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Soil Vapor Extraction (SVE) System 2014 - 2015 Annual Report

Former Frank Wear Cleaners Site
Yakima, Washington

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Prepared for

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Central Regional Office
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List of Acronyms

Acronym	Description
ASIL	acceptable source impact level
ATL	Air Toxics, Ltd.
cfm	cubic feet per minute
cis-1,2-DCE	cis-1,2-dichloroethene
COC	chemical of concern
Ecology	Washington State Department of Ecology
EPA	US Environmental Protection Agency
°F	degree Fahrenheit
GAC	granular activated carbon
H&P	H&P Mobile Geochemistry
mL	milliliter
MTCA	Model Toxics Control Act
PCE	tetrachloroethene
PID	photoionization detector
SCFM	standard cubic feet per minute
SIM	selective ion monitoring
SSD	subslab depressurization
SVE	soil vapor extraction
TCE	trichloroethene
VLS	vapor liquid separator
VOC	volatile organic compound
$\mu g/m^3$	micrograms per cubic meter
WC	water column
YRCAA	Yakima Regional Clean Air Agency

Section 1: Introduction

Kennedy/Jenks Consultants, on behalf of the Washington State Department of Ecology (Ecology), has prepared this *Soil Vapor Extraction (SVE) System 2014-2015 Annual Report* (Report) to document the operation, maintenance, and monitoring of the SVE system at the former Frank Wear Cleaners site (site) located at 106 South Third Avenue, Yakima, Washington (Figure 1).

A dry cleaning facility operated on a portion of the site from early 1940s to 2000. During many of those years, the dry cleaner used tetrachloroethene (PCE) as the dry cleaning solvent. As a result of the past dry cleaning operations, PCE has been detected in soil vapor, soil, and groundwater at and adjacent to the site. A building located adjacent to the former Frank Wear Cleaners building is currently operated as a childcare center. The locations of the former Frank Wear Cleaners building and childcare center are shown on Figure 1.

In September and October 2011, a vapor intrusion study consisting of indoor air, outdoor ambient air, and subslab soil vapor sample collection and chemical analyses, was performed at the childcare center to evaluate whether PCE or other volatile organic compounds (VOCs) might be migrating into the building occupied by children or onsite staff. PCE was detected at the childcare center at concentrations greater than the Model Toxics Control Act (MTCA) Method B indoor air cleanup level, prompting implementation of an interim remedial action (Kennedy/Jenks Consultants 2011).

In 2012, a soil vapor extraction (SVE) system was constructed at the site with the primary objective of mitigating vapor intrusion of PCE and other chemicals of concerns (COCs) by inducing a vacuum beneath the childcare center concrete slab (i.e., sub-slab depressurization) (Kennedy/Jenks Consultants 2012a). The SVE system included installation of five soil vapor extraction wells (SVE-1 through SVE-5) at locations adjacent to the childcare center and within the footprint of the former Frank Wear Cleaners building where PCE is believed to have been released (Figure 2). The SVE wells were installed with upper and lower screens to provide operational flexibility for removal of contaminant mass in the unsaturated zone (i.e., accommodating for seasonal groundwater fluctuation associated with localized recharge from irrigation). Extraction of soil vapor from the SVE system is treated using vapor-phase granular activated carbon (GAC) prior to atmospheric discharge, complying with the requirements from the Yakima Regional Clean Air Agency (YRCAA) (Kennedy/Jenks Consultants 2012b).

This report summarizes activities performed during the October 2014 to September 2015 operational period (2014/2015 operational period), including an evaluation of system performance and recommendations for future operation, maintenance, and monitoring. SVE system operation, maintenance, and monitoring from startup to September 2014 is presented in the *Soil Vapor Extraction (SVE) System 2012-2013 Annual Report* (Kennedy/Jenks Consultants 2014) and the *Soil Vapor Extraction (SVE) System 2013-2014 Annual Report* (Kennedy/Jenks Consultants 2015).

Section 2: SVE System Operation, Monitoring, Sampling Results and Data Analyses

This section summarizes the SVE system operation, maintenance, and monitoring for the 2014/2015 operational period, including sampling results and data analyses.

2.1 SVE System Operation and Monitoring

From October 2014 to late January 2015, the SVE system was operated with extraction of soil vapor from the upper zone at all wells (SVE-1, SVE-2, SVE-3, SVE-4, and SVE-5). During low groundwater conditions (typically observed from December to June, soil vapor was extracted from the lower zone at SVE-3, SVE-4, and SVE-5 (located at the perimeter of the childcare center building) to maintain subslab depressurization (SSD) beneath the concrete slab, while soil vapor was extracted from the upper zone at SVE-1 and SVE-2. Soil vapor was extracted from the upper zone at all SVE wells from May 2015 through September 2015.

The extracted soil vapor is treated using vapor-phase GAC prior to discharge to the atmosphere. In October and November 2014, and from June through September 2015, extracted soil vapor was treated with the GAC vessels positioned on the vacuum side of the blower. From December 2014 to May 2015, extracted soil vapor was treated with the GAC vessels positioned on the discharge side of the blower (which increased the vapor temperature prior to treatment in the GAC vessel, reducing condensation).

During the 2014/2015 operational period, the SVE system monitoring included the following:

- The flow rate was measured for each individual well using a hot-wire anemometer. The total flow rate was measured at the blower outlet (pitot-tube assembly).
- Vacuum or pressure readings were recorded from gauges at each individual well (extraction manifold and wellhead), blower inlet and outlet, and between the GAC vessels.
- Vapor temperature was measured at the blower inlet and outlet.
- VOCs in the extracted soil vapor were measured using a photoionization detector (PID). PID measurements were performed at the extraction manifold for each individual well, prior to GAC treatment (i.e., total influent), between GAC vessels, and at the effluent.
- Performance monitoring soil vapor samples were collected at the influent (total influent and/or individual well influent), between the GAC vessels (i.e., midpoint), and the effluent port and submitted for chemical analyses. Additional performance monitoring samples were collected prior to and following system modifications (i.e., change from upper to lower zone operation).
- Vacuum was measured at subslab monitoring points SS-1 through SS-5 in the childcare center to monitor SSD (Figure 3). See Section 3.1.2 for additional details regarding abandonment of subslab monitoring point SS-4 in March 2015.

SVE system and subslab measurements are summarized in Tables 1 and 2, respectively. System performance monitoring sheets were completed during each site visit and are presented in Appendix A.

2.2 SVE System Operation and Monitoring Analysis

System operation and monitoring observations are summarized below.

Soil vapor was extracted at flow rates between 30 and 80 standard cubic feet per minute (SCFM) in the upper zone for each of the SVE wells at an applied vacuum of approximately 10 to 15 inches water column (WC); a flow rate of up to 120 SCFM was observed at SVE-3, SVE-4, and SVE-5 at an applied vacuum of approximately 15 inches WC in the upper zone. Soil vapor was extracted at higher flow rates from the lower zone at SVE-4 and SVE-5 compared to SVE-3. A flow rate of less than 20 SCFM was observed in the lower zone at SVE-3 (applied vacuum up to 40 inches WC). At these flow rates, the vacuum measured beneath the childcare center concrete slab ranged from 0.009 to 0.084 inch WC with greater vacuum response observed while extracting soil vapor from the upper zone at SVE-3, SVE-4, and SVE-5.

System operations were modified and system upgrades were performed in 2013 to minimize condensation. Even with these modifications, some condensation was observed in the vapor liquid separator (VLS) and GAC vessels, particularly while extracting from the lower zone during winter months.

2.3 SVE System Sampling and Analysis

SVE system soil vapor samples were collected at the influent (total influent and individual well influent), between the GAC vessels (i.e., midpoint), and the effluent port and submitted for chemical analyses. Soil vapor samples were collected into pre-cleaned, evacuated 400-milliliter (mL) Summa^{TM} canisters using a short piece of new Tygon tubing connecting the sampling barb on the Summa^{TM} canister to the barb(s) on each ½-inch ball valve on the SVE system. Samples were analyzed for VOCs by modified US Environmental Protection Agency (EPA) Method TO-15 (unless otherwise noted) at H&P Mobile Geochemistry (H&P) of Carlsbad, California. SVE system sampling analytical results are summarized in Table 3. PCE and benzene concentration trends in total influent, mid-point, and effluent samples are shown on Figure 4. Laboratory analytical reports for SVE system samples are presented in Appendix B.

- Total influent PCE soil vapor concentrations ranged from 4,000 to 20,000 micrograms per cubic meter (µg/m^3) during upper zone operation (October 2014 to January 2015 and May to September 2015) and 7,900 to 16,000 µg/m^3 during extraction of soil vapor from lower zone at SVE-3, SVE-4, and SVE-5 and from upper zone at SVE-1 and SVE-2 (January to May 2015).

- On 16 March 2015, individual influent soil vapor samples were collected from all SVE wells. PCE was detected in soil vapor samples collected from the upper zone at SVE-1 (320 µg/m^3) and SVE-2 (13,000 µg/m^3), and from the lower zone at SVE-3 (7,000 µg/m^3) and SVE-5 (1,500 µg/m^3). PCE was not detected above the reporting limit of 6.9 µg/m^3 in an influent soil vapor sample collected from the lower zone at SVE-4.

- Trichloroethene (TCE) was detected in the total influent samples at concentrations ranging from 350 µg/m^3 to 1,700 µg/m^3. Cis-1,2-dichloroethene (cis-1,2-DCE) was detected in total influent samples at concentrations ranging from 7100 µg/m^3 to 9,000 µg/m^3. These PCE biodegradation byproducts appear to be attributed to reductive dechlorination from operation of the enhanced bioremediation/groundwater recirculation system (Fowler 2015).

- A carbon change-out was performed in June 2013 with spent carbon being replaced in the two GAC vessels with virgin coconut shell vapor-phase GAC. PCE vapor concentrations in the effluent ranged from below the reporting limit of 6.9 µg/m^3 to 25 µg/m^3 during this reporting period. The overall removal efficiency for PCE from both carbon canisters was estimated at or above 99 percent from October 2014 to September 2015. The PCE removal efficiency between the first and second GAC canisters was significantly lower, indicating significant loading to the first carbon canister.

- In 2015, PCE was detected in effluent samples at concentrations of 21 to 25 µg/m^3, below the maximum average effluent concentration to meet the acceptable source impact level (ASIL) of 5,016 µg/m^3 (Kennedy/Jenks Consultants 2012b). TCE was detected in effluent samples collected in January, June and September at concentrations of 7.4 µg/m^3 to 160 µg/m^3, below the maximum average effluent concentration to meet the ASIL of 14,840 µg/m^3. Vinyl chloride was detected in the effluent samples at concentrations ranging from 7.5 to 370 µg/m^3; the detected vinyl chloride concentration was below the maximum average effluent concentration to meet the ASIL of 380 µg/m^3.

2.4 SVE System Mass Removal Estimates

Cumulative total VOC and PCE mass removal rates were calculated as the product of the influent VOC (sum of detected VOC constituent concentrations) and PCE concentrations averaged between sampling events, the measured influent flow rate [average of approximately 240 cubic feet per minute (cfm)], and the time since the previous sampling event. For the purpose of this evaluation, measured airflow rates and concentrations were assumed to be constant between sampling events as the SVE system has experienced minimal downtime.

During the 2014/2015 operational period, PCE and cumulative VOC mass removal was estimated at approximately 89 and 129 pounds, respectively. Since SVE system startup in July 2012, PCE and cumulative VOC mass removal were estimated at approximately 218 pounds and 270 pounds, respectively. VOC and PCE mass removal estimates are summarized in Table 4. Influent PCE and VOC concentrations and the estimated cumulative total PCE and VOC mass removed are shown on Figure 5. During the 2014/2015 operational period, sustained PCE mass removal is attributed to: (a) volatilization from the unsaturated zone, particularly during low groundwater conditions, and (2) off-gassing as PCE from groundwater.

2.5 SVE System Maintenance and Modifications

Routine system maintenance includes inspection of mechanical components, replacement of inlet filter/demister, removal of condensate accumulated in the VLS and GAC vessels. Condensate removed from the VLS and GAC vessels was temporarily stored onsite in a

polyethylene tank and was transferred to the enhanced bioremediation/groundwater recirculation system for reuse.

During the 2014/2015 operational period, an increase in accumulation of condensate water was observed in the VLS and GAC vessels, particularly while extracting from the lower zone during the winter months. An increase in condensate is likely attributed to lower ambient air temperatures as moist, extracted soil vapor condenses within system components during the winter. System upgrades and operation modifications were performed in 2013 to minimize condensate generation, including:

- A demister was installed at the VLS to remove moisture droplets.
- Additional piping and valves were installed to allow treatment of extracted soil vapor with the GAC vessels positioned on the discharge side of the blower. This treatment configuration takes advantage of increased temperature of extracted soil vapor (i.e., thermal loading across the blower) prior to GAC treatment. The increase in temperature reduces moisture in the soil vapor discharged from the blower to the GAC vessels.

  Note: The GAC vessels were originally positioned on the vacuum side of the blower given the lower adsorption rate and increased potential for off-gassing of vinyl chloride from groundwater during enhanced bioremediation activities. Blower inlet temperatures vary based on ambient temperature and mode of operation (upper or lower zone); between 60 and 90 degrees Fahrenheit (ºF). Blower discharge temperatures vary based on applied vacuum; maximum temperature of approximately 145 ºF. In general, carbon absorption rates, particularly for vinyl chloride, decrease at temperatures above 100 ºF.

- Insulation was installed on the GAC vessels and outside process piping.

Overall, system upgrades and operation modifications have been effective at reducing, but not eliminating, condensate generation in the VLS and GAC vessels. The system upgrades also provide the flexibility for treatment of extracted soil vapor on the vacuum or discharge side of the blower.

Section 3: Indoor Air, Ambient Air, and Subslab Soil Vapor Sampling

Since September 2012, indoor air, outdoor ambient air, and subslab soil vapor sampling have been performed on a quarterly basis to evaluate the vapor intrusion pathway and to evaluate the effectiveness of the SVE system at mitigating vapor intrusion at the childcare center. During the 2014/2015 operational period, indoor air, outdoor ambient air, and subslab vapor samples were collected from the childcare center on 4 December 2014, 3 March 2015, 24 June 2015, and 25 September 2015. Additional indoor air samples were collected from a downgradient residential structure at 310 West Walnut Avenue in December 2014. Field logs for indoor air and subslab sampling activities are presented in Appendix C. Laboratory analytical reports for indoor air, outdoor ambient air, and subslab soil vapor samples are presented in Appendix D.

3.1.1 Indoor and Outdoor Ambient Air

Indoor air samples were collected from two locations (NE Corner Nap/Play Area and SE Corner Nap/Play Area) within the childcare center and the outdoor ambient air samples were collected at the northwestern corner of the property (typically upwind of the site; the prevailing wind direction is from the west). Indoor air samples were collected from two locations (main floor and basement) within the structure at 310 West Walnut Avenue. Indoor air and outdoor ambient air samples were analyzed for VOCs by EPA Method TO-15, with selected compounds analyzed in selective ion monitoring (SIM) mode at Eurofins/Air Toxics, Ltd. (ATL) of Folsom, California. Indoor air and outdoor ambient air analytical results for the childcare center are summarized in Table 5. A summary of indoor air and outdoor air sampling results for the childcare center are as follows:

- Indoor air PCE concentrations ranged from 0.28 µg/m^3 to 0.70 µg/m^3, below the indoor air PCE concentrations in 2011 (5.7 µg/m^3 to 6.6 µg/m^3, prior to SVE system startup in June 2012) and below the MTCA Method B indoor air cleanup level of 9.6 µg/m^3.

- PCE was not detected in outdoor ambient air at or above the laboratory reporting limit for the December 2014 sampling event; however, PCE was detected in the March, June, and September 2015 outdoor ambient air samples at concentrations ranging between 0.70 µg/m^3 and 1.5 µg/m^3.

- Chloroform was not detected at or above the laboratory reporting limit of 0.81 to 0.86 µg/m^3 for the June 2015 sampling event. Chloroform was detected in indoor air samples collected during the December 2014, March and September 2015 sampling events at concentrations ranging from 1.33 µg/m^3 to 2.0 µg/m^3, exceeding the MTCA Method B cleanup level for indoor air of 0.109 µg/m^3.

  As noted in the *Vapor Intrusion Study Report* (Kennedy/Jenks Consultants 2011), occupants at the childcare center reported that bleach and tap water were used for daily cleaning and may be the primary source of chloroform to indoor air. During the June 2015 sampling event, the owners and occupants of the childcare center were renovating the interior of the childcare center and had discontinued the use of bleach to clean surfaces on the main floor. During subsequent sampling events, the occupants of the

childcare center continued the practice of using bleach for daily cleaning. The increased indoor air chloroform concentrations in the September 2015 sampling event appears to correlate with the occupant's use of bleach for cleaning.

- Benzene was detected in indoor air at concentrations ranging from 0.28 µg/m^3 to 1.3 µg/m^3, above the MTCA Method B indoor air cleanup level of 0.32 µg/m^3. Benzene was detected in outdoor ambient air samples collected in December 2014, and March and September 2015 at concentrations ranging from 0.54 µg/m^3 to 1.2 µg/m^3, respectively. Benzene was not detected in outdoor ambient air at or above the laboratory reporting limit for the June 2015 sampling event; however, benzene was detected in indoor air at concentrations of 0.28 and 0.32 µg/m^3. Because benzene was detected at similar concentrations in the upwind outdoor air samples collected at the site during the same sampling events, these indoor air concentrations may be attributed to ubiquitous benzene commonly associated with industrial and urban areas.

Indoor air PCE concentrations within the structure at 310 West Walnut Avenue ranged from 0.34 µg/m^3 to 0.35 µg/m^3, below the MTCA Method B indoor air cleanup level of 9.6 µg/m^3. Indoor air analytical results for the downgradient residential structure at 310 West Walnut Avenue are summarized in Table 7.

[Note: While reasonable efforts were made by the analytical laboratory to attain reporting limits adequate for comparison to the MTCA Method B indoor air cleanup levels, it is important to note analytical method reporting limits may be greater than the indoor air cleanup levels, in which case, the lowest method reporting limit achievable by the analytical laboratory was used. The reporting limits for chloroform and 1,2-dichloroethane were above the MTCA Method B indoor air cleanup levels for all indoor and outdoor ambient air samples collected.]

