DRAFT

12 JANUARY 2018

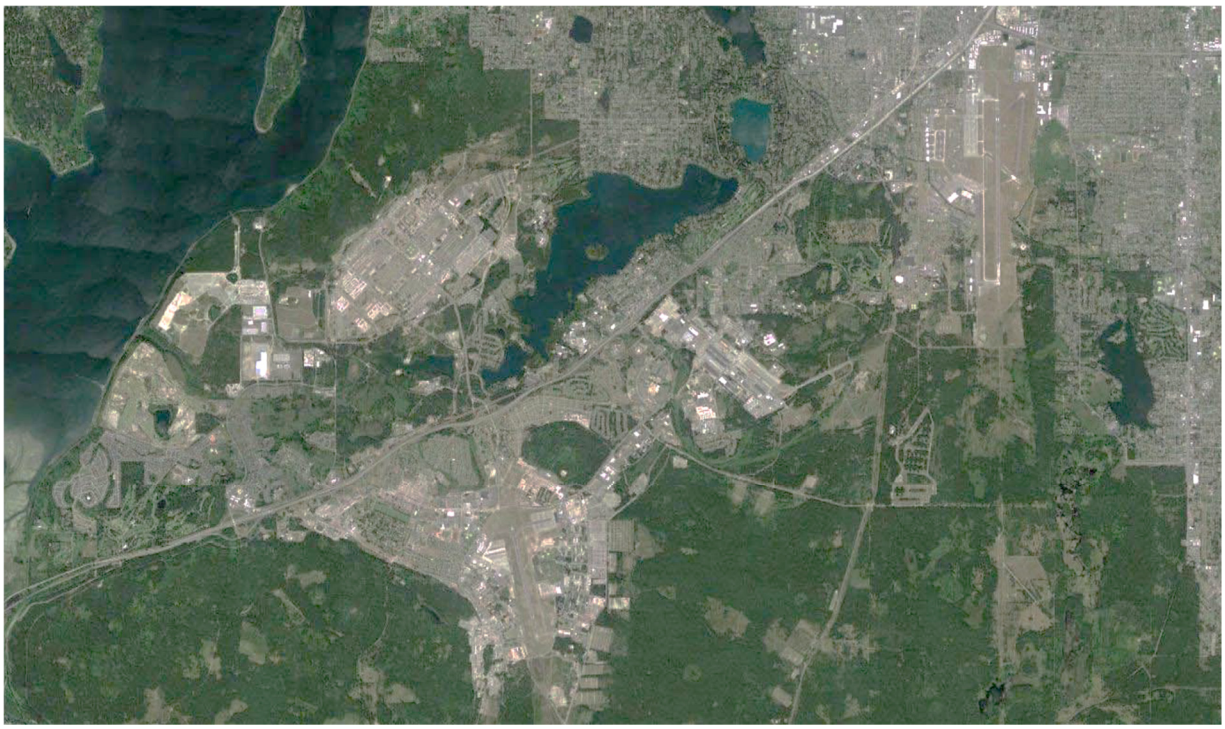
ANNUAL AIR SPARGE AND SOIL VAPOR EXTRACTION SYSTEM PERFORMANCE MONITORING REPORT – 2017

Joint Base Lewis-McChord Area of Concern 9-2
Lewis North Credit Union

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

January 12, 2018

Public Works

Mr. Charles Hoffman, PE
Washington Department of Ecology
Hazardous Waste & Toxics Reduction
PO Box 47775
Olympia, Washington 98504-7775

Dear Mr. Hoffman:

Enclosed for your review is one paper copy of the Draft Annual Air Sparge and Soil Vapor Extraction System, Performance Monitoring Report – 2017, Joint Base Lewis-McChord Area of Concern 9-2, North Base Credit Union. This report focuses on the operation and maintenance of the Air Sparge/Soil Vapor Extraction system completed in 2017 including the physical monitoring (e.g., system operation and pressure monitoring) of the system.

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: 2018.01.12 15:11:35 -08'00'

Meseret C. Ghebresllassie
Installation Restoration Program Manager
Public Works Department

DRAFT

ANNUAL AIR SPARGE AND SOIL VAPOR EXTRACTION SYSTEM PERFORMANCE MONITORING REPORT – 2017

JOINT BASE LEWIS-MCCHORD AREA OF CONCERN 9-2
LEWIS NORTH CREDIT UNION

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

JANUARY 12, 2018

JOINT BASE LEWIS-MCCHORD
PIERCE COUNTY, WASHINGTON

SEALASKA ENVIRONMENTAL SERVICES, LLC
POULSBO, WASHINGTON

Prepared by: _____
Tom Malamakal
Environmental Technician
(425-623-2951)

Reviewed by: _____
Bob Thomas
Plant Maintenance Manager
(360-930-2768)

Approved by: _____
Scott Elkind, PE
Project Manager
(360-626-3991)

CONTENTS

CONTENTS (continued)

APPENDICES

FIGURES

CONTENTS (continued)

TABLES

ACRONYMS AND ABBREVIATIONS

AOC	Area of Concern
AS	air sparge
AS/SVE system	Lewis North Credit Union air sparge, soil vapor extraction, and sub-slab depressurization system
BTEX	benzene, toluene, ethylbenzene, and xylenes
Ecology	Washington State Department of Ecology
cfm	cubic feet per minute
eV	electron volts
GAC	granular-activated carbon
HVAC	heating, ventilation, and air conditioning
IRP	Installation Restoration Program
JBLM	Joint Base Lewis-McChord
m^3/hr	cubic meters per hour
$\mu g/m^3$	microgram per cubic meter
µg/L	micrograms per liter
MTCA	Model Toxics Control Act
OSHA	Occupational Safety and Health Administration
PCS	petroleum-contaminated soil
PID	photoionization detector
PSCAA	Puget Sound Clean Air Agency
psi	pounds per square inch
Sealaska	Sealaska Environmental Services, LLC
SIM	Selected Ion Mode
SSD	sub-slab depressurization
STEL	short-term exposure limit
SVE	soil vapor extraction
SVP	soil vapor probe
TPH-G	gasoline-range total petroleum hydrocarbons
TWA	time-weighted average
UST	underground storage tank

ACRONYMS AND ABBREVIATIONS (continued)

1	VI	vapor intrusion
2	VOC	volatile organic compound
3	ZOI	zone of influence

1 INTRODUCTION

This annual performance monitoring report was prepared by Sealaska Environmental Services, LLC (Sealaska) for Joint Base Lewis-McChord (JBLM) Public Works, Installation Restoration Program (IRP). The report documents the 2017 operations, maintenance, and monitoring conducted at the Lewis North Credit Union air sparge (AS), soil vapor extraction (SVE), and sub-slab depressurization (SSD) system (hereafter, referred to as AS/SVE system) at JBLM, Washington (Figure 1-1). The AS/SVE system was installed to remediate petroleum-impacted soil and groundwater at a former fueling station (former Building A1033, site Area of Concern [AOC] 9-2) which is currently the site of the Lewis North Credit Union (Figure 1-2).

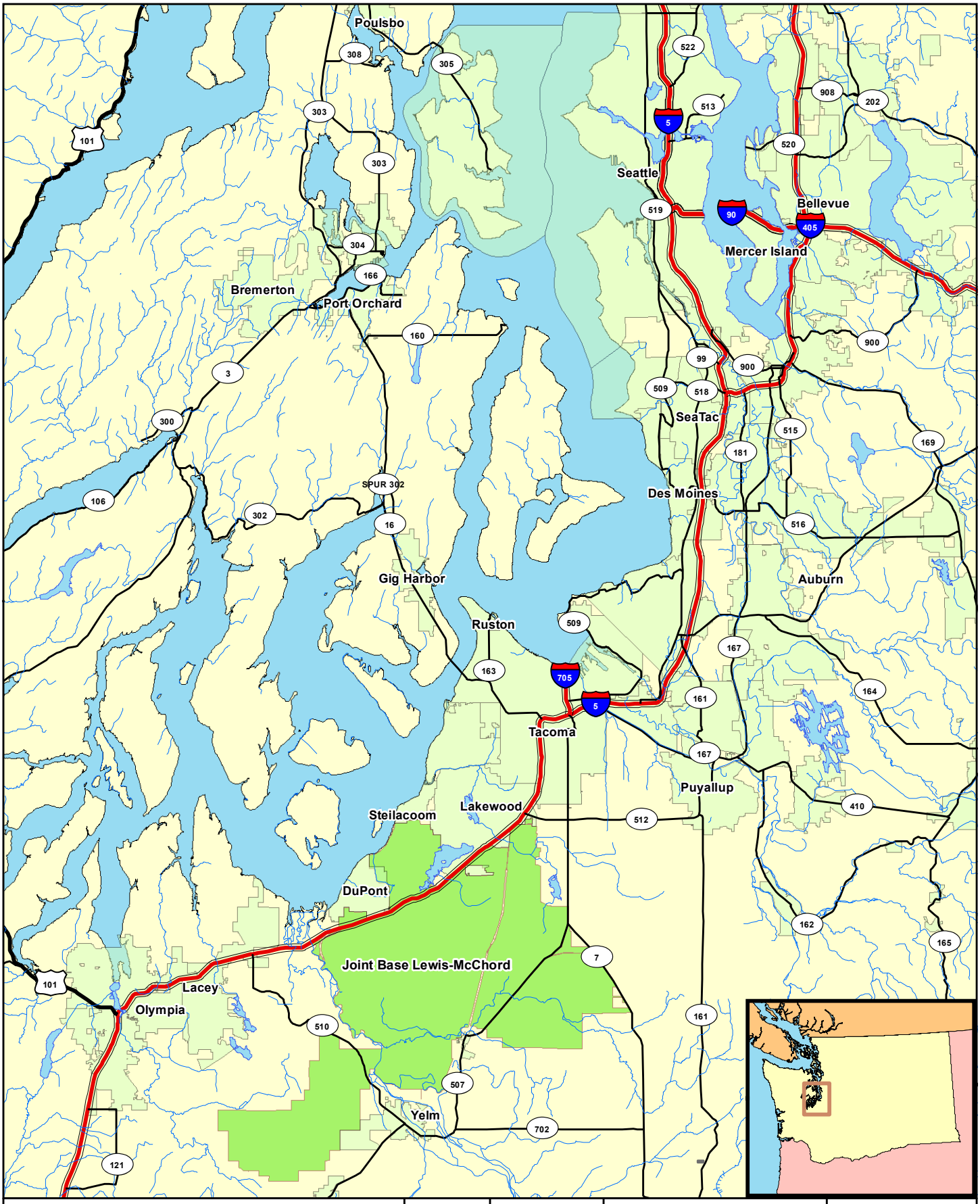
This report presents the information used to verify the effectiveness of the AS/SVE system in removing petroleum contamination from soil and groundwater at AOC 9-2.

Three types of monitoring are conducted to evaluate the effectiveness of the system:

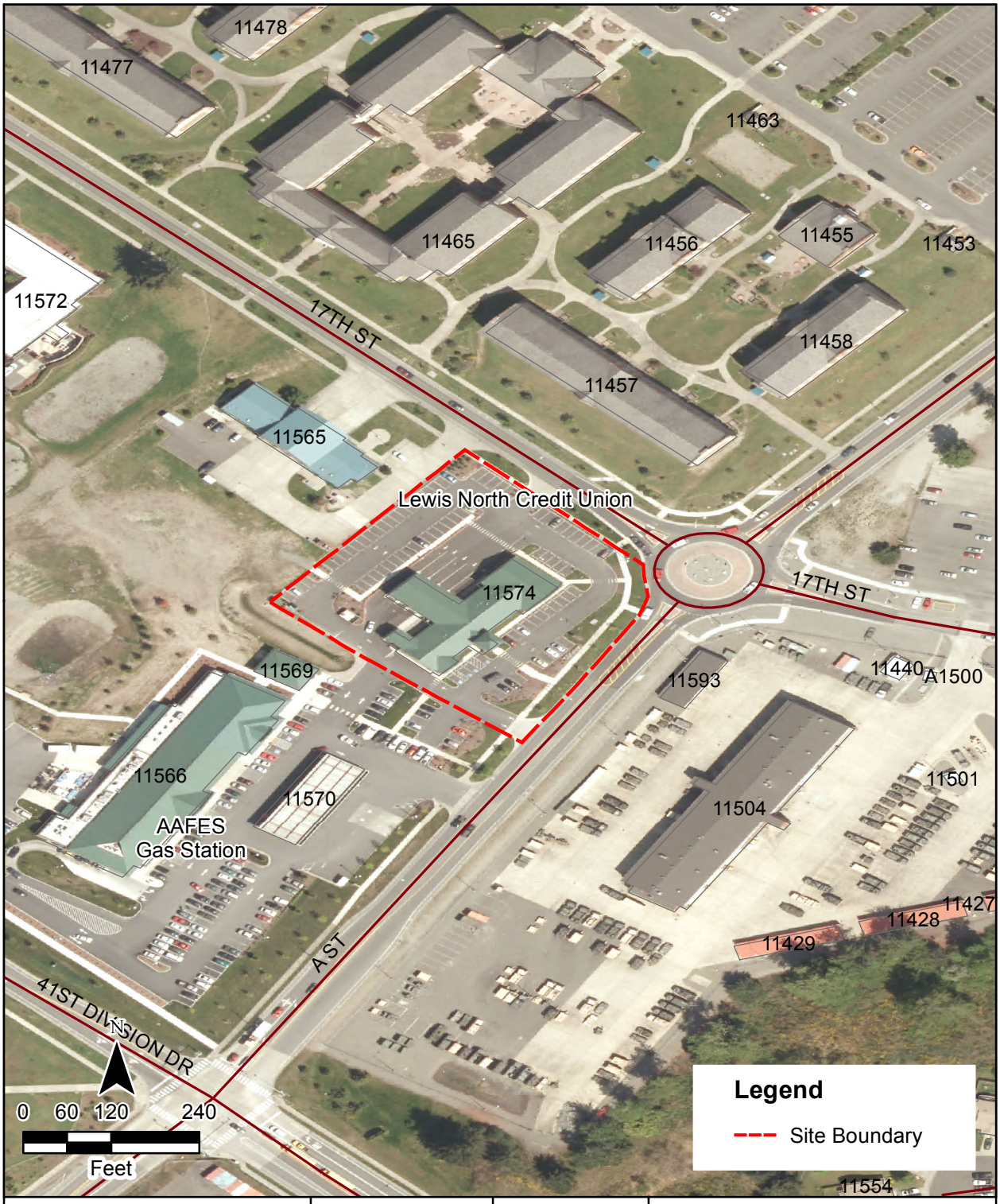
- Performance monitoring;
- Groundwater monitoring; and
- Vapor intrusion (VI) and ambient air monitoring.

Operation, maintenance, and monitoring were conducted in 2017 in accordance with the Air Sparge and Soil Vapor Extraction System Operations and Maintenance Manual, Joint Base Lewis-McChord Area of Concern 9-2 (Sealaska 2017a). Requirements included:

- Monitor and maintain operation and performance of the AS/SVE system;
- Monitor and maintain the effectiveness of SSD and vapor mitigation system for protection of building occupants from volatile organic compound (VOC) intrusion and removal of VOCs for site remediation;
- Monitor zone of influence (ZOI) of AS/SVE system to ensure VOC capture;
- Monitor VOC concentrations in SVE exhaust to ensure contaminant removal;



Path: P:\Dropbox (SES)\Fig\JBLM\ALL_FIG_1-1_JBLM_8.5X11.mxd
Date: 3/7/2017



Map Data: Coordinate System: UTM, Zone 10 Horizontal Datum: WGS 84	**USACE**	**SEALASKA**	Figure 1-2 Location of Lewis North Credit Union

Path: E:\Users\JBLM\TO 01A\Credit Union\O&M Report - 2015\Maps\SVE_Fig_1-2_LOC.mxd
Date: 5/25/2016

- Confirm that VOC concentrations associated with onsite residual contamination above regulatory criteria are not migrating into the Credit Union building; and
- Observe changes in VOC concentrations in groundwater through semiannual monitoring to document the effectiveness of the remedial action.

Results of groundwater monitoring at AOC-9-2 are presented in the Fort Lewis Agreed Order Groundwater Monitoring Report [Sealaska 2017b] and summarized in this document.

Additionally, the Interim Action Workplan (Versar 2013a) defined criteria for system shutdown, including extent of VOC removal as indicated by SVE exhaust and VOC concentrations in soil vapor and groundwater. The goal of remediation by AS/SVE is to satisfy Washington State Department of Ecology (Ecology) Model Toxics Control Act (MTCA) Method A cleanup standards for groundwater.

1.1 BACKGROUND

The former vehicle fueling station site is located on the southwest corner of the intersection of 17th Street and A Street on Lewis North (Figure 1-2). Constructed in 1967, the station consisted of a 10 feet x 15 feet office and a 30 feet x 60 feet metal canopy. Records indicate that two 4,000-gallon tanks were removed in 1990. Significant soil contamination was encountered during the removal of two additional 4,000-gallon gasoline underground storage tanks (USTs) in 1994, resulting in the removal of 1,138 cubic yards of petroleum-contaminated soil (PCS). The excavation was limited by groundwater and the foundation of the former Building A1033. A 1996 Site Assessment Report (USACE 1996) outlines events associated with the 1994 UST removal and subsequent investigations, including the installation of monitoring wells.

In 1998, a 10,000-gallon gasoline tank, associated piping, and fuel dispenser were removed. No additional soil removal took place during the 1998 tank removal because no evidence of a release associated with this tank was discovered. The 1998 UST removal and details of associated site characterization were presented in the June 1999 Field Report for JBLM UST & PCS Removal and Disposal (Garry Struthers & Associates 1999).

The building was demolished in 2002. Two additional USTs were discovered during excavation for construction of the Credit Union building in June 2009. The USTs were located adjacent and north of the four USTs removed in 1990 and 1994. The tanks removed in 2009, were estimated to each have an approximate capacity of 1,000 gallons, and appeared to have been closed-in-place with concrete fill. Laboratory results of the samples

collected from the floors and sidewalls of the UST excavation indicate that diesel was present in the soil at concentrations below MTCA Method A levels for unrestricted use.

Because gasoline was present in groundwater underlying the site, JBLM elected to install the AS/SVE system during building construction for the protection of building occupants. Two AS wells were installed in May 2009. The AS/SVE system began operation in February 2010. Construction of the Credit Union building at AOC 9-2 was completed in early 2010. A November 2011 pilot test and February 2012 VI monitoring were conducted to evaluate the effectiveness of the AS/SVE system for site remediation and SSD for protection of building occupants. The results of the pilot test and VI monitoring (Versar 2013b) suggested that the existing system would be adequate to achieve site remediation. The AS system operation was initiated as part of the pilot test. The system has continued to be in operation since the pilot test startup.

Conditions at AOC 9-2, the site of a former vehicle fueling station, are described in the Fort Lewis Agreed Order Draft Feasibility Study for Seven Sites (Versar 2009a) and an additional nine sites in the Remedial Investigation Report for Nine Agreed Order Sites (Bussey 2008).

The chronology of investigation events are summarized in Table 1-1.

Table 1-1. Investigation Chronology

Event	Date
Gas station constructed	1967
Two 4,000 gallon gasoline tanks removed	1990
Two additional 4,000 gallon gasoline tanks removed	1994
Removal of 1,138 cubic yards of PCS	1994
Monitoring wells 95-A17-1, 95-A17-2, 95-A17-3, 95-A17-3A, and 95-A17-4 installed	1995
Groundwater monitoring	1995-current
Site Assessment Report completed (USACE 1996)	1996
Monitoring wells 96-A17-5 and 96-A17-6 installed	1996
Removal of 10,000 gallon gasoline tank	1998
Field Report for JBLM UST & PCS Removal and Disposal (Garry Struthers & Associates 1999)	1999
Building demolished	2002
Monitoring well 07-A17-7 installed	2007
Two additional diesel USTs discovered closed in place (1,000 gallons each)	2009
Soil samples found diesel concentrations below MTCA Method A associated with diesel USTs	2009
Construction of AS/SVE system	2009
Two air sparge wells installed	2009
Construction of Credit Union building	2010

Table 1-1. Investigation Chronology (continued)

Event	Date
Monitoring well 10-A17-8 installed	2010
Eleven soil vapor probes installed	2010
Pilot test, startup, and initial VI monitoring completed (Versar 2013b)	2011-2012
AS/SVE system operation and monitoring	2012-current
VI monitoring	2012, 2014-2017
Soil vapor and pressure monitoring	2012, 2015-2017

Notes:
AS/SVE – air sparge/soil vapor extraction
MTCA – Model Toxics Control Act
PCS – petroleum-contaminated soil
USACE – United States Army Corps of Engineers
UST – underground storage tank
VI – vapor intrusion

1.2 REPORT ORGANIZATION

This report is organized as follows:

Section 1 **Introduction** – provides an overview of the project and the site description and background.

Section 2 **System Description** – provides a description of the AS/SVE system and components.

Section 3 **Performance Monitoring and Maintenance --** describes monitoring and maintenance activities completed during the performance period.

Section 4 **Groundwater Monitoring** – provides a summary of the semiannual groundwater monitoring completed at the site and results.

Section 5 **Vapor Intrusion and Ambient Air Monitoring** – presents a summary of the annual VI and ambient air monitoring and results.

Section 6 **Deviations from Interim Action Workplan** – provides a list of deviations from the requirements of the Workplan.

Section 7 **Conclusions**

Section 8 **Recommendations**

Section 9 **References**

2 SYSTEM DESCRIPTION

This section provides a brief description of the AS/SVE system. Figure 2-1 shows the layout of the SVE system. A vertical cross-section of the system beneath the Credit Union building is shown on Figure 2-2. A detailed description of system design is presented in the Draft Design Report, Air Sparge and Soil Vapor Extraction System, Fort Lewis Area of Concern 9-2 (Versar 2009b). In-depth AS/SVE system descriptions are provided in the Final Interim Action Workplan (Versar 2013a) and Sub-slab Depressurization, Air Sparge and Soil Vapor Extraction System, Pilot Test Startup and Vapor Intrusion Monitoring Report (Versar 2013b).

2.1 VAPOR BARRIER DESCRIPTION

A vapor barrier underlies the building slab. A combination of the sub-slab vapor barrier and sealed slab penetrations provides passive protection against fuel vapors entering the building. Vapor sampling ports penetrate the building footings at five points to allow for measurement of vacuum pressure and sub-slab air quality. Penetrations in the building slab were sealed during construction to reduce the potential for vapors entering the building or escaping.

2.2 SOIL VAPOR EXTRACTION/SUB-SLAB DEPRESSURIZATION SYSTEM DESCRIPTION

The SVE system consists of a vacuum blower housed in a small shed on a concrete pad located near the southwest corner of the site adjacent to the stormwater pond (see Figure 2-1). The SVE system maintains a negative pressure under the slab and vapor barrier. In addition, the building heating, ventilation, and air conditioning (HVAC) system maintains a positive pressure in the building interior. By maintaining this pressure differential over the slab and sub-slab system, soil vapors are drawn into the underlying extraction laterals, and away from the building.

Approximately 95% of the building site is covered with either asphalt or concrete. The capped site minimizes infiltration of surface air, maximizing the effectiveness of the SVE system. In addition, landscaped areas along the building foundation are planted with grass rather than less dense shrubbery.

2.3 AIR SPARGE SYSTEM DESCRIPTION

Figure 2-1 shows the site plan including the AS system layout. The AS system consists of a rotary vane blower, piping, and two vertical AS wells.

The AS blower is installed in a concrete vault located in the landscaped strip at the east edge of the property. The blower supplies air to the two sparge wells via a manifold (Figure 2-1, ASW-1 and ASW-2). Pressure indicators, flow regulating valves, and check valves are installed on the air supply manifold in the vaults at the top of the AS wells. Flow gauges are installed at each wellhead to measure air flow rate.

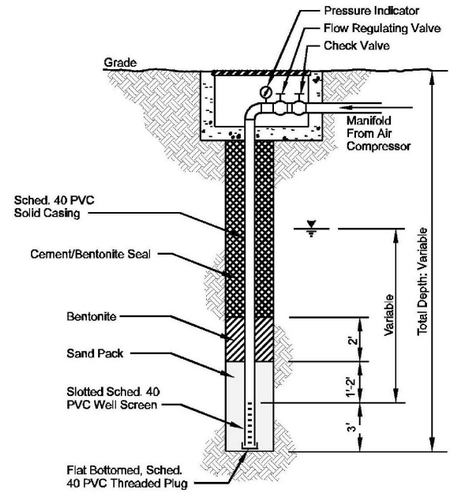
2.4 SOIL VAPOR PROBES

The system includes 11 soil vapor probes (SVPs). SVPs were placed at 20-foot intervals extending perpendicular to the midpoint of the north lateral as shown on Figure 2-1. The probes were installed to depths within the ZOI (see Figure 2-1) that was calculated during completion of the pilot test (Versar 2013b). Soil vapor samples are collected from the SVPs and analyzed for gasoline-range total petroleum hydrocarbons (TPH-G), and benzene, toluene, ethylbenzene, and xylenes (BTEX) to evaluate the effectiveness of the AS/SVE system. Soil vapor pressures are also measured to assess the ZOI of the AS and SVE blowers and confirm the ZOI calculated during pilot testing is still applicable.

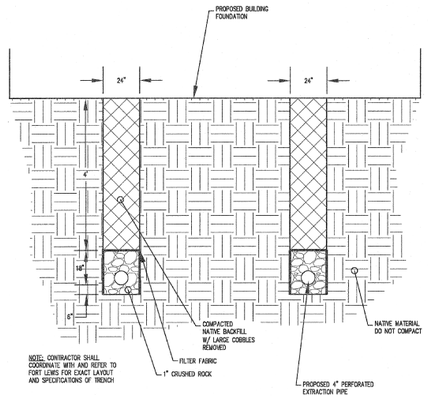
2.5 GROUNDWATER MONITORING WELLS

Eight groundwater monitoring wells are installed at AOC 9-2. The locations of the wells are identified on Figure 2-1. Sampling of groundwater monitoring wells is used to assess the progress of remedial action and overall groundwater quality at AOC 9-2.

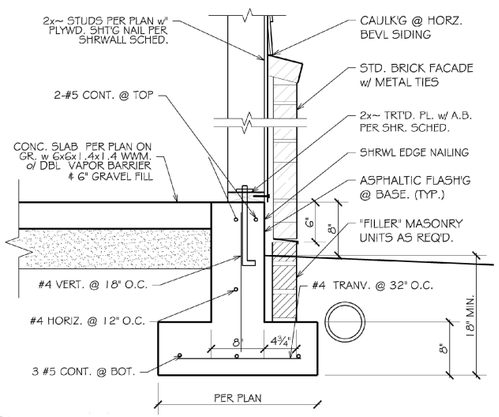
Typical Vertical Air Sparging Well Construction



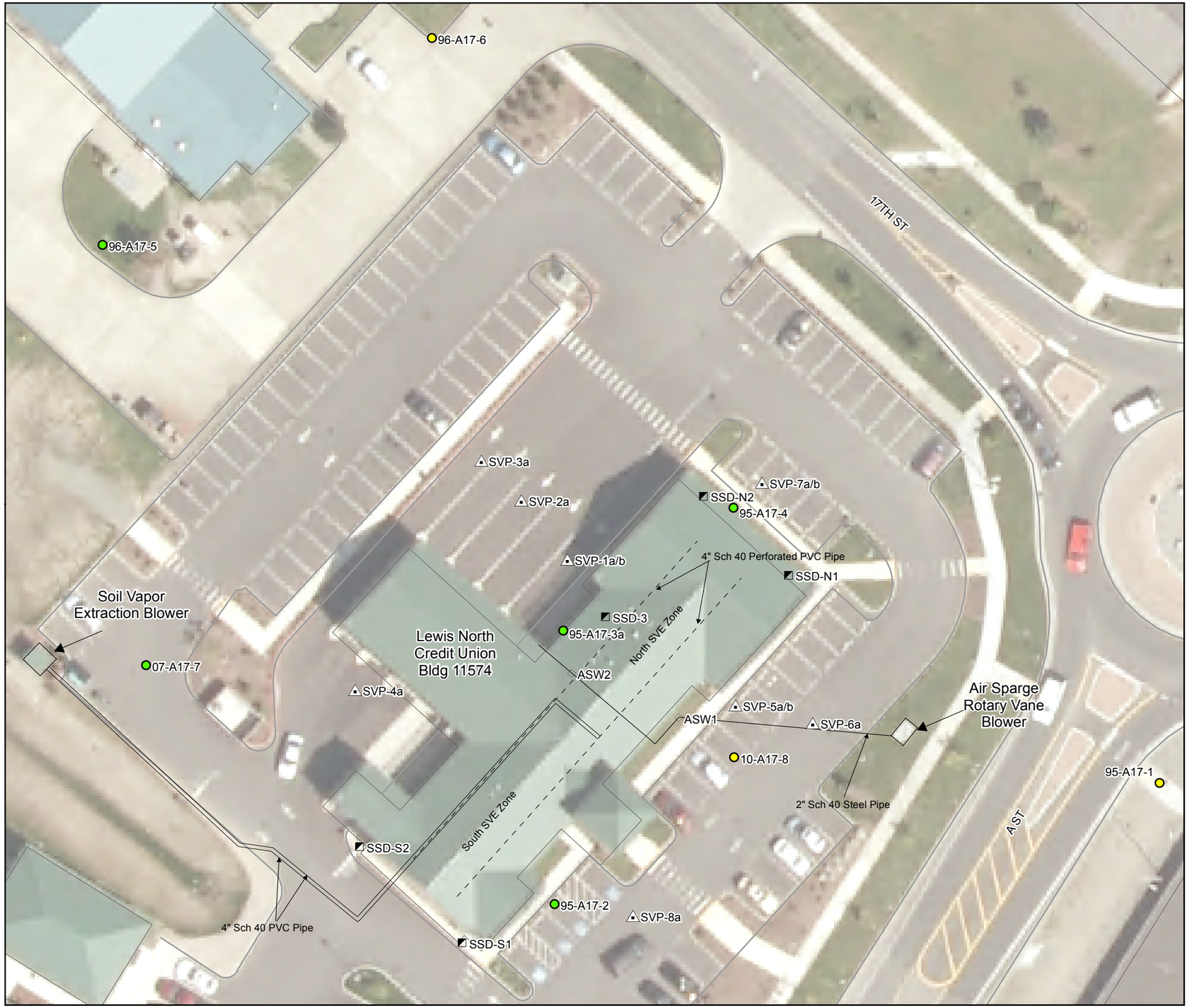
1 Air Sparge Well Construction



2 Vapor Extraction System Trench



3 Typical Footing



Legend

- Soil Vapor Probe
- Vacuum Port
- Air Sparge Well
- Monitoring Well
- Monitoring Well w/Transducer

0 5 10 20 Feet

N

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

USACE | **SEALASKA**

Figure 2-1
AOC 9-2
Air Sparge and Soil Vapor Extraction Layout

Path: P:\Production\Fig\JBLM\TO 01A\Credit Union\O&M Report - 2015\Maps\SVE_Fig_2-1_AS_VE_Layout.mxd
Date: 10/6/2015

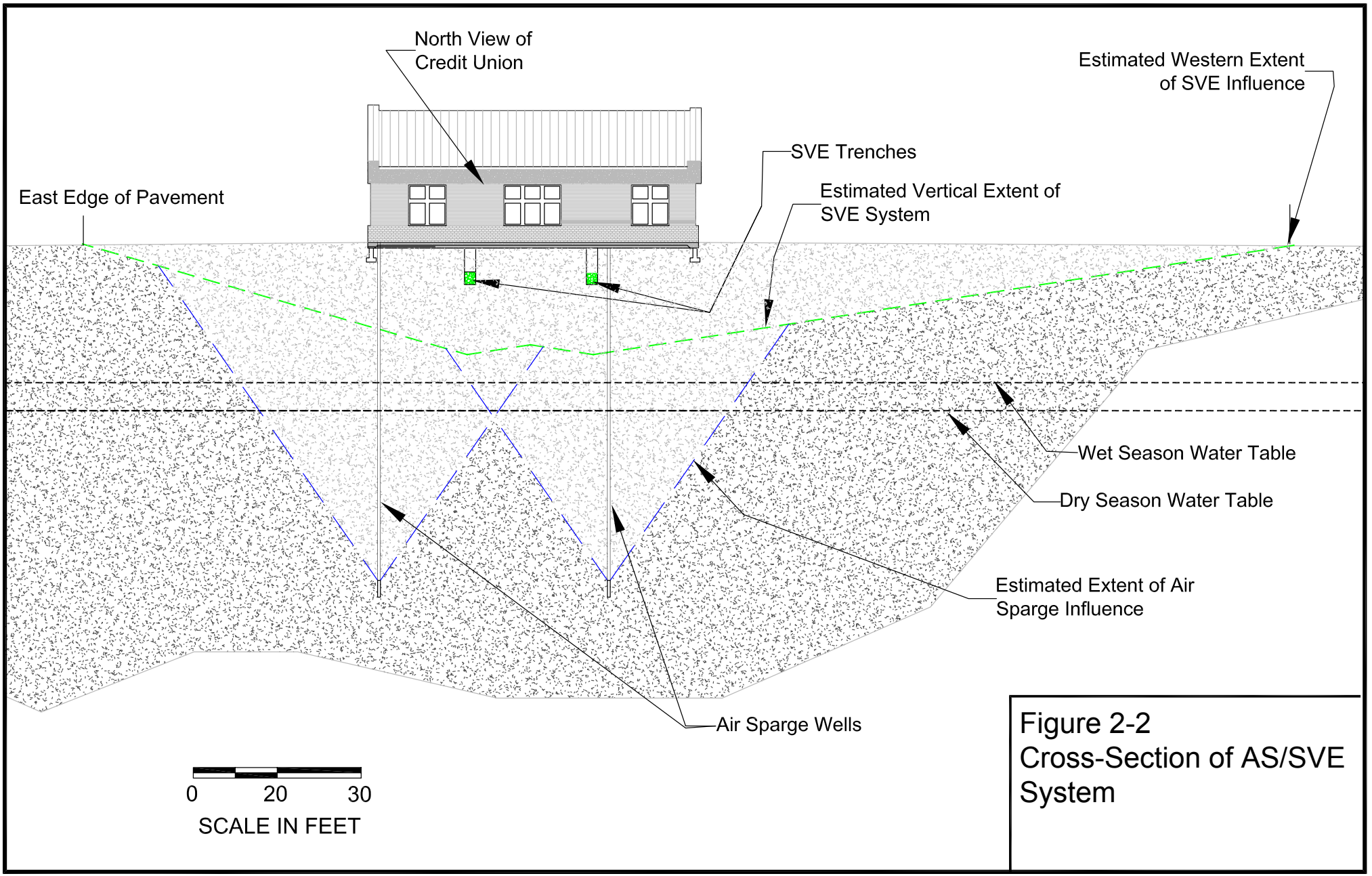


Figure 2-2
Cross-Section of AS/SVE System

3 PERFORMANCE MONITORING AND MAINTENANCE

A description of the required monitoring and maintenance activities is provided in the Air Sparge and Soil Vapor Extraction System Operations and Maintenance Manual (Sealaska 2017a).

Routine performance monitoring includes:

- Sampling to observe trends in groundwater and soil vapor concentrations;
- Monitoring SVE and SSD performance;
- Measuring blower ZOIs; and
- Measuring the ability of the system to strip and remove VOCs.

Performance monitoring focuses on:

- Operating the AS/SVE system equipment to allow efficient and effective remediation of contaminants in groundwater and soil at the site;
- Monitoring air flow throughout the system to ensure contaminants in soil vapor are removed and to maintain negative sub-slab pressure to prevent VI into the Credit Union building;
- Monitoring operating temperature to prevent damage to system components;
- Confirming that VOCs are being removed by the system;
- Monitoring SVP vacuum for assessment of SVE ZOI; and
- Ensuring emissions from the AS/SVE system are not above Puget Sound Clean Air Agency's (PSCAA) criteria.

All AS/SVE system operations, maintenance, and air monitoring activities were recorded on system log sheets. System log sheets for 2017 are provided in Appendix A. Collected field data for 2017 along with historical data are summarized as tables in Appendix B.

The following sections provide the results of performance monitoring, operation, and maintenance activities conducted in 2017.

3.1 AS/SVE SYSTEM OPERATION AND MAINTENANCE

AS/SVE system inspection and maintenance are conducted to guarantee continued system operation and to remove residual contamination at the site. In 2017, weekly inspection of the blowers revealed no unusual noises or oil leaks. No leaks were observed in the exposed

AS/SVE system's piping or fittings. No issues were observed in SVE air flow and vacuum pressures. No repairs of the SVE system were necessary in 2017.

The SVE system operated continuously during 2017, except for brief outages (less than 15 minutes per event) to drain the water vapor knock-out drum.

A granular-activated carbon (GAC) vessel was connected to the SVE exhaust in July 2015. The vessel contains 200 pounds GAC in a 55-gallon drum. A vent stack, constructed of Schedule 80 PVC, extended from the outlet of the GAC vessel to above the roofline of the SVE shed. The GAC was disconnected in July 2016 due to low emissions. The two GAC vessels were profiled as non-hazardous waste and stored onsite until off-site disposal on September 1, 2017. The profile for disposal of the GAC drums is contained in Appendix A.

The AS compressor is designed to discharge air at up to 20 pounds per square inch (psi) and 20 cubic feet per minute (cfm). After piping and fitting head losses, the typical operating pressure at wellheads is approximately 17 psi. The AS well head pressures were within expected operating condition during inspections.

AS wellheads and injection lines required no maintenance in 2017.

The AS compressor was turned off March 1, 2017 to allow for semiannual groundwater monitoring and remained off until August 24, 2017 to allow for possible contaminant rebound (see discussion in Section 4.3). The coupling between the AS motor and compressor failed in the initial attempt to restart the AS compressor on August 4, 2017. The coupling was replaced and the AS compressor restarted on August 24, 2017.

3.2 AIR FLOW AND TEMPERATURE MONITORING

Air flow is monitored to ensure that flow through the system is maintained to allow for efficient removal of VOCs. Temperature is monitored to ensure that higher than normal temperatures, that could potentially damage system equipment and infrastructure, are not present.

The normal air-flow velocity in the SVE exhaust line is approximately 40 to 50 meters per second. In 2017, the measured air-flow velocity of the SVE suction lines were within normal range.

The line from the AS compressor vault is steel and transitions to PVC at the ASW-1 wellhead. The AS lines are heated by air compression. The SVE suction lines are affected by ambient temperature. The acceptable temperature at the AS wells (ASW-1 and ASW-2; Figure 2-1) and in the SVE suction lines is less than 129°F, the lowest distortion temperature for Schedule 40 PVC. Peak temperatures at the AS wellheads were 68.9°F. Peak

temperature at the SVE suction lines was 89.8°F. Weekly monitoring consistently indicated that the plastic SVE and AS lines were well below the distortion temperature of 129°F for Schedule 40 PVC.

Monitoring data are provided in Appendix B, Table B-1.

3.3 BUILDING AND SUB-SLAB PRESSURE MONITORING

Monitoring SSD system performance is focused on the protection of building occupants and ensuring that negative pressure is continuously maintained beneath the sub slab. The effectiveness of the SSD system in mitigating VI was assessed by measuring the pressure differentials across the building floor slab.

Sub-slab pressures were measured weekly at five SSD monitoring points (SSD-3, SSD-S1, SSD-S2, SSD-N1, and SSD-N2) using a magnehelic vacuum gauge. Sub-slab differential pressures recorded from the SSD monitoring points fluctuated between 0.01 to 0.04 inches of water, indicating that negative pressures were maintained for the duration of 2017. Monitoring locations are identified on Figure 2-1 with measurement results provided in Table 3-1.

Table 3-1. Differential Pressures at Sub-Slab Depressurization Ports

	Sub-Slab Pressures (inch WC)				
Date	SSD-S1 (Southeast)	SSD-S2 (Southwest)	SSD-N1 (Northeast)	SSD-N2 (Northwest)	SSD-3 (Inside)
01/06/2017	0.02	0.02	0.03	0.03	0.02
01/13/2017	0.02	0.02	0.03	0.03	0.01
01/27/2017	0.02	0.02	0.03	0.02	0.02
02/03/2017	0.18	0.02	0.04	0.03	0.01
02/10/2017	0.04	0.03	0.02	0.03	0.02
02/17/2017	0.01	0.01	0.01	0.02	0.02
02/24/2017	0.01	0.01	0.02	0.02	0.02
03/01/2017	0.02	0.03	0.03	0.03	0.01
03/10/2017	0.04	0.04	0.03	0.04	0.02
03/17/2017	0.10	0.01	0.02	0.02	0.02
03/24/2017	0.02	0.02	0.02	0.02	-
03/31/2017	0.01	0.01	0.02	0.03	0.02
04/06/2017	0.02	0.02	0.02	0.02	0.02
04/14/2017	0.02	0.03	0.02	0.02	0.02
04/20/2017	0.03	0.02	0.02	0.02	0.02
04/28/2017	0.01	0.01	0.01	0.01	0.02
05/05/2017	0.03	0.04	0.02	0.02	0.02
05/12/2017	0.01	0.01	0.01	0.01	0.01
05/18/2017	0.01	0.02	0.02	0.02	0.02
05/25/2017	0.01	0.02	0.02	0.02	0.02
06/02/2017	0.01	0.01	0.02	0.02	-
06/09/2017	0.02	0.02	0.02	0.02	0.01
06/23/2017	0.01	0.01	0.02	0.02	0.02

Table 3-1. Differential Pressures at Sub-Slab Depressurization Ports (continued)

	Sub-Slab Pressures (inch WC)				
Date	**SSD-S1 (Southeast)**	**SSD-S2 (Southwest)**	**SSD-N1 (Northeast)**	**SSD-N2 (Northwest)**	**SSD-3 (Inside)**
06/30/2017	0.01	0.01	0.02	0.02	0.02
07/07/2017	-	-	-	-	-
07/14/2017	0.01	0.01	0.02	0.02	0.01
07/21/2017	0.01	0.02	0.02	0.02	0.01
07/28/2017	0.02	0.02	0.02	0.01	0.02
08/04/2017	0.02	0.02	0.02	0.02	0.02
08/11/2017	0.01	0.01	0.03	0.02	0.02
08/18/2017	0.01	0.01	0.03	0.02	0.01
08/24/2017	0.02	0.02	0.02	0.03	0.02
09/01/2017	0.02	0.01	0.02	0.03	0.01
09/08/2017	-	-	-	-	-
09/15/2017	0.01	0.02	0.02	0.02	0.01
09/22/2017	0.01	0.01	0.02	0.02	0.01
09/28/2017	0.03	0.03	0.03	0.03	0.01
10/06/2017	0.02	0.02	0.02	0.02	0.01
10/11/2017	0.03	0.02	0.03	0.02	0.01
10/20/2017	0.02	0.03	0.02	0.02	0.02
10/26/2017	0.02	0.02	0.03	0.02	0.01
11/03/2017	0.03	0.02	0.03	0.03	0.01
11/09/2017	0.02	0.02	0.03	0.02	0.01
11/16/2017	0.04	0.04	0.03	0.03	0.02
11/22/2017	0.03	0.02	0.02	0.02	0.01
12/01/2017	0.01	0.01	0.02	0.02	0.01
AVG SSD	0.01	0.01	0.02	0.02	0.01

Notes:
Differential pressures were obtained using magnehelic vacuum gauge.
WC – Water column

Historical data indicate negative pressure was maintained under the building since system startup in 2012. Historical monitoring data are provided in Appendix B, Tables B-2.

During operation, water occasionally accumulates in the sub-slab ports, especially SSD-S1 and SSD-S2 on the south side of Credit Union building at AOC 9-2. Presumably, water vapor and liquid condenses and collects on the sub-slab vapor barrier and then flows to the low areas under the building, such as the sub-slab monitoring ports. The occasional small amount of water (< 500 milliliters) is removed prior to measurement of sub-slab vacuum pressures.

3.4 AS/SVE SYSTEM EXHAUST MONITORING

Weekly monitoring of SVE exhaust was conducted using a photoionization detector (PID). Quarterly SVE exhaust samples were collected using Tedlar bags on March 28, 2017, June 13, 2017, September 26, 2017, and November 21, 2017. During each event, Tedlar bag

samples were collected from the bulk air stream at the center of the SVE blower exhaust pipe at four regular intervals over an 8-hour period.

3.4.1 Results of PID Screening of SVE Exhaust

Appendix B, Table B-1 contains a table of field data including results of weekly PID measurements of VOC concentrations at the SVE exhaust. Figure 3-1 shows results of weekly screening of SVE exhaust by PID. The plot of PID readings shows a significant downward trend in VOC concentrations since startup of the AS compressor in 2012. In general, PID screening in 2017 yielded concentrations of VOCs similar to 2016. Brief spikes in VOC concentrations observed in SVE exhaust in April and May 2016, and April 2017 may be associated with exposure of a petroleum hydrocarbon smear zone after a seasonal drop in groundwater levels. No increase in VOCs was observed after the AS compressor was restarted following the extended outage between March 1 through August 24, 2017 (see Section 3-1).

3.4.2 Results of Tedlar Bag Sampling of SVE Exhaust

Quarterly SVE exhaust monitoring using Tedlar bags yields a more accurate depiction of bulk concentrations of VOC in soil gas extracted by the SVE blower. Results of 2017 SVE exhaust sampling by Tedlar bag are provided in Table 3-2 and on Figures 3-2 and 3-3. The AS system normally operates with four, 30-minute sparge cycles per day. Results of air sampling using Tedlar bags indicate that the four regular intervals of 30-minute sparge cycles appear to help equalize throughout the day, the soil gas concentrations that are ultimately extracted by the SVE system.

Results of the four 2017 SVE monitoring events indicated TPH-G concentrations ranging from 250 micrograms per cubic meter ($\mu g/m^3$) in November to a maximum concentration of 1,100 $\mu g/m^3$ in June, with an average concentration of approximately 560 $\mu g/m^3$. Benzene concentrations ranged from below the laboratory reporting limit of 0.15 $\mu g/m^3$ in June to a maximum concentration of 1.1 $\mu g/m^3$ in November, with an average concentration of 0.45 $\mu g/m^3$.

The AS system was offline from March 1 through August 24 to assess plume contaminant rebound and repair a failed motor-compressor coupling. SVE exhaust sampling completed during the period the AS was offline did not show the increase in TPH-G or benzene concentrations that were observed when the AS system was offline in 2015. Instead, a sharp increase in BTEX was observed in November, approximately 2.5 months after AS system restart (Table 3-2). TPH-G showed a concentration decrease in November when compared to the other 2017 sampling events. The correlation between AS system operation and contaminant concentration in the SVE exhaust is unclear.

