DRAFT
2 AUGUST 2017

ANNUAL AIR SPARGE AND SOIL VAPOR EXTRACTION SYSTEM PERFORMANCE MONITORING REPORT – 2016

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

August 2, 2017

Public Works

Mr. Charles Hoffman, PE
Washington Department of Ecology
Attention: 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 – 2016, 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 2015 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,

for Meseret C. Ghebresllassie
Installation Restoration Program Manager
Public Works Department

DRAFT

ANNUAL AIR SPARGE AND SOIL VAPOR EXTRACTION SYSTEM PERFORMANCE MONITORING REPORT – 2016

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

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

AUGUST 2, 2017

JOINT BASE LEWIS-MCCHORD
PIERCE COUNTY, WASHINGTON

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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
CLARC	Cleanup Levels and Risk Calculation
Ecology	Washington State Department of Ecology
eV	electron volts
GAC	granular-activated charcoal
HVAC	heating, ventilation, and air conditioning
IRP	Installation Restoration Program
JBLM	Joint Base Lewis-McChord
m^3/hr	cubic meters per hour
µg/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
VOC	volatile organic compound
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 2016 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, i.e., site Area of Concern [AOC] 9-2) which is currently the site of the Lewis North Credit Union (Figure 1-2).

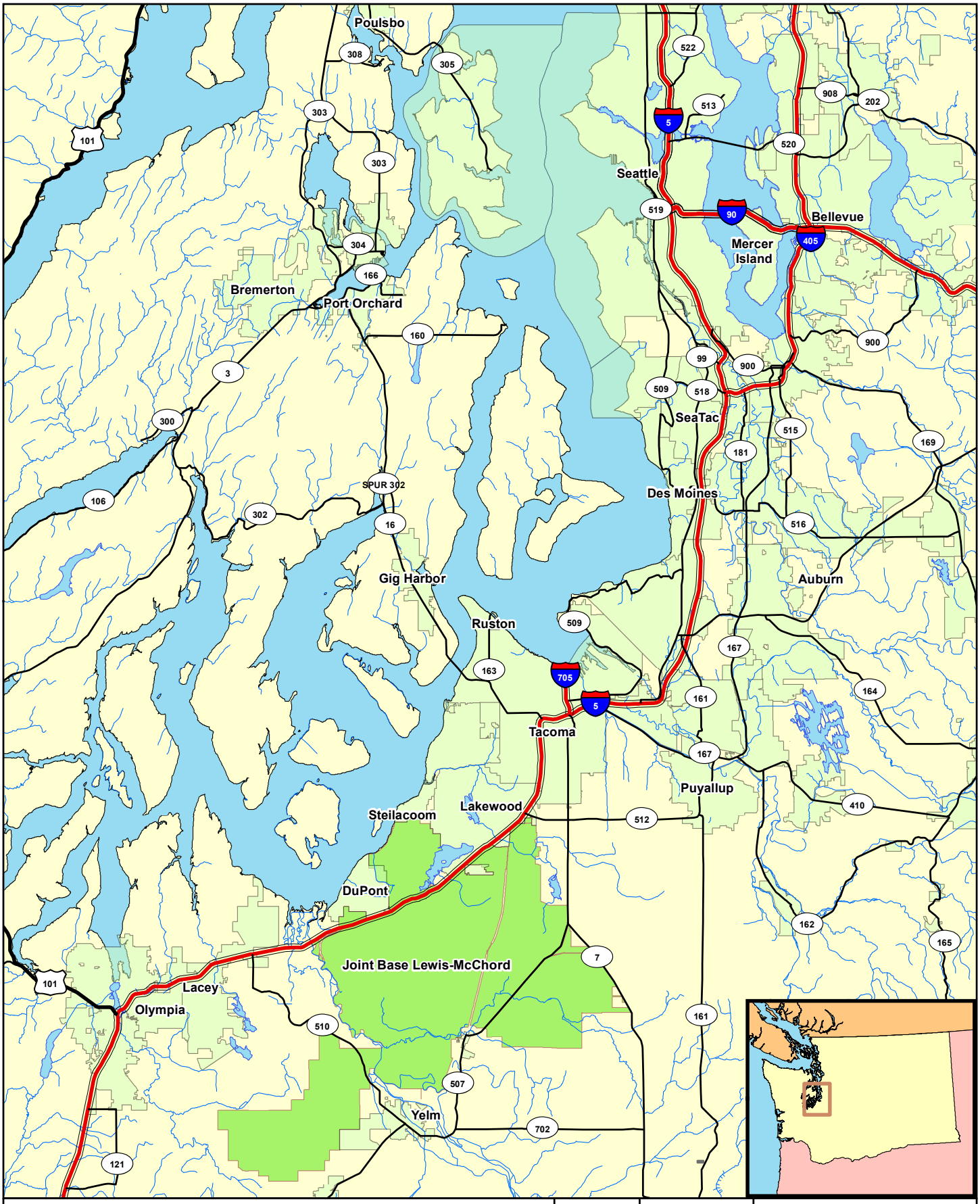
The purpose of this report is to present the information used to verify the effectiveness of the AS/SVE system in removing petroleum contamination from soil and groundwater at AOC 9-2.

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

- Performance monitoring;
- Groundwater monitoring; and
- Vapor intrusion and ambient air monitoring.

Operation, maintenance, and monitoring were conducted in 2016 in accordance with the Final Interim Action Workplan for Area of Concern 9-2, Sub-Slab Depressurization, Air Sparge and Soil Vapor Extraction System at Joint Base Lewis-McChord (Versar 2013a). 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;



USACE	SEALASKA	Figure 1-1 Joint Base Lewis-McChord Location Map

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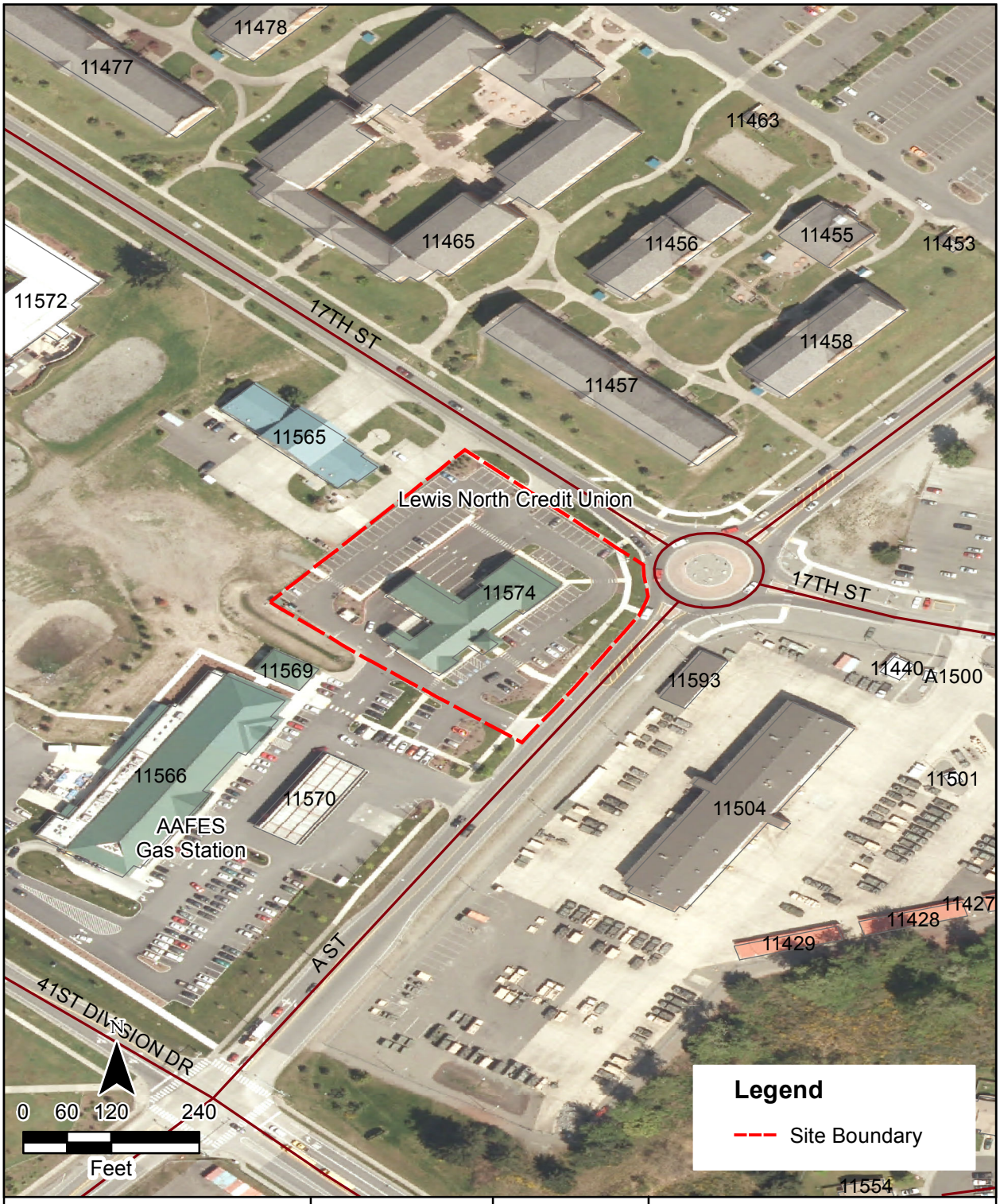
Date: 7/11/2017



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 semi-annual 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 2017] and summarized in this report.)

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). The station, constructed in 1967, 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. As a result, 1,138 cubic yards of petroleum contaminated soil (PCS) were removed at that time. 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 monitoring well installation.

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 a 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 have a capacity of about 1,000 gallons each 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 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 vapor intrusion monitoring were conducted to evaluate the effectiveness of AS/SVE for site remediation and SSD for protection of building occupants. The results of the pilot test and vapor intrusion 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 start up.

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 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 vapor intrusion monitoring completed (Versar 2013b)	2011-2012
AS/SVE system operation and monitoring	2012-current
Vapor intrusion monitoring	2012, 2014-2016
Soil vapor and pressure monitoring	2012, 2015, 2016

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

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 semi-annual groundwater monitoring completed at the site and results.

Section 5 **Vapor Intrusion and Ambient Air Monitoring** – presents a summary of the annual vapor intrusion 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 in 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 air sparge wells. Flow gauges are installed at each well head to measure air flow rate.

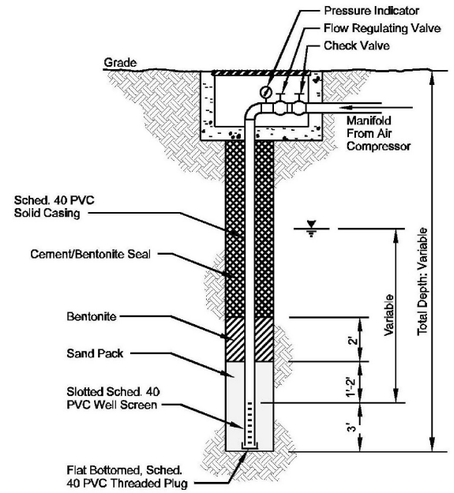
2.4 SOIL VAPOR PROBES

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 in 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.

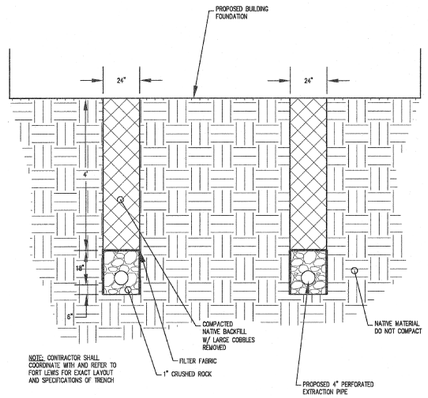
2.5 GROUNDWATER MONITORING WELLS

Eight groundwater monitoring wells are installed at AOC 9-2. The locations of the wells are identified in 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.

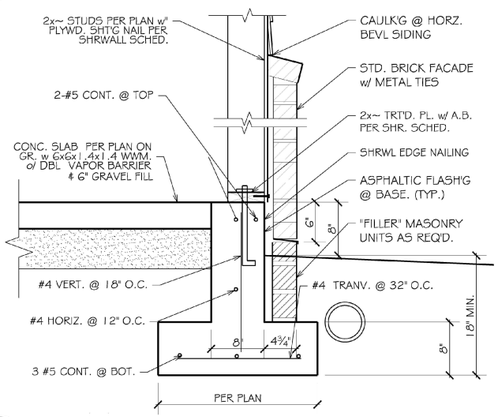
Typical Vertical Air Sparging Well Construction



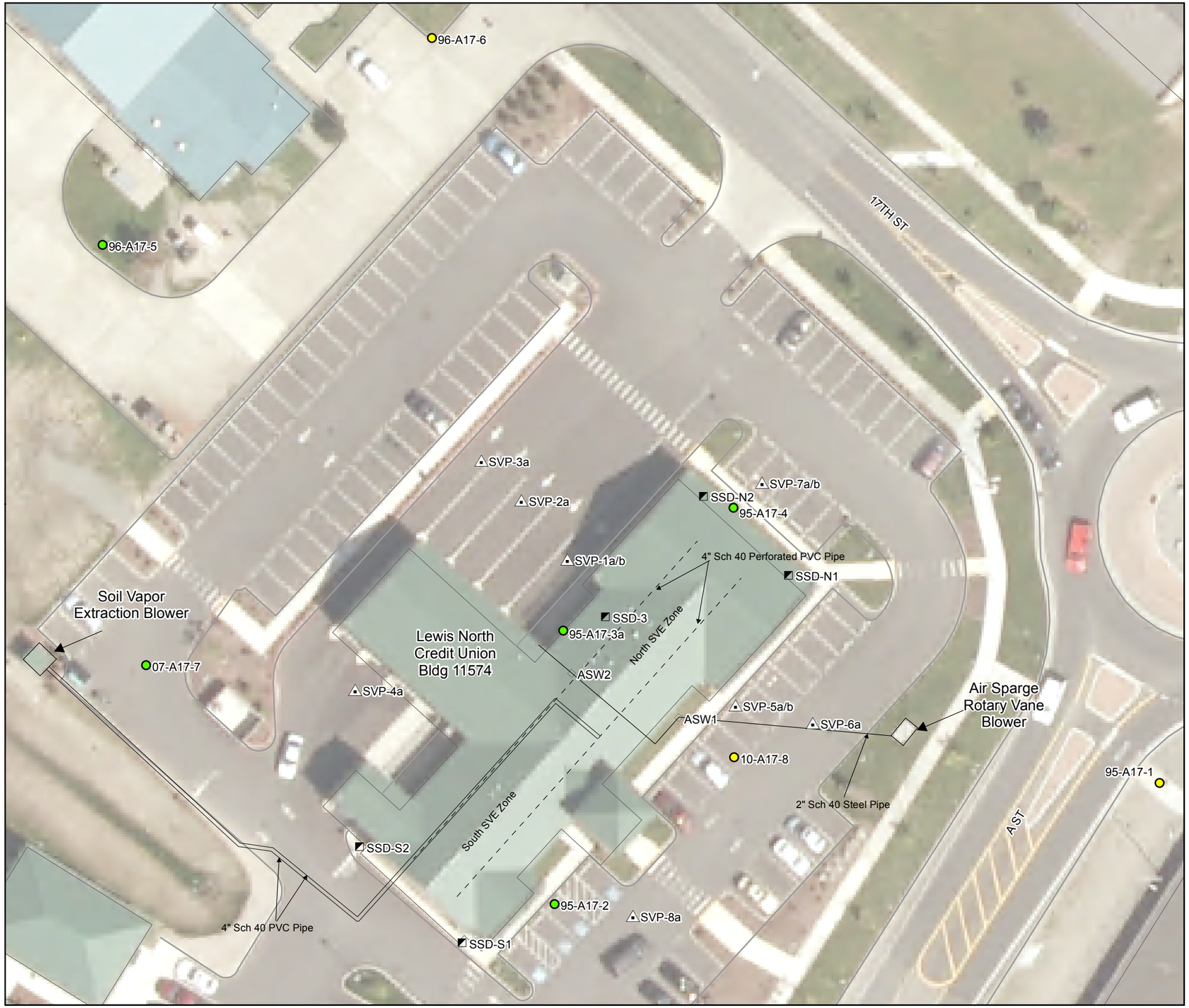
1 Air Sparge Well Construction



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

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Date: 10/6/2015

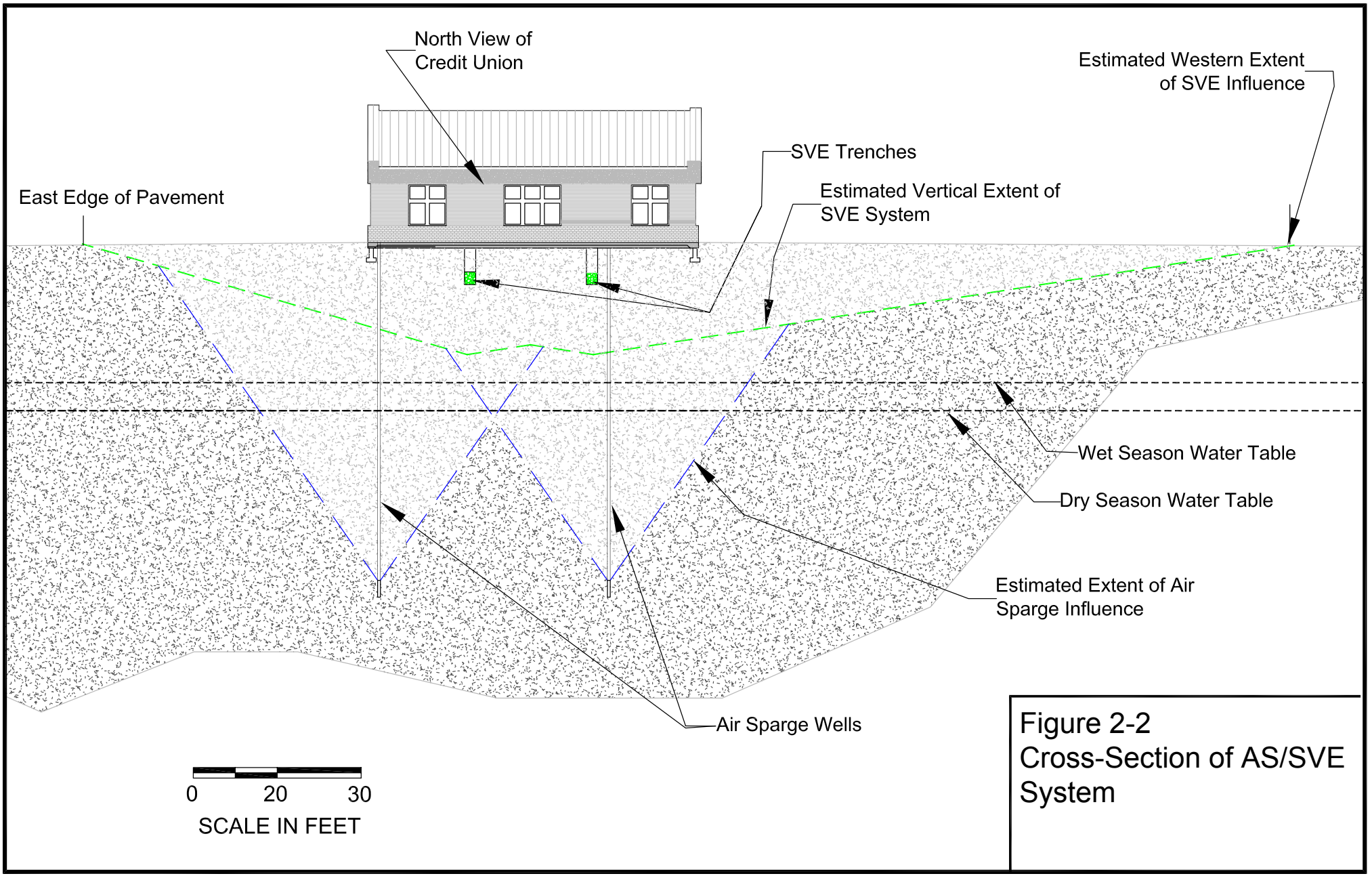


Figure 2-2
Cross-Section of AS/SVE System

3 PERFORMANCE MONITORING AND MAINTENANCE

A description of the required monitoring and maintenance activities is provided in the Final Interim Action Workplan (Versar 2013a).

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 vapor intrusion 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 2014 through 2016 are provided in Appendix A. Collected field data for 2016 along with historical data are provided in Appendix B.

The following sections provide the results of performance monitoring, operation and maintenance activities conducted in 2016.

3.1 AS/SVE SYSTEM INSPECTION AND MAINTENANCE

AS/SVE system inspection and maintenance are conducted to guarantee continued system operation and to remove residual contamination at the site. In 2016, weekly inspection of the blowers revealed no unusual noises or oil leaks. No leaks were observed in the exposed AS/SVE systems piping or fittings.

On June 4, 2015 the AS compressor failed due to a seized motor shaft. A new GAST 6066-P102 compressor was installed on October 10, 2015. The SVE system operated continuously during 2016.

The AS compressor is designed to discharge air at up 20 pounds per square inch (psi) and 20 cubic feet per minute (cfm). After piping and fitting head losses, the typical operating pressure at well heads is approximately 17 psi. The AS well head pressures were observed to be within expected operating condition. AS well heads and injection lines required no maintenance in 2016.

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, extends 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.

3.2 AIR FLOW AND TEMPERATURE MONITORING

Airflow 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 airflow velocity in the SVE exhaust line is approximately 40 to 50 meters per second. In 2016, the measured airflow velocity of the SVE suction lines were within normal range.

The acceptable temperature at the AS wells (ASW-1 and ASW-2) and in the SVE suction lines is less than 129°F. This corresponds to the lowest temperature where Schedule 40 PVC can distort. All temperatures measured for the AS well heads and SVE suction lines were below this value.

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. The effectiveness of the SSD system in mitigating vapor intrusion 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) utilizing 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 2016. Monitoring locations are identified in 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)
1/8/2016	0.03	0.03	0.03	0.03	0.01
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
1/29/2016	0.03	0.02	0.03	0.04	0.02
2/5/2016	0.02	0.02	0.02	0.02	0.01
2/12/2016	0.02	0.02	0.02	0.02	0.01
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
3/11/2016	0.01	0.01	0.02	0.02	0.01
3/18/2016	0.01	0.01	0.02	0.02	0.01
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
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
5/6/2016	0.03	0.03	0.02	0.02	0.02
5/13/2016	0.01	0.01	0.02	0.02	0.01
5/19/2016	0.03	0.02	0.03	0.02	0.01
5/27/2016	0.01	0.02	0.03	0.02	0.01
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
6/24/2016	0.04	0.03	0.03	0.03	0.01
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
7/15/2016	0.03	0.03	0.03	0.03	0.02
7/22/2016	0.04	0.03	0.03	0.03	0.02
7/28/2016	0.02	0.01	0.03	0.03	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)**
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
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
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
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
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
AVG SSD	**0.02**	**0.02**	**0.02**	**0.03**	**0.01**

Notes:
Differential pressures were obtained using magnehelic gauge.
ND – No data, not applicable
WC – Water column

Historical data indicate negative pressure was maintained beneath the building since system startup in 2012. Historical monitoring data are provided in Appendix B, Tables B-1 and 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. It is presumed that water vapor and liquid condense and collect on the sub-slab vapor barrier and flow 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). Semi-annual SVE exhaust samples were collected using Tedlar bags on March 23, 2016, June 13, 2016, September 21, 2016, and December 28, 2016. During each event, Tedlar bag samples were collected from the bulk air stream at the center of the SVE blower exhaust pipe at four, equally-spaced 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 yielded low concentration of VOCs in 2016. Increased VOC concentrations were observed in SVE exhaust in April and May 2016. It is likely that some plume rebound occurred during the period when the AS compressor was offline in 2015.

3.4.2 Results of Tedlar Bag Sampling of SVE Exhaust

Concentrations of TPH-G ranged from 780 microgram per cubic meter (µg/m^3) and 1,100 µg/m^3 and benzene concentrations between 0.4 µg/m^3 and 0.5 µg/m^3 during the March 2016 sampling event. TPH-G concentrations in June, September, and December 2016 ranged from 230 µg/m^3 to 570 µg/m^3. Benzene concentrations ranged between 0.2 µg/m^3 and 0.6 µg/m^3 in in June, September, and December 2016.

Results of SVE exhaust sampling by Tedlar bag are provided in Table 3-2 and on Figures 3-2 and 3-3.

Figure 3-1.
Weekly VOC Concentrations at SVE Blower Exhuast
May 2012 through December 2016

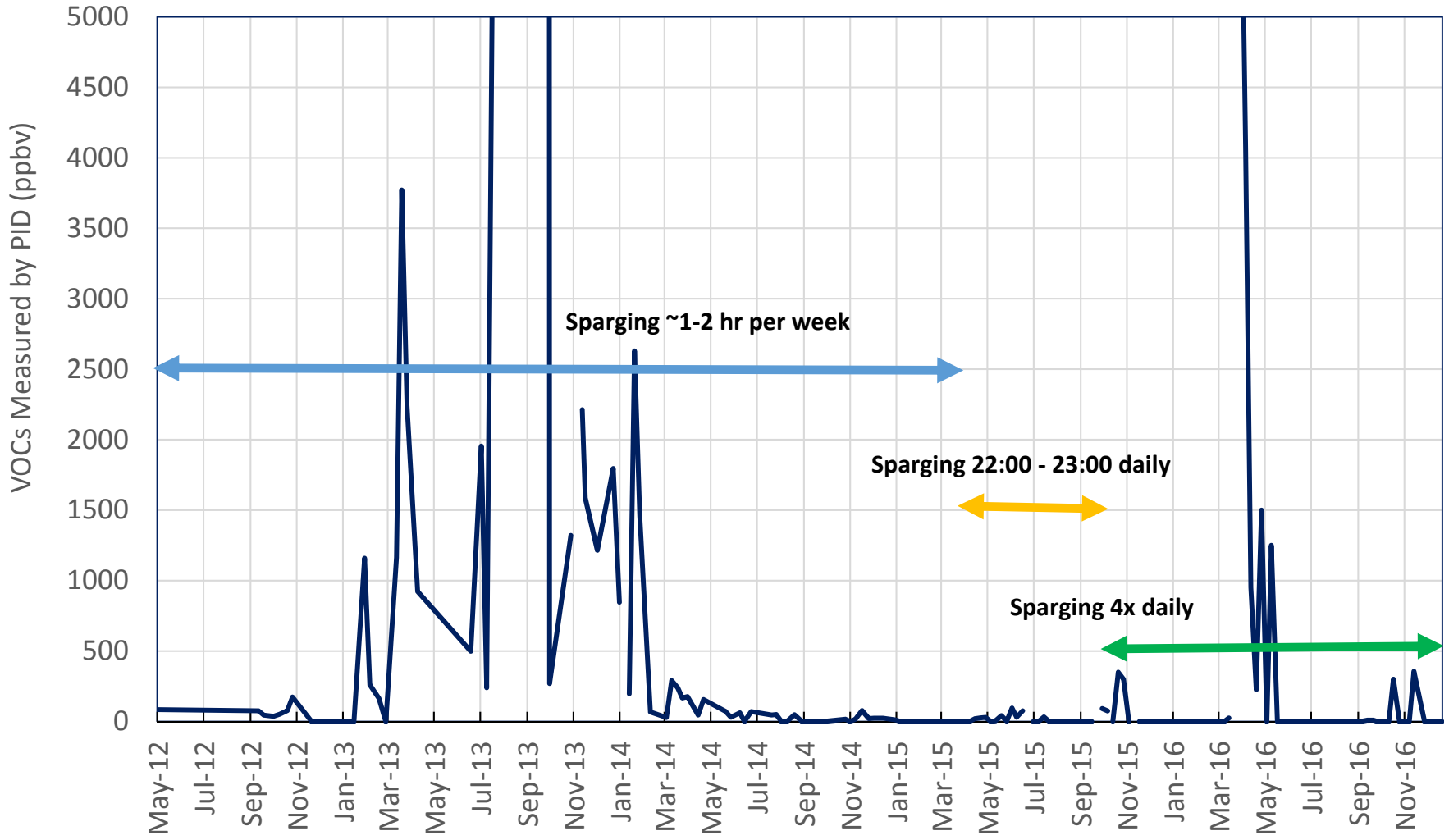


Table 3-2. 2016 Results of SVE Exhaust Tedlar Bag Samples

Date	Sample ID	Time Collected	TPH-G (ppbv)	TPH-G (µg/m^3)	Benzene (µg/m^3)	Toluene (µg/m^3)	Ethyl Benzene (µg/m^3)	m,p Xylene (µg/m^3)	o-Xylene (µg/m^3)	Total Xylenes (µg/m^3)[1/]
03/23/2016	AOC92160323SVE1000	1000	245	1,000	ND	9.2	0.57 J	0.8 J	ND	0.8 J
	AOC92160323SVE1300	1300	245	1,000	0.46 J	13	ND	0.88 J	0.55 J	1.43 J
	AOC92160323SVE1530	1530	269	1,100	0.42 J	12	ND	0.93 J	ND	0.93 J
	AOC92160323SVE1800BG	1800	220	900	0.41 J	11	0.8 J	0.9 J	ND	0.9 J
	AOC92160323SVEDUP	1800	191	780	0.43 J	11	ND	0.78 J	ND	0.78 J
06/13/2016	AOC92160613SVE1000BG	1000	139	570	0.43 J	14	ND	0.54 J	ND	0.54 J
	AOC92160613SVE1300BG	1300	100	410	0.45 J	19	ND	0.72 J	ND	0.72 J
	AOC92160613SVE1530BG	1530	120	490	0.49 J	9.9	ND	0.59 J	ND	0.59 J
	AOC92160613SVE1800BG	1800	100	410	0.47 J	7	ND	0.61 J	ND	0.61 J
	AOC92160613SVEDUP	1800	110	450	0.58 J	11	ND	1.0 J	ND	1.0 J
09/21/2016	AOC92160921SVE-1000	1000	98	400	ND	4.7	0.34 J	1.1 J	0.61 J	1.71 J
	AOC92160921SVE-1300	1300	100	410	0.34 J	4.3	ND	1.2 J	0.57 J	1.77 J
	AOC92160921SVEDUP	1305	100	410	0.29 J	3.8	ND	1.2 J	0.61 J	1.81 J
	AOC92160921SVE-1530	1530	120	490	ND	4.6	0.43 J	4.4	1.7 J	6.1 J
	AOC92160921SVE-1800	1800	93	380	ND	4.5	ND	1.0 J	0.49 J	1.49 J
12/28/2016	AOC92161228SVE-1000	1000	56	230	0.23 J	1.0 J	ND	ND	ND	ND
	AOC92161228SVE-1300	1300	110	450	ND	0.84 J	ND	ND	ND	ND
	AOC92161228SVE-1530	1530	88	360	ND	1.2 J	ND	ND	ND	ND
	AOC92161228SVEDUP	1535	73	300	ND	1.0 J	ND	ND	ND	ND
	AOC92161228SVE-1800	1800	110	450	ND	0.86 J	ND	ND	ND	ND

Notes:
[1/] Total xylenes are calculated from sum of m,p- and o-xylenes.
ppbv – parts per billion by volume
µg/m^3 – micrograms per cubic meter
ND – Not Detected
J – estimated value.