3.1.2 Sub-Slab Soil Vapor

Subslab pressure monitoring points (Vapor Pins^{TM}) were installed during SVE system construction activities by drilling holes through the floor slab at five locations (SS-1 through SS-5; Figure 3). Subslab soil vapor samples were collected from below the concrete slab of the childcare center at SS-1 (NE Corner Nap/Play Area) and SS-4/SS-5 (SE Corner Nap/Play Area) based on their proximity to indoor air sample locations. Subslab monitoring point SS-4 was abandoned in March 2015 and backfilled with concrete to match the existing slab; SS-5 was used for subsequent sampling events.

Prior to subslab soil vapor sample collection, connector tubing was used to join the monitoring point to the sampling train (vacuum gauge, Summa^{TM} canister, and connector fittings). The sampling train was tested for possible leaks by conducting a shut-in test, which consisted of applying a vacuum on the sampling train and observing whether vacuum loss occurred over a period of 60 seconds. Then, the subslab monitoring points were tested for leaks by placing a shroud over the subslab monitoring point.

Helium was introduced into the shroud, and concentrations were maintained at approximately 70 to 90 percent while purging and sampling each subslab sampling location. The dead volume of the connecting tubing and sampling train was purged by removing approximately 200 mL of air from the probe. The purged air was tested immediately using a portable helium meter to evaluate the probe for potential leaks. Subslab soil vapor samples were then collected using

individually certified 6-liter Summa™ canisters. The valve on the sample tubing was closed upon completion of sampling, and the Vapor Pin™ was covered until the next sampling event.

Subslab soil vapor samples were analyzed for VOCs by modified EPA Method TO-15 and for helium by ASTM Method 1945-46 by H&P. Subslab soil vapor analytical results are summarized in Table 6 and PCE concentration trends are illustrated on Figure 6. A summary of subslab soil vapor sampling results are as follows:

- PCE was detected in the subslab soil vapor samples at concentrations ranging from 1.8 to 166 µg/m^3, below the screening level for subslab soil vapor (321 µg/m^3, calculated using a 30-fold attenuation factor from the MTCA Method B indoor air cleanup levels).

- Chloroform was detected in subslab soil vapor at concentrations below the screening level for subslab soil vapor (3.6 µg/m^3) in samples collected at SS-4 and SS-5 during the four sampling events. Benzene was detected in subslab soil vapor at concentrations ranging from 0.30 µg/m^3 to 3.1 µg/m^3, below the subslab soil vapor screening level of 10.7 µg/m^3. Other VOCs detected in subslab soil vapor samples include 1,2-dichloroethane, toluene, ethylbenzene, m,p-xylene, o-xylene, methylene chloride, and cis-1,2-DCE with concentrations below applicable subslab soil vapor screening levels.

PCE concentrations in the indoor air and subslab soil vapor have significantly decreased since startup of the SVE system in July 2012. Indoor air benzene concentrations may be attributed to outdoor ambient air or an indoor air source, as indoor air benzene concentrations are often slightly higher than subslab soil vapor concentrations.

Section 4: Conclusions and Recommendations

This section presents a summary of conclusions and recommendations for future system operation, maintenance, and monitoring.

4.1 Conclusions

Kennedy/Jenks Consultants understands Ecology plans to continue operation, maintenance, and monitoring of the SVE system to mitigate vapor intrusion, remove mass from the unsaturated zone, and capture PCE and its daughter products produced through anaerobic reductive dechlorinating during enhanced bioremediation in the saturated zone.

Based on evaluation of SVE system operation, maintenance, and monitoring data:

- The SVE system has been effective at mitigating vapor intrusion to the childcare center, particularly with extraction of soil vapor from the lower zone at wells SVE-3, SVE-4, and SVE-5 (located along the perimeter of the childcare center building). While frequently below EPA guidance, the induced vacuum beneath the childcare center concrete slab occurring through operation of the SVE system has been sufficient to mitigate vapor intrusion into the building as evidence in reduced indoor air and subslab soil vapor PCE concentrations. Indoor air sampling results since 2012 indicate PCE concentrations have decreased significantly since SVE system startup and are below the MTCA Method B indoor air cleanup level of 9.6 $\mu g/m^3$.

- Indoor air benzene concentrations may be attributed to outdoor ambient air or an indoor source, as indoor air benzene concentrations are often slightly higher than subslab soil vapor concentrations. Benzene indoor air concentrations may be attributed to ubiquitous benzene commonly associated with industrial and urban areas. Chloroform detections in indoor air are likely associated with the occupant's use of bleach for cleaning.

- Since SVE system startup in July 2012, PCE and cumulative VOC mass removal were estimated at approximately 218 pounds and 270 pounds, respectively.

- A carbon change-out was performed in June 2013, replacing spent carbon with virgin grade coconut shell vapor-phase GAC. PCE removal efficiency for this reporting period was estimated to be above 99 percent. PCE, TCE, and vinyl chloride concentrations in effluent samples were well below each respective average effluent concentrations that would result in exceedance of the corresponding ASIL, complying with the requirements of the YRCAA.

- PCE degradation byproducts TCE, cis-1,2-DCE, and/or vinyl chloride were detected in the total influent soil vapor samples collected between April 2014 and September 2015. The detection of PCE byproducts in soil vapor is attributed anaerobic reductive dechlorination process (Fowler 2015).

4.2 Recommendations

Overall, the SVE system has been effective at mitigating vapor intrusion while removing PCE/VOC mass from the unsaturated zone and groundwater. Furthermore, the SVE system has been highly effective in removing PCE and other VOCs from the vadose zone. Recommendation for future SVE system operation, maintenance, and monitoring are as follows:

- During high groundwater conditions, extract soil vapor from the upper zone at wells SVE-3, SVE-4, and/or SVE-5 to maintain a slight vacuum (target of greater than 0.025 inch WC) beneath the childcare center concrete slab.

- During low groundwater conditions (typically during December to May), extract soil vapor from the lower zone, particularly at SVE-2, SVE-4, and SVE-5 to target PCE/VOC mass removal while extracting from the upper zone at the same time to maintain SSD. This may involve consecutive rounds of adjustment and subslab vacuum measurements to achieve optimal deeper soil vapor removal while maintaining adequate SSD.

- During winter months, perform treatment of extracted soil vapor with the GAC vessels positioned on the discharge side of the blower to minimize condensate generation. During the summer months, discharge temperatures should be monitored as it relates to vinyl chloride absorption efficiency.

- Continue monitoring of SVE system parameters (flow rate, vacuum/pressure, temperature, etc.) and collect SVE system samples on a quarterly basis and during system modification events for chemical analyses.

- Continue collection of indoor air, outdoor ambient air, and subslab soil vapor samples for chemical analyses on periodic basis to document system performance and effectiveness.

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Tables

Table 1: SVE System Measurements

Date	Ambient Temperature (degrees F)	Approximate Blower Inlet Vacuum (in. WC)	Measured Blower Inlet Differential Pressure (in. WC)	Approximate Blower Inlet Flow Rate (CFM)[a]	Blower Inlet Temperature (degrees F)	Blower Discharge Temperature (degrees F)	VLS Vacuum (in. WC)	Lead GAC Vacuum (in. WC)	Lag GAC Vacuum (in. WC)	SVE-1 Upper Screen Interval (7.92 - 12.92 ft from TOC) Lower Screen Interval (14.92 - 19.92 ft from TOC)										SVE-2 Upper Screen Interval (7.96 - 12.96 ft from TOC) Lower Screen Interval (14.96 - 19.96 ft from TOC)									
										Manifold Vacuum (in. WC)		Manifold Flow Rate (CFM)[b]		Manifold Temperature (degrees F)		Well Head Vacuum (in. WC)		DTW from TOC		Manifold Vacuum (in. WC)		Manifold Flow Rate (CFM)[b]		Manifold Temperature (degrees F)		Well Head Vacuum (in. WC)		DTW from TOC	
										Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower
6/25/2012	82	38	--	250	85	145	29	--	--	--	30	--	25	--	82	0.06	28	--	19.84	--	28	--	32.5	--	84	0.25	27	--	18.30
6/25/2012	82	22.5	--	285	87	130	11	--	--	9.0	--	69	--	82.5	--	0.8	0.12	19.84	--	9	--	40	--	82.7	--	6.5	0.27	18.30	--
6/27/2012	63	46	--	250	70	134	37.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
6/27/2012	63	31	--	255	74	128	21	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
7/3/2012	77	34	--	249	83	132	21	23	29	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
7/12/2012	96	31	--	258	92	142	20.2	22	28	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
9/12/2012	90	32	1	212	87	139	21	23.5	29	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
9/25/2012	82	32	1.75	281	84	139	21	23	29	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11/5/2012	65	34	--	353	68	123	23	25	31	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
12/11/2012	37	41	1.50	254	45	111	23	25	38	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
12/12/2012	37	43	1.50	256	52	114	23	26	38	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
12/18/2012	27	49	1.25	235	50	122	20	28	46	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
12/27/2012	32	52	1.20	232	50	122	20	26	48	--	--	--	--	--	--	0.021	0.034	--	--	--	--	--	--	--	--	0.057	0.7	--	--
12/28/2012	28	38	1.65	265	46	100	25	28	33	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1/11/2013	35	37	1.70	270	51	110	25	34	28	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1/22/2013	25	47	1.40	247	44	110	23	42	32	--	--	--	--	--	--	0.059	0.061	--	--	--	--	--	--	--	--	0.022	0.034	--	--
2/21/2013	--	51	1.25	235	46	120	20	30	46	--	--	--	--	--	--	0.020	0.033	--	--	--	--	--	--	--	--	0.057	0.003	--	--
2/21/2013	43	37	1.60	262	50	110	25	27	31	--	--	--	--	--	--	0.016	0.030	--	--	--	--	--	--	--	--	0.060	0.065	--	--
3/12/2013	40	41	1.60	264	52	112	24	28	36	--	--	--	--	--	--	0.020	0.033	--	dry	--	--	--	--	--	--	0.058	0.064	--	dry
3/14/2013	54	36.5	1.70	271	56	112	25	26.5	31	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
5/13/2013	64	34	1.75	278	70	126	22.5	25	29	--	--	--	--	--	--	0.03	0.02	--	--	--	--	--	--	--	--	0.06	0.07	--	--
5/14/2013	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.021	0.025	--	--	--	--	--	--	--	--	0.076	0.098	--	--
6/14/2013	72	31	1.75	281	88	140	22	24	26.5	--	--	--	--	--	--	0.017	0.027	--	--	--	--	--	--	--	--	0.081	0.103	--	--
9/19/2013	55	33	1.80	281	69	123	23	25	28	--	--	--	--	--	--	0.018	+0.025	--	--	--	--	--	--	--	--	0.096	+0.022	--	--
11/20/2013	45	35	1.75	276	60	115	24	26	29	--	--	--	--	--	--	0.036	0.038	--	--	--	--	--	--	--	--	0.072	0.102	--	--
11/21/2013	39	25.5	1.70	269	64	124	24	+12.5	+9.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
12/6/2013	20	26	1.70	269	62	120	25	+9.8	+6.8	--	--	--	--	--	--	0.074	0.011	--	--	--	--	--	--	--	--	0.032	0.045	--	--
12/6/2013	19	21.5	1.65	264	63	121	24.5	+9.8	+6.8	--	--	--	--	--	--	0.056	0.070	--	--	--	--	--	--	--	--	0.031	0.050	--	--
12/6/2013	25	33	1.50	255	63	126	30	+8.8	+6.0	--	--	--	--	--	--	0.055	0.080	--	--	--	--	--	--	--	--	0.040	0.040	--	--
12/6/2013	25	43	1.20	232	63	133	41	+7.3	+5.1	--	--	--	--	--	--	0.060	0.080	--	--	--	--	--	--	--	--	0.030	0.045	--	--
12/6/2013	25	36	1.40	248	63	130	34	+8.4	+5.8	--	--	--	--	--	--	0.040	0.057	--	--	--	32	--	41	--	58	0.327	>16	--	--
12/6/2013	23	32	1.55	259	62	124	30	+8.9	+6.2	--	27.5	--	30	--	64	0.067	>16	--	--	--	28	--	36	--	58.2	0.270	>16	--	--
12/6/2013	23	26	1.65	265	61	120	24.5	--	--	--	21	--	--	--	--	--	--	--	--	--	21	--	--	--	--	--	--	--	--
12/10/2013	18	27.5	1.65	265	62	122	26	+9.7	+6.7	--	23	--	84 - 123	--	57 - 64	0.050	6 - 15	--	--	--	23	--	70 - 90	--	68.1	0.220	>16	--	--
1/7/2014	30	27.5	1.65	265	60	120	25	+9.05 - +9.7	+6.75 - +6.8	--	22.5	--	30 - 120	--	62.3	0.040	5 - 14	--	--	--	22.5	--	50 - 90	--	65.7	0.235	>16	--	--
2/5/2014	19	28	1.65	265	60	116	--	+9.9	+6.8	--	22	--	80	--	58.2	0.050	11.6 -15	--	--	--	22	--	50	--	57.4	0.274	>16	--	--
4/11/2014	57	27.5	1.60	262	64	126	25.5	+9.8	+6.8	--	23	--	28	--	76.7	0.050	>16	--	--	--	23.5	--	13	--	75.5	0.151	>16	--	--
6/5/2014	72	30	1.50	256	70	140	27.5	+9.3	+6.5	--	27	--	24	--	83.7	0.061	>16	--	--	--	27	--	11	--	86.9	0.039	>16	--	--
6/6/2014	75	23	2.00	302	90	135	12	9	5.5	9.0	--	74	--	85.3	--	1.36	0.118	--	--	9	--	38	--	86.2	--	7.24	0.005	--	--
9/12/2014	55	24	2.00	294	72	119	13	9	6	10.0	--	78	--	82.6	--	1.474	0.033	--	--	10	--	39	--	86.2	--	7.59	0.019	--	--

Table 1: SVE System Measurements

Date	Ambient Temperature (degrees F)	Approximate Blower Inlet Vacuum (in. WC)	Measured Blower Inlet Differential Pressure (in. WC)	Approximate Blower Inlet Flow Rate (CFM)[a]	Blower Inlet Temperature (degrees F)	Blower Discharge Temperature (degrees F)	VLS Vacuum (in. WC)	Lead GAC Vacuum (in. WC)	Lag GAC Vacuum (in. WC)	SVE-1 Upper Screen Interval (7.92 - 12.92 ft from TOC) Lower Screen Interval (14.92 - 19.92 ft from TOC)										SVE-2 Upper Screen Interval (7.96 - 12.96 ft from TOC) Lower Screen Interval (14.96 - 19.96 ft from TOC)									
										Manifold Vacuum (in. WC)		Manifold Flow Rate (CFM)[b]		Manifold Temperature (degrees F)		Well Head Vacuum (in. WC)		DTW from TOC		Manifold Vacuum (in. WC)		Manifold Flow Rate (CFM)[b]		Manifold Temperature (degrees F)		Well Head Vacuum (in. WC)		DTW from TOC	
										Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower
12/3/2014	18	0	0	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
12/4/2014	30	14	1.95	282	60	108	15	2 psi	3 psi	12.0	--	110	--	62.8	--	1.50	0.136	--	--	12	--	44	--	59.7	--	7.9	0.030	--	15.10
12/29/2014	34	16	1.90	280	62	116	16	1.5 psi	1.5 psi	13.0	--	92	--	69.1	--	--	--	--	--	13	--	49	--	66	--	--	--	--	--
1/21/2015	30	18.5	1.90	281	60	112	16	3.0 psi	3.5 psi	13.0	--	90	--	66.6	--	9.1	0.26	--	--	13	--	47	--	65.3	--	1.7	0.107	--	--
1/21/2015	32	40	1.35	244	60	126	38	3 psi	3.5 psi	0.0	36.5	--	--	--	--	0.079	OL	--	--	0	37	--	--	--	--	0.047	OL	--	--
1/22/2015	36	43	1.20	231	64	140	41	3.5 psi	3.5 psi	--	39	--	--	--	68 - 72	0.071	OL	--	--	--	40	--	3.8	--	73.9	0.058	OL	--	--
1/26/2015	--	26.5	1.70	266	51	118	24.5	2.5 psi	3.0 psi	10.0	0	--	--	--	--	--	--	--	--	10	0	--	--	--	--	--	--	--	--
3/16/2015	--	27.5	1.60	262	64	126	25.5	2.5 psi	2.5 psi	11.0	--	33	--	67.8	--	--	--	--	--	11	--	74	--	66.2	--	--	--	--	--
5/6/2015	66	26		250	72	133	24	2.5 psi	2.5 psi	9.5	0.002	71	0	81	80.1	1.38	0.007	--	--	8.25	0.073	35.5	0.01	74.6	73.7	6.41	0.027	--	--
5/6/2015	63	34	--	215	82	124	23.5	25	28.5	9.415	0.008	63.8	0.01	76.6	73.6	1.39	0.01			8.09	0.015	29.9	0.01	73.4	72.9	6.27	0.016+		
5/6/2015	63	47.5	--	217	76	144	39	41.5	44	0.024	0.013	0	0	82.3	82.3	0.032	0.008			0.04	0.004	0.01	0.02	72	72.2	0.038	0.007		
5/7/2015	59	48.0	--	219	80	146	40.0	42	45.0	0.027	0	0.51	0.05	87	87	0.029	0.005			0.085	0.058	--	--	76	76.6	0	.008+		
5/7/2015	63	69.0	--	160	77.7	166	62.5	>60	>60	0.015	--	--	--	--	--	0.016	0.006			0.027	0.005	NM	NM	NM	NM	0.017	.001+		
6/24/2015	82	25.0	--	265	88	130	14.0	16	20.0	-11.2	0.015+	76	0.01	--	--	1.53	0.02+	--	--	11	0.038	39	0	--	--	0.02+	8.4	--	--
6/25/2015	80	24.0	--	275	80	NM	13.0	16	19.0	10.4	0.011+	73	0.04	--	--	1.50	0.006+	--	--	0.02+	10.7	41	0.04	--	--	1.5	0.006+	--	--
9/25/2015	88	24	--	263	76	122.5	12	15	18	10.0	--	58	--	84.8	--	--	--	--	--	10.5	--	31	--	86.8	--	--	--	--	--