Figure 3-1
Weekly VOC Concentrations at SVE Blower Exhuast
May 2012 through November 2017

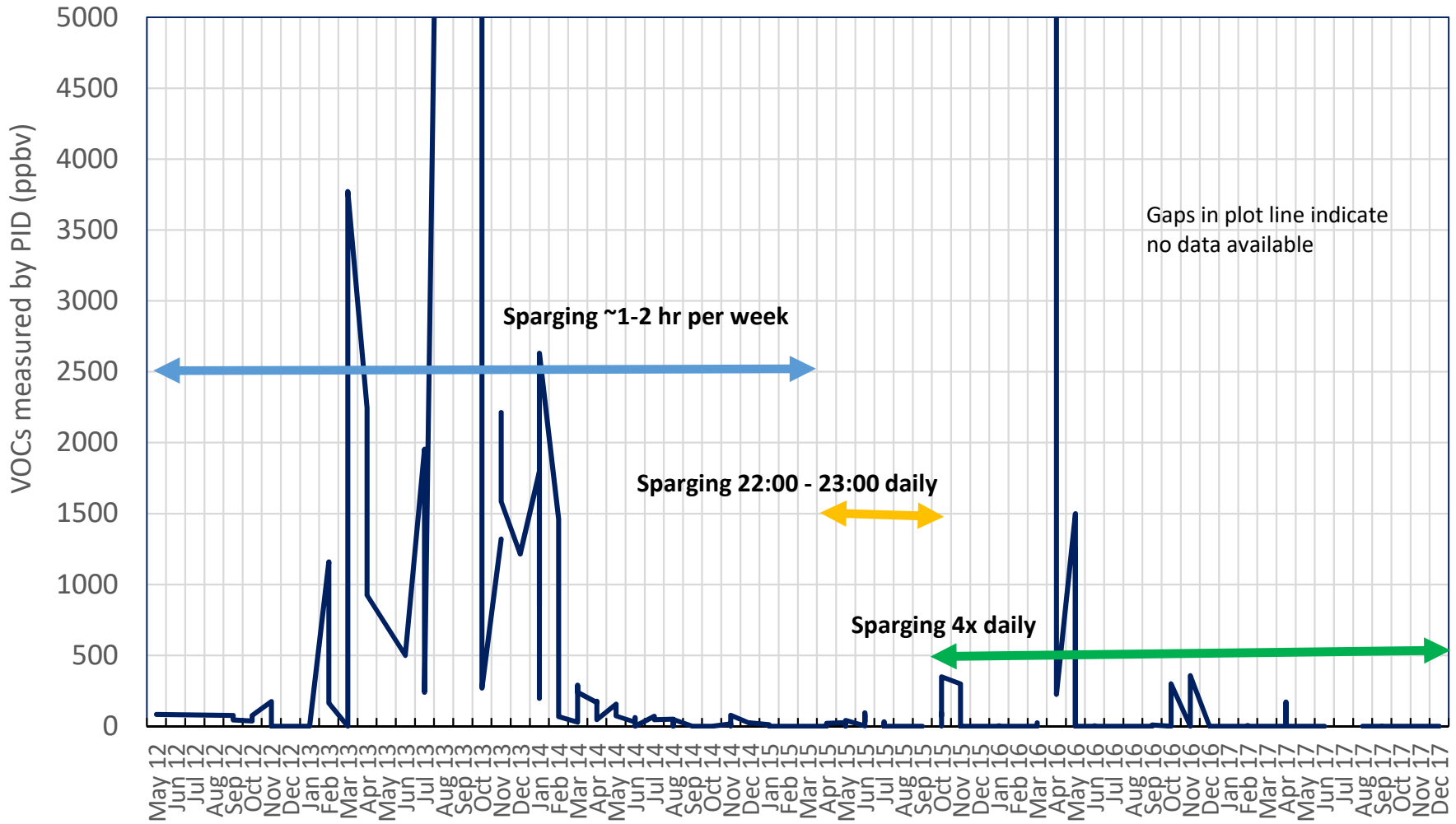


Table 3-2. 2017 Results of SVE Exhaust Tedlar Bag Samples

Date	Sample ID	Sample Time	TPH-G (µg/m³)	Benzene (µg/m³)	Toluene (µg/m³)	Ethyl Benzene (µg/m³)	m,p Xylene (µg/m³)	o-Xylene (µg/m³)	Total Xylenes (µg/m³)[1/]
3/28/2017	AOC92170328SVE1000	1000	530	ND	4.8	ND	0.33 J	ND	0.33 J
	AOC92170328SVE1300	1300	900	ND	2.0	ND	ND	ND	ND
	AOC92170328SVE1530	1530	490	ND	2.0	ND	ND	ND	ND
	AOC92170328SVE1800	1800	610	0.42 J	2.6	ND	0.5	0.47 J	0.97
	AOC92170328SVEDUP	1800	490	ND	2.3	ND	ND	ND	ND
6/13/2017	AOC92170613SVE1000	1000	610	ND	6.7	ND	1.1 J	0.43 J	5.23 J
	AOC92170613SVE1300	1300	490	ND	6.0	ND	1.0 J	ND	1.00 J
	AOC92170613SVE1530	1530	ND	ND	6.0	ND	0.74 J	0.28 J	1.02 J
	AOC92170613SVE1800	1800	1,100	0.46 J	18	0.84 J	2.0 J	0.57 J	2.57 J
	AOC92170613SVEDUP	1535	490	ND	6.7	ND	0.81 J	0.27 J	1.08 J
9/26/2017	AOC92170926SVE1000	1000	570	0.35 J	10	0.48 J	1.2 J	0.43 J	1.63 J
	AOC92170926SVE1250	1250	700	0.39 J	11	0.56 J	1.0 J	0.44 J	1.44 J
	AOC92170926SVE1430	1430	700	ND	10	0.49 J	1.0 J	0.38 J	1.38 J
	AOC92170926SVE1800	1800	650	ND	10	0.43 J	1.2 J	0.39 J	1.59 J
	AOC92170926SVEDUP	1000	610	0.38 J	11	0.57 J	1.1 J	0.48 J	1.59 J
11/21/2017	AOC92171121SVE900	0900	360	0.85 J	37	2.7	7.8	3.1	10.9
	AOC92171121SVE1200	1200	300	0.96 J	36	2.5	7.0	2.4	9.40
	AOC92171121SVE1430	1430	250	0.88 J	35	2.8	8.9	3.4	12.3
	AOC92171121SVE1730	1730	330	1.1 J	39	2.4	6.6	2.6	9.20
	AOC92171121SVEDUP	1735	280	1.0 J	37	2.9	6.9	2.9	9.80

Notes:
[1/] Total xylenes are calculated from sum of m,p- and o-xylenes.
J – estimated value.
ND – not detected
µg/m³ – micrograms per cubic meter

Figure 3-2. SVE Exhaust - Tedlar Bag Samples: TPH-G (µg/m^3)

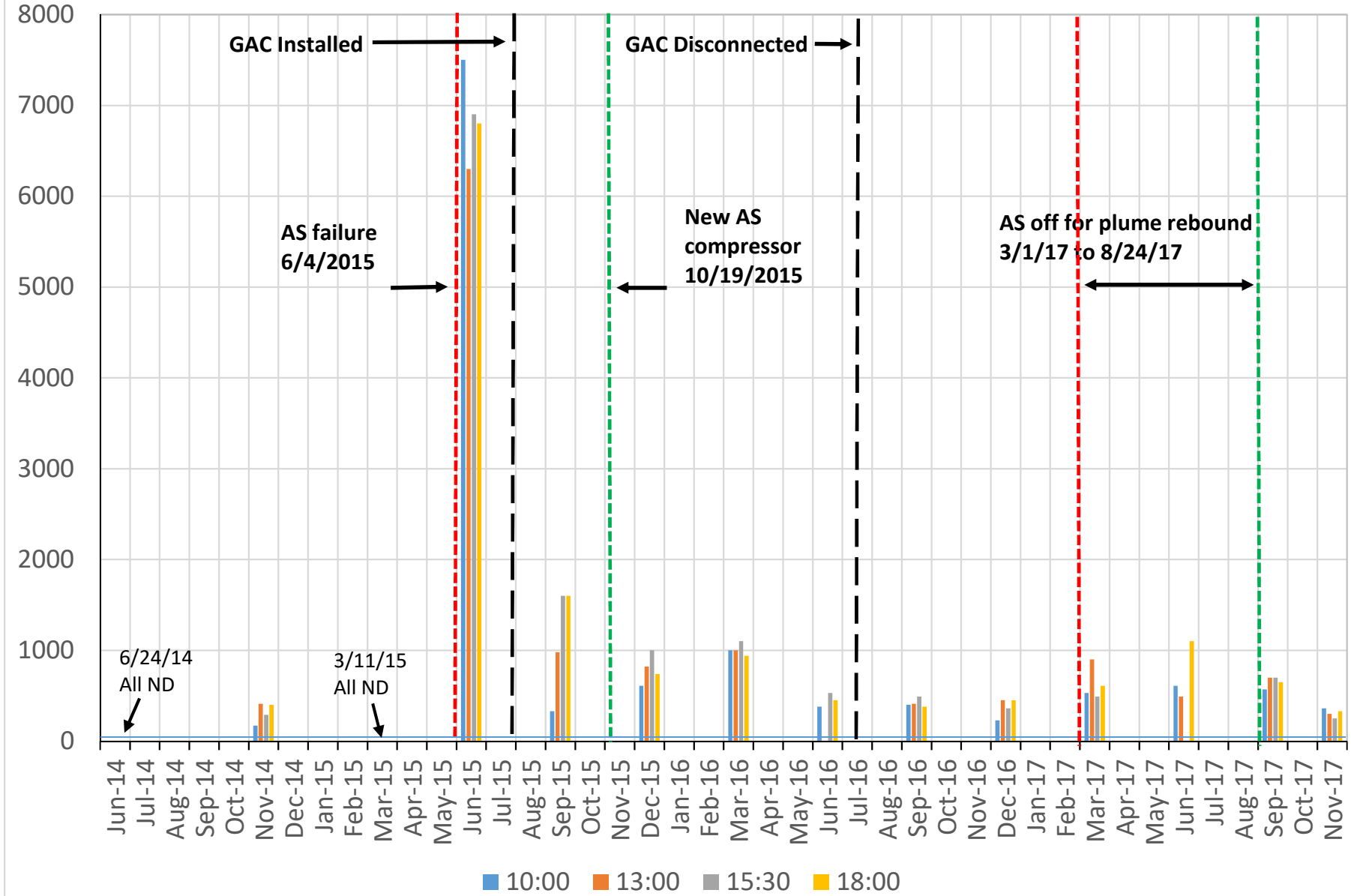
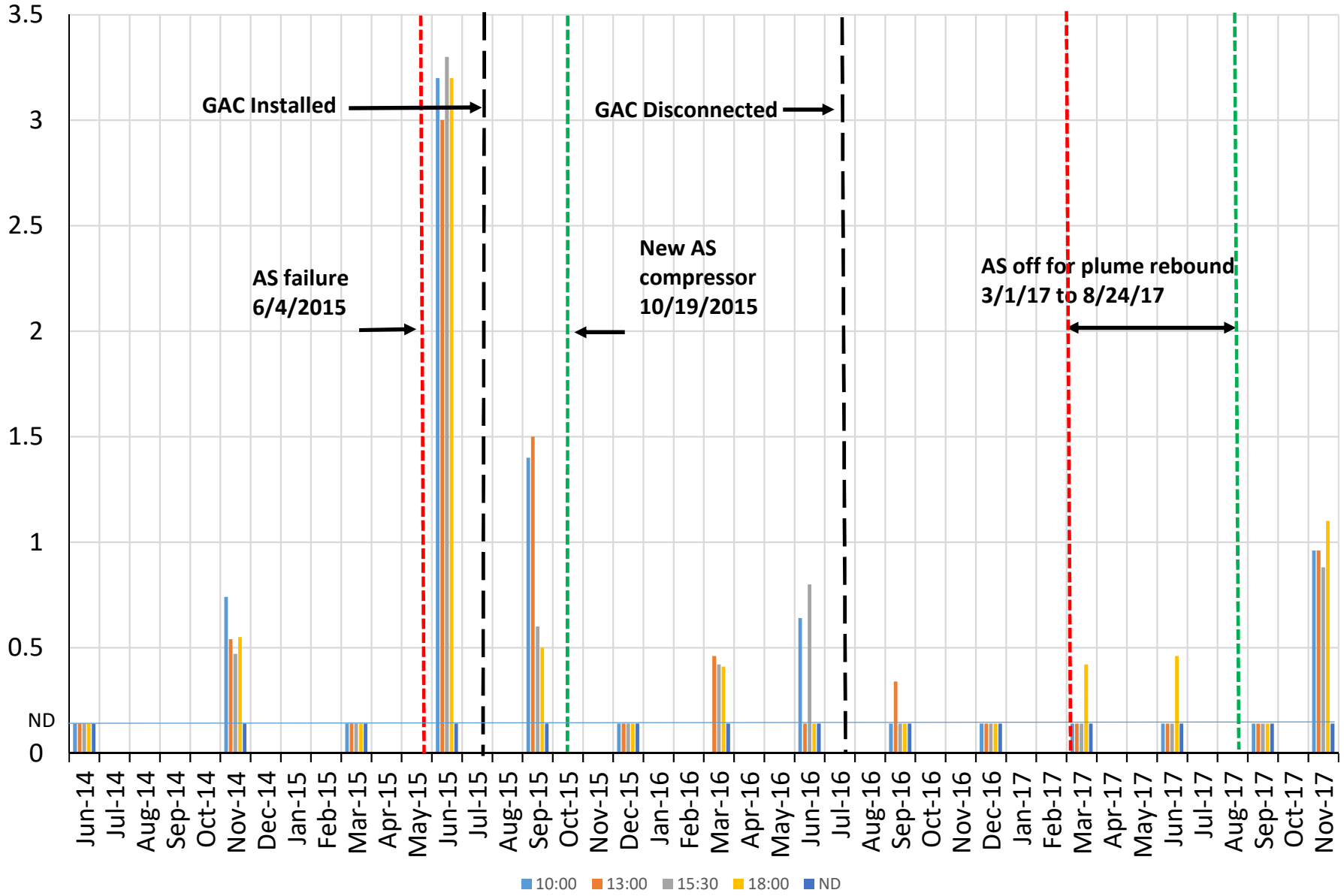


Figure 3-3. SVE Exhaust - Tedlar Bag Samples: Benzene (µg/m³)



In November, annual VI monitoring was performed on the same day as SVE exhaust sampling. In addition to the higher BTEX concentrations observed during SVE exhaust sampling, BTEX detected in VI and ambient air samples were also higher than previous VI events (Section 5). The November sampling event revealed BTEX in ambient air were at concentrations similar to those observed in SVE exhaust. November 2017 was the first event during which SVE exhaust and VI monitoring were performed on the same day. It is currently unknown if this was a single occurrence or if a direct correlation exists between ambient air and SVE exhaust concentrations. Additional evaluation would be required to determine if a direct correlation exists.

3.4.3 Calculation of Air Emissions

Vapor samples from the AS/SVE system exhaust are collected by Tedlar bag to:

- Analyze long-term system performance, and
- Verify the system is compliant with the PSCAA total maximum allowable emission limit of:
  - 50,000 pounds of VOCs per year for an unpermitted facility (PSCAA 2015, Section 5.03(a)(3)(C)).
  - 15 pounds of benzene per year for an unpermitted water treatment facility related to soil and groundwater remediation projects (PSCAA 2015, Section 6.03(c)(94)).

TPH-G and benzene concentrations from the sampling event with the highest concentrations were used to assess the total estimated emissions for 2017. These calculations represent a worst case scenario.

Maximum concentration of TPH-G was 1,100 µg/m^3 on June 13, 2017. Assuming continuous hourly emissions with a maximum blower flow rate of 476 m^3/hr:

(a) $1{,}100\ \frac{\mu g}{m^3} \times 476 \frac{m^3}{hr} = 523{,}600\ \frac{\mu g}{hr}$

(b) $523{,}600\ \frac{\mu g}{hr} \times 8{,}760 \frac{hrs}{year} \times 10^{-6} \frac{g}{\mu g} \times\ 0.0022 \frac{lbs}{g} = \mathbf{10}\ \frac{\boldsymbol{lbs}}{\boldsymbol{year}}\ \boldsymbol{TPH-G}$

Estimates of total VOC emissions as TPH-G are 10 pounds per year, which is well below the 50,000 pounds per year PSCAA criteria.

The highest concentration of benzene during was 1.1 µg/m^3 on November 21, 2017 with a maximum blower flow rate (per the manufacturer's specifications) of 476 cubic meters per hour (m^3/hr):

(a) $1.1\ \frac{\mu g}{m^3} \times 476 \frac{m^3}{hr} = 523.6\ \frac{\mu g}{hr}$

(b) $523.6\ \frac{\mu g}{hr} \times 8{,}760 \frac{hrs}{year} \times 10^{-6} \frac{g}{\mu g} \times\ 0.0022 \frac{lbs}{g} = \mathbf{0.011} \frac{\boldsymbol{lbs}}{\boldsymbol{year}}\ \boldsymbol{benzene}$

Extrapolation of the worst case concentrations result in total annual benzene emissions of 0.011 pounds per year, well below the 15 pounds per year PSCAA criteria.

As noted previously, weekly monitoring of SVE exhaust was performed using a PID. Figure 3-1 shows a plot of the weekly PID values versus time. The PID monitoring has indicated a general downward trend in VOC concentrations.

VOC concentrations in soil vapor vary depending on the time since the last AS event. As a result, PID readings may vary weekly. However, a general decline in VOC concentrations in SVE exhaust has been observed since AS startup, with brief increases after shutdown and restart of the AS compressor.

The PID employed for monitoring at AOC 9-2 is equipped with a bulb rated for 10.6 electron volts (eV), rendering the meter effective for screening for BTEX (range: 8.76 to 9.25 eV) and gasoline constituents such as octane (9.9 eV). The effectiveness of the PID as a field-screening tool decreases with removal of the lower ionization potential components. Groundwater and vapor monitoring analyses indicate a significant reduction in BTEX and TPH-G at AOC 9-2 since system startup. These downward trends are reflected in PID screening of SVE exhaust. The quarterly data collected using Tedlar bags are more useful in evaluating concentration trends in the SVE exhaust. Tedlar bag sampling data provide a greater range and accuracy for analysis of VOCs of concern and TPH-G. The data are also useful as an indication of the effectiveness of the AS/SVE system and success of the remedial action, especially related to a specific contaminant of concern. Increased concentrations in SVE exhaust samples collected after restoring AS operation following an extended off cycle are indicative of plume contaminant rebound.

3.5 SOIL VAPOR PROBE MONITORING

Annual monitoring of SVPs was performed to assess the effectiveness of air sparging and SVE. SVP pressures were measured using a magnehelic vacuum gauge, configured to measure the difference between atmospheric and subsurface pressures. The SVE blower

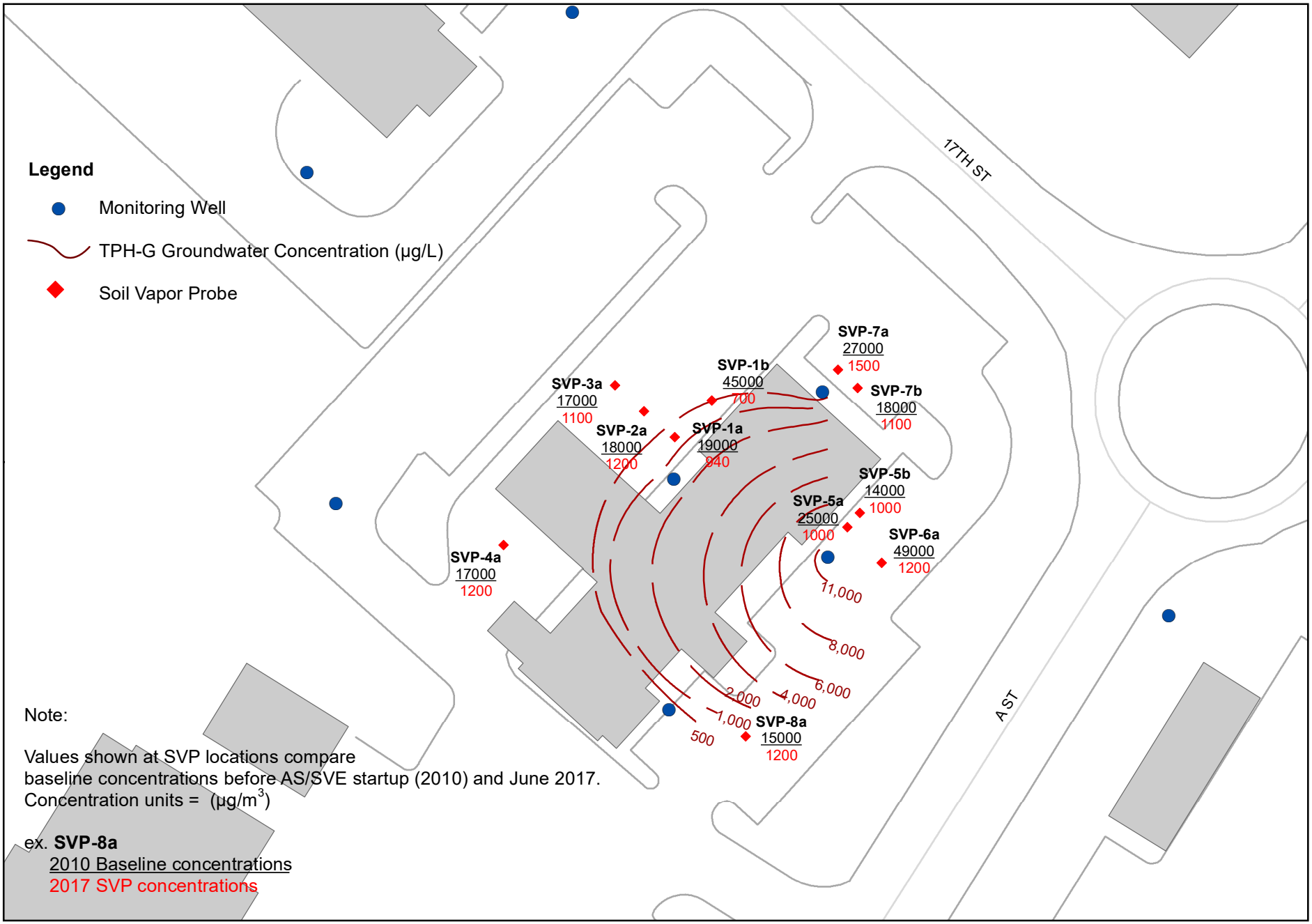
remains in continuous operation during SVP sampling. The AS compressor was off from March 1, 2017 to August 24, 2017 to allow for plume contaminant rebound and the repair of a failed motor-compressor coupling. While operational, the AS compressor was programmed to the usual frequency of four regular intervals of 30-minute cycles per day.

Differential pressure measurements were collected from each SVP to assess the ZOI of the SVE system.

During sampling, vacuum pressure was measured at each SVP location (see Figure 2-1). A peristaltic pump was used to draw the soil vapor from each SVP. A PID was used for field readings of VOC concentrations in the vapor. The probe was purged of soil gas until PID readings from the peristaltic pump exhaust stabilized. The Tedlar bag was then filled, purged of one volume, and refilled for the sample. Tedlar bag samples were submitted to Eurofins-Air Toxics of Folsom, California for analysis by Modified Method TO-15 (full scan/SIM) for TPH-G and BTEX.

Table 3-3 presents the 2017 analytical results for soil vapor samples for TPH-G and BTEX. TPH-G results for both 2010 and 2017 are shown on Figure 3-4 for comparison. Soil vapor concentrations show general homogeneity across the remediation area possibly indicating the effects of air sparging and migration of VOCs toward the SVE extraction laterals. Vapor concentrations have decreased at all monitoring locations since the 2010 baseline sampling event.

SVP results indicated an increase in concentrations of TPH-G from an average of 653 $\mu g/m^3$ in 2016 to 1,104 $\mu g/m^3$ in 2017. Average benzene concentrations decreased from 11 $\mu g/m^3$ in 2016 to 1 $\mu g/m^3$ in 2017.



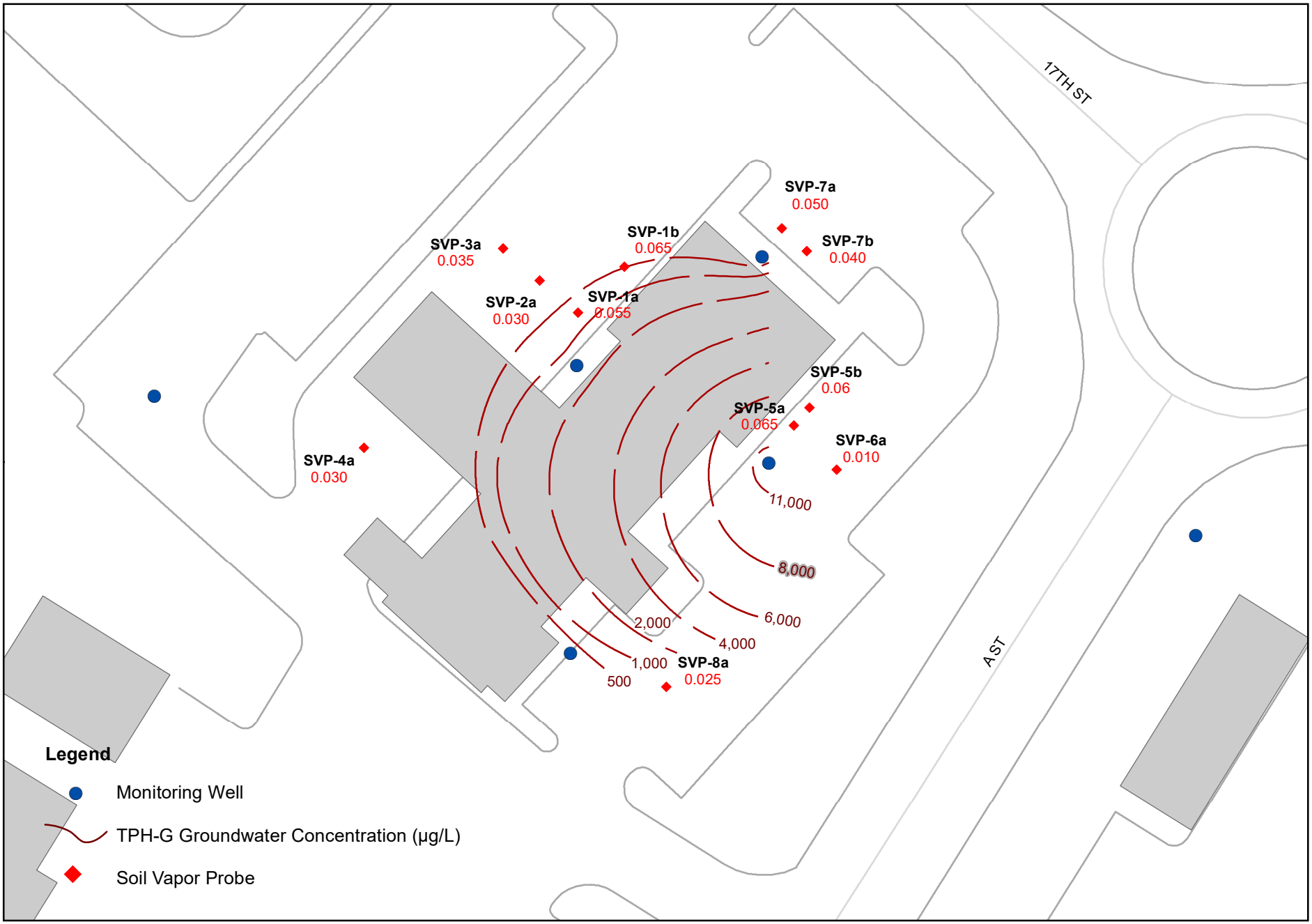
Path: E:\JBLM\TO 01A\Credit Union\SVE_Fig_3-4_SVP_2017.mxd
Date: 12/7/2017

Table 3-3. 2017 Soil Vapor Concentrations

Sample ID	TPH-G (µg/m³)	Benzene (µg/m³)[1/]	Toluene (µg/m³)	Ethyl Benzene (µg/m³)	m,p Xylene (µg/m³)	o-Xylene (µg/m³)	Total Xylenes (µg/m³)[2/]
AOC92170613SVP1A	940	0.6	11.0	2.0	7.9	2.6	10.5
AOC92170613SVP1B	700	0.9	12.0	2.1	7.7	3.2	10.9
AOC92170613SVP2A	1,200	1.0	12.0	2.3	8.7	3.3	12.0
AOC92170613SVP3A	1,100	1.2	11.0	2.6	9.4	3.5	12.9
AOC92170613SVP4A	1,200	1.3	15.0	2.4	8.6	2.9	11.5
AOC92170613SVP5A	1,000	2.3	11.0	2.3	8.6	3.6	12.2
AOC92170613SVP5B	1,000	2.8	11.0	2.2	8.7	3.1	11.8
AOC92170613SVP6A	1,200	2.5	11.0	1.8	7.5	3.0	10.5
AOC92170613SVP7A	1,500	0.7	10.0	2.3	8.7	3.4	12.1
AOC92170613SVP7B	1,100	1.0	11.0	2.2	9.1	3.6	12.7
AOC92170613SVP8A	1,200	1.0	9.7	1.0	8.1	2.6	10.5
Average Concentrations	1,104	1.4	11.3	2.1	8.5	3.2	11.7

Notes:
[1/]All benzene results reported with laboratory "J Flag" – Estimated value
[2/]Total xylenes are calculated from sum of m,p- and o-xylenes.
µg/m³ – micrograms per cubic meter

Figure 3-5 illustrates differential pressures measured at the 11 SVPs. As noted during the pilot test (Versar 2013b) and 2017 SVP monitoring events, negative differential pressures were observed at all SVPs. In 2017, differential pressures ranged from 0.08 inches of water in SVP-1, nearest the building, to 0.005 inches of water at SVP-4a farthest from the source area. The differential pressures indicate that the SVE is exerting a vacuum under the Credit Union building and across the parking lot. The valves on the two SVE zones are set to exert greater vacuum under the north side of the Credit Union building near the source area. SVP-3a, the most distant probe from the building, indicated a negative differential pressure of 0.025 inches of water. As with previous SVP monitoring events, the 2017 survey indicated a SVE ZOI that includes all SVPs, an area that extends at least 60 feet west and 40 feet east of the building exterior.



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

USACE | **SEALASKA**

Figure 3-5
Differential Pressure Readings (inches of water)
June 2017

Path: E:\JBLM\TO 01A\Credit Union\SVE_Fig_3-3_SVP_DifPressure_2017.mxd
Date: 12/7/2017

4 GROUNDWATER MONITORING

This section provides a summary of the semiannual groundwater monitoring that is conducted at the AOC 9-2 site. All wells are sampled semiannually except well 95-A17-4, which is sampled annually during the wet season (spring). The locations of groundwater monitoring wells are shown on Figure 4-1. Data collected during groundwater monitoring is used to:

- Assess possible mounding in the groundwater table and plume mobilization caused by the AS system; and
- Assess the success of the implemented remedial action at the site.

Depth to water and field parameter measurements collected in 2017 and previous years are provided in Appendix C, Table C-1. Current and historical groundwater analytical results for TPH-G and BTEX concentrations are provided in Appendix C, Table C-2.

Detailed information regarding the groundwater sampling and results can be found in the Draft Fort Lewis Agreed Order Groundwater Monitoring Report - 2017 (Sealaska 2017b).

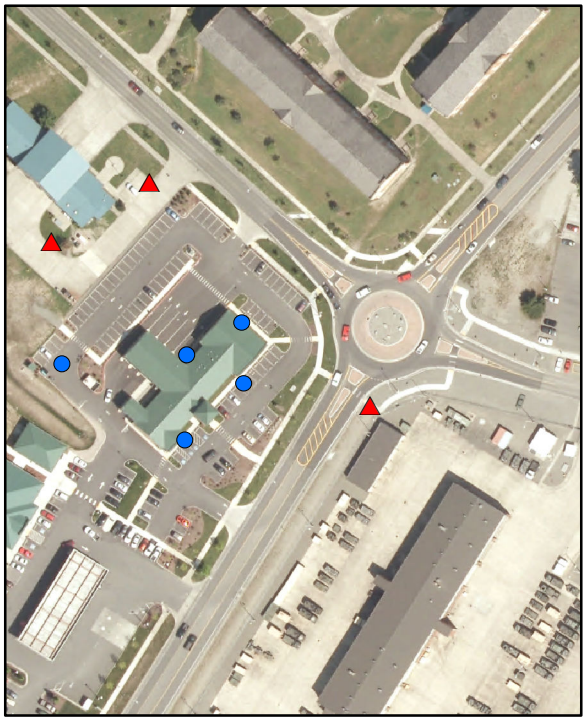
4.1 WATER LEVEL MONITORING

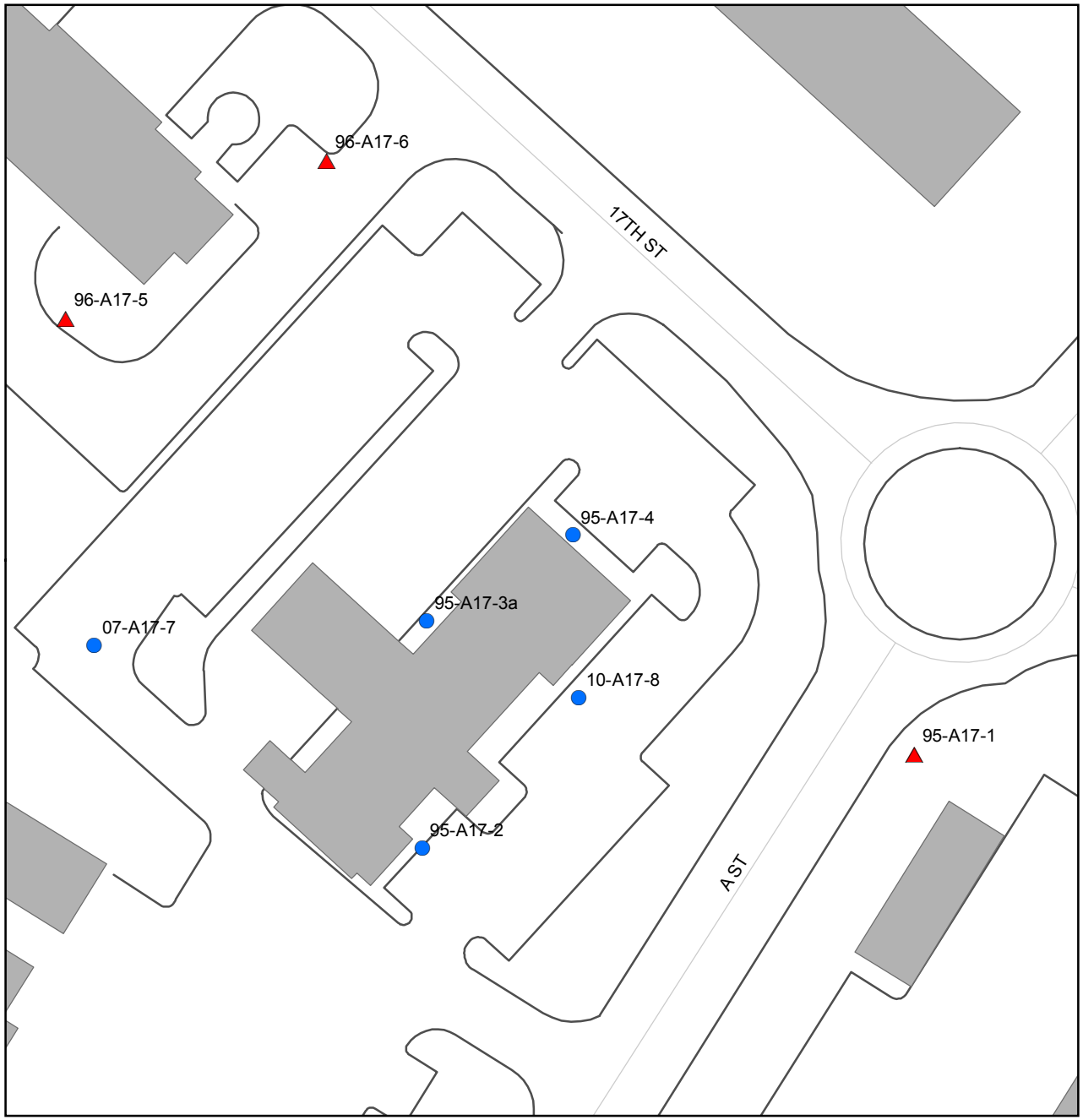
Groundwater level plots from the March and July 2017 sampling events are presented on Figures 4-2 and 4-3, respectively. Because air sparging impacts the water table elevation in source area wells, the AS compressor was turned off at least 24 hours before sampling.

Pressure transducers with associated dataloggers are installed in monitoring wells 95-A17-2, 95-A17-3A, 95-A17-4, 96-A17-5, and 07-A17-7 to assess the AS system's influence on groundwater and potential plume mobilization. Transducer data for the first quarter of 2017 were unavailable due to datalogger memory being overwritten. Data logged for May through October show mounding effects similar to 2015 and 2016. Pressure transducer data were downloaded through October 8, 2017 due to an expedited report schedule. The effects of the AS compressor being off from March 2 through August 24, 2017 is evident in the lack of groundwater mounding induced by air sparging.

4.2 GROUNDWATER ANALYTICAL RESULTS

The TPH-G concentration iso-contour lines for the March and July 2017 sampling events are presented on Figures 4-2 and 4-3 respectively. Appendix C, Table C-2 presents TPH-G and BTEX analytical results, and a comparison to Ecology's MTCA Method A cleanup levels for groundwater.





Notes:

Wet season depth to water measured and samples collected typically during February or March.

Dry season depth to water measured and samples collected typically during August or September.

95-A17-4 sampled during wet season only.

Legend

- Monitoring Well - Depth to Water Measurement and Sample
- Monitoring Well - Depth to Water Measurement

N

0 12.5 25 50

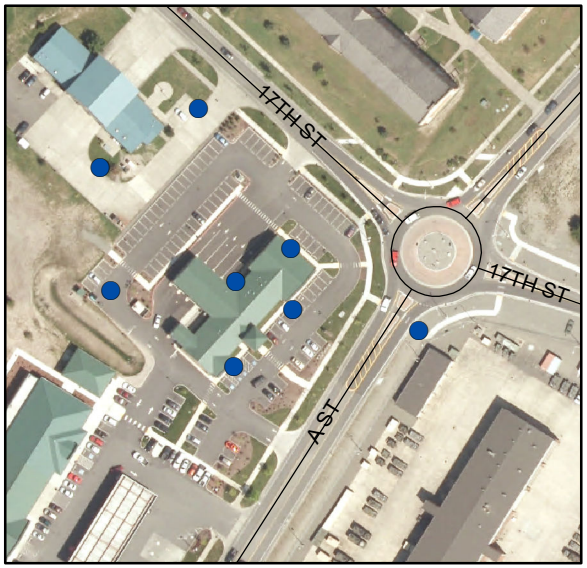
Feet

USACE

SEALASKA

Figure 4-1
Groundwater Monitoring Locations

Path: E:\Users\JBLM\TO 01A\Credit Union\O&M Report - 2015\Maps\SVE_Fig_4-1_GWM_loc.mxd
Date: 7/21/2016



Notes:
Depth to water measurements collected February 27, 2017.

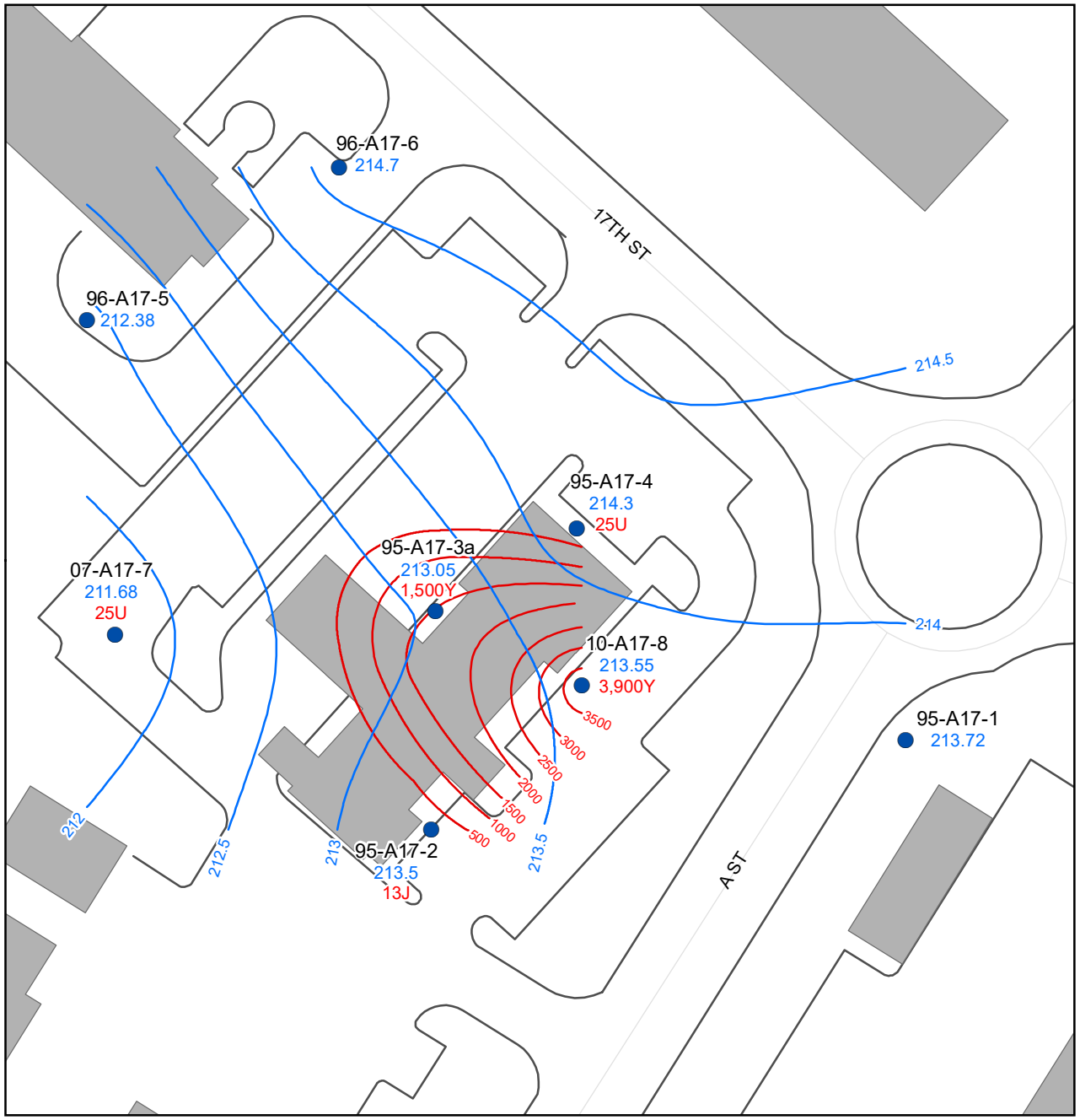
Groundwater samples collected March 2, 2017.

TPH-G Cleanup level = 800 µg/L

Data Qualifiers:
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.
U - Analyte not detected above result reporting limit.
J - The result is an estimated value.

Legend

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



N

0 15 30 60
Feet

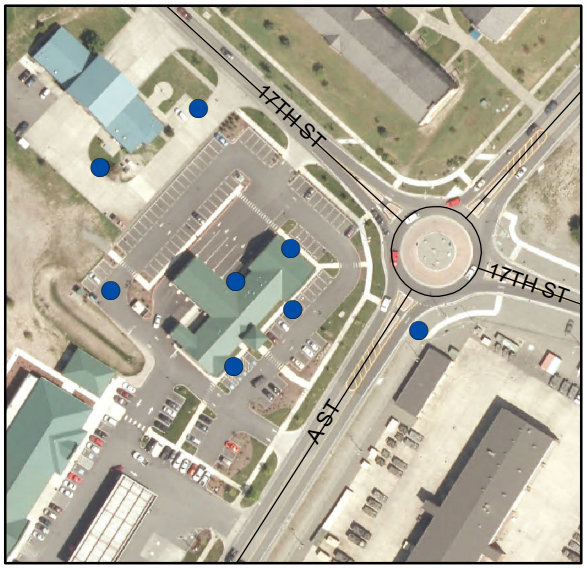
Label ID
07-A17-7 - Well ID
211.68 - GW Elev.
25U - TCE (µg/L)

USACE

SEALASKA

Figure 4-2
AOC 9-2 Groundwater Elevation and TPH-G Concentration Contours March 2017

Path: E:\JBLM\TO 01A\Credit Union\2017_AnnualGW_FIG_4_2_edit1.mxd
Date: 12/8/2017



Notes:
Depth to water measurements collected July 31, 2017.

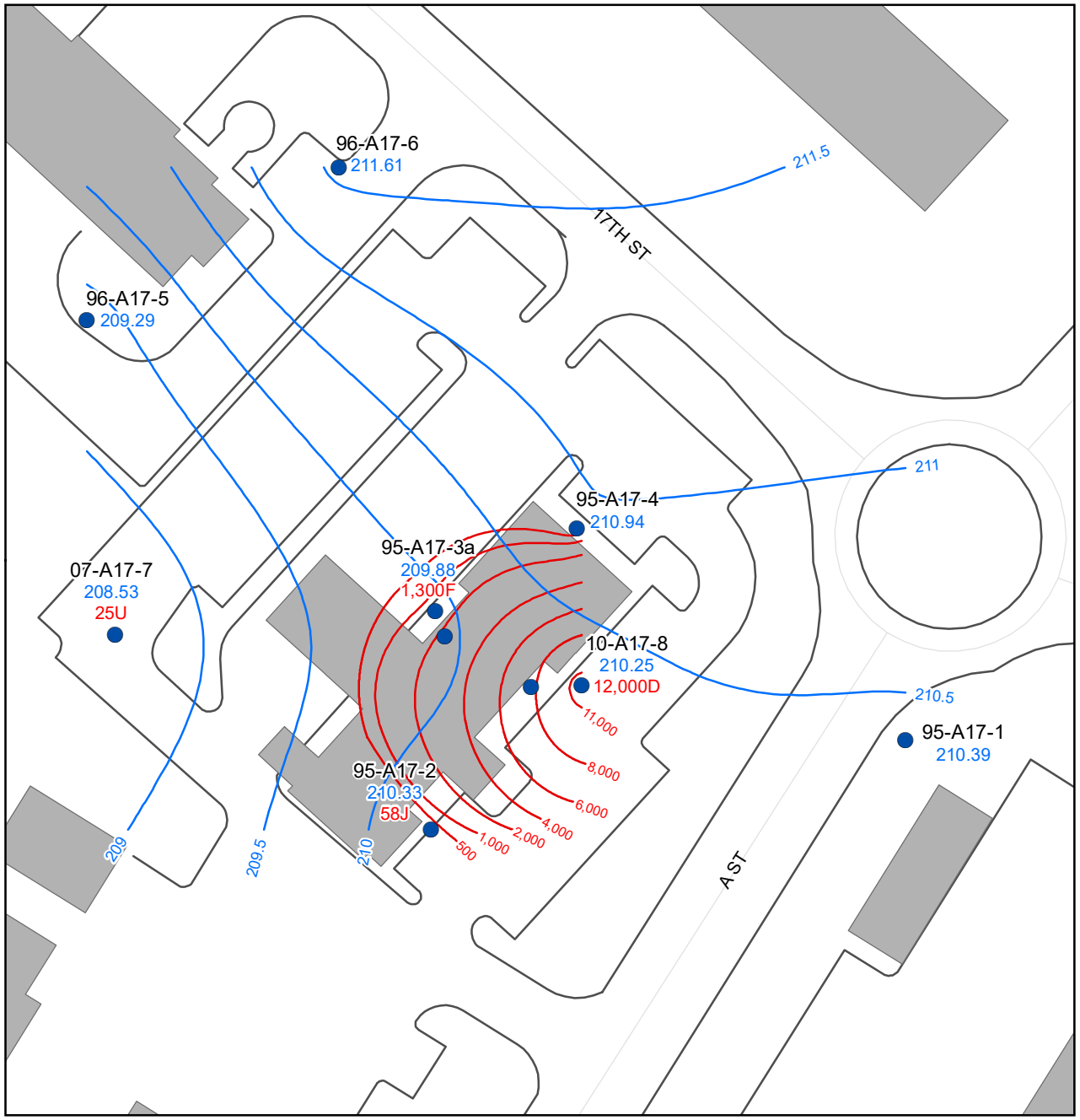
Groundwater samples collected July 31, 2017.

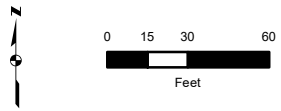
TPH-G Cleanup level = 800 µg/L

Data Qualifiers:
F - The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
D - The reported result is from a dilution.
U - Analyte not detected above result reporting limit.
J - The result is an estimated value.

Legend

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





Label ID
07-A17-7 - Well ID
208.53 - GW Elev.
25U - TCE (µg/L)

USACE | **SEALASKA**

Figure 4-3
AOC 9-2 Groundwater Elevation and TPH-G Concentration Contours July 2017

Path: E:\JBLM\TO 01A\Credit Union\2017_AnnualGW_FIG_4_2.mxd
Date: 12/7/2017

Figures 4-4a through 4-4h present trends in TPH-G and benzene concentrations in monitoring wells at AOC 9-2. TPH-G and benzene continue to exceed MTCA Method A cleanup levels in monitoring wells 95-A17-3a and 10-A17-8. Both TPH-G and benzene were either not detected, or detected below their respective cleanup levels, in samples collected from all other monitoring wells during 2017.

Historically, 95-A17-3a and 10-A17-8 have been considered to be at or near the source area. 95-A17-3a, installed in 1995, had detected concentrations of TPH-G ranging from 1,300 micrograms per liter (µg/L; July 2017) to 35,000 µg/L (March 2008). In October 2010, installation of 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). The MTCA Method A cleanup level for groundwater for TPH-G in the presence of benzene is 800 µg/L.

During the 2017 monitoring events, TPH-G concentrations were 1,500 µg/L and 1,300 µg/L in samples collected from 95-A17-3a in March and July, respectively. Both are above MTCA Method A cleanup level for groundwater. TPH-G was also above the MTCA Method A cleanup level at monitoring well 10-A17-8 in 2017 (3,900 µg/L in March and 12,000 µg/L in July). The TPH-G concentration at well 10-A17-8 showed a marked increase in 2017 compared to samples collected in 2016, possibly indicating contaminant rebound in response to the AS system being offline between March 1 and August 24, 2017. The greater concentration increase was noted during the July sampling event after the system had been offline almost 5 months.

In 2017, benzene concentration detected in samples collected from 95-A17-3a exceeded the MTCA Method A cleanup level for groundwater of 5 µg/L in July 2017 (8.8 µg/L). Benzene was detected in samples collected from 10-A17-8 at a concentration of 43 µg/L and 94 µg/L in March and July 2017, respectively, both exceeding the MTCA Method A cleanup level. Benzene concentrations showed an increase when compared to 2016 sampling results. As stated previously, this concentration increase is likely related to contaminant rebound while the AS system was offline.

Total xylenes at well 10-A17-8 also exceeded the MTCA Method A cleanup level from groundwater of 1,000 µg/L during the July 2017 sampling event.

Duplicate samples were collected in March from well 10-A17-8 and in July from well 95-A17-3a, and analyzed for TPH-G and BTEX. The duplicate sample results were comparable with the primary sample for both sampling events.

4.3 AIR SPARGE OPERATION AND PLUME CONCENTRATION REBOUND

Based on evidence of plume contaminant rebound after two extended periods of the AS system being offline, continuing aggressive management of AS operation is recommended to allow for plume contaminant rebound.

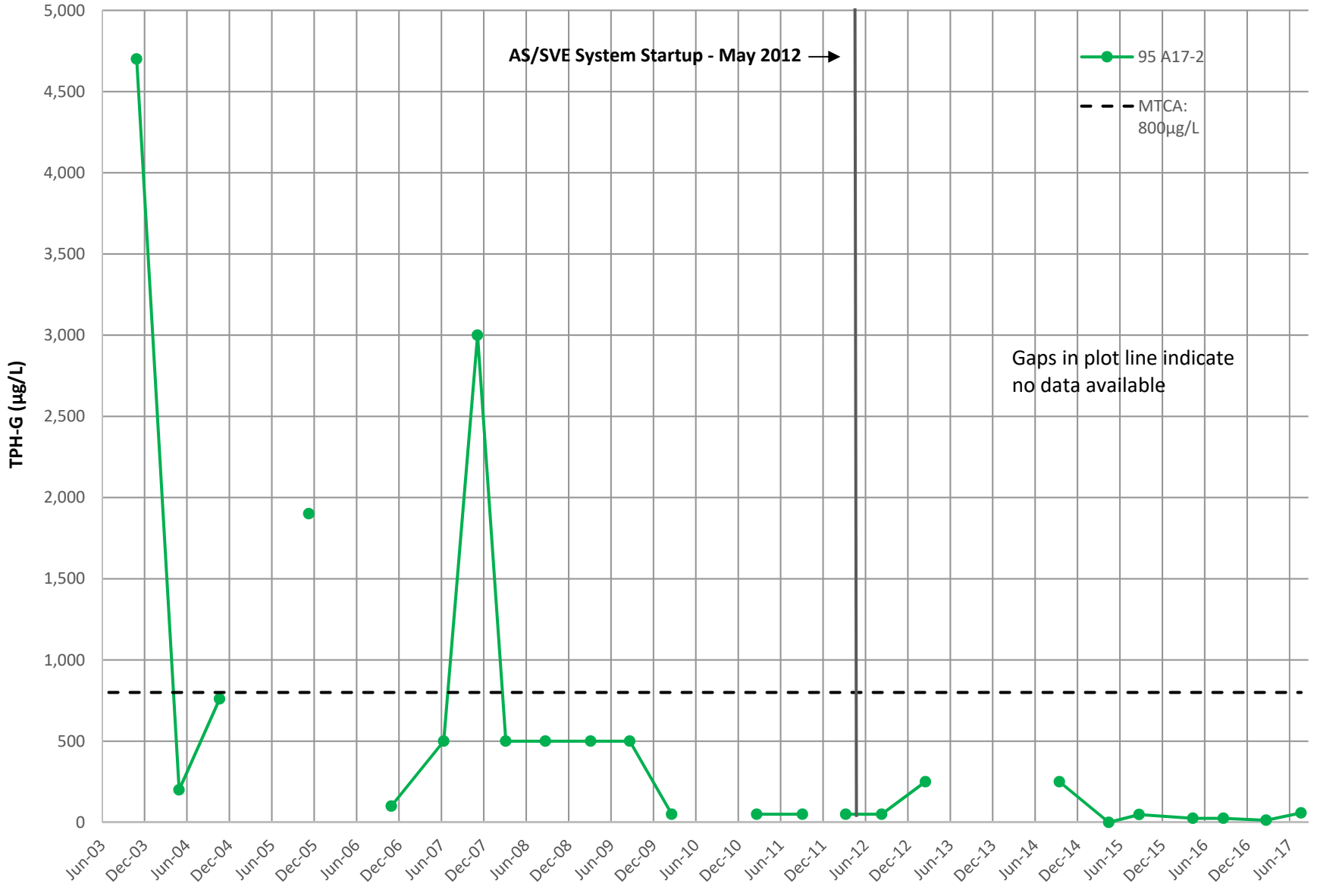
Air sparging strips volatiles from groundwater within the ZOI of the AS wells. When contaminant concentrations reach asymptotic levels, the effect may be a "donut hole" of clean groundwater around the AS wells, and the possibility of a ring of dissolved petroleum hydrocarbons beyond the ZOI. Reducing the AS frequency or duration, or turning the AS system off for extended periods, appears to allow the groundwater contaminant plume to "rebound" around the AS wells and may allow for increased volatilization and removal of the volatile contaminants from groundwater.

