC15090110A178	K1509795-007	09/01/2015	09/04/2015
AOC15090110A1718	K1509795-008	09/01/2015	09/04/2015
AOC15090195A172	K1509795-009	09/01/2015	09/04/2015
AOC15090295A173A	K1509795-010	09/02/2015	09/04/2015
AOC15090207A177	K1509795-011	09/02/2015	09/04/2015
AOC15090295A173AMS	KWG1508626-1	09/02/2015	09/04/2015
AOC15090295A173ADMS	KWG1508626-2	09/02/2015	09/04/2015

Analytical Results

Client:	Sealaska Environmental Services, LLC	**Service Request:**	K1509795
Project:	JBLM FLAO/TO 01A	**Date Collected:**	08/31/2015
Sample Matrix:	Water	**Date Received:**	09/04/2015

Gasoline Range Organics

Sample Name:	TB-150901	**Units:**	ug/L
Lab Code:	K1509795-003	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	NWTPH-Gx		

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTPH	ND	U	250	25	13	1	09/08/15	09/08/15	KWG1508626	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	105	50-150	09/08/15	Acceptable

Comments:

Analytical Results

Client:	Sealaska Environmental Services, LLC	**Service Request:**	K1509795
Project:	JBLM FLAO/TO 01A	**Date Collected:**	09/01/2015
Sample Matrix:	Water	**Date Received:**	09/04/2015

Gasoline Range Organics

Sample Name:	AOC15090110A178	**Units:**	ug/L
Lab Code:	K1509795-007	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	NWTPH-Gx		

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTPH	**25000**	DY	2500	250	130	10	09/09/15	09/09/15	KWG1508626	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	111	50-150	09/09/15	Acceptable

Comments:

Analytical Results

Client:	Sealaska Environmental Services, LLC	**Service Request:**	K1509795
Project:	JBLM FLAO/TO 01A	**Date Collected:**	09/01/2015
Sample Matrix:	Water	**Date Received:**	09/04/2015

Gasoline Range Organics

Sample Name:	AOC15090110A1718	**Units:**	ug/L
Lab Code:	K1509795-008	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	NWTPH-Gx		

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTPH	**24000**	DY	2500	250	130	10	09/09/15	09/09/15	KWG1508626	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	110	50-150	09/09/15	Acceptable

Comments:

Analytical Results

Client:	Sealaska Environmental Services, LLC	**Service Request:**	K1509795
Project:	JBLM FLAO/TO 01A	**Date Collected:**	09/01/2015
Sample Matrix:	Water	**Date Received:**	09/04/2015

Gasoline Range Organics

Sample Name:	AOC15090195A172	**Units:**	ug/L
Lab Code:	K1509795-009	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	NWTPH-Gx		

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTPH	**48**	J	250	25	13	1	09/08/15	09/08/15	KWG1508626	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	106	50-150	09/08/15	Acceptable

Comments:

Analytical Results

Client:	Sealaska Environmental Services, LLC	**Service Request:**	K1509795
Project:	JBLM FLAO/TO 01A	**Date Collected:**	09/02/2015
Sample Matrix:	Water	**Date Received:**	09/04/2015

Gasoline Range Organics

Sample Name:	AOC15090295A173A	**Units:**	ug/L
Lab Code:	K1509795-010	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	NWTPH-Gx		

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTPH	**3400**	Y	250	25	13	1	09/08/15	09/08/15	KWG1508626	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	121	50-150	09/08/15	Acceptable

Comments:

Analytical Results

Client:	Sealaska Environmental Services, LLC	**Service Request:**	K1509795
Project:	JBLM FLAO/TO 01A	**Date Collected:**	09/02/2015
Sample Matrix:	Water	**Date Received:**	09/04/2015

Gasoline Range Organics

Sample Name:	AOC15090207A177	**Units:**	ug/L
Lab Code:	K1509795-011	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	NWTPH-Gx		

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTPH	**19**	J	250	25	13	1	09/09/15	09/09/15	KWG1508626	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	105	50-150	09/09/15	Acceptable

Comments:

Analytical Results

Client:	Sealaska Environmental Services, LLC	**Service Request:**	K1509795
Project:	JBLM FLAO/TO 01A	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

Gasoline Range Organics

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1508626-5	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	NWTPH-Gx		