Table 1: SVE System Measurements

	SVE-3 Upper Screen Interval (7.95 - 12.95 ft from TOC) Lower Screen Interval (14.95 - 19.45 ft from TOC)										SVE-4 Upper Screen Interval (8.0 - 13.0 ft from TOC) Lower Screen Interval (15.0 - 20.0 ft from TOC)										SVE-5 Upper Screen Interval (7.95 - 12.95 ft from TOC) Lower Screen Interval (14.95 - 19.95 ft from TOC)										
	Manifold Vacuum (in. WC)		Manifold Flow Rate (CFM)[b]		Manifold Temperature (degrees F)		Well Head Vacuum (in. WC)		DTW from TOC		Manifold Vacuum (in. WC)		Manifold Flow Rate (CFM)[b]		Manifold Temperature (degrees F)		Well Head Vacuum (in. WC)		DTW from TOC		Manifold Vacuum (in. WC)		Manifold Flow Rate (CFM)[b]		Manifold Temperature (degrees F)		Well Head Vacuum (in. WC)		DTW from TOC		
Date	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Notes
6/25/2012	--	30	--	13.5	--	83.1	0.26	28	--	19.09	--	29	--	67	--	82.5	0.16	22	--	20.00	--	28	--	115	--	81.5	0.11	7	--	19.93	Initial lower zone testing -- 5 wells
6/25/2012	9	--	41	--	83.2	--	3.5	0.6	19.09	--	9	--	74	--	81.8	--	0.8	0.16	20.00	--	9	--	66	--	81.3	--	1.5	0.1	19.93	--	Initial upper zone testing -- 5 wells
6/27/2012	--	38	--	14	--	68	0.40	37	--	19.09	--	38	--	77	--	68	0.192	30	--	20.00	--	37	--	118	--	68	0.115	9.3	--	19.93	Initial lower zone testing -- 3 wells
6/27/2012	21	--	64	--	73.8	--	7.75	1.45	19.09	--	21	--	109	--	72.7	--	2.30	0.25	20.00	--	21	--	104	--	72.9	--	4.00	0.125	19.93	--	Initial upper zone testing -- 3 wells
7/3/2012	18	--	63	--	76.3	--	7.65	+0.011	18.45	--	19	--	111	--	77.8	--	2.28	0.03	19.32	--	17	--	99	--	78.3	--	3.97	0.132	19.43	--	Extracting from upper zone at SVE-3, SVE-4, SVE-5
7/12/2012	22	--	64.1	--	94.3	--	7.58	0.013	17.20	--	21.2	--	105.2	--	92.6	--	2.36	0.02	18.00	--	21.9	--	98.1	--	92.4	--	3.87	0.288	18.90	--	Extracting from upper zone at SVE-3, SVE-4, SVE-5
9/12/2012	19	--	67.1	--	90.8	--	--	--	--	--	20	--	109.5	--	91.5	--	--	--	--	--	19.5	--	103.7	--	94.2	--	--	--	--	--	
9/25/2012	19	--	24 - 36	--	88.5	--	7.88	--	13.92	--	20	--	28 - 32	--	87	--	2.46	--	14.27	--	19.5	--	28.5 - 30	--	84.2	--	4.07	--	14.80	--	
11/5/2012	21	--	80	--	73.8	--	7.07	--	16.50	--	22	--	115	--	73.8	--	2.52	--	17.37	--	21	--	105	--	73.5	--	4.05	--	17.32	--	
12/11/2012	20	--	70	--	64.0	--	6.80	0.018	dry	--	21	--	108	--	61	--	2.46	0.022	dry	--	21	--	100	--	60.6	--	4.33	0.122	19.60	--	
12/12/2012	21	--	100	--	56.7	--	6.97	0.019	--	--	22	--	115	--	61.4	--	2.50	0.029	--	--	--	20	--	93	--	63	0.110	6.11	--	--	Extracting from upper zone at SVE-3, SVE-4, and lower zone at SVE-5
12/18/2012	19	--	80 - 100	--	72.5	--	6.4	0.021	--	--	19	--	109	--	73.6	--	2.30	0.025	--	--	--	19	--	92 - 99	--	72.6	0.116	5.6	--	--	Pressure transducers in wells; condensation observed in GAC canisters
12/27/2012	19	--	102 - 121	--	59.4	--	6.3	2.35	--	--	19	--	101 - 105	--	59.4	--	2.45	0.326	--	--	--	18	--	85 - 100	--	60.2	0.105	5.7	--	--	
12/28/2012	24	--	--	--	--	--	--	--	--	--	25	--	--	--	--	--	--	--	--	--	--	24	--	--	--	--	--	--	--	--	Drained GAC canisters
1/11/2013	23	--	--	--	--	--	--	--	--	--	24	--	--	--	--	--	--	--	--	--	--	23	--	--	--	--	--	--	--	--	Effluent confirmation sample collected
1/22/2013	20	--	87 - 128	--	64.1	--	6.7	1.57	--	--	20	--	110 - 112	--	61.4	--	2.3	0.291	--	--	--	19	--	87 - 90	--	59.5	0.108	6.6	--	--	
2/21/2013	19	--	115	--	66.2	--	6.5	1.223	--	--	20	--	110	--	64.3	--	2.2	0.269	--	--	--	19	--	90	--	63.8	0.101	5.9	--	--	Collected before draining GAC canisters
2/21/2013	23	--	80	--	67.0	--	7.98	1.5	--	--	23.5	--	120	--	63.4	--	2.6	0.312	--	--	--	23	--	105	--	63.8	0.115	7.0	--	--	Collected after draining GAC canisters
3/12/2013	22	--	80 - 120	--	65.3	--	7.40	1.483	--	dry	22.5	--	116	--	64.3	--	2.49	0.311	--	dry	--	22	--	95	--	64.9	0.116	6.9	--	--	
3/14/2013	23	--	--	--	--	--	--	--	--	--	23.5	--	--	--	--	--	--	--	--	--	--	22.5	--	--	--	--	--	--	--	--	Drained GAC canisters
5/13/2013	22	--	73	--	80	--	8.43	1.32	--	--	22	--	114	--	78.0	--	2.43	0.31	--	--	--	21.5	--	93	--	81	0.11	6.66	--	--	
5/14/2013	20.5	--	66	--	75.0	--	8.176	1.175	--	--	21.5	--	125	--	74.1	--	2.34	0.228	--	--	20	--	112	--	75.1	--	4.14	0.138	--	--	Extracting from upper zone at SVE-3, SVE-4, SVE-5
6/14/2013	21	--	70	--	87.5	--	8.208	1.740	--	--	21	--	113	--	84.7	--	2.34	0.232	--	--	20	--	104	--	86.6	--	4.275	0.136	--	--	
9/19/2013	21.5	--	69	--	83	--	8.745	+0.014	--	--	22	--	113	--	82.7	--	2.51	+0.011	--	--	21	--	107	--	83	--	4.218	0.286	--	--	
11/20/2013	22.5	--	--	--	--	--	7.607	1.331	--	--	23	--	--	--	--	--	2.536	0.259	--	--	22	--	--	--	--	--	4.37	0.130	--	--	Drained GAC canisters
11/21/2013	22	--	--	--	--	--	--	--	--	--	23	--	--	--	--	--	--	--	--	--	22	--	--	--	--	--	--	--	--	--	Water/condensate discharging from effluent stack; changed GAC from pull to push; effluent sample port under positive pressure (at Lag GAC barbed fitting)
12/6/2013	22	--	110	--	70.0	--	7.4	1.19	--	--	22.5	--	120	--	68.8	--	2.50	0.261	--	--	21.5	--	110	--	69.2	--	4.2	0.14	--	--	Pre-modification record; no moisture discharging from effluent stack
12/6/2013	22.5	--	100 - 125	--	62.5	--	7.68	1.36	--	--	23	--	125	--	60.6	--	2.57	0.322	--	--	--	22	--	110	--	60.1	0.133	6.0	--	--	Switched SVE-5 from upper to lower @ 11:25
12/6/2013	--	30	--	14	--	69	0.274	>16	--	--	30	--	--	--	67	--	3.14	0.33	--	--	--	29	--	119 - 128	--	67	0.130	7.6	--	--	Switched SVE-3 from upper to lower @ 13:02
12/6/2013	--	40	--	18	--	63.9	0.380	>16	--	--	--	39	--	87	--	61.1	0.17	>16	--	--	--	39	--	--	--	58.8	0.12	10.12	--	--	Switched SVE-4 from upper to lower @ 14:45; cracked bleed valve to adjuct blower inlet vacuum to 30 in. WC for PID sampling
12/6/2013	--	33	--	16	--	63	0.34	>16	--	--	--	32	--	83	--	62.7	0.17	>16	--	--	--	32	--	125	--	60.1	0.120	--	--	--	Turn on SVE-2 lower zone @16:06
12/6/2013	--	29	--	14	--	64.4	0.3	>16	--	--	--	27	--	70	--	64.7	0.1	>16	--	--	--	28	--	120	--	62.7	0.100	--	--	--	Turn on SVE-1 lower zone @17:17
12/6/2013	2	22.5	--	--	--	--	--	--	--	--	--	21	--	--	--	--	--	--	--	--	--	22	--	--	--	--	--	--	--	--	Switched SVE-3 from lower to upper @18:45 to increase SSD
12/10/2013	24	--	90 - 120	--	70.2	--	8.0	1.3	--	--	--	22.5	--	65 - 95	--	70.4	0.160	17	--	--	--	23.5	--	105 - 115	--	69.2	0.111	6.8	--	--	
1/7/2014	24	1.75	70 - 123	--	68.3	--	7.6	1.12	--	--	--	22	--	65 - 80	--	68.0	0.161	16.6 - 16.9	--	--	--	23	--	105	--	65.9	0.115	6.5	--	--	Water in VLS, transferred to poly tank after measurements (40+ gallons); measurable negative pressure in SVE-3 lower at manifold; small H2O leak at transfer pump head.
2/5/2014	23	0.5	92	--	63.1	--	7.4	1.09	--	--	--	22.5	--	75	--	61.6	0.14	16.6	--	--	--	23	--	100	--	58.0	0.120	6.7	--	--	SVE-1 lower pressure needle bounces around (water in line); unstable readings in SS-1 and SS-2
4/11/2014	24.0	2.0	75	--	75.8	--	8.39	1.362	--	--	--	23	--	66	--	74.9	0.163	>16	--	--	--	24	--	100	--	74.0	0.120	6.0	--	--	
6/5/2014	27	3	80	--	82.2	--	9.41	2.19	--	--	--	26	--	--	--	80.4	0.167	>16	--	--	--	27	--	110	--	81.6	0.105	7.96	--	--	
6/6/2014	10	--	44	--	87.5	--	4.14	0.84	--	--	10	--	74	--	85.6	--	1.35	0.14	--	--	10	--	69	--	86.0	--	2.28	0.09	--	--	Post-modification; changed GAC from push to pull; changed all wells to upper zone; SVE-2 lower zone pressure at 14 in. H2O
9/12/2014	11	--	45	--	83.4	--	4.462	+0.021	--	--	11	--	75	--	83.7	--	1.572	+0.008	--	--	11	--	67	--	83.7	--	3.254	+0.001	--	--	

Table 1: SVE System Measurements

Date	SVE-3 Upper Screen Interval (7.95 - 12.95 ft from TOC) Lower Screen Interval (14.95 - 19.45 ft from TOC)										SVE-4 Upper Screen Interval (8.0 - 13.0 ft from TOC) Lower Screen Interval (15.0 - 20.0 ft from TOC)										SVE-5 Upper Screen Interval (7.95 - 12.95 ft from TOC) Lower Screen Interval (14.95 - 19.95 ft from TOC)										Notes
	Manifold Vacuum (in. WC)		Manifold Flow Rate (CFM)[b]		Manifold Temperature (degrees F)		Well Head Vacuum (in. WC)		DTW from TOC		Manifold Vacuum (in. WC)		Manifold Flow Rate (CFM)[b]		Manifold Temperature (degrees F)		Well Head Vacuum (in. WC)		DTW from TOC		Manifold Vacuum (in. WC)		Manifold Flow Rate (CFM)[b]		Manifold Temperature (degrees F)		Well Head Vacuum (in. WC)		DTW from TOC		
	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	
12/3/2014	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	SVE system off. Overload alarm cleared via reset of relay in control panel. Overload due to ice in hose between lead & lag GAC vessels. Configuration changed from pull to push soil vapor through GAC vessels. Hose placed in groundwater treatement system building to thaw overnight.
12/4/2014	14	--	17	--	62.9	--	1.3	0.27	--	--	13.5	--	90 - 105	--	62.7	--	1.69	0.207	--	--	13	--	95 - 115	--	64.5	--	2.77	0.100	--	18.55	System startup at 0745
12/29/2014	15	--	1.5 - 5.1	--	71.4	--	--	--	--	--	15	--	95 - 113	--	67.8	--	--	--	--	--	14	--	95 - 120	--	67.3	--	--	--	--	--	
1/21/2015	15	--	2 - 6	--	68.8	--	0.018 - 0.38	0.06 - 0.10	--	--	15	--	94	--	65.8	--	1.8	0.202	--	--	14.5	--	100 - 122	--	66.2	--	3.4	+0.089	--	--	Pre-modification
1/21/2015	0	38	--	--	--	--	0.24	OL	--	--	0	36	--	--	--	--	0.180	OL	--	--	0	37	--	--	--	--	0.107	12.3	--	--	Post-modification; configuration changed to extract from upper to lower zone
1/22/2015	--	40	--	15	--	74.8	0.344	OL	--	--	--	39	--	--	--	72.8	0.173	OL	--	--	--	40	--	--	--	73.8	0.110	11.78	--	--	Water in VLS, transferred to poly tank after measurements (35 gallons)
1/26/2015	0	23	--	--	--	--	--	--	--	--	0	21.5	--	--	--	--	--	--	--	--	0	23	--	--	--	--	--	--	--	--	Switched SVE-1 and SVE-2 to upper zone to reduce water intake (partially opened); Water in VLS, transferred to poly tank (35 gallons).
3/16/2015	0	24	--	8 - 120	--	67.0	--	--	--	--	0	23	--	55	--	70.1	--	--	--	--	0	24	--	95	--	69.2	--	--	--	--	SVE-3 highly variable flow 8-120 CFM, mostly around 20 CFM; relative humidity was measured in SVE-1 at 29.7%, in SVE-2 at 34.2%, in SVE-3 at 30.0%, in SVE-4 at 27.2%, and in SVE-5 at 29.2%. Relative humidity before the GAC and after the blower was measured at 12.5% and temperature was measured at 120 degrees F.
5/6/2015	0.25	23	0.75	13.5	79.1	79.9	0.245	OL > 16	--	--	0.15	21	0.95	62	78	77.1	0.15	17.11	--	--	0.095	22	0.6	85	73.7	76.1	0.139	6.82	--	--	System set up to push through GAC. SVE-1 and SVE-2 valve @ 50%. SVE-3 lower drop pipe appears skewed.
5/6/2015	0.25	22	0.62	15	73.4	71.4	0.24	20			0.15	20	0.7	45	72.7	72.7	0.15	16.79			0.095	20.5	0.55	82	72.1	72.8	0.15	6.75			System changed to pull through GAC units. SVE-1 and SVE-2 valve @ 50%
5/6/2015	0.378	40	0.9	25	77	74.9	0.383	36			0.188	38	0.7	72	73.4	74.1	0.202	29			0.112	39	0.8	116	72.9	74.1	0.124	10.73			SVE-1 and SVE-2 closed. SVE-3, SVE-4, SVE-5 lower zones 100% open.
5/7/2015	0.395	40	14	23	84.3	77.1	0.38	36.5			0.228	38.0	0.93	81.2	77.1	76.8	0.19	29			0.157	39	0.27	114	76	76.6	0.114	10.61			SVE-3, SVE-4, SVE-5 only, 100% open.
5/7/2015	0.453	>60	1.2	OL	86.6	81.7	0.45	54			0.12	18.0	0.27	44	77.9	81.2	0.091	15.05			0.08	20	0.57	76	78.7	80.4	0.082	5.918			SVE-4 and SVE-5 50% open. SVE-3 100% open.
6/24/2015	11.4	0.26	39	0	--	--	0.02+	8.4	--	--	11.2	0.055+	76	0.35	--	--	1.61	0	--	--	11.2	0.098	67	0.9	--	--	2.81	0.08	--	--	Prior to switching all to upper zone.
6/25/2015	10.86	0.43	31	0.37	--	--	2.4	0.44	--	--	10.6	0.033	76	0.62	--	--	2.74	0	--	--	10.7	0.08	66	0.34	--	--	1.57	0.18	--	--	After switching to the upper zone
9/25/2015	11.5	--	16.2	--	87.9	--	--	--	--	--	11.5	--	62	--	83.4	--	--	--	--	--	11	--	57.8	--	83.5	--	--	--	--	--	

Notes:
(a) Total Flow Rate (CFM) - estimated, based on measurements collected at the blower inlet [in inches water column (in. WC)].
(b) Manifold Flow Rate (CFM) - measured using hot wire anemometer.