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

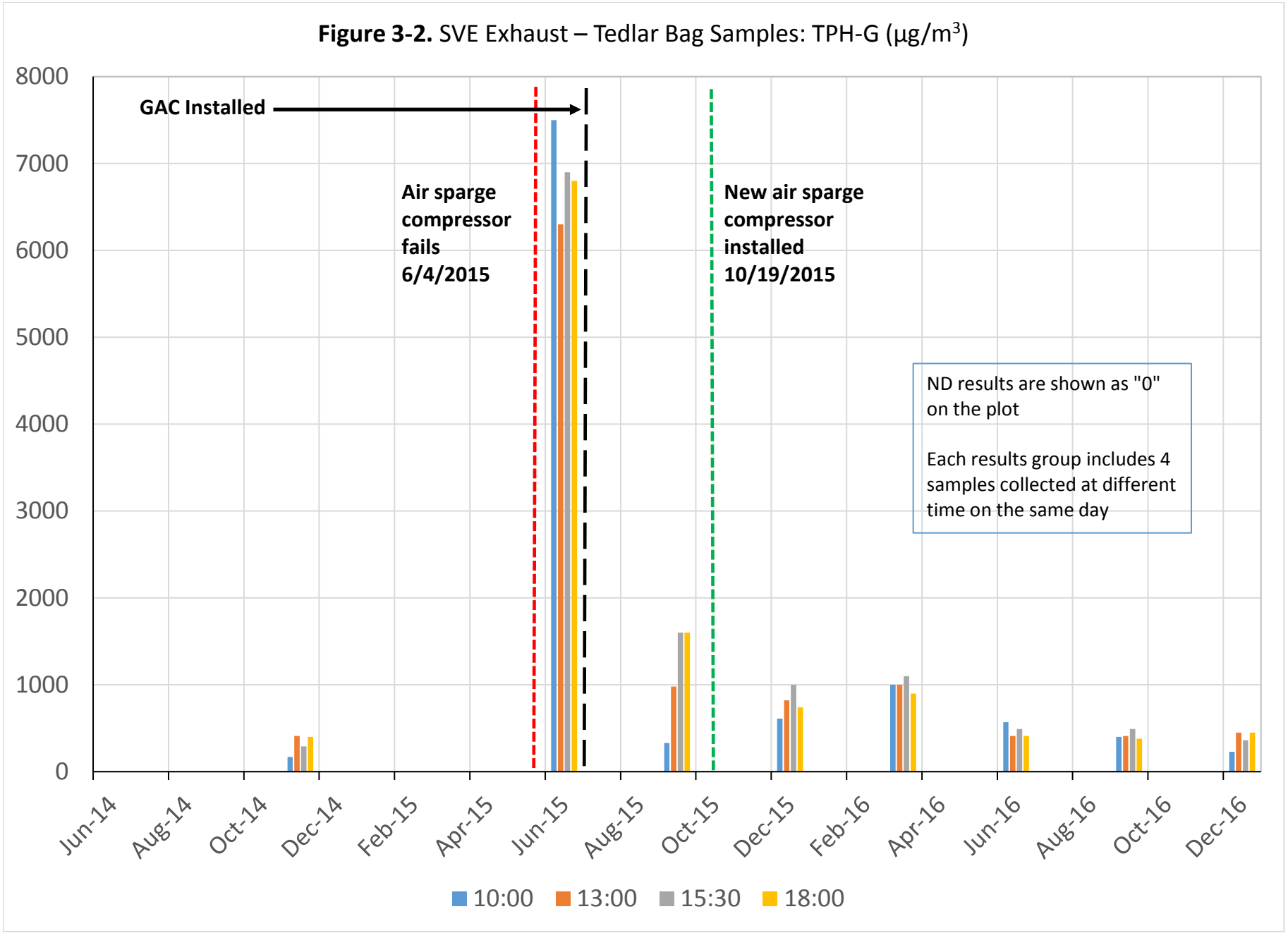
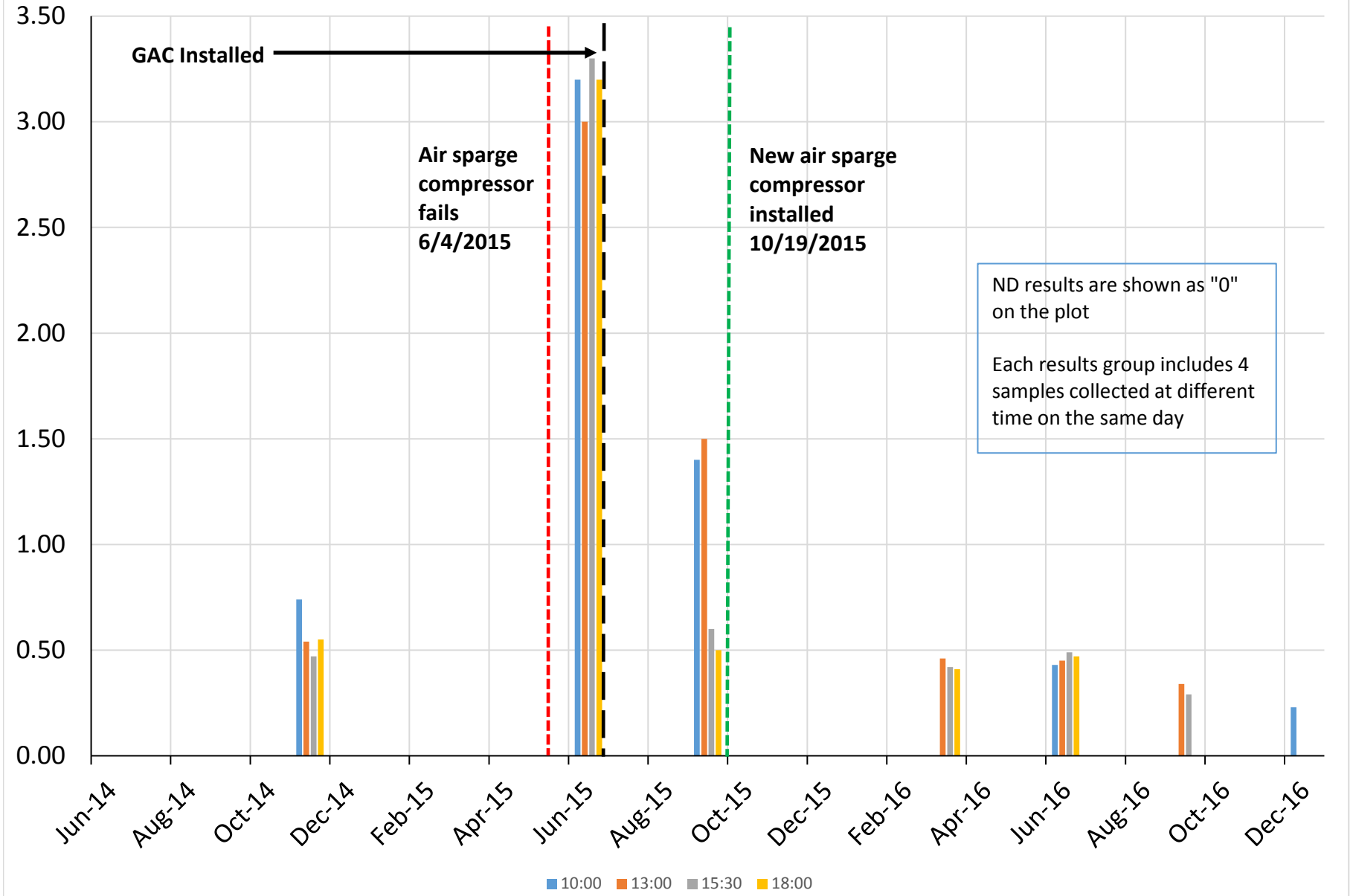


Figure 3-3. SVE Exhaust – Tedlar Bag Samples: Benzene (µg/m^3)



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:
  - 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))
  - 50,000 pounds of VOCs per year for an unpermitted facility (PSCAA 2015, Section 5.03(a)(3)(C)).

TPH-G and benzene concentrations from the sampling event with the highest concentrations were used to assess the total estimated emissions for 2016. These calculations represent a worst case scenario.

Maximum concentration of TPH-G was 1,100 µg/m^3 on March 23, 2016. 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) $523{,}600\ \frac{\mu g}{hr} \times 8{,}760 \frac{hrs}{year} \times 10^{-6} \frac{g}{\mu g} \times\ 0.0022 \frac{lbs}{g} = \mathbf{10}\ \frac{\boldsymbol{lbs}}{\boldsymbol{year}}\ \boldsymbol{TPH-G}$

Total VOC emissions as TPH-G are estimated to be 10 pounds per year, which is well below the 50,000 pounds per year PSCAA criteria.

The highest concentration of benzene during this peak concentration event was 0.6 µg/m^3 with a maximum blower flow rate (per the manufacturer's specifications) of 476 cubic meters per hour (m^3/hr):

(a) $0.6\ \frac{\mu g}{m^3} \times 476 \frac{m^3}{hr} = 285.6\ \frac{\mu g}{hr}$

(b) $285.6\ \frac{\mu g}{hr} \times 8{,}760 \frac{hrs}{year} \times 10^{-6} \frac{g}{\mu g} \times\ 0.0022 \frac{lbs}{g} = \mathbf{0.006} \frac{\boldsymbol{lbs}}{\boldsymbol{year}}\ \boldsymbol{benzene}$

Extrapolation of the worst case concentrations result in total annual benzene emissions of 0.006 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.

PID readings are collected at the same time during every SVE monitoring event, but weekly PID readings may not be at the same time every week. VOC concentrations in soil vapor vary depending on the time since the last air sparge event. As a result, PID readings may vary from week to week. However, a general decline in VOC concentrations in SVE exhaust has been observed since AS startup, with a brief increase after failure and replacement 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 as the lower ionization potential components are removed. 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.

3.5 SOIL VAPOR PROBE MONITORING

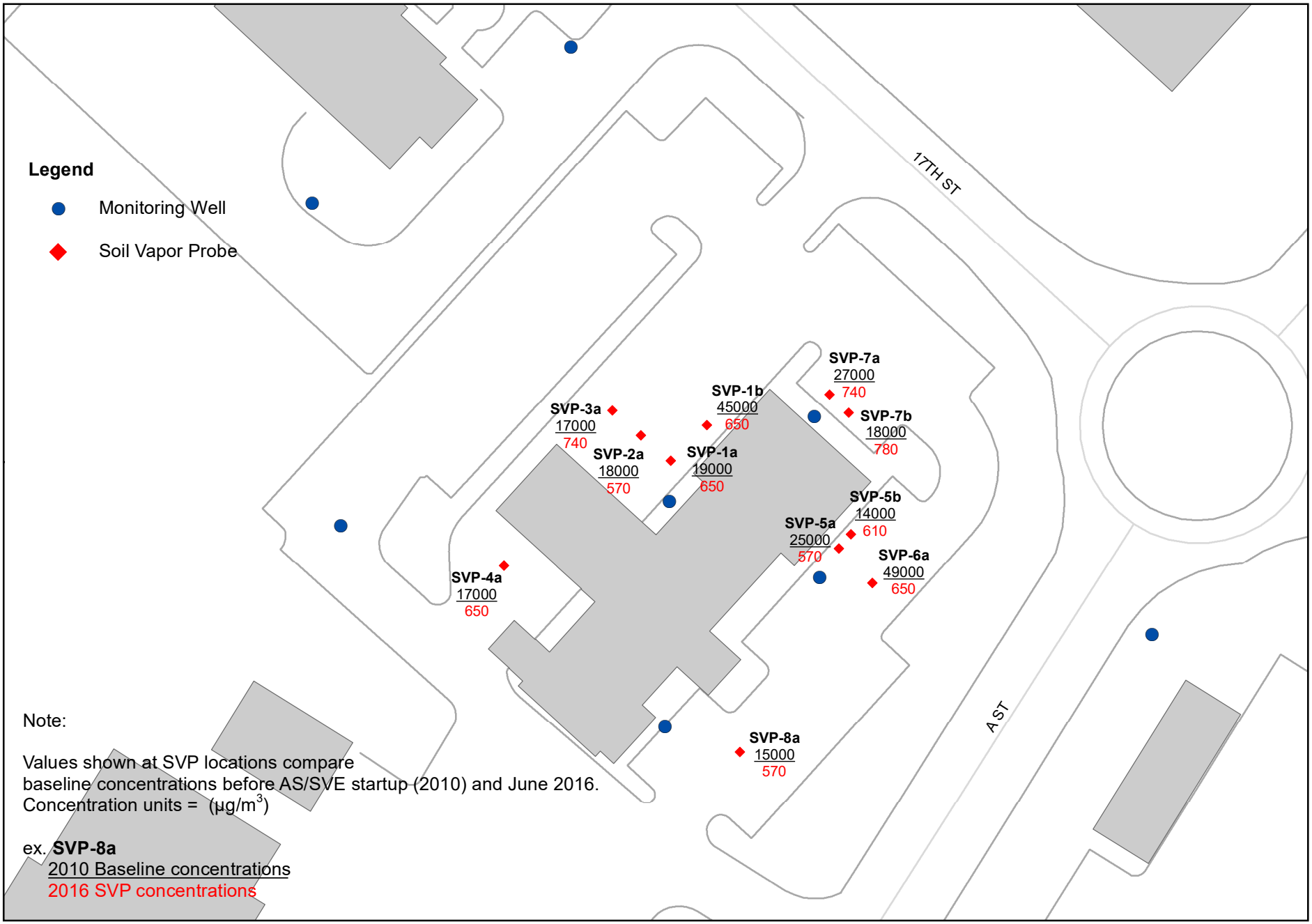
Annual monitoring of SVPs was performed to assess the effectiveness of air sparging and soil vapor extraction. SVP pressures were measured using a magnehelic gauge, configured to measure the difference between atmospheric and subsurface pressures. The SVE blower remains in continuous operation during SVP sampling. The programmed intermittent AS blower operations (four, 30 minute cycles per day) remained unchanged through 2016.

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

During sampling, vacuum pressure was measured at each soil vapor probe locations (see Figure 2-1). A peristaltic pump was used to draw the soil vapor from each SVP. A PID was used for field readings for 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 laboratory for analysis for TPH-G and BTEX by Method TO-15.

Table 3-3 presents the 2016 analytical results for soil vapor samples for TPH-G and BTEX. The TPH-G results for 2010 and 2016 are both shown on Figure 3-4 as a 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 versus the 2010 baseline concentrations.



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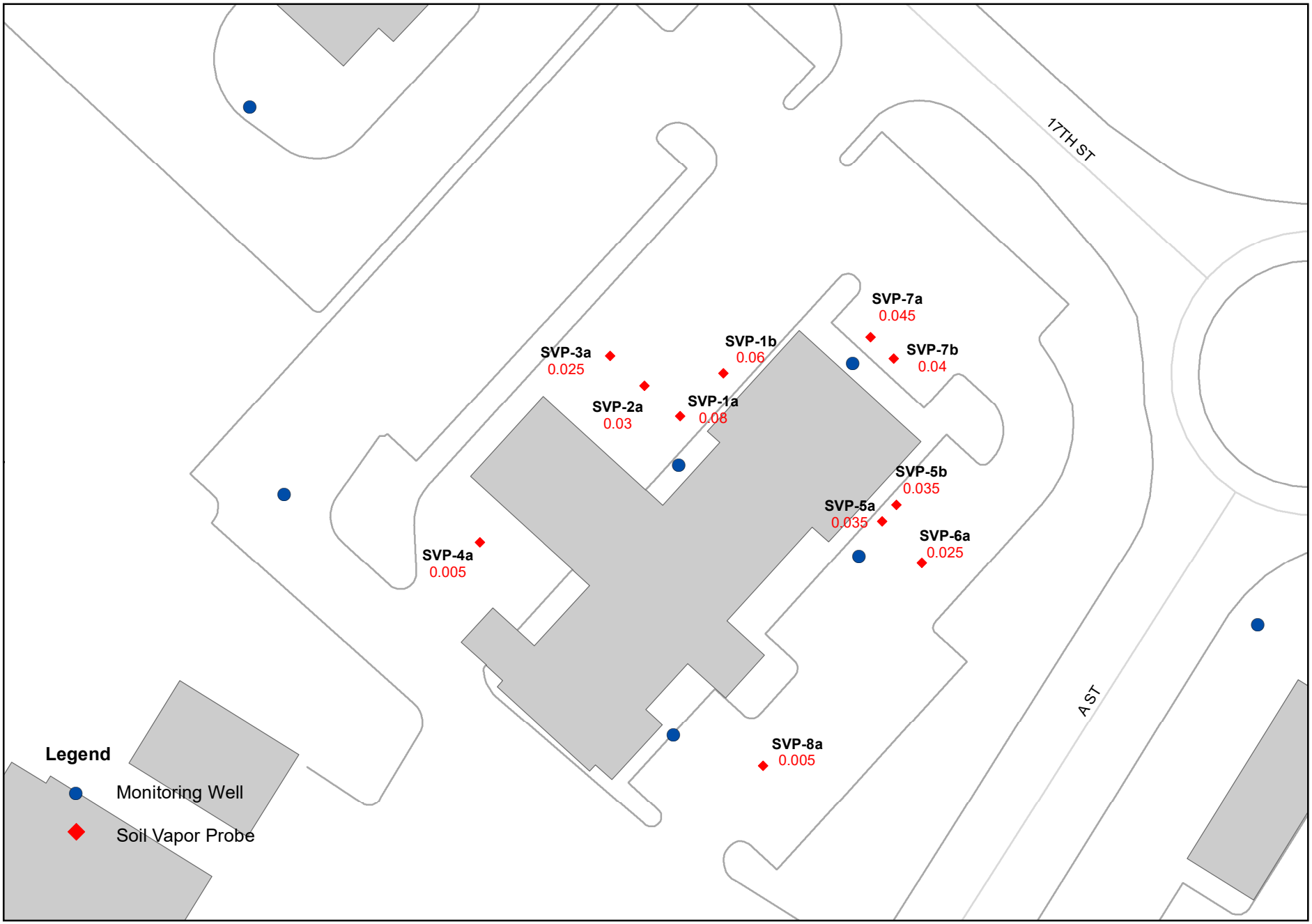
Date: 6/13/2017

Table 3-3. 2016 Soil Vapor Concentrations

Sample ID	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/]
AOC92160613SVP1A	650	2.2	19	3.3	12	4.2	16.2
AOC92160613SVP1B	650	7.4	19	3.3	14	4.4	18.4
AOC92160613SVP2A	570	1.8	18	2.9	12	4.4	16.4
AOC92160613SVP3A	740	1.5 J	24	3.2	12	4.4	16.4
AOC92160613SVP4A	650	1.2 J	9.7	1.9	7.9	2.9	10.8
AOC92160613SVP5A	570	2.2	26	2.6	12	3.9	15.9
AOC92160613SVP5B	610	93	16	2.7	12	4.0	16
AOC92160613SVP6A	650	5.6	15	2.9	12	3.9	15.9
AOC92160613SVP7A	740	0.8 J	14	1.4	6	2.3	8.3
AOC92160613SVP7B	780	0.9 J	20	2.4	8.8	3.3	12.1
AOC92160613SVP8A	570	2.2	12	1.9	8.5	3	11.5

Notes:
[1/] Total xylenes are calculated from sum of m,p- and o-xylenes.
µg/m³ – micrograms per cubic meter
J – Estimated value

Figure 3-5 illustrates differential pressures measured at the 11 SVPs. As was noted during the Pilot Study (Versar 2013b) and 2016 SVP monitoring events, negative differential pressures were observed at all SVPs. In 2016, 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 2016 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

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Figure 3-5
Differential Pressure Readings (inches of water)
June 2016

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Date: 6/13/2017

4 GROUNDWATER MONITORING

This section provides a summary of the semi-annual groundwater monitoring that is conducted at the AOC 9-2 site. All wells are sampled semi-annually except well 95-A17-4 which is sampled annually during the wet season (spring). The locations of groundwater monitoring wells are shown in 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.

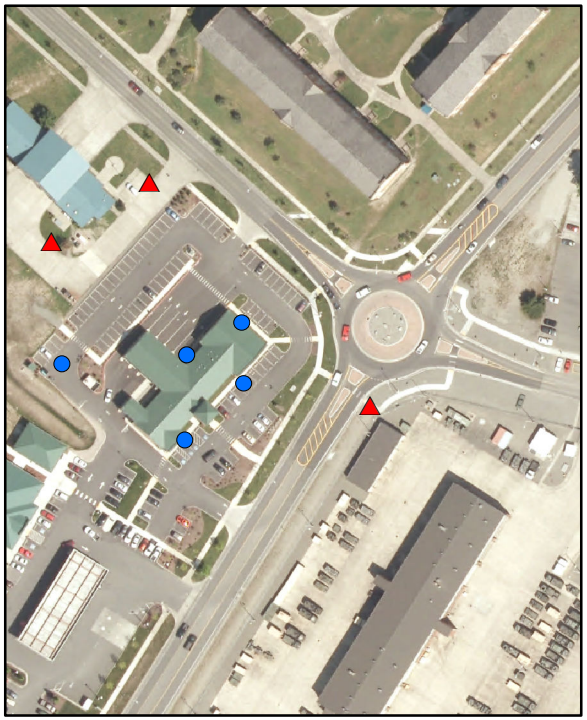
Depth to water and field parameter measurements collected in 2016 and historically are provided in Appendix C, Table C-1. Current and historical groundwater analytical results for TPH-G and BTEX concentrations are provided in Appendix C, Table C-2.

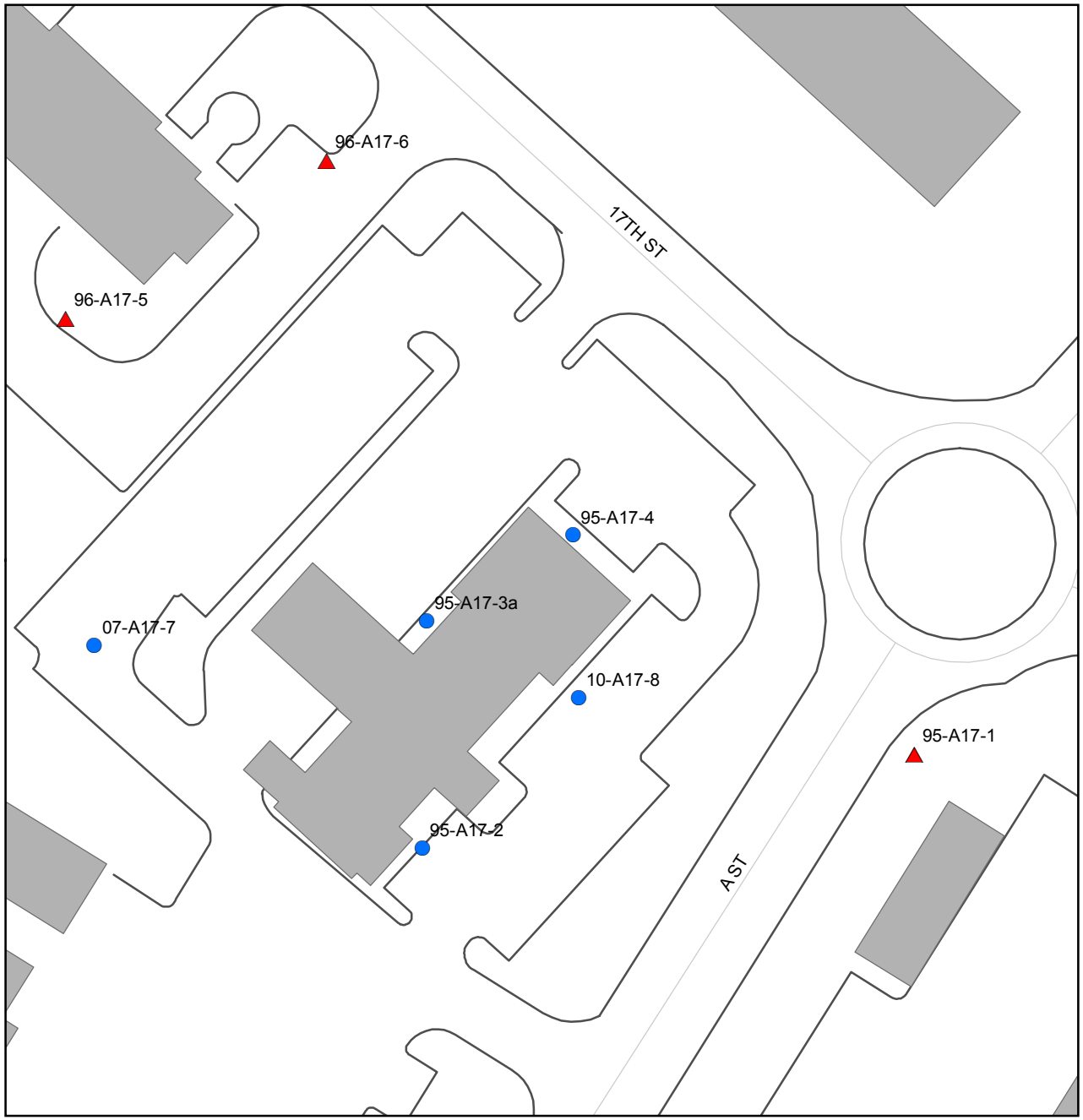
Detailed information regarding the groundwater sampling and results can be found in the Fort Lewis Agreed Order Groundwater Monitoring Report (Sealaska 2017a).

4.1 WATER LEVEL MONITORING

Groundwater level plots from the April and August 2016 sampling events are presented on Figures 4-2 and 4-3, respectively.

Pressure transducers with associated data loggers are installed in monitoring wells 95-A17-2, 95-A17-3A, 95-A17-4, 96-A17-5, and 07-A17-7 to assess the sparge system's influence on groundwater and potential plume mobilization. However, transducer data for much of 2016 is unavailable due to program initialization error. Data was logged for November and December and show mounding effects similar to 2015. Protocols have been established to ensure that future data is being collected as required.





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.

Well 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

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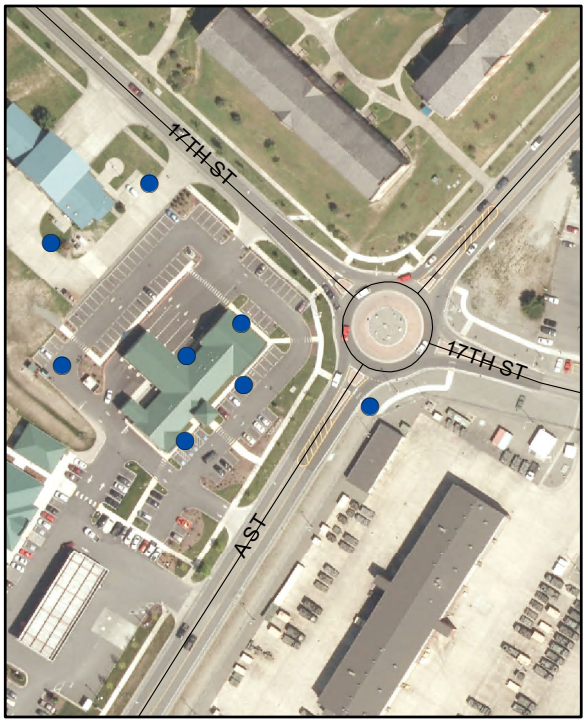
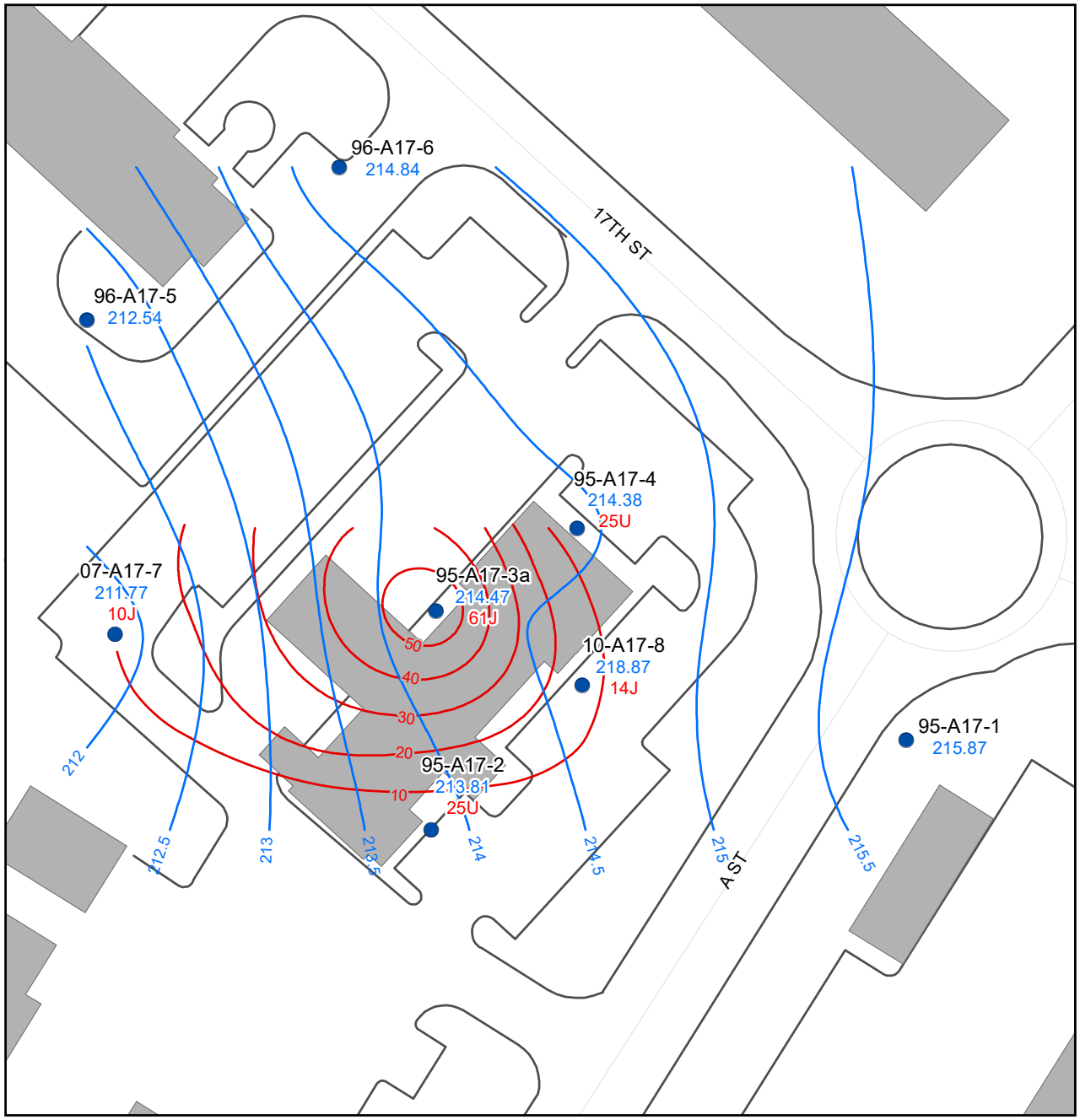
Figure 4-1
Groundwater Monitoring Locations

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 April 18, 2016.

Groundwater samples collected April 18 and 19, 2016.