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTPH	ND	U	250	25	13	1	09/09/15	09/09/15	KWG1508626	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	109	50-150	09/09/15	Acceptable

Comments:

Volatile Organic Compounds

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Client: Sealaska Environmental Services, LLC **Service Request:** K1509795
Project: JBLM FLAO/TO 01A

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Volatile Organic Compounds

Sample Name	Lab Code	Date Collected	Date Received
TB-150901	K1509795-003	08/31/2015	09/04/2015
AOC15090110A178	K1509795-007	09/01/2015	09/04/2015
AOC15090110A1718	K1509795-008	09/01/2015	09/04/2015
AOC15090195A172	K1509795-009	09/01/2015	09/04/2015
AOC15090295A173A	K1509795-010	09/02/2015	09/04/2015
AOC15090207A177	K1509795-011	09/02/2015	09/04/2015
AOC15090295A173AMS	KWG1508685-5	09/02/2015	09/04/2015
AOC15090295A173ADMS	KWG1508685-6	09/02/2015	09/04/2015

Analytical Results

Client:	Sealaska Environmental Services, LLC	**Service Request:**	K1509795
Project:	JBLM FLAO/TO 01A	**Date Collected:**	08/31/2015
Sample Matrix:	Water	**Date Received:**	09/04/2015

Volatile Organic Compounds

Sample Name:	TB-150901	**Units:**	ug/L
Lab Code:	K1509795-003	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C		

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	ND	U	0.50	0.10	0.062	1	09/10/15	09/10/15	KWG1508685	
Toluene	ND	U	0.50	0.10	0.054	1	09/10/15	09/10/15	KWG1508685	
Ethylbenzene	ND	U	0.50	0.10	0.050	1	09/10/15	09/10/15	KWG1508685	
m,p-Xylenes	ND	U	0.50	0.20	0.11	1	09/10/15	09/10/15	KWG1508685	
o-Xylene	ND	U	0.50	0.20	0.074	1	09/10/15	09/10/15	KWG1508685	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,2-Dichloroethane-d4	95	70-120	09/10/15	Acceptable
Dibromofluoromethane	103	85-115	09/10/15	Acceptable
Toluene-d8	94	85-120	09/10/15	Acceptable
4-Bromofluorobenzene	85	75-120	09/10/15	Acceptable

Comments:

Analytical Results

Client:	Sealaska Environmental Services, LLC	**Service Request:**	K1509795
Project:	JBLM FLAO/TO 01A	**Date Collected:**	09/01/2015
Sample Matrix:	Water	**Date Received:**	09/04/2015

Volatile Organic Compounds

Sample Name:	AOC15090110A178	**Units:**	ug/L
Lab Code:	K1509795-007	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C		

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	**170**	D	13	2.5	1.6	25	09/10/15	09/10/15	KWG1508685	
Toluene	**800**	D	13	2.5	1.4	25	09/10/15	09/10/15	KWG1508685	
Ethylbenzene	**740**	D	13	2.5	1.3	25	09/10/15	09/10/15	KWG1508685	
m,p-Xylenes	**2900**	D	13	5.0	2.8	25	09/10/15	09/10/15	KWG1508685	
o-Xylene	**850**	D	13	5.0	1.9	25	09/10/15	09/10/15	KWG1508685	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,2-Dichloroethane-d4	89	70-120	09/10/15	Acceptable
Dibromofluoromethane	94	85-115	09/10/15	Acceptable
Toluene-d8	94	85-120	09/10/15	Acceptable
4-Bromofluorobenzene	90	75-120	09/10/15	Acceptable

Comments:

Analytical Results

Client:	Sealaska Environmental Services, LLC	**Service Request:**	K1509795
Project:	JBLM FLAO/TO 01A	**Date Collected:**	09/01/2015
Sample Matrix:	Water	**Date Received:**	09/04/2015

Volatile Organic Compounds

Sample Name:	AOC15090110A1718	**Units:**	ug/L
Lab Code:	K1509795-008	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C		

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	**180**	D	13	2.5	1.6	25	09/10/15	09/10/15	KWG1508685	
Toluene	**870**	D	13	2.5	1.4	25	09/10/15	09/10/15	KWG1508685	
Ethylbenzene	**770**	D	13	2.5	1.3	25	09/10/15	09/10/15	KWG1508685	
m,p-Xylenes	**3000**	D	13	5.0	2.8	25	09/10/15	09/10/15	KWG1508685	
o-Xylene	**920**	D	13	5.0	1.9	25	09/10/15	09/10/15	KWG1508685	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,2-Dichloroethane-d4	87	70-120	09/10/15	Acceptable
Dibromofluoromethane	96	85-115	09/10/15	Acceptable
Toluene-d8	95	85-120	09/10/15	Acceptable
4-Bromofluorobenzene	89	75-120	09/10/15	Acceptable