F = Fahrenheit
CFM = cubic feet per minute
TOC = top of casing
ft = feet
H2O = water
NM = not measured
psi = pounds per square inch
GAC = granular activated carbon
DTW = depth to water
PID = photoionization detector
VLS = vapor liquid separator
SSD = subslab depressurization

Table 2: Subslab Measurements

Date	Pressure (in. WC)				
	BMS-SS-1	BMS-SS-2	BMS-SS-3	BMS-SS-4	BMS-SS-5
6/25/2012	-0.036	-0.168	-0.047	-0.040	-0.022
6/25/2012	-0.054	-0.110	-0.043	-0.060	-0.035
6/27/2012	-0.037	-0.111	-0.036	-0.044	-0.025
6/27/2012	-0.065	-0.115	-0.057	-0.050	-0.030
7/3/2014	-0.066	-0.115	-0.050	-0.043	-0.033
7/12/2014	-0.078	-0.131	-0.063	-0.059	-0.043
9/12/2012	-0.110	-0.162	-0.087	-0.079	-0.062
9/25/2012	-0.072	--	--	-0.056	--
11/5/2012	-0.064	-0.112	-0.042	-0.038	-0.025
12/11/2012	-0.055	-0.104	-0.039	-0.031	-0.022
12/12/2012	-0.031	-0.079	-0.029	-0.030	-0.019
12/18/2012	-0.030	-0.079	-0.029	-0.029	-0.020
12/27/2012	-0.029	-0.074	-0.028	-0.028	-0.019
1/22/2013	-0.026	-0.069	-0.024	-0.023	-0.018
3/12/2013	-0.037	-0.083	-0.033	-0.033	-0.019
5/13/2013	-0.050	-0.090	-0.045	-0.045	-0.030
5/14/2013	-0.075	-0.115	-0.047	-0.041	-0.031
6/14/2013	-0.072	-0.118	-0.049	-0.059	-0.027
9/19/2013	-0.061	-0.122	-0.054	-0.049	-0.032
11/20/2013	-0.040	-0.090	-0.035	-0.024	-0.017
11/21/2013	-0.040	-0.085	-0.031	--	-0.016
12/6/2013	-0.037	-0.083	-0.028	-0.018	-0.013
12/6/2013	-0.011	-0.060	-0.021	-0.018	-0.014
12/6/2013	0.000 - -0.020	-0.060	-0.020	-0.015	-0.010
12/6/2013	+0.012	-0.031	-0.015	-0.011	-0.003
12/6/2013	+0.010	-0.024	-0.009	-0.009	-0.008
12/6/2013	+0.020	-0.025	-0.013	-0.010	-0.010
12/6/2013	+0.040 to -0.010	-0.030 to 0.048	-0.015	-0.007 to -0.014	-0.011
12/10/2013	-0.012	-0.042	-0.017	-0.014	-0.012
1/7/2014	-0.015	-0.042	-0.017	-0.017	-0.012
2/5/2014	-0.008	-0.040	-0.015	-0.014	-0.014
4/11/2014	-0.019	-0.024	-0.049	-0.025	-0.014
6/5/2014	-0.027	-0.059	-0.024	-0.033	-0.022
6/6/2014	-0.044	-0.075	-0.028	-0.032	-0.015
9/12/2014	-0.050	-0.096	-0.036	-0.035	-0.025
12/3/2014	--	--	--	--	--
12/4/2014	-0.032	--	-0.021	-0.014	-0.009
12/29/2014	--	--	--	--	--
1/21/2015	-0.034	--	-0.020	-0.010	-0.009
1/21/2015	--	--	--	--	--
1/22/2015	-0.017	--	-0.015	-0.019	-0.011
1/26/2015	--	--	--	--	--
3/16/2015	-0.017	-0.042	-0.015	-0.016	-0.010
5/6/2015	-0.029	-0.041	-0.017	AB	-0.022
5/6/2015	-0.018	-0.047	-0.017	--	-0.034
5/6/2015	-0.025	-0.055	-0.022	--	-0.021
5/7/2015	--	--	--	--	--
6/24/2015	-0.028	-0.054	-0.029	--	-0.028
6/24/2015	-0.045	-0.036	-0.083	--	-0.029
6/25/2015	-0.050	-0.084	-0.037	--	-0.043
9/25/2015	-0.039	-0.080	-0.028	--	-0.025

Notes:

Subslab monitoring points are measured for pressure using Fluke 922 Micromanometer.
in. WC = inches water column
AB = ABANDONED. Location SS-4 was abandoned in March 2015 and not re-installed.

Table 3: Remediation System Analytical Data

			Removal Efficiency for Tetrachloro-ethene	Tetrachloro-ethene	Chloroform	Benzene	1,2-Dichloro-ethane	Trichloro-ethene	Toluene	Ethyl-benzene	m,p-Xylene	o-Xylene	Vinyl chloride	Methylene chloride	trans-1,2-Dichloro-ethene	cis-1,2-Dichloro-ethene
Soil Vapor Screening Level [(a)]				***962***	***11***	***32***	***9.6***	***37***	***228,571***	***45,714***	***4,571***	***4,571***	***28***	***25,000***		
Influent	**Influent 1A**	**7/3/2012**	--	**7,700**	<25	**92**	<21	<27	**49**	<22	<44	<22	<13	<18	<40	<20
	FW-Influent-001	**7/30/2012**	--	**260**	**9.6**	**66**	<4.1	<5.5	**66**	**8.7**	**35**	**11**	<2.6	**7.5**	<8.0	<4.0
	FW-Influent-323	**8/13/2012**	--	**110**	**5.9**	**32**	<4.1	<5.5	**29**	<4.4	<8.8	<4.4	<2.6	<3.5	<8.0	<4.0
	FW-Influent-067	**8/28/2012**	--	**380**	**25**	**100**	<4.1	<5.5	**35**	<4.4	<8.8	<4.4	<2.6	<3.5	<8.0	<4.0
	FW-Influent-101	**9/12/2012**	--	**260**	**19**	**32**	<4.1	<5.5	**120**	**6.6**	**17**	**6.9**	<2.6	<3.5	<8.0	<4.0
	FW-Influent-074	**9/25/2012**	--	**210**	**20**	**39**	<4.1	<5.5	**16**	<4.4	<8.8	<4.4	<2.6	<3.5	<8.0	<4.0
	FW-Influent-011	**11/5/2012**	--	**570**	**13**	**39**	<4.1	<5.5	**16**	<4.4	<8.8	<4.4	<2.6	<3.5	<8.0	<4.0
	FW-Influent-264 [(b)]	**12/11/2012**	--	**1,800**	<100	<100	<100	<100	<1,000	<500	<500	<500	<50	<500	<500	<500
	FW-Influent-286 [(b)]	**12/12/2012**	--	**12,000**	<100	<100	<100	<100	<1,000	<500	<500	<500	<50	<500	<500	<500
	FW-Influent-081 [(b)]	**12/18/2012**	--	**11,000**	<100	<100	<100	<100	<1,000	<500	<500	<500	<50	<500	<500	<500
	FW-Influent-356 [(b)]	**12/27/2012**	--	**3,200**	<100	<100	<100	<100	<1,000	<500	<500	<500	<50	<500	<500	<500
	FW-Influent-054 [(b)]	**1/22/2013**	--	**9,900**	<100	<100	<100	<100	<1,000	<500	<500	<500	<50	<500	<500	<500
	FW-Influent-049	**3/12/2013**	--	**16,000**	<25	**31**	<21	<27	<19	<22	<44	<22	<13	<18	<40	<20
	FW-Influent-152	**5/13/2013**	--	**12,000**	<25	**30**	<21	<27	**73**	<22	<44	<22	<13	<18	<40	<20
	FW-Influent-033	**5/14/2013**	--	**2,000**	**14**	**28**	<4.1	<5.5	**100**	<4.4	<8.8	<4.4	<2.6	<3.5	<8.0	**4.3**
	FW-Influent-169	**6/14/2013**	--	**850**	**14**	**39**	<4.1	<5.5	**17**	<4.4	<8.8	<4.4	<2.6	<3.5	<8.0	<4.0
	FW-Influent-013	**9/19/2013**	--	**180**	**21**	**24**	<4.1	<5.5	**8.6**	<4.4	<8.8	<4.4	<2.6	<3.5	<8.0	**16**
	FW-Influent-204	**11/20/2013**	--	**2,600**	**7.7**	**21**	<4.1	<5.5	**11**	<4.4	<8.8	<4.4	<2.6	<3.5	<8.0	<4.0
	FW-Influent-071	**11/21/2013**	--	**2,100**	**7.9**	**27**	<4.1	<5.5	**9.7**	<4.4	<8.8	<4.4	<2.6	<3.5	<8.0	<4.0
	FW-Influent-321 [(b)]	**12/6/2013**	--	**2,900**	<100	<100	<100	<100	<1,000	<500	<500	<500	<50	<500	<500	<500
	FW-Influent-068 [(b)]	**12/10/2013**	--	**14,000**	<100	<100	<100	<100	<1,000	<500	<500	<500	<50	<500	<500	<500
	FW-Influent-029 [(b)]	**1/7/2014**	--	**11,000**	<100	<100	<100	<100	<1,000	<500	<500	<500	<50	<500	<500	<500
	FW-Influent-224 [(b)]	**2/5/2014**	--	**3,900**	<100	<100	<100	<100	**1,300**	<500	<500	<500	<50	<500	<500	<500
	FW-Influent-383 [(b)]	**4/11/2014**	--	**14,000**	<100	<100	<100	**1,800**	<1,000	<500	<500	<500	<50	<500	<500	<500
	FW-Influent-193 [(b)]	**6/5/2014**	--	**12,000**	<100	<100	<100	**520**	<1,000	<500	<500	<500	<50	<500	<500	**920**
	FW-Influent-013 [(b)]	**6/6/2014**	--	**23,000**	<100	<100	<100	**880**	<1,000	<500	<500	<500	<50	<500	<500	**1,600**
	FW-Influent-163	**9/12/2014**	--	**630**	<4.9	**7.5**	<4.1	**150**	**59**	<4.4	<8.8	<4.4	<2.6	<3.5	**15**	**1,300**
	FW-Influent-224	**12/4/2014**	--	**20,000**	**250**	<16	<21	**1,700**	<19	<22	<44	<22	**2,800**	<18	**65**	**9,000**
	FW-Influent-158	**1/22/2015**	--	**16,000**	**100**	<16	<21	**640**	<19	<22	<44	<22	**170**	<18	<40	**3,600**
	FW-Influent-017	**3/16/2015**	--	**7,900**	**26**	<6.5	**23**	**350**	**69**	<8.8	<18	<8.8	**17**	<7.1	**27**	**750**
	FW-Influent-470	**6/25/2015**	--	**4,200**	**25**	**6.9**	<8.2	**840**	<7.6	<8.8	<18	<8.8	**22**	<7.1	<16	**710**
	FW-Influent-041	**9/25/2015**	--	**4,000**	**22**	**13**	<4.1	**850**	**12**	<4.4	<8.8	<4.4	**7.2**	<3.5	**8.6**	**810**

Table 3: Remediation System Analytical Data

			Removal Efficiency for Tetrachloro-ethene	**Tetrachloro-ethene**	**Chloroform**	**Benzene**	**1,2-Dichloro-ethane**	**Trichloro-ethene**	**Toluene**	**Ethyl-benzene**	**m,p-Xylene**	**o-Xylene**	**Vinyl chloride**	**Methylene chloride**	**trans-1,2-Dichloro-ethene**	**cis-1,2-Dichloro-ethene**
Soil Vapor Screening Level [(a)]				**960**	11	**32**	9.6	37	229000	45700	4570	4570	28	25000	2700	
Influent SVE-1 (Upper Zone)	**FW-SVE1U-207**	**3/16/2015**	--	**320**	**15**	**85**	<4.1	**33**	**26**	<4.4	<8.8	<4.4	<2.6	<3.5	<8.0	**75**
Influent SVE-1 (Lower Zone)	**FW-SVE 1 Low-355**	**12/6/2013**	--	**90**	**11**	**8.2**	<8.2	<11	**8.1**	<8.8	<18	<8.8	<5.2	<7.1	<16	<8.0
Influent SVE-2 (Upper Zone)	**FW-SVE2U-331**	**3/16/2015**	--	**13,000**	<9.9	**8.5**	<8.2	**660**	**15**	<8.8	<18	<8.8	**23**	<7.1	<16	**880**
Influent SVE-2 (Lower Zone)	**FW-SVE 2 Low-313** [(b)]	**12/6/2013**	--	**11,000**	<100	<100	<100	<100	<1,000	<500	<500	<500	<50	<500	<500	<500
Influent SVE-3 (Upper Zone)	**FW-SVE 3 Upper-198**	**12/6/2013**	--	**59**	<9.9	**16**	<8.2	<11	<7.6	<8.8	<18	<8.8	<5.2	<7.1	<16	<8.0
Influent SVE-3 (Lower Zone)	**FW-SVE 3 Low-131** [(b)]	**12/6/2013**	--	**2,200**	<100	<100	<100	<100	<1,000	<500	<500	<500	<50	<500	<500	<500
	FW-SVE3L-011	**3/16/2015**	--	**7,000**	**11**	**130**	<8.2	**190**	**54**	<8.8	<18	<8.8	**16**	<7.1	<16	**860**
Influent SVE-4 (Lower Zone)	**FW-SVE 4 Low-031** [(b)]	**12/6/2013**	--	**71,000**	<100	<100	<100	<100	<1,000	<500	<500	<500	<50	<500	<500	<500
	FW-SVE4L-260	**3/16/2015**	--	<6.9	<4.9	**4.5**	**15**	<5.5	**130**	<4.4	**9.0**	<4.4	<2.6	**8.6**	**8.2**	<4.0
Influent SVE-5 (Upper Zone)	**FW-SV5upper-009**	**5/14/2013**	--	**52**	<4.9	**410**	<4.1	<5.5	**1,400**	**10**	**27**	**14**	<2.6	**11**	<8.0	<4.0
	FW-5up-600	**6/14/2013**	--	**14**	<4.9	**16**	<4.1	<5.5	**310**	**12**	**35**	**10**	<2.6	**72**	<8.0	<4.0
Influent SVE-5 (Lower Zone)	**FW-5low-260** [(b)]	**12/12/2012**	--	**13,000**	<100	**210**	<100	<100	<1,000	<500	<500	<500	<50	<500	<500	<500
	FW-5low-201 [(b)]	**12/18/2012**	--	**32,000**	<100	<100	<100	<100	<1,000	<500	<500	<500	<500	<500	<500	<500
	FW-5low-309 [(b)]	**12/27/2012**	--	**28,000**	<100	**110**	<100	<100	<1,000	<500	<500	<500	<50	<500	<500	<500
	FW-5Low-194 [(b)]	**1/22/2013**	--	**30,000**	<100	<100	<100	<100	<1,000	<500	<500	<500	<50	<500	<500	<500
	FW-SVE 5 Low-145 [(b)]	**12/6/2013**	--	**64,000**	<100	<100	<100	<100	<1,000	<500	<500	<500	<50	<500	<500	<500
	FW-SVE5L-028	**3/16/2015**	--	**1,500**	**7.1**	**22**	**140**	**79**	**560**	**9.9**	**21**	**7.9**	**4.4**	**27**	**70**	**180**

Table 3: Remediation System Analytical Data

			Removal Efficiency for Tetrachloro-ethene	**Tetrachloro-ethene**	**Chloroform**	**Benzene**	**1,2-Dichloro-ethane**	**Trichloro-ethene**	**Toluene**	**Ethyl-benzene**	**m,p-Xylene**	**o-Xylene**	**Vinyl chloride**	**Methylene chloride**	**trans-1,2-Dichloro-ethene**	**cis-1,2-Dichloro-ethene**
	Inbetween 1B	**7/3/2012**	--	**24**	<4.9	**260**	<4.1	<5.5	**7.2**	<4.4	<8.8	<4.4	<2.6	<3.5	<8.0	<4.0
	FW-Inbtwn-070	**7/30/2012**	--	<6.9	<4.9	**230**	<4.1	<5.5	**8.4**	<4.4	<8.8	<4.4	<2.6	**3.6**	<8.0	<4.0
	FW-Inbtwn-219	**8/13/2012**	--	<6.9	<4.9	**370**	<4.1	<5.5	**4.4**	<4.4	<8.8	<4.4	<2.6	<3.5	<8.0	<4.0
	FW-Inbtwn-219	**8/28/2012**	--	<6.9	<4.9	**28**	<4.1	<5.5	<3.8	<4.4	<8.8	<4.4	<2.6	<3.5	<8.0	<4.0
	FW-Inbtwn-105	**9/12/2012**	--	<6.9	<4.9	**51**	<4.1	<5.5	**5.0**	<4.4	<8.8	<4.4	<2.6	<3.5	<8.0	<4.0
	FW-Inbtwn-241	**9/25/2012**	--	<6.9	<4.9	**430**	<4.1	<5.5	**26**	<4.4	**15**	**6.3**	<2.6	**3.8**	<8.0	<4.0
Midpoint	**FW-Inbtwn-129**	**11/5/2012**	--	<6.9	**6.5**	**330**	<4.1	<5.5	**5.8**	<4.4	<8.8	<4.4	<2.6	<3.5	<8.0	<4.0
	FW-Inbtwn-376 [(b)]	**12/27/2012**	--	**1,300**	<100	<100	<100	<100	<1,000	<500	<500	<500	<50	<500	<500	<500
	FW-Inbtwn-098	**3/12/2013**	--	**5,700**	<25	**75**	<21	**27**	**19**	<22	<44	<22	<13	<18	<40	<20
	FW-Btwn-006	**1/22/2015**	--	**120**	<4.9	<3.2	<4.1	**130**	**15**	<4.4	<8.8	<4.4	**80**	**4.8**	<8.0	**290**
	FW-Btwn-324	**3/16/2015**	--	**230**	<4.9	<3.2	<4.1	**200**	<3.8	<4.4	<8.8	<4.4	**25**	<3.5	**20**	**1,900**
	FW-Btwn-264	**6/25/2015**	--	**2,100**	**23**	**13**	<4.1	**200**	<3.8	<4.4	<8.8	<4.4	**19**	<3.5	**9.5**	**660**
	FW-Btwn-355	**9/25/2015**	--	**12,000**	**18**	**150**	<4.1	**2,300**	**8.5**	<4.4	**12**	**5.7**	**5.6**	<3.5	<8.0	**660**