AS/SVE System was running during sampling (Mounding observed in well 10-A17-8, thus it was not used in contour creation)

TPH-G Cleanup level = 800 µg/L

Legend

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

N

0 15 30 60
Feet

Label ID
07-A17-7 - Well ID
211.77 - GW Elev.
10J - TCE (µg/L)

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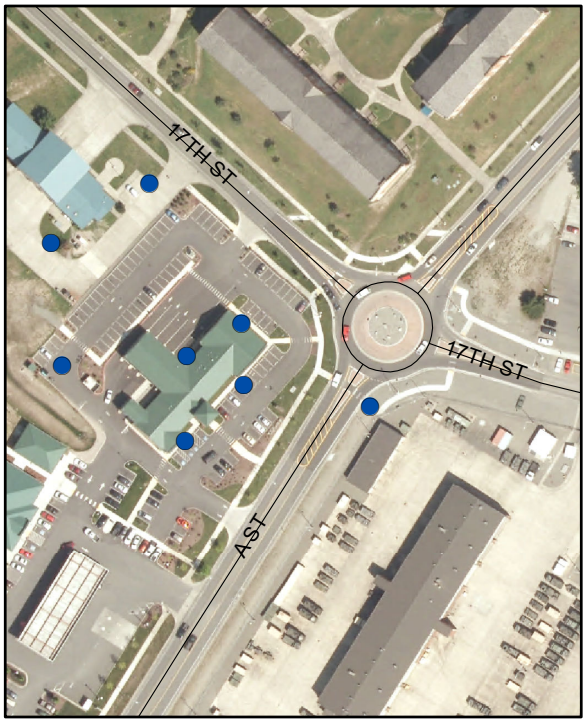
Figure 4-2
AOC 9-2 Groundwater Elevation and TPH-G Concentration Contours April 2016

Path: E:\JBLM\TO 01B\FLAO\FLAO Annual Report 2016\Maps\FLAO_2016_AnnualGW_FIG_3-7.mxd
Date: 6/13/2017



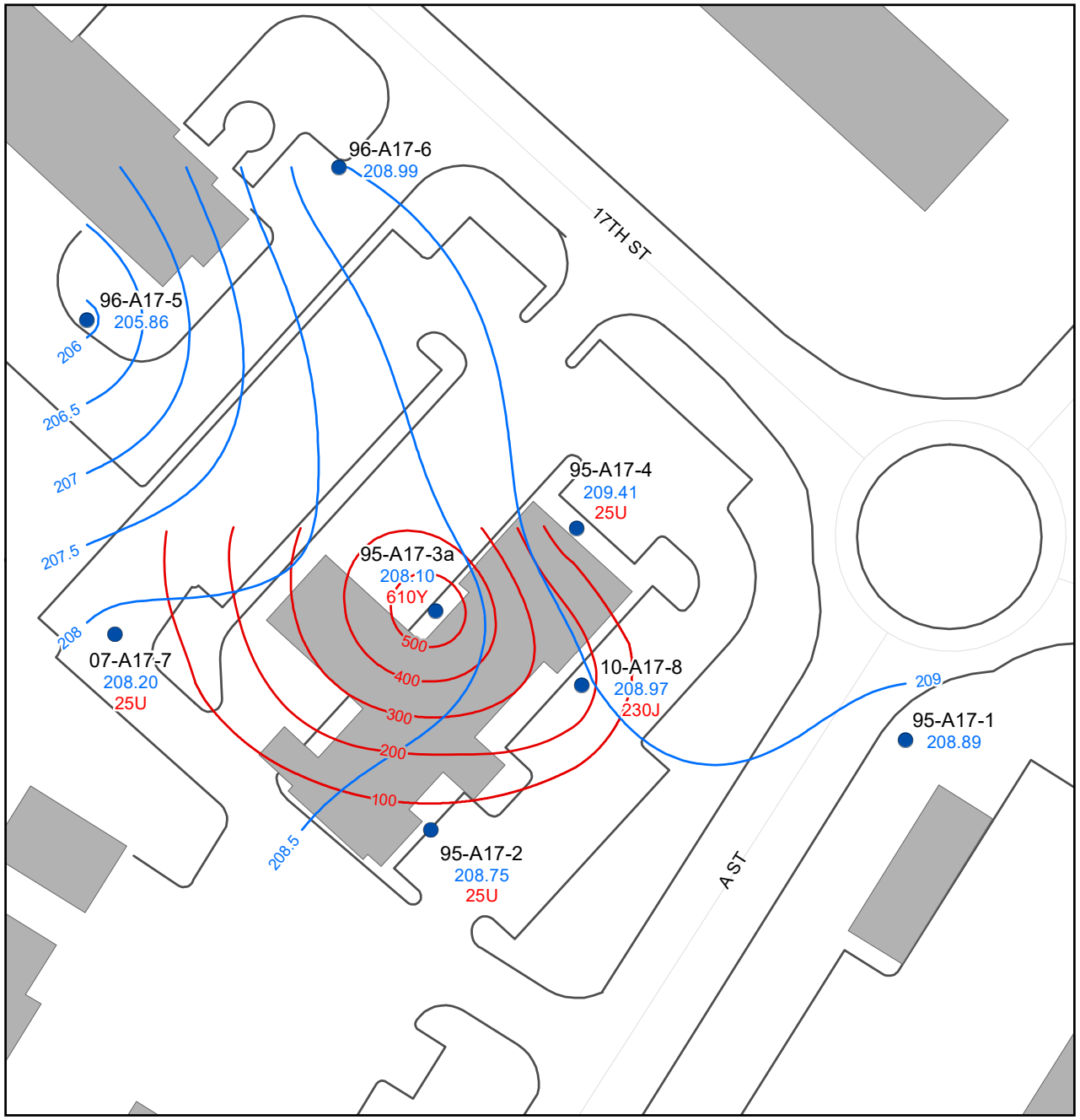
Notes:
Depth to water measurements collected August 18, 2016.

Groundwater samples collected August 29, 2016.

TPH-G Cleanup level = 800 µg/L

Legend

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



N

0 15 30 60
Feet

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

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Figure 4-3
AOC 9-2 Groundwater Elevation and TPH-G Concentration Contours August 2016

Path: E:\JBLM\TO 01B\FLAO\FLAO Annual Report 2016\Maps\FLAO_2016_AnnualGW_FIG_3-8.mxd
Date: 6/13/2017

4.2 GROUNDWATER ANALYTICAL RESULTS

The TPH-G concentration iso-contour lines for the April and August 2016 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.

Historically, 95-A17-3a has been considered at or near the source area since it had the highest detected concentrations of TPH-G ranging from 1,400 micrograms per liter (µg/L; September 2014) to 35,000 µg/L (March 2008). In October 2010, monitoring well 10-A17-8 was completed within the boundary of the historical UST excavation. TPH-G was detected in samples collected from 10-A17-8 ranging from 3,500 µg/L (September 2014) to 74,000 µg/L (November 2011).

During April and August 2016, TPH-G detected in samples collected from 95-A17-3a were at an estimated 61 µg/L and 610 µg/L, respectively, which are below the MTCA Method A cleanup level for groundwater of 800 µg/L. TPH-G was detected at an estimated 14 µg/L (April) and an estimated 230 µg/L (August) in samples collected from 10-A17-8. A duplicate sample was collected during both the April and August sampling events from well 10-A17-8. Sample results are consistent with the primary samples (estimated at 15 µg/L in April and estimated at 230 µg/L in August).

Benzene concentrations detected in samples collected from 95-A17-3a during 2016 were non-detect (April) and 1.9 µg/L (August), which are below the MTCA Method A cleanup level for groundwater of 5 µg/L. Benzene was detected in samples collected from 10-A17-8 at an estimated concentration of 0.14 µg/L (April) and 3 µg/L (August). A duplicate sample was collected during the April and August sampling events from well 10-A17-8. Sample results are consistent with the primary sample (estimated at 0.14 µg/L in April and 3.1 µg/L in August).

Both benzene and TPH-G were either not detected or detected below their respective cleanup levels in samples collected from all the other monitoring wells during 2016. Figures 4-4a through 4-4h presents TPH-G and benzene concentrations in monitoring wells at AOC 9-2 over time. TPH-G and benzene have continued to exceed MTCA Method A cleanup levels in two site wells. Because of this, it is recommended that prescribed monitoring continue in 2017. TPH-G and benzene concentrations at this site in 2016 were orders of magnitude lower than baseline conditions. The AS compressor was replaced in September 2015. Groundwater samples collected in early September 2015 (prior to the AS

compressor replacement) were the highest TPH-G results in over 2 years and BTEX components also showed a dramatic increase during the time the AS system was offline. After replacement of the air sparge compressor, concentrations decreased at all sites. An additional consideration for the low contaminant concentrations is the possibility of the 2016 samples being collected during or close to active air sparging. The AS system currently operates in 30 minute intervals four times per day (0:00, 6:00, 12:00, and 18:00). The April samples were collected across the 12:00 AS interval and while the AS system was offline prior to the August samples being collected, it had run at 6:00 that day prior to the sampling. Sample results were higher in August than in April.

Another possible cause of the low groundwater concentrations is that with the new air sparge compressor installed and the system running efficiently, effective mass removal of VOCs is taking place; the late 2015 and early 2016 results could indicate contaminant rebound while the AS system was down. To maintain consistent conditions for future sampling events, it is proposed that future samples at AOC 9-2 be collected after the AS system has been offline for at least 48 hours.

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

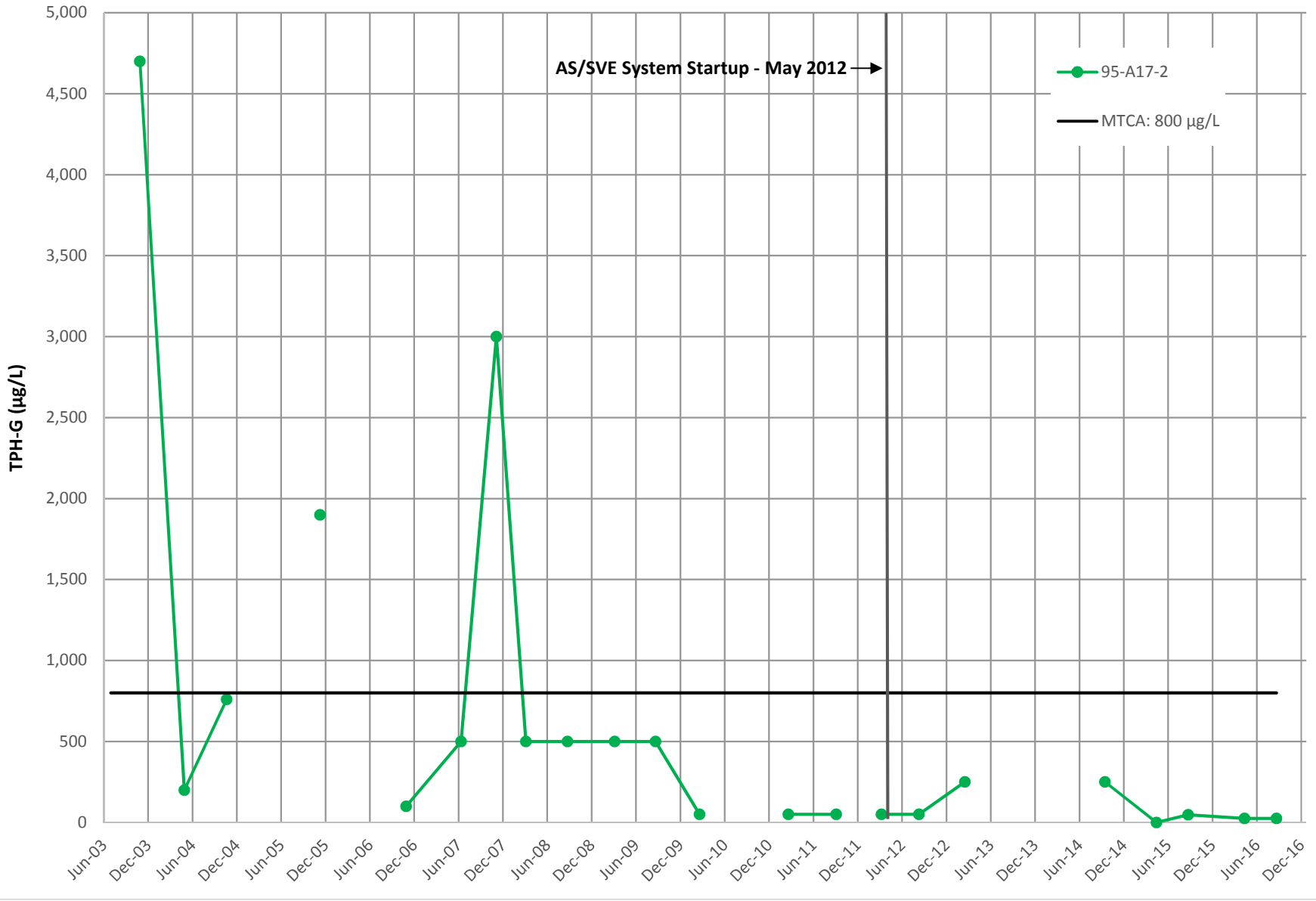


Figure 4-4b. Benzene Trend for 95-A17-2 (AOC 9-2)

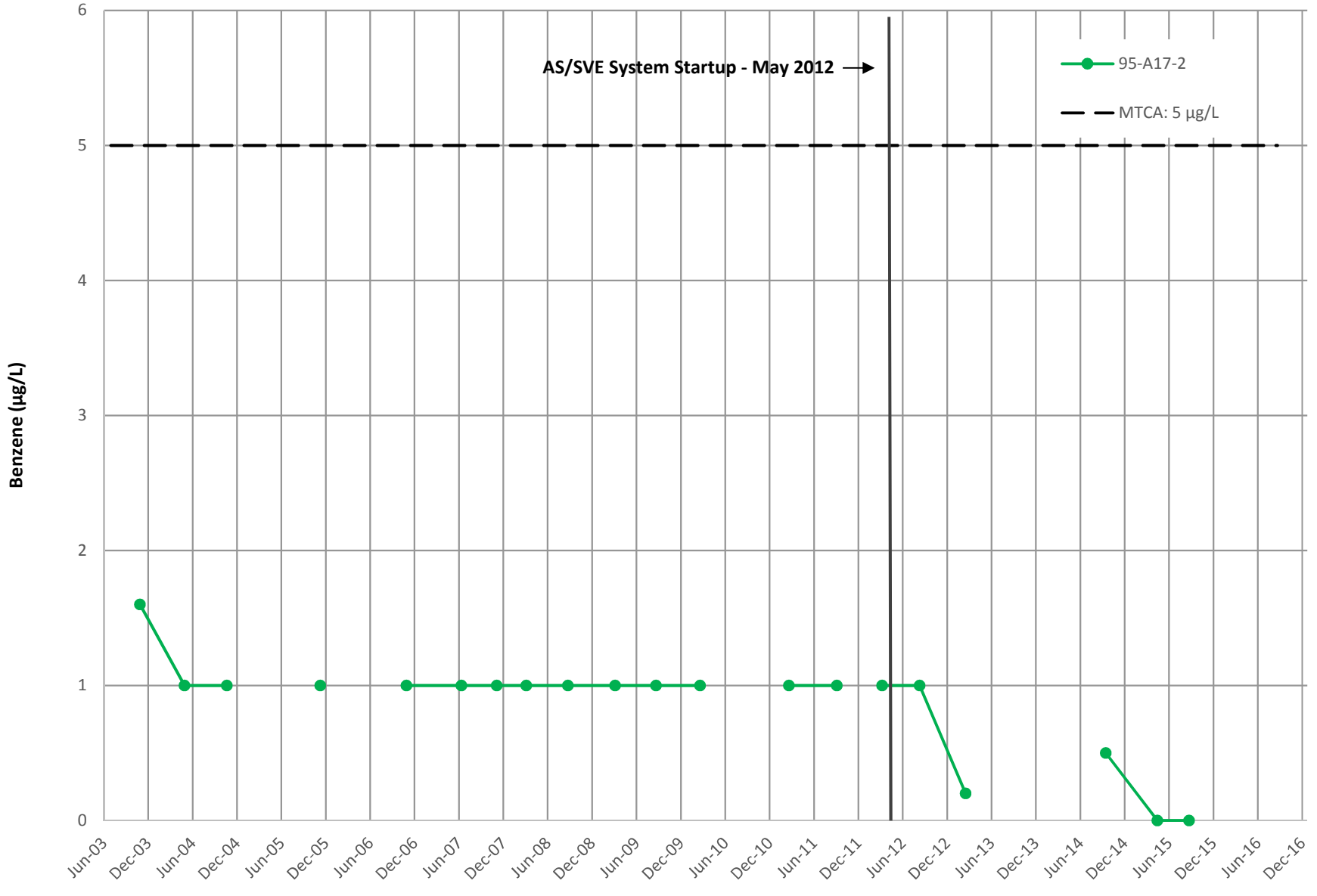


Figure 4-4c. TPH-G Trend for 95-A17-3A (AOC 9-2)

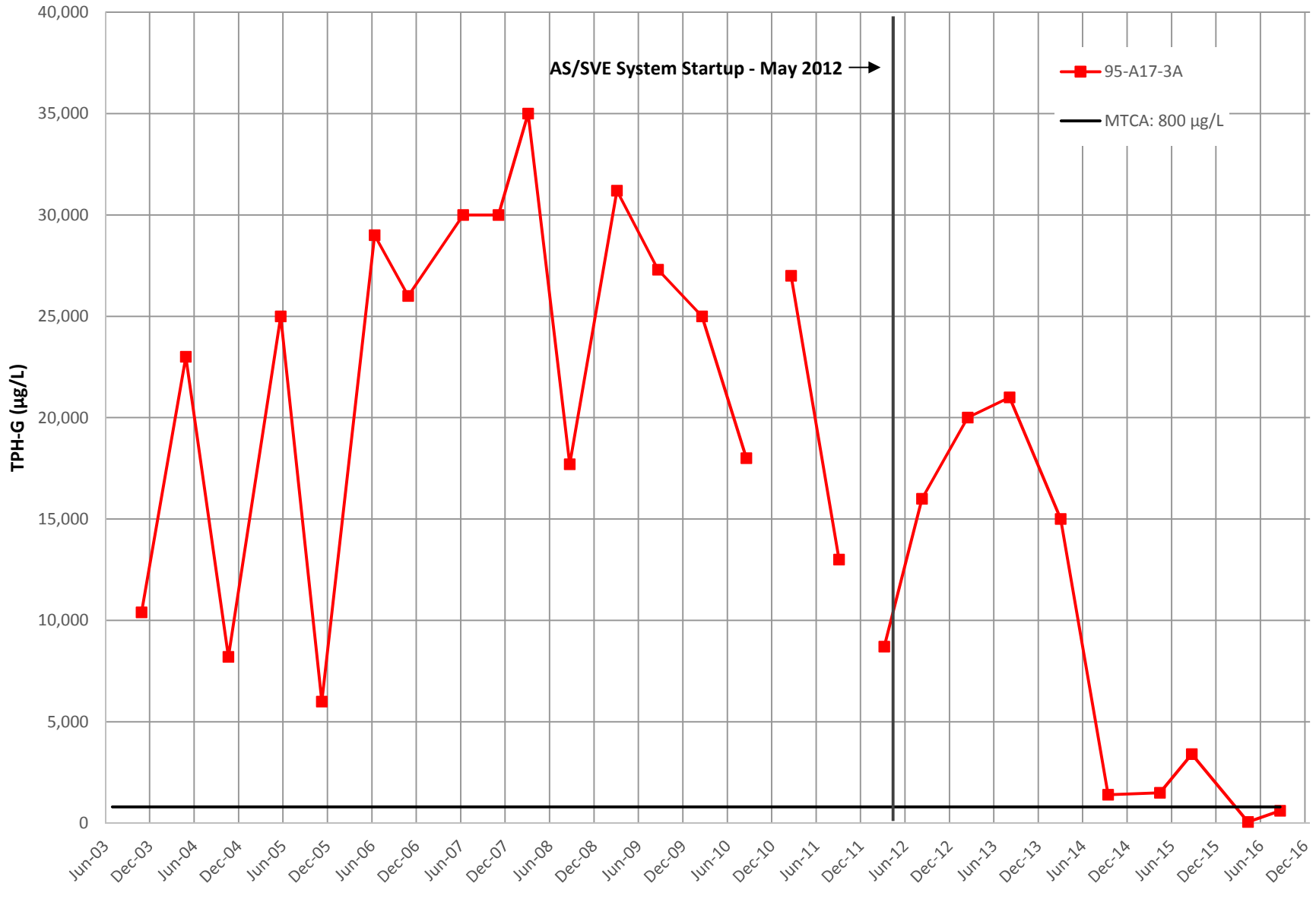


Figure 4-4d. Benzene Trend for 95-A17-3A (AOC 9-2)

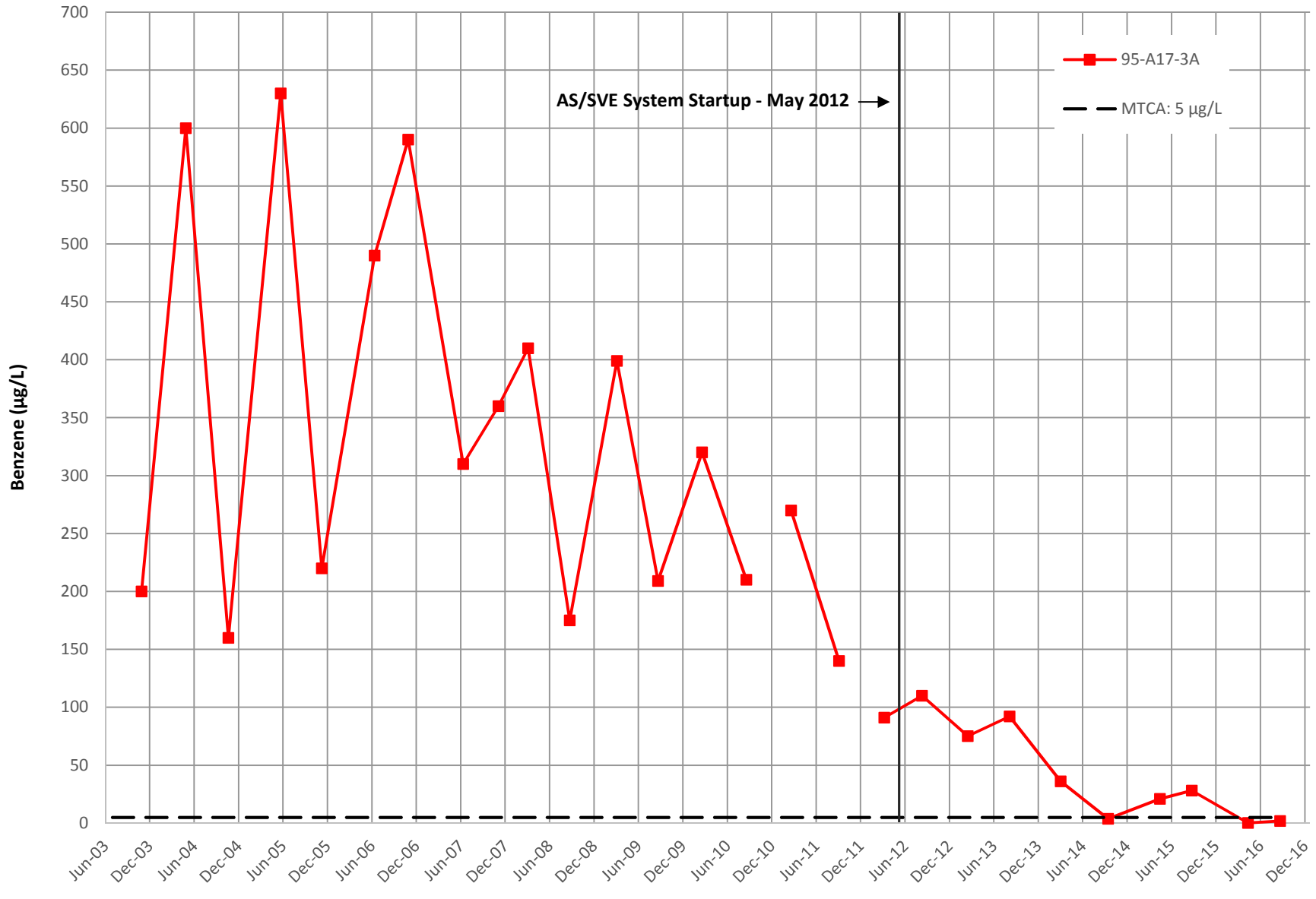


Figure 4-4e. TPH-G Trend for 07-A17-7 (AOC 9-2)

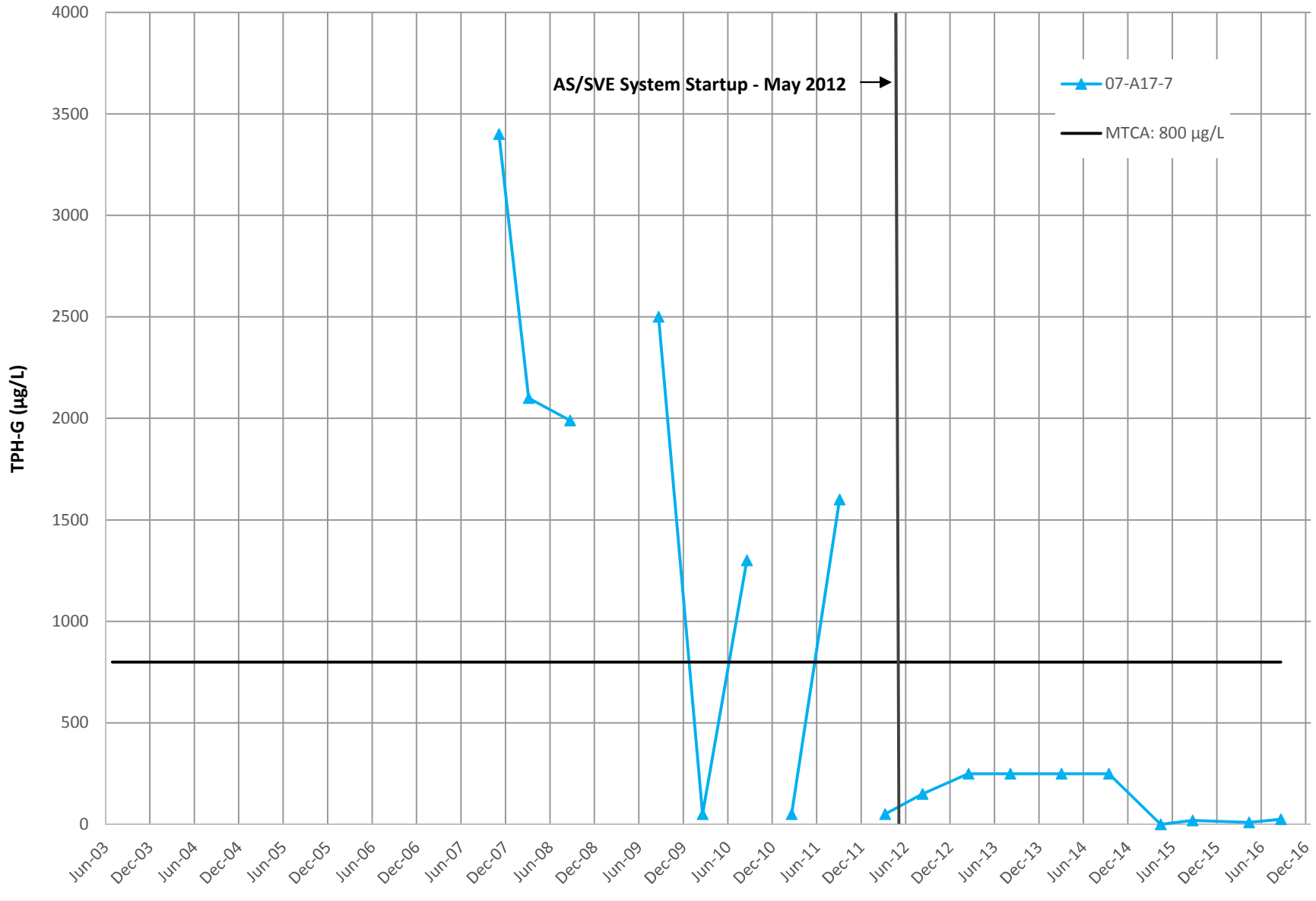


Figure 4-4f. Benzene Trend for 07-A17-7 (AOC 9-2)

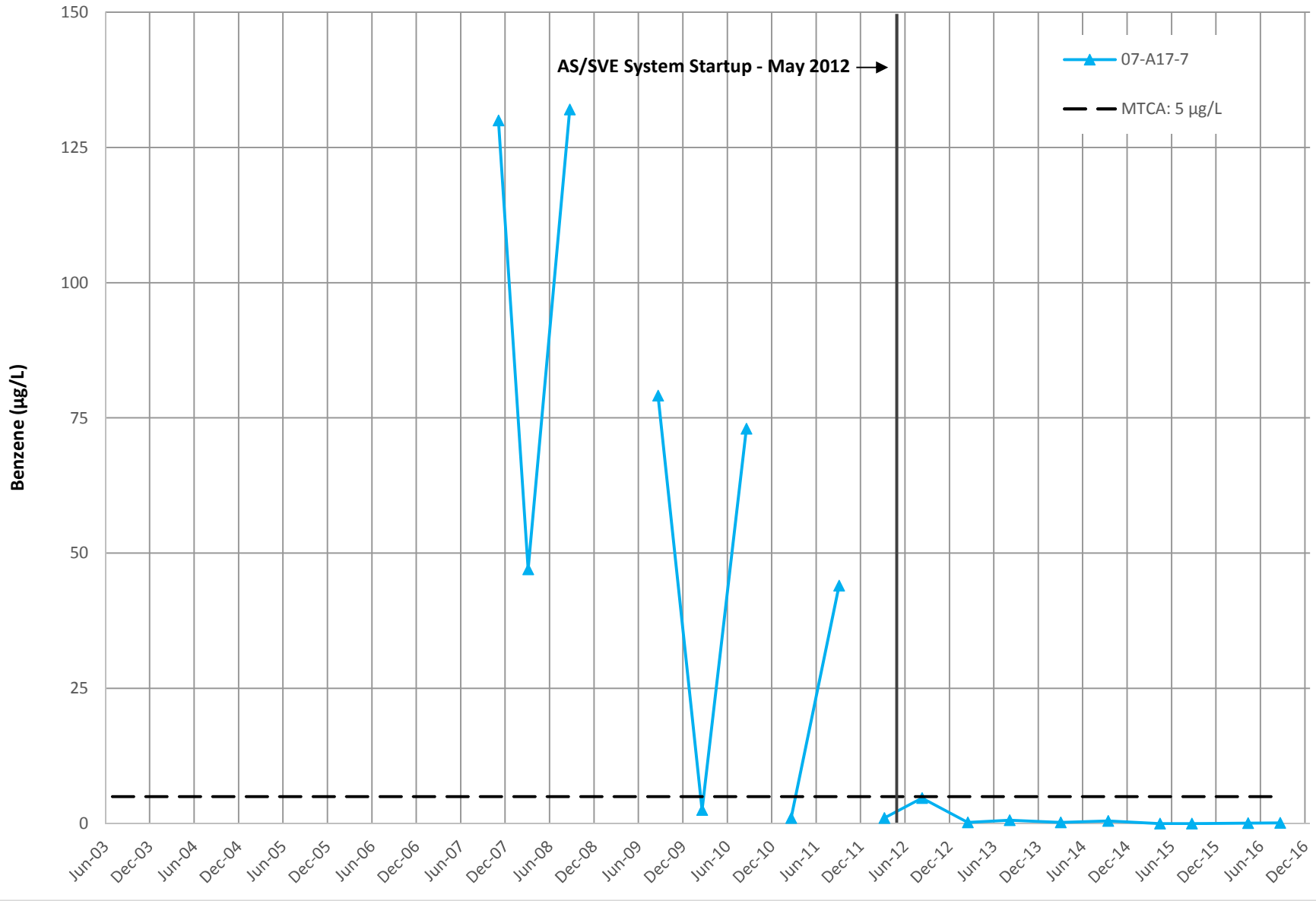


Figure 4-4g. TPH-G Trend for 10-A17-8 (AOC 9-2)

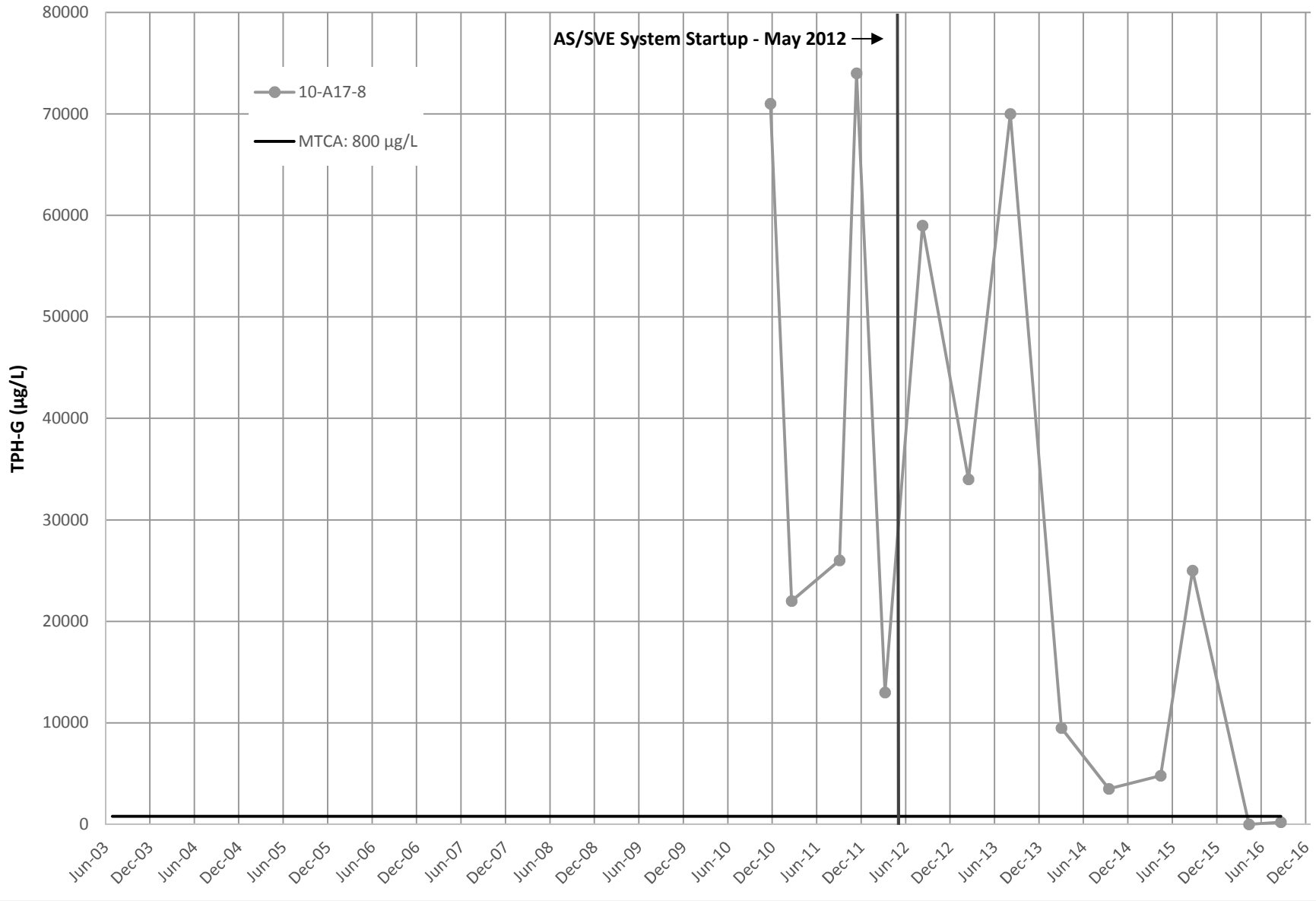
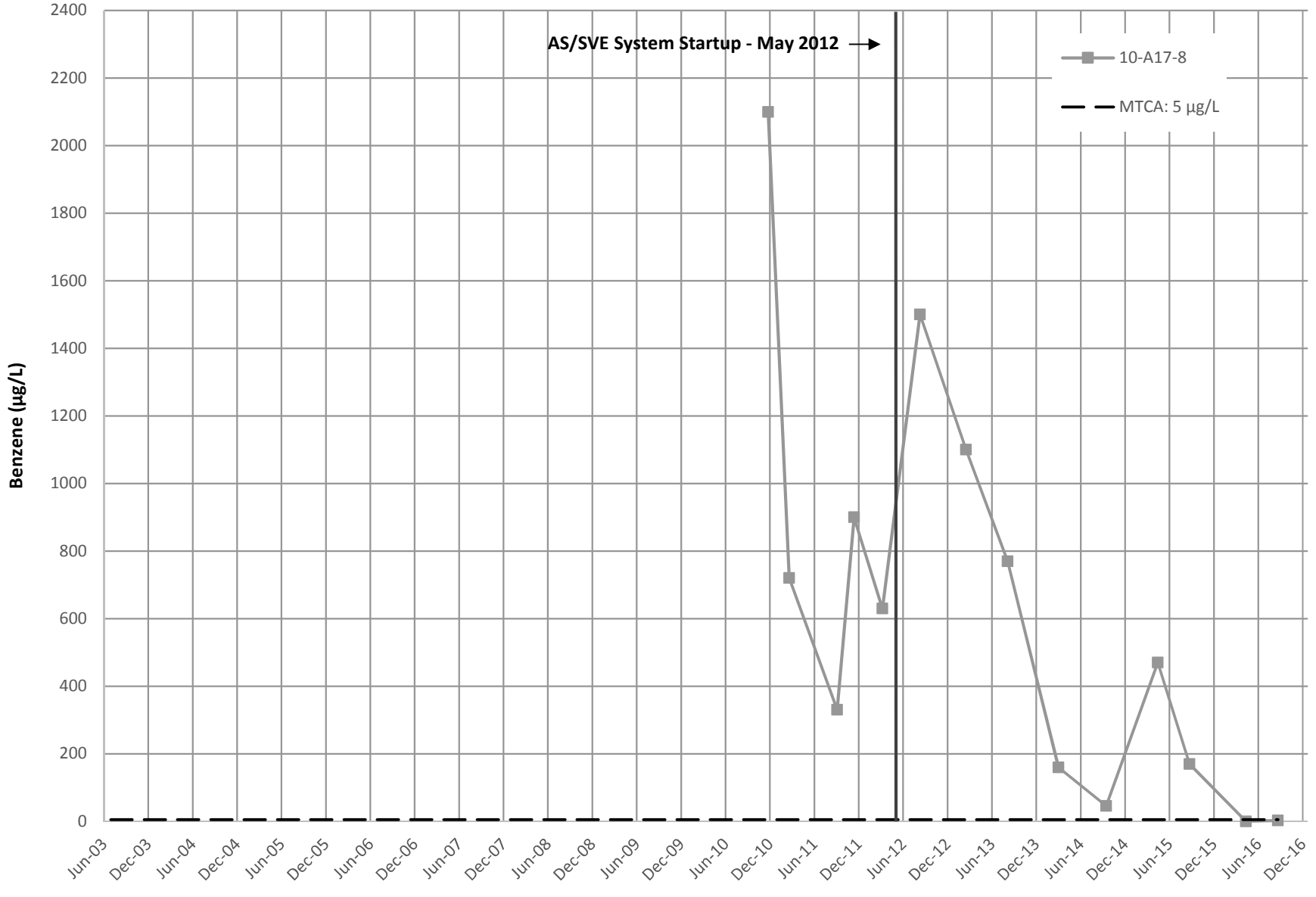


Figure 4-4h. Benzene Trend for 10-A17-8 (AOC 9-2)



5 VAPOR INTRUSION AND AMBIENT AIR MONITORING

Vapor intrusion monitoring is conducted to confirm that VOCs concentrations 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.