The AS compressor failed in mid-2015 and was replaced in September 2015. Groundwater samples collected in early September 2015 (prior to the AS compressor replacement) had the highest TPH-G concentrations in over 2 years and BTEX components also showed an increase during the time the AS system was offline. After replacement of the AS compressor and restoration of daily sparge cycling, concentrations decreased at all monitoring wells based on 2016 groundwater sampling results.

The late 2015 and early 2016 groundwater results suggested contaminant rebound while the AS system was offline. With this observation, the AS system was offline from March 1 through August 24, 2017 to assess for plume contaminant rebound and repair of a failed motor-compressor coupling. Groundwater monitoring was performed on March 2 and July 31, 2017. March 2017 groundwater sampling results indicated TPH-G in source area wells 95-A17-3a and 10-A17-8 at 1,500 µg/L and 3,900 µg/L, respectively. Samples collected in July 2017 indicated TPH-G in source area wells 95-A17-3a and 10-A17-8 at 1,300 µg/L and 12,000 µg/L, respectively.

By comparison, in 2016 benzene concentrations detected in samples collected from well 95-A17-3a were non-detect (April 2016) and 1.9 µg/L (August 2016), both below the MTCA Method A cleanup level for groundwater of 5 µg/L. Benzene was detected in samples collected from well 10-A17-8 at an estimated concentration of 0.14 µg/L (April 2016) and 3 µg/L (August 2016). Increases in TPH-G and benzene in 2017 are attributed, in part, to plume contaminant rebound while the AS system was offline.

Figure 4-4a. TPH-G Trend for 95-A17-2 (AOC 9-2)



Gaps in plot indicate
no data available

Figure 4-4b. Benzene Trend for 95-A17-2 (AOC 9-2)

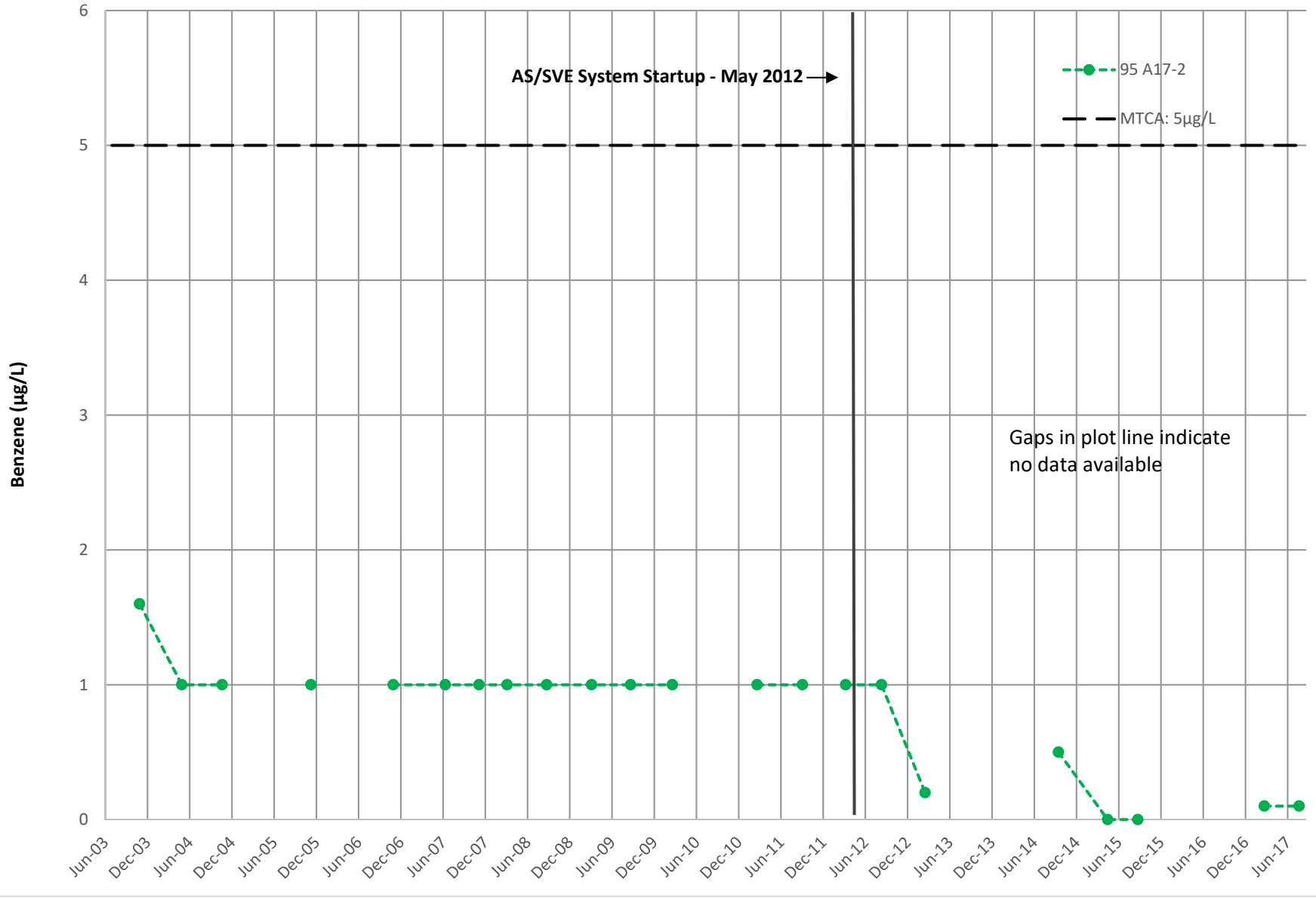


Figure 4-4c. TPH-G Trend for 95-A17-3A (AOC 9-2)

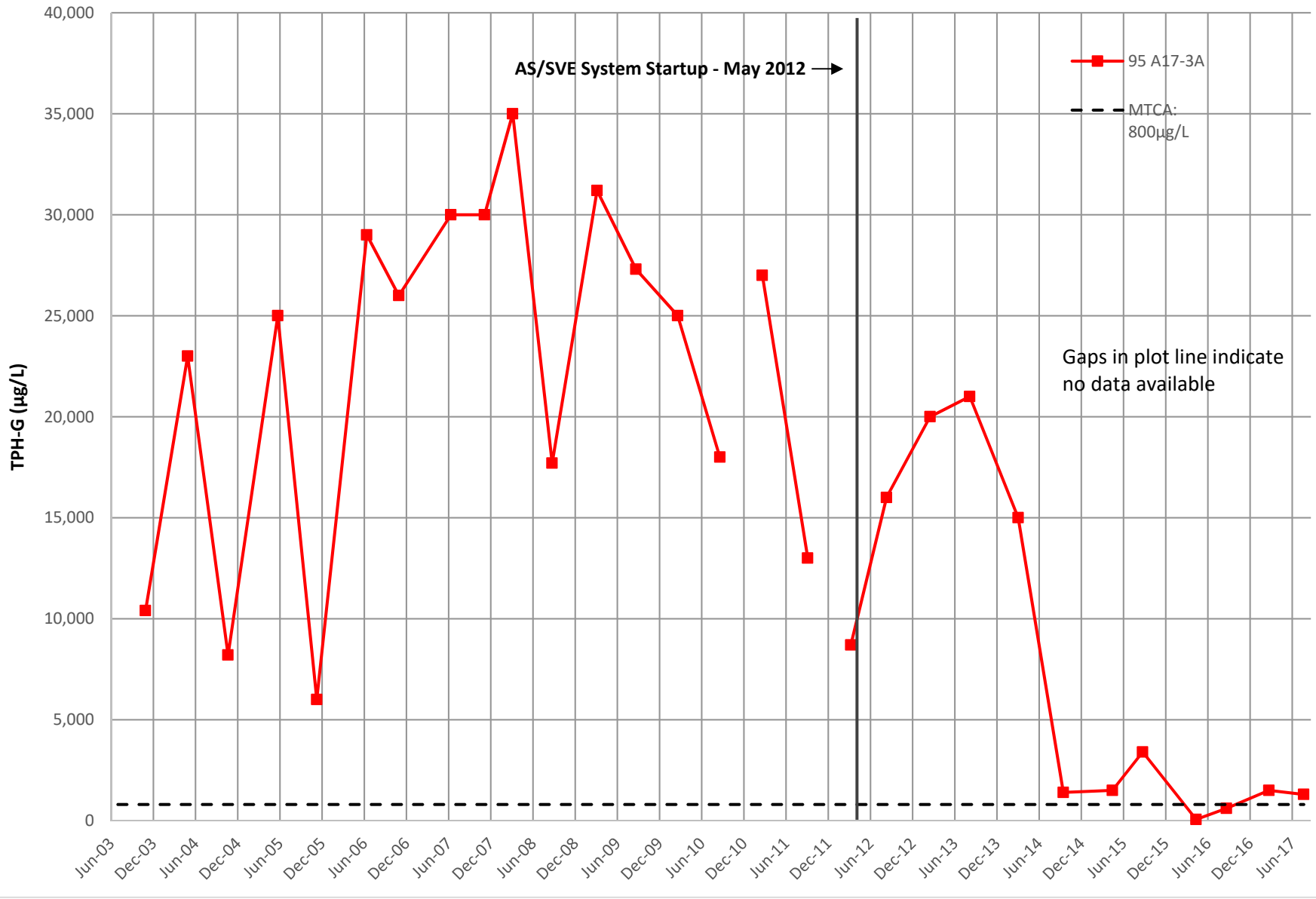


Figure 4-4d. Benzene Trend for 95-A17-3A (AOC 9-2)

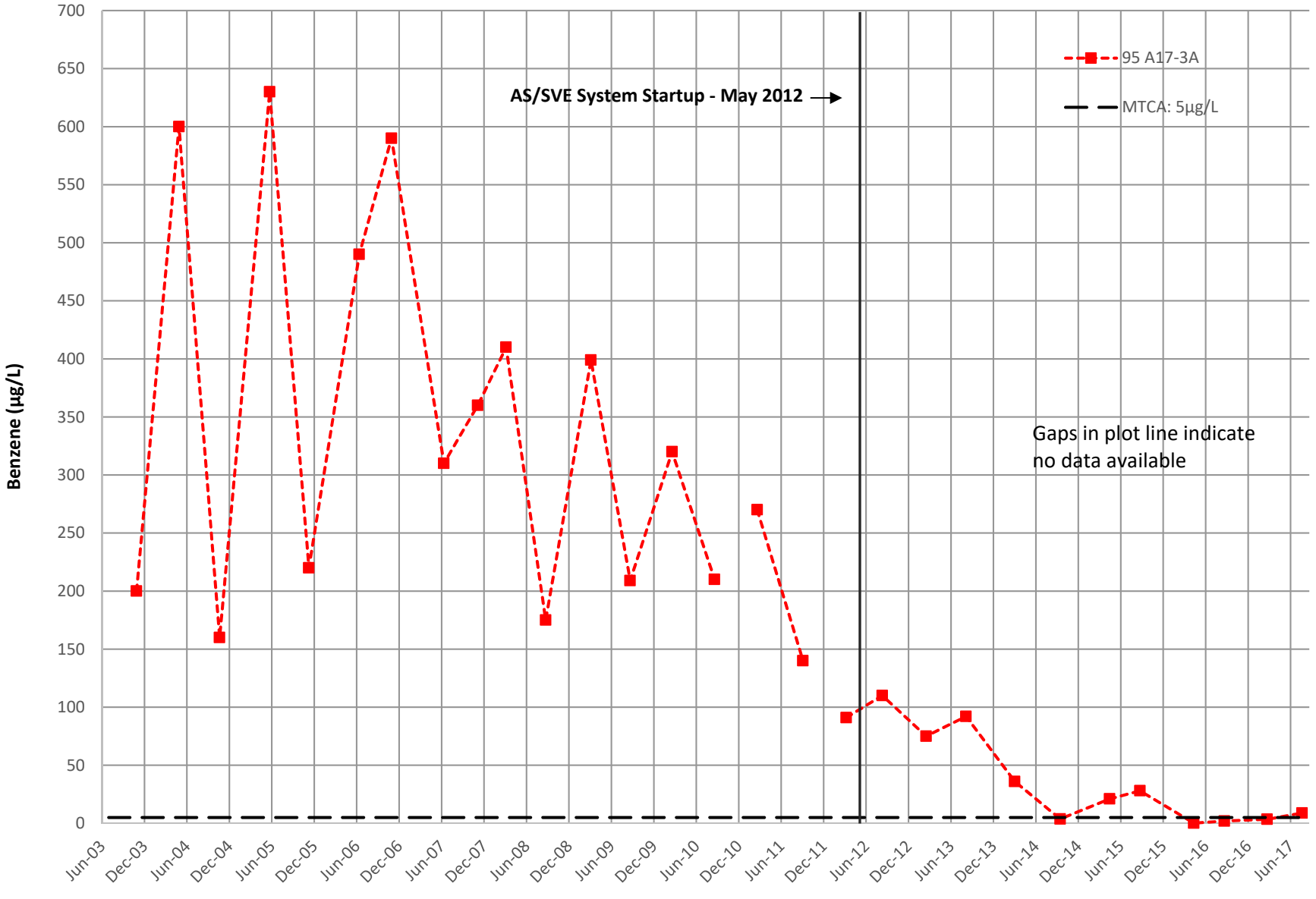


Figure 4-4e. TPH-G Trend for 07-A17-7 (AOC 9-2)

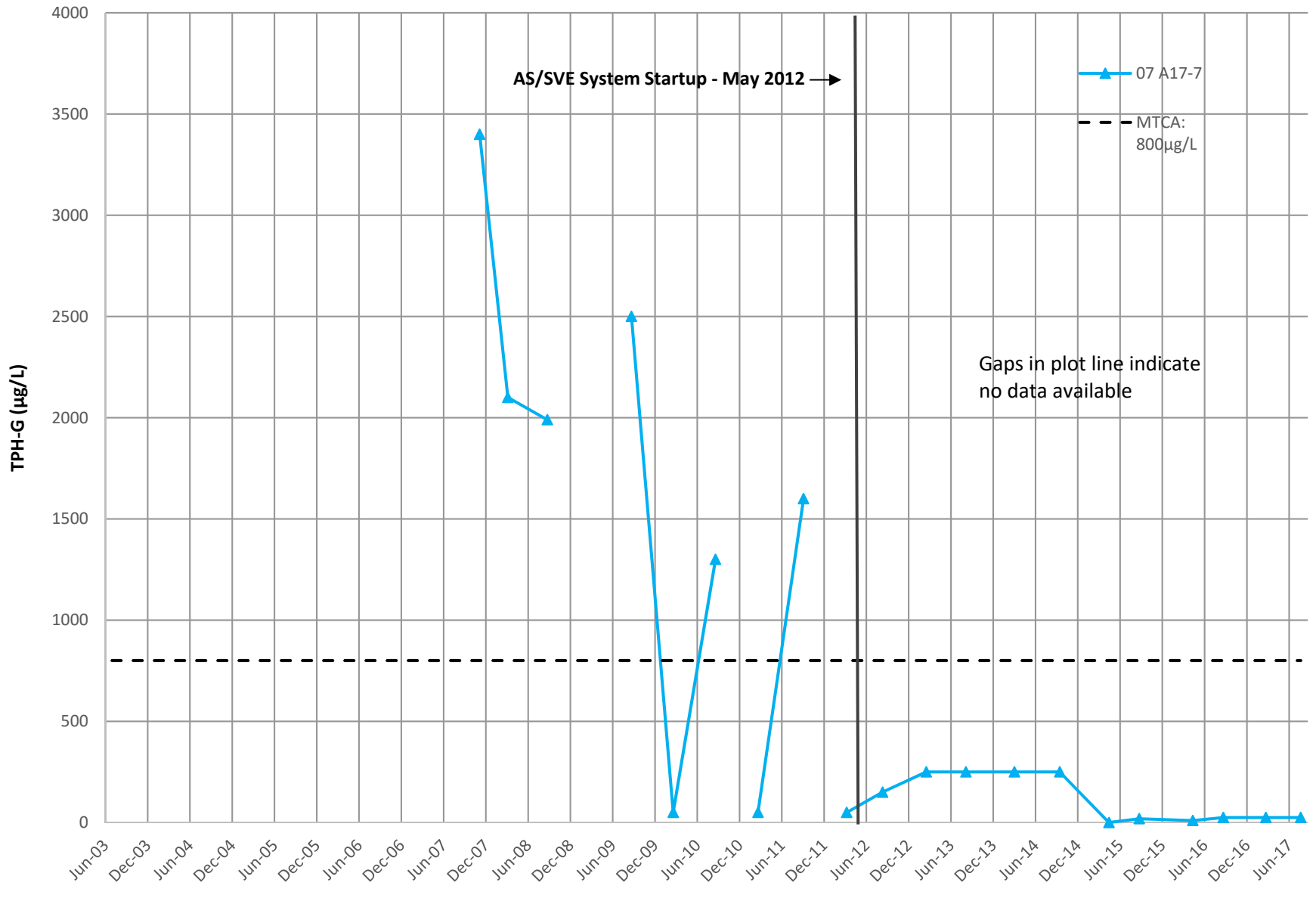


Figure 4-4f. Benzene Trend for 07-A17-7 (AOC 9-2)

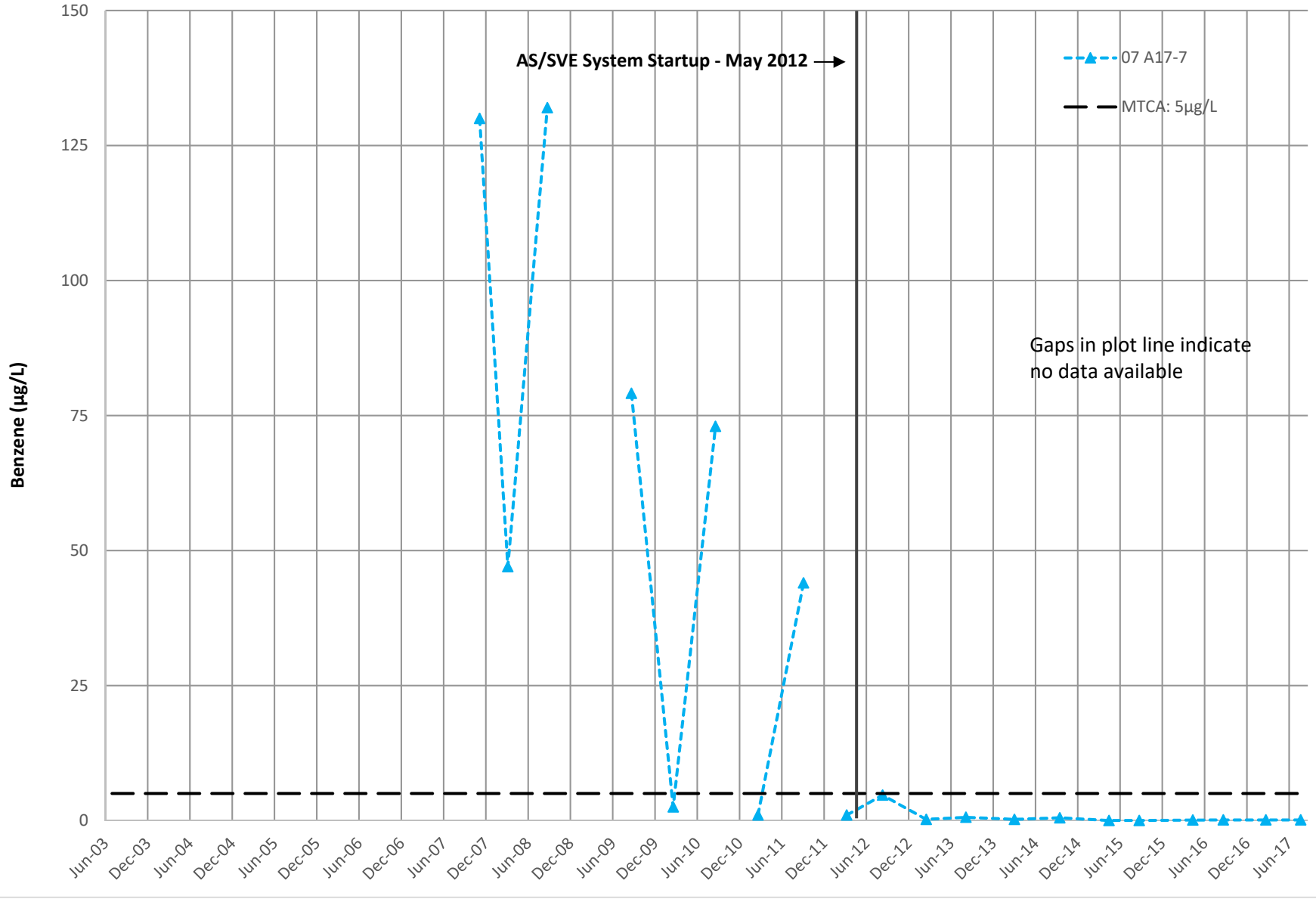


Figure 4-4g. TPH-G Trend for 10-A17-8 (AOC 9-2)

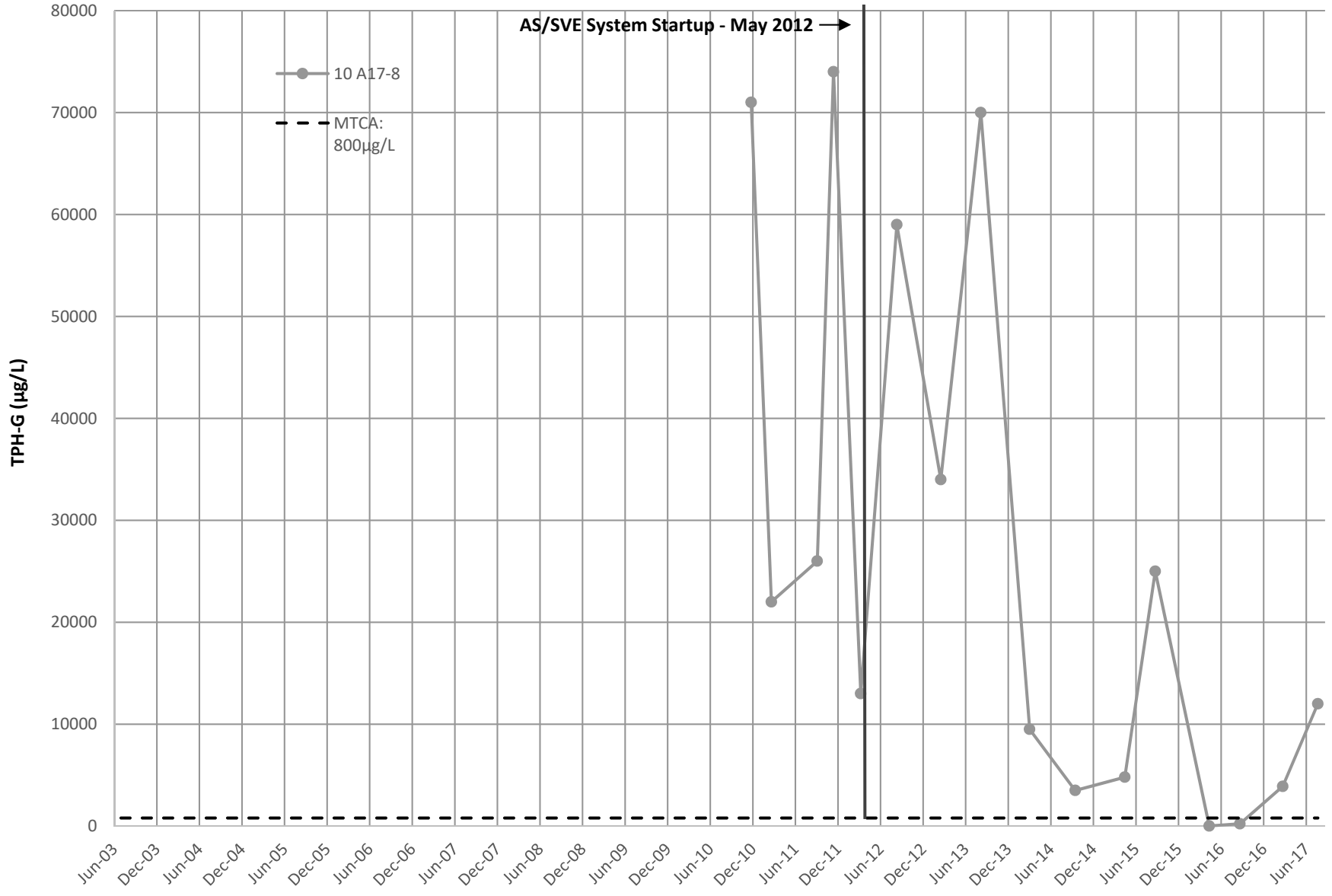
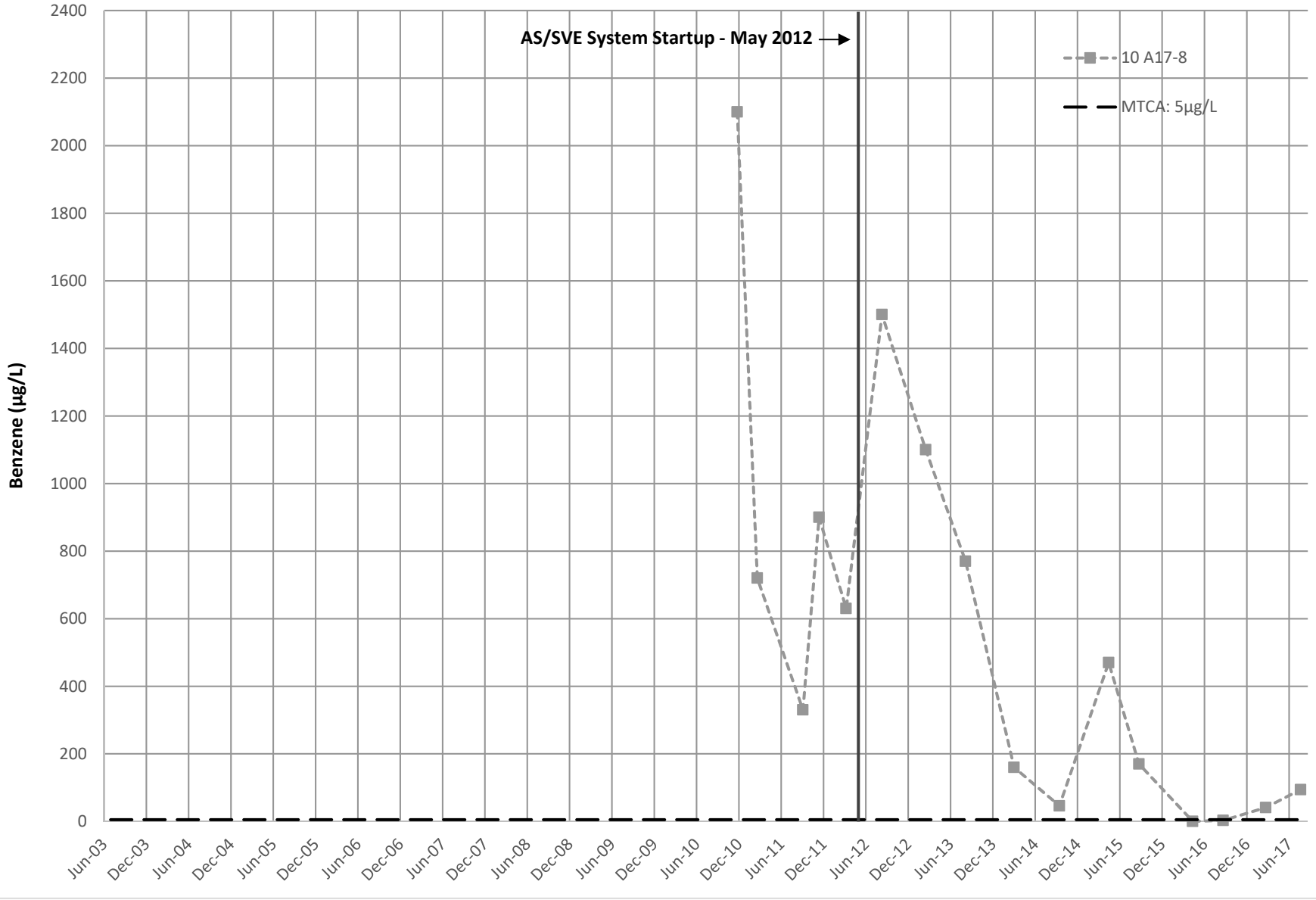


Figure 4-4h. Benzene Trend for 10-A17-8 (AOC 9-2)



5 VAPOR INTRUSION AND AMBIENT AIR MONITORING

VI monitoring is conducted to confirm that VOC vapors associated with onsite residual contamination above regulatory criteria are not migrating into the Credit Union building. Ambient air monitoring is used to assess ambient air quality in areas outside the influences of the SVE system and to help determine if other nearby sources may be impacting the air quality within the Credit Union building.

VI monitoring was conducted on November 21, 2017. Air samples were collected using 6-liter Summa canisters (Selected Ion Mode [SIM] certified) equipped with vacuum gauges and calibrated flow regulators. Time-integrated samples were collected for 8 hours from all indoor locations. Summa canisters for indoor air sampling were placed in:

- The Credit Union lobby;
- The Credit Union custodian's closet, located in the north wing of the building. The custodian's closet is the area with the most floor penetrations nearest to the source area. The door to the closet was closed to allow for the most conservative (highest concentration) vapor collection; and
- The Credit Union conference room. The conference room is the largest room in the Credit Union building. The southeast corner of the conference room overlies the former UST area.

No modifications were made to HVAC settings, door positions, use, or activities of building personnel or customers. However, automatic metered room deodorizers were turned off 24 hours before sampling, and remained off through the duration of the sampling events. As discussed in the Sub-slab Depressurization, Air Sparge and Soil Vapor Extraction System, Pilot Test Startup and Vapor Intrusion Monitoring Report (Versar 2013b) the deodorizer system is suspected of interfering with the VOC results for the interior air samples.

Ambient air samples were collected concurrently at:

- South edge of the Credit Union property, on the boundary of the parking lot at the adjacent fueling station and mini-mall. An 8-hour, time-integrated sample was collected at this location. This sample was collected to assess the contribution of the nearby fueling station and vehicle traffic on local ambient air quality.
- West edge of the Credit Union property, on the boundary of the parking lot at the adjacent fire station. This sampling location was defined as the upwind direction in the KTA Sampling and Analysis Plan (KTA 2011). An 8-hour time-integrated sample was collected at this location.

- Air intake to HVAC system at the west side of the building. This canister was placed at the elevation of the air intake on top of the cage that protects the building heat pumps. An 8-hour, time-integrated sample was collected at this location. This sample is collected to represent ambient air that enters the building through the HVAC system.
- A grab sample was collected in the northernmost fueling island at the adjacent AAFES gas station. This sample was collected to assess the contribution of the gas station to ambient air quality.

Weather conditions were recorded for the period around each monitoring event. Field readings include temperature, barometric pressure, and relative wind speed.

All samples were sent to Eurofins-Air Toxics of Folsom, California for analysis by Modified Method TO-15 (full scan/SIM) for TPH-G and BTEX. Sampling locations are shown on Figure 5-1.

5.1 VAPOR INTRUSION MONITORING RESULTS

Annual VI monitoring was performed inside and around the outside of the Credit Union. Results of VI monitoring using Summa canisters are listed in Table 5-1. This table provides a comparison of detected concentrations of gasoline-type VOCs to Ecology Cleanup Levels and Risk Calculation database, and MTCA Method B Cleanup Levels for carcinogens and non-carcinogen compounds, Occupational Safety and Health Administration (OSHA) 8-hour time-weighted average (TWA), and OSHA short-term exposure limits (STEL). Laboratory reports for air sample analysis are contained in Appendix D. Table 5-2 provides a comparison of the 2017 sampling results to historical VI and ambient air sampling results.

All summa canister samples collected in November 2017 were non-detect for TPH-G.

The MTCA Method B carcinogen cleanup level of 0.32 $\mu g/m^3$ benzene was exceeded at all sample points inside the building. Elevated concentrations of benzene were observed in the three building interior samples collected (lobby, conference room, and custodian's closet) and ranged in concentration from at 0.87 $\mu g/m^3$ to 1.9 $\mu g/m^3$ (see Table 5-1). However, the highest concentrations of benzene were observed in ambient air samples collected at the intake for the building HVAC system and from the south parking lot near the AAFES gas station, with benzene at 0.93 $\mu g/m^3$ and 1.9 $\mu g/m^3$, respectively. The grab sample collected at the AAFES fueling island contained benzene at 0.67 $\mu g/m^3$. These results indicate the gas station could be a potential source for the elevated benzene concentration detected in the indoor air at the Credit Union building. In addition, the drive through banking lanes and the Domino's Pizza drive-through window are below the HVAC intake. Idling cars are a likely source of VOC during business hours.

Table 5-1. 2017 Results of Indoor and Ambient Air Monitoring at AOC 9-2

Lab Sample ID	Summa Canister Number	Sealaska Sample ID	Sampling Location	Date	TPH-G (µg/m^3)	Benzene (µg/m^3)	Toluene (µg/m^3)	Ethyl-benzene (µg/m^3)	Total Xylenes (µg/m^3)[1/]
1711423-01A	028L	AOC92171121SUPPLY	Ambient - HVAC Intake	11/21/17	ND	**0.93**	2.4	0.34	1.75
1700423-02A	6L0078	AOC92171121CONF	Conference Room	11/21/17	ND	**1.0**	2.8	0.37	1.89
1700423-03A	6L1064	AOC92171121CUST	Custodian Closet	11/21/17	ND	**1.0**	3.3	0.38	1.96
1700423-04A	5713	AOC92171121AAFES	Ambient - AAFES	11/21/17	ND	**1.9**	4.4	0.53	2.82
1700423-05A	2798	AOC92171121FD	Ambient - Fire Dept.	11/21/17	ND	**0.87**	2.0	0.28	1.42
1700423-06A	2516	AOC92171121LOBBY	Lobby	11/21/17	ND	**1.0**	2.9	0.37	1.77
1711423-07A	6L1571	AOC92171121GRAB	Ambient – AAFES (grab)	11/21/17	ND	**0.67**	3.8	0.29	1.65
MTCA Method B Carcinogen Cleanup Level					NA	0.32	NA	NA	NA
MTCA Method B Non-Carcinogen Cleanup Level					NA	14	2,300	460	46
OSHA 8 Hour TWA					NA	3,194	753,619	434,192	434,232
OSHA STEL					NA	15,973	NA	NA	NA

Notes:
[1/] Total xylenes are calculated from sum of m,p- and o-xylenes.
Bold – exceeds most stringent cleanup level.
ND – Not Detected
NA – Not Applicable
MTCA – Model Toxics Control Act (Department of Ecology), Vapor Intrusion Guidance 2015
OSHA – Occupational Safety and Health Administration
STEL - short-term exposure limit (15 minutes for benzene)
TWA – Time-Weighted Average

Table 5-2. Comparison of Indoor and Ambient Air Monitoring Results

Sampling Location	TPH-G (µg/m³)					Benzene (µg/m³)					Toluene (µg/m³)					Ethylbenzene (µg/m³)					Total Xylenes (µg/m³)				
	2012	2014	2015	2016	2017	2012	2014	2015	2016	2017	2012	2014	2015	2016	2017	2012	2014	2015	2016	2017	2012	2014	2015	2016	2017
Ambient - HVAC Intake	98	ND	ND	ND	ND	1.3	0.4	0.9	0.6	0.9	3.1	1.2	3.8	4.3	2.4	0.5	0.2	0.5	0.2	0.3	2.6	0.9	2.3	1.0	1.8
Conference Room	360	ND	ND	ND	ND	1.8	0.4	0.9	0.5	1.0	9.4	1.6	3.7	0.7	2.8	1.0	0.2	0.4	0.1	0.4	4.9	1.1	2.2	0.5	1.9
Custodian Closet	410	ND	ND	ND	ND	1.9	0.4	0.9	0.4	1.0	9.6	2.8	4.6	1.1	3.3	1.0	0.3	0.5	0.1	0.4	4.6	1.1	2.2	0.4	2.0
Ambient - AAFES	170	72	ND	ND	ND	2.0	0.8	1.0	1.0	1.9	7.1	4.8	4.9	5.6	4.4	1.0	0.6	0.5	0.4	0.5	4.6	3.8	2.4	1.8	2.8
Ambient - Fire Dept.	140	ND	ND	ND	ND	1.7	0.2	0.8	0.5	0.9	5.6	0.4	2.0	2.6	2.0	0.8	0.1	0.1	0.1	0.3	3.8	0.2	0.4	0.6	1.4
Lobby	34	ND	ND	ND	ND	1.9	0.4	1.0	0.5	1.0	7.3	1.9	4.4	0.9	2.9	1.0	0.2	0.5	0.1	0.4	4.5	1.2	2.5	0.5	1.8

Legend

- Vapor Intrusion Monitoring Location
- Soil Vapor Probe
- Vacuum Port
- Monitoring Well

0 10 20 40
Feet

N

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

USACE

SEALASKA

Figure 5-1
Vapor Intrusion
Monitoring Locations

Path: P:\Production\Fig\JBLM\TO 01A\Credit Union\O&M Report - 2015\Maps\SVE_Fig_5-1_VprIntrMonitoringLoc.mxd
Date: 10/6/2015

A comparison of air sampling results to the OSHA 8-hour TWA show that the concentrations of BTEX compounds detected in indoor and ambient air were well below the OSHA values. Air sampling was completed as 8-hour, time-integrated samples providing a direct comparison to the OSHA 8-hour TWA values.

The OSHA STEL values are based on an exposure time of 15 minutes. However, the benzene concentrations detected in the indoor and ambient air were well below the STEL and not expected to be of concern to human health.

5.2 QUALITY ASSURANCE/QUALITY CONTROL REVIEW AND VERIFICATION

Data quality was reviewed and verified by Sealaska personnel to determine if the data are suitable for use. Project data as well as quality assurance/quality control data (such as, duplicates, field quality control results, lab quality control results, practical quantification limits, and holding times) were evaluated. No corrective actions for field or laboratory data were necessary and all data was considered usable.

6 DEVIATIONS FROM INTERIM ACTION WORKPLAN

Compliance monitoring and VI monitoring were completed in general accordance with the Air Sparge and Soil Vapor Extraction System Operations and Maintenance Manual (Sealaska 2017a). Groundwater monitoring events were completed in general accordance with the March 2016 Groundwater Monitoring Plan (Sealaska 2017c). Noted deviations from the Plan for 2017 are included:

- 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 2017 wet and dry season sampling events, samples were collected from 95-A17-2 using a peristaltic pump and dedicated disposable sample tubing.

7 CONCLUSIONS

Mechanically, the AS/SVE system is functioning as designed. Sparge cycles are evidenced by the groundwater mounding effect at monitoring wells around the contaminant plume. When operating, the AS compressor should remain programmed to operate for 30 minutes at four regular intervals per day.

Air sparging appears to produce a "donut hole" through the plume with lower concentrations of contaminants around the AS wells and a possibility of a ring of higher contaminant concentrations beyond the ZOI. AS operation creates frothy water in source area monitoring wells. Turning the AS system off for at least 48 hours before collecting groundwater samples allows more representative contaminant concentrations from the AS ZOI.

The AS system was turned off from March 1 to August 24, 2017. Groundwater samples collected March 2 and July 31, 2017 revealed an increase in concentrations of VOCs, significantly higher than results from the 2016 monitoring events, with the greatest increase noted during the July sampling. This indicates contaminant rebound in groundwater during the period when the AS system is offline. SVE exhaust sampling completed during the period the AS was offline in 2017 did not show the increase in TPH-G or benzene concentrations that were observed when the AS system was offline in 2015. Instead, a sharp increase in BTEX was observed in November, approximately 2.5 months after AS system restart (Table 3-2). TPH-G showed a concentration decrease in November when compared to the other 2017 sampling events. The correlation between AS system operation and contaminant concentration in the SVE exhaust is unclear.

Analysis of the SVE exhaust verifies continuing removal of VOCs. Results of SVE blower exhaust monitoring in 2017 indicate benzene emissions of 0.011 pounds/year and total VOC emissions of 10 pounds/year compared to benzene emissions of 0.006 pounds/year and total VOC emissions of 10 pounds/year in 2016. SVE emissions during 2017 were well below the PSCAA criteria of 50,000 pounds total VOC and benzene emissions of 15 pounds per year.

Results of VI monitoring indicate air concentrations of TPH-G, toluene, ethylbenzene, and xylenes are below MTCA Method B carcinogen and non-carcinogen cleanup levels (Table 5-1).

Benzene concentrations in air samples collected from within the Credit Union building were above MTCA Method B carcinogen cleanup levels. Elevated concentrations of benzene were observed in the three building interior samples collected (lobby, conference room, and custodian's closet). However, the ambient air sample collected at the intake for the building

HVAC system and an ambient air sample collected from the south parking lot near the AAFES gas station, also contained benzene in excess of the MTCA Method B carcinogen cleanup level. The low concentrations of benzene in groundwater and SVE exhaust suggest that the gas station and/or vehicle emissions are potential sources for the elevated benzene concentration detected in the indoor air at the Credit Union building.

In November, annual VI monitoring was performed on the same day as SVE exhaust sampling. In addition to the higher BTEX concentrations observed during SVE exhaust sampling, BTEX detected in VI and ambient air samples were also higher than previous VI sampling events. The November sampling event revealed BTEX in ambient air were at concentrations similar to those observed in SVE exhaust. It is currently unknown if there is always direct correlation between ambient air and SVE exhaust concentrations or if this was a single occurrence. Additional evaluation would be required to determine if a direct correlation exists.

8 RECOMMENDATIONS

Weekly, monthly, semiannual, and annual monitoring and/or sampling events should continue to evaluate system operation and remediation progress. Additional information on system monitoring and sampling is provided in the Final Interim Action Workplan (Versar 2013a) and the Ecology-approved Air Sparge and Soil Vapor Extraction System Operations and Maintenance Manual (Sealaska 2017a).

Evaluation of the current monitoring program has been ongoing to determine what monitoring activities are critical for system operations and what activities could be reduced in frequency or eliminated.

Temperature, pressure, and flow-rate measurements have been conducted on a weekly basis since system startup and are shown to be stable with little variation. It is recommended that measurement of temperature, pressure, and flow rate for the AS/SVE system be reduced from weekly to once per month. Weekly site maintenance visits should continue.

The current AS operation appears to be producing a “donut hole” of clean groundwater around the AS wells with the possibility of a ring of hydrocarbons beyond the ZOI. Continued intermittent operation of the AS system is recommended to allow for plume contaminant rebound for removal of VOCs. An extended period of taking the AS system offline, appears to be effective in allowing plume contaminant rebound. In addition, to allow for the collection of groundwater samples more representative of actual groundwater conditions, the AS system should be shut down at least 48 hours to allow for plume contaminant rebound.

Continuation of weekly screening of SVE exhaust using a PID and quarterly Tedlar bag sampling of the SVE system exhaust are recommended to observe for evidence of fluctuations in VOC associated with plume contaminant rebound after shutting down and restarting the AS compressor.

Cleanup objectives are based on MTCA criteria for groundwater. Groundwater monitoring results would also be used to evaluate the possibility of plume contaminant rebound into monitoring wells near the AS wells. Other monitoring wells on the site would be monitored to verify that the plume has not mobilized during the AS shut down.

Simultaneous monitoring of VI, SVE exhaust, and SVPs is recommended to better correlate soil gas and ambient air conditions. Furthermore, sampling of source area groundwater monitoring wells 24 hours before AS shutdown and 24 hours after AS restart will allow for

better definition of the time for plume contaminant rebound. Increased frequency in groundwater monitoring at source area wells may provide additional information on the time required for plume contaminant rebound following shutting down the AS system.

When intermittent AS operation no longer yields significant increases in groundwater and soil vapor concentrations, inspection and sampling will shift from the current Performance Monitoring to Confirmation Monitoring as described in the Interim Action Workplan (Versar 2013a), approved by Ecology in July 2013. According to the workplan, confirmation monitoring involves one round of groundwater, SVE exhaust, SVPs, and VI monitoring. If confirmation monitoring reveals concentrations below cleanup levels, the system will be turned off and post-shutdown monitoring, involving five quarters of groundwater monitoring, will be implemented.

9 REFERENCES

Bussey. Troy. 2008. Remedial Investigation Report for Nine Agreed Order Sites. February, 2008.

Garry Struthers & Associates. 1999. Field Report, Fort Lewis UST & PCS Removal and Disposal. Joint Base Lewis-McChord, Washington. Contract DACA67-95-G-0001-35. Prepared for USACE, Seattle District. June, 1999.

KTA. 2011. Vapor Intrusion Sampling and Analysis Plan for Credit Union Building at Joint Base Lewis-McChord. Prepared for Joint Base Lewis-McChord Environmental Division. October, 2011.

PSCAA (Puget Sound Clean Air Agency). 2015. Regulations I, Article 6.03(b)(94) and Article 5.03(a)(3)(C). November 1, 2015.

Sealaska (Sealaska Environmental Services, Inc.). 2017a. Air Sparge and Soil Vapor Extraction System Operations and Maintenance Manual, Joint Base Lewis-McChord Area of Concern 9-2, Lewis North Credit Union, Joint Base Lewis McChord, Pierce County, Washington. February 3, 2017.

Sealaska. 2017b. Draft Fort Lewis Agreed Order Groundwater Monitoring Report - 2017, Joint Base Lewis-McChord, Pierce County Washington. December 7, 2017.

Sealaska. 2017c. Final 2016 Fort Lewis Agreed Order Groundwater Monitoring 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. Contract No. W912DW-11-D-1031, Task Order 0001. March 29, 2017.

USACE (U.S. Army Corps of Engineers). 1996. Site Assessment Report, Groundwater Field Investigation, Building 10A33, Joint Base Lewis-McChord, Washington. DCN 174. July, 1996.

Versar. 2009a. Draft Fort Lewis Agreed Order Feasibility Study for Seven Sites, Joint Base Lewis-McChord, Washington. Prepared for Joint Base Lewis-McChord Public Works, Environmental Division. November, 2009.

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

Versar. 2013a. Interim Action Workplan for Area of Concern 9-2, Sub-Slab Depressurization, Air Sparge and Soil Vapor Extraction System at Joint Base Lewis-McChord (JBLM). July, 2013.

Versar. 2013b. Sub-slab Depressurization, Air Sparge and Soil Vapor Extraction System, Pilot Test Startup and Vapor Intrusion Monitoring Report, Fort Lewis Area of Concern 9-2, North Fort Credit Union. February, 2013.

APPENDIX A

FIELD DOCUMENTATION

Profile for Spent Activated Carbon Disposal

EVOQUA WATER TECHNOLOGIES

2523 Mutahar Street - Box 3308 Parker, AZ 85344 AZD 982 441 263
11711 Reading Road Red Bluff, CA 96080 CAR 000 058 784

December 23, 2015

Consultant:

Bob Thomas
Sealaska Environmental Services
Phone: (360) 930-2768

Generator Mailing Address:

(253) 477-3742
Joint Base Lewis-McChord
Environmental Division 2012 Liggett,
BOX 339500, MS17
JBLM, WA 98433-9500

The following Spent Carbon Profile has been approved for acceptance at Evoqua Water Technologies LLC:

Generator:	Joint Base Lewis-McChord
EPA ID:	
Site Address:	Americas Credit Union Bldg. 11574 17th and A Street JBLM, WA 98433-
Waste Codes:	None No Waste Codes Per Generator
Carbon Type:	Vapor
PH Range:	4.1 to 10.5
Profile Number:	W150243AC
Valid Through:	12/23/2017

Please feel free to call the undersigned at (928) 669-5758 if you have any questions.

Sincerely,

Evoqua Water Technologies LLC has all the necessary permits and licenses for the waste that has been characterized and identified by this profile.

Roy Provins
EHS Manager

Monte McCue
Director of Plant Operations

EVOQUA
WATER TECHNOLOGIES

WESTATES® Activated Carbon Laboratory
5375 South Boyle Avenue TELEPHONE 323.277.3083
Los Angeles, CA 90058 FACSIMILE 323.277.3080

ANALYTICAL REPORT

Customer:	Joint Base Lewis-McChord	**Lab ID. #:**	31284
C/o:	America's Credit Union Bldg 11574	**Date Sampled:**	12/11/2015
Address:	17th & A Street	**Date Received:**	12/16/2015
	JBLM, WA 98433	**Date Extracted:**	12/16/2015
Contact:	PNW Sales	**Date Analyzed:**	12/17/2015
Sampler:	Bob Thomas	**Date Reported:**	12/18/2015

EPA METHOD 1311 AND 8260B
VOLATILE ORGANIC COMPOUNDS

Compound	CAS #	Waste Code No.	Results (mg/l)	Reporting Limit (mg/l)	Dilution Factor	MDL (mg/l)	TCLP Limits (mg/l)
Vinyl Chloride	75-01-4	D043	ND	0.060	1.0	0.030	0.200
1,1-Dichloroethene	75-35-4	D029	ND	0.010	1.0	0.005	0.700
Chloroform	67-66-3	D022	ND	0.010	1.0	0.005	6.00
1,2-Dichloroethane	107-06-2	D028	ND	0.010	1.0	0.005	0.500
2-Butanone (MEK)	78-93-3	D035	ND	0.100	1.0	0.050	200
CarbonTetrachloride	56-23-5	D019	ND	0.020	1.0	0.010	0.500
Trichloroethene	79-01-6	D040	ND	0.010	1.0	0.005	0.500
Benzene	71-43-2	D018	ND	0.010	1.0	0.005	0.500
Tetrachloroethene	127-18-4	D039	ND	0.010	1.0	0.005	0.700
Chlorobenzene	108-90-7	D021	ND	0.010	1.0	0.005	100

The volatile organic analyses were extracted using a Zero Headspace Toxicity Characteristic Leaching Procedure (TCLP). The leachate was prepared according to the procedure as listed in the 40CFR Part 261, et al., and Federal Register, March 29, 1990 and June 29, 1990.
A sample is considered to have failed the volatile TCLP test and is considered a hazardous waste if any of the volatile compounds exceed the maxima limits as listed in the last column. These limits have been taken from the March 29, Federal Register, pp 11845-6.