Table 3: Remediation System Analytical Data

			Removal Efficiency for Tetrachloro-ethene	**Tetrachloro-ethene**	**Chloroform**	**Benzene**	**1,2-Dichloro-ethane**	**Trichloro-ethene**	**Toluene**	**Ethyl-benzene**	**m,p-Xylene**	**o-Xylene**	**Vinyl chloride**	**Methylene chloride**	**trans-1,2-Dichloro-ethene**	**cis-1,2-Dichloro-ethene**
Effluent	**Effluent 1C**	**7/3/2012**	*99.8%*	**17**	<4.9	**23**	<4.1	<5.5	**6.8**	<4.4	<8.8	<4.4	<2.6	<3.5	<8.0	<4.0
	FW-effluent	**7/30/2012**	*97.3%*	<6.9	<4.9	**37**	<4.1	<5.5	**17**	<4.4	<8.8	<4.4	<2.6	<3.5	<8.0	<4.0
	FW-effluent-217	**8/13/2012**	*93.7%*	<6.9	<4.9	**84**	<4.1	<5.5	<3.8	<4.4	<8.8	<4.4	<2.6	<3.5	<8.0	<4.0
	FW-Effluent-355	**8/28/2012**	*98.2%*	<6.9	<4.9	**190**	<4.1	<5.5	**56**	<4.4	**9.2**	<4.4	<2.6	<3.5	<8.0	<4.0
	FW-Effluent-102	**9/12/2012**	*97.3%*	<6.9	<4.9	**130**	<4.1	<5.5	**280**	**19**	**45**	**18**	<2.6	**9.3**	<8.0	<4.0
	FW-Effluent-245	**9/25/2012**	*96.7%*	<6.9	<4.9	**150**	<4.1	<5.5	**17**	<4.4	**52**	**18**	<2.6	<3.5	<8.0	<4.0
	FW-Effluent-300	**11/5/2012**	*98.8%*	<6.9	<4.9	<3.2	<4.1	<5.5	<3.8	<4.4	<8.8	<4.4	<2.6	<3.5	<8.0	<4.0
	FW-Effluent-362	**12/27/2012**	*97.0%*	**96**	**11**	**45**	<4.1	<5.5	**13**	<4.4	<8.8	<4.4	<2.6	<3.5	<8.0	<4.0
	FW-Effluent-034	**1/11/2013**	--	**20**	<4.9	**34**	**4.6**	<5.5	**180**	**28**	**100**	**23**	<2.6	**6.8**	<8.0	<4.0
	FW-Effluent-054	**1/22/2013**	*96.5%*	**350**	**12**	**63**	<4.1	<5.5	**21**	<4.4	<8.8	<4.4	<2.6	<3.5	<8.0	<4.0
	FW-Effluent-054	**3/12/2013**	*81.3%*	**3,000**	**12**	**230**	<4.1	**93**	**5.5**	<4.4	<8.8	<4.4	<2.6	<3.5	<8.0	<4.0
	FW-Effluent-285	**5/13/2013**	*98.4%*	**190**	<4.9	**460**	<4.1	<5.5	**530**	**8.6**	**20**	**8.1**	<2.6	**9.0**	<8.0	<4.0
	FW-Effluent-157	**5/14/2013**	*72.5%*	**550**	**5.7**	**440**	<4.1	<5.5	**7.1**	<4.4	<8.8	<4.4	<2.6	<3.5	<8.0	<4.0
	FW-Effluent-026	**6/14/2013**	*98.5%*	**13**	<4.9	**440**	<4.1	<5.5	**4.5**	<4.4	<8.8	<4.4	<2.6	<3.5	<8.0	<4.0
	FW-Effluent-159	**9/19/2013**	*95.3%*	**8.5**	<4.9	**470**	<4.1	<5.5	**46**	<4.4	<8.8	<4.4	<2.6	**7.4**	<8.0	<4.0
	FW-Effluent-275	**11/20/2013**	*96.2%*	**100**	<4.9	**420**	<4.1	<5.5	**4.3**	<4.4	<8.8	<4.4	<2.6	**4.1**	<8.0	<4.0
	FW-Effluent-206	**11/21/2013**	*73.8%*	**550**	<4.9	<3.2	<4.1	<5.5	<3.8	<4.4	<8.8	<4.4	<2.6	<3.5	<8.0	<4.0
	FW-Effluent-216	**12/10/2013**	*100.0%*	<6.9	<4.9	<3.2	<4.1	<5.5	<3.8	<4.4	<8.8	<4.4	<2.6	**4.2**	<8.0	<4.0
	FW-Effluent-062	**1/7/2014**	*99.9%*	<6.9	<4.9	<3.2	<4.1	**5.9**	**11**	<4.4	<8.8	<4.4	<2.6	**3.5**	<8.0	<4.0
	FW-Effluent-362	**2/5/2014**	*99.8%*	<6.9	<4.9	**12**	<4.1	<5.5	**7,700**	**21**	**63**	**9.4**	<2.6	**21**	<8.0	<4.0
	FW-Effluent-129	**4/11/2014**	*100.0%*	<6.9	<4.9	**15**	<4.1	<5.5	<3.8	<4.4	<8.8	<4.4	<2.6	<3.5	<8.0	<4.0
	FW-Effluent-132	**6/5/2014**	*99.9%*	<6.9	<4.9	**210**	<4.1	**5.5**	**4.3**	<4.4	<8.8	<4.4	<2.6	<3.5	<8.0	<4.0
	FW-Effluent-015	**6/6/2014**	*100.0%*	**11**	<4.9	**710**	<4.1	**8.5**	**8.6**	<4.4	<8.8	<4.4	<2.6	<3.5	<8.0	<4.0
	FW-Effluent-384	**9/12/2014**	*98.9%*	<6.9	**8.4**	**340**	<4.1	<5.5	<3.8	<4.4	<8.8	<4.4	**7.6**	<3.5	<8.0	**44**
	FW-Effluent-356	**12/4/2014**	*98.9%*	<6.9	**9.4**	**9.0**	<4.1	<5.5	**11**	<4.4	<8.8	<4.4	**370**	<3.5	**21**	**4,200**
	FW-Effluent-218	**12/29/2014**	--	<6.9	<4.9	<3.2	<4.1	<5.5	<3.8	<4.4	<8.8	<4.4	**200**	<3.5	<8.0	**580**
	FW-Effluent-149	**1/22/2015**	*100.0%*	<6.9	<4.9	<3.2	<4.1	**7.4**	<3.8	<4.4	<8.8	<4.4	**150**	<3.5	**8.3**	**830**
	FW-Effluent-292	**3/16/2015**	*99.7%*	**25**	<4.9	**4.5**	**18**	<5.5	190	<4.4	8.9	<4.4	<2.6	**28**	**9.0**	**6.2**
	FW-Effluent-461	**6/25/2015**	*99.5%*	**21**	**70**	**550**	<4.1	**7.4**	**7.3**	<4.4	<8.8	<4.4	**20**	<3.5	**64**	**4,900**
	FW-Effluent-219	**9/25/2015**	*99.8%*	<6.9	**44**	**590**	<4.1	**160**	**7.7**	<4.4	<8.8	<4.4	**7.5**	<3.5	**21**	**1,500**

Notes:

(a) Screening levels calculated by multiplying MTCA Method B indoor air cleanup levels by 100 times attenuation, as noted in Ecology's *Guidance for Evaluating Soil Vapor Intrusion in Washington State: Investigation and Remedial Action; Review Draft, October 2009.*

(b) Samples were analyzed by Modified EPA Method 8260B.

All units are in micrograms per cubic meter ($\mu g/m^3$), unless otherwise noted.

Detected concentrations are shown in **boldface.**

Table 4: Cumulative Mass Removal

Date	Approximate Blower Inlet Flow Rate (CFM)[a]	Total Blower Operation (days)[b]	Total Influent VOC Concentration (µg/m^3)[c]	Average Influent VOC Concentration (µg/m^3)[d]	Influent PCE Concentration (µg/m^3)	Average Influent PCE Concentration (µg/m^3)[e]	Mid-Point PCE Concentration (µg/m^3)	Effluent PCE Concentration (µg/m^3)	Influent Benzene Concentration (µg/m^3)	Mid-Point Benzene Concentration (µg/m^3)	Effluent Benzene Concentration (µg/m^3)	Time Period Blower Operation (days)[f]	Time Period VOC Mass Removed (pound)[g]	Time Period PCE Mass Removed (pound)[g]	Cumulative VOC Mass Removed (pound)[h]	Cumulative PCE Mass Removed (pound)[h]
7/3/2012	249	0	8,021	0	7,700	0			92			0	0.00	0.00	0.00	0.00
7/12/2012	258															
7/30/2012		27	769	4,395	260	3,980						27	0.00	0.00	0.00	0.00
8/13/2012		41	243	506	110	185						14	0.00	0.00	0.00	0.00
8/28/2012	212	56	680	461	380	245						15	0.13	0.07	0.13	0.07
9/12/2012	280	71	607	643	260	320						15	0.24	0.12	0.37	0.19
9/25/2012	353	84	322	464	210	235						13	0.19	0.10	0.57	0.29
11/5/2012	253	125	699	511	570	390	6.9	*6.9*	39	330	*3.2*	41	0.48	0.36	1.04	0.65
12/11/2012	256	161	1,800	1,250	1,800	1,185						36	1.03	0.98	2.07	1.63
12/12/2012	235	162	12,000	6,900	12,000	6,900						1	0.15	0.15	2.22	1.78
12/18/2012	231	168	11,000	11,500	11,000	11,500						6	1.43	1.43	3.65	3.21
12/27/2012	265	177	3,200	7,100	3,200	7,100	1,300	96		*100*	45	9	1.52	1.52	5.17	4.72
12/28/2012	270															
1/11/2013	247															
1/22/2013	235	203	9,900	6,550	9,900	6,550		350			63	26	3.59	3.59	8.76	8.31
2/21/2013	261															
2/21/2013	263															
3/12/2013	271	252	16,031	12,966	16,000	12,950	5,700	3,000	31	75	230	49	15.44	15.43	24.20	23.74
5/13/2013	277	314	12,103	14,067	12,000	14,000		190	30		460	62	21.67	21.57	45.87	45.31
5/14/2013		315	2,146	7,125	2,000	7,000		550	28		440	1	0.00	0.00	45.87	45.31
6/14/2013	281	346	920	1,533	850	1,425	28	13	39	430	440	31	1.20	1.11	47.07	46.42
9/19/2013	281	443	250	585	180	515	6.9	8.5	24	250	470	97	1.43	1.26	48.50	47.68
11/21/2013	275	506	2,640	1,445	2,600	1,390		100	21		420	63	2.25	2.16	50.75	49.84
11/21/2013	269	506	2,145	2,392	2,100	2,350		550	27		*3.2*	0	0.00	0.00	50.75	49.84
12/6/2013	268	521	2,900	2,522	2,900	2,500			*100*			15	0.91	0.90	51.66	50.74
12/10/2013	265	525	14,000	8,450	14,000	8,450	6.9	*6.9*	*100*	17	*3.2*	4	0.80	0.80	52.46	51.55
1/7/2014	264	553	11,000	12,500	11,000	12,500	10	*6.9*	*100*	*3.2*	*3.2*	28	8.29	8.29	60.75	59.84
2/5/2014	265	582	5,200	8,100	3,900	7,450	100	*6.9*	*100*	*100*	12	29	5.58	5.14	66.33	64.97
4/11/2014	261	647	15,800	10,500	14,000	8,950	100	*6.9*	*100*	*100*	15	65	15.98	13.62	82.31	78.59
6/5/2014	255	702	13,440	14,620	12,000	13,000		*6.9*	*100*	*100*	210	55	18.39	16.36	100.71	94.95
6/6/2014	298	703	25,480	19,460	23,000	17,500	1,200	11	*100*	*100*	710	1	0.52	0.47	101.23	95.42
9/12/2014	321	801	2,162	13,821	630	11,815	5.5	*6.9*	7.5	20	340	98	39.00	33.34	140.23	128.76
12/4/2014	282	884	33,815	17,988	20,000	10,315	18,000	*6.9*	16.0	7	3	83	37.77	21.66	178.00	150.42
1/22/2015	231	933	20,510	27,163	16,000	18,000	120.0	*6.9*	16.0	7	3	49	27.58	18.28	205.58	168.70
3/16/2015	262	986	9,139	14,825	7,900	11,950	230.0	*25.0*	6.5	3	5	53	18.47	14.89	224.05	183.58
5/6/2015	250															
5/6/2015	215															
5/6/2015	217															
5/7/2015	219															
5/7/2015	160															
6/24/2015	265															
6/25/2015	275	1,087	5,804	13,157	4,200	10,100	2,100	*21.0*	6.9	13	550	101	32.78	25.17	256.83	208.75
9/25/2015	263	1,179	5,723	5,764	4,000	4,100	12,000	*6.9*	13	150	590	92	12.51	8.90	269.34	217.65

Notes:

(a) Total Flow Rate [cubic feet per minute (CFM)] - estimated, based on measurements collected at the blower inlet (in inches water column).
(b) Blower Operation (days) - total days of soil vapor extration (SVE) blower operation at time of system monitoring and sampling.
(c) Total Influent VOC Concentration - sum of detected volatile organic compound (VOC) constituents (see Table 4).
(d) Average Influent VOC Concentration - average concentration of VOCs between monitoring and sampling events.
(e) Average Influent PCE Concentration - average concentration of tetrachloroethene (PCE) between monitoring and sampling events.
(f) Time Period Blower Operation (days) - time period between monitoring and sampling events.
(g) Time Period Mass Removed (pound) - mass removed between monitoring and sampling events.
(h) Cumulative Mass Removed (pound) - mass removed cumulatively over operational period.

Laboratory Anaytical Data
Averaged Data
Non-detect values shown in italics, set at reporting limit.

µg/m^3 = micrograms per cubic meter
CFM = cubic feet per minute

Table 5: Indoor and Ambient Air Analytical Data

			Tetrachloro-ethene	Chloroform	Benzene	1,2-Dichloro-ethane	Trichloro-ethene	Toluene	Ethyl Benzene	m,p-Xylene	o-Xylene	Methylene Chloride	trans-1,2-Dichloro-ethene	Vinyl Chloride	cis-1,2-Dichloro-ethene
MTCA Method B Indoor Air Cleanup Level [(a)]			***9.6***	***0.11***	***0.32***	***0.096***	***0.37***	***2,286***	***457***	***45.7***	***45.7***	***250***		***0.28***	
Upstairs (Kitchen)	**BMS-U1-092411**	**9/25/2011**	**5.7**	**1.3**		<0.17	<0.22								<0.16
	BMS-U1-102011	**10/20/2011**	**6.1**	**2.9**		<0.14	**0.086**								<0.13
NE Corner Nap/ Play Area	**BMS-M1-092411**	**9/25/2011**	**6.3**	**1.4**		**0.15**	<0.19								<0.14
	BMS-M1-102011	**10/20/2011**	**6.0**	**2.3**		<0.14	**0.08**								<0.14
	BMS-M1-070612	**7/6/2012**	**0.29**	**2.9**		**0.34**	**0.071**								<0.15
	BMS-M1-081312	**8/13/2012**	<0.25	**1.8**	**0.50**	**0.25**	**0.083**	**3.8**	**0.30**	**0.78**	**0.33**	<1.3	<0.74	<0.048	<0.15
	BMS-M1-091212	**9/12/2012**	<0.24	**1.2**	**4.4**	<0.14	**0.058**	**3.8**	**0.34**	**1.2**	**0.42**	<1.2	<0.71	<0.046	<0.14
	BMS-M1-110512	**11/5/2012**	**0.37**	**2.7**	**2.1**	**0.26**	**0.11**	**9.9**	**1.3**	**4.3**	**1.5**	<1.3	<0.74	<0.048	<0.15
	BMS-M1-031213	**3/12/2013**	**1.7**	**1.5**	**1.0**	**0.21**	**0.065**	**5.4**	**0.55**	**1.8**	**0.64**	**7.0**	<0.72	<0.047	<0.14
	BMS-M1-061413	**6/14/2013**	<0.25	**2.3**	**0.34**	<0.15	<0.029	**1.3**	**0.33**	**0.70**	**0.27**	<1.3	<0.72	<0.046	<0.14
	BMS-M1-091913	**9/19/2013**	**0.24**	**2.4**	**0.48**	**0.16**	**0.055**	**3.2**	**0.30**	**0.87**	**0.32**	<1.2	<0.69	<0.044	<0.14
	BMS-M1-121013	**12/10/2013**	**0.24**	<0.74	**1.9**	<0.12	**0.033**	**4.5**	**1.0**	**2.1**	**0.75**	<1.0	<0.60	<0.039	<0.12
	BMS-M1-041114	**4/11/2014**	**1.3**	<0.87	**0.39**	<0.14	**0.033**	**1.3**	**0.16**	**0.49**	**0.16**	<1.2	<0.71	<0.046	<0.14
	BMS-M1-060614	**6/6/2014**	**1.8**	**1.1**	<0.28	<0.14	**0.071**	**1.4**	**0.15**	**0.42**	**0.16**	<1.2	<0.70	<0.045	<0.14
	BMS-M1-091214	**9/12/2014**	**2.8**	**5.4**	**0.62**	<0.14	**0.071**	**1.8**	**0.20**	**0.58**	**0.25**	<1.2	<0.67	<0.043	**0.48**
	BMS-M1-120414	**12/4/2014**	**0.28**	**2.0**	**1.3**	<0.14	**0.066**	**4.2**	**0.50**	**1.7**	**0.62**	<1.2	<0.69	**0.070**	<0.14
	BMS-M1-031615	**3/16/2015**	**0.62**	**1.7**	**0.59**	<0.14	**0.056**	**2.0**	**0.24**	**0.80**	**0.29**	<1.2	<0.67	<0.043	**0.16**
	BMS-M1-062415	**6/24/2015**	**0.52**	<0.86	**0.32**	<0.14	**0.13**	**1.3**	**1.8**	**5.3**	**1.2**	<1.2	<0.70	<0.045	**1.8**
	BMS-M1-092515	**9/25/2015**	**0.70**	**1.3**	**0.79**	**0.83**	**0.13**	**4.3**	**1.6**	**4.7**	**1.2**	<1.3	<0.72	<0.046	**0.51**
Reception Desk	**BMS-M2-092411**	**9/25/2011**	**6.2**	**1.3**		<0.14	**0.27**								<0.14
	BMS-M2-102011	**10/20/2011**	**6.2**	**2.4**		<0.15	**0.083**								<0.14
SE Corner Nap/ Play Area	**BMS-M3-092411**	**9/25/2011**	**6.6**	**1.3**		**0.15**	<0.18								<0.13
	BMS-M3-102011	**10/20/2011**	**6.5**	**2.7**		<0.14	**0.085**								<0.14
	BMS-M3-070612	**7/6/2012**	**0.25**	**2.7**		**0.33**	**0.067**								<0.14
	BMS-M3-081312	**8/13/2012**	<0.25	**1.8**	**0.46**	**0.23**	**0.077**	**3.8**	**0.26**	**0.75**	**0.30**	<1.3	<0.74	<0.048	<0.15
	BMS-M3-091212	**9/12/2012**	<0.24	**1.1**	**1.0**	<0.14	**0.032**	**2.8**	**0.31**	**1.0**	**0.35**	<1.2	<0.71	<0.046	<0.14
	BMS-M3-110512	**11/5/2012**	**0.56**	**2.9**	**2.6**	**0.30**	**0.13**	**12**	**1.5**	**5.0**	**1.8**	**1.9**	<0.69	<0.045	<0.14
	BMS-M3-031213	**3/12/2013**	**2.5**	**1.2**	**1.0**	**0.20**	**0.065**	**5.8**	**0.57**	**1.8**	**0.64**	**13**	<0.74	<0.048	<0.15
	BMS-M3-061413	**6/14/2013**	<0.19	**1.9**	**0.28**	**0.12**	<0.022	**1.4**	**0.60**	**1.9**	**0.66**	<0.96	<0.55	<0.035	<0.11
	BMS-M3-091913	**9/19/2013**	**0.57**	**2.1**	**0.54**	**0.20**	**0.52**	**5.4**	**0.50**	**1.3**	**0.51**	**1.8**	<0.66	<0.042	<0.13
	BMS-M3-121013	**12/10/2013**	**1.1**	<0.75	**1.8**	**0.16**	**0.054**	**17**	**1.4**	**3.4**	**1.2**	**2.7**	<0.61	<0.039	<0.12
	BMS-M3-041114 [(b)]	**4/11/2014**	**1.2**	<0.90	**0.37**	<0.15	**0.031**	**1.2**	<0.16	**0.45**	**0.16**	<1.3	<0.73	<0.047	<0.14
	BMS-M3-060614	**6/6/2014**	**1.6**	**0.93**	<0.28	<0.14	**0.062**	**1.5**	**0.17**	**0.43**	**0.17**	<1.2	<0.70	<0.046	<0.14
	BMS-M3-091214	**9/12/2014**	**3.6**	**2.8**	**0.78**	<0.11	**0.086**	**1.8**	**0.20**	**0.58**	**0.19**	<0.94	<0.54	<0.035	**0.50**
	BMS-M3-120414	**12/4/2014**	**0.29**	**1.8**	**1.3**	<0.14	**0.075**	**4.2**	**0.53**	**1.8**	**0.64**	<1.2	<0.69	**0.086**	<0.14
	BMS-M3-031615	**3/16/2015**	**0.62**	**1.5**	**0.61**	**0.16**	**0.080**	**3.9**	**0.34**	**0.98**	**0.35**	<1.1	<0.64	<0.041	**0.14**
	BMS-M3-062415	**6/24/2015**	**0.59**	<0.81	**0.28**	<0.13	**0.14**	**1.2**	**2.1**	**6.1**	**1.4**	<1.2	<0.66	<0.042	**2.3**
	BMS-M3-092515	**9/25/2015**	**0.69**	**1.4**	**0.78**	**0.86**	**0.13**	**4.2**	**1.6**	**4.6**	**1.2**	<1.4	<0.78	<0.050	**0.38**