Vapor intrusion monitoring was conducted on December 28, 2016. 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 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.
- 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 at the height of the air intake.
- A grab sample was collected in the northernmost fueling island at the adjacent AAFES gas station.

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

Results of vapor intrusion 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 (CLARC) 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.

All air samples collected in December 2016 were non-detect for TPH-G.

The MTCA Method B carcinogen cleanup level of 0.32 µg/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 0.4 µg/m^3 to 1.0 µg/m^3 (see Table 5-1). 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 contained benzene above MTCA Method B carcinogen cleanup level for benzene at 0.6 µg/m^3 and 1.0 µg/m^3, respectively. The grab sample collected at the AAFES fueling island contained benzene at 0.57 µg/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-thru window are below the HVAC intake. During busy business hours, idling cars could be another source of VOCs.

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 concentration detected in the indoor and ambient air were well below the STEL and not expected to be of a 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 (i.e., field quality control results, lab quality control results, practical quantification limits, and holding times) were evaluated in terms of precision, accuracy, representativeness, comparability, and completeness. No corrective actions for field or laboratory data were necessary.

Table 5-1. 2016 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/]
1612495-01A	33799	AOC92161228SUPPLY	Ambient - HVAC Intake	12/28/16	ND	**0.56**	4.3	0.23	1.02
1612495-02A	3332	AOC9216128CONF	Conference Room	12/28/16	ND	**0.45**	0.67	0.1	0.47
1612495-03A	NO756	AOC92161228CUST	Custodian Closet	12/28/16	ND	**0.44**	1.1	0.12	0.44
1612495-04A	21007	AOC92161228AAFES	Ambient - AAFES	12/28/16	ND	**0.99**	5.6	0.38	1.78
1612495-05A	6L1202	AOC92161228FD	Ambient - Fire Dept.	12/28/16	ND	**0.45**	2.6	0.14	0.58
1612495-06A	5785	AOC92161228LOBBY	Lobby	12/28/16	ND	**0.46**	0.93	0.11	0.45
1612495-07A	NO878	AOC92161228GRAB	Ambient – AAFES (grab)	12/28/16	ND	**0.57**	0.88	0.15	0.74
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 2012, 2014, 2015, and 2016 Indoor and Ambient Air Monitoring Results

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

Notes:
[1/] Total xylenes are calculated from sum of m,p- and o-xylenes.
The 2012 TPH-G concentrations for non-ambient samples may have been affected by a building deodorizer. The amount of the impact and what analytes were impacted is not known.
ND – Not Detected

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

6 DEVIATIONS FROM INTERIM ACTION WORKPLAN

Compliance monitoring and vapor intrusion monitoring were completed in general accordance with the Interim Action Workplan (Versar 2013a). Deviations related to groundwater monitoring are presented in the Fort Lewis Agreed Order Groundwater Monitoring Report (Sealaska 2017a).

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.

All groundwater monitoring wells are currently below MTCA cleanup levels for TPH-G and BTEX. However, air sparging strips volatiles from groundwater within the ZOI of the AS wells. AS may be producing a “donut hole” of groundwater with lower concentrations of contaminants around the AS wells with the possibility of a ring of higher contaminant concentrations beyond the ZOI. Turning the AS system off before collecting groundwater samples may provide a better indication of actual contaminant concentrations remaining in the ZOI.

Reducing the air sparge frequency or duration, or turning the AS system off for extended periods may allow for the groundwater plume to “rebound” around the AS wells and allow for increased air stripping, volatilization of contaminants, and contaminant removal from groundwater.

Analysis of the SVE exhaust verified that VOCs are being extracted. Results of SVE blower exhaust monitoring in 2016 indicate benzene emissions of 0.006 pounds/year and total VOC emissions of 10 pounds/year.

Results of vapor intrusion monitoring indicate air concentrations of TPH-G, toluene, ethylbenzene, and xylenes are below MTCA Method B carcinogen and non-carcinogen cleanup levels (see Table 5-1). 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. Benzene concentrations detected in the indoor and ambient air were well below the STEL for 15 minute exposure and not expected to be of a concern to human health.

Benzene concentrations in air samples collected from within the Credit Union building were slightly 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 as potential sources for the elevated benzene concentration detected in the indoor air at the Credit Union building.

8 RECOMMENDATIONS

Weekly, monthly, semi-annual, and annual monitoring and/or sampling events should continue in order to evaluate system operation and remediation progress. Additional information on system monitoring and sampling is provided in the Interim Action Workplan (Versar 2013a) and the Ecology-approved 2016 AS/SVE O&M manual (Sealaska 2017b).

Evaluation of the current monitoring program has been ongoing to determine what monitoring activities are critical for system operations and what activities are not (and can be reduced in frequency or eliminated).

Temperatures, pressures, and flow rates measurements have been conducted on a weekly basis since system startup and are shown to be stable with little to no critical variations. It is recommended that measurement of temperatures, pressures, and flow rates for the AS/SVE system be reduced from weekly to once per month. Weekly site maintenance visits should continue.

Although TPH-G and BTEX concentrations have decreased at all wells, continued monitoring of groundwater is needed to verify that remediation is occurring.

Air sparging events may result in localized decreases in groundwater contaminant concentrations in nearby monitoring wells. In order to collect groundwater that is representative of actual groundwater contaminant plume, it is proposed that monitoring wells be sampled after the AS system has been shut down for at least 48 hours to allow for plume rebound.

As discussed in Section 7, the current AS operation may be producing a “donut hole” of clean groundwater around the AS wells with the possibility of a ring of hydrocarbons beyond the ZOI. Adjusting the AS system operation is recommended. Taking the AS system offline for extended periods is recommended to allow for plume rebound and help increase the volatilization and removal of contaminants. Since this revised AS operation strategy would be expected to increase concentrations in the SVE exhaust, monitoring of the SVE exhaust would be used to assess the effectiveness of the new operation strategy. Groundwater monitoring results would also be used to evaluate the possibility of plume 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.

If the AS operation strategy does not result in 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 Vapor Intrusion 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

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APPENDIX A

FIELD DOCUMENTATION

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

Technician: TOM MALAMAKAL & BOB THOMAS						**Day/Date:** FRI 30 DEC 2016
Weather Condition: (temp, barometer, wind, etc)		39°F ; 30.3 in Hg ; WIND: NNW 0 MPH ; RH: 100%				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	11 27	100	—	56.9	—	GUAGE NOT WORKING
Air Sparge Wells						
11574-ASW-1	1126	100	—	43.8	0	
11574-ASW-2	1116	100	—	62.4	0	
Extraction Blower Suction						
11574-SVE-BS-1	1120	75	18.2	47.5	3	
11574-SVE-BS-2	1120	100	36.4	50.4	6	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	36.1	96.9	**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.)	
	0.010	0.015	0.020	0.020	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: Tom Malamakal & Bob Thomas						**Day/Date:** Fri 23 Dec 2016
Weather Condition: (temp, barometer, wind, etc)			38° F; Wind: N 2 mph, 29.5 in Hg; RH: 99% 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	09:34	100	—	54.6	—	Gauge not working, no pressure
Air Sparge Wells						
11574-ASW-1	09:32	100	—	44.4	0	
11574-ASW-2	09:30	100	—	64.1	0	
Extraction Blower Suction						
11574-SVE-BS-1	0929	75	18.1	46.1	4	
11574-SVE-BS-2	0929	100	28.2	48.6	7	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	35.2	88.6	**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	0.020	0.025	0.025	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.

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

Technician: TOM MALAMPHAL						**Day/Date:** THURS 15 DEC 2016
Weather Condition: (temp, barometer, wind, etc)			34°F, 29.9 in Hg, WIND: NE 2 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:** AUTO ON 4X			**Time Off:** AUTO OFF 4X		
AS Blower Vault	11:39	100	—	55.3	—	NO PRESSURE, GUAGE BROKEN
Air Sparge Wells						
11574-ASW-1	11:40	100	—	43.4	0	
11574-ASW-2	11:30	100	—	64.4	0	
Extraction Blower Suction						
11574-SVE-BS-1	11:42	75	18.3	48.3	3	
11574-SVE-BS-2	11:42	100	24.4	48.5	4	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	37.5	83.3	**VOCs by PID** (ppbv/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.)	
	0.02	0.015	0.025	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.

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

Technician: TOM MALAMAKAL						**Day/Date:** WED DEC 7 2016
Weather Condition: (temp, barometer, wind, etc)			37° F, 30.4 in Hg, WIND NNE 8 MPH; RH: 60% 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	13:45	100	—	61.1	— 0	
Air Sparge Wells						
11574-ASW-1	13:47	100	—	46.1	0	
11574-ASW-2	13:44	100	—	62.1	0	
Extraction Blower Suction						
11574-SVE-BS-1	13:50	75	18.7	55	3	
11574-SVE-BS-2	13:51	100	28.4	53.3	6	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	38.2	89	**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	0.025	0.025	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.

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

Technician: TOM MALAMAKAL + BOB THOMAS						**Day/Date:** WED 23 NOV 2016
Weather Condition: (temp, barometer, wind, etc)			47°F; 30 in; WIND: S 12 MPH.			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		100	—	62.7	—	GUAGE NOT WORKING.
Air Sparge Wells						
11574-ASW-1	1143	100	—	53.4	0	NO PRESSURE IN LINE
11574-ASW-2	1152	100	—	66.3	0	
Extraction Blower Suction						
11574-SVE-BS-1	11:30	75	20.8	51.0	3	
11574-SVE-BS-2	11:30	100	28.6	51.6	6	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	38.6	91.6	**VOCs by PID** (ppbv/ppmv)[d] 356	

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.)	
	0.030	0.015-.025	0.035	0.045	0-0.010	

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 MALAMAKA & BOB THOMAS						**Day/Date:** THURS 17 NOV 2016
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:** AUTO ON 4X				**Time Off:** AUTO OFF 4X	
AS Blower Vault	11:18	100	—	64.3	OFF	P-GUAGE NOT WORKING; NO PRESSURE.
Air Sparge Wells						
11574-ASW-1	11:17	100	—	55.6	0	
11574-ASW-2	11:28	100	—	64.1	0	
Extraction Blower Suction						
11574-SVE-BS-1	11:07	75	20.6	58.1	3	
11574-SVE-BS-2	11:07	100	30.4	60.7	6	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	38.4	10.6	**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	0.010	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 + BOB THOMAS					Day/Date: FRI 11 NOV 2016	
Weather Condition: (temp, barometer, wind, etc)	54°F ; 30.00 in ; WIND: SW 1 MPH ; RH: 99 %				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	9:54	100	—	71.6	—	
Air Sparge Wells						
11574-ASW-1	9:52	100	—	57.5	Ø	NO PRESSURE IN LINE
11574-ASW-2	—	100	—	—	—	ACV CLOSED
Extraction Blower Suction						
11574-SVE-BS-1	9:42	75	23.6	58.4	3	
11574-SVE-BS-2	9:42	100	30.2	59.Ø	6	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	40.4	101.1	**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.)	
	Ø.Ø25	Ø.Ø25	Ø.Ø3Ø	Ø.Ø28	—	CLOSED DUE TO VETERANS DAY.

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 MALAMAKAL & BOB THOMAS						**Day/Date:** FRI 4 NOV 2016
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:** AUTO ON 4X				**Time Off:** AUTO OFF 4X	
AS Blower Vault	1436	100	—	77.8	—	
Air Sparge Wells						
11574-ASW-1	1422	100	—	59.2	—	NO PRESSURE IN LINE
11574-ASW-2	1433	100	—	66.5	—	" " " "
Extraction Blower Suction						
11574-SVE-BS-1	14:09	75	21.3	62.6	3	
11574-SVE-BS-2	14:09	100	29.3	64.4	6	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	39.8	100.1	**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.)
	Ø.Ø22	Ø.Ø2Ø	Ø.Ø3Ø	Ø.Ø3Ø	Ø.Ø1Ø

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 MOUSMAKAIL & BOB THOMAS						**Day/Date:** THURS 27 OCT 2016
Weather Condition: (temp, barometer, wind, etc)			55°F, 29.80 in, WIND: S 11 MPH,		RH: 83%	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	14:26	100	—	76.5	—	GUAGE NOT WORKING
Air Sparge Wells						
11574-ASW-1	1426	100	—	57.3	Ø	
11574-ASW-2	14:20	100	—	66.9	Ø	
Extraction Blower Suction						
11574-SVE-BS-1	14:07	75	22.1	62.6	3	
11574-SVE-BS-2	14:07	100	29.3	62.6	6	
Extraction Blower Exhaust (11574-SVE-BE-1) 14:06		Always 100%	40.Ø	105.7	**VOCs by PID** (ppb/ppmv)[d] 300	25 Ø AMBIENT AIR @ FIRST MEASURE SAMPLE NEXT TO SVE SHED

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.Ø3Ø	Ø.Ø27	Ø.Ø3Ø	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.

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

Technician: Tom MALAMAKAL & BOB THOMAS						**Day/Date:** FRI 21 OCT 2016 ~11:00
Weather Condition: (temp, barometer, wind, etc)			52°F, 30.00 in, WIND. SSE 5 MPH; RH: 97% 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	11:27	100	—	68.2	—	GAUGE NOT WORKING
Air Sparge Wells						
11574-ASW-1	11:24	100	—	57.8	0	
11574-ASW-2	11:20	100	—	67.2	0	
Extraction Blower Suction						
11574-SVE-BS-1	11:12	~~75~~ 100	23	57.6	3	
11574-SVE-BS-2	11:12	100	23	63.4	6	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	36.2	104.6	**VOCs by PID** (ppb/ppmv)[d] 0	0-10 PPB AT FIRST PARKING STALL NEXT TO SVE SHED - ← ADJACENT DIRT PARKING LOT BEING LEVELED BY

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	0.026	0.026	0.010

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

TESTED SPARGE BLOWER → TURNED ON. DISCOVERED LOOSE ~~BHD~~ BOLT.

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:** ~10:00 FRI 14 OCT 2016	
Weather Condition: (temp, barometer, wind, etc)	55°F ; 29.30 in ; WIND SSE 23 MPH ; RH: 95% PRECIP: <1 in. HEAVY RAINS 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	10:23	100	—	65.8	OFF	P- GUAGE NOT WORKING
Air Sparge Wells						
11574-ASW-1	10:20	100	—	55.1	0	
11574-ASW-2	10:29	100	—	69.4	0	
Extraction Blower Suction						
11574-SVE-BS-1	10:30	75	16.6	57.3	3	
11574-SVE-BS-2	10:30	100	28.4	55.3	6	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	35.5	97.6	**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	0.06	0.030	0.07	0.015	WIND CAUSING P CHANGES

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 M + BOB T.					**Day/Date:** THURS 6 OCT 2016	
Weather Condition: (temp, barometer, wind, etc)	61°F ; 30.10 in ; WIND SSE 16 MPH RH 64% 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	14:26	100	—	64.5	∅	
Air Sparge Wells						
11574-ASW-1	14:27	100	—	64.5	∅	
11574-ASW-2	14:24	100	—	82.8	∅	
Extraction Blower Suction						
11574-SVE-BS-1	14 30	75	18.2	58.3	3	
11574-SVE-BS-2	14:30	100	27.8	58.3	6	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	35.5	100.4	**VOCs by PID** (ppbv/ppmv)[d] ∅	105.9 % @ BLOWER EXHAUST NEAR WALL

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.)
	∅.∅30	∅.∅30	∅.∅30	∅.∅25	∅.∅15

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 30 SEPT 2016	
Weather Condition: (temp, barometer, wind, etc)	48°F, 30.10 in, WIND N 0MPH; RH. 91% 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	1145	100	—	74.6	0	
Air Sparge Wells						
11574-ASW-1	1143	100	—	69.3	0	
11574-ASW-2	1147	100	—	69.9	0	
Extraction Blower Suction						
11574-SVE-BS-1	1130	75	17.5	64.9	3	
11574-SVE-BS-2	1130	100	30.1	65.4	6	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	35.7	93	**VOCs by PID** 0-20 ppb ~~(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	0.025	0.030	0.030	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.

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

Technician: TOM MALAMAKAL & BOB THOMAS						**Day/Date:** FRI 23 SEPT 2016
Weather Condition: (temp, barometer, wind, etc)			55°F, 30.00 in, WIND: ESE 8 MPH; RH: 91%			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	1209	100	—	72	GAGE BROKEN	NO PRESSURE
Air Sparge Wells						
11574-ASW-1	12:03	100	—	64.1	0	
11574-ASW-2	11:52	100	—	67.8	0	
Extraction Blower Suction						
11574-SVE-BS-1	11:45	75	17.5	61.1	3	
11574-SVE-BS-2	11:45	100	30.3	61.1	6	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	39.5	108.6	**VOCs by PID** (ppbv/ppmv)[d] 0-21	108.6°F @ BLOWER EXHAUST BEFORE WALL.

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	0.030	0.030	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 + Mindy Crandall						**Day/Date:** 11:05 WED 14 SEPT 2016
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:** Auto on 4X			**Time Off:** Auto off 4X	
AS Blower Vault	11:36	100	—	74.8	—	Gauge broken → no pressure.
Air Sparge Wells						
11574-ASW-1	11:21	100	—	70.0	0	
11574-ASW-2	11:21	100	—	68.3	0	
Extraction Blower Suction						
11574-SVE-BS-1	11:05	75	19.2	76.8	3 in H_2O	
11574-SVE-BS-2	11:05	100	27.3	76.5	6 in H_2O	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	37.0	115.7	**VOCs by PID** (ppbv/ppmv)[d] (ppbv circled) 0	115.3 °F at blower exhaust near wall

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	0.020	0.020	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						**Day/Date:** FRI 9 SEPT 2016
Weather Condition: (temp, barometer, wind, etc)	70°F, 30.30 in, WIND NW 9 MPH, 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	1423	100	—	89.4	FROZEN	
Air Sparge Wells						
11574-ASW-1	1421	100	—	72.7	~~8~~ 0	
11574-ASW-2	1419	100	—	69.2	~~6~~ 0	
Extraction Blower Suction						
11574-SVE-BS-1	1400	75	17.3	73.8	3	
11574-SVE-BS-2	1400	100	24.3	74.8	6	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	39.5	106.3	**VOCs by PID** (ppbv/ppmv)[d] 0	114.3 F AT BLOWER EXHAUST NEAR WALL

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	0.025	0.012

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:** THURS 1 SEPT 2016
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:** AUTO ON 4X				**Time Off:** AUTO OFF 4X	
AS Blower Vault	1345	100	—	71.4	NA	GAUGE BROKEN → OFF FOR GW SAMPLING
Air Sparge Wells						
11574-ASW-1	1349	100	—	70.1	0	
11574-ASW-2	1357	100	—	72.1	0	
Extraction Blower Suction						
11574-SVE-BS-1		75	23.4	65.8	3	
11574-SVE-BS-2		100	29.5	66.6	6	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	35.4	86.3	**VOCs by PID** (ppbv/ppmv)[d] 0	114°F AT BLOWER EXHAUST NEAR WALL

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	0.035	0.025	0.060	0.015

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

TURNED AS BACK ONTO 4X/DAY AFTER OFF FOR GW SAMPLING

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 26 AUG 2016
Weather Condition: (temp, barometer, wind, etc)		86°F, 29.90 in, WIND: N 5MPH; RH: 29%				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	—	101.3	—	GAUGE NOT WORKING
Air Sparge Wells						
11574-ASW-1	1407	100	—	79.9	0	
11574-ASW-2	1409	100	—	89.8	0	
Extraction Blower Suction						
11574-SVE-BS-1	13:53	75	13.6	89.9	3	
11574-SVE-BS-2	13:53	100	29.6	88.9	6	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	38.4	108.5	**VOCs by PID** (ppb/ppmv)[d] 0	122.6°F AT BLOWER EXHAUST NEAR WALL

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	0.025	0.026

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						**Day/Date:** FRI 19 AUG 2016
Weather Condition: (temp, barometer, wind, etc)		84°F, 30.00 in, WIND N 10 MPH, RH 34%				SUNNY, BREEZY
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	11:34	100	—	87.3	—	GUAGE BROKEN -> NO PRESSURE
Air Sparge Wells						
11574-ASW-1	11:27	100	—	69.6	0	
11574-ASW-2	11:30	100	—	77.6	0	
Extraction Blower Suction						
11574-SVE-BS-1	11:10	75	14.2	90.7	3	
11574-SVE-BS-2	11:10	100	30.3	89.4	5.5	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	40.4	131.3°F	**VOCs by PID** (ppb)/ppmv)[d] 0	122.9 °F AT BLOWER EXHAUST BEFORE WALL

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 05	0.02	

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:** THURS 11 AUG 2016	
Weather Condition: (temp, barometer, wind, etc)	79°F, 30.10 in, WIND N 8 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:** 4X AUTO ON				**Time Off:** 4X AUTO OFF	
AS Blower Vault	1451	100	—	92.2	-~18 → GAUGE NOT WORKING	
Air Sparge Wells						
11574-ASW-1	1449	100	—	79.4	~~8~~ 0	
11574-ASW-2	1447	100	—	69.7	~~5.5~~ 0	
Extraction Blower Suction						
11574-SVE-BS-1	14:20	75	14.5	80.4	3	
11574-SVE-BS-2	14:28	100	29 &	79.7	5.5	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	36.5	108.7 AT EXHAUST	**VOCs by PID** (ppbv/ppmv)[d] 0	NO GAC CONNECTED 114°F AT BLOWER EXHAUST BEFORE WALL

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	0.025	0.015

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 M + Bob T.					**Day/Date:** THURS 4 AUG 2016	
Weather Condition: (temp, barometer, wind, etc)	77°F, 30.10 in, WIND: WNW 12 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	14:11	100	—	99	95	GAUGE STUCK (NEW GAUGE ON ORDER)
Air Sparge Wells						
11574-ASW-1	1409	100	—	69.2	0	
11574-ASW-2	1403	100	—	80.3	0	
Extraction Blower Suction						
11574-SVE-BS-1	13:40	75	21.5	82.1	3	
11574-SVE-BS-2	13:40	100	28.3	83.3	5.5	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	36.5	104.3	**VOCs by PID** (ppbv/ppmv)[d] 0	NO GAC CONNECTED 118°F AT BLOWER EXHAUST BEFORE WALL OUTLET

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	0.035	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.

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

Technician: Tom MALAMAKAL & Bob THOMAS					**Day/Date:** THURS 28 JUL 2016	
Weather Condition: (temp, barometer, wind, etc)	82°F. 30.10 in, WIND: N 9 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		100	—	96.6	—	PRESSURE GAUGE BROKEN
Air Sparge Wells						
11574-ASW-1	15:00	100	—	83.3	0	REPLACED GUAGE
11574-ASW-2		100	—	71.1	0	REPLACED GUAGE
Extraction Blower Suction						
11574-SVE-BS-1	14:30	75	19.3	86.6	3	
11574-SVE-BS-2	14:30	100	28.4	85.3	6	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	37.2	118.1	**VOCs by PID** (ppbv/ppmv)[d] 0	GAC NOT CONNECTED 123.4°F AT BLOWER EXHAUST BEFORE WALL

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	0.025	0.025	0.015

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 22 JUL 2016
Weather Condition: (temp, barometer, wind, etc)			66°F, 30.30 in, WIND: S 11 MPH; RH: 78%			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 4X ON				**Time Off:** AUTO 4X OFF	
AS Blower Vault	11:32	100	—	81.5	~~7.5~~	PRESSURE GUAGE NOT WORKING, NO PRESSURE.
Air Sparge Wells						
11574-ASW-1	11:30	100	—	72.9	7	PRESSURE GUAGE NOT WORKING, NO PRES.
11574-ASW-2	11:23	100	—	71.4	—	PRESSURE GUAGE NOT WORKING, NO PRES.
Extraction Blower Suction						
11574-SVE-BS-1	11:10	75	20.6	72.8	3	
11574-SVE-BS-2	11:10	100	29.5	73.3	6	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	38 ø	98.8 AT OUTLET	**VOCs by PID** (ppbv/ppmv)[d] 0	GAC NOT CONNECTED 113°F AT BLOWER EXHAUST BEFORE WALL OUTLET.

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.ø55	ø.ø3ø	ø.ø3ø	ø.ø3ø	ø.ø15

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

INSTALLED STACK BYPASSING GAC.

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 15 JUL 2016
Weather Condition: (temp, barometer, wind, etc)			63°F, 30.20, WIND: SSW 4 MPH; RH 72% 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 4X				**Time Off:** AUTO 4X	
AS Blower Vault	11:22	100	—	83.6	0	97 PSIG → GAUGE STUCK
Air Sparge Wells						
11574-ASW-1	11:21	100	—	74.3	0	5 PSIG → GAUGE STUCK
11574-ASW-2	11:18	100	—	68.6	0	5 PSIG → GAUGE STUCK
Extraction Blower Suction						
11574-SVE-BS-1	11:00	75	20.0	75.1	3	
11574-SVE-BS-2	11:00	100	27.7	74.9	5	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	35.5	98.7	**VOCs by PID** (ppbv/ppmv)[d] 0 @ EXHAUST	0 PPB BEFORE GAC
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	0.030	0.025	0.03	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.

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

Technician: TOM MALAMAKAL + BOB THOMAS					**Day/Date:** FRI 8 JUL 2016	
Weather Condition: (temp, barometer, wind, etc)	63°F, 29.96 in, WIND: SSW 7 MPH, RH: 90% 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 4X			**Time Off:** AUTO 4X		
AS Blower Vault	11:47	100	—	76 L	0.75 psig	GUAGE STUCK.
Air Sparge Wells						
11574-ASW-1	11:46	100	—	~~71.4~~ 69.6	0	GUAGE STUCK
11574-ASW-2	11:43	100	—	71.4	0	GUAGE STUCK
Extraction Blower Suction						
11574-SVE-BS-1	11:31	75	18.7	73.1	3	
11574-SVE-BS-2	11:31	100	28.8	74.2	5	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	35.5	105 (EXHAUST AFTER GAC)	**VOCs by PID** (ppbv/ppmv)[d] 0 AFTER GAC	0 PPB BEFORE GAC 108°F @ BLOWER EXHAUST BEFORE GAC

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.)
	0.035	0.035	0.036	0.040	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:** THURS 30 JUN 2016
Weather Condition: (temp, barometer, wind, etc)	68°F, 30.20 in, WIND: N 0 MPH, RH: 64% 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 4X				**Time Off:** AUTO 4X	
AS Blower Vault	1609	100	—	85.2	0	STUCK @ 75 PSIG (NO PRESSURE)
Air Sparge Wells						
11574-ASW-1	1607	100	—	72.5	— 0	STUCK @ 7 PSIG (NO PRESSURE)
11574-ASW-2	1600	100	—	68.8	— 0	STUCK @ 7 PSIG (NO PRESSURE)
Extraction Blower Suction						
11574-SVE-BS-1	15:50	75	21.2	78.7	3	
11574-SVE-BS-2	15:50	100	27.1	68.9	5	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	35.5	90.7	**VOCs by PID** (ppbv/ppmv)[d] 0 AFTER GAC	0 PPB BEFORE GAC 122°F AT BLOWER EXHAUST BEFORE GAC

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	0.030	0.625	0.02	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.