Respectfully submitted,

Margaret Jefferson

Margaret Jefferson
Laboratory Manager

Notes:
Any remaining sample(s) for testing will be disposed of one month from the final report date unless other arrangements are made in advance.
ND = NOT DETECTED at or above the reporting limits.
The Reporting Limits (RL) is referenced as laboratory's Practical Quantification Limit (PQL).
MDL = Method Detection Limit.

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: TOM MALAMAKAL + BOB THOMAS					Day/Date: FRI 1 DEC 2017	
Weather Condition: (temp, barometer, wind, etc)	48°F, 30 in Hg, WIND: SSE 13 MPH					
Monitoring Point	**Time**	**Valves (% Open)**	**Flow (m/s)**	**Temp. (°C/ °F)[b]**	**Pressure (in H_2O +/-)[c] (psig)[c]**	**Comments**
Air Sparge Blower	**Time On:** AUTO ON/ 4X				**Time Off:** AUTO OFF 4X	
AS Blower Vault	1319	100	—	138.8	14 psig	41 psig (NEW)
Air Sparge Wells						
11574-ASW-1	1323	100	—	57.3	18	
11574-ASW-2	1333	100	—	65.8	0	
Extraction Blower Suction						
11574-SVE-BS-1	1345	75	21.2	48.3	4	
11574-SVE-BS-2	1346	100	29.3	57.3	7	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	38.6	97.3	**VOCs by PID** (ppbv/ppmv)[d] 0	

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)
	0.005	0.010	0.020	0.020	0.010

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.

DRAINED KO DRUM 2X

Signature:

Notes:

a: Identify phase of testing, AS and SVE valve positions, etc.;

b: Identify temperature units.

c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).

d. Identify units of measurement.

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: TOM MALAMAKAL & BOB THOMAS						**Day/Date:** WED 22 NOV 2017
Weather Condition: (temp, barometer, wind, etc)			65°F, 29.9 in Hg, WIND SE 12 MPH; RH 93% CLOUDY			
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower	**Time On:** AUTO ON 4X			**Time Off:** AUTO OFF 4X		
AS Blower Vault	327	100	—	141.2	13 in	42 (NEW) PSIG
Air Sparge Wells						
11574-ASW-1	1325	100	—	52.3	17	
11574-ASW-2	1321	100	—	64.8	17	
Extraction Blower Suction						
11574-SVE-BS-1	1331	75	20.1	66.1	4.5	
11574-SVE-BS-2	1332	100	29.1	66.1	7.5	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	38.3	101.4	**VOCs by PID** (ppbv/ppmv)[d] 0	

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)
	Ø.Ø25	Ø.Ø2Ø	Ø.Ø2Ø	Ø.Ø15	Ø.Ø16

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.

DRAINED KO DRUM

Signature:

Notes:
a: Identify phase of testing, AS and SVE valve positions, etc.;
b: Identify temperature units.
c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).
d. Identify units of measurement.

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: TOM MARLAMAKAL & BOB THOMAS						**Day/Date:** THURS 16 NOV 2017
Weather Condition: (temp, barometer, wind, etc)	43°F, 29.6 in Hg, WIND: SSE 8 MAH; RH: 100% SHOWERS/RAIN					
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower	**Time On:** 1300, 1900, 100, 700				**Time Off:** 1330, 1930, 130, 730	
AS Blower Vault	1328	100	—	157.1	14 (ALL)	42 (NEW)
Air Sparge Wells						
11574-ASW-1	1326	100	—	51.4	17	
11574-ASW-2	1324	100	—	66.4	16.5	
Extraction Blower Suction						
11574-SVE-BS-1	1334	75	17.7	51.6	4	
11574-SVE-BS-2	1335	100	28.2	54.8	7.5	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	37.4	161.6	**VOCs by PID** (ppbv/ppmv)[d] 0	

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)
	Ø.Ø35	Ø.Ø35	Ø.Ø3	Ø.Ø3Ø	Ø.Ø15

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.

DRAINED KO DRUM

Signature: Tom Marlamakal

Notes:

a: Identify phase of testing, AS and SVE valve positions, etc.;

b: Identify temperature units.

c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).

d. Identify units of measurement.

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: TOM MALAMAKAL + BOB THOMAS					**Day/Date:** THURS 9 NOV 2017	
Weather Condition: (temp, barometer, wind, etc)	47° F, 29.7 in Hg, WIND: SE 8 MPH; RH: 100%, SHOWERS					
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower	**Time On:** 1405, 2000, 200, 800				**Time Off:** 1430, 2030, 230, 830	
AS Blower Vault	1327	100	—	112.2	13	412 PSIGA (NEW GAUGE)
Air Sparge Wells						
11574-ASW-1	1322	100	—	56.3	13	
11574-ASW-2	1323	100	—	65.6	17	
Extraction Blower Suction						
11574-SVE-BS-1	1332	75	~~52.4~~ 21.4	52.4	2.5	
11574-SVE-BS-2	1333	100	~~54.5~~ 18.3	54.3	6	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	38.2	101.2	**VOCs by PID** (ppbv/ppmv)[d] 0	

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)
	0.020	0.026	0.025	0.023	~~0.065~~

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.

Signature:

Notes:

a: Identify phase of testing, AS and SVE valve positions, etc.;

b: ~~Identify~~ temperature units.

c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).

d. Identify units of measurement.

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: TOM MALAMAKAL & BOB THOMAS						**Day/Date:** FRI 3 NOV 2017
Weather Condition: (temp, barometer, wind, etc)			36°F, 30.2 in Hg, WIND N 10 MPH, RH 100% CLOUDY			
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower	**Time On:** 1430, 2000, 200, 800				**Time Off:** 1430, 2030, 230, 830	
AS Blower Vault	1421	100	—	148.2	13	42 psis now 5455
Air Sparge Wells						
11574-ASW-1	1429	100	—	56.1.6	16.5	
11574-ASW-2	1420	100	—	65 2	16	
Extraction Blower Suction						
11574-SVE-BS-1	14 ~~38~~	~~75~~	22.2	48.1	2.5	
11574-SVE-BS-2	14 39	100	30.2	50.2	6	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	36.8	162 8	**VOCs by PID** (ppbv/ppmv)[d] 0	

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)
	Ø.017	Ø.02Ø	Ø.03Ø	Ø.Ø3Ø	Ø.Ø3Ø

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.

Signature: Tom Malamakal

Notes:
a: Identify phase of testing, AS and SVE valve positions, etc.;
c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).
~~b: Identify~~ temperature units.
d. Identify units of measurement.

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: Tom MALAMAKAL + BOB THOMAS					**Day/Date:** THURS 26 OCT 2017	
Weather Condition: (temp, barometer, wind, etc)	53°F; 30.2 in Hg; WIND: NNE 8 MPH; RH: 96% CLOUDY					
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower	**Time On:** 1400, 2000, 200, 800				**Time Off:** 1430, 2030, 230, 830	
AS Blower Vault	1408	100	—	111.1	43	43 - 44.7
Air Sparge Wells						
11574-ASW-1	1406	100	—	57.8	16.5	
11574-ASW-2	1403	100	—	46.9	17	
Extraction Blower Suction						
11574-SVE-BS-1	14:15	75	20.2	57.6	2.5	
11574-SVE-BS-2	14:16	100	30.2	59.2	6	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	38.3	104	**VOCs by PID** (ppbv/ppmv)[d] 0	

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)	
	0.015	0.015	0.025	0.020	0.010	

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.

Signature:

Notes:
a: Identify phase of testing, AS and SVE valve positions, etc.;
b: Identify temperature units.
c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).
d. Identify units of measurement.

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: Bob T.					**Day/Date:** T/Thurs 26 Oct 2017	
Weather Condition: (temp, barometer, wind, etc)						
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower	**Time On:**				**Time Off:**	
AS Blower Vault	1408	100	—	111.1	43psig	43-14.7 = psig
Air Sparge Wells						
11574-ASW-1	1406	100	—	57.8	16.5	AS ON @ 1400-1430
11574-ASW-2	1403	100	—	66.9	18psig	
Extraction Blower Suction						
11574-SVE-BS-1						
11574-SVE-BS-2						
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%			**VOCs by PID** (ppbv/ppmv)[d]	

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)	
1344, 1341, 1349, 1347, 1400	0.015	0.015	0.025	0.020	0.010	

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.)

Signature:

Notes:
a: Identify phase of testing, AS and SVE valve positions, etc.;
b: Identify temperature units.
c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).
d. Identify units of measurement.

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: Tom MALAMAKAL						**Day/Date:** FRI 20 OCT 2017
Weather Condition: (temp, barometer, wind, etc)			53° F; 29.8 inHg; WIND: S 12 MPH; RH: 85% SHOWERS			
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower	**Time On:** ~~1400, 2000~~, 200, 800			**Time Off:** 1430, 2030, 230, 830		
AS Blower Vault	1429	100	—	190.2	15	
Air Sparge Wells						
11574-ASW-1	1422	100	—	67.6	16	
11574-ASW-2	1430	100	—	~~190.2~~ 58.4	~~15~~ Ø	
Extraction Blower Suction						
11574-SVE-BS-1	1436	75	24.2	53.4	2.5	
11574-SVE-BS-2	1437	100	32.8	53.6	6	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	37.7	104.2	**VOCs by PID** (ppbv/ppmv)[d] 0	

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)
1420, 1412, 14 , , 1420	Ø.Ø15	Ø.Ø25	Ø.Ø15	Ø.Ø2	0.Ø15

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.

Signature:

Notes:
a: Identify phase of testing, AS and SVE valve positions, etc.;
b: Identify temperature units.
c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).
d. Identify units of measurement.

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: Tom Mallammakal + Mitch Haldane					**Day/Date:** Wed 11 Oct 2017	
Weather Condition: (temp, barometer, wind, etc)	55° F, 30 in Hg, Wind: SSW 10 mph; Cloudy					
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower	**Time On:** 1400, 2000, 200, 800				**Time Off:** 1430, 2030, 230, 830	
AS Blower Vault	14:20	100	—	160	15	
Air Sparge Wells						
11574-ASW-1	14:10	100	—	67.4	17	
11574-ASW-2	14:24	100	—	64.9	16	
Extraction Blower Suction						
11574-SVE-BS-1	13:54	75	16.3	58.1	2.5	
11574-SVE-BS-2	13:53	100	31.6	58.9	6.5	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	36.3	102.5	**VOCs by PID** ~~(ppbv~~/ppmv)[d] 0	

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)
	0.03	0.02	0.03	0.02	0.01

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.

Signature: Tom Mallammakal

Notes:
a: Identify phase of testing, AS and SVE valve positions, etc.;
b: Identify temperature units.
c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).
d. Identify units of measurement.

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: Tom MALAMAKAL					**Day/Date:** 6 FRI ~~10~~ OCT 2017	
Weather Condition: (temp, barometer, wind, etc)	73 °F, 30.1 in Hg, WIND: NNW 2 MPH SUNNY.					
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower	**Time On:** 2:00, 8:00, 1400, 2000				**Time Off:** 2:30, 8:30, 1430, 2030	
AS Blower Vault	14:12	100	—	110	14	
Air Sparge Wells						
11574-ASW-1	14:00	100	—	63.4	16	
11574-ASW-2	14:14	100	—	62.5	16	
Extraction Blower Suction						
11574-SVE-BS-1	14:20	75	20.1	72.3	3	
11574-SVE-BS-2	14:21	100	33.3	75.4	6	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	38.3	110.9	**VOCs by PID** (ppbv/ppmv)[d] 0	

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)
	0.02	0.02	0.02	0.02	0.01

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.

Signature:

Notes:
a: Identify phase of testing, AS and SVE valve positions, etc.;
b: ~~Identify~~ temperature units.
c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).
d. Identify units of measurement.

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: JOB THOMAS						**Day/Date:** FRI 28 SEPT 2017
Weather Condition: (temp, barometer, wind, etc)			65°F, 83% HUM, SSW 9 MPH, 30 in Hg			
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower AUTO **Time On:** 0200, 0800, 1400, 2000 **Time Off:** 0230, 0830, 1430, 2030						
AS Blower Vault	1426	100	—	151.7F	22 psig *	99.8F @ EXIT FROM VAULT
Air Sparge Wells						
11574-ASW-1	1421	100	—	68.6F	16 psig	
11574-ASW-2	1419	100	—	67.8F	16 psig	
Extraction Blower Suction						
11574-SVE-BS-1	1448	75	13.5	66.5F	2.8 in H_2O	
11574-SVE-BS-2	1447	100	32.8	66.3F	7.5 in H_2O	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	39.2 m/s	91.1F	**VOCs by PID** (ppbv/ppmv)[d]	0 ppbv @ 1412 108.7F @ BLOWER HEAD → NC 0 ppbv @ 1458

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)
1427, 1429, 1424, 1417	0.030	0.025	0.025	0.025	0.010

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.

AS OPERATING DURING VISIT.

* NEW GAUGE: 38 psig - 14.7 = 22.3 psig, OLD GAUGE = 14 psig

Signature: J. Thomas

Notes:

a: Identify phase of testing, AS and SVE valve positions, etc.;

b: Identify temperature units.

c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).

d. Identify units of measurement.

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: BOB THOMAS						**Day/Date:** FRI 22 SEPT 2017
Weather Condition: (temp, barometer, wind, etc)	65 F, 59% HUM, WIND: NNW: 5 MPH, 30 IN Hg LIGHT BREEZE, SPARSE CLOUDS					
Monitoring Point	**Time**	**Valves (% Open)**	**Flow (m/s)**	**Temp. (°C/°F)[b]**	**Pressure (in H_2O +/-)[c] (psig)[c]**	**Comments**
Air Sparge Blower	**Time On:** 1400				**Time Off:** 1430	CURRENT ON / 1 OF 4 / d
ON → AS Blower Vault	1416	100	—	152.1F		GAUGE: 115F, 38 psig, OLD GAUGE: 14 psi
Air Sparge Wells						
11574-ASW-1	1425	100	—	66.5	16.5	
11574-ASW-2	1431	100	—	66.3	0 →	PRESS. DROPPED WHEN WATER OUT
Extraction Blower Suction						
11574-SVE-BS-1	1458	75	5.4	70.7	~~5.7~~ LAST 2.0	IN H_2O
11574-SVE-BS-2	1459	100	33.1	71.1	~~3.3~~ 6.5	IN H_2O
Extraction Blower Exhaust (11574-SVE-BE-1) 1455		Always 100%	37.2	103.8F IN BLOWER HOUSE 115.4F OUTSIDE	**VOCs by PID** (ppbv/ppmv)[d] 0	- 1453: 0 ppbv @ 1ST PKG BAY - 1508: 0 ppbv IN ACU LOBBY - 0 ppbv THROUGH ENTIRE WALK AROUND PERIMETER OF BLDG + PKG LOT
Sub-slab Probe Pressures		**SSD-S1 (SE) (in W.C.)**	**SSD-S2 (SW) (in W.C.)**	**SSD-N1 (NE) (in W.C.)**	**SSD-N2 (NW) (in W.C.)**	**SSD-3 (inside) (in W.C.)**
1437 1437 1446 1434		0.010	0.010	0.020	0.020	0.010
Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.						
- AS ON FOR 30 MINS @ 1400, 2000, 0200, 0800 (STARTED ON 15 SEPT 2017)						
- RUBY = ACU ESCORT TO STORAGE + MEETING ROOM.						
- HEAVY RAINS EARLIER THIS WEEK BUT NO WATER IN KO DRUM.						
Signature: BT / Thomas						

Notes:
a: Identify phase of testing, AS and SVE valve positions, etc.;
b: Identify temperature units.
c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).
d. Identify units of measurement.

AOC 9-2
15 SEPT 2017

TIME	PORT	PRESS	TEMP	
1352	SSD-S2 SW	Ø.ØZ	—	
1354	SSD-S1 SE	Ø.ØIØ	—	RESTARTED AS TODAY; AS TIMER: ØZØØ, ØØØØ, 14ØØ, 2ØØØ
1357	SSD-N2 NW	Ø.ØZØ	—	
1359	SSD-N1 NE	Ø.ØZØ	—	
14Ø7	SSD-3 IN	Ø.ØIØ	—	
1411	ASW-2	16 psig	68.4F	AS COMPRESSOR OPERATING
1413	ASW-1	16 psig	74.8F	" " "
1415	AS VAULT	35 psig (NEW GAUGE) 14 psig (OLD GAUGE)	138.9F	" " "

IS THIS psia? = 35 − 14.7 = ~21Ø psia

FRI 1 SEPT 2017

TIME	PORT	PRESS	TEMP	COMMENTS
0932	SSD-S2 SW	0.010	—	
0934	SSD-S1 SE	0.015	—	
0937	SSD-N2 NW	0.025		
0939	SSD-N1 NE	0.020	—	
0943	SSD-3	0.010	—	ACU ESCORT : JOY B.

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: TOM MALAMAKAL + JOJO THOMAS						**Day/Date:** FRI 1 SEPT 2017
Weather Condition: (temp, barometer, wind, etc)		62°F, 30.1 in Hg, WIND 5 MPH, NNW, RH: 75% SUNNY				
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower	**Time On:** OFF				**Time Off:** OFF	
AS Blower Vault	—	100	—	—	0	OFF
Air Sparge Wells						
11574-ASW-1	—	100	—	—	0	OFF
11574-ASW-2	—	100	—	—	0	OFF
Extraction Blower Suction						
11574-SVE-BS-1	9:50	75	19.0	71.3	2.5	
11574-SVE-BS-2	9:51	100	33.9	81.2	6.5	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	37.0	126.3	**VOCs by PID** (ppbv/ppmv)[d] 0	

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)
	0.015	0.010	0.020	0.025	0.010

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.

Signature:

Notes:
a: Identify phase of testing, AS and SVE valve positions, etc.;
b: Identify temperature units.
c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).
d. Identify units of measurement.

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: B. S T.						**Day/Date:** 18 AUG 2017
Weather Condition: (temp, barometer, wind, etc)			68F, 72% Hum, WIND: W 5MPH 30.1 INHG			
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower	**Time On:** OFF				**Time Off:** OFF	
AS Blower Vault						
Air Sparge Wells						
11574-ASW-1						AS OFF
11574-ASW-2						
Extraction Blower Suction						
11574-SVE-BS-1	1423	75	6.6	75.5	2.0	
11574-SVE-BS-2	1423	100	33.4	75.3	6.8	
Extraction Blower Exhaust (11574-SVE-BE-1)	1419	Always 100%	40.9	99.4F out 130.8F Blower	**VOCs by PID** (ppbv/ppmv)[d]	- 0ppbv @ 1ST PKG BAY @ SVE - 0ppbv @ SVE EXH

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)
1428/1437/1435/1436, 1431	0.010	0.010	0.025	0.020	0.010

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.

ACM ESCORT TO STORAGE => SSD-EN = RUSTY

Signature: B. Thomas

Notes:

a: Identify phase of testing, AS and SVE valve positions, etc.;

b: Identify temperature units.

c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).

d. Identify units of measurement.

AOC 9-2 8/11/17

TIME	PORT	PRESS	TEMP	FLOW	PID
15 2	SVE EXH	—	101.2 F SVE EXH 107.0 F @ 1ST PVC FITTING ON SCOUAR	39.1 m/s	0 ppbv @ SVE, 0 IN AIR CUT
1454	SVE SOUTH	2.5" H2O	78.7 F	19.5 m/s	
	SVE NORTH	5.25" H2O	76.8 F	31.3 m/s	
1507	SSO-EN	0.015	—	—	ACU ESCORT = RUBY
1512	SSO-N2 NW	0.025			
1514	SSO-N1 NE	0.025	—	—	
1417	SSO-S1 SE	0.010		—	74 °F SMOKEY (BC WILDFIRES) 65% Hum, 29.9 IN Hg, 8 mi VIS UV IND.: 6 WEATHER.COM APP
1419	SSO-S2 SW	0.000			

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: TOM MALAMAKAL + BOB THOMAS						**Day/Date:** FRI 4 AUG 2017
Weather Condition: (temp, barometer, wind, etc)			87°F, 29.9 in Hg, WIND: 6 MPH; RH: 41%			SUNNY, SMOKY
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower	**Time On:** SYSTEM OFF			**Time Off:** SYSTEM OFF		
AS Blower Vault	1445	100	—	77.9	— 0	GUAGE NOT WORKING
Air Sparge Wells						
11574-ASW-1	1437	100	—	81.1	0	
11574-ASW-2	1443	100	—	68.9	0	
Extraction Blower Suction						
11574-SVE-BS-1	1452	75	14.2	89.8	2.5	
11574-SVE-BS-2	1453	100	32.8	88.7	6.5	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	39.3	126.3	**VOCs by PID** (ppb/ppmv)[d] 0	

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)	
	0.015	0.040	0.015	0.015	0.01	

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.

Signature: Tom Malamakal

Notes:
a: Identify phase of testing, AS and SVE valve positions, etc.;
b: Identify temperature units.
c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).
d. Identify units of measurement.

FRI 4 AUG 2017

TIME ~~PORT~~	PORT	PRESS	TEMP	
1429	SSD-S2 SW	0.0020	—	
1431	SSD-S1 SE	0.010-0.015	—	-AFFECTED BY BREEZE
1433	SSD-N2 NW	0.015	—	
1435	SSD-N1 NE	0.015	—	
1437	ASW-1	0	81.1°F	OFF
1441	~~ASD~~ SSD-EN	0.015	68.9°F	OFF
1443	ASW-2	0		
1445	ASVAULT	GAUGE NOT WORKING	77.9°F	OFF

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: BOB THOMAS						**Day/Date:** FRI 28 JULY 2017
Weather Condition: (temp, barometer, wind, etc)		77F, 51% HUM, WNW 8MPH, CLEAR SKY, 30 IN HG,				
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower	**Time On:**			**Time Off:**		
AS Blower Vault	1640	100	OFF	75.8	GAUGE NOT WORKING	TURNED POWER OFF *
Air Sparge Wells						
11574-ASW-1	1636	100	OFF	79.0F	0	
11574-ASW-2	1632	100	OFF	67.5F	0	NO PRESSURE IN LINE
Extraction Blower Suction						
11574-SVE-BS-1	1652	75	11.4	74.8	2.5	
11574-SVE-BS-2	1652	100	25.3	72.4	6.5	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	38.3	115.3F	**VOCs by PID** (ppbv/ppmv)[d]	PID NOT AVAILABLE

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)
TIME					
1643/1634, 1634, 1628	0.015	0.015	0.015	0.010	0.015

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.

* AS OFF @ MOTOR STARTER @ 1640 FOR NEXT WEEK'S MW SAMPLING
- JOY BENGE ESCORTED TO SSD-3N + ASW-2

Signature: B. Thomas

Notes:
a: Identify phase of testing, AS and SVE valve positions, etc.;
b: Identify temperature units.
c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).
d. Identify units of measurement.

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: Tom MALAMAKAR						**Day/Date:** FRI 21 JULY 2017
Weather Condition: (temp, barometer, wind, etc)			69°F, 30.1 in Hg, WSW 3MPH, RH 62% PARTLY SUNNY			
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower	**Time On:** AUTO ON 4X				**Time Off:** AUTO OFF 4X	
AS Blower Vault	11:50	100	—	70.7	—	GUAGE BROKEN → NO PRESSURE
Air Sparge Wells						
11574-ASW-1	11:52	100	—	71.6	0	
11574-ASW-2	11:45	100	—	69.3	0	
Extraction Blower Suction						
11574-SVE-BS-1	11:55	75	14.8	83.1	3	
11574-SVE-BS-2	11:56	100	31.4	80.9	6	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	38.3	130	**VOCs by PID** (ppbv/ppmv)[d] 0	

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)
	0.01	0.02	0.02	0.02	0.01

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.

Signature: Tom Malamakar

Notes:
a: Identify phase of testing, AS and SVE valve positions, etc.;
b: Identify temperature units.
c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).
d. Identify units of measurement.

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: TOM MALAMAKAL + BOB THOMAS						**Day/Date:** FRI 14 JULY 2017
Weather Condition: (temp, barometer, wind, etc)		74°F, 30.1 in Hg, WIND WNW 5 MPH; 50% RH SUNNY				
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ (°F))[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower	**Time On:** AUTO ON 4X				**Time Off:** AUTO OFF 4X	
AS Blower Vault	1433	100	—	69.8	— 0	GUAGE NOT WORKING
Air Sparge Wells						
11574-ASW-1	1432	100	—	76.3	Ø	
11574-ASW-2	1439	100	—	67.1	Ø	
Extraction Blower Suction						
11574-SVE-BS-1	14:45	75	13.1	78.7	3	
11574-SVE-BS-2	14:46	100	32.4	75.4	6.5	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	39.5	116	**VOCs by PID** (ppbv/ppmv)[d] 0	

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)
	Ø.ØØ5	Ø.ØØ5	Ø.Ø15	Ø.Ø15	Ø.Ø1

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.

Signature:

Notes:
a: Identify phase of testing, AS and SVE valve positions, etc.;
b: Identify temperature units.
c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).
d. Identify units of measurement.

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: Tom Abrahamson + Rob Thomas					**Day/Date:** FRI 7 JUL 2017	
Weather Condition: (temp, barometer, wind, etc)	77°F, 30.0 in Hg, wind NW 5MPH RH 55% SUNNY					
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower	**Time On:** AUTO ON 4X			**Time Off:** AUTO OFF 4X		
AS Blower Vault	10/12	100	—	—	—	
Air Sparge Wells						
11574-ASW-1	—	100	—	—	—	AS OFF
11574-ASW-2	—	100	—	—	—	
Extraction Blower Suction						
11574-SVE-BS-1						
11574-SVE-BS-2						
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%			**VOCs by PID** (ppbv/ppmv)[d]	

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)	

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.

Signature:

Notes:
a: Identify phase of testing, AS and SVE valve positions, etc.;
b: Identify temperature units.
c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).
d. Identify units of measurement.

JBLM AOC 9-2, Air Sparge/ Soil Vapor Extraction System
JBLM North, America's Credit Union, JBLM Building 11574

Day & Date	Time	Technician	Purpose of Site Visit/ Observations
FRI 1 APR 2016	1420	BOB T.	WKLY INSPN; DRAIN KO (~1/3).
TUES 5 APR 2016	1300	TOM M.	DRAINED KO (1x)
WED 13 APR 2016	~1000	TOM M	DRAINED KO 2X isolated lines.
FRI 8 APR 2016	1115	BOB T	DRAINED KO. WEEKLY INSPN. ISOLATED DRAINED 2x.
FRI 22 APR 2016	1115	BOB T	DRAINED KO. WKLY INSPN. DRAINED KO 2X.
MON 25 APR 2016	1145	BOB T.	DRAINED KO
FRI 13 MAY 2016	1346	BOB T.	WKLY INSPN
FRI 6 MAY 2016		BOB T : TOM M.	WKLY INSPN
MON 16 MAY 2016	1642	BOB T.	SYSTEM CHECK. INSTALL "CONFINED SPACE" SIGN ON AS VAULT LID
THURS 19 MAY 2016	1120	BOB T / TOM M.	WKLY INSPN.
FRI 27 MAY 2016	1500-1700	BOB T	WKLY INSPN. MONTR MANIFOLD/SUM. MOUNTED CONTACT SIGNS.
WEDS 1 JUN 2016	~1320	BOB T / TOM M.	VERIFIED AS CYCLE @ 1300. DISCONNECTED GAC
FRI 3 JUN 2016	1420	BOB T.	WEEKLY INSPN
THURS 9 JUN 2016	1008	BOB T, TOM M, CHRYSTAL P.	WEEKLY INSPN.
FRI 10 JUN 2016	1110	BOB T.	DELIVER EXT CORD FOR MON SVP SAMPLING, SYSTEM CHECK.
MON 13 JUN 2016	1230-	BOB T, TOM M - CHRYSTAL P.	SVP SAMPLING, SVE EXH SAMPLING
MON 13 JUN 2016	1530	BOB T, TOM M, CHRYSTAL P.	SVE EXH SAMPLES
FRI 17 JUN 2016	~1430	BOB T., TOM M., CHRYSTAL P.	WKLY SYSTEM INSPN.
WEDS 22 JUN 16	1230	BOB T.	SYSTEM CHECK. NO WATER IN KO AFTER HEAVY RAINS
FRI 23 JUN 16	10:10	BOB T., TOM M.	WEEKLY INSPECTION
FRI 8 JUL 16	11:53	BOB T, TOM M.	WEEKLY INSPECTION
FRI 15 JUL 16	11:30	BOB T, TOM M.	WEEKLY INSPECTION
FRI 22 JUL 16	11:30	BOB T, TOM M.	WEEKLY INSPECTION
THURS 28 JUL 16	14:30	BOB T, TOM M.	WEEKLY INSPECTION
THURS 4 AUG 16	13:40	BOB T, TOM M.	WEEKLY INSPECTION
THURS 11 AUG 16	14:20	TOM M, BOB T.	WEEKLY INSPECTION
FRI 19 AUG 16	11:00	TOM M.	WEEKLY INSPECTION

JBLM AOC 9-2, Air Sparge/ Soil Vapor Extraction System
JBLM North, America's Credit Union, JBLM Building 11574

Day & Date	Time	Technician	Purpose of Site Visit/ Observations
FRI 17 FEB 2017	11:30	TOM M.	WEEKLY INSPECTION; DRAINED KO DRUM, ~10 gal
WED 22 FEB 2017	9:30	TOM M.	DRAINED KO DRUM
FRI 24 FEB 2017	11:00	TOM M + BOB T	WEEKLY INSPECTION, DRAINED DRUM ~10gal
WED 1 MAR 2017	1430	TOM M + BOB T.	" " "
SUN 5 MAR 2017	1413	BOB T.	DRAIN KO DRUM ~2/3 FULL
FRI 10 MAR 2017	1126	BOB T + TOM M.	DRAINED KO DRUM ~ 1/3 FULL
TUES 14 MAR 2017	1400	BOB T	DRAIN KO DRUM ~2/3 FULL
FRI 17 MAR 2017	1330	BOB T, TOM M.	DRAIN KO DRUM
WED 22 MAR 2017	1330	TOM M, MINDY G.	DRAINED KO ~ 13 GAL.
TUES 28 MAR 2017	1000	TOM M	DRAINED KO ~13 gal, SVE SAMPLING
TUES 11 APR 2017	1000	TOM M.	DRAINED KO ~ 10 GAL
THURS 13 APR 2017	1310	BOB T.	DRAINED KO; RETRIEVED EXTINGUISHER FOR SERVICE
FRI 14 APR 2017	M25	TOM M, BOB T.	WEEKLY INSPECTION, DRAINED KO
TUES 18 APR 2017	1500	TOM M.	DRAINED KO ~ 13 gal
WED 3 MAY 2017	1500	TOM M.	DRAINED KO ~13 gal
THURS 1 JUNE 2017	1200	BOB T	CHECK SYSTEM. NO WATER IN KO.
FRI 2 JUNE 17	~1400	BOB T.	WKLY INSPN - NO WATER IN KO
FRI 28 JULY 17	~1430	BOB T	WKLY INSPN. NO WATER IN KO. TURNED AS OFF FOR MW SAMPLING NEXT WK.
FRI 4 JULY 17	~1500	BOB T	" "
FRI 11 JULY 17	~1450	BOB T	WKLY INSPN

JBLM AOC 9-2, Air Sparge/ Soil Vapor Extraction System
JBLM North, America's Credit Union, JBLM Building 11574

Day & Date	Time	Technician	Purpose of Site Visit/ Observations
FRI 26 AUG 2016	13:50	Tom M + Bob T	WEEKLY INSPECTION
THURS 1 SEPT 2016		Tom M + Bob T	WEEKLY INSPECTION
FRI 9 SEPT 2016	13:50	Tom M + Bob T	WEEKLY INSPECTION
WED 14 SEPT 2016	11:50	Tom M + MINDY G	WEEKLY INSPECTION
FRI 23 SEPT 2016	12:00	Tom M + Bob T	WEEKLY INSPECTION
THURS 6 OCT 2016	1402	Bob T / Tom M.	WEEKLY INSPECTION
TUES 18 OCT 2016	1600	Bob T	CHECK & DRAIN KO DRUM. ~ 2 gallons
THURS FRI 27 OCT 2016		Bob T / Tom M	WKLY INSPN / BLDG INSPN
FRI 28 OCT 2016		Bob T / Tom M	CHECK / DRAIN KO
MON 31 OCT 2016	~1000	Bob T.	ISOLATE ZONES / DRAIN KO.
WED 16 NOV 2016	~11:30	Tom M.	ISOLATED ZONES / DRAINED KO ~10 gal
THURS 17 NOV 2016	~11:30	Tom M + Bob T	ISOLATED ZONES / DRAINED KO ~ 2 gal.
MON 28 NOV 2016	~7:30	Tom M.	ISOLATED ZONES / DRAINED KO 2 TIMES ~10 gal
WED 7 DEC 2016	~13:00	Tom M.	ISOLATED ZONES / DRAINED KO ~ 10 gal
MON 12 DEC 2016	~14:00	Tom M.	ISOLATED ZONES / DRAINED KO ~ 10 gal
THURS 15 DEC 2016	~12:00	Tom M	ISOLATED ZONES / DRAINED KO ~ 10 gal
MON 19 DEC 2016	~1505	Bob T	DRAINED KO DRUM ~ 5 MIN
FRI 23 DEC 2016	~10:00	Tom M + Bob T.	ISOLATED ZONES / DRAINED KO ~10 gal
TUES 27 DEC 2016	~1200	Bob T / Tom M	DEPLOY SMART CANISTERS / DRAIN KO DRUM: 2X
WED 18 DEC 2016	~14:00	Tom M	DRAINED KO DRUM ~ 10 gal 2X
'17 FRI 20 JAN 2017	~12:00	Tom M + Bob T	DRAINED KO DRUM / WEEKLY INSPECTION
THURS 25 JAN 2017	1520	Bob T.	DRAIN KO DRUM
FRI 26 JAN 2017		Bob T / Tom M	WKLY INSP + DRAIN KO
FRI 3 FEB 2017	~1320	Bob T / Tom M	WKLY INSPN + DRAIN KO DRUM
THURS 9 FEB 2017	1040	Bob T.	SYSTEM CHECK. DRAIN KO DRUM. 2X
FRI 10 FEB 2017	1545	Bob T.	WKLY INSPN. DRAIN KO. X-NO WTR IN DRUM
WED 15 FEB 2017	1615	Bob T	DRAINED KO (HEAVY RAINS), INSPECTED FIRE EXTINGUISHER

THURS 30-JUNE 2016

TIME	WELL	PRESS	TEMP	COMMENTS
404	SSD-S2	Φ.ΦΙΦ"	—	
406	SSD-S1	Φ,ΦΦ5"		
1412	SSD-N2	Φ.ΦΙ5	—	
1414	SSD-N1	Φ.ΦΙ8	—	
1416	ASVAULT	GAUGE NOT WORKING	73.8	
1418	ASW-1	~~Φ~~	78.2	NO PRESS. IN LINE WHEN OPENED VALVE
1422	SSD-IN	Φ.ΦΙ5	—	
1424	ASW-2	Φ	66.9F	

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: TOM MALAMAKAL + BOB THOMAS					**Day/Date:** FRI 30 JUN 2017	
Weather Condition: (temp, barometer, wind, etc)	78°F, 30.00 in Hg, WIND: NW 6 MPH RH: 52% SUNNY					
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower	**Time On:** AUTO ON 4X				**Time Off:** AUTO OFF 4X	
AS Blower Vault	1416	100	—	73.8	— Ø	GAUGE NOT WORKING.
Air Sparge Wells						
11574-ASW-1	1419	100	—	78.2	Ø	
11574-ASW-2	1424	100	—	66.9	Ø	
Extraction Blower Suction						
11574-SVE-BS-1	1428	75	21.3	83.4	3	
11574-SVE-BS-2	1429	100	32.2	82.3	6.5	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	38.2	117°F	**VOCs by PID** (ppbv/ppmv)[d] 0	

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)
	Ø.ØØ5	Ø.Ø1Ø	Ø.Ø18	Ø.Ø15	Ø.Ø15

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.)

Signature: [signature]

Notes:
a: Identify phase of testing, AS and SVE valve positions, etc.;
b: Identify temperature units.
c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).
d. Identify units of measurement.

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: TOM MALAMAKAL + BOB THOMAS					**Day/Date:** FRI 23 JUN 2017	
Weather Condition: (temp, barometer, wind, etc)	78°F, 30.2 in Hg, WIND: W 10 MPH, RH: 41 %, SUNNY					
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower	**Time On:** AUTO ON 4X				**Time Off:** AUTO OFF 4X	
AS Blower Vault	1446	100	—	63.5	—	NO PRESSURE IN LINE
Air Sparge Wells						
11574-ASW-1	1445	100	—	75.6	Ø	
11574-ASW-2	1454	100	—	63.5	Ø	
Extraction Blower Suction						
11574-SVE-BS-1	15:01	75	18.8	79.7	1.5	
11574-SVE-BS-2	15:02	100	32.1	78.6	6.5	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	36.8	118°F	**VOCs by PID** (ppbv/ppmv)[d] 0	

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)
	Ø.ØØ5	Ø.ØØ5	Ø.Ø15	Ø.Ø15	Ø.Ø15

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.

Signature:

Notes:
a: Identify phase of testing, AS and SVE valve positions, etc.;
b: Identify temperature units.
c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).
d. Identify units of measurement.

FRE 23-Sum 2017.

TIME	PORT	PRESS	TEMP	
1434	SSD-S2 SW	ØØØS"	—	
1436	SSA-S1 SE	Ø.ØØS	—	
1440	SSD-N2 NE	Ø.ØØS → Ø.Ø2	—	
1442	SSD-N1 NW	Ø.Ø15	—	
1445	ASW-1	Ø psig	75.6F	no press in line
1446	AS VAULT	GAUGE NOT WORKING (GUILT TRIP)	65.4	
1451	SSD-IN	Ø.Ø15	—	
1454	ASW-2	Ø	63.5F	

FRI 14 JULY 2017

HOC 9-2

TIME	PORT	PRESS	TEMP	COMMENTS
			—	AFFECTED BY BREEZE
1423	SSD-S2 SW	Ø.ØØS		
			—	"
1425	SSD-S1 SE	Ø.ØØS		
		Ø.Ø15	—	"
1427	SSD-N2 NW	-Ø.Ø2Ø		
			—	
1429	SSD-N1 NE	Ø.Ø15		
1432	ASW-1	Ø	76.3	NO PRESSURE IN LINE WHEN OPENED
1433	AS VAULT	GAUGE NOT WORKING	69.8	
1437	SSD-IW	Ø.Ø1	—	
1439	ASW-2	Ø	67.1	

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: TOM MALAMAKAL + BOB THOMAS						**Day/Date:** FRI 9 JUN 2017
Weather Condition: (temp, barometer, wind, etc)			56°F, 29.8 in Hg, WIND SSW 7 MPH, RH 78% SHOWERS			
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower	**Time On:** AUTO ON 4X			**Time Off:**	AUTO OFF 4X	
AS Blower Vault	1349	100	—	63.6	— IO	GUAGE NOT WORKING
Air Sparge Wells						
11574-ASW-1	1347	100	—	66.9	0	
11574-ASW-2	1358	100	—	69.8	0	
Extraction Blower Suction						
11574-SVE-BS-1	1406	75	21.2	71.4	4.5	
11574-SVE-BS-2	1407	100	36.2	72.3	5.5	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	37.7	108 3	**VOCs by PID** (ppbv/ppmv)[d] 0	

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)
	0.015	0.015	0.020	0.010	0.010

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.

Signature: [signature]

Notes:
a: Identify phase of testing, AS and SVE valve positions, etc.;
b: Identify temperature units.
c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).
d. Identify units of measurement.

FRI 9-JUNE 2017

TIME	PORT	PRESS	TEMP	
1336	SSD-S2 SW	Ø.Ø15	—	
388	SSD-S1 SE	Ø.Ø15	—	
1340	SSD-N2 NW	Ø.Ø2Ø	—	
1342	SSD-N1 NE	Ø.Ø2Ø	—	
1347	ASW-1	~~GAUGE~~ Ø PSIG	66.9F	OFF
1349	ASVALVE	*	63.6	* GAUGE NOT WORKING
1355	SSD-IN SSD-3	Ø.Ø1Ø	—	
1358	ASW-2	Ø	69.8F	OFF — NO PRESS IN LINE W/IN VALVE OPENED

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: B. THOMAS						Day/Date: FRI 2-JUNE 2017
Weather Condition: (temp, barometer, wind, etc) WRATHER CHANNEL:	67°F, 55% Hum, WNW 8MPH, 30.1"Hg, 10 MILES VIS PARTIAL CLOUDS					
Monitoring Point	**Time**	**Valves (% Open)**	**Flow (m/s)**	**Temp. (°C/ °F)[b]**	**Pressure (in H_2O +/-)[c] (psig)[c]**	**Comments**
Air Sparge Blower	**Time On:** AUTO 4X/D			**Time Off:** AUTO 4X/D		
AS Blower Vault	1420	100	OFF	69.6 F	GAUGE NOT WORKING	
Air Sparge Wells						
11574-ASW-1	1418	100	OFF	70°F	0	NO PRESSURE IN LINES (78.0°F)
11574-ASW-2	*					SEE NOTE
Extraction Blower Suction						
11574-SVE-BS-1	1427	75	11.7	70.3 F	2.5	
11574-SVE-BS-2	1429	100	37.5	69.0 F	6.5	
Extraction Blower Exhaust (11574-SVE-BE-1)	1426	Always 100%	39.2	91.1 F	**VOCs by PID** (ppbv/ppmv)[d] 0	0 ppbv @ 1ST ACC SAY @1428 0 ppbv @ WALKTHROUGH AROUND ENTIRE ACU -NO TRAFFIC IN PKG LOT

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)	
1400*, 1407, 1414, 1416	0.005	0.005	0.02	0.015	*	

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.)

* ACU TOO BUSY / UNDERSTAFFED TO ESCORT TO ASW-2 + SSD-3

Signature: B. Thomas

Notes:
a: Identify phase of testing, AS and SVE valve positions, etc.;
b: Identify temperature units.
c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).
d. Identify units of measurement.

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: Tom MALAMAKAL & Rob Thomas						**Day/Date:** THURS 25 MAY 2017
Weather Condition: (temp, barometer, wind, etc)			67°F, 29.8 in Hg, WIND: NNE 9 MPH; RH: 47%			SUNNY
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower	**Time On:** AUTO ON 4X				**Time Off:** AUTO OFF 4X	
AS Blower Vault	1505	100	—	68.0	—	NO PRESSURE
Air Sparge Wells						
11574-ASW-1	1503	100	—	73.6	0	
11574-ASW-2	1512	100	—	65.4	0	
Extraction Blower Suction						
11574-SVE-BS-1	1524	75	20.2	68.3	3.5	
11574-SVE-BS-2	1525	100	30.0	67.5	6.5	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	37.9	104.6	**VOCs by PID** (ppbv/ppmv)[d] 0	

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)
	0.010	0.015	0.020	0.020	0.015

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.

Signature:

Notes:
a: Identify phase of testing, AS and SVE valve positions, etc.;
b: Identify temperature units.
c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).
d. Identify units of measurement.

THURS 25MAY

TIME	PORT	PRESS	TEMP	
1453	SSD-S2 SW	Ø.ØØ15	——	
1456	SSD-S1 SE	Ø.ØØ1Ø	——	
1458	SSD-N2 NW	Ø.ØØ2Ø	——	
15ØØ	SSDN1 NE	Ø.ØØ2Ø	——	
15Ø3	ASW-1	Ø	73.6F	NO AIR PRESS IN LINE (OPENED/CLOSED VALVE)
15Ø5	ASVAULT	GAUGE NOT WORKING	68.Ø1F	DEP AUTO 4X/D
151Ø	SSD-3	Ø.ØØ15	——	
1512	ASW-2	Ø	65.4F	

THURS 18 MAY 2017

TIME	PORT	PRESS	TEMP	
1323	SSD-S2 SW	Ø.ØØ5	—	BREEZE AFFECTING G.
1325	SSD-S1 SE	Ø.Ø1Ø	—	" "
1330	SSD-N2 NW	Ø.Ø15	—	
1333	SSD-N1 NE	Ø.Ø15	—	
1334	AS VAULT	GAUGE NOT WORKING	60.7F	
1338	ASW-1	OFF Øpsig	62.6F	
1342	SSD-3 IN	Ø.Ø15	—	—
1345	ASW-2	01F Øpsig	64.1F	

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: TOM MALAMAKAR + BOB THOMAS					**Day/Date:** THURS 18 MAY 2017 ~~MAY 2017~~	
Weather Condition: (temp, barometer, wind, etc)	61°F, 30.1 in Hg, WIND NE 3 MPH, RH: 54% PARTLY CLOUDY					
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower	**Time On:** AUTO ON 4X				**Time Off:** AUTO OFF 4X	
AS Blower Vault	1334	100	-	60.7	- 0	GAUGE NOT WORKING, NO PRESSURE
Air Sparge Wells						
11574-ASW-1	1338	100	—	62.6	0	
11574-ASW-2	1345	100	—	64.1	0	
Extraction Blower Suction						
11574-SVE-BS-1	1350	75	16.4	68.6	4	
11574-SVE-BS-2	1351	100	29.4	66.3	6.5	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	38.4	110	**VOCs by PID** (ppbv/ppmv)[d] 0	

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)
	0.014	0.015	0.015	0.015	0.015

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.

DRAINED KO ~10 gal

Signature:

Notes:

a: Identify phase of testing, AS and SVE valve positions, etc.;

b: Identify temperature units.

c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).

d. Identify units of measurement.

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: TOM MALAMAKAL						**Day/Date:** FRI 12 MAY 2017
Weather Condition: (temp, barometer, wind, etc)			52°F; 29.9 in Hg; WIND: SW 10 MPH; RH: 74% SHOWERS			
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower	**Time On:** AUTO ON 4X			**Time Off:** AUTO OFF 4X		
AS Blower Vault	14:33	100	—	61.0	0	
Air Sparge Wells						
11574-ASW-1	14:26	100	—	58.4	— 0	NO PRESSURE. GUAGE NOT WORKING
11574-ASW-2	14:27	100	—	64.4	0	
Extraction Blower Suction						
11574-SVE-BS-1	14:43	75	27.1	61.3	4	
11574-SVE-BS-2	14:44	100	29.1	61.0	6.5	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	38.8	108.0	**VOCs by PID** (ppbv/ppmv)[d] 0	

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)
	0.012	0.012	0.012	0.012	0.012

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.

DRAINED KO ~ 10 AM

Signature:

Notes:

a: Identify phase of testing, AS and SVE valve positions, etc.;

b: Identify temperature units.

c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).

d. Identify units of measurement.

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: TOM MALAMAKAL & BOB THOMAS					Day/Date: FRI 5 MAY 2017	
Weather Condition: (temp, barometer, wind, etc)	55°F, 29.9 in Hg, WIND SW 9MPH; RH 84% SHOWERS.					
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower	**Time On:** AUTO ON 4X				**Time Off:** AUTO OFF 4X	
AS Blower Vault	1139	100	—	64.7	—	GAUGE NOT WORKING.
Air Sparge Wells						
11574-ASW-1	1138	100	—	63.4	0	
11574-ASW-2	1148	100	—	67.8	0	
Extraction Blower Suction						
11574-SVE-BS-1	1150	75	23.9	54.7	4	
11574-SVE-BS-2	1151	100	30.0	54.7	7	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	36.2	103.6	**VOCs by PID** (ppbv/ppmv)[d] 0	

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)
	0.025	0.040	0.020	0.020	0.020

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.

PLUGGED KO ~ 9 gal

Signature:

Notes:

a: Identify phase of testing, AS and SVE valve positions, etc.;

b: Identify temperature units.

c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).

d. Identify units of measurement.

FRI 5 MAY 2017

TIME	PORT	PRESS	TEMP
1130	SSD-S2 SW	Ø.ØØ4Ø	—
1133	SSD-S1 SE	Ø.ØØ2Ø - Ø.ØØ4Ø	—
1135	SSD-N2 NW	Ø.ØØ2Ø	—
1137	SSD-N1 NE	Ø.ØØ2Ø	—
1138	ASW-1	Ø	63.4°F
1139	AS VAULT	GAUGE NOT WORKING	69.7F
1145	SSD-GN	Ø.ØØ2Ø	—
1148	ASW-2	Ø	67.8°F

FRI 28 APR 2017

TIME	PORT	PRESS	TEMP	
SSD-S2 1318	SSDS2 SW	0.005	—	
SSD-S1 1320	SSD-S1 SE	0.005	—	
SSD-N2 1324	SSD-N2 NW	0.010	—	
1326	SSD-N1 NE	0.010	—	
ASW-1 1328	ASW-1	0.	60.7F	NO AIR IN LINE (OPENED VALVE TO CHECK
1330	AS VAULT	GAUGE NOT WORKING	56.1F	
1334	SSD-3 (IN)	0.015	—	
1335	ASW-2	0	64.1F	

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: TOM MALAMAKYL + BOB THOMAS						**Day/Date:** FRI 28 APR 2017
Weather Condition: (temp, barometer, wind, etc)			54°F; 30.3 in Hg, WIND: N 4 MPH; RH 53%			PARTLY CLOUDY
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower	**Time On:** AUTO ON 4X				**Time Off:** AUTO OFF 4X	
AS Blower Vault	1330	100	—	56.1	—	GUAGE NOT WORKING, NO PRESSURE
Air Sparge Wells						
11574-ASW-1	1328	100	—	60.7	0	
11574-ASW-2	1335	100	—	64.1	0	
Extraction Blower Suction						
11574-SVE-BS-1	13:45	75	13.2	64.6	45	
11574-SVE-BS-2	13:46	100	30.3	64.8	70	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	39.5	103.2	**VOCs by PID** (ppbv/ppmv)[d] 0	

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)
	0.005	0.005	0.010	0.010	0.015

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.

Signature: Tom Mallatt

Notes:
a: Identify phase of testing, AS and SVE valve positions, etc.;
b: Identify temperature units.
c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).
d. Identify units of measurement.