Comments:

Analytical Results

Client:	Sealaska Environmental Services, LLC	**Service Request:**	K1509795
Project:	JBLM FLAO/TO 01A	**Date Collected:**	09/01/2015
Sample Matrix:	Water	**Date Received:**	09/04/2015

Volatile Organic Compounds

Sample Name:	AOC15090195A172	**Units:**	ug/L
Lab Code:	K1509795-009	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C		

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	ND	U	0.50	0.10	0.062	1	09/11/15	09/11/15	KWG1508685	
Toluene	**0.080**	J	0.50	0.10	0.054	1	09/11/15	09/11/15	KWG1508685	
Ethylbenzene	**0.070**	J	0.50	0.10	0.050	1	09/11/15	09/11/15	KWG1508685	
m,p-Xylenes	**0.28**	J	0.50	0.20	0.11	1	09/11/15	09/11/15	KWG1508685	
o-Xylene	**0.090**	J	0.50	0.20	0.074	1	09/11/15	09/11/15	KWG1508685	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,2-Dichloroethane-d4	92	70-120	09/11/15	Acceptable
Dibromofluoromethane	100	85-115	09/11/15	Acceptable
Toluene-d8	93	85-120	09/11/15	Acceptable
4-Bromofluorobenzene	84	75-120	09/11/15	Acceptable

Comments:

Analytical Results

Client:	Sealaska Environmental Services, LLC	**Service Request:**	K1509795
Project:	JBLM FLAO/TO 01A	**Date Collected:**	09/02/2015
Sample Matrix:	Water	**Date Received:**	09/04/2015

Volatile Organic Compounds

Sample Name:	AOC15090295A173A	**Units:**	ug/L
Lab Code:	K1509795-010	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C		

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	**28**	JD	2.5	0.50	0.31	5	09/11/15	09/11/15	KWG1508685	
Toluene	**34**	JD	2.5	0.50	0.27	5	09/11/15	09/11/15	KWG1508685	
Ethylbenzene	**120**	JD	2.5	0.50	0.25	5	09/11/15	09/11/15	KWG1508685	
m,p-Xylenes	**190**	JD	2.5	1.0	0.55	5	09/11/15	09/11/15	KWG1508685	
o-Xylene	**52**	JD	2.5	1.0	0.37	5	09/11/15	09/11/15	KWG1508685	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,2-Dichloroethane-d4	89	70-120	09/11/15	Acceptable
Dibromofluoromethane	98	85-115	09/11/15	Acceptable
Toluene-d8	95	85-120	09/11/15	Acceptable
4-Bromofluorobenzene	84	75-120	09/11/15	Acceptable

Comments:

Analytical Results

Client:	Sealaska Environmental Services, LLC	**Service Request:**	K1509795
Project:	JBLM FLAO/TO 01A	**Date Collected:**	09/02/2015
Sample Matrix:	Water	**Date Received:**	09/04/2015

Volatile Organic Compounds

Sample Name:	AOC15090207A177	**Units:**	ug/L
Lab Code:	K1509795-011	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C		

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	ND	U	0.50	0.10	0.062	1	09/11/15	09/11/15	KWG1508685	
Toluene	ND	U	0.50	0.10	0.054	1	09/11/15	09/11/15	KWG1508685	
Ethylbenzene	**0.050**	J	0.50	0.10	0.050	1	09/11/15	09/11/15	KWG1508685	
m,p-Xylenes	ND	U	0.50	0.20	0.11	1	09/11/15	09/11/15	KWG1508685	
o-Xylene	ND	U	0.50	0.20	0.074	1	09/11/15	09/11/15	KWG1508685	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,2-Dichloroethane-d4	93	70-120	09/11/15	Acceptable
Dibromofluoromethane	100	85-115	09/11/15	Acceptable
Toluene-d8	94	85-120	09/11/15	Acceptable
4-Bromofluorobenzene	86	75-120	09/11/15	Acceptable