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

Technician: TOM MALAMAKAL + BOB THOMAS						**Day/Date:** FRI 24 JUN 2016
Weather Condition: (temp, barometer, wind, etc)			57°F, 30.20 in, WIND: S 10 MPH, RH: 86%			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 4X DAILY				**Time Off:** AUTO 4X DAILY	
AS Blower Vault	10:29	100	—	65.4	0	GUAGE STUCK @ 8 PSIG
Air Sparge Wells						
11574-ASW-1	10:31	100	—	73.4	0	GUAGE STUCK @ 7.5 PSIG
11574-ASW-2		100	—	69.8	0	GUAGE STUCK @ 8 PSIG
Extraction Blower Suction						
11574-SVE-BS-1	10:10	75	25.8	68.3	3 inWC	
11574-SVE-BS-2	10:10	100	29.3	68.3	5 inWC	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	35.3	87.7 AT STACK	**VOCs by PID** (ppbv/ppmv)[d] 0 AFTER GAC	0 PPB BEFORE GAC 116°F AT BLOWER EXHAUST BEFORE GAC
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.)
		0.035	0.03	0.03	0.03	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: TOM MARIAMACHER & BOB THOMAS					**Day/Date:** FRI 17 JUN 2016	
Weather Condition: (temp, barometer, wind, etc)	54°F, 30.10 in, WIND: W 9 MPH, RH: 56% 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 4X/D				**Time Off:** AUTO 4X/D	
AS Blower Vault	1150	100	OFF	74.6F	75 psig	gauge stuck-no air pressure @ ASW-1 when valve opened
Air Sparge Wells						
11574-ASW-2	1145	100	OFF	68.0F	7 psig	gauge stuck ASW-2
11574-ASW-1	1149	100	OFF	67.8	5 psig	gauge stuck ASW-1
Extraction Blower Suction						
11574-SVE-BS-1	1155	75	14.5	73.1	3	
11574-SVE-BS-2	1155	100	25.7	73.8	5	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	35.8	85.1	**VOCs by PID** (ppbv/ppmv)[d] 0	0 PPB BEFORE GAC 0 PPB AFTER GAC 110°F AT BLOWER EXHAUST BEFORE GAC.

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.)**
1134, 1132, 1149, 1147, 1142	0.020	0.015	0.025	0.035	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., TOM M., CHRYSTAL P.						**Day/Date:** THURS 9 JUNE 2016
Weather Condition: (temp, barometer, wind, etc)			61°F, 30.00 in, WIND: S 6 MPH, RH: 54%. CLOUDY. SHOWERS TONIGHT.			
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/DAY			**Time Off:** AUTO 4X/DAY	
AS Blower Vault	1103	100	OFF	75.9	NA	– gauge stuck
Air Sparge Wells						
11574-ASW-1	10	100	OFF	69.4F	7psig	gauge stuck; no pressure in line
11574-ASW-2	1054	100	OFF	69.9F	8psig	gauge stuck; NO PRESSURE
Extraction Blower Suction						
11574-SVE-BS-1	10:19	75	14.9	62.8	3.5	
11574-SVE-BS-2	10:20	100	29.8	64.1	6.5	
Extraction Blower Exhaust (11574-SVE-BE-1) 1027		Always 100%	49.1 m/s	90.7	**VOCs by PID** (ppbv/ppmv)[d]	2-4 ppbv @ SVE EXH @ 1016h. 101.4°F AT SVE BLOWER (INSIDE)

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.)
1035, 1038, 1045, 1050	0.025	0.040	0.025	0.025	0.015

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

ESCORT INSIDE ACU BY CLARKE / JORDAN

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: Bob T / Tom M						**Day/Date:** WEDS / June 2016
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:** AS ON @ 1300			**Time Off:** AUTO 4X/DAY		
AS Blower Vault	~1320			160.7F		
Air Sparge Wells						
11574-ASW-1	~1321			67.0F		
11574-ASW-2						
Extraction Blower Suction						
11574-SVE-BS-1						
11574-SVE-BS-2						
Extraction Blower Exhaust (11574-SVE-BE-1) ~1325		Always 100%	NO MSMT.	127.7F @ BLOWER HEAD	**VOCs by PID** (ppbv/ppmv)[d]	0 ppbv @ GAC OUT 0 ppbv @ GAC IN

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.

- AS ON WHILE @ SITE.
- DISCONNECTED GAC DUE TO HEAT.
- VERIFIED AS OPN @ 1300

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: Bob T.						**Day/Date:** FRI 3 JUN 2Ø16
Weather Condition: (temp, barometer, wind, etc)	81F, 42% Hum, WIND: NW 8 MPH; 3Ø.2Ø 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/DAY			**Time Off:** AUTO 4X/DAY 07ØØ, 13ØØ, 19ØØ, Ø1ØØ		
AS Blower Vault	15Ø2	1ØØ	OFF	9Ø.5F	7Øpsig - gauge stuck.	
Air Sparge Wells						
11574-ASW-1	15Ø4	1ØØ	OFF	79.3	4psig	gauge stuck; NO AIR IN LINE
11574-ASW-2	1454	1ØØ	OFF	68.3F	7psig	gauge stuck; no pressure
Extraction Blower Suction						
11574-SVE-BS-1		75	12.8	77.6	3.Ø	
11574-SVE-BS-2		1ØØ	34.7	74.2	7.Ø	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	[redacted] 51.6 m/s	116.7F BLOWER HEAD; 1Ø8.9F OUTSIDE	**VOCs by PID** (ppbv/ppmv)[d]	- Øppbv @ 1425h - SVE EXH, - Øppbv @ 1425h - INSIDE SVE SHED, - Øppbv @ 1426h - 1st pkg bay
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.)
1442 144Ø—145Ø, 1458		Ø.Ø2Ø	Ø.Ø1Ø	Ø.Ø3Ø	Ø.Ø45	Ø.Ø1Ø

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

- GAC WAS DISCONNECTED ON WEDS 1 JUNE 2Ø16
- Ø ppbv - NO. END OF WEST-MOST DRIVE THROUGH LANE.;
- Øppbv @ AS VAULT (ABOVE) @ 143Øh; Øppbv @ ACU ENTRANCE; Øppbv @ SOUTH ACU SIDEWALK ZOOMERORS
- ACU ESCORT: JOY; JOE, REGIONAL MGR IN LOBBY

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: BOBT.						**Day/Date:** FRI 27 MAY 2014
Weather Condition: (temp, barometer, wind, etc)			63°F, 41% HUM, WIND SW 9MPH, 30.20in (WEATHER.COM APP). 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/DAY		
AS Blower Vault	1535	100	OFF	63F	5 psig	gauge stuck, NEED TO REPLACE
Air Sparge Wells						
11574-ASW-1	1523	100	OFF	66.3F	8 psig	gauge stuck, NO AIR IN LINE ★
11574-ASW-2	1532	100	OFF	67.4	6 or 5	gauge stuck. " " " " ★
Extraction Blower Suction						
11574-SVE-BS-1	1550	75	4.7	64.9F	5.5"	
11574-SVE-BS-2	1552	100	24.1	66.7	2.5"	
Extraction Blower Exhaust (11574-SVE-BE-1) 1553		Always 100%	35.1	87.2 GAC IN 86.1 GAC OUT	**VOCs by PID** (ppbv/ppmv)[d]	@ 1545h: 0 ppbv in SUBSLAB. " " 0 ppbv in 1ST GAC. @ 1547h: 0 ppbv @ GAC IN 0 ppbv @ GAC OUT

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.)
1520-1525, 1526, 1537, 1538	0.010	0.015-0.03	0.025	0.02	0.01

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

OPENED AS AIR RELEASE TO CHECK FOR PRESSURE. NO AIR. ∴ Gauges stuck.
★ REPLACE AS gauges.
WIND CAUSING SSD PRESSURES TO FLUCTUATE
NO WATER IN KO DRUM.

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:** THURS 19 MAY 2016	
Weather Condition: (temp, barometer, wind, etc)		55°F, 29.90 in, WIND: S 14MPH; RH: 63%			CLOUDY, SCATTERED 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 4X/DAY				**Time Off:** AUTO 4X/DAY	
AS Blower Vault	1141	100	OFF	70.8F	**	** 53 psig (STUCK)
Air Sparge Wells						
11574-ASW-1	1136	100	OFF	65.3F	7 psig	* ~~53 psig~~ (STUCK)
11574-ASW-2	1130	100	OFF	68.6F	7 psig	gauge stuck; no pressure*
Extraction Blower Suction						
11574-SVE-BS-1	11:10	75	21.5	69.8	3.5	
11574-SVE-BS-2	11:10	100	25.2	69.1	5.5	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	35.5	② 81.6	**VOCs by PID** (ppbv/ppmv)[d] ③ 1250	① 119°F @ BLOWER EXHAUST BEFORE GAC ② 2000 MB BEFORE GAC

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.)
1120 – 1135	0.025	0.015	0.025-.003	0.020	0.018

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

* AS VALVES OPENED - NO PRESSURE ∴ GAUGES STUCK

** AS VAULT GAUGE STUCK

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: Bob T.						**Day/Date:** FRI 13 MAY 2016	
Weather Condition: (temp, barometer, wind, etc)			81°F, 33% Hum, NW 10 mph, 30.00 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/DAY				**Time Off:** AUTO 4X/DAY		
AS Blower Vault	1420	100	01°F	93.3°F	34 psig	(gauge stuck)	
Air Sparge Wells							
11574-ASW-1	1415	100	—	75.6°F	4 psig	gauge stuck, (no air release fi valve)	
11574-ASW-2	1412	100	—	67.5°F	7 psig	gauge stuck (no air release)	
Extraction Blower Suction							
11574-SVE-BS-1	1429	75	19.7	81.5F	2.5 in H_2O		
11574-SVE-BS-2	1430	100	27.3	78.2F	6.0 in H_2O		
Extraction Blower Exhaust (11574-SVE-BE-1) 1427h	Always 100%		35.4	127.5F BLOWER OUT. 100.3F GAC IN 102.6 GAC OUT	**VOCs by PID** (ppbv/ppmv)[d]	0ppbv EXIT @ 1345h (GAC OUT) 0ppbv EN-GAC @ 1346h 0ppbv - 1st PKG BAY / PKG @ DRIVE WAY AT SVE SHED.	
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.)	BREEZE AFFECTING
1353 - 1410		0.010	0.010	0.020	0.01 - 0.03	0.010	NORTH END
Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc. 0ppbv @ SSD-S2; (224ppbv when vehicle drove by); 0ppbv @ SSD-S1 (242ppbv when vehicle drove by) 0ppbv @ SSD-N2; 0ppbv @ SSD-N1; 0ppbv in lobby; 0ppbv in stg room. 0ppbv @ ASW-1 0ppbv FROM TOP OF AS VAULT.					**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 MALAHAKAI & BOB T.					Day/Date: FRI 6 MAY 2016	
Weather Condition: (temp, barometer, wind, etc)	64°F, 30.10 in, WIND: N 9 MPH, RH: 53%, 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:** 0700, 1300, 1900, 0100				**Time Off:** 0730, 1330, 1930, 0130	
AS Blower Vault	1115	100	—	73.6 F	38 psig	(gauge stuck)
Air Sparge Wells						
11574-ASW-1	1100	100	—	66.5 F	6 psig	no press in line. GAUGE STUCK
11574-ASW-2	1103	100	—	68.3 F	8 psig	(NO pressure when valve open)
Extraction Blower Suction						
11574-SVE-BS-1	10:35	75	21.3	76.5 F	4	
11574-SVE-BS-2	10:35	100	24.5	74.4 F	6	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	36.5	103.1	**VOCs by PID (ppbv/ppmv)[d]** 1500	① 119.2°F AT BLOWER EXHAUST BEFORE GAC ② BEFORE GAC: 3123 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.)**	
1104 - 1113	0.025	0.025	0.015-0.020	0.015	0.015	STRONG BREEZE

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.

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

Technician: TOM MALAMAKAL						**Day/Date:** FRI 29 APR 2016
Weather Condition: (temp, barometer, wind, etc)			52°F, 30.10 in, WIND: WSW 6MPH, RH: 78% CLOUDY			
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b] (°F circled)	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower		**Time On:** 0700, 1300, 1900, 0100			**Time Off:** 0730, 1330, 1930, 0130	
AS Blower Vault	11:15	100	—	72.7	40	BLOWER GUARD BROKEN
Air Sparge Wells						
11574-ASW-1	11:16	100	—	63.1	7	
11574-ASW-2	11:20	100	—	68.9	7	
Extraction Blower Suction						
11574-SVE-BS-1	10:55	75	21.9	54.3	4	
11574-SVE-BS-2	10:55	100	26.3	56.2	6	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	35.2	(1) 72°F	**VOCs by PID** (ppbv/ppmv)[d] (ppbv circled) 225 (2)	(1) 116°F AT BLOWER EXHAUST BEFORE GAC (2) 2250 PPB BEFORE GAC

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	0.025	0.025	0.025	0.01

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: BOB THOMAS						Day/Date: FRI 22APR2016
Weather Condition: (temp, barometer, wind, etc)	57F, CLOUDY, 84% Humm, RAIN, WIND: SSW 12 MPH 29.78IN; WEATHERCHANNEL 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:** AUTO 4X/D				**Time Off:** AUTO 4X/D	
AS Blower Vault	1216	100	OFF	72.6F	38psig	0-gauge stuck
Air Sparge Wells						
11574-ASW-1	1135	100	OFF	67.1F	7psig	gauge stuck @ 7psig
11574-ASW-2	1214	100	OFF	63.9F	4psig	
Extraction Blower Suction						
11574-SVE-BS-1	1224	75	15.6	56.8	4" H_2O	
11574-SVE-BS-2		100	31.5	57.5	6" H_2O	
Extraction Blower Exhaust (11574-SVE-BE-1)	1222h	Always 100%	35.4m/s	BLOWER 108.0F GAC IN 73.4F	**VOCs by PID (ppbv/ppmv)[d]**	2519ppbv @ GAC IN @ 1206h 0ppbv in SVE SHED @ 1207h 450ppbv @ GAC OUT @ 1209h

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.)**
1132-1212	0.020	0.020	0.025	0.030	0.015

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

- DRAINED KO DRUM 1X BEFORE ROCS.
- OPENED AS-1 VENT/BALL VALVE - NO PRESSURE.
- ISOLATED ZONES 1 DRAINED KO AGAIN.
- GAC IN: 20" H_2O

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: B & B THOMAS						**Day/Date:** FRI 15 APR 2016
Weather Condition: (temp, barometer, wind, etc)			54°F, 70% HUM, WIND SSW 11 MPH, 30.40 IN (WEATHER.COM 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:** AUTO 4X/DAY			**Time Off:** AUTO 4X/DAY		
AS Blower Vault	1136	100	OFF	69.0F	→	GAUGE STUCK @ 35 PSIG
Air Sparge Wells						
11574-ASW-1	1134	100	OFF	58.6	8.5 PSIG	
11574-ASW-2	1122	100	—	65.9	7.5 PSIG	
Extraction Blower Suction						
11574-SVE-BS-1	1152	75	8.6-12.7 m/s	62.1°F	2.5" H_2O	VAC
11574-SVE-BS-2	1154	100	28.1-32.2 m/s	61.41°F	6.5" H_2O	VAC
Extraction Blower Exhaust (11574-SVE-BE-1) 1151		Always 100%	36.3 m/s @ GAC OUT →	103.1F BLOWER 83.5F	**VOCs by PID** (ppbv/ppmv)[d]	0 ppbv @ 1ST PKG BAY @ 1151h; 108 PPM @ GAC IN > 96%: REMOVAL; 4071 PPB @ GAC OUT; 12024 ppbv - ENTIRE WALK AROUND ACU-360°
2.0 IN H_2O						

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.)
1124 – 1131	0.022	0.020	0.025	0.025	0.010

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

- MARIA ESCORIZA TO STORAGE / MECHANICAL ROOMS.
- 108 PARTS PER MILLION (PPM) @ GAC IN.
- 0 ppbv DURING ENTIRE WALK - 360° AROUND ACU BLDG.

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 & ZAC THOMAS					**Day/Date:** THURS 7, APR 2016	
Weather Condition: (temp, barometer, wind, etc)	59° F, 30.00 in, WIND NNE 4 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:** 700, 1300, 1900, 0100				**Time Off:** 73, 1330, 1530, 0130	
AS Blower Vault	1136	100	OFF	69.6	*	AS BLOWER ON AUTO
Air Sparge Wells	1132	100	OFF	64.1°F	8 psig	
11574-ASW-1	~~NAV~~	~~100~~	~~OFF~~	~~64.1°F~~	~~7 psig~~	RMT
11574-ASW-2	1114	100	OFF	64.6°F	7 psig	
Extraction Blower Suction						
11574-SVE-BS-1	1100	75	14.1	76.4	3.5	
11574-SVE-BS-2	1100	100	25.3	74.3	5.0	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	35.5	① 68.8°F @ stack	**VOCs by PID** (ppbv/ppmv)[d] ~7000 ppb	① 105°F @ Blower exhaust ② PLANNING TO REPLACE GAC.

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.)
1120 – 1130	0.015	0.010	0.035	0.025	0.020

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

* AS DISCH GAUGE STUCK @ 32 psig. SHOULD BE MAX ~ 18 psig

REPLACE GAC w/ NEW GAC.

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 THOMAS						**Day/Date:** FRI 1 APR 2016
Weather Condition: (temp, barometer, wind, etc)		66F; 55% Hum; W 5 MPH WIND; 30.20 IN (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:** AUTO 4X/DAY			**Time Off:** AUTO 4X/DAY	
AS Blower Vault	1456	100	OFF	78.6	?	NO ENTRY; P GAUGE @ 30 psig
Air Sparge Wells						
11574-ASW-1	1458	100	OFF	63.1F	9.0	
11574-ASW-2	1500	100	OFF	78.2	9.0	
Extraction Blower Suction						
11574-SVE-BS-1	1514	75	19.4	66.8F	4→7 in H_2O	} SURGING
11574-SVE-BS-2	1516	100	25.2	66.8F	7-25 in H_2O	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	29.1	119.1F @ intake / 101.8F GAC IN	**VOCs by PID** (ppbv/ppmv)[d]	GAC INLET P: 50" H_2O PID NOT @ SITE; NO RDGS.
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.)
1448 —		0.015	0.010	0.025	0.015	

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

* REPLACE AS VAULT/BLOWER DISCH. P-GAUGE; STUCK @ 30 PSIG
- INSTALLED TEE + VALVE FOR FLOW & SAMPLE ON SVE EXHAUST.
- MOUNTED NEW FIRE EXTINGUISHER IN SVE SHED

Signature: Bob 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.

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
MON 11/23/15	~1030	BOB T	DRAINED KO DRUM; DUCT-TAPED SVE EXH JOINTS
TUES 11/24/15	~1615	BOB T	SYSTEM CHECK) DRAIN KO DRUM.
FRI 11/27/15		TOM M	WKLY INSPN
MON 11/30/15	~1630	BOB T.	NOTIFIED OF ~~TOMORROW'S~~ WEDS VI MON. + CHECKED KO ($NO H_2O$), (RMT)
WEDS 12/2/15	0800 → 1810	BOB T + TOM M	VI MONITORING
FRI 12/4/15		TOM M / BOB T	SAMPLE SPENT GAC, NO WATER IN KO DRUM
WEDS 12/9/15	~1200		DRAINED KO DRUM 3X.
FRI 12/11/15	~1430	BOB T.	WKLY INSPN + DRAIN KO DRUM 2X
TUES 12/15/15	~1200	BOB T.	DRAINED KO DRUM 2X.
THURS 12/18/15	~1400	BOB T.	WKLY INSPN + DRAINED KO DRUM 2X.
MON 12/21/15	~1730	BOB T.	SYSTEM CHECK + DRAINED KO DRUM 2X.
THURS 12/24/15	~1130	BOB T / TOM M.	WKLY INSPN & DRAINED KO DRUM
MON 12/28/15	~1000	TOM M.	SVE SAMPLING + DRAINED KO DRUM; EXTRACTION LINE TO GAC DISCONNECTED AT MANIFOLD
THURS 12/31/15	~1330	TOM M. / BOB T.	WKLY INSPN + DRAINED KO DRUM 2X
TUES 1/05/16	~1700	BOB T.	DRAIN KO DRUM 2X; REPAIR SVE DISCHARGE
WEDS 1/06/16	0838	BOB T	RESTART SVE & AS. DRAIN KO AFTER OPERATING.
WEDS 1/06/16	1547	BOB T	CHECK SVE REPAIR / CHECK KO, NO WATER.
THURS 1/07/16	0947	BOB T.	SYSTEM CHECK. NO H_2O IN KO. SVE GOOD.
FRI 1/08/16	1155	BOB T / TOM M	WKLY INSPN + KO DRUM DRAINING.
MON 1/11/16	9:00	TOM. M.	DRAINED KO DRUM.
WED 1/13/16	1430	BOB T.	DRAINED KO DRUM (NEAR FULL)
THURS 1/14/16	1430-1700	BOB T.	DRAINED KO (~16GAL). INSTALLED ONE 4" AS VENT
FRI 1/15/16	~1200-1400	BOB T + TOM M.	WKLY INSPN. INSTALLED 2 4" AS VENTS
MON 1/18/16	1240	BOB	DRAIN KO DRUM 2X
TUES 1/19/16	1123	TOM M.	DRAINE KO DRUM → VERY LITTLE WATER.
THURS 1/21/16	1930	BOB T.	DRAIN KO 2X
FRI 1/22/16	10:30	TOM M.	DRAINED KO DRUM → VERY LITTLE WATER

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
MON 1/25/2016	9:00	TOM MALAMAKAL	DRAINED KO DRUM 2X (RAIN OVER WEEKEND (SAT))
TUES 1/26/16	1000	BobT, TOM M, CODY SHORT	SCOPE AUTO KO DRAIN, VENTILATION W/ BLOWER MOTOR; DRAIN KO DRUM.
THURS 1/28/16	0950	BobT.	DRAIN KO DRUM 2X
FRI 1/29/16	1409	BobT / TOM	WEEKLY INSPN. DRAINED KO DRUM.
MON 2/1/16	10:00	TOM M.	DRAINED KO DRUM 2X
TUES 2/9/16	11:00	TOM M.	DRAINED KO DRUM 2X
FRI 2/12/16	1300	BobT / TOM M	WEEKLY INSPN. DRAIN KO DRUM 2X
MON 2/16/16	0945	BobT.	DRAIN KO DRUM 2X (0945-1015)
THURS 2/18/16	0845 LATE	TOM MALAMAKAL	DRAINED KO DRUM 2X
FRI 2/19/16		TOM M	WEEKLY INSPN
MON 2/22/16	1405	BobT	DRAINED KO DRUM 2X
FRI 2/26/16	1400	TOM MALAMAKAL / BobT	DRAINED KO DRUM 2X
MON 2/29/16	1100-1130	BobT.	DRAINED KO DRUM 2X (RECENT HEAVY RAINS)
WEDS 3/2/16	1345-1405	BobT. (1345-1405)	DRAINED KO DRUM 2X (HEAVY RAIN YESTERDAY).
FRI 3/4/16	1115	BobT / TOM M	DRAINED KO DRUM 2X
MON 3/7/16	1025	BobT.	SYSTEM CHECK; KO EMPTY ON ARRIVAL; ISOLATE & DRAIN
FRI 3/11/16	0920	BobT.	WKLY INSPN; DRAIN KO DRUM 2X
MON 3/14/16	1000	TOM M.	DRAINED KO DRUM 2X (HEAVY RAINS OVER WEEKEND) GAC PRES. 90 in H_2O
WEDS 3/16/16	1420	BobT.	DRAINED KO DRUM. INSTALLED SCREWS IN SVE PIPE
FRI 18 MAR 16	1045	BobT.	WKLY INSPN; DRAIN KO DRUM. 2X
MON 21 MAR 16	11:30	TOM M.	DRAINED KO DRUM. 2X
TUES 22 MAR 16	1830	BobT	DRAINED KO DRUM. ONLY RECEIVED 1X. 2ND = EMPTY.
WED 23 MAR 16	1530	BobT	TEDLAR BAG SAMPLE – SVE EXHAUST
WED 23 MAR 16	1806	BobT	TEDLAR – GAC IN; SVE OUT;
THURS 24 MAR 16	1115	BobT, TOM M., BARB S; CARREE J.	WKLY INSPN SYSTEM TOUR
MON 28 MAR 16	1030	TOM M.	DRAINED KO DRUM 2X

A-12

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

Technician:						Day/Date:
Lus Thomas, Tom K., John H., Barb S., Carree J.						Thurs 24 March 2016
Weather Condition: (temp, barometer, wind, etc)			48F, 87% Hum, 30.20 IN, WIND: 5-8 mph. (From weather app iPhone)			
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: 600, 1200, 1800, 2400			Time Off: 0630, 1230, 1830, 0030	
AS Blower Vault	1210	100	—	66.2	—	Pressure gauge not working.
Air Sparge Wells						
11574-ASW-1	1158	100	—	52F	7 psig	
11574-ASW-2	1214	100	—	68.1F	7 PSI	
Extraction Blower Suction						
11574-SVE-BS-1	11:32	75	5.7	53.6	4-11 "H_2O	
11574-SVE-BS-2	11:32	100	22.7	55.1	10-22 "H_2O	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	42.5	① 65.8 at stack outlet	VOCs by PID (ppbv/ppmv)[d] 25	① 128.8°F @ blower exhaust before GAC

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.)	
1152 –	0.035	0.02	0.025	0.025	0.01	

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

Escort by Maria — ASW2 + SSD-3

Barb Schaefers, Carree Johnson, John Highstone

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: BOB T.						**Day/Date:** FRI 18 MARCH 2016
Weather Condition: (temp, barometer, wind, etc)	43F; 74% HUM; WIND SW 2MPH; 30.10IN					
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/DAY				**Time Off:** AUTO 4X/DAY	
AS Blower Vault	1105	100	OFF	60.2F	——→	PRESSURE GAUGE STUCK @ 32 psig
Air Sparge Wells						
11574-ASW-1	1102	100	OFF	47.6F	0 psig	
11574-ASW-2	1056	100	OFF	64.6F	0 psig	
Extraction Blower Suction						
11574-SVE-BS-1	1155	75	10.1 m/s	64.8F	2-5 "H_2O	
11574-SVE-BS-2	1158	100	29.7 m/s	65.2F	5-12 "H_2O	
Extraction Blower Exhaust (11574-SVE-BE-1) 1147h	Always 100%	38.7 m/s	GAC IN 91.8F GAC OUT 88.3F	**VOCs by PID** (ppbv/ppmv)[d]	0 ppbv @ 1st PKG BAY @ 1144h. 0 ppbv @ GAC INLET @ 1141h, 0 ppbv @ GAC OUTLET @ 1144h.	

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.)
1055 —	0.010	0.010	0.015	0.015	0.010

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

- CLEARED WATER FROM SSD-S1 PORT (NOT FULL); SSD-S2 MONUMENT (NOT FLOODING PORT).
- BLOWER DISCH PVC BUSHING: 107.8F

Signature: BOB T 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 T.						**Day/Date:** FRI 11 MARCH 2016
Weather Condition: (temp, barometer, wind, etc)	SUNNY, LIGHT CLOUDS (FROM WEATHER.COM) 91°F HUM; WIND: N 2 MPH; 29.60 IN H2O; VIS: 10 MI					
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/DAY			**Time Off:** 30 MINS/CYCLE		
AS Blower Vault	1021	100	OFF	52F	23 psig	gauge accurate?
Air Sparge Wells						
11574-ASW-1	1020	100	ORI[2]	48.9	6 psig	
11574-ASW-2	1010	100	OFF	65.3F	13 psig	
Extraction Blower Suction						
11574-SVE-BS-1	1044	75	3.5	62.3F	1.0 in H_2O	
11574-SVE-BS-2	1045	100	26.9	61.8F	5.0 in H_2O	
Extraction Blower Exhaust (11574-SVE-BE-1) 1037 – 1042		Always 100%	38.6	78.6F GAC IN 102.8F SVE BLOWER OUT	**VOCs by PID** (ppbv/ppmv)[d]	0 ppbv in SVE BLDG 0 ppbv @ GAC INLET 0 ppbv @ GAC OUTLET

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.)
1005 → 1027	0.010	0.010	0.020	0.015	0.01

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

- DRAINED KO DRUM 2X.
- CLAIR MANCILLA, ACM, ESCORTED TO SSD-3 + AS-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 MALAMAKAL & BOB THOMAS						**Day/Date:** FRI 4 MARCH 2016
Weather Condition: (temp, barometer, wind, etc)			39° F, 29.90 in, WIND. SW 1 MPH, RH 91% CLOUDY, SHOWERS TONIGHT			
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:** 0600, 1200, 1800, 2400				**Time Off:** 0630, 1230, 1830, 0030	
AS Blower Vault	11:10	100	—	62.7	26	DAD PRESSURE GUAGE
Air Sparge Wells						
11574-ASW-1	11:10	100	—	50.4	8.0	
11574-ASW-2	11:06	100	—	66.9	8.5	
Extraction Blower Suction						
11574-SVE-BS-1	10:50	75	10.4	52.4	3	
11574-SVE-BS-2	10:50	100	22.2	55.8	4.5	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	43.0	(2) 77.0	**VOCs by PID** (ppbv/ppmv)[d] 0	(1) 0 PPB BEFORE GAC; 0 PPB AT FIRST PARKING STALL NEXT TO SVE SHED. (2) 123.7 °F AT BLOWER EXHAUST

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	0.015	0.010	

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

DRAINED KO.

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 26 FEB 2016
Weather Condition: (temp, barometer, wind, etc)	57 °F, 30 in, WIND: WSW 3 MPH, RH: 66% 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:** 0600, 1200, 1800, 2400				**Time Off:** 0630, 1230, 1830, 0030	
AS Blower Vault	1446	100	—	53	23	
Air Sparge Wells						
11574-ASW-1	1444	100	—	53.4	11	
11574-ASW-2	1456	100	—	68.1	16	
Extraction Blower Suction						
11574-SVE-BS-1	1358	75	13.3	53.9	3	
11574-SVE-BS-2	1350	100	22.2	53.0	5	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	42.5	(1) 80.8°F AFTER GAC	**VOCs by PID** (ppbv/ppmv)[d] 0	(1) AT BLOWER EXHAUST PORT 131.2°F 0 AT FIRST PARKING STALL NEXT TO SVE SHED

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	0.015	0.015	0.010

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

DRAINED KO DRUM 2X

SUBSLAB READINGS BY BOB T.; AS READINGS BY BOB T.

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 12 FEB 2016	
Weather Condition: (temp, barometer, wind, etc)	55°F, 30.20 in, WIND: SSW 6MPH, RH: 79%					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:** 0600, 1200, 1800, 2400				**Time Off:** 0630, 1230, 1830, 0030	
AS Blower Vault	14:18	100	—	65.9	18	
Air Sparge Wells						
11574-ASW-1	14:15	100	—	52.3	13	
11574-ASW-2	14:08	100	—	67.3	11	
Extraction Blower Suction						
11574-SVE-BS-1	13:55	75	14.7	52.7	6-15	SURGING
11574-SVE-BS-2	13:55	100	23.1	53.4	6	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	43.1	74.4	**VOCs by PID** (ppbv/ppmv)[d] 0	0 PPM @ BEFORE GAC @ 117°F @ BLOWER EXHAUST BEFORE GAC.

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	0.020	0.010

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

DRAINED KO DRUM

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						**Day/Date:** FRI 5 FEB 2016
Weather Condition: (temp, barometer, wind, etc)		39°F, 30.20 in, WIND 0 MPH, RH 100% 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:** ~~0600, 1200, 1800, 2400~~			**Time Off:** ~~0636, 1236, 1836, 2436~~ 0630		
AS Blower Vault	10:20	100	—	60.4	30	
Air Sparge Wells						
11574-ASW-1	10:21	100		48.4	7	OUTLET FILLED W/ WATER
11574-ASW-2		100	—	68.0	8	
Extraction Blower Suction						
11574-SVE-BS-1	9:45	75	15-30	48.1	5-9	D SEEMS TO BE SURGING
11574-SVE-BS-2	9:45	100	15-23	47.2	5-20	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	43.0	(1) 65°F	**VOCs by PID** (~~ppbv~~/ppmv)[d] 0	(1) 123.2°F @ BLOWER EXHAUST BEFORE GAC

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.

GAC PRESSURE: 50 in H_2O. PRESSURES SURGING THROUGH EXTRACTION LATERALS BEFORE DRAINING OF KO DRUM. AFTER DRAINING, SYSTEM FLOWS AND PRESSURES STABILIZED.

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 29 JAN 2016	
Weather Condition: (temp, barometer, wind, etc)	48°F, 29.70 in, WIND: SSW 15 MPH, RH: 88%					
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:** 0600, 1200, 1800, 2400				**Time Off:** 0630, 1230, 1830, 0030	
AS Blower Vault	1346	100	—	65	24	58°F / (GAGE)
Air Sparge Wells						
11574-ASW-1	1345	100	—	50.0	13	
11574-ASW-2	1337	100	—	68.8	11.5	
Extraction Blower Suction						
11574-SVE-BS-1	1330	75	7.9	50.1	2.5	
11574-SVE-BS-2	1330	100	30.2	52.1	7	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	43.5	② 64.5 @ exhaust port	**VOCs by PID** (ppbv/ppmv)[d] ① 0	① 0-11 PPB BEFORE GAC ② 120°F AT BLOWER EXHAUST BEFORE GAC

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.)
	0.030	0.020	0.030	0.035	0.015

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

GAC PRESSURE: 40 in H_2O.