THURS 20 APR 2017

TIME	PORT	PRESS	TEMP	
1339	SSD-3 IN	0.018	———	
1342	ASW-2	0	63.4F	NO PRESS IN LINE
1349	SSD-N2 NW	0.015	———	
1352	SSD-N1 NE	0.020	———	
1354	ASW-1	0	58.5F	
1356	AS VAULT	GAUGE NOT WORKING	53.9F	
1358	SSD-S1 SE	0.025	———	AFFECTED BY WIND
1402	SSD-S2 SW	0.015	———	" " "

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: TOM MALAMAKAL						**Day/Date:** THURS 20 APR 2017
Weather Condition: (temp, barometer, wind, etc)		56°F, 30.2 in Hg; WIND: SSW 7 MPH; PRECIP: 0.2 in CLOUDY. RH: 65%				
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower	**Time On:** AUTO ON 4X				**Time Off:** AUTO OFF 4X	
AS Blower Vault	1356	100	—	53.9	—	GUAGE NOT WORKING, NO PRESSURE.
Air Sparge Wells						
11574-ASW-1	1354	100	—	58.5	0	
11574-ASW-2	1342	100	—	63.4	0	
Extraction Blower Suction						
11574-SVE-BS-1	14:07	75	15.2	64.4	0.5	
11574-SVE-BS-2	14:08	100	35.7	60.4	8.5	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	38.7	87.4	**VOCs by PID** (~~ppbv~~/ppmv)[d] 170 → 4170 ppb	

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)
	0.025	0.015	0.020	0.015	0.018

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.

Signature:

Notes:
a: Identify phase of testing, AS and SVE valve positions, etc.;
b: Identify temperature units.
c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).
d. Identify units of measurement.

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: TOM MALAMAKAL + BOB THOMAS						**Day/Date:** FRI 14 APR 2017
Weather Condition: (temp, barometer, wind, etc)			45°F, 30.1 inHg; WIND SSW 8 MPH; RH 91% MOSTLY CLOUDY			
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower	**Time On:** AUTO ON 4X			**Time Off:** AUTO OFF 4X		
AS Blower Vault	1407	100	—	54.1	—	GAUGE NOT WORKING → NO PRESSURE
Air Sparge Wells						
11574-ASW-1	1409	100	—	55.3	0	
11574-ASW-2	1416	100	—	65.6	0	
Extraction Blower Suction						
11574-SVE-BS-1	1420	75	15.1	55.1	4	
11574-SVE-BS-2	1421	100	30.1	55.5	4	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	38.6	~~30.0~~ 98.1	**VOCs by PID** (ppbv/ppmv)[d]	

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)
	0.020	0.025	0.020	0.020	0.015

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.

ISOLATED ZONES. DRAINED KO DRUM.

Signature:

Notes:
a: Identify phase of testing, AS and SVE valve positions, etc.;
b: Identify temperature units.
c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).
d. Identify units of measurement.

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: ~~JHF~~ Tom Malmanger + Bob Timms					**Day/Date:** THURS 6 APRIL 2017	
Weather Condition: (temp, barometer, wind, etc)	54° F, 29.7 in Hg, wind S 8 MPH, RH: 82% PARTLY CLOUDY.					
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower	**Time On:** AUTO ON 4X				**Time Off:** AUTO ON 4X	
AS Blower Vault	1400	100	—	54.1	0	GAUGE NOT WORKING
Air Sparge Wells						
11574-ASW-1	1402	100	—	54.1	0	
11574-ASW-2	1412	100	—	53.8	0	
Extraction Blower Suction						
11574-SVE-BS-1	1417	75	22.3	60.8	4	
11574-SVE-BS-2	14:18	100	31.0	60.3	7	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	29.5	157.6	**VOCs by PID** (ppbv/ppmv)[d] 0	

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)	
	0.015	0.01 - 0.04	0.020	0.020	0.015	WIND FACING SSDS.

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.

Signature: Tom Malmanger

Notes:
a: Identify phase of testing, AS and SVE valve positions, etc.;
b: Identify temperature units.
c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).
d. Identify units of measurement.

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: B. Obi / Tom M					**Day/Date:** FRI 31 MARCH 2017	
Weather Condition: (temp, barometer, wind, etc)	WEATHER CHANNEL APP. 50F, 78% Hum, WIND: S0.2 MPH, 30.4 in					
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower	**Time On:** AUTO 4X/10			**Time Off:** AUTO 4X/10		
AS Blower Vault	1150	100	—	51.0	GAUGE NOT WORKING	
Air Sparge Wells						
11574-ASW-1	1148	100	—	52.8	0	OFF
11574-ASW-2	1134	100	—	52.4	0	OFF, NO PRESSURE IN LINE
Extraction Blower Suction						
11574-SVE-BS-1	1159	75	22.2	63.6 F	4.5-5.0	in H_2O
11574-SVE-BS-2	~~1159~~ 1205	100	22.8	64.1 F	5.5	in H_2O
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	39.3	89.8 F	**VOCs by PID** (ppbv/ppmv)[d]	0 ppbv in SVE SHED @ 1152; 0 ppbv SVE EXIT @ 1202; 0 ppbv - 1ST FLR BAY @ 1227; 0 ppbv - ENTIRE LOOP AROUND BLDG
Sub-slab Probe Pressures		SSD-S1 (SE) (in W.C.)	SSD-S2 (SW) (in W.C.)	SSD-N1 (NE) (in W.C.)	SSD-N2 (NW) (in W.C.)	SSD-3 (inside) (in W.C.)
1138, 1140, 1143, 1145, 1129		0.005	0.005	0.015	0.020	0.015

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.

- BREEZE AFFECTING SOUTH SIDE PRESSURES
- ESCORT BY ACU - RUBY

Signature: B. Thomas

Notes:

a: Identify phase of testing, AS and SVE valve positions, etc.;

b: Identify temperature units.

c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).

d. Identify units of measurement.

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: TOM MALAMAKAL & BOB THOMAS						Day/Date: FRI 24 MAR 2017
Weather Condition: (temp, barometer, wind, etc)	52°F, 29.8 in Hg, WIND S 16 MPH, RH: 84% CLOUDY SHOWERS.					
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower	**Time On:** AUTO ON 4X				**Time Off:** AUTO OFF 4X	
AS Blower Vault	1418	100	—	53.9	—	→ GUAGE BROKEN NO PRESSURE
Air Sparge Wells						
11574-ASW-1	1420	100	—	53.9	0	
11574-ASW-2	—	100	—	—	—	UNABLE TO ACCESS NO PRESSURE
Extraction Blower Suction						
11574-SVE-BS-1	1430	75	20.3	56.8	4	
11574-SVE-BS-2	1431	100	30.1	56.9	7	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	38.1	102.2	VOCs by PID (ppbv/ppmv)[d] 0	

Sub-slab Probe Pressures	SSD-S1 (SE) (in W.C.)	SSD-S2 (SW) (in W.C.)	SSD-N1 (NE) (in W.C.)	SSD-N2 (NW) (in W.C.)	SSD-3 (inside) (in W.C.)	
	0.015	0.020	0.020	0.020	—	→ UNABLE TO ACCESS

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.

DRAINED KO DRUM

ACU UNDERSTAFFED & BUSY TODAY – COULD NOT ESCORT TO SSD-IN & ASW-2

Signature: [signature]

Notes:

a: Identify phase of testing, AS and SVE valve positions, etc.;

b: Identify temperature units.

c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).

d. Identify units of measurement.

FRI 17 MARCH 2017

TIME	PORT	PRESS	TEMP
1239	SSD-S2 SW	Ø.ØØ1Ø	—
1242	SSD-S1 ~~SE~~	Ø.Ø1Ø	—
1244	SSD-N2 NW	Ø.Ø15	—
1246	SSD-N1 NE	Ø.Ø18	—
1248	ASVAULT	OFF GAUGE NOT WORKING	45.9
~~1250~~ 1252	ASW-1	Ø	49.1 ~~49.1~~ F
~~1255~~ 1257	SSD-3 IN	Ø.Ø15	—
1259	ASW 2	Ø	46.3F

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: TOM MALAMAKAL + BOB THOMAS					**Day/Date:** FRI 17 MAR 2017	
Weather Condition: (temp, barometer, wind, etc)	42° F ; 30.# in Hg ; WIND S 4 MPH ; RH: 95% RAINY					
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower	**Time On:** AUTO ON 4X				**Time Off:** AUTO OFF 4X	
AS Blower Vault	1248	100	—	45.9	Ø	GAUGE NOT WORKING, NO MOISTURE.
Air Sparge Wells						
11574-ASW-1	1252	100	—	49.1	Ø	
11574-ASW-2	1259	100	—	66.3	Ø	
Extraction Blower Suction						
11574-SVE-BS-1	13:01	75	22.8	57.3	4	
11574-SVE-BS-2	13:02	100	29.3	53.8	5	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	38.Ø	78.3	**VOCs by PID** ~~(ppm)~~/ppmv)[d] 0	

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)
	Ø.ØIØ	Ø.Ø1Ø	Ø.Ø18	Ø.Ø15	Ø.Ø15

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.

PURGED KO DRUM 2X.

Signature: Tom Malamakal

Notes:
a: Identify phase of testing, AS and SVE valve positions, etc.;
b: Identify temperature units.
c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).
d. Identify units of measurement.

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: TOM MAZANAREC					**Day/Date:** FRI 10 MAR 2007	
Weather Condition: (temp, barometer, wind, etc)	50° F, 30.2 in Hg, WIND: SSW 15 MPH, RH 83% CLOUDY, WINDY					
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower	**Time On:** AUTO ON 4X				**Time Off:** AUTO OFF 4X	
AS Blower Vault	10 57	100	—	47.3	0	
Air Sparge Wells						
11574-ASW-1	10 55	100	—	46.7	Ø	
11574-ASW-2	11 04	100	—	64.1	Ø	
Extraction Blower Suction						
11574-SVE-BS-1	11 10	75	20.3	53.1	4.5	
11574-SVE-BS-2	11 10	100	21.3	52.9	5.5	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	38.3	88.1	**VOCs by PID** ~~(ppbv~~/ppmv)[d] 0	

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)
	0.04	Ø.035	Ø.025	Ø.035	Ø.Ø15

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.

Signature: Tom Mazanec

Notes:
a: Identify phase of testing, AS and SVE valve positions, etc.;
b: ~~Identify~~ temperature units.
c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).
d. Identify units of measurement.

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: TOM MALAMAKAL + BOB THOMAS					**Day/Date:** WED 1 MAR 2017	
Weather Condition: (temp, barometer, wind, etc)	47° F ; 30.4 in Hg ; WIND SSW 9 MPH ; RH 92 %				CLOUDY, SHOWERS	
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower	**Time On:** AUTO ON 4X			**Time Off:** AUTO OFF 4X		
AS Blower Vault	1359	100	—	47.1	—	GAUGE NOT WORKING - TURNED OFF FOR SAMPLING TOMORROW
Air Sparge Wells						
11574-ASW-1	1356	100	—	46.3	0	
11574-ASW-2	1408	100	—	63.0	0	
Extraction Blower Suction						
11574-SVE-BS-1	14:14	75	20.1	50.4	4	
11574-SVE-BS-2	14:15	100	26.2	57.4	6	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	38.3	93.6	**VOCs by PID** (ppbv/ppmv)[d] 0	

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)
	0.020	0.025	0.025	0.025	0.010

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.

Signature:

Notes:
a: Identify phase of testing, AS and SVE valve positions, etc.;
b: Identify temperature units.
c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).
d. Identify units of measurement.

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: TOM MALAMAKAL + BOB THOMAS					**Day/Date:** FRI 24 FEB 2017	
Weather Condition: (temp, barometer, wind, etc)	39°F ; 30.2 in Hg ; WIND SSE 3MPH, RH 79% MOSTLY CLOUDY.					
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower	**Time On:** AUTO ON 4X				**Time Off:** AUTO OFF 4X	
AS Blower Vault	11 18	100	—	48.8	— 0	GAUGE BROKEN, NO PRESSURE
Air Sparge Wells						
11574-ASW-1	11 20	100	—	45.4	0	
11574-ASW-2	11 27	100	—	62 0	0	
Extraction Blower Suction						
11574-SVE-BS-1	11.02	75	20.1	50.0	4	
11574-SVE-BS-2	11 02	100	28.5	50.9	6.5	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	36.8	91.5	**VOCs by PID** (ppbv/ppmv)[d] 0	

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)
	0.016	0.0005	0.015	0.018	0.005

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.

DRAINED KO DRUM ~10 gl

Signature: [signature]

Notes:

a: Identify phase of testing, AS and SVE valve positions, etc.;

b: Identify temperature units.

c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).

d. Identify units of measurement.

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: TOM MALAMAKAL						**Day/Date:** FRI 17 FEB 2017
Weather Condition: (temp, barometer, wind, etc)			49° F, 29.7 in Hg, WIND: N 5 MPH; RH: 91%			MOSTLY CLOUDY.
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower	**Time On:** AUTO ON 4X			**Time Off:** AUTO OFF 4X		
AS Blower Vault	11:36	100	—	60.9	—	NO PRESSURE; GUAGE BROKEN
Air Sparge Wells						
11574-ASW-1	11:37	100 ~~75~~	—	50.3	0	
11574-ASW-2	11:28	100	—	62.3	0	
Extraction Blower Suction						
11574-SVE-BS-1	11:42	75	15.5	56.4	4	
11574-SVE-BS-2	11:43	100	22.4	55.9	5.5	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	38.9	99.1	**VOCs by PID** (ppbv/ppmv)[d] 5	

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)
	0.01	0.01	0.01	0.015	0.015

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.

DRAINED KO DRUM

Signature:

Notes:

a: Identify phase of testing, AS and SVE valve positions, etc.;

b: Identify temperature units.

c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).

d. Identify units of measurement.

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: BOST.						**Day/Date:** 10 FEB 2017	
Weather Condition: (temp, barometer, wind, etc)		42F, OVERCAST, 94% HUM, WIND: SW 16MPH 29.9 in Hg (WEATHER CHANNEL APP).					
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/°F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**	
Air Sparge Blower	**Time On:**				**Time Off:**		
AS Blower Vault	1555	100	—	53.9	GAUGE NOT WORKING		
Air Sparge Wells							
11574-ASW-1	1557	100	0	44.7	0	NO PRESS IN ZONE	
11574-ASW-2	1604	100	0	65.4	0	" " "	
Extraction Blower Suction							
11574-SVE-BS-1	1609	75	20.4	48.9	3.0		
11574-SVE-BS-2	1610	100	28.3	48.5	6.5		
Extraction Blower Exhaust (11574-SVE-BE-1) 1608		Always 100%	38.9	78.2	**VOCs by PID** (ppbv/ppmv)[d]	NO PID ON-SITE.	

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)	
1349, 1347, 1353, 1353, 1601	0.03-0.05	0.02-0.05	0.024	0.025	0.015	WIND AFFECTING GAGES

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.

NO WATER IN KO DRUM. DRAINED 2X YESTERDAY

Signature: JS Thomas

Notes:
a: Identify phase of testing, AS and SVE valve positions, etc.;
b: Identify temperature units.
c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).
d. Identify units of measurement.

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: Tom MACPHERSON & Bob THOMAS						**Day/Date:** FRI 3 FEB 2017
Weather Condition: (temp, barometer, wind, etc)			36°F, 29.5 in Hg, WIND: N 4 MPH, RH: 100% RAIN			
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower	**Time On:** AUTO ON 4X				**Time Off:** AUTO OFF 4X	
AS Blower Vault	13 10	100	—	55.4	—	GAUGE BROKEN
Air Sparge Wells						
11574-ASW-1	1315	100	—	43	0	
11574-ASW-2	1322	100	—	63.1	0	
Extraction Blower Suction						
11574-SVE-BS-1	13:05	75	24.6	37.9	4	
11574-SVE-BS-2	13:05	100	26.8	39.6	6	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	39.4	84.8	**VOCs by PID** (ppb)/ppmv)[d] 6	

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)
	0.018	0.015	0.040	0.025	0.010

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.

Signature:

Notes:

a: Identify phase of testing, AS and SVE valve positions, etc.;

b: Identify temperature units.

c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).

d. Identify units of measurement.

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: TOM MALAMAKAL + ROB THOMAS						Day/Date: FRI 27 JAN 2017
Weather Condition: (temp, barometer, wind, etc)	49°F ; 30.6 in Hg; WIND N 1 MPH; RH: 75% ; SUNNY.					
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower	**Time On:** AUTO ON 4X			**Time Off:** AUTO OFF 4X		
AS Blower Vault	1419	100	—	61.1	—	GUAGE NOT WORKING
Air Sparge Wells						
11574-ASW-1	1419	100	—	45.7	0	
11574-ASW-2	1425	100	—	62.4	0	
Extraction Blower Suction						
11574-SVE-BS-1	14:30	75	16.6	57.2	4	
11574-SVE-BS-2	14:30	100	26.8	57.5	5	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	41.3	92.3	**VOCs by PID** (ppbv/ppmv)[d] 0	

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)	
	0.015	0.015	0.025	0.020	0.015	

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.

Signature: [signature]

Notes:
a: Identify phase of testing, AS and SVE valve positions, etc.;
b: Identify temperature units.
c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).
d. Identify units of measurement.

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: TOM MALAMAKAL + BOB THOMAS						**Day/Date:** FRI 13 JAN 2017
Weather Condition: (temp, barometer, wind, etc)			37°F; 30.4 in Hg; WIND N 6MPH; RH: 66%			MOSTLY SUNNY
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower	**Time On:** AUTO ON 4X				**Time Off:** AUTO OFF 4X	
AS Blower Vault	1404	100	—	55.9	—	GUAGE DAMAGED
Air Sparge Wells						
11574-ASW-1	1402	100	—	40.2	0	
11574-ASW-2	1359	100	—	62.6	0	
Extraction Blower Suction						
11574-SVE-BS-1	1405	75	18.2	41.1	3	
11574-SVE-BS-2	1406	100	~~43.3~~ 32.4	45.1	6	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	35.6	82.2	**VOCs by PID** (ppbv/ppmv)[d] 0	

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)	
	0.015	0.020	0.025	0.025	0.012	

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.

Signature: Tom Malamakal

Notes:
a: Identify phase of testing, AS and SVE valve positions, etc.;
b: Identify temperature units.
c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).
d. Identify units of measurement.

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: TOM MALAMAKAL & BOB THOMAS						**Day/Date:** FRI 6 JAN 2017 ~~2016~~
Weather Condition: (temp, barometer, wind, etc)			27°F; 30.1 inHg; WIND S 2 MPH; RH: 72%			SUNNY
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower	**Time On:** AUTO ON 4X			**Time Off:** AUTO OFF 4X		
AS Blower Vault	1126	100	—	47.3	—	GAUGE NOT WORKING.
Air Sparge Wells						
11574-ASW-1	11:24	100	—	38.1	0	
11574-ASW-2	1122	100	—	63.1	0	
Extraction Blower Suction						
11574-SVE-BS-1	1103	75	18.6	41.6	3	
11574-SVE-BS-2	1103	100	29.2	42.2	6	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	37.6	76.8	**VOCs by PID** (ppbv/ppmv)[d] 0	

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)
	0.020	0.020	0.028	0.025	0.015

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.

Signature: [signature]

Notes:
a: Identify phase of testing, AS and SVE valve positions, etc.;
b: Identify temperature units.
c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).
d. Identify units of measurement.

APPENDIX B

AIR SPARGE SYSTEM FIELD DATA

Table B-1: AS/SVE System Field Data

Date	AS Blower ON TIME	AS Blower OFF Time	AS Blower ON TIME	AS Blower OFF Time	AS Blower ON TIME	AS Blower OFF Time	AS Blower ON TIME	AS Blower OFF Time	AS Blower Temp. (°F)	AS Blower Pressure (psi)	11574-ASW-1 Temp (°F)	11574-ASW-1 Pressure (psi)	11574-ASW-2 Temp. (°F)
5/11/2012	-	-	-	-	-	-	-	-	52	18	-	-	-
9/21/2012	-	-	-	-	-	-	-	-	60	18	-	-	-
9/28/2012	-	-	-	-	-	-	-	-	205	14	-	-	-
10/11/2012	-	-	-	-	-	-	-	-	205	15	-	-	-
10/19/2012	-	-	-	-	-	-	-	-	205	15	-	-	-
10/29/2012	-	-	-	-	-	-	-	-	205	16	-	-	-
11/5/2012	-	-	-	-	-	-	-	-	205	15	-	-	-
11/30/2012	11:55	12:40	-	-	-	-	-	-	190	16	63.4	16	49.9
1/17/2013	9:08	10:18	-	-	-	-	-	-	180	16	42.8	17	56.1
1/25/2013	13:14	13:56	-	-	-	-	-	-	200	16	45.5	16.5	-
2/8/2013	8:58	10:55	-	-	-	-	-	-	200	16.5	46.4	16.5	56.4
2/15/2013	12:25	13:19	-	-	-	-	-	-	200	16	-	17	
2/27/2013	9:30	10:30	-	-	-	-	-	-	190	17	-	13	-
3/8/2013	10:15	11:14	-	-	-	-	-	-	185	16	48.8	17	58.6
3/22/2013	10:04	12:32	-	-	-	-	-	-	184.3	16.5	55.3	16.5	
3/29/2013	9:38	13:52	-	-	-	-	-	-	224	15	59.6	17	73.1
4/5/2013	10:20	12:34	-	-	-	-	-	-	210	16	57.5	16.5	-
4/19/2013	10:18	13:29	-	-	-	-	-	-	215	16	63.4	13.5	63.4
6/28/2013	9:40	12:30	-	-	-	-	-	-	204	14.5	71.8	15	84.5
7/12/2013	9:46	14:28	-	-	-	-	-	-	160	15	76.8	16	72.3
7/19/2013	11:23	13:41	-	-	-	-	-	-	205	14.5	72.1	15	-
8/2/2013	13:26	15:06	-	-	-	-	-	-	145	14.5	-	-	-
8/15/2013	10:14	13:58	-	-	-	-	-	-	225	15	80.8	15.5	73.5
8/23/2013	11:16	15:22	-	-	-	-	-	-	230	15	77.8	15	-
9/13/2013	11:42	15:08	-	-	-	-	-	-	225	14.5	75.5	15	74.2
10/4/2013	9:25	14:07	-	-	-	-	-	-	225	14.5	62.4	16.5	69.3
10/10/2013	12:10	12:11	-	-	-	-	-	-	-	16	-	-	57
11/7/2013	9:12	11:39	-	-	-	-	-	-	210	15	55.1	15.5	64.9
11/14/2013	13:20	14:25	-	-	-	-	-	-	200	15	53.7	16	65.9
11/22/2013	8:33	9:33	-	-	-	-	-	-	175	16	49.8	16	59.6
11/26/2013	11:05	11:54	-	-	-	-	-	-	180	16.5	48.2	17	57.9
12/12/2013	10:32	11:40	-	-	-	-	-	-	175	16	41.8	17	-
1/2/2014	9:45	11:00	-	-	-	-	-	-	177	15	46.1	16	60.3
1/10/2014	10:26	12:44	-	-	-	-	-	-	200	15.5	46.9	15.5	61.2
1/16/2014	9:45	13:30	-	-	-	-	-	-	177	15	45.8	16	60.8
1/23/2014	9:15	10:15	-	-	-	-	-	-	176	16	46.1	16	58.2
1/30/2014	9:21	12:50	-	-	-	-	-	-	200	15	46.1	15.5	60.6
2/6/2014	9:00	10:00	-	-	-	-	-	-	170	16.5	43	16	50.2
2/20/2014	12:40	13:40	-	-	-	-	-	-	180	16	45.6	17	61.8
3/13/2014	14:52	16:06	-	-	-	-	-	-	215	16	50.8	17.5	63.9
3/20/2014	14:32	15:30	-	-	-	-	-	-	205	17	51.6	18.6	63.8
3/28/2014	14:00	14:25	-	-	-	-	-	-	150	-	-	17	-
4/3/2014	10:49	12:03	-	-	-	-	-	-	197.5	16.5	53.8	17.5	62.8
4/10/2014	10:35	11:50	-	-	-	-	-	-	210	16	55.1	18	61.6
4/24/2014	10:30	11:40	-	-	-	-	-	-	202	16	56.1	18	64.5
5/1/2014	9:00	10:05	-	-	-	-	-	-	215	15	59.1	18	65.3
5/30/2014	13:17	14:08	-	-	-	-	-	-	150	16	68.3	19	73.8
6/6/2014	10:10	11:10	-	-	-	-	-	-	215	105	67.4	19	75.2
6/18/2014	OFF	OFF	-	-	-	-	-	-	-	-	-	-	-
6/24/2014	12:00	13:00	-	-	-	-	-	-	-	-	-	-	-
7/3/2014	10:00	11:00	-	-	-	-	-	-	220	17	68.1	0	70.3
7/30/2014	22:00	23:00	-	-	-	-	-	-	-	15	-	0	71
8/5/2014	22:00	23:00	-	-	-	-	-	-	-	-	-	0	76.6

Table B-1: AS/SVE System Field Data

Date	AS Blower ON TIME	AS Blower OFF Time	AS Blower ON TIME	AS Blower OFF Time	AS Blower ON TIME	AS Blower OFF Time	AS Blower ON TIME	AS Blower OFF Time	AS Blower Temp. (°F)	AS Blower Pressure (psi)	11574-ASW-1 Temp (°F)	11574-ASW-1 Pressure (psi)	11574-ASW-2 Temp. (°F)
8/12/2014	22:00	23:00	-	-	-	-	-	-	75.2	14	-	0	
8/19/2014	22:00	23:00	-	-	-	-	-	-	71.7	13	79.6	0.5	70.4
8/29/2014	22:00	23:00	-	-	-	-	-	-	72.1	14	73.9	0	70.8
9/8/2014	22:00	23:00	-	-	-	-	-	-	69.7	14	69.2	0	70.3
9/12/2014	22:00	23:00	-	-	-	-	-	-	68	14	71.6	0	67.9
9/19/2014	22:00	23:00	-	-	-	-	-	-	66.9	14	71.6	0	-
9/29/2014	22:00	23:00	-	-	-	-	-	-	64.8	4	64.1	0.5	68.8
10/6/2014	22:00	23:00	-	-	-	-	-	-	70	14	65.8	0.5	66.9
11/4/2014	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	69.9	14	57.6	14	57.2
11/10/2014	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	113	16.5	58.6	14	66.6
11/17/2014	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	54.3	17	46.6	1	64.4
11/26/2014	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	66.6	17	51.8	2	65.8
12/5/2014	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	55.5	16	45.4	1	64.4
12/12/2014	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	68.3	17	49.9	6	66.1
12/24/2014	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	48.8	14	114	17	66.1
1/9/2015	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	58.2	17	45.5	1	66.1
1/16/2015	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	55.6	17	46.8	1	64.9
1/23/2015	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	57.5	17	46.9	1	65.6
1/30/2015	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	61	17	48.8	1	65.8
2/5/2015	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	58.4	17	50.6	1	66.4
2/13/2015	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	64.4	17	51.7	1	65.8
2/20/2015	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	63.2	17	55.4	1	66.2
2/27/2015	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	63.2	17	52.3	1	66.1
3/6/2015	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	67.6	17	53.7	2	63.5
3/13/2015	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	68	17.5	54	3	64.3
3/20/2015	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	65.2	17	60	0	65.2
3/27/2015	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	67.9	17.5	56.9	6	62.6
4/3/2015	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	64.3	17	63.2	6	65.5
4/10/2015	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	65.1	17	63	5	65.2
4/17/2015	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	55.8	3	52.1	6	56.3
4/24/2015	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	54.2	3	53.3	6	54.2
5/1/2015	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	63.3	3	63.2	1	65.6
5/8/2015	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	64.3	3	69.9	6	64.5
5/15/2015	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	63.1	3	-	-	67.6
5/21/2015	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	65.8	2.5	69.9	7	65.9
5/29/2015	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	68.2	5	68.2	1	68.4
6/5/2015	-	-	-	-	-	-	-	-	66.2	3	72.5	6	70.3
6/12/2015	-	-	-	-	-	-	-	-	66.2	1	68.6	7	66.8
6/18/2015	-	-	-	-	-	-	-	-	77.4	1	70.9	6	68.4
6/26/2015	-	-	-	-	-	-	-	-	77.4	1	75.2	6	78.7
7/10/2015	-	-	-	-	-	-	-	-	73.2	1	74.6	6	70
7/17/2015	-	-	-	-	-	-	-	-	-	-	-	-	-
7/24/2015	-	-	-	-	-	-	-	-	-	-	-	-	-
7/31/2015	-	-	-	-	-	-	-	-	-	-	-	-	-
8/7/2015	-	-	-	-	-	-	-	-	-	-	-	-	-
8/14/2015	-	-	-	-	-	-	-	-	-	-	-	-	-
8/21/2015	-	-	-	-	-	-	-	-	-	-	-	-	-
8/28/2015	-	-	-	-	-	-	-	-	-	-	-	-	-
9/4/2015	-	-	-	-	-	-	-	-	-	-	-	-	-
9/11/2015	-	-	-	-	-	-	-	-	-	-	-	-	-
9/18/2015	-	-	-	-	-	-	-	-	-	-	-	-	-
9/25/2015	-	-	-	-	-	-	-	-	-	-	-	-	-
10/2/2015	-	-	-	-	-	-	-	-	-	-	-	-	-

Table B-1: AS/SVE System Field Data

Date	AS Blower ON TIME	AS Blower OFF Time	AS Blower ON TIME	AS Blower OFF Time	AS Blower ON TIME	AS Blower OFF Time	AS Blower ON TIME	AS Blower OFF Time	AS Blower Temp. (°F)	AS Blower Pressure (psi)	11574-ASW-1 Temp (°F)	11574-ASW-1 Pressure (psi)	11574-ASW-2 Temp. (°F)
10/9/2015	-	-	-	-	-	-	-	-	-	-	-	-	-
10/16/2015	-	-	-	-	-	-	-	-	-	-	-	-	-
10/19/2015	-	-	-	-	-	-	-	-	-	-	-	-	-
10/23/2015	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	55	0	68.8	7	62.3
10/30/2015	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	62.4	19	58.9	10	70
11/6/2015	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	113	22	57.4	14	68.3
11/13/2015	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	110	22	66	14	68
11/19 - 11/23	-	-	-	-	-	-	-	-	-	-	-	-	-
11/27/2015	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	58.3	26	54.2	13	66.4
12/2/2015	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	62.6	26	47.3	13	69.6
12/11/2015	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	57.9	27	49.3	13	68.3
12/18/2015	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	59.1	28	47.2	15	68.6
12/24/2015	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	62.3	20	44.1	17	68
12/31/2015	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	77.5	29	39.8	14	68.5
1/8/2016	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	146.5	30	68.2	15	66.3
1/15/2016	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	160.2	30	45.3	18	66.2
1/22/2016	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	56.8	30	48.3	7	69.8
1/29/2016	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	65	24	50	13	68.8
2/5/2016	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	60.4	30	48.4	7	68
2/12/2016	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	65.9	18	52.3	13	67.3
2/26/2016	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	53	23	53.4	11	68.1
3/4/2016	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	62.7	26	50.4	8	66.9
3/11/2016	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	52	23	48.9	6	65.3
3/18/2016	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	60.2	0	47.6	9	64.6
3/24/2016	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	66.2	0	52	7	68.1
4/1/2016	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	78.6	0	63.1	9	78.2
4/7/2016	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	69.6	0	60.1	8	64.6
4/15/2016	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	69	0	58.6	8.5	65.9
4/22/2016	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	72.6	0	67.1	7	63.9
4/29/2016	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	72.7	0	63.1	7	68.9
5/6/2016	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	73.6	0	66.9	6	68.3
5/13/2016	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	93.3	0	75.6	4	67.5
5/19/2016	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	70.8	0	65.3	7	68.6
5/27/2016	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	63	0	66.3	8	67.4
6/3/2016	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	90.5	0	79.3	4	68.3
6/9/2016	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	75.9	0	69.4	7	69.9
6/17/2016	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	74.6	0	68	7	67.8
6/24/2016	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	65.4	0	73.4	-	69.8
6/30/2016	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	85.2	0	72.5	-	68.8
7/8/2016	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	76.2	0	69.6	-	71.4
7/15/2016	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	83.6	0	74.3	-	68.6
7/22/2016	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	81.5	0	72.9	-	71.4
7/28/2016	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	96.6	0	83.3	0	71.1
8/4/2016	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	99	0	69.2	-	80.3
8/11/2016	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	92.2	0	79.4	0	69.7
8/19/2016	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	83.3	0	69.6	0	77.6
8/26/2016	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	101.3	0	79.9	0	89.8
9/1/2016	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	71.4	0	70.1	0	72.1
9/9/2016	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	89.4	0	72.7	0	69.2
9/14/2016	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	74.8	0	70	0	68.3
9/23/2016	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	72	0	64.1	0	67.8
9/30/2016	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	74.6	0	69.3	0	63.9
10/6/2016	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	64.5	0	64.5	0	82.8

Table B-1: AS/SVE System Field Data

Date	AS Blower ON TIME	AS Blower OFF Time	AS Blower ON TIME	AS Blower OFF Time	AS Blower ON TIME	AS Blower OFF Time	AS Blower ON TIME	AS Blower OFF Time	AS Blower Temp. (°F)	AS Blower Pressure (psi)	11574-ASW-1 Temp (°F)	11574-ASW-1 Pressure (psi)	11574-ASW-2 Temp. (°F)
10/14/2016	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	65.8	0	59.1	0	69.4
10/21/2016	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	68.2	0	57.8	0	67.2
10/27/2016	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	76.5	0	57.3	0	66.9
11/4/2016	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	77.8	0	59.2	0	66.5
11/11/2016	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	71	0	57.5	0	ND
11/17/2016	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	64.3	0	55.6	0	64.1
11/23/2016	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	62.7	0	53.4	0	66.3
12/7/2016	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	61.1	0	46.1	0	62.1
12/15/2016	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	55.3	0	43.4	0	64.4
12/23/2016	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	54.6	0	44.4	0	64.1
12/30/2016	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	56.9	0	43.8	0	62.4
1/6/2017	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	47.3		38.1	0	63.1
1/13/2017	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	55.9		40.2	0	62.6
1/27/2017	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	61.1		45.7	0	62.4
2/3/2017	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	55.4		43	0	63.1
2/10/2017	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	53.9		44.7	0	65.4
2/17/2017	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	60.9		50.3	0	62.3
2/24/2017	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	48.8		45.4	0	62
3/1/2017	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	47.1		46.3	0	63
3/10/2017	AS OFF	-	-	-	-	-	-	-	47.3		46.7	0	64.1
3/17/2017	AS OFF	-	-	-	-	-	-	-	45.9		49.1	0	66.3
3/24/2017	AS OFF	-	-	-	-	-	-	-	53.9		53.9	0	
3/31/2017	AS OFF	-	-	-	-	-	-	-	51		52.8	0	62.4
4/6/2017	AS OFF	-	-	-	-	-	-	-	54.1		54.1	0	53.8
4/14/2017	AS OFF	-	-	-	-	-	-	-	54.1		55.3	0	65.6
4/20/2017	AS OFF	-	-	-	-	-	-	-	53.9		58.5	0	63.4
4/28/2017	AS OFF	-	-	-	-	-	-	-	56.1		60.7	0	64.1
5/5/2017	AS OFF	-	-	-	-	-	-	-	60.7		63.4	0	67.8
5/12/2017	AS OFF	-	-	-	-	-	-	-	61.1		58.4	0	64.4
5/18/2017	AS OFF	-	-	-	-	-	-	-	60.7		62.6	0	64.1
5/25/2017	AS OFF	-	-	-	-	-	-	-	68		73.6	0	65.4
6/2/2017	AS OFF	-	-	-	-	-	-	-	69.6		70	0	
6/9/2017	AS OFF	-	-	-	-	-	-	-	63.6		66.9	0	69.8
6/23/2017	AS OFF	-	-	-	-	-	-	-	63.5		75.6	0	63.5
6/30/2017	AS OFF	-	-	-	-	-	-	-	73.8		78.2	0	66.9
7/7/2017	AS OFF	-	-	-	-	-	-	-	-	-	-	-	-
7/14/2017	AS OFF	-	-	-	-	-	-	-	69.8		76.3	0	67.1
7/21/2017	AS OFF	-	-	-	-	-	-	-	70.7		74.6	0	69.3
7/28/2017	AS OFF	-	-	-	-	-	-	-	75.8		79	0	67.5
8/4/2017	AS OFF	-	-	-	-	-	-	-	-	-	-	-	-
8/11/2017	AS OFF	-	-	-	-	-	-	-	-	-	-	-	-
8/18/2017	AS OFF	-	-	-	-	-	-	-	-	-	-	-	-
8/24/2017	AS OFF	-	-	-	-	-	-	-	-	-	-	-	-
9/1/2017	AS OFF	-	-	-	-	-	-	-	-	-	-	-	-
9/8/2017	AS OFF	-	-	-	-	-	-	-	-	-	-	-	-
9/15/2017	2:00	2:30	8:00	8:30	14:00	14:30	20:00	20:30	138.9	20	74.8	16	68.4
9/22/2017	2:00	2:30	8:00	8:30	14:00	14:30	20:00	20:30	115	14	66.5	16.5	66.3
9/28/2017	2:00	2:30	8:00	8:30	14:00	14:30	20:00	20:30	152	23	69	16	68
10/6/2017	2:00	2:30	8:00	8:30	14:00	14:30	20:00	20:30	110	14	63	16	63
10/11/2017	2:00	2:30	8:00	8:30	14:00	14:30	20:00	20:30	160	15	67	17	65
10/20/2017	2:00	2:30	8:00	8:30	14:00	14:30	20:00	20:30	190	15	68	16	58
10/26/2017	2:00	2:30	8:00	8:30	14:00	14:30	20:00	20:30	111	15	58	17	67
11/3/2017	2:00	2:30	8:00	8:30	14:00	14:30	20:00	20:30	148	13	55	17	65

Table B-1: AS/SVE System Field Data

Date	AS Blower ON TIME	AS Blower OFF Time	AS Blower ON TIME	AS Blower OFF Time	AS Blower ON TIME	AS Blower OFF Time	AS Blower ON TIME	AS Blower OFF Time	AS Blower Temp. (^{o}F)	AS Blower Pressure (psi)	11574-ASW-1 Temp (^{o}F)	11574-ASW-1 Pressure (psi)	11574-ASW-2 Temp. (^{o}F)
11/9/2017	2:00	2:30	8:00	8:30	14:00	14:30	20:00	20:30	112	13	56	16	66
11/16/2017	2:00	2:30	8:00	8:30	14:00	14:30	20:00	20:30	151	14	51	17	66
11/22/2017	2:00	2:30	8:00	8:30	14:00	14:30	20:00	20:30	141	13	52	17	65
12/1/2017	2:00	2:30	8:00	8:30	14:00	14:30	20:00	20:30	139	14	52	18	66

Notes:
ND - No data, not applicable
ppb - parts per billion
^{o}F - degrees fahrenheit
psi - pounds per square inch

Table B-1: AS/SVE System Field Data

Date	11574-ASW-2 Pressure (psi)	11574-SVE-BS-1 Flow (m/s)	11574-SVE-BS-1 Temp. (^{o}F)	11574-SVE-BS-1 Pressure (psi)	11574-SVE-BS-2 Flow (m/s)	11574-SVE-BS-2 Temp. (^{o}F)	11574-SVE-BS-2 Pressure (psi)	11574-SVE-BE-1 Flow (m/s)	11574-SVE-BE-1 Temp. (^{o}F)	11574-SVE-BE-1 VOCs (ppb)
5/11/2012	-	-	39	4	-	39	4	-	-	84
9/21/2012	-	19.6	60	4	28.4	60	4	-	-	76
9/28/2012	-	16.4	55	3	13.6	55	3	40.6	55	45
10/11/2012	-	17.3	60	2	14.5	60	2	42.3	60	37
10/19/2012	-	16.8	50	2	13.6	50	2	46.9	50	52
10/29/2012	-	15.4	57	2.5	12.8	57	2.5	54.2	57	77
11/5/2012	-	5.3	55	3	19.2	55	3		55	174
11/30/2012	14	21.7	-	4	31.3	-	4	48.4		0
1/17/2013	14	10.1	-	5	36.5	-	6	51		0
1/25/2013	-	24.2	57.8	5	27.8	52.7	5	48.1	70.7	0
2/8/2013	13	10.2	-	6	32.8		6	47.8	75.8	1159
2/15/2013	14	12.3	-	-	38.2	-	-	45.4	88.4	260
2/27/2013	12	25.1	55.6	4.5	34.2	56.3	6	45.7	75.3	163
3/8/2013	14	11.2	48.9	4	35.3	50.1	6	50.1	71.9	0
3/22/2013		24.8	55.7	5	29.9	55.3	6	54.7	81.3	1164
3/29/2013	13.5	15.2	50.8	3	28.7	47.6	6	54.3	86.6	3771
4/5/2013	-	17.1	55.6	4	34.4	55.8	6	49.8	63.7	2244
4/19/2013	13.5	14.3	57.9	-	31.1	57.6	-	53.5	71.6	923
6/28/2013	13	9.5	74.8	4	31	72	7	46	91.9	499
7/12/2013	12.5	12.5	70.3	4	40.8	68.1	6	54.5	97.3	1954
7/19/2013	-	10.8	75.1	4	31.9	72.9	8	51	108.8	240
8/2/2013	-	14.8	-	4	33.6	-	8	53.8		9708
8/15/2013	12.5	6.5	68.8	2	32.6	68.3	5	46.7	89.8	17000
8/23/2013	-	13.2	71.7	2	33.7	70.6	6	50.8	93.2	30800
9/13/2013	12.5	12.6	70.9	2	34.7	69	6	52		27400
10/4/2013	13	9.6	64.3	3	34.5	65.6	4	54.5	96.2	100000
10/10/2013	14	14.3	59.6	3	28.2	59.9	6	51	77.4	270
11/7/2013	13	13.5	54.6	4	32.1	56.4	4	56.8	73.7	1320
11/14/2013	13.5	25.4	57.5	8	22.5	56.3	6	48.5	79.6	
11/22/2013	13.2	13.4	48.5	6	22.9	51.2	6	49.9	65.8	2212
11/26/2013	13.9	30.5	54.5	5	22.8	53.3	5	48.6	74.6	1585
12/12/2013	-	22.5	43.3	5	26.2	47.2	4	44.8	67.5	1215
1/2/2014	13	27.6	53.4	3	25.8	51.7	4	40.3	78.1	1795
1/10/2014	13.5	11.3	46.9	4	31.7	51.4	4	44.8	75.3	847
1/16/2014	13	26.5	51.9	5	29.2	52.7	3	49.8	72.4	
1/23/2014	13	25.8	49.6	5	30.1	50.6	4	50.1	70	197
1/30/2014	13.5	21.5	46.8	3	35.1	47.3	5	49.7	55.8	2630
2/6/2014	13	26.9	41.6	-	29.6	45.3		50.1	63.7	1460
2/20/2014	14	27.2	46.4	4.5	30.4	48.8	4	47.4	72.6	67
3/13/2014	15	9.4	59.3	6	33	59.1	6	50.2	85.6	28
3/20/2014	14.5	15.4	55.4	4	33.1	55.1	5	51.2	84.1	290
3/28/2014	-	16.2	-	4	31.8	-	5	51	-	240
4/3/2014	14.5	25.3	58.1	4	25.5	57.3	4	54.4	78	167
4/10/2014	15	22.2	61.3	5	30.6	61.7	8	46.5	85.9	176
4/24/2014	14	31.3	56.9	3	33.7	56.6	5	53.2	79	46
5/1/2014	15	21.2	60.7	4	29.3	63.6	5	51.6	91.6	156
5/30/2014	14	13.7	70.8	3	35.6	66.5	5	55.1	103.5	72
6/6/2014	16	23.2	64.8	3	31.3	63.7	6	52.5	87.1	30
6/18/2014	-	7.9	-	-	36.2	-	-	55.4	-	62
6/24/2014	-	10.2	73.7	2	34.6	71.9	4	53.8	91.4	0
7/3/2014	-	24.5	67.4	-	28.9	66.3		47.3	89.1	70
7/30/2014	0	18.3	63.8	-	35.2	64.4	6	54.7	83.8	46
8/5/2014	0	11	-	0	30	-	7	48.5	-	50

Table B-1: AS/SVE System Field Data

Date	11574-ASW-2 Pressure (psi)	11574-SVE-BS-1 Flow (m/s)	11574-SVE-BS-1 Temp. (^{o}F)	11574-SVE-BS-1 Pressure (psi)	11574-SVE-BS-2 Flow (m/s)	11574-SVE-BS-2 Temp. (^{o}F)	11574-SVE-BS-2 Pressure (psi)	11574-SVE-BE-1 Flow (m/s)	11574-SVE-BE-1 Temp. (^{o}F)	11574-SVE-BE-1 VOCs (ppb)
8/12/2014	0	16.9	-	-	27.4	-	-	52.1	-	0
8/19/2014	0	12	76.5	-	31	76.5	-	47	112	0
8/29/2014	0	4.6	68.6	4	33.3	67.9	7.5	50.4	85.6	48
9/8/2014	0	12.2	69.3	4	34.8	69.3	7	51.6	89.8	0
9/12/2014	0	30.3	69.3	2	28.2	67.5	6	52.1	114.2	0
9/19/2014	-	24.1	76.3	2.5	33.1	72.6	6	51.7	106	0
9/29/2014	0	36.4	58.1	3	32.7	58.4	6.5	52	71.3	0
10/6/2014	1	24.6	76	1.5	36.2	70.3	6.5	51.6	99.5	0
11/4/2014	1	20.2	58.9	3.5	35.2	59.2	8	52.5	81.6	16
11/10/2014	1	30.7	57.6	3.5	36.1	57.8	8	51.2	88.3	1
11/17/2014	0	30.3	53.7	2.5	37.7	51.2	8	50.5	80	14
11/26/2014	2	33.3	57.6	2.5	36.2	58.8	7.5	51.9	81.7	78
12/5/2014	1	27.9	52.4	2.5	34.6	55.7	7.5	54.2	77	21
12/12/2014	5	24.4	56.5	2.5	36.5	57.6	8	55.4	86.6	24
12/24/2014	12	36.6	52.1	2.5	38	54.6	8	54.5	76.3	24
1/9/2015	1	23.9	52.3	2.5	36.8	54	8	53.2	79.6	12
1/16/2015	1	25.8	51.7	2.5	35.2	50.8	8	54	78.3	0
1/23/2015	0	23.1	52.7	4	35.2	55.1	8.5	56.5	73.9	0
1/30/2015	0	27.3	50.8	4.5	39.3	54.1	8.5	57	73.4	0
2/5/2015	1	26.2	56.5	4	36.2	56.9	8.5	51.2	74.5	0
2/13/2015	1	23.5	55.6	4	37.5	56.1	8.5	52.9	78.8	0
2/20/2015	1	22.4	54.3	4	35.4	54.5	8	50.5	79.2	0
2/27/2015	0	27.3	47.8	4	36.2	47.9	8	51.9	72.3	0
3/6/2015	0	8.6	58.9	4	41.6	57.9	8	53.8	88.7	0
3/13/2015	0	10.1	63.7	3	38.3	62.6	7	52.8	88.4	0
3/20/2015	0	27.2	59.2	3	34.5	61	7	51.5	81	0
3/27/2015	0	7.7	72.1	2	34.4	69.6	8	52	82	0
4/3/2015	7	26.3	55.8	4.5	35.3	57.2	8.5	51.7	78.7	0
4/10/2015	7	27	55.2	4.5	35.4	56.3	8.5	51	77.2	0
4/17/2015	7	25.8	63.6	3.5	35.5	60.6	8	52.4	78.4	0
4/24/2015	7	23.9	50.3	4	36.7	51.8	8	51.9	70.3	20
5/1/2015	7	25.4	70.1	4	35.6	68.4	8	55.4	92.8	26
5/8/2015	7	21.3	68.6	4	35	67.5	8	53.7	108.6	29
5/15/2015	6	14.6	67.8	7	41.7	67.6	8	55.2	105.1	0
5/21/2015	7	10.5	80.6	4	41.5	75.9	6.5	55.2	118.1	4
5/29/2015	7	23.7	80	4	32.2	78.3	8	50.2	105	41
6/5/2015	7	23.6	83.2	3	33.8	83.3	7	53.4	94.1	2
6/12/2015	1	25.2	65.3	4	36.1	66.1	8	52.3	87.2	95
6/18/2015	1	23	77.6	4	31.5	76.5	8	51.3	97.8	30
6/26/2015	1	22.3	93.4	4	33.1	92.1	8	52.3	105	76
7/10/2015	7	21.5	72.7	3	33.5	72.7	7	40	96.1	0
7/17/2015	-	13.6	87.4	1.5	30.1	85.9	5.5	41.6	90	0
7/24/2015	-	18.5	76.2	3	30.1	76.2	6	44.3	96.3	32
7/31/2015	-	25.3	96.2	3	33.2	98.2	6	44	105	0
8/7/2015	-	23	92.6	6	31	91.7	3	46	97.3	0
8/14/2015	-	21.3	65	6	31.7	65	3	43	109	0
8/21/2015	-	23	69.2	3	30.3	69.7	5.5	45.3	89.7	0
8/28/2015	-	17.1	77.6	1.7	30.4	76.1	5.5	37.4	118.9	0
9/4/2015	-	20.2	69.6	3	26.8	69.6	6	48.2	90	0
9/11/2015	-	15.5	75.5	2	27.2	75.9	5	40.2	129	0
9/18/2015	-	15.7	75.1	3.5	29.4	74.9	5	45.3	103.1	0
9/25/2015	-	22.5	66.1	3	25.1	67.3	5	46	90.3	0
10/2/2015	-	22.4	63.3	3	25.2	65.2	5	43.5	100.2	0