Table 5: Indoor and Ambient Air Analytical Data

			Tetrachloro-ethene	Chloroform	Benzene	1,2-Dichloro-ethane	Trichloro-ethene	Toluene	Ethyl Benzene	m,p-Xylene	o-Xylene	Methylene Chloride	trans-1,2-Dichloro-ethene	Vinyl Chloride	cis-1,2-Dichloro-ethene
MTCA Method B Indoor Air Cleanup Level [(a)]			***9.6***	***0.11***	***0.32***	***0.096***	***0.37***	***2,286***	***457***	***45.7***	***45.7***	***250***		***0.28***	
Upwind Ambient Air	**AMB-UPWIND-092411**	**9/25/2011**	<0.23	<0.84		<0.14	<0.18								<0.14
	AMB-UPWIND-070612	**7/6/2012**	<0.26	<0.94		<0.16	**0.048**								<0.15
	AMB-UPWIND-081312	**8/13/2012**	<0.27	<0.98	**0.40**	<0.16	**0.068**	**1.1**	**0.20**	**0.46**	**0.17**	<1.4	<0.80	<0.051	
	AMB-UPWIND-091212	**9/12/2012**	<0.25	<0.89	**0.64**	<0.15	<0.030	**1.6**	**0.19**	**0.58**	**0.22**	<1.3	<0.72	<0.047	<0.14
	AMB-UPWIND-110512	**11/5/2012**	**0.45**	<0.91	**2.3**	<0.15	**0.11**	**8.8**	**1.3**	**4.5**	**1.6**	<1.3	<0.74	<0.048	<0.15
	AMB-UPWIND-031213	**3/12/2013**	**70**	<1.8	**1.3**	**1.5**	**0.22**	**53**	**1.9**	**4.5**	**1.6**	**410**	<1.4	<0.093	<0.29
	AMB-UPWIND-061413	**6/14/2013**	<0.25	<0.90	**0.32**	<0.15	<0.030	**1.7**	**0.71**	**2.4**	**0.84**	<1.3	<0.73	<0.047	<0.15
	AMB-UPWIND-091913	**9/19/2013**	<0.26	<0.92	**0.35**	<0.15	<0.030	**1.8**	**0.24**	**0.71**	**0.25**	<1.3	<0.74	<0.048	<0.15
	AMB-UPWIND-121013	**12/10/2013**	<0.21	<0.77	<0.25	<0.13	<0.025	<0.12	<0.14	<0.27	<0.14	<1.1	<0.63	<0.040	<0.12
	AMB-UPWIND-041114	**4/11/2014**	**5.6**	<0.91	**0.36**	<0.15	**0.088**	**0.75**	<0.16	**0.38**	<0.16	<1.3	<0.74	<0.048	<0.15
	AMB-UPWIND-060614	**6/6/2014**	**4.1**	<0.92	<0.30	<0.15	**0.12**	**0.80**	<0.16	**0.33**	<0.16	<1.3	<0.74	<0.048	**0.18**
	AMB-UPWIND-091214	**9/12/2014**	**4.1**	<0.83	**0.48**	<0.14	**0.086**	**1.1**	**0.16**	**0.51**	**0.17**	<1.2	<0.67	<0.043	**0.48**
	AMB-UPWIND-120414	**12/4/2014**	<0.24	<0.85	**1.2**	<0.14	**0.053**	**3.6**	**0.55**	**1.9**	**0.67**	<1.2	<0.69	**0.067**	**0.21**
	AMB-UPWIND-031615	**3/16/2015**	**1.5**	<0.79	**0.54**	<0.13	**0.11**	**1.3**	**0.22**	**0.71**	**0.26**	<1.1	<0.64	**0.065**	**0.22**
	AMB-UPWIND-062415	**6/24/2015**	**0.70**	<0.86	<0.28	<0.14	**0.16**	**1.2**	**0.28**	**0.95**	**0.33**	<1.2	<0.70	<0.045	**0.47**
	AMB-UPWIND-092515	**9/25/2015**	**0.71**	<1.0	**0.66**	<0.16	**0.12**	**3.0**	**0.42**	**1.4**	**0.51**	<1.4	<0.81	<0.052	**0.26**
Upwind Ambient Air along North Wall	**AMB-NWALL-092411**	**9/25/2011**	<0.25	<0.90		<0.15	<0.20								<0.14

Notes:
(a) MTCA Method B Indoor Air Cleanup Level, published in Ecology's Cleanup Levels and Risk Calculations (CLARC) database as of December 2014.
(b) Analytical laboratory report uses an incorrect field sample name, "BMS-M2-041114".

All units are in micrograms per cubic meter (µg/m^3), unless otherwise noted.

Table 6: Subslab Soil Vapor Analytical Data

			Helium[b] (%)	Tetrachloro-ethene	Chloroform	Benzene	1,2-Dichloro-ethane	Trichloro-ethene	Toluene	Ethyl-benzene	m,p-Xylene	o-Xylene	Vinyl chloride	Methylene chloride	trans-1,2-Dichloro-ethene	cis-1,2-Dichloro-ethene
Subslab Soil Vapor Screening Level [a]			***NA***	***321***	***3.6***	***10.7***	***3.2***	***12.3***	***76,190***	***15,238***	***1,524***	***1,524***	***9.3***	***8,333***		
NE Corner Nap/ Play Area	**BMS-SS-1-092511**	**9/25/2011**	<1.0	**3,600**	**7.5**	<3.2	<4.1	<5.5	**11**	<4.4	<8.8	<4.4	<2.6	<3.5	<8.0	<4.0
	BMS-SS-1-081312	**8/13/2012**	**0.8**	**450**	<0.49	**0.47**	<0.82	<1.1	**2.7**	<0.88	**2.8**	**1.1**	<0.26	**0.97**	<0.80	<0.80
	BMS-SS-1-091212	**9/12/2012**	**0.2**	**57**	**1.9**	**4.3**	<0.82	<1.1	**29**	**6.1**	**21**	**7.6**	<0.26	**8.5**	<0.80	<0.80
	BMS-SS-1-110512	**11/5/2012**	**0.7**	**51**	**0.29**	**0.26**	<0.41	<0.55	**7.1**	**1.1**	**4.1**	**1.6**	<0.13	<0.35	<0.40	<0.40
	BMS-SS-1-031213	**3/12/2013**	**0.2**	**40**	<0.25	**0.58**	<0.41	<0.55	**22**	**1.2**	**3.3**	**1.3**	<0.13	<0.35	<0.40	<0.40
	BMS-SS-1-061413	**6/14/2013**	<0.10	**63**	**0.54**	<0.32	<0.82	<1.1	**4.2**	<0.88	**1.6**	<0.88	<0.26	<0.71	<0.80	<0.80
	BMS-SS-1-091913	**9/19/2013**	<0.10	**82**	**0.35**	**0.16**	<0.41	<0.55	**3.8**	**1.1**	**2.8**	**1.9**	<0.13	<0.35	<0.40	<0.40
	BMS-SS-1-121013	**12/10/2013**	**0.70**	**12**	<0.25	**0.77**	<0.41	<0.55	**2.6**	**0.85**	**1.8**	**0.73**	<0.13	<0.35	<0.40	<0.40
	BMS-SS-1-041114	**4/11/2014**	<0.10	**80**	<0.25	**0.26**	<0.41	<0.55	**2.1**	<0.44	**0.88**	<0.44	<0.13	<0.35	<0.40	<0.40
	BMS-SS-1-060614	**6/6/2014**	<0.10	**110**	**0.53**	**0.79**	<0.41	<0.55	**5.2**	<0.44	**1.4**	**0.73**	<0.13	<0.35	<0.40	<0.40
	BMS-SS-1-091214	**9/12/2014**	<0.10	**57**	**0.99**	**0.19**	<0.41	<0.55	**1.4**	<0.44	**0.66**	<0.44	<0.13	<0.35	<0.40	<0.40
	BMS-SS-1-120414	**12/4/2014**	<0.10	**27**	<0.25	<0.16	<0.41	<0.55	**0.76**	<0.44	**0.69**	<0.44	<0.13	<0.35	<0.40	<0.40
	BMS-SS-1-031615	**3/16/2015**	<0.10	**47**	<0.49	<0.32	<0.82	<1.1	**8.2**	<0.88	**0.96**	<0.88	<0.26	**0.74**	<0.80	<0.80
	BMS-SS-1-062415	**6/24/2015**	<0.10	**166**	<0.49	<0.32	<0.82	<1.09	<1.53	<0.88	<0.88	<0.88	<0.26	<0.71	<0.80	<0.80
	BMS-SS-1-092515	**9/25/2015**	<0.10	**37**	<0.25	<0.16	<0.41	<0.55	**1.1**	**0.47**	**2.1**	**1.2**	<0.13	<0.35	<0.40	**0.54**
Main Floor Sink Area	**BMS-SS-2-092511**	**9/25/2011**	<1.0	**45,000**	**27**	<3.2	<4.1	<5.5	**19**	<4.4	<8.8	<4.4	<2.6	<3.5	<8.0	<4.0
Reception Area	**BMS-SS-3-092511**	**9/25/2011**	<1.0	**50,000**	**16**	<3.2	<4.1	<5.5	**15**	<4.4	<8.8	<4.4	<2.6	<3.5	<8.0	<4.0
SE Corner Nap/ Play Area	**BMS-SS-4-081312**	**8/13/2012**	**1.8**	**110**	**1.4**	**0.60**	<0.82	<1.1	**5.7**	**1.3**	**5.8**	**1.8**	<0.26	**6,200**	<0.80	<0.80
	BMS-SS-4-091212	**9/12/2012**	**4.8**	**14**	**2.4**	**0.94**	<0.82	<1.1	**25**	**4.4**	**11**	**4.5**	<0.26	**1,300**	<0.80	<0.80
	BMS-SS-4-110512	**11/5/2012**	**6.7**	**4.0**	**2.6**	**1.5**	**0.42**	<0.55	**12**	**1.8**	**5.3**	**2.3**	<0.13	**780**	<0.40	<0.40
	BMS-SS-4-031213	**3/12/2013**	**6.1**	**1.1**	**1.2**	**1.4**	<0.41	<0.55	**4.5**	**0.76**	**2.1**	**0.71**	<0.13	**130**	<0.40	<0.40
	BMS-SS-4-061413	**6/14/2013**	**4.89**	**6.8**	**3.8**	**0.27**	<0.41	<0.55	**3.0**	**0.70**	**1.5**	**0.69**	<0.13	**420 E**	<0.40	<0.40
	BMS-SS-4-091913	**9/19/2013**	**1.46**	**3.9**	**5.4**	**0.55**	<0.41	<0.55	**12**	**3.0**	**7.0**	**4.5**	<0.13	**110**	<0.40	<0.40
	BMS-SS-4-121013	**12/10/2013**	**6.68**	<0.69	**0.34**	**2.8**	<0.41	<0.55	**6.7**	**1.8**	**4.1**	**1.5**	<0.13	**13**	<0.40	<0.40
	BMS-SS-4-041114	**4/11/2014**	**0.70**	**2.9**	**0.42**	**0.60**	<0.41	<0.55	**3.0**	**0.44**	**1.4**	**0.55**	<0.13	**29**	<0.40	<0.40
	BMS-SS-4-060614	**6/6/2014**	**1.68**	**7.8**	**1.5**	**0.41**	<0.41	<0.55	**4.2**	<0.44	**1.3**	**0.57**	<0.13	**44**	<0.40	<0.40
	BMS-SS-4-091214	**9/12/2014**	<0.10	**1.5**	**5.5**	**0.49**	<0.41	<0.55	**3.0**	<0.44	**1.2**	**0.57**	<0.13	**0.35**	<0.40	<0.40
	BMS-SS-4-120414	**12/4/2014**	<0.10	**84**	**1.1**	**0.49**	<0.41	<0.55	**2.3**	<0.44	**1.6**	**0.55**	<0.13	**5.3**	<0.40	<0.40
	BMS-SS-4-031615	**3/16/2015**	**1.19**	**4.4**	**1.7**	**0.67**	<0.41	<0.55	**17**	**0.87**	**3.0**	**1.4**	<0.13	**8.4**	<0.40	<0.40
SW Corner Nap/ Play Area	**BMS-SS-5-062415**	**6/24/2015**	**0.76**	**9.64**	**0.30**	**0.36**	<0.41	<0.55	**2.10**	**0.88**	**2.33**	**1.01**	<0.13	<0.35	<0.40	**4.14**
	BMS-SS-5-092515	**9/25/2015**	<0.10	**1.8**	**3.10**	**0.99**	**1.0**	<0.55	**4.1**	**1.5**	**5.0**	**1.9**	<0.13	**0.43**	<0.40	**0.95**

Notes:

(a) Screening levels calculated by multiplying MTCA Method B indoor air cleanup levels by 30 times attenuation.

(b) Helium was used as a leak check compound during soil gas sampling. Results are presented in units of percent.

All units are in micrograms per cubic meter ($\mu g/m^3$), unless otherwise noted.

Detected concentrations are shown in **boldface.**

NA = not applicable

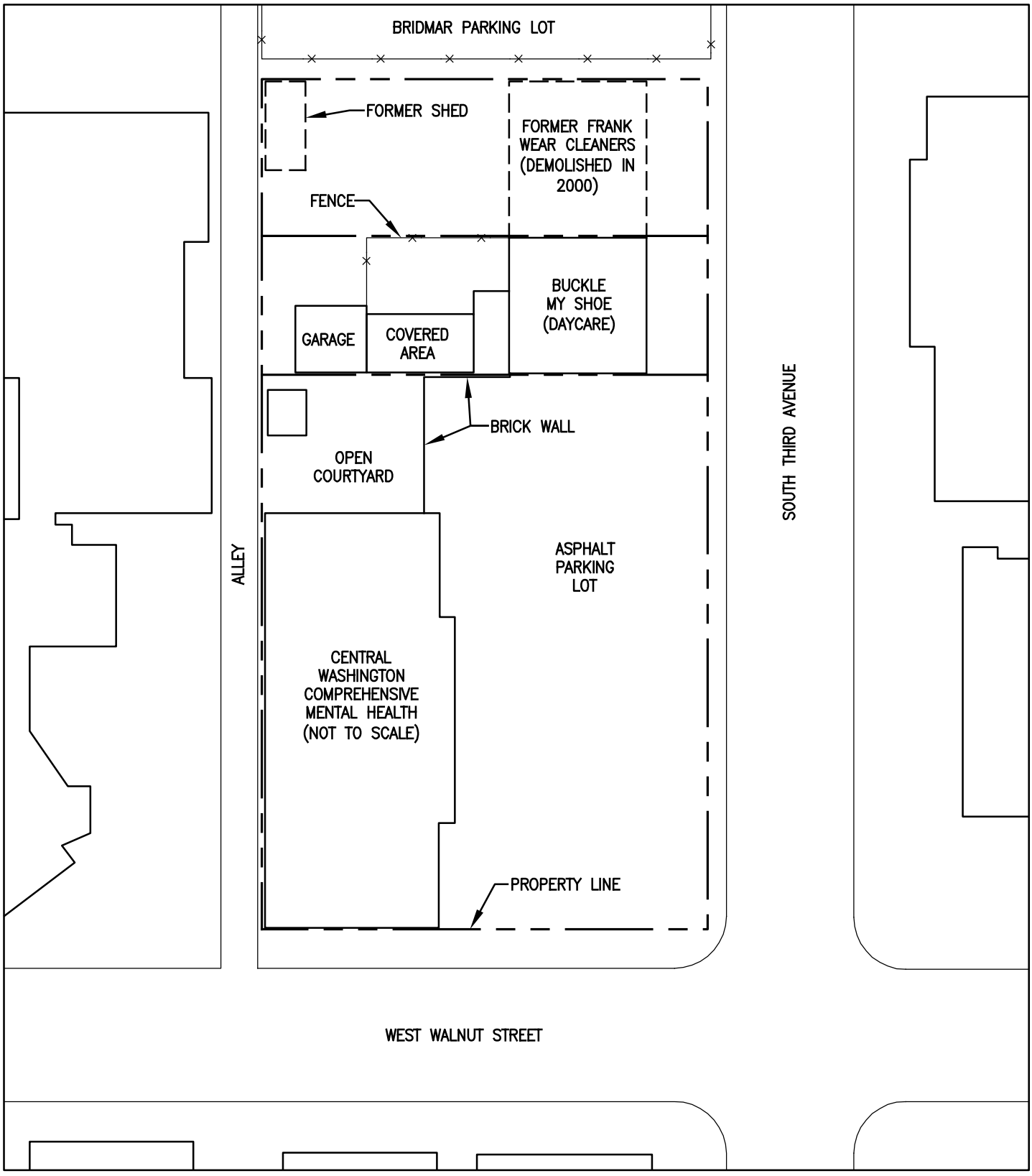
Table 7: 310 Walnut Indoor Air Analytical Data

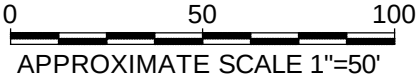
			Tetrachloro-ethene	Chloroform	Benzene	1,2-Dichloro-ethane	Trichloro-ethene	Toluene	Ethyl Benzene	m,p-Xylene	o-Xylene	Methylene Chloride	trans-1,2-Dichloro-ethene	Vinyl Chloride	cis-1,2-Dichloro-ethene
MTCA Method B Indoor Air Cleanup Level [(a)]			***9.6***	***0.11***	***0.32***	***0.096***	***0.37***	***2,290***	***457***	***45.7***	***45.7***	***250***	***27***	***0.28***	
Basement	**310 WALNUT-B-120314**	**12/3/2014**	**0.35**	<0.83	**1.2**	<0.14	**0.072**	**3.4**	**0.56**	**1.9**	**0.68**	<1.2	<0.68	<0.044	<0.14
Main Floor	**310 WALNUT-M-120314**	**12/3/2014**	**0.34**	<0.77	**1.6**	**0.42**	**0.10**	**5.1**	**2.2**	**6.3**	**2.7**	<1.1	<0.62	<0.040	<0.12

Notes:
(a) MTCA Method B Indoor Air Cleanup Level, published in Ecology's Cleanup Levels and Risk Calculations (CLARC) database as of December 2014.