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 22 JAN 2016	
Weather Condition: (temp, barometer, wind, etc)	52° F, 29.90 in, WIND: SSW 9 MPH, RH: 98% 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:** 0600, 1200, 1800, 2400				**Time Off:** 0636, 1236, 1836, 0030	
AS Blower Vault	10:43	100	—	56.8	30	
Air Sparge Wells						
11574-ASW-1	10:44	100	—	48.3	7.0	
11574-ASW-2	10:34	100	—	69.8	7.5	
Extraction Blower Suction						
11574-SVE-BS-1	10:17	75	13.5	48.1	3	
11574-SVE-BS-2	10:17	100	20.3	49.2	6	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	45.6	0	**VOCs by PID (ppbv/ppmv)[d]** ② 0	① 126°F @ BLOWER EXHAUST BEFORE GAC. 65.4°F @ EXHAUST AFTER GAC ② 0 PPB BEFORE GAC 0 PPB AFTER GAC

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	0.02	0.01	0.01	0.01	

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

GAC PRESSURE: 52 in H_2O

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 15 JAN 2016	
Weather Condition: (temp, barometer, wind, etc)	43°F, 30.00 in, WIND 0 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:** 0600, 1200, 1800, 2400				**Time Off:** 0030, 1230, 1830, 0030	
AS Blower Vault	12:17	100%	—	160.2	30	
Air Sparge Wells						
11574-ASW-1	12:15	100%	—	45.3	18	
11574-ASW-2	12:00	100%	—	66.2	17	
Extraction Blower Suction						
11574-SVE-BS-1	12:20	75%	15.3	52.6	2.5	
11574-SVE-BS-2	12:20	100%	28.6	55.4	7	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	45.8	①	**VOCs by PID** (ppbv/ppmv)[d] 0.3	① 102°F @ SVE EXHAUST

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	0.015	0.02	0.03	0.01

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 8 JAN 2016	
Weather Condition: (temp, barometer, wind, etc)		37°F, 30.10 in, WIND NW 3 MPH; RH 100% FOGGY				
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:** 0600, 1200, 1800, 2400				**Time Off:** 0630, 1230, 1830, 0030	
AS Blower Vault	1224	100%	—	146.5	30	
Air Sparge Wells						
11574-ASW-1	1216	100%	—	68.2	15	
11574-ASW-2	1224	100%	—	66.3	18	
Extraction Blower Suction						
11574-SVE-BS-1	1155	75	22.9	45.5	3.5	
11574-SVE-BS-2	1155	100	25.1	48.9	5.5	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	43.2	(1)	**VOCs by PID** (ppbv/ppmv)[d] 0 (2)	(1) 72.3°F @ EXHAUST AFTER GAC 108.3°F @ SVE BLOWER EXHAUST (2) 4 PPB @ BEFORE GAC, 0 PPB AFTER GAC.

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	0.03	0.025	0.025	0.01	

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

DRAINED KO DRUM. ISOLATED EXTRACTION LATERALS, DRAINED AGAIN.

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.

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. (^{o}F)	AS Blower Pressure (psi)	11574-ASW-1 Temp (^{o}F)	11574-ASW-1 Pressure (psi)	11574-ASW-2 Temp. (^{o}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

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

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	

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	1-Aug-95	30.49	204.77	-	-	-	-	-
236.9	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	-	-	-	-	-
95 A17-2	1-Aug-95	30.2	204.59	-	-	-	-	-
235.9	1-Feb-96	24.24	210.55	-	-	-	-	-
	1-Sep-96	27.71	207.08	-	-	-	-	-
	1-Mar-97	22.34	212.45	-	-	-	-	-
	1-Aug-97	26.08	208.71	-	-	-	-	-
	1-Mar-98	23.82	210.97	-	-	-	-	-
	1-Sep-98	28.7	206.09	-	-	-	-	-
	1-Mar-99	20.6	214.19	-	-	-	-	-
	1-Aug-99	26.55	208.24	-	-	-	-	-
	1-Mar-00	23.49	211.30	-	-	-	-	-
	1-Sep-00	28.51	206.28	-	-	-	-	-
	1-Mar-01	29.09	205.70	-	-	-	-	-
	1-Aug-02	28.92	205.87	-	-	-	-	-
	28-Oct-03	29.65	205.14	-	-	-	-	-
	28-Apr-04	27.97	206.82	-	-	-	-	-
	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

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	22-Feb-10	25.5	210.40	-*	-	-	-	-
Cont.	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
95 A17-3a	1-Aug-95	30.41	204.81	-	-	-	-	-
235.9	1-Feb-96	24.65	210.57	-	-	-	-	-
	1-Sep-96	28.06	207.16	-	-	-	-	-
	1-Mar-97	22.31	212.91	-	-	-	-	-
	1-Aug-97	26.1	209.12	-	-	-	-	-
	1-Mar-98	23.51	211.71	-	-	-	-	-
	1-Sep-98	28.7	206.52	-	-	-	-	-
	1-Mar-99	20	215.22	-	-	-	-	-
	1-Aug-99	26.44	208.78	-	-	-	-	-
	1-Mar-00	23.16	212.06	-	-	-	-	-
	1-Sep-00	28.54	206.68	-	-	-	-	-
	1-Mar-01	29.51	205.71	-	-	-	-	-
	1-Aug-02	29.14	206.08	-	-	-	-	-
	30-Jun-03	28.94	206.28	-	-	-	-	-
	28-Oct-03	29.85	205.37	-	-	-	-	-
	28-Apr-04	28.06	207.16	-	-	-	-	-
	20-Oct-04	30.88	204.34	-	-	-	-	-
	24-May-05	28.75	206.47	-	-	-	-	-
	9-Nov-05	30.32	204.90	-	-	-	-	-
	14-Jun-06	26.99	208.23	-	-	-	-	-
	31-Oct-06	30.86	204.36	6.49	0.253	-	-	12.60
	14-Jun-07	26.09	209.13	6.51	0.252	-	-	12.60
	21-Nov-07	29.21	206.01	6.05	0.205	-	-	13.00
	21-Mar-08	26	209.22	7.35	0.237	0.70	-	12.37
	8-Aug-08	29.42	205.80	7.16	0.214	0.97	-25.75	12.28
	9-Mar-09	27.07	208.15	7.04	0.227	0.71	-177.00	12.88
	25-Aug-09	29.46	206.44	6.03	0.199	0.77	233.00	13.10
	22-Feb-10	25.6	210.30	6.52	0.205	0.47	-196.00	12.80
	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
95 A17-4	1-Aug-95	29.91	205.24	-	-	-	-	-
236.8	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	-	-	-	-	-

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	1-Mar-00	22.93	212.22	-	-	-	-	-
Cont.	1-Sep-00	28.1	207.05	-	-	-	-	-
	1-Mar-01	29.05	206.10	-	-	-	-	-
	1-Aug-02	29.04	206.11	-	-	-	-	-
	28-Oct-03	29.51	205.64	-	-	-	-	-
	20-Oct-04	30.5	204.65	-	-	-	-	-
	9-Nov-05	29.8	205.35	-	-	-	-	-
	14-Jun-07	25.72	209.43	-	-	-	-	-
	21-Mar-08	25.77	209.38	6.15	0.13	-	-	14.37
	8-Aug-08	29.31	205.84	7.15	0.14	6.81	130.00	12.00
	9-Mar-09	26.91	208.24	7.12	0.14	7.03	228.25	13.83
	25-Aug-09	29.32	207.48	-	-	-	-	-
	21-Feb-10	25.38	211.42	5.95	0.14	4.97	285.00	13.30
	24-Aug-10	27.95	208.85	-	-	-	-	-
	24-Feb-11	24.37	212.43	6.01	0.14	6.91	-	13.30
	9-Sep-11	27.45	209.35	6.09	0.13	5.90	353.00	14.30
	14-Mar-12	24.89	211.91	-	-	6.36	26.00	11.20
	16-Aug-12	27.29	209.51	-	-	-	-	-
	21-Feb-13	25.49	211.31	6.69	-	6.47	-146.00	13.50
	13-Aug-13	27.85	208.95	-	-	-	-	-
	14-Mar-14	22.5	214.30	6.26	0.18	8.55	32.00	13.50
	23-Sep-14	27.99	208.81	-	-	-	-	-
	22-Apr-15	24.76	212.04	6.31	0.18	9.4	206	14.4
	1-Sep-15	28.82	207.98	-	-	-	-	-
	18-Apr-16	22.42	214.38	6.46	0.16	5.39	191	18.11
	18-Aug-16	27.39	209.41	-	-	-	-	-
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	-	-	-	-	-
96 A17-6	1-Feb-96	22.95	209.66	-	-	-	-	-
235.1	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	-	-	-	-	-

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	21-Mar-08	23.43	209.18	-	-	-	-	-
Cont.	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	-	-	-	-	-
07 A17-7	16-Nov-07	27.85	206.20	7.27	0.170	-	-	12.80
233.2	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
10-A17-8	29-Nov-10	26.87	208.93	-	-	-	-	-
235.8	25-Feb-11	24.30	211.50	-	-	-	-	-
	9-Sep-11	26.68	209.12	5.82	0.208	1.99	230	16
	18-Nov-11	29.00	206.80	-	-	-	-	-
	14-Mar-12	24.81	210.99	-	-	-	-	-
	16-Aug-12	27.18	208.62	-	-	-	-	-
	21-Feb-13	25.53	210.27	-	-	-	-	-
	13-Aug-13	28.02	207.78	6.6	0.176	0.48	24	13.6
	10-Mar-14	22.85	212.95	6.01	-	2	47	14.7
	22-Sep-14	27.13	208.67	6.4	0.159	4.4	-21	18.9
Duplicate	22-Sep-14	27.13	208.67	6.4	0.159	4.4	-21	18.9
	22-Apr-15	24.72	211.08	6.43	0.297	4.53	-11	17.3
Duplicate	22-Apr-15	24.72	211.08	6.43	0.297	4.53	-11	17.3
	1-Sep-15	28.39	207.41	6.31	0.371	3.40	-35	19.54
Duplicate	1-Sep-15	28.39	207.41	6.31	0.371	3.40	-35	19.54
	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

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)
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
95-A17-3a	30-Jun-03	**32,000**	**690**	**1,200**	**1,100**	**4,800**
	28-Oct-03	**10,400**	**200**	**270**	**270**	**1,200**
	28-Apr-04	**23,000**	**600**	**800**	**780**	**3,500**
	20-Oct-04	**8,200**	**160**	**100**	**310**	**740**
	24-May-05	**25,000**	**630**	**650**	**810**	**3,400**
	9-Nov-05	**6,000**	**220**	**170**	**280**	**940**
	14-Jun-06	**29,000**	**490**	**500**	**840**	**4,000**
	31-Oct-06	**26,000**	**590**	**380**	**840**	**3,000**
	14-Jun-07	**30,000**	**310**	**360**	**610**	**2,700**
	7-Nov-07	**30,000**	**360**	**270**	**730**	**2,700**
	8-Mar-08	**35,000**	**410**	**400**	**870**	**3,600**
	26-Aug-08	**17,700**	**175**	**162**	**517**	**1,819**
	9-Mar-09	**31,200**	**399**	**335**	**772**	**2,762**
	25-Aug-09	**27,300**	**209**	**245**	**629**	**2,370**
	22-Feb-10	**25,000**	**320**	**390**	**990**	**3,650**

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	24-Aug-10*	**1,300**	**73**	**12**	**42**	**24**
Cont.	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	**610**	**1.9**	**6.9**	**13**	**66**
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
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
	9-Sep-11	**1,600**	**44**	**15**	**79**	**46**
	14-Mar-12	50U	1U	1U	1U	2U
	16-Aug-12	**150**	**4.7**	**3.9**	1U	3U
	21-Feb-13	250U	0.20U	**1.6**	0.20U	0.40U
	13-Aug-13	250U	**0.6**	**0.85**	0.2U	0.4U
Duplicate	13-Aug-13	250U	**0.57**	**0.63**	**0.25**	0.4U

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	14-Mar-14	250U	0.20U	**0.25**	0.20U	0.4U
Cont.	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
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**
MTCA Cleanup Level		**800**	**5**	**1,000**	**700**	**1,000**

Notes:

TPH-G = Gasoline Range Total Petroleum Hydrocarbons

µg/L = Micrograms per liter

BOLD = Analyte detected above practical quantification limit

BOLD = Analyte detected above MTCA Method A cleanup level

U = Analyte not detected above 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)

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4/7/2016
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 #: 1603482

Dear Mr. Scott Elkind

The following report includes the data for the above referenced project for sample(s) received on 3/25/2016 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 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 #: 1603482

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:	03/25/2016	**CONTACT:**	Kelly Buettner
DATE COMPLETED:	04/06/2016		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	AOC92160323SVE1000	TO-15	Tedlar Bag	Tedlar Bag
01AA	AOC92160323SVE1000 Lab Duplicate	TO-15	Tedlar Bag	Tedlar Bag
02A	AOC92160323SVE1300	TO-15	Tedlar Bag	Tedlar Bag
03A	AOC92160323SVE1530	TO-15	Tedlar Bag	Tedlar Bag
04A	AOC92160323SVE1800	TO-15	Tedlar Bag	Tedlar Bag
05A	AOC92160323SVE1800BG	TO-15	Tedlar Bag	Tedlar Bag
06A	AOC92160323SVEDUP	TO-15	Tedlar Bag	Tedlar Bag
07A	Lab Blank	TO-15	NA	NA
08A	CCV	TO-15	NA	NA
09A	LCS	TO-15	NA	NA
09AA	LCSD	TO-15	NA	NA

CERTIFIED BY: Heidi Hayes DATE: 04/07/16

Technical Director

Certification numbers: AZ Licensure AZ0775, NJ NELAP - CA016, NY NELAP - 11291,
TX NELAP - T104704434-15-9, UT NELAP CA0093332015-6, VA NELAP - 8113, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005, Effective date: 10/18/2015, Expiration date: 10/17/2016.
Eurofins Air Toxics Inc.. certifies that the test results contained in this report meet all requirements of the NELAC standards

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

LABORATORY NARRATIVE
DoD QSM 5.0 - TO-15
Sealaska Environmental Services, LLC
Workorder# 1603482

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.
DoD QSM 5.0 Section 2.2.1 PT Requirement	Two PT samples per year for each analyte-matrix-method combination are required.	Not all analyte-matrix-method combinations on the scope of accreditation are available from the current PT providers.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

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.

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.

The recovery of surrogate 4-Bromofluorobenzene in samples AOC92160323SVE1300 and AOC92160323SVE1530 was outside laboratory control limits due to high level hydrocarbon matrix interference. The surrogate recovery is flagged.

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:	AOC92160323SVE1000		
Lab ID:	1603482-01A	**Date/Time Analyzed:**	3/26/16 01:49 PM
Date/Time Collecte	3/23/16 10:00 AM	**Dilution Factor:**	1.00
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msd3.i / 3032608

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.39	0.80	1.6	Not Detected U
Ethyl Benzene	100-41-4	0.55	1.1	2.2	0.57 J
m,p-Xylene	108-38-3	0.55	1.1	2.2	0.80 J
o-Xylene	95-47-6	0.55	1.1	2.2	Not Detected U
Toluene	108-88-3	0.61	0.94	1.9	9.2
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	1000

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	79-128	105
4-Bromofluorobenzene	460-00-4	74-122	108
Toluene-d8	2037-26-5	82-119	92

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

Client ID:	AOC92160323SVE1000 Lab Duplicate		
Lab ID:	1603482-01AA	**Date/Time Analyzed:**	3/26/16 04:29 PM
Date/Time Collecte	3/23/16 10:00 AM	**Dilution Factor:**	1.00
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msd3.i / 3032614

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.39	0.80	1.6	Not Detected U
Ethyl Benzene	100-41-4	0.55	1.1	2.2	Not Detected U
m,p-Xylene	108-38-3	0.55	1.1	2.2	0.69 J
o-Xylene	95-47-6	0.55	1.1	2.2	Not Detected U
Toluene	108-88-3	0.61	0.94	1.9	11
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	1300

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	79-128	106
4-Bromofluorobenzene	460-00-4	74-122	107
Toluene-d8	2037-26-5	82-119	107

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

Client ID:	AOC92160323SVE1300		
Lab ID:	1603482-02A	**Date/Time Analyzed:**	3/26/16 02:15 PM
Date/Time Collecte	3/23/16 01:00 PM	**Dilution Factor:**	1.00
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msd3.i / 3032609

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.39	0.80	1.6	0.46 J
Ethyl Benzene	100-41-4	0.55	1.1	2.2	Not Detected U
m,p-Xylene	108-38-3	0.55	1.1	2.2	0.88 J
o-Xylene	95-47-6	0.55	1.1	2.2	0.55 J
Toluene	108-88-3	0.61	0.94	1.9	13
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	1000

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

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	79-128	104
4-Bromofluorobenzene	460-00-4	74-122	136 Q
Toluene-d8	2037-26-5	82-119	109

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

Client ID:	AOC92160323SVE1530		
Lab ID:	1603482-03A	**Date/Time Analyzed:**	3/26/16 02:42 PM
Date/Time Collecte	3/23/16 03:30 PM	**Dilution Factor:**	1.00
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msd3.i / 3032610

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.39	0.80	1.6	0.42 J
Ethyl Benzene	100-41-4	0.55	1.1	2.2	Not Detected U
m,p-Xylene	108-38-3	0.55	1.1	2.2	0.93 J
o-Xylene	95-47-6	0.55	1.1	2.2	Not Detected U
Toluene	108-88-3	0.61	0.94	1.9	12
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	1100

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

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	79-128	108
4-Bromofluorobenzene	460-00-4	74-122	134 Q
Toluene-d8	2037-26-5	82-119	106

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

Client ID:	AOC92160323SVE1800		
Lab ID:	1603482-04A	**Date/Time Analyzed:**	3/26/16 03:08 PM
Date/Time Collecte	3/23/16 06:00 PM	**Dilution Factor:**	1.00
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msd3.i / 3032611

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.39	0.80	1.6	0.41 J
Ethyl Benzene	100-41-4	0.55	1.1	2.2	Not Detected U
m,p-Xylene	108-38-3	0.55	1.1	2.2	0.80 J
o-Xylene	95-47-6	0.55	1.1	2.2	Not Detected U
Toluene	108-88-3	0.61	0.94	1.9	11
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	940

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	79-128	102
4-Bromofluorobenzene	460-00-4	74-122	108
Toluene-d8	2037-26-5	82-119	92

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

Client ID:	AOC92160323SVE1800BG		
Lab ID:	1603482-05A	**Date/Time Analyzed:**	3/26/16 03:34 PM
Date/Time Collecte	3/23/16 06:00 PM	**Dilution Factor:**	1.00
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msd3.i / 3032612

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.39	0.80	1.6	0.41 J
Ethyl Benzene	100-41-4	0.55	1.1	2.2	0.80 J
m,p-Xylene	108-38-3	0.55	1.1	2.2	0.90 J
o-Xylene	95-47-6	0.55	1.1	2.2	Not Detected U
Toluene	108-88-3	0.61	0.94	1.9	11
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	900

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	79-128	100
4-Bromofluorobenzene	460-00-4	74-122	104
Toluene-d8	2037-26-5	82-119	91

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

Client ID:	AOC92160323SVEDUP		
Lab ID:	1603482-06A	**Date/Time Analyzed:**	3/26/16 04:00 PM
Date/Time Collecte	3/23/16 08:00 AM	**Dilution Factor:**	1.00
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msd3.i / 3032613

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.39	0.80	1.6	0.43 J
Ethyl Benzene	100-41-4	0.55	1.1	2.2	Not Detected U
m,p-Xylene	108-38-3	0.55	1.1	2.2	0.78 J
o-Xylene	95-47-6	0.55	1.1	2.2	Not Detected U
Toluene	108-88-3	0.61	0.94	1.9	11
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	780

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	79-128	106
4-Bromofluorobenzene	460-00-4	74-122	111
Toluene-d8	2037-26-5	82-119	106

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

Client ID:	Lab Blank		
Lab ID:	1603482-07A	**Date/Time Analyzed:**	3/26/16 11:37 AM
Date/Time Collecte	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd3.i / 3032607a

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.39	0.80	1.6	Not Detected U
Ethyl Benzene	100-41-4	0.55	1.1	2.2	Not Detected U
m,p-Xylene	108-38-3	0.55	1.1	2.2	Not Detected U
o-Xylene	95-47-6	0.55	1.1	2.2	Not Detected U
Toluene	108-88-3	0.61	0.94	1.9	Not Detected U
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	Not Detected U

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	79-128	105
4-Bromofluorobenzene	460-00-4	74-122	97
Toluene-d8	2037-26-5	82-119	108

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

Client ID:	CCV		
Lab ID:	1603482-08A	**Date/Time Analyzed:**	3/26/16 08:38 AM
Date/Time Collecte	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd3.i / 3032602a

Compound	CAS#	%Recovery
Benzene	71-43-2	112
Ethyl Benzene	100-41-4	94
m,p-Xylene	108-38-3	96
o-Xylene	95-47-6	94
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	79-128	95
4-Bromofluorobenzene	460-00-4	74-122	100
Toluene-d8	2037-26-5	82-119	108

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

Client ID:	LCS		
Lab ID:	1603482-09A	**Date/Time Analyzed:**	3/26/16 09:31 AM
Date/Time Collecte	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd3.i / 3032604a

Compound	CAS#	%Recovery
Benzene	71-43-2	92
Ethyl Benzene	100-41-4	91
m,p-Xylene	108-38-3	92
o-Xylene	95-47-6	92
Toluene	108-88-3	82
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	79-128	96
4-Bromofluorobenzene	460-00-4	74-122	99
Toluene-d8	2037-26-5	82-119	93

* % Recovery is calculated using unrounded analytical results.

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

Client ID:	LCSD		
Lab ID:	1603482-09AA	**Date/Time Analyzed:**	3/26/16 10:14 AM
Date/Time Collecte	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd3.i / 3032605a

Compound	CAS#	%Recovery
Benzene	71-43-2	97
Ethyl Benzene	100-41-4	92
m,p-Xylene	108-38-3	93
o-Xylene	95-47-6	95
Toluene	108-88-3	96
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	79-128	106
4-Bromofluorobenzene	460-00-4	74-122	100
Toluene-d8	2037-26-5	82-119	109

* % Recovery is calculated using unrounded analytical results.

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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 SUITE 201 City POULSBO State WA Zip 98370

Phone 360-626-3991 Fax 360-598-3116

Project Info:
P.O. # 01331
Project # JBLM
Project Name AOC9-2

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	AOC92160323SVE1000	TEDLAR	3-23-16	10:00	TO-15 BTEX, TPH-G				
02A	AOC92160323SVE1300	TEDLAR	3-23-16	13:00	TO-15 BTEX, TPH-G				
03A	AOC92160323SVE1530	TEDLAR	3-23-16	15:30	TO-15 BTEX, TPH-G				
04A	AOC92160323SVE1800	TEDLAR	3-23-16	18:00	TO-15 BTEX, TPH-G				
05A	AOC92160323SVE1800DUP	TEDLAR	3-23-16	18:00	TO-15 BTEX, TPH-G				
06A	AOC92160323SVEDUP	TEDLAR	3-23-16	8:00	TO-15 BTEX, TPH-G				

Relinquished by: (signature) Date/Time	Received by: (signature) Date/Time
Scott Thomas 3/23/16 1915	Andrea Augusti FATL 3/25/16 1030
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	1603482

Form 1293 rev.11

eurofins | Air Toxics

6/27/2016

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

Project Name: AOC9-2
Project #: JBLM TO 01A
Workorder #: 1606316

Dear Mr. Scott Elkind

The following report includes the data for the above referenced project for sample(s) received on 6/15/2016 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 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

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WORK ORDER #: 1606316

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 TO 01A AOC9-2
DATE RECEIVED:	06/15/2016	**CONTACT:**	Kelly Buettner
DATE COMPLETED:	06/27/2016		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	AOC92160613SVE 1000	TO-15	Tedlar Bag	Tedlar Bag
01AA	AOC92160613SVE 1000 Lab Duplicate	TO-15	Tedlar Bag	Tedlar Bag
02A	AOC92160613SVE 1300 BG	TO-15	Tedlar Bag	Tedlar Bag
03A	AOC92160613SVE 1530	TO-15	Tedlar Bag	Tedlar Bag
04A	AOC92160613SVE 1800	TO-15	Tedlar Bag	Tedlar Bag
05A	AOC92160613SVE 1000 BG	TO-15	Tedlar Bag	Tedlar Bag
06A	AOC92160613SVE 1530 BG	TO-15	Tedlar Bag	Tedlar Bag
07A	AOC92160613SVE 1800 BG	TO-15	Tedlar Bag	Tedlar Bag
08A	AOC92160613SVE DUP	TO-15	Tedlar Bag	Tedlar Bag
09A	Lab Blank	TO-15	NA	NA
10A	CCV	TO-15	NA	NA
11A	LCS	TO-15	NA	NA
11AA	LCSD	TO-15	NA	NA

CERTIFIED BY:  DATE: 06/27/16

Technical Director

Certification numbers: AZ Licensure AZ0775, NJ NELAP - CA016, NY NELAP - 11291,
TX NELAP - T104704434-15-9, UT NELAP CA0093332015-6, VA NELAP - 8113, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005, Effective date: 10/18/2015, Expiration date: 10/17/2016.
Eurofins Air Toxics Inc.. certifies that the test results contained in this report meet all requirements of the NELAC standards

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

LABORATORY NARRATIVE
DoD QSM 5.0 - TO-15
Sealaska Environmental Services, LLC
Workorder# 1606316

Eight 1 Liter Tedlar Bag samples were received on June 15, 2016. 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.
DoD QSM 5.0 Section 2.2.1 PT Requirement	Two PT samples per year for each analyte-matrix-method combination are required.	Not all analyte-matrix-method combinations on the scope of accreditation are available from the current PT providers.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

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.

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.

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
AOC9-2

Client ID:	AOC92160613SVE 1000		
Lab ID:	1606316-01A	**Date/Time Analyzed:**	6/15/16 08:18 PM
Date/Time Collecte	6/13/16 10:00 AM	**Dilution Factor:**	1.00
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msdp.i / p061509

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.34	0.64	1.6	0.64 J
Ethyl Benzene	100-41-4	0.56	0.87	2.2	Not Detected U
m,p-Xylene	108-38-3	0.41	0.87	2.2	0.86 J
o-Xylene	95-47-6	0.46	0.87	2.2	Not Detected U
Toluene	108-88-3	0.23	0.75	1.9	4.4
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	380

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	79-128	103
4-Bromofluorobenzene	460-00-4	74-122	101
Toluene-d8	2037-26-5	82-119	101

EPA METHOD TO-15 GC/MS FULL SCAN
AOC9-2

Client ID:	AOC92160613SVE 1000 Lab Duplicate		
Lab ID:	1606316-01AA	**Date/Time Analyzed:**	6/15/16 08:44 PM
Date/Time Collecte	6/13/16 10:00 AM	**Dilution Factor:**	1.00
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msdp.i / p061510

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.34	0.64	1.6	0.74 J
Ethyl Benzene	100-41-4	0.56	0.87	2.2	Not Detected U
m,p-Xylene	108-38-3	0.41	0.87	2.2	0.80 J
o-Xylene	95-47-6	0.46	0.87	2.2	Not Detected U
Toluene	108-88-3	0.23	0.75	1.9	4.5
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	410

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	79-128	105
4-Bromofluorobenzene	460-00-4	74-122	107
Toluene-d8	2037-26-5	82-119	105

EPA METHOD TO-15 GC/MS FULL SCAN
AOC9-2

Client ID:	AOC92160613SVE 1300 BG		
Lab ID:	1606316-02A	**Date/Time Analyzed:**	6/15/16 09:10 PM
Date/Time Collecte	6/13/16 01:00 PM	**Dilution Factor:**	1.00
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msdp.i / p061511

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.34	0.64	1.6	0.45 J
Ethyl Benzene	100-41-4	0.56	0.87	2.2	Not Detected U
m,p-Xylene	108-38-3	0.41	0.87	2.2	0.72 J
o-Xylene	95-47-6	0.46	0.87	2.2	Not Detected U
Toluene	108-88-3	0.23	0.75	1.9	19
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	410

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	79-128	109
4-Bromofluorobenzene	460-00-4	74-122	105
Toluene-d8	2037-26-5	82-119	101

EPA METHOD TO-15 GC/MS FULL SCAN
AOC9-2

Client ID:	AOC92160613SVE 1530		
Lab ID:	1606316-03A	**Date/Time Analyzed:**	6/15/16 09:37 PM
Date/Time Collecte	6/13/16 03:30 PM	**Dilution Factor:**	1.00
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msdp.i / p061512

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.34	0.64	1.6	0.80 J
Ethyl Benzene	100-41-4	0.56	0.87	2.2	Not Detected U
m,p-Xylene	108-38-3	0.41	0.87	2.2	1.3 J
o-Xylene	95-47-6	0.46	0.87	2.2	0.53 J
Toluene	108-88-3	0.23	0.75	1.9	9.1
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	530

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	79-128	103
4-Bromofluorobenzene	460-00-4	74-122	103
Toluene-d8	2037-26-5	82-119	101

EPA METHOD TO-15 GC/MS FULL SCAN
AOC9-2

Client ID:	AOC92160613SVE 1800		
Lab ID:	1606316-04A	**Date/Time Analyzed:**	6/15/16 10:03 PM
Date/Time Collecte	6/13/16 06:00 PM	**Dilution Factor:**	1.00
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msdp.i / p061513

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.34	0.64	1.6	Not Detected U
Ethyl Benzene	100-41-4	0.56	0.87	2.2	Not Detected U
m,p-Xylene	108-38-3	0.41	0.87	2.2	0.65 J
o-Xylene	95-47-6	0.46	0.87	2.2	Not Detected U
Toluene	108-88-3	0.23	0.75	1.9	5.4
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	450

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	79-128	102
4-Bromofluorobenzene	460-00-4	74-122	105
Toluene-d8	2037-26-5	82-119	101

EPA METHOD TO-15 GC/MS FULL SCAN
AOC9-2

Client ID:	AOC92160613SVE 1000 BG		
Lab ID:	1606316-05A	**Date/Time Analyzed:**	6/15/16 10:55 PM
Date/Time Collecte	6/13/16 10:00 AM	**Dilution Factor:**	1.00
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msdp.i / p061515

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.34	0.64	1.6	0.43 J
Ethyl Benzene	100-41-4	0.56	0.87	2.2	Not Detected U
m,p-Xylene	108-38-3	0.41	0.87	2.2	0.54 J
o-Xylene	95-47-6	0.46	0.87	2.2	Not Detected U
Toluene	108-88-3	0.23	0.75	1.9	14
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	570

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	79-128	98
4-Bromofluorobenzene	460-00-4	74-122	104
Toluene-d8	2037-26-5	82-119	102

EPA METHOD TO-15 GC/MS FULL SCAN
AOC9-2

Client ID:	AOC92160613SVE 1530 BG		
Lab ID:	1606316-06A	**Date/Time Analyzed:**	6/15/16 10:29 PM
Date/Time Collecte	6/13/16 03:30 PM	**Dilution Factor:**	1.00
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msdp.i / p061514

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.34	0.64	1.6	0.49 J
Ethyl Benzene	100-41-4	0.56	0.87	2.2	Not Detected U
m,p-Xylene	108-38-3	0.41	0.87	2.2	0.59 J
o-Xylene	95-47-6	0.46	0.87	2.2	Not Detected U
Toluene	108-88-3	0.23	0.75	1.9	9.9
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	490

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	79-128	101
4-Bromofluorobenzene	460-00-4	74-122	105
Toluene-d8	2037-26-5	82-119	101

EPA METHOD TO-15 GC/MS FULL SCAN
AOC9-2

Client ID:	AOC92160613SVE 1800 BG		
Lab ID:	1606316-07A	**Date/Time Analyzed:**	6/15/16 11:22 PM
Date/Time Collecte	6/13/16 06:00 PM	**Dilution Factor:**	1.00
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msdp.i / p061516

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.34	0.64	1.6	0.47 J
Ethyl Benzene	100-41-4	0.56	0.87	2.2	Not Detected U
m,p-Xylene	108-38-3	0.41	0.87	2.2	0.61 J
o-Xylene	95-47-6	0.46	0.87	2.2	Not Detected U
Toluene	108-88-3	0.23	0.75	1.9	7.0
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	410

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	79-128	107
4-Bromofluorobenzene	460-00-4	74-122	102
Toluene-d8	2037-26-5	82-119	104

EPA METHOD TO-15 GC/MS FULL SCAN
AOC9-2

Client ID:	AOC92160613SVE DUP		
Lab ID:	1606316-08A	**Date/Time Analyzed:**	6/15/16 11:48 PM
Date/Time Collecte	6/13/16 06:00 PM	**Dilution Factor:**	1.00
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msdp.i / p061517

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.34	0.64	1.6	0.58 J
Ethyl Benzene	100-41-4	0.56	0.87	2.2	Not Detected U
m,p-Xylene	108-38-3	0.41	0.87	2.2	1.0 J
o-Xylene	95-47-6	0.46	0.87	2.2	Not Detected U
Toluene	108-88-3	0.23	0.75	1.9	11
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	450

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	79-128	103
4-Bromofluorobenzene	460-00-4	74-122	104
Toluene-d8	2037-26-5	82-119	102

EPA METHOD TO-15 GC/MS FULL SCAN
AOC9-2

Client ID:	Lab Blank		
Lab ID:	1606316-09A	**Date/Time Analyzed:**	6/15/16 12:30 PM
Date/Time Collecte	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msdp.i / p061508a

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.34	0.64	1.6	Not Detected U
Ethyl Benzene	100-41-4	0.56	0.87	2.2	Not Detected U
m,p-Xylene	108-38-3	0.41	0.87	2.2	Not Detected U
o-Xylene	95-47-6	0.46	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

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	79-128	105
4-Bromofluorobenzene	460-00-4	74-122	92
Toluene-d8	2037-26-5	82-119	104

EPA METHOD TO-15 GC/MS FULL SCAN
AOC9-2

Client ID:	CCV		
Lab ID:	1606316-10A	**Date/Time Analyzed:**	6/15/16 08:17 AM
Date/Time Collecte	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msdp.i / p061502a

Compound	CAS#	%Recovery
Benzene	71-43-2	105
Ethyl Benzene	100-41-4	102
m,p-Xylene	108-38-3	103
o-Xylene	95-47-6	105
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	79-128	107
4-Bromofluorobenzene	460-00-4	74-122	97
Toluene-d8	2037-26-5	82-119	103

EPA METHOD TO-15 GC/MS FULL SCAN
AOC9-2

Client ID:	LCS		
Lab ID:	1606316-11A	**Date/Time Analyzed:**	6/15/16 09:03 AM
Date/Time Collecte	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msdp.i / p061503a

Compound	CAS#	%Recovery
Benzene	71-43-2	97
Ethyl Benzene	100-41-4	91
m,p-Xylene	108-38-3	92
o-Xylene	95-47-6	95
Toluene	108-88-3	95
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	79-128	103
4-Bromofluorobenzene	460-00-4	74-122	98
Toluene-d8	2037-26-5	82-119	102

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS FULL SCAN
AOC9-2

Client ID:	LCSD		
Lab ID:	1606316-11AA	**Date/Time Analyzed:**	6/15/16 09:28 AM
Date/Time Collecte	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msdp.i / p061504a

Compound	CAS#	%Recovery
Benzene	71-43-2	98
Ethyl Benzene	100-41-4	90
m,p-Xylene	108-38-3	89
o-Xylene	95-47-6	95
Toluene	108-88-3	97
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	79-128	107
4-Bromofluorobenzene	460-00-4	74-122	96
Toluene-d8	2037-26-5	82-119	106

* % Recovery is calculated using unrounded analytical results.