Table B-1: AS/SVE System Field Data

Date	11574-ASW-2 Pressure (psi)	11574-SVE-BS-1 Flow (m/s)	11574-SVE-BS-1 Temp. (^{o}F)	11574-SVE-BS-1 Pressure (psi)	11574-SVE-BS-2 Flow (m/s)	11574-SVE-BS-2 Temp. (^{o}F)	11574-SVE-BS-2 Pressure (psi)	11574-SVE-BE-1 Flow (m/s)	11574-SVE-BE-1 Temp. (^{o}F)	11574-SVE-BE-1 VOCs (ppb)
10/9/2015	-	20	64.5	3	26	64.5	5	44.7	87.9	92
10/16/2015	-	23.2	67.5	3	27.3	66.2	5	44.3	98	75
10/19/2015	-	-	-	-	-	-	-	-	-	-
10/23/2015	6.5	22.5	60.3	3	29.8	61.8	5.5	49.4	114	2
10/30/2015	9	23.3	65.5	3	28.2	65.1	5	42	86.3	350
11/6/2015	12	25.1	62.7	4	26.1	62.4	6	45.8	100.9	300
11/13/2015	12	23.2	62.5	3	26.1	62.7	5	44	109	0
11/19 - 11/23	-	-	-	-	-	-	-	-	-	-
11/27/2015	14	22.3	50	3	25.1	50.2	5	42.5	85	0
12/2/2015	12.5	21.2	54.5	2.5	25.3	57.2	5.5	42.8	84.5	0
12/11/2015	12	8.3	48.9	2.5	27.8	52.8	12	42.5	80	0
12/18/2015	12.5	5.9	49.4	4	31.2	55.1	5.5	42.5	86.9	0
12/24/2015	12	14.4	-	8	30.5		8	42.2	-	0
12/31/2015	12	4.8	50	3	21.5	52	6	43.1	86.8	0
1/8/2016	18	22.9	45.5	3.5	25.1	48.9	5.5	43.2	72.3	0
1/15/2016	17	15.3	52	2.5	28.6	55.4	7	45.8	102	3
1/22/2016	7.5	13.5	48.1	3	20.3	49.2	6	45.6	65.4	0
1/29/2016	11.5	7.9	50.1	2.5	30.2	52.1	7	43.5	64.5	0
2/5/2016	8	20	48.1	7	20	47.2	10	43	65	0
2/12/2016	11	14.7	52.7	6	23.1	53.4	6	43.1	74.4	0
2/26/2016	10	13.3	53.9	3	22.2	53	5	42.5	80.8	0
3/4/2016	8.5	10.4	52.4	3	22.2	55.8	4.5	43	77	0
3/11/2016	13	3.5	62.3	1	26.9	61.8	5	38.6	102.8	0
3/18/2016	9	10.1	64.8	3	29.7	65.2	9	38.7	88.3	0
3/24/2016	7	5.7	53.6	7	22.7	55.1	15	42.5	65.8	25
4/1/2016	9	19.4	66.9	5	25.2	66.8	15	29.1	101.8	-
4/7/2016	7	14.1	76.4	3.5	25.3	74.3	5	35.5	68.8	7000
4/15/2016	7.5	10.5	62	2.5	30	61.4	6.5	36.3	83.5	4071
4/22/2016	4	15.6	56.8	4	31.5	57.5	6	35.4	73.4	950
4/29/2016	7	21.9	54.3	4	26.3	56.2	6	35.2	72	225
5/6/2016	8	21.3	76.5	4	24.5	74.4	6	36.5	103.1	1500
5/13/2016	7	19.7	81.5	2.5	27.3	78.2	6	35.4	102.6	0
5/19/2016	7	21.5	69.8	3.5	25.2	69.1	5.5	35.5	81.6	1250
5/27/2016	6	4.7	64.9	5.5	24.1	60.7	2.5	35.1	86.1	0
6/3/2016	7	12.8	77.6	3	34.7	74.2	7	51.6	108.9	0
6/9/2016	8	14.9	62.8	3.5	29.8	64.1	6.5	49.1	90.7	3
6/17/2016	8	14.5	73.1	3	25.7	73.8	5	35.8	85.1	0
6/24/2016	-	25.8	68.3	3	29.3	68.3	5	35.3	87.7	0
6/30/2016	-	21.2	70.7	3	27.1	68.9	5	35.5	90.7	0
7/8/2016	-	18.7	73.1	3	28.8	74.2	5	35.5	105.6	0
7/15/2016	-	20	75.1	3	27.7	74.9	5	35.5	98.7	0
7/22/2016	-	20.6	72.8	3	29.5	73.3	6	38	98.8	0
7/28/2016	0	19.3	86.6	3	28.4	85.3	6	37.2	118.1	0
8/4/2016	-	21.5	82.1	3	28.3	83.3	5.5	36.5	104.3	0
8/11/2016	0	14.5	80.4	3	29.6	79.7	5.5	36.5	108.7	0
8/19/2016	0	14.2	90.7	3	30.3	89.4	5.5	40.4	131.3	0
8/26/2016	0	13.6	89.9	3	29.6	88.9	6	38.4	108.5	0
9/1/2016	0	23.4	65.8	3	29.5	66.6	6	35.4	86.3	0
9/9/2016	0	17.3	73.8	3	26.3	74.8	6	39.5	106.3	0
9/14/2016	0	19.2	76.8	3	27.3	76.5	6	37	115.7	0
9/23/2016	0	17.5	61.1	3	30.3	61.1	6	39.5	108.6	10
9/30/2016	0	17.5	64.9	3	30.1	65.6	6	35.7	93	10
10/6/2016	0	18.2	58.3	3	27.8	58.3	6	35.5	100.4	0

Table B-1: AS/SVE System Field Data

Date	11574-ASW-2 Pressure (psi)	11574-SVE-BS-1 Flow (m/s)	11574-SVE-BS-1 Temp. (^{o}F)	11574-SVE-BS-1 Pressure (psi)	11574-SVE-BS-2 Flow (m/s)	11574-SVE-BS-2 Temp. (^{o}F)	11574-SVE-BS-2 Pressure (psi)	11574-SVE-BE-1 Flow (m/s)	11574-SVE-BE-1 Temp. (^{o}F)	11574-SVE-BE-1 VOCs (ppb)
10/14/2016	0	16.6	57.3	3	28.6	55.3	6	35.5	97.6	0
10/21/2016	0	23	57.6	3	23	63.4	6	36.2	104.6	0
10/27/2016	0	22.1	62.6	3	29.3	62.6	6	40	105.7	300
11/4/2016	0	21.3	62.6	3	29.3	64.4	6	39.8	100.1	0
11/11/2016	ND	23.6	58.4	3	30.2	59	6	40.4	101.1	0
11/17/2016	0	20.6	58.1	3	30.4	60.7	6	38.4	101.6	0
11/23/2016	0	20.8	51	3	28.6	51.6	6	38.6	91.6	356
12/7/2016	0	18.7	55	3	28.4	53.3	6	38.2	89	0
12/15/2016	0	18.3	48.3	3	26.4	48.5	6	37.5	83.3	0
12/23/2016	0	18.1	46.1	4	28.2	48.6	7	35.2	88.6	0
12/30/2016	0	18.2	47.5	3	36.4	50.4	6	36.1	96.9	0
1/6/2017	0	18.6	41.6	3	29.2	42.2	6	37.6	76.8	0
1/13/2017	0	18.2	41.1	3	32.2	48.1	6	35.6	82.2	0
1/27/2017	0	16.6	57.2	4	26.8	57.5	5	42.3	92.3	0
2/3/2017	0	24.6	37.9	4	26.8	39.6	6	39.4	84.8	0
2/10/2017	0	20.4	48.9	3	28.3	48.5	6.5	38.9	78.2	-
2/17/2017	0	15.5	56.4	4	22.4	55.9	5.5	38.9	99.1	5
2/24/2017	0	20.1	50	4	28.5	50.9	6.5	36.8	91.5	0
3/1/2017	0	20.1	50.4	4	26.2	51.4	6	38.3	93.6	0
3/10/2017	0	20.3	53.1	4.5	21.3	52.9	5.5	38.3	88.1	0
3/17/2017	0	22.8	51.3	4	29.3	53.8	5	38	78.3	0
3/24/2017		20.3	56.8	4	30.1	56.9	7	38.1	102.2	0
3/31/2017	0	22.2	63.6	5	22.8	64.1	5.5	39.3	89.8	0
4/6/2017	0	22.3	60.8	4	31	60.3	7	39.5	107.6	0
4/14/2017	0	15.1	55.1	4	30.1	55.5	6	38.6	98.1	0
4/20/2017	0	15.2	64.4	0.5	35.7	60.4	8.5	38.7	107.4	170
4/28/2017	0	13.2	64.6	4.5	30.3	64.8	7	39.5	103.2	0
5/5/2017	0	23.9	54.7	4	30	54.7	7	36.2	103.6	0
5/12/2017	0	27.1	61.3	4	29.1	61	6.5	38.8	108	0
5/18/2017	0	16.4	68.6	4	29.4	66.3	6.5	38.4	110	0
5/25/2017	0	20.2	68.3	3.5	30	67.5	6.5	37.9	104.6	0
6/2/2017		11.7	70.3	2.5	37.5	69	6.5	39.2	91.1	0
6/9/2017	0	21.2	71.4	4.5	30.2	72.3	5.5	37.7	108.3	0
6/23/2017	0	18.8	79.7	1.5	32.1	78.6	6.5	36.8	118	0
6/30/2017	0	21.3	83.4	3	32.2	82.3	6.5	38.2	117	0
7/7/2017	-	-	-	-	-	-	-	-	-	-
7/14/2017	0	13.1	78.7	3	32.4	75.4	6.5	39.5	116	0
7/21/2017	0	14.8	83.1	3	31.4	80.9	6	38.3	130	0
7/28/2017	0	11.4	74.8	2.5	25.3	72.4	6.5	38.3	115.3	
8/4/2017	-	14.2	89.8	2.5	32.8	88.7	6.5	39.3	126.3	0
8/11/2017	-	19.5	78.7	2.5	31.3	76.8	5.25	39.1	101.2	0
8/18/2017	-	6.6	75.5	2	33.4	75.3	6.8	40.9	99.9	0
8/24/2017	-	23.5	77.2	2.5	33.2	85.4	6.5	39.5	97.3	0
9/1/2017	-	19	71.3	2.5	33.9	81.2	6.5	37	126.3	0
9/8/2017	-	-	-	-	-	-	-	-	-	-
9/15/2017	16	20.2	73.2	2.5	32.9	75.3	6.5	38.2	110.1	0
9/22/2017	16	5.4	70.7	2	33.1	71.1	6.5	37.2	103.8	0
9/28/2017	16	14	67	3	33	66	8	39	91	0
10/6/2017	16	20	72	3	33	73	6	38	111	0
10/11/2017	16	16	58	3	32	59	7	36	103	0
10/20/2017	0	24	53	3	33	54	6	38	104	0
10/26/2017	17	20	58	3	30	59	6	38	104	0
11/3/2017	16	22	48	3	30	50	6	37	103	0

Table B-1: AS/SVE System Field Data

Date	11574-ASW-2 Pressure (psi)	11574-SVE-BS-1 Flow (m/s)	11574-SVE-BS-1 Temp. (^{o}F)	11574-SVE-BS-1 Pressure (psi)	11574-SVE-BS-2 Flow (m/s)	11574-SVE-BS-2 Temp. (^{o}F)	11574-SVE-BS-2 Pressure (psi)	11574-SVE-BE-1 Flow (m/s)	11574-SVE-BE-1 Temp. (^{o}F)	11574-SVE-BE-1 VOCs (ppb)
11/9/2017	17	22	52	3	28	54	6	38	101	0
11/16/2017	17	18	51	4	28	55	8	37	102	0
11/22/2017	17	20	66	5	29	66	8	38	101	0
12/1/2017	0	21	48	4	29	51	7	39	97	0

Notes:
ND - No data, not applicable
ppb - parts per billion
^{o}F - degrees fahrenheit
psi - pounds per square inch

Table B-2: Sub-Slab Pressures

Date	SSD-S1 (SE) (in. WC)	SSD-S2 (SW) (in. WC)	SSD-N1 (NE) (in. WC)	SSD-N2 (NW) (in. WC)	SSD-3 (inside) (in. WC)	COMMENTS
5/11/2012	0.0005	0.02	0.035	0.03	ND	Ran blower for 1 hour
9/21/2012	0.025	0.025	0.03	0.02	0.05	Ran blower for 1 hour
9/28/2012	0.02	0.025	0.025	0.05	0.05	Ran blower for 1 hour
10/11/2012	0.05	0.025	0.025	0.05	0.05	Ran blower for 1 hour
10/19/2012	0.05	0.025	0.025	0.05	ND	Ran blower for 1 hour
10/29/2012	0.05	0.025	0.02	0.05	ND	Ran blower for 1 hour
11/5/2012	0.05	0.025	0.025	0.05	0.05	Ran blower for 1 hour
11/30/2012	0.09	0.07	0.03	0.04	0.02	Windy conditions prbably account for higher pressure at south side of building
1/17/2013	0.035	0.03	0.04	0.02	0.02	
1/25/2013	0.032	0.03	0.04	0.025	ND	
2/8/2013	ND	ND	ND	ND	ND	
2/15/2013	0.026	0.03	0.035	0.025	0.02	
2/27/2013	0.035	0.03	0.04	0.035	0.025	
3/8/2013	0.025	0.04	0.03	0.025	0.02	
3/22/2013	0.015	0.015	0.03	0.02	0.015	
3/29/2013	0.015	0.015	0.03	0.025	0.02	
4/5/2013	0.035	0.04	0.035	0.035	ND	
4/19/2013	0.045	0.03	0.05	0.035	0.02	
6/28/2013	0.02	0.01	0.02	0.02	0.02	
7/12/2013	0.015	0.015	0.025	0.02	0.02	
7/19/2013	0.02	0.015	0.02	0.02	ND	
8/2/2013	0.02	0.015	0.02	0.02	ND	
8/15/2013	0.022	0.025	0.03	0.035	0.025	
8/23/2013	0.02	0.025	0.03	0.03	ND	
9/13/2013	0.025	0.025	0.03	0.035	0.02	
10/4/2013	0.015	0.02	0.025	0.02	0.02	
10/10/2013	0.01	0.025	0.025	0.02	0.02	Brief operation. Need new drum gasket.
11/7/2013	0.02	0.035	0.02	0.02	0.02	
11/14/2013	0.01	0.01	0.015	0.01	0.015	
11/22/2013	0.025	0.02	0.032	0.03	0.01	
11/26/2013	0.01	0.01	0.015	0.02	0.01	
12/12/2013	0.02	0.02	0.025	0.025	0.01	
1/2/2014	0.02	0.02	0.025	0.02	0.01	Drained KO Drum ~5 min. Isolated SVE zones 5 min each. Drained drum again ~ 5 min.
1/10/2014	0.02	0.02	0.02	0.025	0.01	Isolated SVE zones. Drained KO drum (full). Isoated zones and drained again (approx. half full).
1/16/2014	0.02	0.02	0.04	0.035	0.01	SVE zones isolated 2 min each. KO drum drained ~ 10 min. SVE zones isolated ~ 10 min each. KO drum drained ~ 3 min.
1/23/2014	0.025	0.02	0.03	0.025	0.015	Drained KO Drum ~5 min. Isolated SVE zones 5 min each. Drained drum again ~ 5 min.
1/30/2014	0.045	0.05	0.025	0.03	0.015	Isolated SVE zones. Drained KO drum 2x for ~ 5.5 min (full) ~ 2 min.
2/6/2014	0.01	0.01	0.02	0.02	0.01	
2/20/2014	ND	ND	ND	ND	ND	Wind conditions effecting SSD readings.
3/13/2014	0.015	0.02	0.02	0.02	0.015	Plug popped out / not tight at MW 10A17-8. Bubbling sparged water. Reinstalled/tightened plug.
3/20/2014	0.015	0.015	0.03	0.022	0.02	
3/28/2014	0.02	0.02	0.03	0.025	ND	
4/3/2014	0.02	0.02	0.02	0.025	0.015	
4/10/2014	0.015	0.01	0.025	0.02	0.01	
4/24/2014	0.02	0.02	0.03	0.025	0.01	
5/1/2014	0.01	0.015	0.02	0.02	0.01	

Table B-2: Sub-Slab Pressures

Date	SSD-S1 (SE) (in. WC)	SSD-S2 (SW) (in. WC)	SSD-N1 (NE) (in. WC)	SSD-N2 (NW) (in. WC)	SSD-3 (inside) (in. WC)	COMMENTS
5/30/2014	0.015	0.015	0.025	0.035	0.02	
6/6/2014	0.015	0.015	0.02	0.02	0.01	
6/18/2014	ND	ND	ND	ND	ND	SVE exhaust samples - 2 Tedlar bags.
6/24/2014	0.015	0.015	0.025	0.025	0.02	SVE exhaust samples - 4 Tedlar bags; 1 each hour from 11:00 - 14:00.
7/3/2014	0.015	0.015	0.02	0.025	0.01	
7/30/2014	0.025	0.025	0.03	0.03	0.02	Blower timer set to turn on at 10 PM and shutoff at 11:00 PM.
8/5/2014	0.035	0.035	0.03	0.035	0.02	Both blower suction pressure guages not working properly.
8/12/2014	0.03	0.02	0.025	0.025	0.015	Thermometer broken; replace pressure guages on suction lines with pressure cap.
8/19/2014	0.02	0.035	0.03	0.025	0.02	
8/29/2014	0.015	0.025	0.03	0.025	0.025	
9/8/2014	0.03	0.02	0.04	0.03	0.015	
9/12/2014	0.02	0.02	0.03	0.03	0.02	
9/19/2014	0.01	0.015	0.03	0.02	ND	
9/29/2014	0.03	0.03	0.03	0.035	0.015	
10/6/2014	0.02	0.02	0.025	0.035	0.015	Changed sparging frequency to 4 times daily.
11/4/2014	0.03	0.03	0.035	0.035	0.01	Collecting 4 tedlar bag samples and 1 duplicate.
11/10/2014	0.015	0.01	0.035	0.035	0.015	
11/17/2014	0.025	0.025	0.03	0.035	0.01	VOCs around ACU higher than normal ~10-20 ppb.
11/26/2014	0.03	0.03	0.03	0.03	0.015	
12/5/2014	0.025	0.025	0.03	0.035	0.01	
12/12/2014	0.03	0.025	0.03	0.03	0.015	
12/24/2014	0.025	0.03	0.03	0.035	0.015	
1/9/2015	0.025	0.025	0.03	0.03	0.01	Drained KO Drum ~5 min. Isolated SVE zones 5 min each. Drained drum again ~ 5 min.
1/16/2015	0.025	0.025	0.03	0.03	0.01	
1/23/2015	0.025	0.025	0.03	0.03	0.01	
1/30/2015	0.025	0.025	0.03	0.03	0.01	
2/5/2015	0.025	0.025	0.03	0.035	0.01	
2/13/2015	0.025	0.025	0.03	0.03	0.01	
2/20/2015	0.02	0.02	0.03	0.03	0.015	
2/27/2015	0.03	0.03	0.03	0.03	0.01	Drained KO Drum ~5 min. Isolated SVE zones 5 min each. Drained drum again ~ 5 min.
3/6/2015	0.028	0.02	0.025	0.04	0.015	
3/13/2015	0.025	0.03	0.035	0.025	0.015	Reset AS Blower timer to standard time (ahead 1 hour last week) 9:59 to 10:59. ASW-1 pressure guage stuck. Opened ball valve - no pressure.
3/20/2015	0.025	0.025	0.03	0.03	0.01	
3/27/2015	0.02	0.055	0.025	0.025	0.015	
4/3/2015	0.03	0.04	0.04	0.04	0.01	
4/10/2015	0.025	0.025	0.03	0.03	0.01	Drained KO Drum ~5 min. Isolated SVE zones 5 min each. Drained drum again ~ 5 min.
4/17/2015	0.025	0.025	0.035	0.03	0.01	Drained KO Drum ~5 min. Isolated SVE zones 5 min each. Drained drum again ~ 5 min.
4/24/2015	0.025	0.025	0.03	0.03	0.01	6-10 ppb @ first parking stall next to SVE shed. System was off 4/23/2015 8-12:00 for groundwater sampling event.
5/1/2015	0.025	0.025	0.03	0.035	0.01	5-6 ppb @ first parking stall next to SVE shed. Drained KO drum.
5/8/2015	0.02	0.015	0.04	0.05	0.02	
5/15/2015	0.02	0.04	0.04	0.04	ND	ACU tellers too busy to escort inside. No readings for SSD-3 or ASW-1.
5/21/2015	0.02	0.02	0.025	0.025	0.015	2-7 ppb at third parking bay from SVE Shed. 25 ppb near AAFES @ air dispenser.
5/29/2015	0.02	0.025	0.03	0.035	0.015	
6/5/2015	0.02	0.015	0.03	0.03	0.015	Air sparge blower malfunction discovered 6/4/2015. Possible motor failure. SVE functioning.
6/12/2015	0.02	0.025	0.02	0.03	0.03	Air sparge blower offline due to malfunction. Repair in progress.
6/18/2015	0.02	0.02	0.025	0.025	0.01	

Table B-2: Sub-Slab Pressures

Date	SSD-S1 (SE) (in. WC)	SSD-S2 (SW) (in. WC)	SSD-N1 (NE) (in. WC)	SSD-N2 (NW) (in. WC)	SSD-3 (inside) (in. WC)	COMMENTS
6/26/2015	0.02	0.02	0.03	0.035	0.015	~30 ppb @ first parking stall next to SVE shed.
7/10/2015	0.02	0.03	0.03	0.03	0.015	Blower is off for repairs.
7/17/2015	0.02	0.02	0.02	0.03	0.01	ASW readings not taken due to compressor malfuncation.
7/24/2015	0.02	0.02	0.025	0.03	0.01	GAC pressure @ 21 in WC.
7/31/2015	0.02	0.02	0.02	0.025	0.01	GAC in connected.
8/7/2015	0.02	0.02	0.02	0.02	0.01	3 ppb @ first parking stall next to SVE shed. Sparge blower is off for repair.
8/14/2015	0.05	0.035	0.035	0.035	0.01	Sparge blower is off
8/21/2015	0.025	0.02	0.015	0.03	0.01	Sparge blower is off
8/28/2015	0.025	0.025	0.028	0.02	0.015	Sparge blower is off
9/4/2015	0.02	0.02	0.025	0.02	0.01	Sparge blower is off
9/11/2015	0.025	0.02	0.04	0.03	0.015	0 ppb @ GAC inlet.
9/18/2015	0.02	0.025	0.03	0.025	0.015	32 ppb @ GAC inlet.
9/25/2015	0.01	0.02	0.025	0.03	0.015	0 ppb @ GAC inlet.
10/2/2015	0.02	0.02	0.025	0.03	0.015	0 ppb @ GAC inlet.
10/9/2015	0.025	0.02	0.02	0.02	0.01	Sparge blower is off
10/16/2015	0.02	0.02	0.02	0.02	0.01	
10/19/2015	ND	ND	ND	ND	ND	Blue Mountain Mechanical installed new AS compressor and motor. Operated for ~30 min then On/Off cycles to test auto timer.
10/23/2015	0.02	0.02	0.03	0.02	0.015	254 ppb @ GAC inlet. Discovered power to AS Blower off. Sitched on and checked/verified timer settings.
10/30/2015	0.03	0.03	0.03	0.035	0.01	8-30 ppb at first parking stall next to SVE shed.
11/6/2015	0.03	0.025	0.02	0.02	0.01	~2 ppb at first parking stall next to SVE shed. Drained KO drum.
11/13/2015	0.03	0.03	0.03	0.03	0.015	Drained KO Drum ~5 min. Isolated SVE zones 5 min each. Drained drum again ~ 5 min.
1/19 - 11/23/2015	ND	ND	ND	ND	ND	Discovered SVE blower line fallen off. Blower tripped. Rebuilt line and restarted. AS Blower off until integrity of SVE blower verified. 11/20/2015 restarted SVE blower.
11/27/2015	0.015	0.015	0.015	0.015	0.01	
12/2/2015	0.025	0.025	0.038	0.037	0.015	0-10 ppb at first parking stall next to SVE shed.
12/11/2015	0.015	0.012	0.02	0.018	0.015	9 ppb @ GAC inlet. Drained KO drum.
12/18/2015	0.015	0.015	0.02	0.015	0.01	67 ppb @ GAC inlet. Drained KO drum.
12/24/2015	0.025	0.02	0.02	0.02	0.015	
12/31/2015	0.01	0.015	0.015	0.015	0.01	5 ppb @ GAC inlet.
1/8/2016	0.03	0.03	0.03	0.03	0.01	4 ppb before GAC, 0 ppb after GAC.
1/15/2016	0.01	0.02	0.02	0.03	0.01	
1/22/2016	0.02	0.02	0.01	0.01	0.01	0 ppb before GAC, 0 ppb after GAC.
1/29/2016	0.03	0.02	0.03	0.04	0.02	0-11 ppb before GAC, 0 ppb after GAC.
2/5/2016	0.02	0.02	0.02	0.02	0.01	Pressures surging through extraction laterals. Stabilized after draining KO drum.
2/12/2016	0.02	0.02	0.02	0.02	0.01	0 ppb before GAC, 0 ppb after GAC.
2/26/2016	0.02	0.02	0.02	0.02	0.01	
3/4/2016	0.10	0.02	0.02	0.02	0.01	0 ppb before GAC, 0 ppb after GAC.
3/11/2016	0.01	0.01	0.02	0.02	0.01	0 ppb before GAC, 0 ppb after GAC.
3/18/2016	0.01	0.01	0.02	0.02	0.01	0 ppb before GAC, 0 ppb after GAC.
3/24/2016	0.04	0.02	0.03	0.03	0.01	
4/1/2016	0.02	0.01	0.03	0.02	0.01	PID not @ site, no readings
4/7/2016	0.02	0.01	0.04	0.03	0.02	
4/15/2016	0.02	0.02	0.03	0.03	0.01	
4/22/2016	0.02	0.02	0.03	0.03	0.02	
4/29/2016	0.03	0.03	0.03	0.03	0.01	2250 ppb before GAC
5/6/2016	0.03	0.03	0.02	0.02	0.02	3123 ppb before GAC
5/13/2016	0.01	0.01	0.02	0.02	0.01	

Table B-2: Sub-Slab Pressures

Date	SSD-S1 (SE) (in. WC)	SSD-S2 (SW) (in. WC)	SSD-N1 (NE) (in. WC)	SSD-N2 (NW) (in. WC)	SSD-3 (inside) (in. WC)	COMMENTS
5/19/2016	0.03	0.02	0.03	0.02	0.01	2000 ppb before GAC
5/27/2016	0.01	0.02	0.03	0.02	0.01	0 ppb before GAC, 0 ppb after GAC
6/3/2016	0.02	0.01	0.03	0.05	0.01	
6/9/2016	0.03	0.04	0.03	0.03	0.02	
6/17/2016	0.02	0.02	0.03	0.04	0.01	0 ppb before GAC, 0 ppb after GAC
6/24/2016	0.04	0.03	0.03	0.03	0.01	0 ppb before GAC, 0 ppb after GAC
6/30/2016	0.02	0.03	0.03	0.02	0.01	
7/8/2016	0.04	0.04	0.03	0.04	0.02	0 ppb before GAC, 0 ppb after GAC
7/15/2016	0.03	0.03	0.03	0.03	0.02	0 ppb before GAC, 0 ppb after GAC
7/22/2016	0.04	0.03	0.03	0.03	0.02	GAC disconnected
7/28/2016	0.02	0.01	0.03	0.03	0.02	
8/4/2016	0.01	0.02	0.02	0.04	0.02	
8/11/2016	0.02	0.02	0.03	0.03	0.02	
8/19/2016	0.02	0.02	0.03	0.05	0.02	
8/26/2016	0.01	0.02	0.02	0.03	0.02	
9/1/2016	0.03	0.04	0.03	0.02	0.02	Turned off air sparging for groundwater sampling.
9/9/2016	0.02	0.02	0.03	0.03	0.01	
9/14/2016	0.03	0.02	0.02	0.02	0.02	
9/23/2016	0.02	0.02	0.03	0.03	0.02	
9/30/2016	0.03	0.03	0.03	0.03	0.02	
10/6/2016	0.03	0.03	0.03	0.03	0.02	
10/14/2016	0.02	0.06	0.03	0.07	0.02	Wind affecting pressure readings.
10/21/2016	0.01	0.01	0.02	0.02	0.01	
10/27/2016	0.04	0.03	0.03	0.03	0.02	
11/4/2016	0.02	0.02	0.03	0.03	0.01	
11/11/2016	0.03	0.03	0.03	0.03	ND	ACU closed, unable to get inside readings.
11/17/2016	0.01	0.01	0.03	0.02	0.01	
11/23/2016	0.03	0.03	0.04	0.05	0.01	
12/7/2016	0.02	0.02	0.03	0.03	0.02	
12/15/2016	0.02	0.02	0.03	0.03	0.02	
12/23/2016	0.02	0.02	0.03	0.03	0.02	
12/30/2016	0.01	0.02	0.02	0.02	0.02	
1/6/2017	0.02	0.02	0.03	0.03	0.02	
1/13/2017	0.02	0.02	0.03	0.03	0.01	
1/27/2017	0.02	0.02	0.03	0.02	0.02	
2/3/2017	0.18	0.02	0.04	0.03	0.01	
2/10/2017	0.04	0.03	0.02	0.03	0.02	no PID on site
2/17/2017	0.01	0.01	0.01	0.02	0.02	Drained KO Drum ~5 min. Isolated SVE zones 5 min each. Drained drum again ~ 5 min.
2/24/2017	0.01	0.01	0.02	0.02	0.02	Drained KO Drum ~5 min. Isolated SVE zones 5 min each. Drained drum again ~ 5 min.
3/1/2017	0.02	0.03	0.03	0.03	0.01	Turned off air sparging for groundwater sampling.
3/10/2017	0.04	0.04	0.03	0.04	0.02	
3/17/2017	0.10	0.01	0.02	0.02	0.02	Drained KO Drum ~5 min. Isolated SVE zones 5 min each. Drained drum again ~ 5 min.
3/24/2017	0.02	0.02	0.02	0.02	-	Unable to access SSD-3 and ASW-2; credit union busy
3/31/2017	0.01	0.01	0.02	0.03	0.02	breeze affecting pressures
4/6/2017	0.02	0.02	0.02	0.02	0.02	Wind affecting pressure readings.
4/14/2017	0.02	0.03	0.02	0.02	0.02	Drained KO Drum ~5 min. Isolated SVE zones 5 min each. Drained drum again ~ 5 min.

Table B-2: Sub-Slab Pressures

Date	SSD-S1 (SE) (in. WC)	SSD-S2 (SW) (in. WC)	SSD-N1 (NE) (in. WC)	SSD-N2 (NW) (in. WC)	SSD-3 (inside) (in. WC)	COMMENTS
4/20/2017	0.03	0.02	0.02	0.02	0.02	
4/28/2017	0.01	0.01	0.01	0.01	0.02	
5/5/2017	0.03	0.04	0.02	0.02	0.02	Drained KO Drum ~5 min. Isolated SVE zones 5 min each. Drained drum again ~ 5 min.
5/12/2017	0.01	0.01	0.01	0.01	0.01	Drained KO Drum ~5 min. Isolated SVE zones 5 min each. Drained drum again ~ 5 min.
5/18/2017	0.01	0.02	0.02	0.02	0.02	Drained KO Drum ~5 min. Isolated SVE zones 5 min each. Drained drum again ~ 5 min.
5/25/2017	0.01	0.02	0.02	0.02	0.02	
6/2/2017	0.01	0.01	0.02	0.02	-	Unable to access SSD-3 and ASW-2; credit union busy
6/9/2017	0.02	0.02	0.02	0.02	0.01	
6/23/2017	0.01	0.01	0.02	0.02	0.02	
6/30/2017	0.01	0.01	0.02	0.02	0.02	
7/7/2017	-	-	-	-	-	
7/14/2017	0.01	0.01	0.02	0.02	0.01	
7/21/2017	0.01	0.02	0.02	0.02	0.01	
7/28/2017	0.02	0.02	0.02	0.01	0.02	PID not available. AS off @ motor starter 10:40 for next week groundwater sampling.
8/4/2017	0.02	0.02	0.02	0.02	0.02	
8/11/2017	0.01	0.01	0.03	0.02	0.02	
8/18/2017	0.01	0.01	0.03	0.02	0.01	
8/24/2017	0.02	0.02	0.02	0.03	0.02	AS off. Blue Mountain Mech installed new coupling on AS compressor
9/1/2017	0.02	0.01	0.02	0.03	0.01	
9/8/2017	-	-	-	-	-	
9/15/2017	0.01	0.02	0.02	0.02	0.01	Restarted AS. Timer set to start at 2:00, 8:00, 14:00, and 20:00 for 30 min cycles
9/22/2017	0.01	0.01	0.02	0.02	0.01	
9/28/2017	0.03	0.03	0.03	0.03	0.01	
10/6/2017	0.02	0.02	0.02	0.02	0.01	
10/11/2017	0.03	0.02	0.03	0.02	0.01	
10/20/2017	0.02	0.03	0.02	0.02	0.02	
10/26/2017	0.02	0.02	0.03	0.02	0.01	
11/3/2017	0.03	0.02	0.03	0.03	0.01	
11/9/2017	0.02	0.02	0.03	0.02	0.01	
11/16/2017	0.04	0.04	0.03	0.03	0.02	
11/22/2017	0.03	0.02	0.02	0.02	0.01	
12/1/2017	0.01	0.01	0.02	0.02	0.01	

Notes:

ND - No data, not applicable

WC - Water column

APPENDIX C

GROUNDWATER MONITORING DATA

Table C-1. AOC 9-2 Depth to Water and Groundwater Parameter Measurements.

Well ID TOC Elevation	Date	DTW (ft btoc)	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	-	-	-	-	-
	18-Apr-16	21.03	215.87	-	-	-	-	-
	18-Aug-16	28.01	208.89	-	-	-	-	-
	2-Mar-17	23.18	213.72	-	-	-	-	-
	31-Jul-17	26.51	210.39	-	-	-	-	-
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	-	-	-	-	-

Table C-1. AOC 9-2 Depth to Water and Groundwater Parameter Measurements.

Well ID TOC Elevation	Date	DTW (ft btoc)	GWELEV (ft AMSL)	pH	Cond. (µS/cm)	DO (ppm)	ORP (mv)	Temp ºC
95 A17-2 Cont.	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	-	-	-	-	-
	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-Nov-07	28.82	205.97	6.06	0.107	-	-	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
	18-Apr-16	22.09	213.81	6.44	0.173	5.83	170	18.73
	18-Aug-16	27.15	208.75	6.82	0.161	7.03	168	17.34
	2-Mar-17	22.40	213.50	6.47	0.18	4.15	80	13.30
	31-Jul-17	25.57	210.33	6.32	0.162	8.4	129	20.5
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	-	-	-	-	-

Table C-1. AOC 9-2 Depth to Water and Groundwater Parameter Measurements.

Well ID TOC Elevation	Date	DTW (ft btoc)	GWELEV (ft AMSL)	pH	Cond. (µS/cm)	DO (ppm)	ORP (mv)	Temp ºC
95 A17-3a Cont.	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
	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
	18-Apr-16	21.43	214.47	6.32	0.212	3.38	-79	16.6
	18-Aug-16	27.8	208.10	6.55	0.230	0.99	63	16.7
	2-Mar-17	22.85	213.05	6.6	0.299	0	5	13.70
	31-Jul-17	26.02	209.88	6.27	0.270	1.64	-105	16
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

Table C-1. AOC 9-2 Depth to Water and Groundwater Parameter Measurements.

Well ID TOC Elevation	Date	DTW (ft btoc)	GWELEV (ft AMSL)	pH	Cond. (µS/cm)	DO (ppm)	ORP (mv)	Temp ºC
95 A17-4	9-Sep-11	27.45	209.35	6.09	0.13	5.90	353.00	14.30
Cont.	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	-	-	-	-	-
	18-Apr-16	22.42	214.38	6.46	0.16	5.39	191	18.11
	18-Aug-16	27.39	209.41	-	-	-	-	-
	2-Mar-17	22.50	214.3	6.65	0.16	7.40	121.00	13.10
	31-Jul-17	25.86	210.94	-	-	-	-	-
96 A17-5	1-Feb-96	22.44	211.14	-	-	-	-	-
233.9	1-Sep-96	26.2	207.38	-	-	-	-	-
	1-Mar-97	20.75	212.83	-	-	-	-	-
	1-Aug-97	24.6	208.98	-	-	-	-	-
	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	-	-	-	-	-
	21-Apr-15	23.57	210.33	-	-	-	-	-
	1-Sep-15	27.51	206.39	-	-	-	-	-
	18-Apr-16	21.36	212.54	-	-	-	-	-
	18-Aug-16	28.04	205.86	-	-	-	-	-
	2-Mar-17	21.52	212.38	-	-	-	-	-
	31-Jul-17	24.61	209.29	-	-	-	-	-

Table C-1. AOC 9-2 Depth to Water and Groundwater Parameter Measurements.

Well ID TOC Elevation	Date	DTW (ft btoc)	GWELEV (ft AMSL)	pH	Cond. (µS/cm)	DO (ppm)	ORP (mv)	Temp ºC
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	-	-	-	-	-
	18-Apr-16	20.26	214.84	-	-	-	-	-
	18-Aug-16	26.11	208.99	-	-	-	-	-
	2-Mar-17	20.40	214.7	-	-	-	-	-
	31-Jul-17	23.49	211.61	-	-	-	-	-
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
	18-Apr-16	21.43	211.77	6.8	0.149	0.47	-84	13.36
	18-Aug-16	25.00	208.20	5.75	0.123	0.67	16	13.8
	2-Mar-17	21.52	211.68	7.24	0.170	0.0	180	10.44
	31-Jul-17	24.67	208.53	6.59	0.203	5.43	-104	18
10-A17-8 235.8	29-Nov-10	26.87	208.93	-	-	-	-	-
	25-Feb-11	24.30	211.50	-	-	-	-	-

Table C-1. AOC 9-2 Depth to Water and Groundwater Parameter Measurements.

Well ID TOC Elevation	Date	DTW (ft btoc)	GWELEV (ft AMSL)	pH	Cond. (µS/cm)	DO (ppm)	ORP (mv)	Temp ºC
10-A17-8	9-Sep-11	26.68	209.12	5.82	0.208	1.99	230	16
Cont.	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
	18-Apr-16	16.93	218.87	7.18	0.153	8.53	156	19.21
	18-Aug-16	26.83	208.97	7.56	0.194	6.07	146	19.92
	2-Mar-17	22.25	213.55	6.2	0.34	0.0	46	13.25
	31-Jul-17	25.55	210.25	6.38	0.271	0.94	-105	21.06

Notes:

TOC = Top of casing

DTW (ft btoc) = Depth to water (feet below top of casing). Static DTW collected prior to purging beginning in 2015

GWELEV (ft AMSL) = Groundwater elevation (feet above mean sea level). Datum: NGVD 1929

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 C-2. Results of Groundwater Sampling for TPH-G and BTEX Concentrations

Well ID	Date	TPH-G (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl benzene (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
	19-Apr-16	25U	0.1U	0.1U	0.1U	0.4U
	29-Aug-16	25U	0.1U	0.1U	0.1U	0.2U
	2-Mar-17	13J	0.1U	0.1U	0.1U	0.2U
	31-Jul-17	58J	0.1U	0.1U	0.1U	0.2U
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

Table C-2. Results of Groundwater Sampling for TPH-G and BTEX Concentrations

Well ID	Date	TPH-G (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl benzene (µg/L)	Total Xylenes (µg/L)
95-A17-3a	25-Aug-09	27,300	209	245	629	2,370
Cont.	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
	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
	19-Apr-16	61J	0.1U	0.1U	0.1U	0.4U
	29-Aug-16	610Y	1.9	6.9	13	66
	2-Mar-17	1,500Y	3.4	18	21	132
	31-Jul-17	1,300F	8.8	15	35	83
Duplicate	31-Jul-17	1,300F	8.6	14	34	79
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
	19-Apr-16	25U	0.34	0.48	0.22	6.5
	2-Mar-17	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
07-A17-7	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
Duplicate	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
	24-Feb-11	50U	1U	1U	1U	3U

Table C-2. Results of Groundwater Sampling for TPH-G and BTEX Concentrations

Well ID	Date	TPH-G (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl benzene (µg/L)	Total Xylenes (µg/L)
07-A17-7	9-Sep-11	1,600	44	15	79	46
Cont.	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
	19-Apr-16	10J	0.08	0.08	0.1U	0.4U
	29-Aug-16	25U	0.1U	0.1U	0.1U	0.34J
	2-Mar-17	25U	0.1U	0.1U	0.1U	0.2U
	31-Jul-17	25U	0.1U	0.1U	0.1U	0.2U
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
	18-Apr-16	14J	0.14	0.57	0.07	1.6
Duplicate	18-Apr-16	15J	0.14J	0.52	0.08J	1.48
	29-Aug-16	230J	3	3.8	5.2	26
Duplicate	29-Aug-16	230J	3.1	3.9	5.4	27
	2-Mar-17	3,900Y	43	150D	74	470D
Duplicate	2-Mar-17	3,800Y	41	150D	72	460D
	31-Jul-17	12,000D	94D	390D	460D	1,640
MTCA Cleanup Level		800	5	1,000	700	1,000

Table C-2. Results of Groundwater Sampling for TPH-G and BTEX Concentrations

Well ID	Date	TPH-G (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl benzene (µg/L)	Total Xylenes (µg/L)

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 result reporting limit

\- = No data, not applicable

* = It is suspected that these samples' labels were switched

** = Sample was labelled as 95-A17-2 by mistake

APPENDIX D

AIR SAMPLE DATA AND CHAIN OF CUSTODY FORMS (PROVIDED ON CD)

eurofins | Air Toxics

4/11/2017
Mr. Scott Elkind
Sealaska Environmental Services, LLC
18743 Front St NE, Suite 201
PO Box 869
Poulsbo WA 98370

Project Name: AOC 92
Project #: 01B
Workorder #: 1703557

Dear Mr. Scott Elkind

The following report includes the data for the above referenced project for sample(s) received on 3/30/2017 at Air Toxics Ltd.

The data and associated QC analyzed by TO-15 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Kelly Buettner at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Kelly Buettner

Project Manager

eurofins | Air Toxics

WORK ORDER #: 1703557

Work Order Summary

CLIENT:	Mr. Scott Elkind Sealaska Environmental Services, LLC 18743 Front St NE, Suite 201 PO Box 869 Poulsbo, WA 98370	**BILL TO:**	Ms. Sandi Walker Sealaska Environmental Services, LLC 1200 6th Ave, Suite 800 Seattle, WA 98101
PHONE:	360-930-3187	**P.O. #**	01331
FAX:		**PROJECT #**	01B AOC 92
DATE RECEIVED:	03/30/2017	**CONTACT:**	Kelly Buettner
DATE COMPLETED:	04/05/2017		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	AOC92170328SVE1000	TO-15	Tedlar Bag	Tedlar Bag
01AA	AOC92170328SVE1000 Lab Duplicate	TO-15	Tedlar Bag	Tedlar Bag
02A	AOC92170328SVE1300	TO-15	Tedlar Bag	Tedlar Bag
02AA	AOC92170328SVE1300 Lab Duplicate	TO-15	Tedlar Bag	Tedlar Bag
03A	AOC92170328SVE1530	TO-15	Tedlar Bag	Tedlar Bag
04A	AOC92170328SVE1800	TO-15	Tedlar Bag	Tedlar Bag
05A	AOC92170328SVEDUP	TO-15	Tedlar Bag	Tedlar Bag
06A	Lab Blank	TO-15	NA	NA
06B	Lab Blank	TO-15	NA	NA
07A	CCV	TO-15	NA	NA
07B	CCV	TO-15	NA	NA
08A	LCS	TO-15	NA	NA
08AA	LCSD	TO-15	NA	NA
08B	LCS	TO-15	NA	NA
08BB	LCSD	TO-15	NA	NA

CERTIFIED BY: Heidi Hayes DATE: 04/11/17

Technical Director

Certification numbers: AZ Licensure AZ0775, NJ NELAP - CA016, NY NELAP - 11291,
TX NELAP - T104704434-16-11, UT NELAP CA0093332016-7, VA NELAP - 8113, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005, Effective date: 10/18/2016, Expiration date: 10/17/2017.
Eurofins Air Toxics Inc.. certifies that the test results contained in this report meet all requirements of the NELAC standards

LABORATORY NARRATIVE
DoD QSM 5.0 - TO-15
Sealaska Environmental Services, LLC
Workorder# 1703557

Five 1 Liter Tedlar Bag samples were received on March 30, 2017. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

This workorder was independently validated prior to submittal using 'USEPA National Functional Guidelines' as generally applied to the analysis of volatile organic compounds in air. A rules-based, logic driven, independent validation engine was employed to assess completeness, evaluate pass/fail of relevant project quality control requirements and verification of all quantified amounts.

Modifications to DoD QSM 5.0 requirements are listed in the table below.

Requirement	***TO-15 DoD QSM 5.0***	***ATL Modifications***
DoD QSM 5.0 Module 4 (1.7.1.1.j, 1.5.2.1.b, 1.5.2.2.c) Surrogates	Quantification of surrogates requires a multi-point calibration and determination of DL and LOQ.	Quantification achieved using a multipoint calibration at a single concentration, analogous to internal standards. DLs and LOQs are not established.

Receiving Notes

The Chain of Custody (COC) information for sample AOC92170328SVE1800 did not match the entry on the sample tag with regard to sample identification. The information on the COC was used to process and report the sample.

Analytical Notes

Method TO-15 is validated for samples collected in specially treated canisters. As such, the use of Tedlar bags for sample collection is outside the scope of the method and not recommended for ambient or indoor air samples. It is the responsibility of the data user to determine the usability of TO-15 results generated from Tedlar bags.

As per client project requirements, the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit.

A single point calibration for TPH referenced to Gasoline was performed for each daily analytical batch. Recovery is reported as 100% in the associated results for each CCV.

Definition of Data Qualifying Flags

Eight qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit, LOD, or MDL value. See data page for project specific U-flag definition.