All units are in micrograms per cubic meter ($\mu g/m^3$), unless otherwise noted.
Detected concentrations are shown in **boldface.**

Figures





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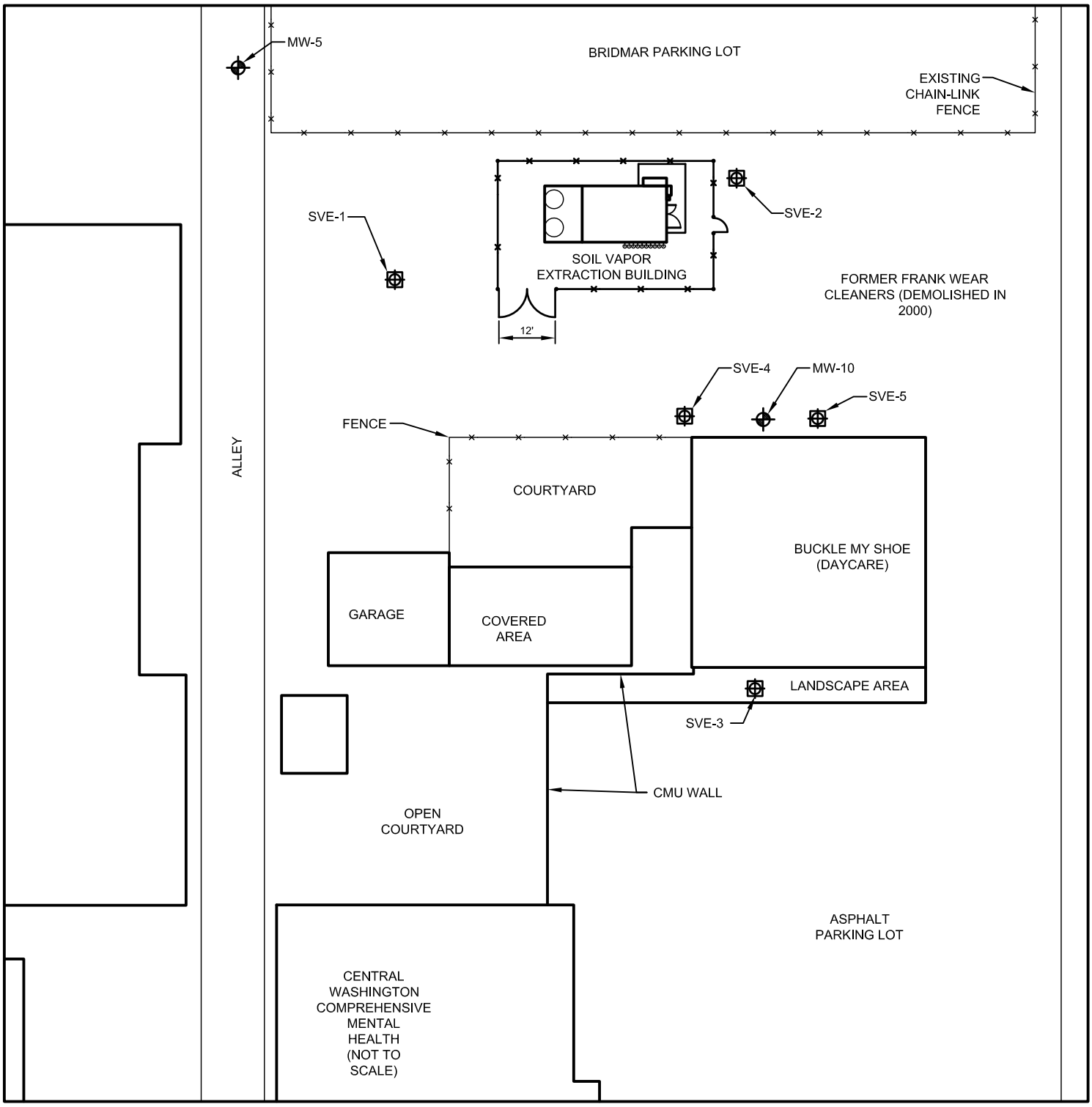
WASHINGTON STATE DEPARTMENT OF ECOLOGY
FORMER FRANK WEAR SITE
YAKIMA, WASHINGTON

SITE MAP

119016.00\FIG-01

10/11

FIGURE 1



N

LEGEND

SVE-4 SOIL VAPOR EXTRACTION WELL

MW-10 MONITORING WELL

0 15 30

APPROXIMATE 1" = 30'-0"

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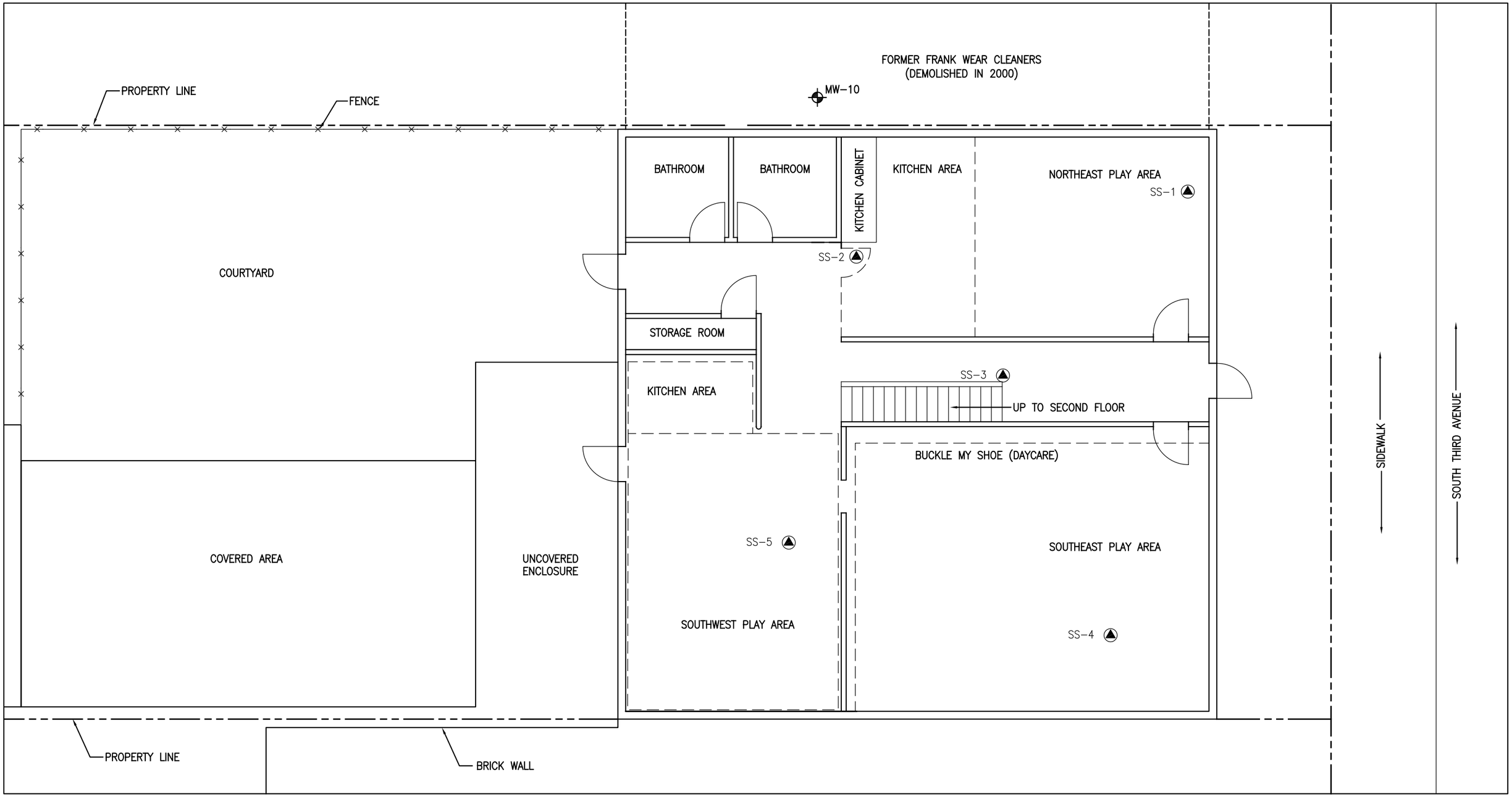
WASHINGTON STATE DEPARTMENT OF ECOLOGY
FRANK WEAR SITE
YAKIMA, WASHINGTON

SVE WELL LOCATIONS

1196016.00\ANNUAL\FIG-02

FIGURE 2



LEGEND

SS-1 SUBSLAB MONITORING POINT

MW-10 MONITORING WELL

NOTE: ALL LOCATIONS ARE APPROXIMATE

N

0 5 10

1/8"=1'-0"

APPROXIMATE SCALE 1/8"=1'

Kennedy/Jenks Consultants

WASHINGTON STATE DEPARTMENT OF ECOLOGY
FRANK WEAR SITE
YAKIMA, WASHINGTON

SUBSLAB MONITORING LOCATIONS

1196016.00\ANNUAL\FIG-03

FIGURE 3

Figure 4: VOC Concentrations Before and After GAC Treatment

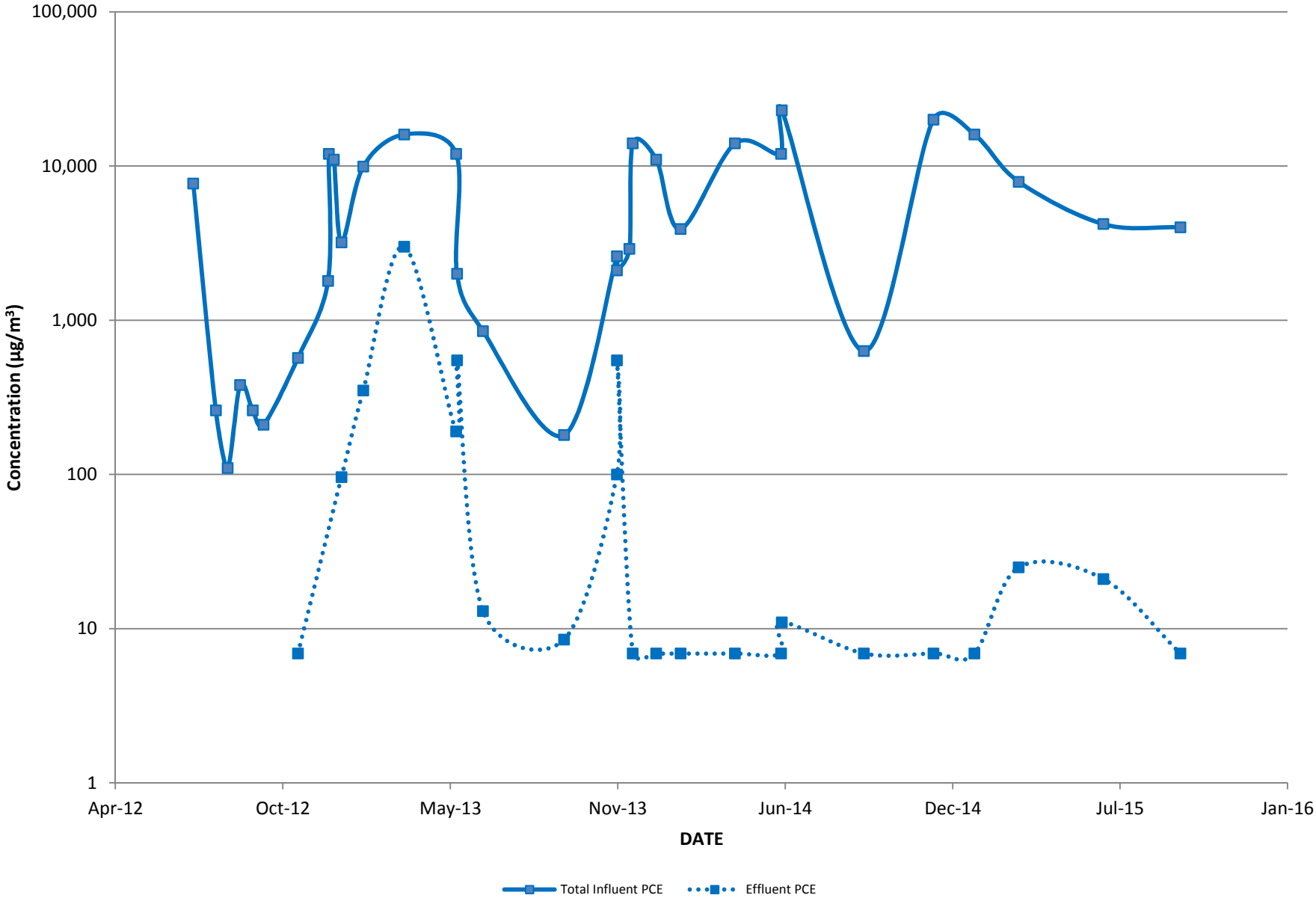
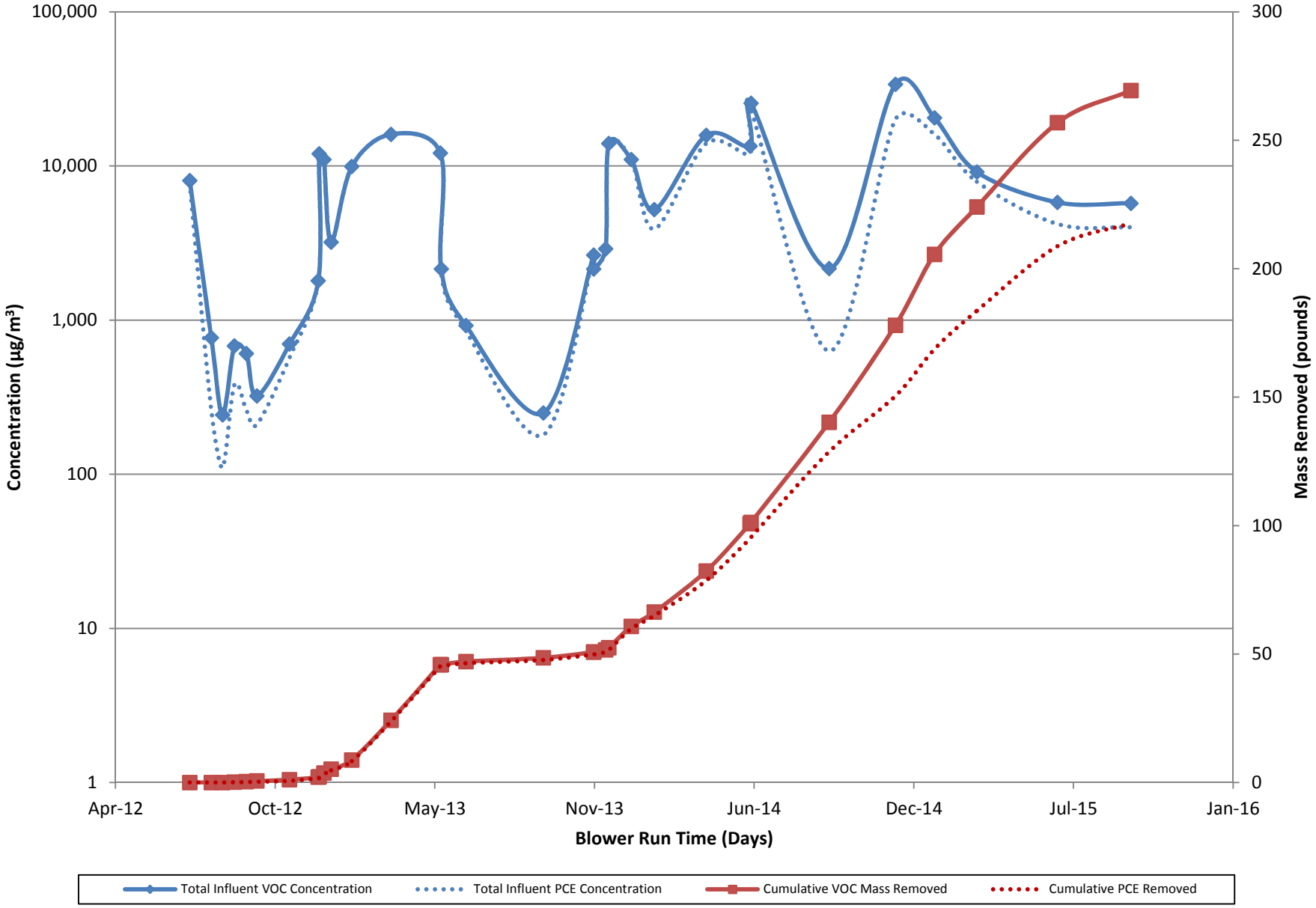


Figure 5: Influent Soil Vapor Concentrations and Mass Removed



Appendix A

SVE System Performance Monitoring Logs

FRANK WEAR SVE SYSTEM - SYSTEM PERFORMANCE MONITORING RECORD SHEET

DATE/TIME: 9/12/14 ADJUSTMENT SHEET (Yes/No)? NO TROUBLESHOOT SHEET (Yes/No)? _____

NOTES: Note any observations, adjustments, or system issues here.