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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 + BOB THOMAS

Company SEALASKA Email SCOTT.ELKIND@SEALASKA.COM

Address 18743 FROST ST NE City POULSBO State WA Zip 98370

Phone 360-626-3991 Fax 360-598-3116

Project Info:

P.O. # PO-01331

Project # JBLM TO 01A

Project Name AOC9-2

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	AOC92160613SVE1000	TEDLAR	6-13-16	10:00	TO-15				
02A	AOC92160613SVE1300BG	TEDLAR	6-13-16	13:00	TO-15				
03A	AOC92160613SVE1530	TEDLAR	6-13-16	15:30	TO-15				
04A	AOC92160613SVE1800	TEDLAR	6-13-16	18:00	TO-15				
05A	AOC92160613SVE1000BG	TEDLAR	6-13-16	10:00	TO-15				
06A	AOC92160613SVE1530BG	TEDLAR	6-13-16	15:30	TO-15				
07A	AOC92160613SVE1800BG	TEDLAR	6-13-16	18:00	TO-15				
08A	AOC92160613SVEDUP	TEDLAR	6-13-16	18:00	TO-15				

Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
Tom Malamakal	6-14-16 8:00	Andrea Augustin EARL	6/15/16 1010

Notes:

Lab Use Only	Shipper Name	Air Bill #	Temp (°C)	Condition	Custody Seals Intact?	Work Order #
	Fed Ex		NA	Good	Yes / No / ~~None~~ AA 6/15/16	1606316

Form 1293 rev.11

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6/29/2016

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

Project Name: AOC9-2
Project #: JBLM 01A
Workorder #: 1606317

Dear Mr. Scott Elkind

The following report includes the data for the above referenced project for sample(s) received on 6/15/2016 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 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

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WORK ORDER #: 1606317

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 01A AOC9-2
DATE RECEIVED:	06/15/2016	**CONTACT:**	Kelly Buettner
DATE COMPLETED:	06/29/2016		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	AOC92160613SVP1A	TO-15	Tedlar Bag	Tedlar Bag
02A	AOC92160613SVP1B	TO-15	Tedlar Bag	Tedlar Bag
03A	AOC92160613SVP2A	TO-15	Tedlar Bag	Tedlar Bag
03AA	AOC92160613SVP2A Lab Duplicate	TO-15	Tedlar Bag	Tedlar Bag
04A	AOC92160613SVP3A	TO-15	Tedlar Bag	Tedlar Bag
05A	AOC92160613SVP4A	TO-15	Tedlar Bag	Tedlar Bag
06A	AOC92160613SVP5A	TO-15	Tedlar Bag	Tedlar Bag
07A	AOC92160613SVP5B	TO-15	Tedlar Bag	Tedlar Bag
08A	AOC92160613SVP6A	TO-15	Tedlar Bag	Tedlar Bag
09A	AOC92160613SVP7A	TO-15	Tedlar Bag	Tedlar Bag
10A	AOC92160613SVP8A	TO-15	Tedlar Bag	Tedlar Bag
11A	AOC92160613SVP7B	TO-15	Tedlar Bag	Tedlar Bag
12A	AOC92160613SVP DUP	TO-15	Tedlar Bag	Tedlar Bag
13A	Lab Blank	TO-15	NA	NA
13B	Lab Blank	TO-15	NA	NA
14A	CCV	TO-15	NA	NA
14B	CCV	TO-15	NA	NA
15A	LCS	TO-15	NA	NA
15AA	LCSD	TO-15	NA	NA
15B	LCS	TO-15	NA	NA
15BB	LCSD	TO-15	NA	NA

CERTIFIED BY: Heidi Mayo DATE: 06/29/16

Technical Director

Certification numbers: AZ Licensure AZ0775, NJ NELAP - CA016, NY NELAP - 11291,
TX NELAP - T104704434-15-9, UT NELAP CA0093332015-6, VA NELAP - 8113, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005, Effective date: 10/18/2015, Expiration date: 10/17/2016.
Eurofins Air Toxics Inc.. certifies that the test results contained in this report meet all requirements of the NELAC standards

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

LABORATORY NARRATIVE
DoD QSM 5.0 - TO-15
Sealaska Environmental Services, LLC
Workorder# 1606317

Twelve 1 Liter Tedlar Bag samples were received on June 15, 2016. 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.
DoD QSM 5.0 Section 2.2.1 PT Requirement	Two PT samples per year for each analyte-matrix-method combination are required.	Not all analyte-matrix-method combinations on the scope of accreditation are available from the current PT providers.

Receiving Notes

There were no receiving discrepancies.

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 (MDL). 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.

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.

The per analytical batch duplicate analysis required for this project is associated with work order 1606316 (on instrument MSDP).

TPH ref. to Gasoline (MW=100) baseline was manually integrated in samples AOC92160613SVP2A,

AOC92160613SVP2A Lab Duplicate, AOC92160613SVP3A, AOC92160613SVP4A, AOC92160613SVP5A, AOC92160613SVP5B, AOC92160613SVP6A, AOC92160613SVP7A, AOC92160613SVP8A, AOC92160613SVP7B and AOC92160613SVP DUP.

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
AOC9-2

Client ID:	AOC92160613SVP1A		
Lab ID:	1606317-01A	**Date/Time Analyzed:**	6/16/16 12:14 AM
Date/Time Collecte	6/13/16 08:06 AM	**Dilution Factor:**	1.00
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msdp.i / p061518

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.34	0.64	1.6	2.2
Ethyl Benzene	100-41-4	0.56	0.87	2.2	3.3
m,p-Xylene	108-38-3	0.41	0.87	2.2	12
o-Xylene	95-47-6	0.46	0.87	2.2	4.2
Toluene	108-88-3	0.23	0.75	1.9	19
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	650

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	79-128	105
4-Bromofluorobenzene	460-00-4	74-122	106
Toluene-d8	2037-26-5	82-119	102

EPA METHOD TO-15 GC/MS FULL SCAN
AOC9-2

Client ID:	AOC92160613SVP1B		
Lab ID:	1606317-02A	**Date/Time Analyzed:**	6/16/16 12:40 AM
Date/Time Collecte	6/13/16 08:26 AM	**Dilution Factor:**	1.00
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msdp.i / p061519

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.34	0.64	1.6	7.4
Ethyl Benzene	100-41-4	0.56	0.87	2.2	3.3
m,p-Xylene	108-38-3	0.41	0.87	2.2	14
o-Xylene	95-47-6	0.46	0.87	2.2	4.4
Toluene	108-88-3	0.23	0.75	1.9	19
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	650

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	79-128	108
4-Bromofluorobenzene	460-00-4	74-122	100
Toluene-d8	2037-26-5	82-119	104

EPA METHOD TO-15 GC/MS FULL SCAN
AOC9-2

Client ID:	AOC92160613SVP2A		
Lab ID:	1606317-03A	**Date/Time Analyzed:**	6/15/16 10:51 PM
Date/Time Collecte	6/13/16 08:45 AM	**Dilution Factor:**	1.00
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msd3.i / 3061516

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.16	1.3	1.6	1.8
Ethyl Benzene	100-41-4	0.32	1.7	2.2	2.9
m,p-Xylene	108-38-3	0.26	1.7	2.2	12
o-Xylene	95-47-6	0.41	1.7	2.2	4.4
Toluene	108-88-3	0.22	1.5	1.9	18
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	570

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	79-128	90
4-Bromofluorobenzene	460-00-4	74-122	103
Toluene-d8	2037-26-5	82-119	102

EPA METHOD TO-15 GC/MS FULL SCAN
AOC9-2

Client ID:	AOC92160613SVP2A Lab Duplicate		
Lab ID:	1606317-03AA	**Date/Time Analyzed:**	6/15/16 11:18 PM
Date/Time Collecte	6/13/16 08:45 AM	**Dilution Factor:**	1.00
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msd3.i / 3061517

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.16	1.3	1.6	1.7
Ethyl Benzene	100-41-4	0.32	1.7	2.2	3.2
m,p-Xylene	108-38-3	0.26	1.7	2.2	13
o-Xylene	95-47-6	0.41	1.7	2.2	4.3
Toluene	108-88-3	0.22	1.5	1.9	19
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	650

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	79-128	91
4-Bromofluorobenzene	460-00-4	74-122	101
Toluene-d8	2037-26-5	82-119	102

EPA METHOD TO-15 GC/MS FULL SCAN
AOC9-2

Client ID:	AOC92160613SVP3A		
Lab ID:	1606317-04A	**Date/Time Analyzed:**	6/15/16 11:44 PM
Date/Time Collecte	6/13/16 09:08 AM	**Dilution Factor:**	1.00
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msd3.i / 3061518

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.16	1.3	1.6	1.5 J
Ethyl Benzene	100-41-4	0.32	1.7	2.2	3.2
m,p-Xylene	108-38-3	0.26	1.7	2.2	12
o-Xylene	95-47-6	0.41	1.7	2.2	4.4
Toluene	108-88-3	0.22	1.5	1.9	24
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	740

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

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	79-128	88
4-Bromofluorobenzene	460-00-4	74-122	102
Toluene-d8	2037-26-5	82-119	102

EPA METHOD TO-15 GC/MS FULL SCAN
AOC9-2

Client ID:	AOC92160613SVP4A		
Lab ID:	1606317-05A	**Date/Time Analyzed:**	6/16/16 12:10 AM
Date/Time Collecte	6/13/16 11:10 AM	**Dilution Factor:**	1.00
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msd3.i / 3061519

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.16	1.3	1.6	1.2 J
Ethyl Benzene	100-41-4	0.32	1.7	2.2	1.9 J
m,p-Xylene	108-38-3	0.26	1.7	2.2	7.9
o-Xylene	95-47-6	0.41	1.7	2.2	2.9
Toluene	108-88-3	0.22	1.5	1.9	9.7
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	650

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

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	79-128	92
4-Bromofluorobenzene	460-00-4	74-122	102
Toluene-d8	2037-26-5	82-119	103

EPA METHOD TO-15 GC/MS FULL SCAN
AOC9-2

Client ID:	AOC92160613SVP5A		
Lab ID:	1606317-06A	**Date/Time Analyzed:**	6/16/16 12:37 AM
Date/Time Collecte	6/13/16 09:37 AM	**Dilution Factor:**	1.00
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msd3.i / 3061520

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.16	1.3	1.6	2.2
Ethyl Benzene	100-41-4	0.32	1.7	2.2	2.6
m,p-Xylene	108-38-3	0.26	1.7	2.2	12
o-Xylene	95-47-6	0.41	1.7	2.2	3.9
Toluene	108-88-3	0.22	1.5	1.9	26
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	570

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	79-128	90
4-Bromofluorobenzene	460-00-4	74-122	102
Toluene-d8	2037-26-5	82-119	103

EPA METHOD TO-15 GC/MS FULL SCAN
AOC9-2

Client ID:	AOC92160613SVP5B		
Lab ID:	1606317-07A	**Date/Time Analyzed:**	6/16/16 01:03 AM
Date/Time Collecte	6/13/16 09:58 AM	**Dilution Factor:**	1.00
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msd3.i / 3061521

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.16	1.3	1.6	93
Ethyl Benzene	100-41-4	0.32	1.7	2.2	2.7
m,p-Xylene	108-38-3	0.26	1.7	2.2	12
o-Xylene	95-47-6	0.41	1.7	2.2	4.0
Toluene	108-88-3	0.22	1.5	1.9	16
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	610

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	79-128	92
4-Bromofluorobenzene	460-00-4	74-122	102
Toluene-d8	2037-26-5	82-119	102

EPA METHOD TO-15 GC/MS FULL SCAN
AOC9-2

Client ID:	AOC92160613SVP6A		
Lab ID:	1606317-08A	**Date/Time Analyzed:**	6/16/16 01:29 AM
Date/Time Collecte	6/13/16 10:15 AM	**Dilution Factor:**	1.00
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msd3.i / 3061522

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.16	1.3	1.6	5.6
Ethyl Benzene	100-41-4	0.32	1.7	2.2	2.9
m,p-Xylene	108-38-3	0.26	1.7	2.2	12
o-Xylene	95-47-6	0.41	1.7	2.2	3.9
Toluene	108-88-3	0.22	1.5	1.9	15
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	650

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	79-128	92
4-Bromofluorobenzene	460-00-4	74-122	101
Toluene-d8	2037-26-5	82-119	104

EPA METHOD TO-15 GC/MS FULL SCAN
AOC9-2

Client ID:	AOC92160613SVP7A		
Lab ID:	1606317-09A	**Date/Time Analyzed:**	6/16/16 08:06 AM
Date/Time Collecte	6/13/16 11:50 AM	**Dilution Factor:**	1.00
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msd3.i / 3061528

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.16	1.3	1.6	0.83 J
Ethyl Benzene	100-41-4	0.32	1.7	2.2	1.4 J
m,p-Xylene	108-38-3	0.26	1.7	2.2	6.0
o-Xylene	95-47-6	0.41	1.7	2.2	2.3
Toluene	108-88-3	0.22	1.5	1.9	14
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	740

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

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	79-128	90
4-Bromofluorobenzene	460-00-4	74-122	100
Toluene-d8	2037-26-5	82-119	102

EPA METHOD TO-15 GC/MS FULL SCAN
AOC9-2

Client ID:	AOC92160613SVP8A		
Lab ID:	1606317-10A	**Date/Time Analyzed:**	6/16/16 02:18 AM
Date/Time Collecte	6/13/16 10:45 AM	**Dilution Factor:**	1.00
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msd3.i / 3061524

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.16	1.3	1.6	2.2
Ethyl Benzene	100-41-4	0.32	1.7	2.2	1.9 J
m,p-Xylene	108-38-3	0.26	1.7	2.2	8.5
o-Xylene	95-47-6	0.41	1.7	2.2	3.0
Toluene	108-88-3	0.22	1.5	1.9	12
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	79-128	93
4-Bromofluorobenzene	460-00-4	74-122	101
Toluene-d8	2037-26-5	82-119	102

EPA METHOD TO-15 GC/MS FULL SCAN
AOC9-2

Client ID:	AOC92160613SVP7B		
Lab ID:	1606317-11A	**Date/Time Analyzed:**	6/16/16 07:08 AM
Date/Time Collecte	6/13/16 11:30 AM	**Dilution Factor:**	1.00
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msd3.i / 3061526

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.16	1.3	1.6	0.92 J
Ethyl Benzene	100-41-4	0.32	1.7	2.2	2.4
m,p-Xylene	108-38-3	0.26	1.7	2.2	8.8
o-Xylene	95-47-6	0.41	1.7	2.2	3.3
Toluene	108-88-3	0.22	1.5	1.9	20
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	780

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

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	79-128	90
4-Bromofluorobenzene	460-00-4	74-122	99
Toluene-d8	2037-26-5	82-119	104

EPA METHOD TO-15 GC/MS FULL SCAN
AOC9-2

Client ID:	AOC92160613SVP DUP		
Lab ID:	1606317-12A	**Date/Time Analyzed:**	6/16/16 07:34 AM
Date/Time Collecte	6/13/16 10:30 AM	**Dilution Factor:**	1.00
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msd3.i / 3061527

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.16	1.3	1.6	11
Ethyl Benzene	100-41-4	0.32	1.7	2.2	3.2
m,p-Xylene	108-38-3	0.26	1.7	2.2	12
o-Xylene	95-47-6	0.41	1.7	2.2	4.5
Toluene	108-88-3	0.22	1.5	1.9	28
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	570

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	79-128	88
4-Bromofluorobenzene	460-00-4	74-122	100
Toluene-d8	2037-26-5	82-119	102

EPA METHOD TO-15 GC/MS FULL SCAN
AOC9-2

Client ID:	Lab Blank		
Lab ID:	1606317-13A	**Date/Time Analyzed:**	6/15/16 12:30 PM
Date/Time Collecte	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msdp.i / p061508a

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.34	0.64	1.6	Not Detected U
Ethyl Benzene	100-41-4	0.56	0.87	2.2	Not Detected U
m,p-Xylene	108-38-3	0.41	0.87	2.2	Not Detected U
o-Xylene	95-47-6	0.46	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

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	79-128	105
4-Bromofluorobenzene	460-00-4	74-122	92
Toluene-d8	2037-26-5	82-119	104

EPA METHOD TO-15 GC/MS FULL SCAN
AOC9-2

Client ID:	Lab Blank		
Lab ID:	1606317-13B	**Date/Time Analyzed:**	6/15/16 01:58 PM
Date/Time Collecte	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd3.i / 3061506a

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.16	1.3	1.6	Not Detected U
Ethyl Benzene	100-41-4	0.32	1.7	2.2	Not Detected U
m,p-Xylene	108-38-3	0.26	1.7	2.2	Not Detected U
o-Xylene	95-47-6	0.41	1.7	2.2	Not Detected U
Toluene	108-88-3	0.22	1.5	1.9	Not Detected U
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	Not Detected U

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	79-128	90
4-Bromofluorobenzene	460-00-4	74-122	93
Toluene-d8	2037-26-5	82-119	104

EPA METHOD TO-15 GC/MS FULL SCAN
AOC9-2

Client ID:	CCV		
Lab ID:	1606317-14A	**Date/Time Analyzed:**	6/15/16 08:17 AM
Date/Time Collecte	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msdp.i / p061502a

Compound	CAS#	%Recovery
Benzene	71-43-2	105
Ethyl Benzene	100-41-4	102
m,p-Xylene	108-38-3	103
o-Xylene	95-47-6	105
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	79-128	107
4-Bromofluorobenzene	460-00-4	74-122	97
Toluene-d8	2037-26-5	82-119	103

EPA METHOD TO-15 GC/MS FULL SCAN
AOC9-2

Client ID:	CCV		
Lab ID:	1606317-14B	**Date/Time Analyzed:**	6/15/16 11:01 AM
Date/Time Collecte	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd3.i / 3061502a

Compound	CAS#	%Recovery
Benzene	71-43-2	95
Ethyl Benzene	100-41-4	92
m,p-Xylene	108-38-3	90
o-Xylene	95-47-6	89
Toluene	108-88-3	94
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	79-128	86
4-Bromofluorobenzene	460-00-4	74-122	98
Toluene-d8	2037-26-5	82-119	104

EPA METHOD TO-15 GC/MS FULL SCAN
AOC9-2

Client ID:	LCS		
Lab ID:	1606317-15A	**Date/Time Analyzed:**	6/15/16 09:03 AM
Date/Time Collecte	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msdp.i / p061503a

Compound	CAS#	%Recovery
Benzene	71-43-2	97
Ethyl Benzene	100-41-4	91
m,p-Xylene	108-38-3	92
o-Xylene	95-47-6	95
Toluene	108-88-3	95
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	79-128	103
4-Bromofluorobenzene	460-00-4	74-122	98
Toluene-d8	2037-26-5	82-119	102

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS FULL SCAN
AOC9-2

Client ID:	LCSD		
Lab ID:	1606317-15AA	**Date/Time Analyzed:**	6/15/16 09:28 AM
Date/Time Collecte	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msdp.i / p061504a

Compound	CAS#	%Recovery
Benzene	71-43-2	98
Ethyl Benzene	100-41-4	90
m,p-Xylene	108-38-3	89
o-Xylene	95-47-6	95
Toluene	108-88-3	97
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	79-128	107
4-Bromofluorobenzene	460-00-4	74-122	96
Toluene-d8	2037-26-5	82-119	106

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS FULL SCAN
AOC9-2

Client ID:	LCS		
Lab ID:	1606317-15B	**Date/Time Analyzed:**	6/15/16 11:28 AM
Date/Time Collecte	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd3.i / 3061503a

Compound	CAS#	%Recovery
Benzene	71-43-2	95
Ethyl Benzene	100-41-4	90
m,p-Xylene	108-38-3	88
o-Xylene	95-47-6	89
Toluene	108-88-3	95
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	79-128	86
4-Bromofluorobenzene	460-00-4	74-122	97
Toluene-d8	2037-26-5	82-119	104

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS FULL SCAN
AOC9-2

Client ID:	LCSD		
Lab ID:	1606317-15BB	**Date/Time Analyzed:**	6/15/16 11:54 AM
Date/Time Collecte	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd3.i / 3061504a

Compound	CAS#	%Recovery
Benzene	71-43-2	94
Ethyl Benzene	100-41-4	89
m,p-Xylene	108-38-3	87
o-Xylene	95-47-6	89
Toluene	108-88-3	94
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	79-128	85
4-Bromofluorobenzene	460-00-4	74-122	96
Toluene-d8	2037-26-5	82-119	103

* % Recovery is calculated using unrounded analytical results.

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Sample Transportation Notice
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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 + BOB THOMAS

Company SEALASKA Email SCOTT.ELKINO@SEALASKA.COM

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

Phone 360-626-3991 Fax 360-598-3116

Project Info:
P.O. # PO-01331
Project # JBLM 01A
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	AOC92160613SVP1A	TEDLAR	6-13-16	8:06	TO-15 BEX, TPH-G				
03A	AOC92160613SVP1B	TEDLAR	6-13-16	8:26	TO-15				
03A	AOC92160613SVP2A	TEDLAR	6-13-16	8:45	TO-15				
04A	AOC92160613SVP3A	TEDLAR	6-13-16	9:08	TO-15				
05A	AOC92160613SVP4A	TEDLAR	6-13-16	11:10	TO-15				
06A	AOC92160613SVP5A	TEDLAR	6-13-16	9:37	TO-15				
07A	AOC92160613SVP5B	TEDLAR	6-13-16	9:58	TO-15				
08A	AOC92160613SVP6A	TEDLAR	6-13-16	10:15	TO-15				
09A	AOC92160613SVP7A	TEDLAR	6-13-16	11:50	TO-15				
10A	AOC92160613SVP8A	TEDLAR	6-13-16	10:45	TO-15				

Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
Tom Malamakal	6-14-16 8:00	Andrea Augustin EATL	6/15/16 1010
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	1606317

Form 1293 rev.11

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Sample Transportation Notice

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FOLSOM, CA 95630-4719
(916) 985-1000 FAX (916) 985-1020

Project Manager SCOTT ELKIND

Collected by: (Print and Sign) TOM MALAMAKAL + BOB THOMAS

Company SEALASKA Email SCOTT.ELKIND@SEALASKA.COM

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

Phone 360-626-3491 Fax 360-598-3116

Project Info:

P.O. # PO-01331

Project # JBLM 01A

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)
1A	AOC92160613SVPFB	TEDLAR	6-13-16	11:30	TO-15 BTEX, TPH-G				
2A	AOC92160613SVPDUP	TEDLAR	6-13-16	10:30	TO-15 BTEX, TPH-G				

Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
Tom Malamakal	6-14-16	Andrea Augustin EATL	6/15/16 1010
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	1606317

Form 1293 rev.11

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10/6/2016
Mr. Scott Elkind
Sealaska Environmental Services, LLC
18743 Front St NE, Suite 201
PO Box 869
Poulsbo WA 98370

Project Name: JBLM AOC9-2
Project #:
Workorder #: 1609536

Dear Mr. Scott Elkind

The following report includes the data for the above referenced project for sample(s) received on 9/23/2016 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 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

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WORK ORDER #: 1609536

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 AOC9-2
DATE RECEIVED:	09/23/2016	**CONTACT:**	Kelly Buettner
DATE COMPLETED:	10/06/2016		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	AOC92160921SVE1000	TO-15	Tedlar Bag	Tedlar Bag
02A	AOC92160921SVE1300	TO-15	Tedlar Bag	Tedlar Bag
02AA	AOC92160921SVE1300 Lab Duplicate	TO-15	Tedlar Bag	Tedlar Bag
03A	AOC92160921SVE1530	TO-15	Tedlar Bag	Tedlar Bag
04A	AOC92160921SVE1800	TO-15	Tedlar Bag	Tedlar Bag
05A	AOC92160921SVEDUP	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: 10/06/16

Technical Director

Certification numbers: AZ Licensure AZ0775, NJ NELAP - CA016, NY NELAP - 11291,
TX NELAP - T104704434-15-9, UT NELAP CA0093332015-6, VA NELAP - 8113, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005, Effective date: 10/18/2015, Expiration date: 10/17/2016.
Eurofins Air Toxics Inc.. certifies that the test results contained in this report meet all requirements of the NELAC standards

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(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

LABORATORY NARRATIVE
DoD QSM 5.0 - TO-15
Sealaska Environmental Services, LLC
Workorder# 1609536

Five 1 Liter Tedlar Bag samples were received on September 23, 2016. 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.
DoD QSM 5.0 Section 2.2.1 PT Requirement	Two PT samples per year for each analyte-matrix-method combination are required.	Not all analyte-matrix-method combinations on the scope of accreditation are available from the current PT providers.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

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.

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.

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 subtractior

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
JBLM AOC9-2

Client ID:	AOC92160921SVE1000		
Lab ID:	1609536-01A	**Date/Time Analyzed:**	9/24/16 05:54 PM
Date/Time Collecte	9/21/16 10:00 AM	**Dilution Factor:**	1.00
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msd3.i / 3092412

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.16	0.64	1.6	Not Detected U
Ethyl Benzene	100-41-4	0.32	0.87	2.2	0.34 J
m,p-Xylene	108-38-3	0.26	0.87	2.2	1.1 J
o-Xylene	95-47-6	0.41	0.87	2.2	0.61 J
Toluene	108-88-3	0.22	0.75	1.9	4.7
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	400

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	78-117	95
4-Bromofluorobenzene	460-00-4	83-120	102
Toluene-d8	2037-26-5	88-112	102

EPA METHOD TO-15 GC/MS FULL SCAN
JBLM AOC9-2

Client ID:	AOC92160921SVE1300		
Lab ID:	1609536-02A	**Date/Time Analyzed:**	9/24/16 03:06 PM
Date/Time Collecte	9/21/16 01:00 PM	**Dilution Factor:**	1.00
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msd3.i / 3092407

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.16	0.64	1.6	0.34 J
Ethyl Benzene	100-41-4	0.32	0.87	2.2	Not Detected U
m,p-Xylene	108-38-3	0.26	0.87	2.2	1.2 J
o-Xylene	95-47-6	0.41	0.87	2.2	0.57 J
Toluene	108-88-3	0.22	0.75	1.9	4.3
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	410

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	78-117	96
4-Bromofluorobenzene	460-00-4	83-120	102
Toluene-d8	2037-26-5	88-112	100

EPA METHOD TO-15 GC/MS FULL SCAN
JBLM AOC9-2

Client ID:	AOC92160921SVE1300 Lab Duplicate		
Lab ID:	1609536-02AA	**Date/Time Analyzed:**	9/24/16 03:33 PM
Date/Time Collecte	9/21/16 01:00 PM	**Dilution Factor:**	1.00
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msd3.i / 3092408

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.16	0.64	1.6	0.32 J
Ethyl Benzene	100-41-4	0.32	0.87	2.2	Not Detected U
m,p-Xylene	108-38-3	0.26	0.87	2.2	1.1 J
o-Xylene	95-47-6	0.41	0.87	2.2	0.50 J
Toluene	108-88-3	0.22	0.75	1.9	4.3
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	210

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	78-117	96
4-Bromofluorobenzene	460-00-4	83-120	100
Toluene-d8	2037-26-5	88-112	102

EPA METHOD TO-15 GC/MS FULL SCAN
JBLM AOC9-2

Client ID:	AOC92160921SVE1530		
Lab ID:	1609536-03A	**Date/Time Analyzed:**	9/24/16 03:59 PM
Date/Time Collecte	9/21/16 03:30 PM	**Dilution Factor:**	1.00
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msd3.i / 3092409

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.16	0.64	1.6	Not Detected U
Ethyl Benzene	100-41-4	0.32	0.87	2.2	0.43 J
m,p-Xylene	108-38-3	0.26	0.87	2.2	4.4
o-Xylene	95-47-6	0.41	0.87	2.2	1.7 J
Toluene	108-88-3	0.22	0.75	1.9	4.6
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	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	78-117	96
4-Bromofluorobenzene	460-00-4	83-120	100
Toluene-d8	2037-26-5	88-112	102

EPA METHOD TO-15 GC/MS FULL SCAN
JBLM AOC9-2

Client ID:	AOC92160921SVE1800		
Lab ID:	1609536-04A	**Date/Time Analyzed:**	9/24/16 04:25 PM
Date/Time Collecte	9/21/16 06:00 PM	**Dilution Factor:**	1.00
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msd3.i / 3092410

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.16	0.64	1.6	Not Detected U
Ethyl Benzene	100-41-4	0.32	0.87	2.2	Not Detected U
m,p-Xylene	108-38-3	0.26	0.87	2.2	1.0 J
o-Xylene	95-47-6	0.41	0.87	2.2	0.49 J
Toluene	108-88-3	0.22	0.75	1.9	4.5
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	380

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	78-117	98
4-Bromofluorobenzene	460-00-4	83-120	102
Toluene-d8	2037-26-5	88-112	100

EPA METHOD TO-15 GC/MS FULL SCAN
JBLM AOC9-2

Client ID:	AOC92160921SVEDUP		
Lab ID:	1609536-05A	**Date/Time Analyzed:**	9/24/16 06:21 PM
Date/Time Collecte	9/21/16 01:05 PM	**Dilution Factor:**	1.00
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msd3.i / 3092413

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.16	0.64	1.6	0.29 J
Ethyl Benzene	100-41-4	0.32	0.87	2.2	Not Detected U
m,p-Xylene	108-38-3	0.26	0.87	2.2	1.2 J
o-Xylene	95-47-6	0.41	0.87	2.2	0.61 J
Toluene	108-88-3	0.22	0.75	1.9	3.8
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	410

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	78-117	94
4-Bromofluorobenzene	460-00-4	83-120	101
Toluene-d8	2037-26-5	88-112	89

EPA METHOD TO-15 GC/MS FULL SCAN
JBLM AOC9-2

Client ID:	Lab Blank		
Lab ID:	1609536-06A	**Date/Time Analyzed:**	9/24/16 01:08 PM
Date/Time Collecte	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd3.i / 3092406c

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.16	0.64	1.6	Not Detected U
Ethyl Benzene	100-41-4	0.32	0.87	2.2	Not Detected U
m,p-Xylene	108-38-3	0.26	0.87	2.2	Not Detected U
o-Xylene	95-47-6	0.41	0.87	2.2	Not Detected U
Toluene	108-88-3	0.22	0.75	1.9	0.26 J
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	Not Detected U

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	78-117	96
4-Bromofluorobenzene	460-00-4	83-120	98
Toluene-d8	2037-26-5	88-112	100

EPA METHOD TO-15 GC/MS FULL SCAN
JBLM AOC9-2

Client ID:	CCV		
Lab ID:	1609536-07A	**Date/Time Analyzed:**	9/24/16 09:40 AM
Date/Time Collecte	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd3.i / 3092402a

Compound	CAS#	%Recovery
Benzene	71-43-2	97
Ethyl Benzene	100-41-4	95
m,p-Xylene	108-38-3	96
o-Xylene	95-47-6	95
Toluene	108-88-3	91
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	78-117	92
4-Bromofluorobenzene	460-00-4	83-120	98
Toluene-d8	2037-26-5	88-112	97

EPA METHOD TO-15 GC/MS FULL SCAN
JBLM AOC9-2

Client ID:	LCS		
Lab ID:	1609536-08A	**Date/Time Analyzed:**	9/24/16 10:07 AM
Date/Time Collecte	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd3.i / 3092403a

Compound	CAS#	%Recovery
Benzene	71-43-2	106
Ethyl Benzene	100-41-4	98
m,p-Xylene	108-38-3	97
o-Xylene	95-47-6	99
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	78-117	96
4-Bromofluorobenzene	460-00-4	83-120	99
Toluene-d8	2037-26-5	88-112	102

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS FULL SCAN
JBLM AOC9-2

Client ID:	LCSD		
Lab ID:	1609536-08AA	**Date/Time Analyzed:**	9/24/16 10:33 AM
Date/Time Collecte	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd3.i / 3092404a

Compound	CAS#	%Recovery
Benzene	71-43-2	105
Ethyl Benzene	100-41-4	95
m,p-Xylene	108-38-3	96
o-Xylene	95-47-6	98
Toluene	108-88-3	97
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	78-117	96
4-Bromofluorobenzene	460-00-4	83-120	97
Toluene-d8	2037-26-5	88-112	102

* % Recovery is calculated using unrounded analytical results.