UJ- Non-detected compound associated with low bias in the CCV

N - The identification is based on presumptive evidence.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

EPA METHOD TO-15 GC/MS FULL SCAN
AOC 92

Client ID:	AOC92170328SVE1000		
Lab ID:	1703557-01A	**Date/Time Analyzed:**	3/31/17 04:40 PM
Date/Time Collecte	3/28/17 10:00 AM	**Dilution Factor:**	1.00
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msda.i / a033112

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.23	0.80	1.6	Not Detected U
Ethyl Benzene	100-41-4	0.23	1.1	2.2	Not Detected U
m,p-Xylene	108-38-3	0.32	1.1	2.2	0.33 J
o-Xylene	95-47-6	0.39	1.1	2.2	Not Detected U
Toluene	108-88-3	0.17	0.94	1.9	4.8
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	530

U = The analyte was not detected above the MDL.
J = Estimated value.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	78-116	106
4-Bromofluorobenzene	460-00-4	83-118	103
Toluene-d8	2037-26-5	87-115	100

EPA METHOD TO-15 GC/MS FULL SCAN
AOC 92

Client ID:	AOC92170328SVE1000 Lab Duplicate		
Lab ID:	1703557-01AA	**Date/Time Analyzed:**	3/31/17 05:07 PM
Date/Time Collecte	3/28/17 10:00 AM	**Dilution Factor:**	1.00
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msda.i / a033113

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.23	0.80	1.6	Not Detected U
Ethyl Benzene	100-41-4	0.23	1.1	2.2	Not Detected U
m,p-Xylene	108-38-3	0.32	1.1	2.2	Not Detected U
o-Xylene	95-47-6	0.39	1.1	2.2	Not Detected U
Toluene	108-88-3	0.17	0.94	1.9	4.6
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	740

U = The analyte was not detected above the MDL.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	78-116	107
4-Bromofluorobenzene	460-00-4	83-118	102
Toluene-d8	2037-26-5	87-115	99

EPA METHOD TO-15 GC/MS FULL SCAN
AOC 92

Client ID:	AOC92170328SVE1300		
Lab ID:	1703557-02A	**Date/Time Analyzed:**	3/30/17 11:19 PM
Date/Time Collecte	3/28/17 01:00 PM	**Dilution Factor:**	1.00
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msd3.i / 3033018

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.16	0.61	1.6	Not Detected U
Ethyl Benzene	100-41-4	0.32	0.82	2.2	Not Detected U
m,p-Xylene	108-38-3	0.26	0.82	2.2	Not Detected U
o-Xylene	95-47-6	0.41	0.82	2.2	Not Detected U
Toluene	108-88-3	0.22	0.72	1.9	2.0
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	900

U = The analyte was not detected above the MDL.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	78-116	113
4-Bromofluorobenzene	460-00-4	83-118	106
Toluene-d8	2037-26-5	87-115	103

EPA METHOD TO-15 GC/MS FULL SCAN
AOC 92

Client ID:	AOC92170328SVE1300 Lab Duplicate		
Lab ID:	1703557-02AA	**Date/Time Analyzed:**	3/30/17 11:45 PM
Date/Time Collecte	3/28/17 01:00 PM	**Dilution Factor:**	1.00
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msd3.i / 3033019

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.16	0.61	1.6	Not Detected U
Ethyl Benzene	100-41-4	0.32	0.82	2.2	Not Detected U
m,p-Xylene	108-38-3	0.26	0.82	2.2	Not Detected U
o-Xylene	95-47-6	0.41	0.82	2.2	Not Detected U
Toluene	108-88-3	0.22	0.72	1.9	1.9
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	1100

U = The analyte was not detected above the MDL.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	78-116	114
4-Bromofluorobenzene	460-00-4	83-118	107
Toluene-d8	2037-26-5	87-115	105

EPA METHOD TO-15 GC/MS FULL SCAN
AOC 92

Client ID:	AOC92170328SVE1530		
Lab ID:	1703557-03A	**Date/Time Analyzed:**	3/31/17 12:12 AM
Date/Time Collecte	3/28/17 03:30 PM	**Dilution Factor:**	1.00
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msd3.i / 3033020

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.16	0.61	1.6	Not Detected U
Ethyl Benzene	100-41-4	0.32	0.82	2.2	Not Detected U
m,p-Xylene	108-38-3	0.26	0.82	2.2	Not Detected U
o-Xylene	95-47-6	0.41	0.82	2.2	Not Detected U
Toluene	108-88-3	0.22	0.72	1.9	2.0
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	490

U = The analyte was not detected above the MDL.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	78-116	113
4-Bromofluorobenzene	460-00-4	83-118	106
Toluene-d8	2037-26-5	87-115	104

EPA METHOD TO-15 GC/MS FULL SCAN
AOC 92

Client ID:	AOC92170328SVE1800		
Lab ID:	1703557-04A	**Date/Time Analyzed:**	3/31/17 12:38 AM
Date/Time Collecte	3/28/17 06:00 PM	**Dilution Factor:**	1.00
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msd3.i / 3033021

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.16	0.61	1.6	0.42 J
Ethyl Benzene	100-41-4	0.32	0.82	2.2	Not Detected U
m,p-Xylene	108-38-3	0.26	0.82	2.2	0.47 J
o-Xylene	95-47-6	0.41	0.82	2.2	Not Detected U
Toluene	108-88-3	0.22	0.72	1.9	2.6
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	610

J = Estimated value.
U = The analyte was not detected above the MDL.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	78-116	111
4-Bromofluorobenzene	460-00-4	83-118	107
Toluene-d8	2037-26-5	87-115	105

EPA METHOD TO-15 GC/MS FULL SCAN
AOC 92

Client ID:	AOC92170328SVEDUP		
Lab ID:	1703557-05A	**Date/Time Analyzed:**	3/31/17 01:04 AM
Date/Time Collecte	3/28/17 08:00 AM	**Dilution Factor:**	1.00
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msd3.i / 3033022

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.16	0.61	1.6	Not Detected U
Ethyl Benzene	100-41-4	0.32	0.82	2.2	Not Detected U
m,p-Xylene	108-38-3	0.26	0.82	2.2	Not Detected U
o-Xylene	95-47-6	0.41	0.82	2.2	Not Detected U
Toluene	108-88-3	0.22	0.72	1.9	2.3
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	490

U = The analyte was not detected above the MDL.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	78-116	115
4-Bromofluorobenzene	460-00-4	83-118	108
Toluene-d8	2037-26-5	87-115	103

EPA METHOD TO-15 GC/MS FULL SCAN
AOC 92

Client ID:	Lab Blank		
Lab ID:	1703557-06A	**Date/Time Analyzed:**	3/30/17 03:12 PM
Date/Time Collecte	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd3.i / 3033007e

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.16	0.61	1.6	Not Detected U
Ethyl Benzene	100-41-4	0.32	0.82	2.2	Not Detected U
m,p-Xylene	108-38-3	0.26	0.82	2.2	Not Detected U
o-Xylene	95-47-6	0.41	0.82	2.2	Not Detected U
Toluene	108-88-3	0.22	0.72	1.9	Not Detected U
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	Not Detected

U = The analyte was not detected above the MDL.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	78-116	114
4-Bromofluorobenzene	460-00-4	83-118	99
Toluene-d8	2037-26-5	87-115	104

EPA METHOD TO-15 GC/MS FULL SCAN
AOC 92

Client ID:	Lab Blank		
Lab ID:	1703557-06B	**Date/Time Analyzed:**	3/31/17 03:10 PM
Date/Time Collecte	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msda.i / a033111c

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.23	0.80	1.6	Not Detected U
Ethyl Benzene	100-41-4	0.23	1.1	2.2	Not Detected U
m,p-Xylene	108-38-3	0.32	1.1	2.2	Not Detected U
o-Xylene	95-47-6	0.39	1.1	2.2	Not Detected U
Toluene	108-88-3	0.17	0.94	1.9	Not Detected U
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	Not Detected

U = The analyte was not detected above the MDL.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	78-116	110
4-Bromofluorobenzene	460-00-4	83-118	108
Toluene-d8	2037-26-5	87-115	98

EPA METHOD TO-15 GC/MS FULL SCAN
AOC 92

Client ID:	CCV		
Lab ID:	1703557-07A	**Date/Time Analyzed:**	3/30/17 09:46 AM
Date/Time Collecte	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd3.i / 3033002a

Compound	CAS#	%Recovery
Benzene	71-43-2	112
Ethyl Benzene	100-41-4	102
m,p-Xylene	108-38-3	101
o-Xylene	95-47-6	100
Toluene	108-88-3	111
TPH ref. to Gasoline (MW=100)	9999-9999-038	100

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	78-116	113
4-Bromofluorobenzene	460-00-4	83-118	104
Toluene-d8	2037-26-5	87-115	105

EPA METHOD TO-15 GC/MS FULL SCAN
AOC 92

Client ID:	CCV		
Lab ID:	1703557-07B	**Date/Time Analyzed:**	3/31/17 09:05 AM
Date/Time Collecte	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msda.i / a033102a

Compound	CAS#	%Recovery
Benzene	71-43-2	82
Ethyl Benzene	100-41-4	91
m,p-Xylene	108-38-3	92
o-Xylene	95-47-6	95
Toluene	108-88-3	85
TPH ref. to Gasoline (MW=100)	9999-9999-038	100

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	78-116	106
4-Bromofluorobenzene	460-00-4	83-118	107
Toluene-d8	2037-26-5	87-115	98

EPA METHOD TO-15 GC/MS FULL SCAN
AOC 92

Client ID:	LCS		
Lab ID:	1703557-08A	**Date/Time Analyzed:**	3/30/17 10:47 AM
Date/Time Collecte	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd3.i / 3033003a

Compound	CAS#	%Recovery
Benzene	71-43-2	116
Ethyl Benzene	100-41-4	104
m,p-Xylene	108-38-3	103
o-Xylene	95-47-6	101
Toluene	108-88-3	114
TPH ref. to Gasoline (MW=100)	9999-9999-038	Not Spiked

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	78-116	110
4-Bromofluorobenzene	460-00-4	83-118	104
Toluene-d8	2037-26-5	87-115	105

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS FULL SCAN
AOC 92

Client ID:	LCSD		
Lab ID:	1703557-08AA	**Date/Time Analyzed:**	3/30/17 11:14 AM
Date/Time Collecte	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd3.i / 3033004a

Compound	CAS#	%Recovery
Benzene	71-43-2	114
Ethyl Benzene	100-41-4	102
m,p-Xylene	108-38-3	102
o-Xylene	95-47-6	102
Toluene	108-88-3	112
TPH ref. to Gasoline (MW=100)	9999-9999-038	Not Spiked

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	78-116	113
4-Bromofluorobenzene	460-00-4	83-118	101
Toluene-d8	2037-26-5	87-115	104

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS FULL SCAN
AOC 92

Client ID:	LCS		
Lab ID:	1703557-08B	**Date/Time Analyzed:**	3/31/17 09:29 AM
Date/Time Collecte	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msda.i / a033103a

Compound	CAS#	%Recovery
Benzene	71-43-2	81
Ethyl Benzene	100-41-4	88
m,p-Xylene	108-38-3	92
o-Xylene	95-47-6	95
Toluene	108-88-3	85
TPH ref. to Gasoline (MW=100)	9999-9999-038	Not Spiked

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	78-116	109
4-Bromofluorobenzene	460-00-4	83-118	107
Toluene-d8	2037-26-5	87-115	98

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS FULL SCAN
AOC 92

Client ID:	LCSD		
Lab ID:	1703557-08BB	**Date/Time Analyzed:**	3/31/17 09:54 AM
Date/Time Collecte	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msda.i / a033104a

Compound	CAS#	%Recovery
Benzene	71-43-2	83
Ethyl Benzene	100-41-4	88
m,p-Xylene	108-38-3	90
o-Xylene	95-47-6	96
Toluene	108-88-3	84
TPH ref. to Gasoline (MW=100)	9999-9999-038	Not Spiked

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	78-116	107
4-Bromofluorobenzene	460-00-4	83-118	104
Toluene-d8	2037-26-5	87-115	96

* % Recovery is calculated using unrounded analytical results.

eurofins | Air Toxics

Sample Transportation Notice

Relinquishing signature on this document indicates that sample is being shipped in compliance with all applicable local, State, Federal, national, and international laws, regulations and ordinances of any kind. Air Toxics Limited assumes no liability with respect to the collection, handling or shipping of these samples. Relinquishing signature also indicates agreement to hold harmless, defend, and indemnify Air Toxics Limited against any claim, demand, or action, of any kind, related to the collection, handling, or shipping of samples. D.O.T. Hotline (800) 467-4922

180 BLUE RAVINE ROAD, SUITE B
FOLSOM, CA 95630-4719
(916) 985-1000 FAX (916) 985-1020

Project Manager SCOTT ELKIND

Collected by: (Print and Sign) TOM MALAMAKAL

Company SEALASKA Email SCOTT.ELKIND@SEALASKA.COM

Address 18743 FRONT ST NE STE 201 City POULSBO State WA Zip 98370

Phone 360-930-3187 Fax

Project Info:

P.O. # 01331

Project # 01B

Project Name AOC92

Turn Around Time:

☑ Normal

☐ Rush

specify

Lab Use Only

Pressurized by:

Date:

Pressurization Gas: N_2 He

Lab I.D.	Field Sample I.D. (Location)	Can #	Date of Collection	Time of Collection	Analyses Requested	Canister Pressure/Vacuum Initial	Final	Receipt	Final (psi)
01A	~~AOC92~~ AOC92170328SVE1000	TEDLAR	3-28-17	1000	TO-15 BTEX, TPH-G				
02A	AOC92170328SVE1300	TEDLAR	3-28-17	1300	TO-15 BTEX, TPH-G				
03A	AOC92170328SVE1530	TEDLAR	3-28-17	1530	TO-15 BTEX, TPH-G				
04A	AOC92170328SVE1800	TEDLAR	3-28-17	1800	TO-15 BTEX, TPH-G				
05A	AOC92170328SVEDUP	TEDLAR	3-28-17	800	TO-15 BTEX, TPH-G				

Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
	3-29-17 1000		3/30/17 1020
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time

Notes:

Lab Use Only	Shipper Name	Air Bill #	Temp (°C)	Condition	Custody Seals Intact?	Work Order #
	Fed Ex		1.4	Good	Yes No None	1703557

Form 1293 rev.11

eurofins | Air Toxics

6/28/2017

Mr. Scott Elkind
Sealaska Environmental Services, LLC
18743 Front St NE, Suite 201
PO Box 869
Poulsbo WA 98370

Project Name: AOC 9-2
Project #: JBLM
Workorder #: 1706292

Dear Mr. Scott Elkind

The following report includes the data for the above referenced project for sample(s) received on 6/15/2017 at Air Toxics Ltd.

The data and associated QC analyzed by TO-15 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Kelly Buettner at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Kelly Buettner

Project Manager

eurofins | Air Toxics

WORK ORDER #: 1706292

Work Order Summary

CLIENT:	Mr. Scott Elkind Sealaska Environmental Services, LLC 18743 Front St NE, Suite 201 PO Box 869 Poulsbo, WA 98370	**BILL TO:**	Ms. Sandi Walker Sealaska Environmental Services, LLC 1200 6th Ave, Suite 800 Seattle, WA 98101
PHONE:	360-930-3187	**P.O. #**	01331
FAX:		**PROJECT #**	JBLM AOC 9-2
DATE RECEIVED:	06/15/2017	**CONTACT:**	Kelly Buettner
DATE COMPLETED:	06/20/2017		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	AOC92170613SVE1000	TO-15	Tedlar Bag	Tedlar Bag
02A	AOC92170613SVE1300	TO-15	Tedlar Bag	Tedlar Bag
03A	AOC92170613SVE1530	TO-15	Tedlar Bag	Tedlar Bag
04A	AOC92170613SVE1800	TO-15	Tedlar Bag	Tedlar Bag
05A	AOC92170613SVEDUP	TO-15	Tedlar Bag	Tedlar Bag
05AA	AOC92170613SVEDUP Lab Duplicate	TO-15	Tedlar Bag	Tedlar Bag
06A	Lab Blank	TO-15	NA	NA
07A	CCV	TO-15	NA	NA
08A	LCS	TO-15	NA	NA
08AA	LCSD	TO-15	NA	NA

CERTIFIED BY: Heidi Hayes DATE: 06/26/17

Technical Director

Certification numbers: AZ Licensure AZ0775, NJ NELAP - CA016, NY NELAP - 11291,
TX NELAP - T104704434-16-11, UT NELAP CA0093332016-7, VA NELAP - 8113, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005, Effective date: 10/18/2016, Expiration date: 10/17/2017.
Eurofins Air Toxics Inc.. certifies that the test results contained in this report meet all requirements of the NELAC standards

LABORATORY NARRATIVE
DoD QSM 5.0 - TO-15
Sealaska Environmental Services, LLC
Workorder# 1706292

Five 1 Liter Tedlar Bag samples were received on June 15, 2017. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

This workorder was independently validated prior to submittal using 'USEPA National Functional Guidelines' as generally applied to the analysis of volatile organic compounds in air. A rules-based, logic driven, independent validation engine was employed to assess completeness, evaluate pass/fail of relevant project quality control requirements and verification of all quantified amounts.

Modifications to DoD QSM 5.0 requirements are listed in the table below.

Requirement	*TO-15 DoD QSM 5.0*	*ATL Modifications*
DoD QSM 5.0 Module 4 (1.7.1.1.j, 1.5.2.1.b, 1.5.2.2.c) Surrogates	Quantification of surrogates requires a multi-point calibration and determination of DL and LOQ.	Quantification achieved using a multipoint calibration at a single concentration, analogous to internal standards. DLs and LOQs are not established.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

Method TO-15 is validated for samples collected in specially treated canisters. As such, the use of Tedlar bags for sample collection is outside the scope of the method and not recommended for ambient or indoor air samples. It is the responsibility of the data user to determine the usability of TO-15 results generated from Tedlar bags.

A single point calibration for TPH referenced to Gasoline was performed for each daily analytical batch. Recovery is reported as 100% in the associated results for each CCV.

A Limit of Detection (LOD) and Method Detection Limit (MDL) study are not maintained for non-standard compounds.

As per client project requirements, the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit. Concentrations that are below the level at which the canister was certified may be false positives.

Definition of Data Qualifying Flags

Eight qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit, LOD, or MDL value. See data page for project specific U-flag definition.

UJ- Non-detected compound associated with low bias in the CCV

N - The identification is based on presumptive evidence.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

EPA METHOD TO-15 GC/MS FULL SCAN
AOC 9-2

Client ID:	AOC92170613SVE1000		
Lab ID:	1706292-01A	**Date/Time Analyzed:**	6/17/17 02:24 PM
Date/Time Collecte	6/13/17 10:00 AM	**Dilution Factor:**	2.07
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msd3.i / 3061707

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.32	1.3	3.3	Not Detected U
Ethyl Benzene	100-41-4	0.42	1.8	4.5	Not Detected U
m,p-Xylene	108-38-3	0.42	1.8	4.5	1.1 J
o-Xylene	95-47-6	0.18	1.8	4.5	0.43 J
Toluene	108-88-3	0.24	1.6	3.9	6.7
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	420	610

U = The analyte was not detected above the MDL.
J = Estimated value.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	78-116	95
4-Bromofluorobenzene	460-00-4	83-118	105
Toluene-d8	2037-26-5	87-115	100

EPA METHOD TO-15 GC/MS FULL SCAN
AOC 9-2

Client ID:	AOC92170613SVE1300		
Lab ID:	1706292-02A	**Date/Time Analyzed:**	6/17/17 02:51 PM
Date/Time Collecte	6/13/17 01:00 PM	**Dilution Factor:**	2.02
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msd3.i / 3061708

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.31	1.3	3.2	Not Detected U
Ethyl Benzene	100-41-4	0.41	1.8	4.4	Not Detected U
m,p-Xylene	108-38-3	0.41	1.8	4.4	1.0 J
o-Xylene	95-47-6	0.18	1.8	4.4	Not Detected U
Toluene	108-88-3	0.24	1.5	3.8	6.0
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	410	490

U = The analyte was not detected above the MDL.
J = Estimated value.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	78-116	96
4-Bromofluorobenzene	460-00-4	83-118	107
Toluene-d8	2037-26-5	87-115	98

EPA METHOD TO-15 GC/MS FULL SCAN
AOC 9-2

Client ID:	AOC92170613SVE1530		
Lab ID:	1706292-03A	**Date/Time Analyzed:**	6/17/17 03:17 PM
Date/Time Collecte	6/13/17 03:30 PM	**Dilution Factor:**	2.08
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msd3.i / 3061709

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.32	1.3	3.3	Not Detected U
Ethyl Benzene	100-41-4	0.42	1.8	4.5	Not Detected U
m,p-Xylene	108-38-3	0.42	1.8	4.5	0.74 J
o-Xylene	95-47-6	0.19	1.8	4.5	0.28 J
Toluene	108-88-3	0.24	1.6	3.9	6.0
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	420	Not Detected

U = The analyte was not detected above the MDL.
J = Estimated value.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	78-116	97
4-Bromofluorobenzene	460-00-4	83-118	106
Toluene-d8	2037-26-5	87-115	101

EPA METHOD TO-15 GC/MS FULL SCAN
AOC 9-2

Client ID:	AOC92170613SVE1800		
Lab ID:	1706292-04A	**Date/Time Analyzed:**	6/17/17 03:43 PM
Date/Time Collecte	6/13/17 06:00 PM	**Dilution Factor:**	2.09
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msd3.i / 3061710

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.32	1.3	3.3	0.46 J
Ethyl Benzene	100-41-4	0.42	1.8	4.5	0.84 J
m,p-Xylene	108-38-3	0.42	1.8	4.5	2.0 J
o-Xylene	95-47-6	0.19	1.8	4.5	0.57 J
Toluene	108-88-3	0.24	1.6	3.9	18
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	430	1100

J = Estimated value.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	78-116	97
4-Bromofluorobenzene	460-00-4	83-118	105
Toluene-d8	2037-26-5	87-115	99

EPA METHOD TO-15 GC/MS FULL SCAN
AOC 9-2

Client ID:	AOC92170613SVEDUP		
Lab ID:	1706292-05A	**Date/Time Analyzed:**	6/17/17 04:09 PM
Date/Time Collecte	6/13/17 03:35 PM	**Dilution Factor:**	2.08
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msd3.i / 3061711

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.32	1.3	3.3	Not Detected U
Ethyl Benzene	100-41-4	0.42	1.8	4.5	Not Detected U
m,p-Xylene	108-38-3	0.42	1.8	4.5	0.81 J
o-Xylene	95-47-6	0.19	1.8	4.5	0.27 J
Toluene	108-88-3	0.24	1.6	3.9	6.7
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	420	490

U = The analyte was not detected above the MDL.
J = Estimated value.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	78-116	97
4-Bromofluorobenzene	460-00-4	83-118	106
Toluene-d8	2037-26-5	87-115	99

EPA METHOD TO-15 GC/MS FULL SCAN
AOC 9-2

Client ID:	AOC92170613SVEDUP Lab Duplicate		
Lab ID:	1706292-05AA	**Date/Time Analyzed:**	6/17/17 04:35 PM
Date/Time Collecte	6/13/17 03:35 PM	**Dilution Factor:**	2.08
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msd3.i / 3061712

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.32	1.3	3.3	Not Detected U
Ethyl Benzene	100-41-4	0.42	1.8	4.5	Not Detected U
m,p-Xylene	108-38-3	0.42	1.8	4.5	0.58 J
o-Xylene	95-47-6	0.19	1.8	4.5	Not Detected U
Toluene	108-88-3	0.24	1.6	3.9	6.5
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	420	530

U = The analyte was not detected above the MDL.
J = Estimated value.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	78-116	97
4-Bromofluorobenzene	460-00-4	83-118	106
Toluene-d8	2037-26-5	87-115	100

EPA METHOD TO-15 GC/MS FULL SCAN
AOC 9-2

Client ID:	Lab Blank		
Lab ID:	1706292-06A	**Date/Time Analyzed:**	6/17/17 11:28 AM
Date/Time Collecte	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd3.i / 3061706a

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.15	0.64	1.6	Not Detected U
Ethyl Benzene	100-41-4	0.20	0.87	2.2	Not Detected U
m,p-Xylene	108-38-3	0.20	0.87	2.2	Not Detected U
o-Xylene	95-47-6	0.090	0.87	2.2	Not Detected U
Toluene	108-88-3	0.12	0.75	1.9	Not Detected U
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	Not Detected

U = The analyte was not detected above the MDL.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	78-116	95
4-Bromofluorobenzene	460-00-4	83-118	101
Toluene-d8	2037-26-5	87-115	100

EPA METHOD TO-15 GC/MS FULL SCAN
AOC 9-2

Client ID:	CCV		
Lab ID:	1706292-07A	**Date/Time Analyzed:**	6/17/17 07:48 AM
Date/Time Collecte	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd3.i / 3061702a

Compound	CAS#	%Recovery
Benzene	71-43-2	104
Ethyl Benzene	100-41-4	102
m,p-Xylene	108-38-3	102
o-Xylene	95-47-6	101
Toluene	108-88-3	104
TPH ref. to Gasoline (MW=100)	9999-9999-038	100

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	78-116	91
4-Bromofluorobenzene	460-00-4	83-118	104
Toluene-d8	2037-26-5	87-115	101

EPA METHOD TO-15 GC/MS FULL SCAN
AOC 9-2

Client ID:	LCS		
Lab ID:	1706292-08A	**Date/Time Analyzed:**	6/17/17 08:11 AM
Date/Time Collecte	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd3.i / 3061703a

Compound	CAS#	%Recovery
Benzene	71-43-2	108
Ethyl Benzene	100-41-4	107
m,p-Xylene	108-38-3	106
o-Xylene	95-47-6	107
Toluene	108-88-3	108
TPH ref. to Gasoline (MW=100)	9999-9999-038	Not Spiked

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	78-116	93
4-Bromofluorobenzene	460-00-4	83-118	104
Toluene-d8	2037-26-5	87-115	102

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS FULL SCAN
AOC 9-2

Client ID:	LCSD		
Lab ID:	1706292-08AA	**Date/Time Analyzed:**	6/17/17 08:34 AM
Date/Time Collecte	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd3.i / 3061704a

Compound	CAS#	%Recovery
Benzene	71-43-2	112
Ethyl Benzene	100-41-4	111
m,p-Xylene	108-38-3	110
o-Xylene	95-47-6	109
Toluene	108-88-3	112
TPH ref. to Gasoline (MW=100)	9999-9999-038	Not Spiked

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	78-116	94
4-Bromofluorobenzene	460-00-4	83-118	104
Toluene-d8	2037-26-5	87-115	103

* % Recovery is calculated using unrounded analytical results.

eurofins | Air Toxics

Sample Transportation Notice
Relinquishing signature on this document indicates that sample is being shipped in compliance with all applicable local, State, Federal, national, and international laws, regulations and ordinances of any kind. Air Toxics Limited assumes no liability with respect to the collection, handling or shipping of these samples. Relinquishing signature also indicates agreement to hold harmless, defend, and indemnify Air Toxics Limited against any claim, demand, or action, of any kind, related to the collection, handling, or shipping of samples. D.O.T. Hotline (800) 467-4922

180 BLUE RAVINE ROAD, SUITE B
FOLSOM, CA 95630-4719
(916) 985-1000 FAX (916) 985-1020

Project Manager SCOTT ELKINO

Collected by: (Print and Sign) TOM MALAMAKAL SCOTT.ELKINO@SEALASKA.COM

Company SEALASKA ENVIRONMENTAL Email ~~TOM.MALAMAKAL~~

Address 18743 FRONT ST NE STE 201 City POULSBO State WA Zip 98370

Phone 360-626-3991 Fax

Project Info:
P.O. # 01331
Project # JBLM
Project Name AOC 9-2

Turn Around Time:
☑ Normal
☐ Rush
specify

Lab Use Only
Pressurized by:
Date:
Pressurization Gas: N_2 He

Lab I.D.	Field Sample I.D. (Location)	Can #	Date of Collection	Time of Collection	Analyses Requested	Canister Pressure/Vacuum Initial	Final	Receipt	Final (psi)
01A	AOC9217Ø613SVE1ØØØ	TEDLAR	6-13-17	10:00	TO-15 BTEX, TPH-G				
02A	AOC9217Ø613SVE13ØØ	TEDLAR	6-13-17	13:00	TO-15 BTEX, TPH-G				
03A	AOC9217Ø613SVE153Ø	TEDLAR	6-13-17	15:30	TO-15 BTEX, TPH-G				
04A	AOC9217Ø613SVE18ØØ	TEDLAR	6-13-17	18:00	TO-15 BTEX, TPH-G				
05A	AOC9217Ø613SVEDUP	TEDLAR	6-13-17	15:35	TO-15 BTEX, TPH-G				

Relinquished by: (signature) Date/Time	Received by: (signature) Date/Time
Tom Malamakal 6-14-17 1000	alw GAT 06/15/17 1100
Relinquished by: (signature) Date/Time	Received by: (signature) Date/Time
Relinquished by: (signature) Date/Time	Received by: (signature) Date/Time

Notes:

Lab Use Only	Shipper Name	Air Bill #	Temp (°C)	Condition	Custody Seals Intact?	Work Order #
	Fed Ex	7868 7595 1197	NA	Good	Yes No None	1706292

Form 1293 rev.11

eurofins | Air Toxics

6/28/2017

Mr. Scott Elkind
Sealaska Environmental Services, LLC
18743 Front St NE, Suite 201
PO Box 869
Poulsbo WA 98370

Project Name: AOC 9-2
Project #: JBLM
Workorder #: 1706293

Dear Mr. Scott Elkind

The following report includes the data for the above referenced project for sample(s) received on 6/15/2017 at Air Toxics Ltd.

The data and associated QC analyzed by TO-15 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Kelly Buettner at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Kelly Buettner

Project Manager

eurofins | Air Toxics

WORK ORDER #: 1706293

Work Order Summary

CLIENT:	Mr. Scott Elkind Sealaska Environmental Services, LLC 18743 Front St NE, Suite 201 PO Box 869 Poulsbo, WA 98370	**BILL TO:**	Ms. Sandi Walker Sealaska Environmental Services, LLC 1200 6th Ave, Suite 800 Seattle, WA 98101
PHONE:	360-930-3187	**P.O. #**	01331
FAX:		**PROJECT #**	JBLM AOC 9-2
DATE RECEIVED:	06/15/2017	**CONTACT:**	Kelly Buettner
DATE COMPLETED:	06/25/2017		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	AOC92170613SVP1A	TO-15	Tedlar Bag	Tedlar Bag
02A	AOC92170613SVP1B	TO-15	Tedlar Bag	Tedlar Bag
03A	AOC92170613SVP2A	TO-15	Tedlar Bag	Tedlar Bag
04A	AOC92170613SVP3A	TO-15	Tedlar Bag	Tedlar Bag
05A	AOC92170613SVP4A	TO-15	Tedlar Bag	Tedlar Bag
06A	AOC92170613SVP5A	TO-15	Tedlar Bag	Tedlar Bag
07A	AOC92170613SVP5B	TO-15	Tedlar Bag	Tedlar Bag
08A	AOC92170613SVP6A	TO-15	Tedlar Bag	Tedlar Bag
09A	AOC92170613SVP7A	TO-15	Tedlar Bag	Tedlar Bag
10A	AOC92170613SVP7B	TO-15	Tedlar Bag	Tedlar Bag
11A	AOC92170613SVP8A	TO-15	Tedlar Bag	Tedlar Bag
12A	AOC92170613SVPDUP	TO-15	Tedlar Bag	Tedlar Bag
12AA	AOC92170613SVPDUP Lab Duplicate	TO-15	Tedlar Bag	Tedlar Bag
13A	Lab Blank	TO-15	NA	NA
14A	CCV	TO-15	NA	NA
15A	LCS	TO-15	NA	NA
15AA	LCSD	TO-15	NA	NA

CERTIFIED BY: Heidi Hayes DATE: 06/26/17

Technical Director

Certification numbers: AZ Licensure AZ0775, NJ NELAP - CA016, NY NELAP - 11291,
TX NELAP - T104704434-16-11, UT NELAP CA0093332016-7, VA NELAP - 8113, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005, Effective date: 10/18/2016, Expiration date: 10/17/2017.
Eurofins Air Toxics Inc.. certifies that the test results contained in this report meet all requirements of the NELAC standards

LABORATORY NARRATIVE
DoD QSM 5.0 - TO-15
Sealaska Environmental Services, LLC
Workorder# 1706293

Twelve 1 Liter Tedlar Bag samples were received on June 15, 2017. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

This workorder was independently validated prior to submittal using 'USEPA National Functional Guidelines' as generally applied to the analysis of volatile organic compounds in air. A rules-based, logic driven, independent validation engine was employed to assess completeness, evaluate pass/fail of relevant project quality control requirements and verification of all quantified amounts.

Modifications to DoD QSM 5.0 requirements are listed in the table below.

Requirement	*TO-15 DoD QSM 5.0*	*ATL Modifications*
DoD QSM 5.0 Module 4 (1.7.1.1.j, 1.5.2.1.b, 1.5.2.2.c) Surrogates	Quantification of surrogates requires a multi-point calibration and determination of DL and LOQ.	Quantification achieved using a multipoint calibration at a single concentration, analogous to internal standards. DLs and LOQs are not established.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

Method TO-15 is validated for samples collected in specially treated canisters. As such, the use of Tedlar bags for sample collection is outside the scope of the method and not recommended for ambient or indoor air samples. It is the responsibility of the data user to determine the usability of TO-15 results generated from Tedlar bags.

A single point calibration for TPH referenced to Gasoline was performed for each daily analytical batch. Recovery is reported as 100% in the associated results for each CCV.

A Limit of Detection (LOD) and Method Detection Limit (MDL) study are not maintained for non-standard compounds.

As per client project requirements, the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit. Concentrations that are below the level at which the canister was certified may be false positives.

Definition of Data Qualifying Flags

Eight qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit, LOD, or MDL value. See data page for project specific U-flag definition.

UJ- Non-detected compound associated with low bias in the CCV

N - The identification is based on presumptive evidence.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

EPA METHOD TO-15 GC/MS FULL SCAN
AOC 9-2

Client ID:	AOC92170613SVP1A		
Lab ID:	1706293-01A	**Date/Time Analyzed:**	6/19/17 11:28 PM
Date/Time Collecte	6/13/17 08:39 AM	**Dilution Factor:**	2.09
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msdp.i / p061923

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.31	1.3	3.3	0.63 J
Ethyl Benzene	100-41-4	0.55	1.8	4.5	2.0 J
m,p-Xylene	108-38-3	0.68	1.8	4.5	7.9
o-Xylene	95-47-6	0.55	1.8	4.5	2.6 J
Toluene	108-88-3	0.48	1.6	3.9	11
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	430	940

J = Estimated value.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	78-116	92
4-Bromofluorobenzene	460-00-4	83-118	113
Toluene-d8	2037-26-5	87-115	101

EPA METHOD TO-15 GC/MS FULL SCAN
AOC 9-2

Client ID:	AOC92170613SVP1B		
Lab ID:	1706293-02A	**Date/Time Analyzed:**	6/19/17 11:02 PM
Date/Time Collecte	6/13/17 08:19 AM	**Dilution Factor:**	2.05
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msdp.i / p061922

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.30	1.3	3.3	0.88 J
Ethyl Benzene	100-41-4	0.54	1.8	4.4	2.1 J
m,p-Xylene	108-38-3	0.67	1.8	4.4	7.7
o-Xylene	95-47-6	0.54	1.8	4.4	3.2 J
Toluene	108-88-3	0.47	1.5	3.9	12
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	420	700

J = Estimated value.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	78-116	95
4-Bromofluorobenzene	460-00-4	83-118	113
Toluene-d8	2037-26-5	87-115	101

EPA METHOD TO-15 GC/MS FULL SCAN
AOC 9-2

Client ID:	AOC92170613SVP2A		
Lab ID:	1706293-03A	**Date/Time Analyzed:**	6/19/17 10:36 PM
Date/Time Collecte	6/13/17 09:04 AM	**Dilution Factor:**	2.04
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msdp.i / p061921

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.30	1.3	3.2	1.0 J
Ethyl Benzene	100-41-4	0.53	1.8	4.4	2.3 J
m,p-Xylene	108-38-3	0.67	1.8	4.4	8.7
o-Xylene	95-47-6	0.54	1.8	4.4	3.3 J
Toluene	108-88-3	0.47	1.5	3.8	12
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	420	1200

J = Estimated value.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	78-116	95
4-Bromofluorobenzene	460-00-4	83-118	116
Toluene-d8	2037-26-5	87-115	100

EPA METHOD TO-15 GC/MS FULL SCAN
AOC 9-2

Client ID:	AOC92170613SVP3A		
Lab ID:	1706293-04A	**Date/Time Analyzed:**	6/19/17 10:09 PM
Date/Time Collecte	6/13/17 09:25 AM	**Dilution Factor:**	2.07
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msdp.i / p061920

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.30	1.3	3.3	1.2 J
Ethyl Benzene	100-41-4	0.54	1.8	4.5	2.6 J
m,p-Xylene	108-38-3	0.68	1.8	4.5	9.4
o-Xylene	95-47-6	0.54	1.8	4.5	3.5 J
Toluene	108-88-3	0.47	1.6	3.9	11
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	420	1100

J = Estimated value.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	78-116	93
4-Bromofluorobenzene	460-00-4	83-118	118
Toluene-d8	2037-26-5	87-115	101

EPA METHOD TO-15 GC/MS FULL SCAN
AOC 9-2

Client ID:	AOC92170613SVP4A		
Lab ID:	1706293-05A	**Date/Time Analyzed:**	6/19/17 07:14 PM
Date/Time Collecte	6/13/17 10:00 AM	**Dilution Factor:**	2.36
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msdp.i / p061918

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.35	1.5	3.8	1.3 J
Ethyl Benzene	100-41-4	0.62	2.0	5.1	2.4 J
m,p-Xylene	108-38-3	0.77	2.0	5.1	8.6
o-Xylene	95-47-6	0.62	2.0	5.1	2.9 J
Toluene	108-88-3	0.54	1.8	4.4	15
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	480	1200

J = Estimated value.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	78-116	95
4-Bromofluorobenzene	460-00-4	83-118	118
Toluene-d8	2037-26-5	87-115	100

EPA METHOD TO-15 GC/MS FULL SCAN
AOC 9-2

Client ID:	AOC92170613SVP5A		
Lab ID:	1706293-06A	**Date/Time Analyzed:**	6/19/17 06:47 PM
Date/Time Collecte	6/13/17 10:47 AM	**Dilution Factor:**	2.03
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msdp.i / p061917

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.30	1.3	3.2	2.3 J
Ethyl Benzene	100-41-4	0.53	1.8	4.4	2.3 J
m,p-Xylene	108-38-3	0.66	1.8	4.4	8.6
o-Xylene	95-47-6	0.53	1.8	4.4	3.6 J
Toluene	108-88-3	0.46	1.5	3.8	11
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	420	1000

J = Estimated value.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	78-116	96
4-Bromofluorobenzene	460-00-4	83-118	115
Toluene-d8	2037-26-5	87-115	101

EPA METHOD TO-15 GC/MS FULL SCAN
AOC 9-2

Client ID:	AOC92170613SVP5B		
Lab ID:	1706293-07A	**Date/Time Analyzed:**	6/19/17 06:21 PM
Date/Time Collecte	6/13/17 11:03 AM	**Dilution Factor:**	2.11
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msdp.i / p061916

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.31	1.3	3.4	2.8 J
Ethyl Benzene	100-41-4	0.55	1.8	4.6	2.2 J
m,p-Xylene	108-38-3	0.69	1.8	4.6	8.7
o-Xylene	95-47-6	0.56	1.8	4.6	3.1 J
Toluene	108-88-3	0.48	1.6	4.0	11
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	430	1000

J = Estimated value.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	78-116	93
4-Bromofluorobenzene	460-00-4	83-118	114
Toluene-d8	2037-26-5	87-115	102

EPA METHOD TO-15 GC/MS FULL SCAN
AOC 9-2

Client ID:	AOC92170613SVP6A		
Lab ID:	1706293-08A	**Date/Time Analyzed:**	6/19/17 05:55 PM
Date/Time Collecte	6/13/17 10:21 AM	**Dilution Factor:**	2.06
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msdp.i / p061915

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.30	1.3	3.3	2.5 J
Ethyl Benzene	100-41-4	0.54	1.8	4.5	1.8 J
m,p-Xylene	108-38-3	0.67	1.8	4.5	7.5
o-Xylene	95-47-6	0.54	1.8	4.5	3.0 J
Toluene	108-88-3	0.47	1.6	3.9	11
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	420	1200

J = Estimated value.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	78-116	93
4-Bromofluorobenzene	460-00-4	83-118	114
Toluene-d8	2037-26-5	87-115	100

EPA METHOD TO-15 GC/MS FULL SCAN
AOC 9-2

Client ID:	AOC92170613SVP7A		
Lab ID:	1706293-09A	**Date/Time Analyzed:**	6/19/17 05:29 PM
Date/Time Collecte	6/13/17 12:13 PM	**Dilution Factor:**	2.06
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msdp.i / p061914

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.30	1.3	3.3	0.74 J
Ethyl Benzene	100-41-4	0.54	1.8	4.5	2.3 J
m,p-Xylene	108-38-3	0.67	1.8	4.5	8.7
o-Xylene	95-47-6	0.54	1.8	4.5	3.4 J
Toluene	108-88-3	0.47	1.6	3.9	10
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	420	1500

J = Estimated value.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	78-116	93
4-Bromofluorobenzene	460-00-4	83-118	118
Toluene-d8	2037-26-5	87-115	101

EPA METHOD TO-15 GC/MS FULL SCAN
AOC 9-2

Client ID:	AOC92170613SVP7B		
Lab ID:	1706293-10A	**Date/Time Analyzed:**	6/19/17 05:02 PM
Date/Time Collecte	6/13/17 11:52 AM	**Dilution Factor:**	2.05
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msdp.i / p061913

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.30	1.3	3.3	1.0 J
Ethyl Benzene	100-41-4	0.54	1.8	4.4	2.2 J
m,p-Xylene	108-38-3	0.67	1.8	4.4	9.1
o-Xylene	95-47-6	0.54	1.8	4.4	3.6 J
Toluene	108-88-3	0.47	1.5	3.9	11
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	420	1100

J = Estimated value.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	78-116	94
4-Bromofluorobenzene	460-00-4	83-118	116
Toluene-d8	2037-26-5	87-115	102

EPA METHOD TO-15 GC/MS FULL SCAN
AOC 9-2

Client ID:	AOC92170613SVP8A		
Lab ID:	1706293-11A	**Date/Time Analyzed:**	6/19/17 04:36 PM
Date/Time Collecte	6/13/17 11:27 AM	**Dilution Factor:**	2.04
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msdp.i / p061912

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.30	1.3	3.2	1.0 J
Ethyl Benzene	100-41-4	0.53	1.8	4.4	1.9 J
m,p-Xylene	108-38-3	0.67	1.8	4.4	8.1
o-Xylene	95-47-6	0.54	1.8	4.4	3.3 J
Toluene	108-88-3	0.47	1.5	3.8	9.7
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	420	1200

J = Estimated value.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	78-116	94
4-Bromofluorobenzene	460-00-4	83-118	117
Toluene-d8	2037-26-5	87-115	100

EPA METHOD TO-15 GC/MS FULL SCAN
AOC 9-2

Client ID:	AOC92170613SVPDUP		
Lab ID:	1706293-12A	**Date/Time Analyzed:**	6/19/17 03:44 PM
Date/Time Collecte	6/13/17 12:25 PM	**Dilution Factor:**	2.06
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msdp.i / p061910

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.30	1.3	3.3	0.80 J
Ethyl Benzene	100-41-4	0.54	1.8	4.5	2.2 J
m,p-Xylene	108-38-3	0.67	1.8	4.5	8.8
o-Xylene	95-47-6	0.54	1.8	4.5	3.6 J
Toluene	108-88-3	0.47	1.6	3.9	11
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	420	1500

J = Estimated value.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	78-116	94
4-Bromofluorobenzene	460-00-4	83-118	118
Toluene-d8	2037-26-5	87-115	100

EPA METHOD TO-15 GC/MS FULL SCAN
AOC 9-2

Client ID:	AOC92170613SVPDUP Lab Duplicate		
Lab ID:	1706293-12AA	**Date/Time Analyzed:**	6/19/17 04:10 PM
Date/Time Collecte	6/13/17 12:25 PM	**Dilution Factor:**	2.06
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msdp.i / p061911

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.30	1.3	3.3	0.75 J
Ethyl Benzene	100-41-4	0.54	1.8	4.5	2.2 J
m,p-Xylene	108-38-3	0.67	1.8	4.5	8.4
o-Xylene	95-47-6	0.54	1.8	4.5	3.3 J
Toluene	108-88-3	0.47	1.6	3.9	11
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	420	1600

J = Estimated value.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	78-116	93
4-Bromofluorobenzene	460-00-4	83-118	116
Toluene-d8	2037-26-5	87-115	101

EPA METHOD TO-15 GC/MS FULL SCAN
AOC 9-2

Client ID:	Lab Blank		
Lab ID:	1706293-13A	**Date/Time Analyzed:**	6/19/17 01:09 PM
Date/Time Collecte	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msdp.i / p061907e

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.15	0.64	1.6	Not Detected U
Ethyl Benzene	100-41-4	0.26	0.87	2.2	Not Detected U
m,p-Xylene	108-38-3	0.33	0.87	2.2	Not Detected U
o-Xylene	95-47-6	0.26	0.87	2.2	Not Detected U
Toluene	108-88-3	0.23	0.75	1.9	Not Detected U
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	Not Detected

U = The analyte was not detected above the MDL.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	78-116	93
4-Bromofluorobenzene	460-00-4	83-118	108
Toluene-d8	2037-26-5	87-115	100

EPA METHOD TO-15 GC/MS FULL SCAN
AOC 9-2

Client ID:	CCV		
Lab ID:	1706293-14A	**Date/Time Analyzed:**	6/19/17 08:15 AM
Date/Time Collecte	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msdp.i / p061902a

Compound	CAS#	%Recovery
Benzene	71-43-2	97
Ethyl Benzene	100-41-4	91
m,p-Xylene	108-38-3	91
o-Xylene	95-47-6	88
Toluene	108-88-3	98
TPH ref. to Gasoline (MW=100)	9999-9999-038	100

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	78-116	97
4-Bromofluorobenzene	460-00-4	83-118	116
Toluene-d8	2037-26-5	87-115	104

EPA METHOD TO-15 GC/MS FULL SCAN
AOC 9-2

Client ID:	LCS		
Lab ID:	1706293-15A	**Date/Time Analyzed:**	6/19/17 08:39 AM
Date/Time Collecte	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msdp.i / p061903a

Compound	CAS#	%Recovery
Benzene	71-43-2	98
Ethyl Benzene	100-41-4	93
m,p-Xylene	108-38-3	93
o-Xylene	95-47-6	91
Toluene	108-88-3	98
TPH ref. to Gasoline (MW=100)	9999-9999-038	Not Spiked

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	78-116	96
4-Bromofluorobenzene	460-00-4	83-118	113
Toluene-d8	2037-26-5	87-115	101

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS FULL SCAN
AOC 9-2

Client ID:	LCSD		
Lab ID:	1706293-15AA	**Date/Time Analyzed:**	6/19/17 09:04 AM
Date/Time Collecte	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msdp.i / p061904a

Compound	CAS#	%Recovery
Benzene	71-43-2	98
Ethyl Benzene	100-41-4	95
m,p-Xylene	108-38-3	95
o-Xylene	95-47-6	93
Toluene	108-88-3	101
TPH ref. to Gasoline (MW=100)	9999-9999-038	Not Spiked

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	78-116	94
4-Bromofluorobenzene	460-00-4	83-118	114
Toluene-d8	2037-26-5	87-115	102

* % Recovery is calculated using unrounded analytical results.

eurofins | Air Toxics

Sample Transportation Notice
Relinquishing signature on this document indicates that sample is being shipped in compliance with all applicable local, State, Federal, national, and international laws, regulations and ordinances of any kind. Air Toxics Limited assumes no liability with respect to the collection, handling or shipping of these samples. Relinquishing signature also indicates agreement to hold harmless, defend, and indemnify Air Toxics Limited against any claim, demand, or action, of any kind, related to the collection, handling, or shipping of samples. D.O.T. Hotline (800) 467-4922

180 BLUE RAVINE ROAD, SUITE B
FOLSOM, CA 95630-4719
(916) 985-1000 FAX (916) 985-1020

Project Manager SCOTT ELKINS

Collected by: (Print and Sign) TOM MALAMAKAL

Company SEALASKA ENVIRONMENTAL Email SCOTT.ELKINS@SEALASKA.COM

Address 18743 FRONT ST NE STE 201 City POULSBO State WA Zip 98370

Phone 360-626-3991 Fax

Project Info:
P.O. # 01331
Project # 332M
Project Name AOC 9-2

Turn Around Time:
☒ Normal
☐ Rush
specify

Lab Use Only
Pressurized by:
Date:
Pressurization Gas: N_2 He

Lab I.D.	Field Sample I.D. (Location)	Can #	Date of Collection	Time of Collection	Analyses Requested	Canister Pressure/Vacuum Initial	Final	Receipt	Final (psi)
01A	AOC9217Ø613SVP1A	TEDLAR	6-13-17	8:39	TO-15 BTEX, TPH-G				
02A	AOC9217Ø613SVP1B	TEDLAR	6-13-17	8:19	TO-15				
03A	AOC9217Ø613SVP2A	TEDLAR	6-13-17	9:04	TO-15				
04A	AOC9217Ø613SVP3A	TEDLAR	6-13-17	9:25	TO-15				
05A	AOC9217Ø613SVP4A	TEDLAR	6-13-17	10:00	TO-15				
06A	AOC9217Ø613SVP5A	TEDLAR	6-13-17	10:47	TO-15				
07A	AOC9217Ø613SVP5B	TEDLAR	6-13-17	11:03	TO-15				
08A	AOC9217Ø613SVP6A	TEDLAR	6-13-17	10:21	TO-15				
09A	AOC9217Ø613SVP7A	TEDLAR	6-13-17	12:13	TO-15				
10A	AOC9217Ø613SVP7B	TEDLAR	6-13-17	11:52	TO-15				

Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
	6-14-17 10:00		EAT 06/15/17 1100
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time

Notes:

Lab Use Only	Shipper Name	Air Bill #	Temp (°C)	Condition	Custody Seals Intact?	Work Order #
	Fed Ex		N/A	Good	Yes No None	1706293

Form 1293 rev.11

eurofins | Air Toxics

Sample Transportation Notice
Relinquishing signature on this document indicates that sample is being shipped in compliance with all applicable local, State, Federal, national, and international laws, regulations and ordinances of any kind. Air Toxics Limited assumes no liability with respect to the collection, handling or shipping of these samples. Relinquishing signature also indicates agreement to hold harmless, defend, and indemnify Air Toxics Limited against any claim, demand, or action, of any kind, related to the collection, handling, or shipping of samples. D.O.T. Hotline (800) 467-4922

180 BLUE RAVINE ROAD, SUITE B
FOLSOM, CA 95630-4719
(916) 985-1000 FAX (916) 985-1020

Project Manager SCOTT ELKIND
Collected by: (Print and Sign) TOM MALAMMAKAL
Company SEALASKA ENVIRONMENTAL Email SCOTT.ELKIND@SEALASKA.COM
Address 18743 FRONT ST NE STE 201 City POULSBO State WA Zip 98370
Phone 360-626-3991 Fax

Project Info:
P.O. # 61331
Project # JBLM
Project Name AOC 9-2

Turn Around Time:
☑ Normal
☐ Rush
specify

Lab Use Only
Pressurized by:
Date:
Pressurization Gas: N_2 He

Lab I.D.	Field Sample I.D. (Location)	Can #	Date of Collection	Time of Collection	Analyses Requested	Canister Pressure/Vacuum Initial	Final	Receipt	Final (psi)
11A	AOC92170613SVP8A	TEDLAR	6-13-17	11:27	TO-15 BTEX, TPH-G				
12A	AOC92170613SVPDUP	TEDLAR	6-13-17	12:25	TO-15				

Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
Tom Malammakal	6-14-17 1000	ALTA EATL	06/15/17 1100
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time

Notes:

Lab Use Only	Shipper Name	Air Bill #	Temp (°C)	Condition	Custody Seals Intact?	Work Order #
	FedEx		NA	Good	Yes No None	1706293

Form 1293 rev.11

eurofins | Air Toxics

10/11/2017
Mr. Scott Elkind
Sealaska Environmental Services, LLC
18743 Front St NE, Suite 201
PO Box 869
Poulsbo WA 98370

Project Name: AOC 9-2
Project #: JBLM
Workorder #: 1709553

Dear Mr. Scott Elkind

The following report includes the data for the above referenced project for sample(s) received on 9/28/2017 at Air Toxics Ltd.

The data and associated QC analyzed by TO-15 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Kelly Buettner at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Kelly Buettner

Project Manager

eurofins | Air Toxics

WORK ORDER #: 1709553

Work Order Summary

CLIENT:	Mr. Scott Elkind Sealaska Environmental Services, LLC 18743 Front St NE, Suite 201 PO Box 869 Poulsbo, WA 98370	**BILL TO:**	Ms. Sandi Walker Sealaska Environmental Services, LLC 1200 6th Ave, Suite 800 Seattle, WA 98101
PHONE:	360-930-3187	**P.O. #**	01331
FAX:		**PROJECT #**	JBLM AOC 9-2
DATE RECEIVED:	09/28/2017	**CONTACT:**	Kelly Buettner
DATE COMPLETED:	10/06/2017		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	AOC92170926SVE 1000	TO-15	Tedlar Bag	Tedlar Bag
01AA	AOC92170926SVE 1000 Lab Duplicate	TO-15	Tedlar Bag	Tedlar Bag
02A	AOC92170926SVE 1250	TO-15	Tedlar Bag	Tedlar Bag
03A	AOC92170926SVE 1430	TO-15	Tedlar Bag	Tedlar Bag
04A	AOC92170926SVE 1800	TO-15	Tedlar Bag	Tedlar Bag
05A	AOC92170926SVE DUP	TO-15	Tedlar Bag	Tedlar Bag
06A	Lab Blank	TO-15	NA	NA
07A	CCV	TO-15	NA	NA
08A	LCS	TO-15	NA	NA
08AA	LCSD	TO-15	NA	NA

CERTIFIED BY: Heidi Hayes DATE: 10/06/17

Technical Director

Certification numbers: AZ Licensure AZ0775, NJ NELAP - CA016, NY NELAP - 11291,
TX NELAP - T104704434-16-11, UT NELAP CA0093332016-7, VA NELAP - 8113, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005, Effective date: 10/18/2016, Expiration date: 10/17/2017.
Eurofins Air Toxics Inc.. certifies that the test results contained in this report meet all requirements of the NELAC standards

LABORATORY NARRATIVE
DoD QSM 5.0 - TO-15
Sealaska Environmental Services, LLC
Workorder# 1709553

Five 1 Liter Tedlar Bag samples were received on September 28, 2017. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

This workorder was independently validated prior to submittal using 'USEPA National Functional Guidelines' as generally applied to the analysis of volatile organic compounds in air. A rules-based, logic driven, independent validation engine was employed to assess completeness, evaluate pass/fail of relevant project quality control requirements and verification of all quantified amounts.

Modifications to DoD QSM 5.0 requirements are listed in the table below.

Requirement	***TO-15 DoD QSM 5.0***	***ATL Modifications***
DoD QSM 5.0 Module 4 (1.7.1.1.j, 1.5.2.1.b, 1.5.2.2.c) Surrogates	Quantification of surrogates requires a multi-point calibration and determination of DL and LOQ.	Quantification achieved using a multipoint calibration at a single concentration, analogous to internal standards. DLs and LOQs are not established.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

Method TO-15 is validated for samples collected in specially treated canisters. As such, the use of Tedlar bags for sample collection is outside the scope of the method and not recommended for ambient or indoor air samples. It is the responsibility of the data user to determine the usability of TO-15 results generated from Tedlar bags.