Comments:

Analytical Results

Client:	Sealaska Environmental Services, LLC	**Service Request:**	K1509795
Project:	JBLM FLAO/TO 01A	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

Volatile Organic Compounds

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1508685-4	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C		

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	ND	U	0.50	0.10	0.062	1	09/10/15	09/10/15	KWG1508685	
Toluene	ND	U	0.50	0.10	0.054	1	09/10/15	09/10/15	KWG1508685	
Ethylbenzene	**0.050**	J	0.50	0.10	0.050	1	09/10/15	09/10/15	KWG1508685	
m,p-Xylenes	ND	U	0.50	0.20	0.11	1	09/10/15	09/10/15	KWG1508685	
o-Xylene	ND	U	0.50	0.20	0.074	1	09/10/15	09/10/15	KWG1508685	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,2-Dichloroethane-d4	91	70-120	09/10/15	Acceptable
Dibromofluoromethane	99	85-115	09/10/15	Acceptable
Toluene-d8	94	85-120	09/10/15	Acceptable
4-Bromofluorobenzene	86	75-120	09/10/15	Acceptable

Comments:

Tetra Tech, Inc.
Data Review Report

Project Name:	JBLM/Areas of Concern (AOCs)
Project Number	K1509795
Collection Date:	08/31/15 - 09/03/15
Laboratory:	ALS Environmental, Kelso, WA

DATA REVIEW

- Thirteen water samples and two field duplicates were collected and analyzed for volatile organic compounds (BTEX only) by EPA method SW-846 8260C, and diesel range and gasoline range organics by EPA method SW-846 8015. One trip blank was also collected to assess potential contamination during sample transport. A review was performed of the following parameters as applicable:

- Chain-of-custody (C-O-C) documentation
- Holding time compliance
- Blank sample data
- Spike sample recovery
- Duplicate samples
- Surrogate recoveries

Sample Identification:

AOC150831AO111MW06
AOC150831AO111MW07
TB-150901
AOC150901AOC108B05
AOC150901JPMW02
AOC150901AO111MW08
AOC15090110A178
AOC15090110A1718
AOC15090195A172
AOC15090295A173A
AOC15090207A177
AOC1509034131MW03
AOC1509034131MW02
AOC1509034131MW12
AOC1509034131MW05
AOC1509034131MW04

Review Summary

1. Holding Time

All holding times were met. All coolers arrived at an acceptable temperature level. All chain of custody documentation and sample labels were in order.

2. Matrix Spikes

Sample AOC1509034131MW04 was analyzed as the matrix spike and matrix spike duplicate for diesel range organics. Both recoveries were within recommended limits of control. Sample AOC15090295A173A was selected as the matrix spike and matrix spike duplicate for gasoline range organics and BTEX. All recoveries for gasoline range organics were within recommended limits of control. All recoveries for the BTEX spikes were outside of recommended control limits. Since the results have been reported from a dilution, they have been flagged as estimated.

3. Blanks

The trip blank was analyzed for gasoline range organics and BTEX and was free of contamination. The method blank for gasoline range organics was free of contamination. The method blank for diesel range organics had a reported detection for residual range organics of 33 ug/L. All samples may be considered to be biased high. The method blank for BTEX had a reported concentration for ethylbenzene of 0.05 ug/L. Samples AOC15090195A172 and AOC15090207A177 may be considered to be biased high or non-detect.

4. Duplicates

For diesel range organics, sample AOC1509034131MW12 was collected as a field duplicate for sample AOC1509034131MW02. The field duplicate precision for diesel range organics was within recommended limits of control. For gasoline range organics and BTEX, sample AOC15090110A1718 was collected as a field duplicate for sample AOC15090110A178. The field duplicate precision was within recommended limits of control for both methods. All LCS/LCSD and the MS/MSD RPD’s were within recommended limits of control.

5. Laboratory Control Samples

All recoveries were within recommended limits of control for all methods.

6. Surrogates

All surrogate recoveries for all methods were within recommended limits of control.

7. Comments

Manual integration was performed to correct the automated data program integration. The manual integration was performed in accordance with NELAP and DOD QA/QC protocol. For diesel range and gasoline range organics, the laboratory indicated that the chromatographic patterns resembled petroleum products in the same carbon range as the standards, but that the pattern did not match the standards. The concentrations may be considered to be estimated values. All data are complete and usable.