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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 ENVIRONMENTAL Email SCOTT.ELKIND@SEALASKA.COM

Address 18743 FRONT ST NE STE 8 City POULSBO State WA Zip 98370

Phone 360-626-3991 Fax 360-598-3116

Project Info:

P.O. # 01331

Project #

Project Name JBLM 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	AOC9216@921SVE1@@@	TEDLAR	9-21-16	1@:@@	TO-15 BTEX, TPH-G				
02A	AOC9216@921SVE13@@	TEDLAR	9-21-16	13:@@	TO-15 BTEX, TPH-G				
03A	AOC9216@921SVE153@	TEDLAR	9-21-16	15:3@	TO-15 BTEX, TPH-G				
04A	AOC9216@921SVE18@@	TEDLAR	9-21-16	18:@@	TO-15 BTEX, TPH-G				
05A	AOC9216@921SVEDUP	TEDLAR	9-21-16	13:@5	TO-15 BTEX, TPH-G				

Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
Tom Malamakal	9-22-16 9:@@	[illegible] EATL	9/23/16 1005
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		N/A	Good	Yes No (None)	1609536

Form 1293 rev.11

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1/13/2017

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

Project Name: AOC92
Project #: 01B
Workorder #: 1612490

Dear Mr. Scott Elkind

The following report includes the data for the above referenced project for sample(s) received on 12/30/2016 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

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WORK ORDER #: 1612490

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 AOC92
DATE RECEIVED:	12/30/2016	**CONTACT:**	Kelly Buettner
DATE COMPLETED:	01/12/2017		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	AOC92161228SVE1000	TO-15	Tedlar Bag	Tedlar Bag
01AA	AOC92161228SVE1000 Lab Duplicate	TO-15	Tedlar Bag	Tedlar Bag
02A	AOC92161228SVE1300	TO-15	Tedlar Bag	Tedlar Bag
03A	AOC92161228SVE1530	TO-15	Tedlar Bag	Tedlar Bag
04A	AOC92161228SVE1800	TO-15	Tedlar Bag	Tedlar Bag
05A	AOC92161228SVEDUP	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: 01/13/17

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

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

LABORATORY NARRATIVE
DoD QSM 5.0 - TO-15
Sealaska Environmental Services, LLC
Workorder# 1612490

Five 1 Liter Tedlar Bag samples were received on December 30, 2016. 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

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.

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.

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
AOC92

Client ID:	AOC92161228SVE1000		
Lab ID:	1612490-01A	**Date/Time Analyzed:**	12/30/16 05:45 PM
Date/Time Collecte	12/28/16 10:00 AM	**Dilution Factor:**	1.00
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msda.i / a123007

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.23	0.61	1.6	0.23 J
Ethyl Benzene	100-41-4	0.23	0.82	2.2	Not Detected U
m,p-Xylene	108-38-3	0.32	0.82	2.2	Not Detected U
o-Xylene	95-47-6	0.39	0.82	2.2	Not Detected U
Toluene	108-88-3	0.17	0.72	1.9	1.0 J
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	230

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	99
4-Bromofluorobenzene	460-00-4	83-118	108
Toluene-d8	2037-26-5	87-115	103

EPA METHOD TO-15 GC/MS FULL SCAN
AOC92

Client ID:	AOC92161228SVE1000 Lab Duplicate		
Lab ID:	1612490-01AA	**Date/Time Analyzed:**	12/30/16 06:12 PM
Date/Time Collecte	12/28/16 10:00 AM	**Dilution Factor:**	1.00
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msda.i / a123008

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.23	0.61	1.6	0.29 J
Ethyl Benzene	100-41-4	0.23	0.82	2.2	Not Detected U
m,p-Xylene	108-38-3	0.32	0.82	2.2	Not Detected U
o-Xylene	95-47-6	0.39	0.82	2.2	Not Detected U
Toluene	108-88-3	0.17	0.72	1.9	0.93 J
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	260

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	100
4-Bromofluorobenzene	460-00-4	83-118	108
Toluene-d8	2037-26-5	87-115	102

EPA METHOD TO-15 GC/MS FULL SCAN
AOC92

Client ID:	AOC92161228SVE1300		
Lab ID:	1612490-02A	**Date/Time Analyzed:**	12/30/16 06:38 PM
Date/Time Collecte	12/28/16 01:00 PM	**Dilution Factor:**	1.00
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msda.i / a123009

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.23	0.61	1.6	Not Detected U
Ethyl Benzene	100-41-4	0.23	0.82	2.2	Not Detected U
m,p-Xylene	108-38-3	0.32	0.82	2.2	Not Detected U
o-Xylene	95-47-6	0.39	0.82	2.2	Not Detected U
Toluene	108-88-3	0.17	0.72	1.9	0.84 J
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	450

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	102
4-Bromofluorobenzene	460-00-4	83-118	108
Toluene-d8	2037-26-5	87-115	102

EPA METHOD TO-15 GC/MS FULL SCAN
AOC92

Client ID:	AOC92161228SVE1530		
Lab ID:	1612490-03A	**Date/Time Analyzed:**	12/30/16 07:05 PM
Date/Time Collecte	12/28/16 03:30 PM	**Dilution Factor:**	1.00
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msda.i / a123010

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.23	0.61	1.6	Not Detected U
Ethyl Benzene	100-41-4	0.23	0.82	2.2	Not Detected U
m,p-Xylene	108-38-3	0.32	0.82	2.2	Not Detected U
o-Xylene	95-47-6	0.39	0.82	2.2	Not Detected U
Toluene	108-88-3	0.17	0.72	1.9	1.2 J
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	360

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	98
4-Bromofluorobenzene	460-00-4	83-118	108
Toluene-d8	2037-26-5	87-115	104

EPA METHOD TO-15 GC/MS FULL SCAN
AOC92

Client ID:	AOC92161228SVE1800		
Lab ID:	1612490-04A	**Date/Time Analyzed:**	12/30/16 07:32 PM
Date/Time Collecte	12/28/16 06:00 PM	**Dilution Factor:**	1.00
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msda.i / a123011

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.23	0.61	1.6	Not Detected U
Ethyl Benzene	100-41-4	0.23	0.82	2.2	Not Detected U
m,p-Xylene	108-38-3	0.32	0.82	2.2	Not Detected U
o-Xylene	95-47-6	0.39	0.82	2.2	Not Detected U
Toluene	108-88-3	0.17	0.72	1.9	0.86 J
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	450

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	101
4-Bromofluorobenzene	460-00-4	83-118	113
Toluene-d8	2037-26-5	87-115	105

EPA METHOD TO-15 GC/MS FULL SCAN
AOC92

Client ID:	AOC92161228SVEDUP		
Lab ID:	1612490-05A	**Date/Time Analyzed:**	12/30/16 07:58 PM
Date/Time Collecte	12/28/16 03:35 PM	**Dilution Factor:**	1.00
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msda.i / a123012

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.23	0.61	1.6	Not Detected U
Ethyl Benzene	100-41-4	0.23	0.82	2.2	Not Detected U
m,p-Xylene	108-38-3	0.32	0.82	2.2	Not Detected U
o-Xylene	95-47-6	0.39	0.82	2.2	Not Detected U
Toluene	108-88-3	0.17	0.72	1.9	1.0 J
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	300

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	102
4-Bromofluorobenzene	460-00-4	83-118	110
Toluene-d8	2037-26-5	87-115	102

EPA METHOD TO-15 GC/MS FULL SCAN
AOC92

Client ID:	Lab Blank		
Lab ID:	1612490-06A	**Date/Time Analyzed:**	12/30/16 03:28 PM
Date/Time Collecte	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msda.i / a123006a

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.23	0.61	1.6	Not Detected U
Ethyl Benzene	100-41-4	0.23	0.82	2.2	Not Detected U
m,p-Xylene	108-38-3	0.32	0.82	2.2	Not Detected U
o-Xylene	95-47-6	0.39	0.82	2.2	Not Detected U
Toluene	108-88-3	0.17	0.72	1.9	Not Detected U
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	Not Detected U

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	100
4-Bromofluorobenzene	460-00-4	83-118	110
Toluene-d8	2037-26-5	87-115	106

EPA METHOD TO-15 GC/MS FULL SCAN
AOC92

Client ID:	CCV		
Lab ID:	1612490-07A	**Date/Time Analyzed:**	12/30/16 10:51 AM
Date/Time Collecte	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msda.i / a123002a

Compound	CAS#	%Recovery
Benzene	71-43-2	80
Ethyl Benzene	100-41-4	87
m,p-Xylene	108-38-3	82
o-Xylene	95-47-6	89
Toluene	108-88-3	94
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	103
4-Bromofluorobenzene	460-00-4	83-118	111
Toluene-d8	2037-26-5	87-115	105

EPA METHOD TO-15 GC/MS FULL SCAN
AOC92

Client ID:	LCS		
Lab ID:	1612490-08A	**Date/Time Analyzed:**	12/30/16 11:16 AM
Date/Time Collecte	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msda.i / a123003c

Compound	CAS#	%Recovery
Benzene	71-43-2	76
Ethyl Benzene	100-41-4	85
m,p-Xylene	108-38-3	76
o-Xylene	95-47-6	84
Toluene	108-88-3	90
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	102
4-Bromofluorobenzene	460-00-4	83-118	110
Toluene-d8	2037-26-5	87-115	104

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS FULL SCAN
AOC92

Client ID:	LCSD		
Lab ID:	1612490-08AA	**Date/Time Analyzed:**	12/30/16 11:41 AM
Date/Time Collecte	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msda.i / a123004c

Compound	CAS#	%Recovery
Benzene	71-43-2	76
Ethyl Benzene	100-41-4	88
m,p-Xylene	108-38-3	78
o-Xylene	95-47-6	87
Toluene	108-88-3	89
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	98
4-Bromofluorobenzene	460-00-4	83-118	113
Toluene-d8	2037-26-5	87-115	104

* % Recovery is calculated using unrounded analytical results.

COPY

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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 1818 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 AOC 92

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 (psig)
01A	AOC92161228SVE1000	TEDLAR	12-28-16	10:00	TO-15 BTEX, TPH-G		-		
02A	AOC92161228SVE1300	TEDLAR	12-28-16	13:00	TO-15 BTEX, TPH-G				
03A	AOC92161228SVE1530	TEDLAR	12-28-16	15:30	TO-15 BTEX, TPH-G				
04A	AOC92161228SVE1800	TEDLAR	12-28-16	18:00	TO-15 BTEX, TPH-G				
05A	AOC92161228SVE DUP	TEDLAR	12-28-16	15:35	TO-15 BTEX, TPH-G				

Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
	12-28-16 1000		
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)	1612490

Form 1293 rev.11

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1/13/2017
Mr. Scott Elkind
Sealaska Environmental Services, LLC
18743 Front St NE, Suite 201
PO Box 869
Poulsbo WA 98370

Project Name: AOC92
Project #: 01B
Workorder #: 1612495

Dear Mr. Scott Elkind

The following report includes the data for the above referenced project for sample(s) received on 12/30/2016 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

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WORK ORDER #: 1612495

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 AOC92
DATE RECEIVED:	12/30/2016	**CONTACT:**	Kelly Buettner
DATE COMPLETED:	01/13/2017		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	AOC92161228SUPPLY	Modified TO-15	2.5 "Hg	5 psi
01B	AOC92161228SUPPLY	Modified TO-15	2.5 "Hg	5 psi
02A	AOC92161228CONF	Modified TO-15	4.0 "Hg	5 psi
02B	AOC92161228CONF	Modified TO-15	4.0 "Hg	5 psi
03A	AOC92161228CUST	Modified TO-15	5.0 "Hg	5 psi
03B	AOC92161228CUST	Modified TO-15	5.0 "Hg	5 psi
04A	AOC92161228AAFES	Modified TO-15	3.0 "Hg	5 psi
04B	AOC92161228AAFES	Modified TO-15	3.0 "Hg	5 psi
05A	AOC92161228FD	Modified TO-15	3.0 "Hg	5 psi
05B	AOC92161228FD	Modified TO-15	3.0 "Hg	5 psi
06A	AOC92161228LOBBY	Modified TO-15	5.5 "Hg	5 psi
06B	AOC92161228LOBBY	Modified TO-15	5.5 "Hg	5 psi
07A	AOC92161228GRAB	Modified TO-15	0.0 "Hg	5 psi
07AA	AOC92161228GRAB Lab Duplicate	Modified TO-15	0.0 "Hg	5 psi
07B	AOC92161228GRAB	Modified TO-15	0.0 "Hg	5 psi
07BB	AOC92161228GRAB Lab Duplicate	Modified TO-15	0.0 "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

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WORK ORDER #: 1612495

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 AOC92
DATE RECEIVED:	12/30/2016	**CONTACT:**	Kelly Buettner
DATE COMPLETED:	01/13/2017		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
10BB	LCSD	Modified TO-15	NA	NA

CERTIFIED BY: Heidi Hayes DATE: 01/13/17

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

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

LABORATORY NARRATIVE
DoD QSM 5.0 TO-15 LL/SIM
Sealaska Environmental Services, LLC
Workorder# 1612495

Seven 6 Liter Summa Canister (SIM Certified) samples were received on December 30, 2016. 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 AOC92161228SUPPLY, AOC92161228AAFES and AOC92161228FD was not provided on the sample tag. Therefore the information on the Chain of Custody was used to process and report the sample.

The Chain of Custody (COC) information for sample AOC92161228GRAB 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.

The Chain of Custody (COC) information for sample AOC92161228CONF did not match the information on the canister with regard to canister identification. The client was notified of the discrepancy and the information on the canister was used to process and report the sample.

Analytical Notes

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.

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.

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.

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:	AOC92161228SUPPLY		
Lab ID:	1612495-01A	**Date/Time Analyzed:**	1/5/17 01:04 PM
Date/Time Collected:	12/28/16 09:25 AM	**Dilution Factor:**	1.46
Media:	6 Liter Summa Canister (SIM Certified)	**Instrument/Filename:**	msd20.i / 20010509

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	60	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	85-132	105
4-Bromofluorobenzene	460-00-4	82-112	95
Toluene-d8	2037-26-5	88-108	97

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
AOC92

Client ID:	AOC92161228SUPPLY		
Lab ID:	1612495-01B	**Date/Time Analyzed:**	1/5/17 01:04 PM
Date/Time Collected:	12/28/16 09:25 AM	**Dilution Factor:**	1.46
Media:	6 Liter Summa Canister (SIM Certified)	**Instrument/Filename:**	msd20.i / 20010509sim

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.0034	0.037	0.23	0.56
Ethyl Benzene	100-41-4	0.0058	0.051	0.13	0.23
m,p-Xylene	108-38-3	0.0083	0.051	0.25	0.74
o-Xylene	95-47-6	0.0079	0.051	0.13	0.28
Toluene	108-88-3	0.0048	0.044	0.11	4.3

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	84-133	103
4-Bromofluorobenzene	460-00-4	81-114	96
Toluene-d8	2037-26-5	92-104	98

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
AOC92

Client ID:	AOC92161228CONF		
Lab ID:	1612495-02A	**Date/Time Analyzed:**	1/5/17 01:43 PM
Date/Time Collected:	12/28/16 09:14 AM	**Dilution Factor:**	1.55
Media:	6 Liter Summa Canister (SIM Certified)	**Instrument/Filename:**	msd20.i / 20010510

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	63	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	85-132	102
4-Bromofluorobenzene	460-00-4	82-112	93
Toluene-d8	2037-26-5	88-108	97

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
AOC92

Client ID:	AOC92161228CONF		
Lab ID:	1612495-02B	**Date/Time Analyzed:**	1/5/17 01:43 PM
Date/Time Collected:	12/28/16 09:14 AM	**Dilution Factor:**	1.55
Media:	6 Liter Summa Canister (SIM Certified)	**Instrument/Filename:**	msd20.i / 20010510sim

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.0036	0.040	0.25	0.45
Ethyl Benzene	100-41-4	0.0061	0.054	0.13	0.10 J
m,p-Xylene	108-38-3	0.0088	0.054	0.27	0.32
o-Xylene	95-47-6	0.0084	0.054	0.13	0.15
Toluene	108-88-3	0.0051	0.047	0.12	0.67

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

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	84-133	104
4-Bromofluorobenzene	460-00-4	81-114	94
Toluene-d8	2037-26-5	92-104	98

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
AOC92

Client ID:	AOC92161228CUST		
Lab ID:	1612495-03A	**Date/Time Analyzed:**	1/5/17 02:22 PM
Date/Time Collected:	12/28/16 09:10 AM	**Dilution Factor:**	1.61
Media:	6 Liter Summa Canister (SIM Certified)	**Instrument/Filename:**	msd20.i / 20010511

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	66	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	85-132	107
4-Bromofluorobenzene	460-00-4	82-112	95
Toluene-d8	2037-26-5	88-108	97

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
AOC92

Client ID:	AOC92161228CUST		
Lab ID:	1612495-03B	**Date/Time Analyzed:**	1/5/17 02:22 PM
Date/Time Collected:	12/28/16 09:10 AM	**Dilution Factor:**	1.61
Media:	6 Liter Summa Canister (SIM Certified)	**Instrument/Filename:**	msd20.i / 20010511sim

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.0038	0.041	0.26	0.44
Ethyl Benzene	100-41-4	0.0064	0.056	0.14	0.12 J
m,p-Xylene	108-38-3	0.0092	0.056	0.28	0.32
o-Xylene	95-47-6	0.0087	0.056	0.14	0.12 J
Toluene	108-88-3	0.0053	0.048	0.12	1.1

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

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	84-133	104
4-Bromofluorobenzene	460-00-4	81-114	96
Toluene-d8	2037-26-5	92-104	98

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
AOC92

Client ID:	AOC92161228AAFES		
Lab ID:	1612495-04A	**Date/Time Analyzed:**	1/5/17 03:01 PM
Date/Time Collected:	12/28/16 09:18 AM	**Dilution Factor:**	1.49
Media:	6 Liter Summa Canister (SIM Certified)	**Instrument/Filename:**	msd20.i / 20010512

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	61	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	85-132	107
4-Bromofluorobenzene	460-00-4	82-112	95
Toluene-d8	2037-26-5	88-108	97

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
AOC92

Client ID:	AOC92161228AAFES		
Lab ID:	1612495-04B	**Date/Time Analyzed:**	1/5/17 03:01 PM
Date/Time Collected:	12/28/16 09:18 AM	**Dilution Factor:**	1.49
Media:	6 Liter Summa Canister (SIM Certified)	**Instrument/Filename:**	msd20.i / 20010512sim

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.0035	0.038	0.24	0.99
Ethyl Benzene	100-41-4	0.0059	0.052	0.13	0.38
m,p-Xylene	108-38-3	0.0085	0.052	0.26	1.3
o-Xylene	95-47-6	0.0081	0.052	0.13	0.48
Toluene	108-88-3	0.0049	0.045	0.11	5.6

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	84-133	105
4-Bromofluorobenzene	460-00-4	81-114	97
Toluene-d8	2037-26-5	92-104	98

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
AOC92

Client ID:	AOC92161228FD		
Lab ID:	1612495-05A	**Date/Time Analyzed:**	1/5/17 04:03 PM
Date/Time Collected:	12/28/16 09:20 AM	**Dilution Factor:**	1.49
Media:	6 Liter Summa Canister (SIM Certified)	**Instrument/Filename:**	msd20.i / 20010513

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	61	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	85-132	107
4-Bromofluorobenzene	460-00-4	82-112	94
Toluene-d8	2037-26-5	88-108	98

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
AOC92

Client ID:	AOC92161228FD		
Lab ID:	1612495-05B	**Date/Time Analyzed:**	1/5/17 04:03 PM
Date/Time Collected:	12/28/16 09:20 AM	**Dilution Factor:**	1.49
Media:	6 Liter Summa Canister (SIM Certified)	**Instrument/Filename:**	msd20.i / 20010513sim

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.0035	0.038	0.24	0.45
Ethyl Benzene	100-41-4	0.0059	0.052	0.13	0.14
m,p-Xylene	108-38-3	0.0085	0.052	0.26	0.42
o-Xylene	95-47-6	0.0081	0.052	0.13	0.16
Toluene	108-88-3	0.0049	0.045	0.11	2.6

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	84-133	105
4-Bromofluorobenzene	460-00-4	81-114	95
Toluene-d8	2037-26-5	92-104	99

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
AOC92

Client ID:	AOC92161228LOBBY		
Lab ID:	1612495-06A	**Date/Time Analyzed:**	1/5/17 05:24 PM
Date/Time Collected:	12/28/16 09:05 AM	**Dilution Factor:**	1.64
Media:	6 Liter Summa Canister (SIM Certified)	**Instrument/Filename:**	msd20.i / 20010514

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	85-132	106
4-Bromofluorobenzene	460-00-4	82-112	94
Toluene-d8	2037-26-5	88-108	98

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
AOC92

Client ID:	AOC92161228LOBBY		
Lab ID:	1612495-06B	**Date/Time Analyzed:**	1/5/17 05:24 PM
Date/Time Collected:	12/28/16 09:05 AM	**Dilution Factor:**	1.64
Media:	6 Liter Summa Canister (SIM Certified)	**Instrument/Filename:**	msd20.i / 20010514sim

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.0038	0.042	0.26	0.46
Ethyl Benzene	100-41-4	0.0065	0.057	0.14	0.11 J
m,p-Xylene	108-38-3	0.0093	0.057	0.28	0.33
o-Xylene	95-47-6	0.0089	0.057	0.14	0.12 J
Toluene	108-88-3	0.0054	0.049	0.12	0.93

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

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	84-133	104
4-Bromofluorobenzene	460-00-4	81-114	94
Toluene-d8	2037-26-5	92-104	98

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
AOC92

Client ID:	AOC92161228GRAB		
Lab ID:	1612495-07A	**Date/Time Analyzed:**	1/5/17 06:15 PM
Date/Time Collected:	12/28/16 05:45 PM	**Dilution Factor:**	1.34
Media:	6 Liter Summa Canister (SIM Certified)	**Instrument/Filename:**	msd20.i / 20010515

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	55	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	85-132	106
4-Bromofluorobenzene	460-00-4	82-112	93
Toluene-d8	2037-26-5	88-108	100

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
AOC92

Client ID:	AOC92161228GRAB Lab Duplicate		
Lab ID:	1612495-07AA	**Date/Time Analyzed:**	1/5/17 06:54 PM
Date/Time Collected:	12/28/16 05:45 PM	**Dilution Factor:**	1.34
Media:	6 Liter Summa Canister (SIM Certified)	**Instrument/Filename:**	msd20.i / 20010516

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	55	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	85-132	105
4-Bromofluorobenzene	460-00-4	82-112	96
Toluene-d8	2037-26-5	88-108	98

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
AOC92

Client ID:	AOC92161228GRAB		
Lab ID:	1612495-07B	**Date/Time Analyzed:**	1/5/17 06:15 PM
Date/Time Collected:	12/28/16 05:45 PM	**Dilution Factor:**	1.34
Media:	6 Liter Summa Canister (SIM Certified)	**Instrument/Filename:**	msd20.i / 20010515sim

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.0031	0.034	0.21	0.57
Ethyl Benzene	100-41-4	0.0053	0.046	0.12	0.15
m,p-Xylene	108-38-3	0.0076	0.046	0.23	0.54
o-Xylene	95-47-6	0.0073	0.046	0.12	0.20
Toluene	108-88-3	0.0044	0.040	0.10	0.88

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	84-133	105
4-Bromofluorobenzene	460-00-4	81-114	96
Toluene-d8	2037-26-5	92-104	99

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
AOC92

Client ID:	AOC92161228GRAB Lab Duplicate		
Lab ID:	1612495-07BB	**Date/Time Analyzed:**	1/5/17 06:54 PM
Date/Time Collected:	12/28/16 05:45 PM	**Dilution Factor:**	1.34
Media:	6 Liter Summa Canister (SIM Certified)	**Instrument/Filename:**	msd20.i / 20010516sim

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.0031	0.034	0.21	0.58
Ethyl Benzene	100-41-4	0.0053	0.046	0.12	0.15
m,p-Xylene	108-38-3	0.0076	0.046	0.23	0.54
o-Xylene	95-47-6	0.0073	0.046	0.12	0.20
Toluene	108-88-3	0.0044	0.040	0.10	0.88

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	84-133	107
4-Bromofluorobenzene	460-00-4	81-114	98
Toluene-d8	2037-26-5	92-104	99

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
AOC92

Client ID:	Lab Blank		
Lab ID:	1612495-08A	**Date/Time Analyzed:**	1/5/17 10:29 AM
Date/Time Collected:	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd20.i / 20010506a

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	85-132	107
4-Bromofluorobenzene	460-00-4	82-112	94
Toluene-d8	2037-26-5	88-108	98

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
AOC92

Client ID:	Lab Blank		
Lab ID:	1612495-08B	**Date/Time Analyzed:**	1/5/17 10:29 AM
Date/Time Collected:	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd20.i / 20010506sima

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.0023	0.026	0.16	0.010 J
Ethyl Benzene	100-41-4	0.0040	0.035	0.087	0.016 J
m,p-Xylene	108-38-3	0.0057	0.035	0.17	0.042 J
o-Xylene	95-47-6	0.0054	0.035	0.087	0.019 J
Toluene	108-88-3	0.0033	0.030	0.075	0.027 J

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

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	84-133	106
4-Bromofluorobenzene	460-00-4	81-114	96
Toluene-d8	2037-26-5	92-104	98

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
AOC92

Client ID:	CCV		
Lab ID:	1612495-09A	**Date/Time Analyzed:**	1/5/17 07:46 AM
Date/Time Collected:	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd20.i / 20010502a

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	85-132	98
4-Bromofluorobenzene	460-00-4	82-112	104
Toluene-d8	2037-26-5	88-108	100

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
AOC92

Client ID:	CCV		
Lab ID:	1612495-09B	**Date/Time Analyzed:**	1/5/17 07:46 AM
Date/Time Collected:	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd20.i / 20010502sima

Compound	CAS#	%Recovery
Benzene	71-43-2	90
Ethyl Benzene	100-41-4	114
m,p-Xylene	108-38-3	112
o-Xylene	95-47-6	114
Toluene	108-88-3	99

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	84-133	96
4-Bromofluorobenzene	460-00-4	81-114	104
Toluene-d8	2037-26-5	92-104	102

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
AOC92

Client ID:	LCS		
Lab ID:	1612495-10A	**Date/Time Analyzed:**	1/5/17 08:32 AM
Date/Time Collected:	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd20.i / 20010503a

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	85-132	98
4-Bromofluorobenzene	460-00-4	82-112	103
Toluene-d8	2037-26-5	88-108	101

* % Recovery is calculated using unrounded analytical results.

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
AOC92

Client ID:	LCSD		
Lab ID:	1612495-10AA	**Date/Time Analyzed:**	1/5/17 09:11 AM
Date/Time Collected:	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd20.i / 20010504a

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	85-132	92
4-Bromofluorobenzene	460-00-4	82-112	105
Toluene-d8	2037-26-5	88-108	100

* % Recovery is calculated using unrounded analytical results.

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
AOC92

Client ID:	LCS		
Lab ID:	1612495-10B	**Date/Time Analyzed:**	1/5/17 08:32 AM
Date/Time Collected:	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd20.i / 20010503sima

Compound	CAS#	%Recovery
Benzene	71-43-2	89
Ethyl Benzene	100-41-4	115
m,p-Xylene	108-38-3	113
o-Xylene	95-47-6	114
Toluene	108-88-3	98

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	84-133	95
4-Bromofluorobenzene	460-00-4	81-114	105
Toluene-d8	2037-26-5	92-104	101

* % Recovery is calculated using unrounded analytical results.

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
AOC92

Client ID:	LCSD		
Lab ID:	1612495-10BB	**Date/Time Analyzed:**	1/5/17 09:11 AM
Date/Time Collected:	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd20.i / 20010504sima

Compound	CAS#	%Recovery
Benzene	71-43-2	90
Ethyl Benzene	100-41-4	113
m,p-Xylene	108-38-3	112
o-Xylene	95-47-6	113
Toluene	108-88-3	99

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	84-133	94
4-Bromofluorobenzene	460-00-4	81-114	104
Toluene-d8	2037-26-5	92-104	102

* % Recovery is calculated using unrounded analytical results.

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Project Manager: SCOTT ELKIND
Collected by: (Print and Sign) TOM MALAMAKAL [signature]
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: AOC 92

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	AOC92161228SUPPLY	33799	12-28-16	9:25	TO-15 BTEX, TPH-G	-30	-6		
02A	AOC92161228CONF	3332	12-28-16	9:14	TO-15 BTEX, TPH-G	-30	-5		
03A	AOC92161228CUST	N0756	12-28-16	9:10	TO-15 BTEX, TPH-G	-30	-7		
04A	AOC92161228AAFES	21007	12-28-16	9:18	TO-15 BTEX, TPH-G	-30	-4		
05A	AOC92161228FD	6L1202	12-28-16	9:20	TO-15 BTEX, TPH-G	-30	-3		
06A	AOC92161228LOBBY	5785	12-28-16	9:05	TO-15 BTEX, TPH-G	-30	-5.5		
07A	AOC92161228GRAB	N0878	12-28-16	17:45	TO-15 BTEX, TPH-G	-30	GRAB		

Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
[signature]	12-28-16 1000	[signature] EATL	12/30/16 1025

Notes:

Lab Use Only	Shipper Name	Air Bill #	Temp (°C)	Condition	Custody Seals Intact?	Work Order #
	FedEx		NA	Good	(Yes) No None	1612495

Form 1293 rev.11