A single point calibration for TPH referenced to Gasoline was performed for each daily analytical batch. Recovery is reported as 100% in the associated results for each CCV.

A Limit of Detection (LOD) and Method Detection Limit (MDL) study are not maintained for non-standard compounds.

As per client project requirements, the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit. Concentrations that are below the level at which the canister was certified may be false positives.

Definition of Data Qualifying Flags

Eight qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction

not performed).

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit, LOD, or MDL value. See data page for project specific U-flag definition.

UJ- Non-detected compound associated with low bias in the CCV

N - The identification is based on presumptive evidence.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

EPA METHOD TO-15 GC/MS FULL SCAN
AOC 9-2

Client ID:	AOC92170926SVE 1000		
Lab ID:	1709553-01A	**Date/Time Analyzed:**	9/28/17 07:56 PM
Date/Time Collecte	9/26/17 10:00 AM	**Dilution Factor:**	1.00
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msdp.i / p092812

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.15	0.64	1.6	0.35 J
Ethyl Benzene	100-41-4	0.26	0.87	2.2	0.48 J
m,p-Xylene	108-38-3	0.33	0.87	2.2	1.2 J
o-Xylene	95-47-6	0.26	0.87	2.2	0.43 J
Toluene	108-88-3	0.23	0.75	1.9	10
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	570

J = Estimated value.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	77-115	106
4-Bromofluorobenzene	460-00-4	82-119	108
Toluene-d8	2037-26-5	92-111	104

EPA METHOD TO-15 GC/MS FULL SCAN
AOC 9-2

Client ID:	AOC92170926SVE 1000 Lab Duplicate		
Lab ID:	1709553-01AA	**Date/Time Analyzed:**	9/28/17 08:23 PM
Date/Time Collecte	9/26/17 10:00 AM	**Dilution Factor:**	1.00
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msdp.i / p092813

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.15	0.64	1.6	0.39 J
Ethyl Benzene	100-41-4	0.26	0.87	2.2	0.41 J
m,p-Xylene	108-38-3	0.33	0.87	2.2	1.4 J
o-Xylene	95-47-6	0.26	0.87	2.2	0.32 J
Toluene	108-88-3	0.23	0.75	1.9	9.8
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	610

J = Estimated value.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	77-115	101
4-Bromofluorobenzene	460-00-4	82-119	110
Toluene-d8	2037-26-5	92-111	103

EPA METHOD TO-15 GC/MS FULL SCAN
AOC 9-2

Client ID:	AOC92170926SVE 1250		
Lab ID:	1709553-02A	**Date/Time Analyzed:**	9/28/17 08:49 PM
Date/Time Collecte	9/26/17 12:50 PM	**Dilution Factor:**	1.00
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msdp.i / p092814

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.15	0.64	1.6	0.39 J
Ethyl Benzene	100-41-4	0.26	0.87	2.2	0.56 J
m,p-Xylene	108-38-3	0.33	0.87	2.2	1.0 J
o-Xylene	95-47-6	0.26	0.87	2.2	0.44 J
Toluene	108-88-3	0.23	0.75	1.9	11
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	700

J = Estimated value.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	77-115	102
4-Bromofluorobenzene	460-00-4	82-119	112
Toluene-d8	2037-26-5	92-111	105

EPA METHOD TO-15 GC/MS FULL SCAN
AOC 9-2

Client ID:	AOC92170926SVE 1430		
Lab ID:	1709553-03A	**Date/Time Analyzed:**	9/28/17 09:15 PM
Date/Time Collecte	9/26/17 02:30 PM	**Dilution Factor:**	1.00
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msdp.i / p092815

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.15	0.64	1.6	Not Detected U
Ethyl Benzene	100-41-4	0.26	0.87	2.2	0.49 J
m,p-Xylene	108-38-3	0.33	0.87	2.2	1.0 J
o-Xylene	95-47-6	0.26	0.87	2.2	0.38 J
Toluene	108-88-3	0.23	0.75	1.9	10
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	700

U = The analyte was not detected above the MDL.
J = Estimated value.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	77-115	102
4-Bromofluorobenzene	460-00-4	82-119	111
Toluene-d8	2037-26-5	92-111	104

EPA METHOD TO-15 GC/MS FULL SCAN
AOC 9-2

Client ID:	AOC92170926SVE 1800		
Lab ID:	1709553-04A	**Date/Time Analyzed:**	9/28/17 09:41 PM
Date/Time Collecte	9/26/17 06:00 PM	**Dilution Factor:**	1.00
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msdp.i / p092816

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.15	0.64	1.6	Not Detected U
Ethyl Benzene	100-41-4	0.26	0.87	2.2	0.43 J
m,p-Xylene	108-38-3	0.33	0.87	2.2	1.2 J
o-Xylene	95-47-6	0.26	0.87	2.2	0.39 J
Toluene	108-88-3	0.23	0.75	1.9	10
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	650

U = The analyte was not detected above the MDL.
J = Estimated value.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	77-115	102
4-Bromofluorobenzene	460-00-4	82-119	111
Toluene-d8	2037-26-5	92-111	101

EPA METHOD TO-15 GC/MS FULL SCAN
AOC 9-2

Client ID:	AOC92170926SVE DUP		
Lab ID:	1709553-05A	**Date/Time Analyzed:**	9/28/17 10:07 PM
Date/Time Collecte	9/26/17 09:00 AM	**Dilution Factor:**	1.00
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msdp.i / p092817

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.15	0.64	1.6	0.38 J
Ethyl Benzene	100-41-4	0.26	0.87	2.2	0.57 J
m,p-Xylene	108-38-3	0.33	0.87	2.2	1.1 J
o-Xylene	95-47-6	0.26	0.87	2.2	0.48 J
Toluene	108-88-3	0.23	0.75	1.9	11
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	610

J = Estimated value.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	77-115	100
4-Bromofluorobenzene	460-00-4	82-119	109
Toluene-d8	2037-26-5	92-111	106

EPA METHOD TO-15 GC/MS FULL SCAN
AOC 9-2

Client ID:	Lab Blank		
Lab ID:	1709553-06A	**Date/Time Analyzed:**	9/28/17 06:47 PM
Date/Time Collecte	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msdp.i / p092811c

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.15	0.64	1.6	Not Detected U
Ethyl Benzene	100-41-4	0.26	0.87	2.2	Not Detected U
m,p-Xylene	108-38-3	0.33	0.87	2.2	Not Detected U
o-Xylene	95-47-6	0.26	0.87	2.2	Not Detected U
Toluene	108-88-3	0.23	0.75	1.9	Not Detected U
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	Not Detected

U = The analyte was not detected above the MDL.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	77-115	105
4-Bromofluorobenzene	460-00-4	82-119	96
Toluene-d8	2037-26-5	92-111	103

EPA METHOD TO-15 GC/MS FULL SCAN
AOC 9-2

Client ID:	CCV		
Lab ID:	1709553-07A	**Date/Time Analyzed:**	9/28/17 05:25 PM
Date/Time Collecte	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msdp.i / p092809c

Compound	CAS#	%Recovery
Benzene	71-43-2	113
Ethyl Benzene	100-41-4	95
m,p-Xylene	108-38-3	95
o-Xylene	95-47-6	92
Toluene	108-88-3	106
TPH ref. to Gasoline (MW=100)	9999-9999-038	100

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	77-115	107
4-Bromofluorobenzene	460-00-4	82-119	104
Toluene-d8	2037-26-5	92-111	107

EPA METHOD TO-15 GC/MS FULL SCAN
AOC 9-2

Client ID:	LCS		
Lab ID:	1709553-08A	**Date/Time Analyzed:**	9/28/17 12:40 PM
Date/Time Collecte	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msdp.i / p092804c

Compound	CAS#	%Recovery
Benzene	71-43-2	114
Ethyl Benzene	100-41-4	97
m,p-Xylene	108-38-3	97
o-Xylene	95-47-6	95
Toluene	108-88-3	107
TPH ref. to Gasoline (MW=100)	9999-9999-038	Not Spiked

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	77-115	106
4-Bromofluorobenzene	460-00-4	82-119	106
Toluene-d8	2037-26-5	92-111	106

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS FULL SCAN
AOC 9-2

Client ID:	LCSD		
Lab ID:	1709553-08AA	**Date/Time Analyzed:**	9/28/17 02:33 PM
Date/Time Collecte	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msdp.i / p092806c

Compound	CAS#	%Recovery
Benzene	71-43-2	114
Ethyl Benzene	100-41-4	96
m,p-Xylene	108-38-3	98
o-Xylene	95-47-6	94
Toluene	108-88-3	108
TPH ref. to Gasoline (MW=100)	9999-9999-038	Not Spiked

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	77-115	108
4-Bromofluorobenzene	460-00-4	82-119	104
Toluene-d8	2037-26-5	92-111	106

* % Recovery is calculated using unrounded analytical results.

eurofins | Air Toxics

Sample Transportation Notice
Relinquishing signature on this document indicates that sample is being shipped in compliance with all applicable local, State, Federal, national, and international laws, regulations and ordinances of any kind. Air Toxics Limited assumes no liability with respect to the collection, handling or shipping of these samples. Relinquishing signature also indicates agreement to hold harmless, defend, and indemnify Air Toxics Limited against any claim, demand, or action, of any kind, related to the collection, handling, or shipping of samples. D.O.T. Hotline (800) 467-4922

180 BLUE RAVINE ROAD, SUITE B
FOLSOM, CA 95630-4719
(916) 985-1000 FAX (916) 985-1020

Project Manager SCOTT ELKINO

Collected by: (Print and Sign) BOB THOMAS

Company SEALASKA ENVIRONMENTAL Email SCOTT.ELKINO@SEALASKA.COM

Address P.O. Box 869 18743 FRONT ST. NE STE 301 City POULSBO State WA Zip 98370

Phone 360-626-3991 Fax

Project Info:
P.O. # 01331
Project # JBLM
Project Name AOC 9-2

Turn Around Time:
☑ Normal
☐ Rush
specify

Lab Use Only
Pressurized by:
Date:
Pressurization Gas: N_2 He

Lab I.D.	Field Sample I.D. (Location)	Can #	Date of Collection	Time of Collection	Analyses Requested	Canister Pressure/Vacuum Initial	Final	Receipt	Final (psi)
01A	AOC9217092GSVE 1000	TEDLAR 76383	9/26/17	1000	TO-15 (TPH-G, BTEX)				
02A	AOC9217092GSVE 1250	TEDLAR 76383	9/26/17	1250	TO-15 (TPH-G, BTEX)				
03A	AOC9217092GSVE 1430	TEDLAR 76383	9/26/17	1430	TO-15 (TPH-G, BTEX)				
04A	AOC9217092GSVE 1800	TEDLAR 76383	9/26/17	1800	TO-15 (TPH-G, BTEX)				
05A	AOC9217092GSVE DUP	TEDLAR 76383	9/26/17	0900	TO-15 (TPH-G, BTEX)				

Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
Bob Thomas	9/26/17 1830	[illegible] GATE	09/28/17 0945
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time

Notes:

Lab Use Only

Shipper Name	Air Bill #	Temp (°C)	Condition	Custody Seals Intact?	Work Order #
Fed Ex		NA	Good	Yes No None	1709553

Form 1293 rev.11

eurofins | Air Toxics

12/4/2017
Mr. Scott Elkind
Sealaska Environmental Services, LLC
18743 Front St NE, Suite 201
PO Box 869
Poulsbo WA 98370

Project Name: AOC92
Project #: 01C
Workorder #: 1711416

Dear Mr. Scott Elkind

The following report includes the data for the above referenced project for sample(s) received on 11/27/2017 at Air Toxics Ltd.

The data and associated QC analyzed by TO-15 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Kelly Buettner at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Kelly Buettner

Project Manager

eurofins | Air Toxics

WORK ORDER #: 1711416

Work Order Summary

CLIENT:	Mr. Scott Elkind Sealaska Environmental Services, LLC 18743 Front St NE, Suite 201 PO Box 869 Poulsbo, WA 98370	**BILL TO:**	Ms. Sandi Walker Sealaska Environmental Services, LLC 1200 6th Ave, Suite 800 Seattle, WA 98101
PHONE:	360-930-3187	**P.O. #**	01331
FAX:		**PROJECT #**	01C AOC92
DATE RECEIVED:	11/27/2017	**CONTACT:**	Kelly Buettner
DATE COMPLETED:	12/04/2017		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	AOC92171121SVE 900	TO-15	Tedlar Bag	Tedlar Bag
02A	AOC92171121SVE 1200	TO-15	Tedlar Bag	Tedlar Bag
03A	AOC92171121SVE 1430	TO-15	Tedlar Bag	Tedlar Bag
04A	AOC92171121SVE 1730	TO-15	Tedlar Bag	Tedlar Bag
05A	AOC92171121SVE DUP	TO-15	Tedlar Bag	Tedlar Bag
05AA	AOC92171121SVE DUP Lab Duplicate	TO-15	Tedlar Bag	Tedlar Bag
06A	Lab Blank	TO-15	NA	NA
07A	CCV	TO-15	NA	NA
08A	LCS	TO-15	NA	NA
08AA	LCSD	TO-15	NA	NA

CERTIFIED BY:  DATE: 12/04/17

Technical Director

Certification numbers: AZ Licensure AZ0775, NJ NELAP - CA016, NY NELAP - 11291,
TX NELAP - T104704434-16-11, UT NELAP CA0093332016-7, VA NELAP - 8113, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005, Effective date: 10/18/2016, Expiration date: 10/17/2017.
Eurofins Air Toxics Inc.. certifies that the test results contained in this report meet all requirements of the NELAC standards

LABORATORY NARRATIVE
DoD QSM 5.0 - TO-15
Sealaska Environmental Services, LLC
Workorder# 1711416

Five 1 Liter Tedlar Bag samples were received on November 27, 2017. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

This workorder was independently validated prior to submittal using 'USEPA National Functional Guidelines' as generally applied to the analysis of volatile organic compounds in air. A rules-based, logic driven, independent validation engine was employed to assess completeness, evaluate pass/fail of relevant project quality control requirements and verification of all quantified amounts.

Modifications to DoD QSM 5.0 requirements are listed in the table below.

Requirement	***TO-15 DoD QSM 5.0***	***ATL Modifications***
DoD QSM 5.0 Module 4 (1.7.1.1.j, 1.5.2.1.b, 1.5.2.2.c) Surrogates	Quantification of surrogates requires a multi-point calibration and determination of DL and LOQ.	Quantification achieved using a multipoint calibration at a single concentration, analogous to internal standards. DLs and LOQs are not established.

Receiving Notes

Samples were received past the recommended hold time of 3 days. Analysis proceeded.

Analytical Notes

Method TO-15 is validated for samples collected in specially treated canisters. As such, the use of Tedlar bags for sample collection is outside the scope of the method and not recommended for ambient or indoor air samples. It is the responsibility of the data user to determine the usability of TO-15 results generated from Tedlar bags.

As per client project requirements, the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit. Concentrations that are below the level at which the canister was certified (0.2 ppbv for compounds reported at 0.5 ppbv and 0.8 ppbv for compounds reported at 2.0 ppbv) may be false positives.

A single point calibration for TPH referenced to Gasoline was performed for each daily analytical batch. Recovery is reported as 100% in the associated results for each CCV.

A Limit of Detection (LOD) and Method Detection Limit (MDL) study are not maintained for non-standard compounds.

Definition of Data Qualifying Flags

Eight qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit, LOD, or MDL value. See data page for project specific U-flag definition.

UJ- Non-detected compound associated with low bias in the CCV

N - The identification is based on presumptive evidence.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

EPA METHOD TO-15 GC/MS FULL SCAN
AOC92

Client ID:	AOC92171121SVE 900		
Lab ID:	1711416-01A	**Date/Time Analyzed:**	11/28/17 12:24 AM
Date/Time Collected:	11/21/17 09:00 AM	**Dilution Factor:**	1.00
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msd17.i / 17112721

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.14	0.64	1.6	0.85 J
Ethyl Benzene	100-41-4	0.40	0.87	2.2	2.7
m,p-Xylene	108-38-3	0.31	0.87	2.2	7.8
o-Xylene	95-47-6	0.38	0.87	2.2	3.1
Toluene	108-88-3	0.18	0.75	1.9	37
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	360

J = Estimated value.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	77-115	94
4-Bromofluorobenzene	460-00-4	82-119	110
Toluene-d8	2037-26-5	92-111	100

EPA METHOD TO-15 GC/MS FULL SCAN
AOC92

Client ID:	AOC92171121SVE 1200		
Lab ID:	1711416-02A	**Date/Time Analyzed:**	11/27/17 11:55 PM
Date/Time Collected:	11/21/17 12:00 PM	**Dilution Factor:**	1.00
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msd17.i / 17112720

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.14	0.64	1.6	0.96 J
Ethyl Benzene	100-41-4	0.40	0.87	2.2	2.5
m,p-Xylene	108-38-3	0.31	0.87	2.2	7.0
o-Xylene	95-47-6	0.38	0.87	2.2	2.4
Toluene	108-88-3	0.18	0.75	1.9	36
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	300

J = Estimated value.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	77-115	96
4-Bromofluorobenzene	460-00-4	82-119	110
Toluene-d8	2037-26-5	92-111	98

EPA METHOD TO-15 GC/MS FULL SCAN
AOC92

Client ID:	AOC92171121SVE 1430		
Lab ID:	1711416-03A	**Date/Time Analyzed:**	11/27/17 11:27 PM
Date/Time Collected:	11/21/17 02:30 PM	**Dilution Factor:**	1.00
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msd17.i / 17112719

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.14	0.64	1.6	0.88 J
Ethyl Benzene	100-41-4	0.40	0.87	2.2	2.8
m,p-Xylene	108-38-3	0.31	0.87	2.2	8.9
o-Xylene	95-47-6	0.38	0.87	2.2	3.4
Toluene	108-88-3	0.18	0.75	1.9	35
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	250

J = Estimated value.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	77-115	100
4-Bromofluorobenzene	460-00-4	82-119	109
Toluene-d8	2037-26-5	92-111	100

EPA METHOD TO-15 GC/MS FULL SCAN
AOC92

Client ID:	AOC92171121SVE 1730		
Lab ID:	1711416-04A	**Date/Time Analyzed:**	11/27/17 10:56 PM
Date/Time Collected:	11/21/17 05:30 PM	**Dilution Factor:**	1.00
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msd17.i / 17112718

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.14	0.64	1.6	1.1 J
Ethyl Benzene	100-41-4	0.40	0.87	2.2	2.4
m,p-Xylene	108-38-3	0.31	0.87	2.2	6.6
o-Xylene	95-47-6	0.38	0.87	2.2	2.6
Toluene	108-88-3	0.18	0.75	1.9	39
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	330

J = Estimated value.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	77-115	93
4-Bromofluorobenzene	460-00-4	82-119	108
Toluene-d8	2037-26-5	92-111	99

EPA METHOD TO-15 GC/MS FULL SCAN
AOC92

Client ID:	AOC92171121SVE DUP		
Lab ID:	1711416-05A	**Date/Time Analyzed:**	11/27/17 09:59 PM
Date/Time Collected:	11/21/17 05:35 PM	**Dilution Factor:**	1.00
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msd17.i / 17112716

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.14	0.64	1.6	1.0 J
Ethyl Benzene	100-41-4	0.40	0.87	2.2	2.9
m,p-Xylene	108-38-3	0.31	0.87	2.2	6.9
o-Xylene	95-47-6	0.38	0.87	2.2	2.9
Toluene	108-88-3	0.18	0.75	1.9	37
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	280

J = Estimated value.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	77-115	94
4-Bromofluorobenzene	460-00-4	82-119	107
Toluene-d8	2037-26-5	92-111	100

EPA METHOD TO-15 GC/MS FULL SCAN
AOC92

Client ID:	AOC92171121SVE DUP Lab Duplicate		
Lab ID:	1711416-05AA	**Date/Time Analyzed:**	11/27/17 10:28 PM
Date/Time Collected:	11/21/17 05:35 PM	**Dilution Factor:**	1.00
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msd17.i / 17112717

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.14	0.64	1.6	0.79 J
Ethyl Benzene	100-41-4	0.40	0.87	2.2	2.3
m,p-Xylene	108-38-3	0.31	0.87	2.2	6.9
o-Xylene	95-47-6	0.38	0.87	2.2	2.1 J
Toluene	108-88-3	0.18	0.75	1.9	36
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	290

J = Estimated value.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	77-115	95
4-Bromofluorobenzene	460-00-4	82-119	111
Toluene-d8	2037-26-5	92-111	99

EPA METHOD TO-15 GC/MS FULL SCAN
AOC92

Client ID:	Lab Blank		
Lab ID:	1711416-06A	**Date/Time Analyzed:**	11/27/17 01:44 PM
Date/Time Collected:	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd17.i / 17112706d

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.14	0.64	1.6	0.22 J
Ethyl Benzene	100-41-4	0.40	0.87	2.2	Not Detected U
m,p-Xylene	108-38-3	0.31	0.87	2.2	Not Detected U
o-Xylene	95-47-6	0.38	0.87	2.2	Not Detected U
Toluene	108-88-3	0.18	0.75	1.9	Not Detected U
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	Not Detected

J = Estimated value.
U = The analyte was not detected above the MDL.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	77-115	97
4-Bromofluorobenzene	460-00-4	82-119	97
Toluene-d8	2037-26-5	92-111	100

EPA METHOD TO-15 GC/MS FULL SCAN
AOC92

Client ID:	CCV		
Lab ID:	1711416-07A	**Date/Time Analyzed:**	11/27/17 11:23 AM
Date/Time Collected:	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd17.i / 17112702a

Compound	CAS#	%Recovery
Benzene	71-43-2	96
Ethyl Benzene	100-41-4	101
m,p-Xylene	108-38-3	106
o-Xylene	95-47-6	105
Toluene	108-88-3	98
TPH ref. to Gasoline (MW=100)	9999-9999-038	100

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	77-115	103
4-Bromofluorobenzene	460-00-4	82-119	101
Toluene-d8	2037-26-5	92-111	101

EPA METHOD TO-15 GC/MS FULL SCAN
AOC92

Client ID:	LCS		
Lab ID:	1711416-08A	**Date/Time Analyzed:**	11/27/17 11:50 AM
Date/Time Collected:	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd17.i / 17112703a

Compound	CAS#	%Recovery
Benzene	71-43-2	85
Ethyl Benzene	100-41-4	93
m,p-Xylene	108-38-3	97
o-Xylene	95-47-6	99
Toluene	108-88-3	86
TPH ref. to Gasoline (MW=100)	9999-9999-038	Not Spiked

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	77-115	103
4-Bromofluorobenzene	460-00-4	82-119	101
Toluene-d8	2037-26-5	92-111	101

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS FULL SCAN
AOC92

Client ID:	LCSD		
Lab ID:	1711416-08AA	**Date/Time Analyzed:**	11/27/17 12:17 PM
Date/Time Collected:	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd17.i / 17112704a

Compound	CAS#	%Recovery
Benzene	71-43-2	88
Ethyl Benzene	100-41-4	98
m,p-Xylene	108-38-3	102
o-Xylene	95-47-6	103
Toluene	108-88-3	88
TPH ref. to Gasoline (MW=100)	9999-9999-038	Not Spiked

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	77-115	105
4-Bromofluorobenzene	460-00-4	82-119	100
Toluene-d8	2037-26-5	92-111	100

* % Recovery is calculated using unrounded analytical results.

eurofins | Air Toxics

Sample Transportation Notice

Relinquishing signature on this document indicates that sample is being shipped in compliance with all applicable local, State, Federal, national, and international laws, regulations and ordinances of any kind. Air Toxics Limited assumes no liability with respect to the collection, handling or shipping of these samples. Relinquishing signature also indicates agreement to hold harmless, defend, and indemnify Air Toxics Limited against any claim, demand, or action, of any kind, related to the collection, handling, or shipping of samples. D.O.T. Hotline (800) 467-4922

180 BLUE RAVINE ROAD, SUITE B
FOLSOM, CA 95630-4719
(916) 985-1000 FAX (916) 985-1020

Page 1 of 1

Project Manager: SCOTT ELKIND
Collected by: (Print and Sign) TOM MALAMALAH [signature]
Company: SCHNITZER Email: SCOTT.ELKIND@SCHNITZER.COM
Address: 13743 FRONT ST NE STE 201 City: PORTLAND State: WA Zip: 98674
Phone: 360-626-3911 Fax:

Project Info:
P.O. #: 01331
Project #: QLC
Project Name: AOC92

Turn Around Time:
☐ Normal
☒ Rush
specify

Lab Use Only
Pressurized by:
Date:
Pressurization Gas: N2 He

Lab I.D.	Field Sample I.D. (Location)	Can #	Date of Collection	Time of Collection	Analyses Requested	Canister Pressure/Vacuum Initial	Final	Receipt	Final (psi)
1A	AOC92171121 SVE 900	TEDLAR	11-21-17	900	TO-15 BTEX, TPH-G				
2A	AOC92171121 SVE 1200	TEDLAR	11-21-17	1200	TO-15 BTEX, TPH-G				
3A	AOC92171121 SVE 1430	TEDLAR	11-21-17	1430	TO-15 BTEX, TPH-G				
4A	AOC92171121 SVE 1730	TEDLAR	11-21-17	1730	TO-15 BTEX, TPH-G				
5A	AOC92171121 SVE DUP	TEDLAR	11-21-17	1735	TO-15 BTEX, TPH-G				

Relinquished by: (signature) [signature] Date/Time 11-21-17 / 900
Received by: (signature) [signature] EAPL Date/Time 11/22/17 1015
Relinquished by: (signature) Date/Time
Received by: (signature) Date/Time
Relinquished by: (signature) Date/Time
Received by: (signature) Date/Time

Notes:

Lab Use Only	Shipper Name	Air Bill #	Temp (°C)	Condition	Custody Seals Intact?	Work Order #
	FedEx		NA	Good	(Yes) No None	1711418

Form 1293 rev.11

eurofins | Air Toxics

12/4/2017

Mr. Scott Elkind
Sealaska Environmental Services, LLC
18743 Front St NE, Suite 201
PO Box 869
Poulsbo WA 98370

Project Name: AOC92
Project #: 01C
Workorder #: 1711423

Dear Mr. Scott Elkind

The following report includes the data for the above referenced project for sample(s) received on 11/27/2017 at Air Toxics Ltd.

The data and associated QC analyzed by Modified TO-15 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Kelly Buettner at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Kelly Buettner

Project Manager

eurofins | Air Toxics

WORK ORDER #: 1711423

Work Order Summary

CLIENT:	Mr. Scott Elkind Sealaska Environmental Services, LLC 18743 Front St NE, Suite 201 PO Box 869 Poulsbo, WA 98370	**BILL TO:**	Ms. Sandi Walker Sealaska Environmental Services, LLC 1200 6th Ave, Suite 800 Seattle, WA 98101
PHONE:	360-930-3187	**P.O. #**	01331
FAX:		**PROJECT #**	01C AOC92
DATE RECEIVED:	11/27/2017	**CONTACT:**	Kelly Buettner
DATE COMPLETED:	12/04/2017		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	AOC92171121SUPPLY	Modified TO-15	4.5 "Hg	5 psi
01AA	AOC92171121SUPPLY Lab Duplicate	Modified TO-15	4.5 "Hg	5 psi
01B	AOC92171121SUPPLY	Modified TO-15	4.5 "Hg	5 psi
01BB	AOC92171121SUPPLY Lab Duplicate	Modified TO-15	4.5 "Hg	5 psi
02A	AOC92171121CONF	Modified TO-15	6.5 "Hg	5 psi
02B	AOC92171121CONF	Modified TO-15	6.5 "Hg	5 psi
03A	AOC92171121CUST	Modified TO-15	7.0 "Hg	5 psi
03B	AOC92171121CUST	Modified TO-15	7.0 "Hg	5 psi
04A	AOC92171121AAFES	Modified TO-15	6.0 "Hg	5 psi
04B	AOC92171121AAFES	Modified TO-15	6.0 "Hg	5 psi
05A	AOC92171121FD	Modified TO-15	3.5 "Hg	5 psi
05B	AOC92171121FD	Modified TO-15	3.5 "Hg	5 psi
06A	AOC92171121LOBBY	Modified TO-15	5.5 "Hg	5 psi
06B	AOC92171121LOBBY	Modified TO-15	5.5 "Hg	5 psi
07A	AOC92171121GRAB	Modified TO-15	0.5 "Hg	5 psi
07B	AOC92171121GRAB	Modified TO-15	0.5 "Hg	5 psi
08A	Lab Blank	Modified TO-15	NA	NA
08B	Lab Blank	Modified TO-15	NA	NA
09A	CCV	Modified TO-15	NA	NA
09B	CCV	Modified TO-15	NA	NA
10A	LCS	Modified TO-15	NA	NA
10AA	LCSD	Modified TO-15	NA	NA
10B	LCS	Modified TO-15	NA	NA

Continued on next page

eurofins | Air Toxics

WORK ORDER #: 1711423

Work Order Summary

CLIENT:	Mr. Scott Elkind Sealaska Environmental Services, LLC 18743 Front St NE, Suite 201 PO Box 869 Poulsbo, WA 98370	**BILL TO:**	Ms. Sandi Walker Sealaska Environmental Services, LLC 1200 6th Ave, Suite 800 Seattle, WA 98101
PHONE:	360-930-3187	**P.O. #**	01331
FAX:		**PROJECT #**	01C AOC92
DATE RECEIVED:	11/27/2017	**CONTACT:**	Kelly Buettner
DATE COMPLETED:	12/04/2017		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
10BB	LCSD	Modified TO-15	NA	NA

CERTIFIED BY: Heidi Hayes DATE: 12/04/17

Technical Director

Certification numbers: AZ Licensure AZ0775, NJ NELAP - CA016, NY NELAP - 11291,
TX NELAP - T104704434-16-11, UT NELAP CA0093332016-7, VA NELAP - 8113, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005, Effective date: 10/18/2016, Expiration date: 10/17/2017.
Eurofins Air Toxics Inc.. certifies that the test results contained in this report meet all requirements of the NELAC standards

LABORATORY NARRATIVE
DoD QSM 5.0 TO-15 LL/SIM
Sealaska Environmental Services, LLC
Workorder# 1711423

Seven 6 Liter Summa Canister (SIM Certified) samples were received on November 27, 2017. The laboratory performed analysis via modified EPA Method TO-15 using GC/MS in the Full Scan and SIM acquisition modes. The method involves concentrating up to 1.0 liter of air. The concentrated aliquot is then flash vaporized and swept through a water management system to remove water vapor. Following dehumidification, the sample passes directly into the GC/MS for analysis.

This workorder was independently validated prior to submittal using 'USEPA National Functional Guidelines' as generally applied to the analysis of volatile organic compounds in air. A rules-based, logic driven, independent validation engine was employed to assess completeness, evaluate pass/fail of relevant project quality control requirements and verification of all quantified amounts.

Method modifications and DoD QSM 5.0 modifications taken to run these samples are summarized in the table below. Specific project requirements may over-ride the modifications.

Requirement	***TO-15 LL/SIM DoD QS***	***ATL Modifications***
Blank and standards	Zero air	UHP Nitrogren provides a higher purity gas matrix than zero air
Daily Calibration	+- 30% Difference	For Std. Full Scan: </= 30% Difference with two allowed out up to </=40%.; flag and narrate outliers For SIM: Project specific; default criteria is </= 30% Difference with 10% of compounds allowed out up to </=40%.; flag and narrate outliers
DoD QSM 5.0 Module 4 (1.7.1.1.j, 1.5.2.1.b, 1.5.2.2.c) Surrogates	Quantification of surrogates requires a multi-point calibration and determination of DL and LOQ.	Quantification achieved using a multipoint calibration at a single concentration, analogous to internal standards. DLs and LOQs are not established.
DoD QSM 5.0 Section 1.7.4.1 Lab Blank	No analytes detected at >1/2 LOQ	No analytes detected at >/=LOQ.
Initial Calibration	</=30%RSD with 2 compounds out up to 40%RSD	(Full Scan): </=30%RSD with 4 compounds out up to 40%RSD SIM: Default criterion is </=30%RSD with 10% VOCs out up to 40%RSD.

Receiving Notes

Sample identification for sample AOC92171121GRAB was not provided on the sample tag. Therefore the information on the Chain of Custody was used to process and report the sample.

Analytical Notes

As per project specific client request the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit. All The canisters used for this project have been certified to the Reporting Limit for the target analytes included in this workorder. Concentrations that are below the level at which the canister was certified may be false positives.

Dilution was performed on sample AOC92171121AAFES due to matrix interference.

The results for each sample in this report were acquired from two separate data files originating from the same analytical run. The two data files have the same base file name and are differentiated with a "sim" extension on the SIM data file.

A single point calibration for TPH referenced to Gasoline was performed for each daily analytical batch. Recovery is reported as 100% in the associated results for each CCV.

A Limit of Detection (LOD) and Method Detection Limit (MDL) study are not maintained for non-standard compounds.

Definition of Data Qualifying Flags

Eight qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit, LOD, or MDL value. See data page for project specific U-flag definition.

UJ- Non-detected compound associated with low bias in the CCV

N - The identification is based on presumptive evidence.

CN - See case narrative explanation

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
AOC92

Client ID:	AOC92171121SUPPLY		
Lab ID:	1711423-01A	**Date/Time Analyzed:**	11/28/17 02:08 PM
Date/Time Collecte	11/21/17 09:10 AM	**Dilution Factor:**	1.58
Media:	6 Liter Summa Canister (SIM Certified)	**Instrument/Filename:**	msd20.i / 20112807

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	65	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	85-130	112
4-Bromofluorobenzene	460-00-4	81-120	94
Toluene-d8	2037-26-5	87-110	96

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
AOC92

Client ID:	AOC92171121SUPPLY Lab Duplicate		
Lab ID:	1711423-01AA	**Date/Time Analyzed:**	11/28/17 03:04 PM
Date/Time Collecte	11/21/17 09:10 AM	**Dilution Factor:**	1.58
Media:	6 Liter Summa Canister (SIM Certified)	**Instrument/Filename:**	msd20.i / 20112808

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	65	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	85-130	116
4-Bromofluorobenzene	460-00-4	81-120	93
Toluene-d8	2037-26-5	87-110	99

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
AOC92

Client ID:	AOC92171121SUPPLY		
Lab ID:	1711423-01B	**Date/Time Analyzed:**	11/28/17 02:08 PM
Date/Time Collecte	11/21/17 09:10 AM	**Dilution Factor:**	1.58
Media:	6 Liter Summa Canister (SIM Certified)	**Instrument/Filename:**	msd20.i / 20112807sim

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.0086	0.025	0.25	0.93
Ethyl Benzene	100-41-4	0.0097	0.034	0.14	0.34
m,p-Xylene	108-38-3	0.011	0.034	0.27	1.3
o-Xylene	95-47-6	0.011	0.034	0.14	0.45
Toluene	108-88-3	0.0037	0.030	0.12	2.4

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	90-127	108
4-Bromofluorobenzene	460-00-4	78-116	95
Toluene-d8	2037-26-5	89-111	99

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
AOC92

Client ID:	AOC92171121SUPPLY Lab Duplicate		
Lab ID:	1711423-01BB	**Date/Time Analyzed:**	11/28/17 03:04 PM
Date/Time Collecte	11/21/17 09:10 AM	**Dilution Factor:**	1.58
Media:	6 Liter Summa Canister (SIM Certified)	**Instrument/Filename:**	msd20.i / 20112808sim

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.0086	0.025	0.25	0.93
Ethyl Benzene	100-41-4	0.0097	0.034	0.14	0.33
m,p-Xylene	108-38-3	0.011	0.034	0.27	1.3
o-Xylene	95-47-6	0.011	0.034	0.14	0.45
Toluene	108-88-3	0.0037	0.030	0.12	2.4

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	90-127	110
4-Bromofluorobenzene	460-00-4	78-116	95
Toluene-d8	2037-26-5	89-111	99

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
AOC92

Client ID:	AOC92171121CONF		
Lab ID:	1711423-02A	**Date/Time Analyzed:**	11/28/17 04:06 PM
Date/Time Collecte	11/21/17 09:06 AM	**Dilution Factor:**	1.71
Media:	6 Liter Summa Canister (SIM Certified)	**Instrument/Filename:**	msd20.i / 20112809

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	70	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	85-130	110
4-Bromofluorobenzene	460-00-4	81-120	90
Toluene-d8	2037-26-5	87-110	97

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
AOC92

Client ID:	AOC92171121CONF		
Lab ID:	1711423-02B	**Date/Time Analyzed:**	11/28/17 04:06 PM
Date/Time Collecte	11/21/17 09:06 AM	**Dilution Factor:**	1.71
Media:	6 Liter Summa Canister (SIM Certified)	**Instrument/Filename:**	msd20.i / 20112809sim

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.0093	0.027	0.27	1.0
Ethyl Benzene	100-41-4	0.010	0.037	0.15	0.37
m,p-Xylene	108-38-3	0.012	0.037	0.30	1.4
o-Xylene	95-47-6	0.012	0.037	0.15	0.49
Toluene	108-88-3	0.0040	0.032	0.13	2.8

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	90-127	105
4-Bromofluorobenzene	460-00-4	78-116	96
Toluene-d8	2037-26-5	89-111	98

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
AOC92

Client ID:	AOC92171121CUST		
Lab ID:	1711423-03A	**Date/Time Analyzed:**	11/28/17 04:44 PM
Date/Time Collecte	11/21/17 09:07 AM	**Dilution Factor:**	1.75
Media:	6 Liter Summa Canister (SIM Certified)	**Instrument/Filename:**	msd20.i / 20112810

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	72	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	85-130	108
4-Bromofluorobenzene	460-00-4	81-120	96
Toluene-d8	2037-26-5	87-110	98

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
AOC92

Client ID:	AOC92171121CUST		
Lab ID:	1711423-03B	**Date/Time Analyzed:**	11/28/17 04:44 PM
Date/Time Collecte	11/21/17 09:07 AM	**Dilution Factor:**	1.75
Media:	6 Liter Summa Canister (SIM Certified)	**Instrument/Filename:**	msd20.i / 20112810sim

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.0096	0.028	0.28	1.0
Ethyl Benzene	100-41-4	0.011	0.038	0.15	0.38
m,p-Xylene	108-38-3	0.013	0.038	0.30	1.4
o-Xylene	95-47-6	0.012	0.038	0.15	0.56
Toluene	108-88-3	0.0041	0.033	0.13	3.3

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	90-127	104
4-Bromofluorobenzene	460-00-4	78-116	95
Toluene-d8	2037-26-5	89-111	98

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
AOC92

Client ID:	AOC92171121AAFES		
Lab ID:	1711423-04A	**Date/Time Analyzed:**	11/28/17 09:18 PM
Date/Time Collecte	11/21/17 09:08 AM	**Dilution Factor:**	2.80
Media:	6 Liter Summa Canister (SIM Certified)	**Instrument/Filename:**	msd20.i / 20112817

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	110	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	85-130	128
4-Bromofluorobenzene	460-00-4	81-120	91
Toluene-d8	2037-26-5	87-110	97

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
AOC92

Client ID:	AOC92171121AAFES		
Lab ID:	1711423-04B	**Date/Time Analyzed:**	11/28/17 09:18 PM
Date/Time Collecte	11/21/17 09:08 AM	**Dilution Factor:**	2.80
Media:	6 Liter Summa Canister (SIM Certified)	**Instrument/Filename:**	msd20.i / 20112817sim

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.015	0.045	0.45	1.9
Ethyl Benzene	100-41-4	0.017	0.061	0.24	0.53
m,p-Xylene	108-38-3	0.020	0.061	0.49	2.1
o-Xylene	95-47-6	0.019	0.061	0.24	0.72
Toluene	108-88-3	0.0065	0.053	0.21	4.4

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	90-127	122
4-Bromofluorobenzene	460-00-4	78-116	93
Toluene-d8	2037-26-5	89-111	98

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
AOC92

Client ID:	AOC92171121FD		
Lab ID:	1711423-05A	**Date/Time Analyzed:**	11/28/17 06:01 PM
Date/Time Collecte	11/21/17 09:09 AM	**Dilution Factor:**	1.52
Media:	6 Liter Summa Canister (SIM Certified)	**Instrument/Filename:**	msd20.i / 20112812

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	62	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	85-130	108
4-Bromofluorobenzene	460-00-4	81-120	93
Toluene-d8	2037-26-5	87-110	99

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
AOC92

Client ID:	AOC92171121FD		
Lab ID:	1711423-05B	**Date/Time Analyzed:**	11/28/17 06:01 PM
Date/Time Collecte	11/21/17 09:09 AM	**Dilution Factor:**	1.52
Media:	6 Liter Summa Canister (SIM Certified)	**Instrument/Filename:**	msd20.i / 20112812sim

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.0083	0.024	0.24	0.87
Ethyl Benzene	100-41-4	0.0093	0.033	0.13	0.28
m,p-Xylene	108-38-3	0.011	0.033	0.26	1.0
o-Xylene	95-47-6	0.010	0.033	0.13	0.42
Toluene	108-88-3	0.0036	0.029	0.11	2.0

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	90-127	105
4-Bromofluorobenzene	460-00-4	78-116	94
Toluene-d8	2037-26-5	89-111	98

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
AOC92

Client ID:	AOC92171121LOBBY		
Lab ID:	1711423-06A	**Date/Time Analyzed:**	11/28/17 06:42 PM
Date/Time Collecte	11/21/17 09:05 AM	**Dilution Factor:**	1.64
Media:	6 Liter Summa Canister (SIM Certified)	**Instrument/Filename:**	msd20.i / 20112813

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	67	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	85-130	108
4-Bromofluorobenzene	460-00-4	81-120	93
Toluene-d8	2037-26-5	87-110	99

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
AOC92

Client ID:	AOC92171121LOBBY		
Lab ID:	1711423-06B	**Date/Time Analyzed:**	11/28/17 06:42 PM
Date/Time Collecte	11/21/17 09:05 AM	**Dilution Factor:**	1.64
Media:	6 Liter Summa Canister (SIM Certified)	**Instrument/Filename:**	msd20.i / 20112813sim

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.0090	0.026	0.26	1.0
Ethyl Benzene	100-41-4	0.010	0.036	0.14	0.37
m,p-Xylene	108-38-3	0.012	0.036	0.28	1.3
o-Xylene	95-47-6	0.011	0.036	0.14	0.47
Toluene	108-88-3	0.0038	0.031	0.12	2.9

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	90-127	106
4-Bromofluorobenzene	460-00-4	78-116	93
Toluene-d8	2037-26-5	89-111	98

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
AOC92

Client ID:	AOC92171121GRAB		
Lab ID:	1711423-07A	**Date/Time Analyzed:**	11/28/17 07:22 PM
Date/Time Collecte	11/21/17 05:30 PM	**Dilution Factor:**	1.36
Media:	6 Liter Summa Canister (SIM Certified)	**Instrument/Filename:**	msd20.i / 20112814

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	56	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	85-130	115
4-Bromofluorobenzene	460-00-4	81-120	100
Toluene-d8	2037-26-5	87-110	103

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
AOC92

Client ID:	AOC92171121GRAB		
Lab ID:	1711423-07B	**Date/Time Analyzed:**	11/28/17 07:22 PM
Date/Time Collecte	11/21/17 05:30 PM	**Dilution Factor:**	1.36
Media:	6 Liter Summa Canister (SIM Certified)	**Instrument/Filename:**	msd20.i / 20112814sim

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.0074	0.022	0.22	0.67
Ethyl Benzene	100-41-4	0.0083	0.030	0.12	0.29
m,p-Xylene	108-38-3	0.0098	0.030	0.24	1.2
o-Xylene	95-47-6	0.0092	0.030	0.12	0.45
Toluene	108-88-3	0.0032	0.026	0.10	3.8

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	90-127	110
4-Bromofluorobenzene	460-00-4	78-116	100
Toluene-d8	2037-26-5	89-111	102

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
AOC92

Client ID:	Lab Blank		
Lab ID:	1711423-08A	**Date/Time Analyzed:**	11/28/17 12:12 PM
Date/Time Collecte	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd20.i / 20112806a

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	41	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	85-130	110
4-Bromofluorobenzene	460-00-4	81-120	92
Toluene-d8	2037-26-5	87-110	100

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
AOC92

Client ID:	Lab Blank		
Lab ID:	1711423-08B	**Date/Time Analyzed:**	11/28/17 12:12 PM
Date/Time Collecte	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd20.i / 20112806sima

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.0055	0.016	0.16	0.022 J
Ethyl Benzene	100-41-4	0.0061	0.022	0.087	Not Detected U
m,p-Xylene	108-38-3	0.0072	0.022	0.17	0.015 J
o-Xylene	95-47-6	0.0068	0.022	0.087	Not Detected U
Toluene	108-88-3	0.0023	0.019	0.075	0.017 J

J = Estimated value.
U = The analyte was not detected above the MDL.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	90-127	105
4-Bromofluorobenzene	460-00-4	78-116	94
Toluene-d8	2037-26-5	89-111	100

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
AOC92

Client ID:	CCV		
Lab ID:	1711423-09A	**Date/Time Analyzed:**	11/28/17 08:08 AM
Date/Time Collecte	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd20.i / 20112802a

Compound	CAS#	%Recovery
TPH ref. to Gasoline (MW=100)	9999-9999-038	100

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	85-130	99
4-Bromofluorobenzene	460-00-4	81-120	97
Toluene-d8	2037-26-5	87-110	102

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
AOC92

Client ID:	CCV		
Lab ID:	1711423-09B	**Date/Time Analyzed:**	11/28/17 08:08 AM
Date/Time Collecte	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd20.i / 20112802sima

Compound	CAS#	%Recovery
Benzene	71-43-2	99
Ethyl Benzene	100-41-4	111
m,p-Xylene	108-38-3	114
o-Xylene	95-47-6	113
Toluene	108-88-3	101

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	90-127	99
4-Bromofluorobenzene	460-00-4	78-116	98
Toluene-d8	2037-26-5	89-111	101

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
AOC92

Client ID:	LCS		
Lab ID:	1711423-10A	**Date/Time Analyzed:**	11/28/17 09:08 AM
Date/Time Collecte	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd20.i / 20112803a

Compound	CAS#	%Recovery
TPH ref. to Gasoline (MW=100)	9999-9999-038	Not Spiked

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	85-130	100
4-Bromofluorobenzene	460-00-4	81-120	98
Toluene-d8	2037-26-5	87-110	102

* % Recovery is calculated using unrounded analytical results.

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
AOC92

Client ID:	LCSD		
Lab ID:	1711423-10AA	**Date/Time Analyzed:**	11/28/17 10:04 AM
Date/Time Collecte	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd20.i / 20112804a

Compound	CAS#	%Recovery
TPH ref. to Gasoline (MW=100)	9999-9999-038	Not Spiked

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	85-130	101
4-Bromofluorobenzene	460-00-4	81-120	99
Toluene-d8	2037-26-5	87-110	102

* % Recovery is calculated using unrounded analytical results.

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
AOC92

Client ID:	LCS		
Lab ID:	1711423-10B	**Date/Time Analyzed:**	11/28/17 09:08 AM
Date/Time Collecte	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd20.i / 20112803sima

Compound	CAS#	%Recovery
Benzene	71-43-2	100
Ethyl Benzene	100-41-4	112
m,p-Xylene	108-38-3	115
o-Xylene	95-47-6	117
Toluene	108-88-3	103

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	90-127	98
4-Bromofluorobenzene	460-00-4	78-116	99
Toluene-d8	2037-26-5	89-111	101

* % Recovery is calculated using unrounded analytical results.

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
AOC92

Client ID:	LCSD		
Lab ID:	1711423-10BB	**Date/Time Analyzed:**	11/28/17 10:04 AM
Date/Time Collecte	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd20.i / 20112804sima

Compound	CAS#	%Recovery
Benzene	71-43-2	101
Ethyl Benzene	100-41-4	112
m,p-Xylene	108-38-3	114
o-Xylene	95-47-6	116
Toluene	108-88-3	103

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	90-127	99
4-Bromofluorobenzene	460-00-4	78-116	100
Toluene-d8	2037-26-5	89-111	101

* % Recovery is calculated using unrounded analytical results.

eurofins | Air Toxics

Sample Transportation Notice

Relinquishing signature on this document indicates that sample is being shipped in compliance with all applicable local, State, Federal, national, and international laws, regulations and ordinances of any kind. Air Toxics Limited assumes no liability with respect to the collection, handling or shipping of these samples. Relinquishing signature also indicates agreement to hold harmless, defend, and indemnify Air Toxics Limited against any claim, demand, or action, of any kind, related to the collection, handling, or shipping of samples. D.O.T. Hotline (800) 467-4922

180 BLUE RAVINE ROAD, SUITE B
FOLSOM, CA 95630-4719
(916) 985-1000 FAX (916) 985-1020

Project Manager SCOTT ELKINS

Collected by: (Print and Sign) TOM MALAMAKAL

Company SEALASKA Email SCOTT.ELKINS@SEALASKA.com

Address 18743 FRONT STNE STE 201 City POULSBO State WA Zip 98370

Phone 360-626-3991 Fax

Project Info:

P.O. # 01331

Project # 01C

Project Name AOC92

Turn Around Time:

☐ Normal

☑ Rush

specify

Lab Use Only

Pressurized by:

Date:

Pressurization Gas: N_2 He

Lab I.D.	Field Sample I.D. (Location)	Can #	Date of Collection	Time of Collection	Analyses Requested	Canister Pressure/Vacuum Initial	Final	Receipt	Final (psi)
01A	AOC92171121SUPPLY	0282	11-21-17	910	TO-15 BTEX, TPH-G	-29.5	-5.5		
02A	AOC92171121CONF	6L0078	11-21-17	906	TO-15 BTEX, TPH-G	-25.5	-6.5		
03A	AOC92171121CUST	6L1064	11-21-17	907	TO-15 BTEX, TPH-G	-30.0	-8.2		
04A	AOC92171121AAFES	5713	11-21-17	908	TO-15 BTEX, TPH-G	-28.0	-6.5		
05A	AOC92171121FD	2798	11-21-17	909	TO-15 BTEX, TPH-G	-29.5	-6.0		
06A	AOC92171121LOBBY	2516	11-21-17	905	TO-15 BTEX, TPH-G	-27.0	-6.2		
07A	AOC92171121GRAB	6L1591	11-21-17	1736	TO-15 BTEX, TPH-G	-30.0	—		

Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
Tom Malamakal	11-22-17/900	FAT	11/27/17 1015
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time

Notes:

Lab Use Only	Shipper Name	Air Bill #	Temp (°C)	Condition	Custody Seals Intact?	Work Order #
	FedEx		NA	Good	(Yes) No None	1711423

Form 1293 rev.11