AMBIENT TEMPERATUR (F):	55- 80 (buildings)	
BLOWER INLET VACUUM (in. WC):	-24	Keep under 50 in. WC
BLOWER INLET FLOW (CFM):	>22.0	
BLOWER INLET TEMPERATURE (F):	72	Keep under 150 F
BLOWER DISCHARGE TEMPERATURE (F):	119	Keep under 130 F
BLOWER DISCHARGE TEMPERATURE (F) @ PVC:	-	
VLS VACUUM (in. WC):	-13	
VLS MOISTURE LEVEL (NA,1st, 2nd, 3rd Float):	N/A	If above 2nd/3rd float, see troubleshoot sheet
160 GALLON TANK WATER LEVEL (Gal):	10	Remove as necessary and per O&M Plan
LEAD GAC VACUUM (in. WC):	-9	
LAG GAC VACUUM (in. WC):	-6	
GAC INFLUENT PID (ppm):	6.45	
GAC BETWEEN PID (ppm):	>25.3	
GAC EFFLUENT PID (ppm):	0.00	

Sample name	loc	Time
FW-Influent-163	Influent	14:25
FW-Intwn-012	Between	14:30
FW-Effluent-387	Effluent	14:35

SVE WELLS - OPERATION MODE (UPPER/LOWER/MIXED): upper

	SVE-1		SVE-2		SVE-3		SVE-4		SVE-5	
ZONE	UPPER	LOWER	UPPER	LOWER	UPPER	LOWER	UPPER	LOWER	UPPER	LOWER
SCREEN INTERVAL (FT from WT)	12.92 - 7.92	19.92 - 14.92	12.96 - 7.96	19.96 - 14.96	12.95 - 7.95	19.45 - 14.95	13.0 - 8.0	20.0 - 15.0	12.95 - 7.95	19.95 - 14.95
MANIFOLD VACUUM (in WC)	-10		-10		-11		-11		-11	
FLOW (CFM)	78		39	~~39~~	45		75		67	
PID (ppm)	9.35		10.40		5.20		6.50		13.65	
TEMPERATURE (F)	82.6		86.2	~~86.2~~	83.4		83.7		83.7	~~83.7~~
WELL HEAD VACUUM (in WC)	-1.4754	-0.033	-7.59	-0.019	-4.462	+0.021	-1.572	+0.008	-3.254	+0.001
DTW (FT from WT)										

SP-12 - 13.74'

MW-10 - 14.75
MW-70 15.98
MW-72 14.99

SUB SLAB DEPRESSURIZATION MONTIORING POINTS

NOTES: Always maintain negative vacuum under slab

	SS-1	SS-2	SS-3	SS-4	SS-5
VACUUM (in. WC):	-0.050	-0.096	-0.036	-0.035	-0.025
CONDITION:	OK	OK	OK	OK	OK

JCH 9/12/14

FRANK WEAR SVE SYSTEM - SYSTEM ADJUSTMENT RECORD SHEET

DATE/TIME: 12/3/14

NOTES: Note any observations, adjustments, or system issues here.

AMBIENT TEMPERATURE (F):	18	
BLOWER INLET VACUUM (in. WC):	0	Keep under 50 in. WC -50
BLOWER INLET FLOW (CFM):	0	
BLOWER INLET TEMPERATURE (F):		
BLOWER DISCHARGE TEMPERATURE (F):		Keep under 160 F
BLOWER DISCHARGE TEMPERATURE (F) @ PVC:		Keep under 140 F, located at steel/PVC transition
VLS VACUUM (in. WC):	0	
VLS MOISTURE LEVEL (NA,1st, 2nd, 3rd Float):	1st	If above LSHH or LSH - alarm, see O&M Plan for troubleshooting
160 GALLON TANK WATER LEVEL (Gal):	10	Waste characterization/disposal per O&M Plan
LEAD GAC VACUUM (in. WC):	0	0?
LAG GAC VACUUM (in. WC):	0	-25
TOTAL INFLUENT PID (ppm):		TAG # Suma Canister Sample:
GAC BETWEEN PID (ppm):		Suma Canister Sample:
GAC EFFLUENT PID (ppm):		Suma Canister Sample:

- Overload alarm
  - alarm cleared via reset of relay in control panel
  - overload due to development of ice in hose between lead & lag GAC vessels
- Configuration changed to push soil vapor through GAC vessels
- Hose placed in GTS building to thaw overnight

SVE WELLS - OPERATION MODE (UPPER/LOWER/MIXED): upper

	SVE-1		SVE-2		SVE-3		SVE-4		SVE-5	
ZONE	UPPER	LOWER	UPPER	LOWER	UPPER	LOWER	UPPER	LOWER	UPPER	LOWER
SCREEN INTERVAL (FT from TOC)	12.92 - 7.92	19.92 - 14.92	12.96 - 7.96	19.96 - 14.96	12.95 - 7.95	19.45 - 14.95	13.0 - 8.0	20.0 - 15.0	12.95 - 7.95	19.95 - 14.95
MANIFOLD VACUUM (in WC)										
FLOW (CFM)										
PID (ppm)										
TEMPERATURE (F)										
WELL HEAD VACUUM (in WC)										
DTW (FT from TOC)										

SUB SLAB DEPRESSURIZATION MONITORING POINTS

	SS-1	SS-2	SS-3	SS-4	SS-5
VACUUM (in. WC):					
CONDITION:					

NOTES: Target sub-slab vacuum = 0.005 in. H20
Ambient Pressure: _____

TOC = top of casing
bgs = below ground surface

FRANK WEAR SVE SYSTEM - SYSTEM PERFORMANCE MONITORING RECORD SHEET

DATE/TIME: 12/4/14 08:30 ADJUSTMENT SHEET (Yes/No)? _____ TROUBLESHOOT SHEET (Yes/No)? _____

NOTES: Note any observations, adjustments, or system issues here.

AMBIENT TEMPERATUR (F):	30 (52 building)	
BLOWER INLET VACUUM (in. WC):	-14	Keep under 50 in. WC
BLOWER INLET FLOW (CFM):	1,95	pegged > 2 @ 12:00
BLOWER INLET TEMPERATURE (F):	60	Keep under 150 F
BLOWER DISCHARGE TEMPERATURE (F):	108	Keep under 130 F
BLOWER DISCHARGE TEMPERATURE (F) @ PVC:		
VLS VACUUM (in. WC):	-15	
VLS MOISTURE LEVEL (NA,1st, 2nd, 3rd Float):	1st	If above 2nd/3rd float, see troubleshoot sheet
160 GALLON TANK WATER LEVEL (Gal):	10	Remove as necessary and per O&M Plan
LEAD GAC VACUUM ~~(in. WC)~~:	2 psi	
LAG GAC VACUUM ~~(in. WC)~~:	3 psi	
GAC INFLUENT PID (ppm):	7.45	
GAC BETWEEN PID (ppm):	11.80	
GAC EFFLUENT PID (ppm):	1.15	

System startup @ 07:45

SVE-1: PID fluctuates from near 0 to over 7 ppm, mostly 2-3 ppm.

SVE2: PID fluctuates evenly from 6 to 13 ppm.

Sample name	Time
Ful-Influent-224	09:05
Ful-Btwn-129	09:10
~~Ful-Effluent-256~~	~~09:15~~
Ful-Effluent-356	09:20

SVE WELLS - OPERATION MODE (UPPER/LOWER/MIXED): upper

	SVE-1		SVE-2		SVE-3		SVE-4		SVE-5	
ZONE	UPPER	LOWER	UPPER	LOWER	UPPER	LOWER	UPPER	LOWER	UPPER	LOWER
SCREEN INTERVAL (FT from WT)	12.92 - 7.92	19.92 - 14.92	12.96 - 7.96	19.96 - 14.96	12.95 - 7.95	19.45 - 14.95	13.0 - 8.0	20.0 - 15.0	12.95 - 7.95	19.95 - 14.95
MANIFOLD VACUUM (in WC)	-12	⊤	-12	⊤	-14	⊤	-13.5	⊤	-13	⊤
FLOW (CFM)	110	|	44	|	17	|	90-105	|	95-115	|
PID (ppm)	0.3-7.75	|	6-13	|	3.45	|	13.95	|	31.05	|
TEMPERATURE (F)	62.8	|	59.7	|	62.9	|	62.7	|	64.5	|
WELL HEAD VACUUM (in WC)	-1.50	-0.136	-7.9	-0.030	-1.3 ~~-3.9~~	-0.27	-1.69	-0.207	-2.77	-0.100
DTW (FT from WT)	~~-1.50~~	~~0.130~~		15.1						18.55

SUB SLAB DEPRESSURIZATION MONTIORING POINTS

NOTES: Always maintain negative vacuum under slab

	SS-1	SS-2	SS-3	SS-4	SS-5
VACUUM (in. WC):	-0.032	NM	-0.021	-0.014	-0.009
CONDITION:	ok	glued	ok	ok	ok

→ occupants indicated they glued the linoleum down to cement floor at the request of an inspector, about a week ago.

SPW-12 - 16.09

MW-10 20.65

FRANK WEAR SVE SYSTEM - SYSTEM PERFORMANCE MONITORING RECORD SHEET

DATE/TIME: 12/29/14 ADJUSTMENT SHEET (Yes/No)? NO TROUBLESHOOT SHEET (Yes/No)? No

NOTES: Note any observations, adjustments, or system issues here.

AMBIENT TEMPERATUR (F):	34	
BLOWER INLET VACUUM (in. WC):	-16	Keep under 50 in. WC
BLOWER INLET FLOW (CFM):	~~1.9~~	
BLOWER INLET TEMPERATURE (F):	62	Keep under 150 F
BLOWER DISCHARGE TEMPERATURE (F):	116	Keep under 130 F
BLOWER DISCHARGE TEMPERATURE (F) @ PVC:	—	
VLS VACUUM (in. WC):	-16	
VLS MOISTURE LEVEL (NA,1st, 2nd, 3rd Float):	1st	If above 2nd/3rd float, see troubleshoot sheet
160 GALLON TANK WATER LEVEL (Gal):	< 10	Remove as necessary and per O&M Plan
LEAD GAC VACUUM (in. WC):	+ 1.5 psi	
LAG GAC VACUUM ~~(in. WC)~~:	+ 1.5 psi	
GAC INFLUENT PID (ppm):	1.90	
GAC BETWEEN PID (ppm):	0.30	
GAC EFFLUENT PID (ppm):	0.15	

Sample ID	Loc	Time
FW-Effluent-218	Effluent	14:30

SVE WELLS - OPERATION MODE (UPPER/LOWER/MIXED): Upper

	SVE-1		SVE-2		SVE-3		SVE-4		SVE-5	
ZONE	UPPER	LOWER	UPPER	LOWER	UPPER	LOWER	UPPER	LOWER	UPPER	LOWER
SCREEN INTERVAL (FT from WT)	12.92 - 7.92	19.92 - 14.92	12.96 - 7.96	19.96 - 14.96	12.95 - 7.95	19.45 - 14.95	13.0 - 8.0	20.0 - 15.0	12.95 - 7.95	19.95 - 14.95
MANIFOLD VACUUM (in WC)	-13	Ø	-13	Ø	-15	Ø	-15	Ø	-14	Ø
FLOW (CFM)	92	|	49	|	~~1.5 - 5.1~~	|	95 - 113	|	95 - 120	|
PID (ppm)	1.60	|	0.05	|	1.40	|	0.10	|	0.05	|
TEMPERATURE (F)	69.9	|	66	|	71.4	|	67.8	|	67.3	|
WELL HEAD VACUUM (in WC)										
DTW (FT from WT)										

SUB SLAB DEPRESSURIZATION MONTIORING POINTS

NOTES: Always maintain negative vacuum under slab

	SS-1	SS-2	SS-3	SS-4	SS-5
VACUUM (in. WC):					
CONDITION:					

FRANK WEAR SVE SYSTEM - SYSTEM PERFORMANCE MONITORING RECORD SHEET

DATE/TIME: 1/21/15 ADJUSTMENT SHEET (Yes/No)? Yes TROUBLESHOOT SHEET (Yes/No)? No

NOTES: Note any observations, adjustments, or system issues here.

AMBIENT TEMPERATUR (F):	30	64 in bldg
BLOWER INLET VACUUM (in. WC):	-18.5	Keep under 50 in. WC
BLOWER INLET FLOW (CFM):	Δ 1.9	
BLOWER INLET TEMPERATURE (F):	60	Keep under 150 F
BLOWER DISCHARGE TEMPERATURE (F):	112	Keep under 130 F
BLOWER DISCHARGE TEMPERATURE (F) @ PVC:	–	
VLS VACUUM (in. WC):	-16	
VLS MOISTURE LEVEL (NA,1st, 2nd, 3rd Float):	N/A	If above 2nd/3rd float, see troubleshoot sheet
160 GALLON TANK WATER LEVEL (Gal):	Ø	Remove as necessary and per O&M Plan
LEAD GAC VACUUM (in. WC):	+3.0 psi	
LAG GAC VACUUM (~~in. WC~~):	+3.5 psi	
GAC INFLUENT PID (ppm):	~~+3.0 psi~~ 1.70	
GAC BETWEEN PID (ppm):	0.10	
GAC EFFLUENT PID (ppm):	0.05	

Pre system adjustment

SVE WELLS - OPERATION MODE (UPPER/LOWER/MIXED): Upper

	SVE-1		SVE-2		SVE-3		SVE-4		SVE-5	
ZONE	UPPER	LOWER	UPPER	LOWER	UPPER	LOWER	UPPER	LOWER	UPPER	LOWER
SCREEN INTERVAL (FT from WT)	12.92 - 7.92	19.92 - 14.92	12.96 - 7.96	19.96 - 14.96	12.95 - 7.95	19.45 - 14.95	13.0 - 8.0	20.0 - 15.0	12.95 - 7.95	19.95 - 14.95
MANIFOLD VACUUM (in WC)	-13	Ø	-13	Ø	-15	Ø	-15	Ø	-14.5	Ø
FLOW (CFM)	90	↓	47	↓	2-6	↓	94	↓	120-122	↓
PID (ppm)	1.40	↓	2.55	↓	1.00	↓	2.05	↓	2.15	↓
TEMPERATURE (F)	66.6	↓	65.3	↓	68.8	↓	65.8	↓	66.2	↓
WELL HEAD VACUUM (in WC)	-9.1	-0.26	-1.7	-0.107	-0.38 -0.018	-0.10 -0.06	-1.88	-0.202	-3.4	0.089
DTW (FT from WT)										

4 bounces around

SUB SLAB DEPRESSURIZATION MONTIORING POINTS

NOTES: Always maintain negative vacuum under slab

	SS-1	SS-2	SS-3	SS-4	SS-5
VACUUM (in. WC):	-0.034	inaccessible	-0.020	-0.010	-0.009
CONDITION:	okay		okay	okay	okay

FRANK WEAR SVE SYSTEM - SYSTEM PERFORMANCE MONITORING RECORD SHEET

DATE/TIME: 1/21/15 14:00 ADJUSTMENT SHEET (Yes/No)? _____ TROUBLESHOOT SHEET (Yes/No)? _____

NOTES: Note any observations, adjustments, or system issues here.

AMBIENT TEMPERATUR (F):	32	64 building
BLOWER INLET VACUUM (in. WC):	-40	Keep under 50 in. WC
BLOWER INLET FLOW (CFM):	Δ1.35	
BLOWER INLET TEMPERATURE (F):	60	Keep under 150 F
BLOWER DISCHARGE TEMPERATURE (F):	126	Keep under 130 F
BLOWER DISCHARGE TEMPERATURE (F) @ PVC:	-	
VLS VACUUM (in. WC):	-38	
VLS MOISTURE LEVEL (NA,1st, 2nd, 3rd Float):	NA	If above 2nd/3rd float, see troubleshoot sheet
160 GALLON TANK WATER LEVEL (Gal):	Ø	Remove as necessary and per O&M Plan
LEAD GAC VACUUM (in. WC):	+3 psi	
LAG GAC VACUUM (in. WC):	+3.5 psi	
GAC INFLUENT PID (ppm):	Up too high	@ 14:50
GAC BETWEEN PID (ppm):	0.40	
GAC EFFLUENT PID (ppm):	0.15	

Change from upper to Lower

SVE WELLS - OPERATION MODE (UPPER/LOWER/MIXED): Lower

	SVE-1		SVE-2		SVE-3		SVE-4		SVE-5	
ZONE	UPPER	LOWER	UPPER	LOWER	UPPER	LOWER	UPPER	LOWER	UPPER	LOWER
SCREEN INTERVAL (FT from WT)	12.92 - 7.92	19.92 - 14.92	12.96 - 7.96	19.96 - 14.96	12.95 - 7.95	19.45 - 14.95	13.0 - 8.0	20.0 - 15.0	12.95 - 7.95	19.95 - 14.95
MANIFOLD VACUUM (in WC)	Ø	-36.5	Ø	-37	Ø	-38	Ø	-36	Ø	-37
FLOW (CFM)										
PID (ppm)										
TEMPERATURE (F)										
WELL HEAD VACUUM (in WC)	-0.079	-OL	-0.047	-OL	-0.24	-OL	-0.180	-OL	-0.107	-12.3
DTW (FT from WT)										

SUB SLAB DEPRESSURIZATION MONTIORING POINTS

	SS-1	SS-2	SS-3	SS-4	SS-5
VACUUM (in. WC):					
CONDITION:					

NOTES: Always maintain negative vacuum under slab

FRANK WEAR SVE SYSTEM - SYSTEM ADJUSTMENT RECORD SHEET

DATE/TIME: 1/22/15 14:15

NOTES: Note any observations, adjustments, or system issues here.

Transfered 35 gallons of water from VLS to poly tank

AMBIENT TEMPERATURE (F):	36	
BLOWER INLET VACUUM (in. WC):	-43	Keep under 50 in. WC
BLOWER INLET FLOW (CFM):	≈1.20	
BLOWER INLET TEMPERATURE (F):	64	
BLOWER DISCHARGE TEMPERATURE (F):	140	Keep under 160 F
BLOWER DISCHARGE TEMPERATURE (F) @ PVC:	-	Keep under 140 F, located at steel/PVC transition
VLS VACUUM (in. WC):	-91	
VLS MOISTURE LEVEL (NA,1st, 2nd, 3rd Float):	6" below 2nd	If above LSHH or LSH - alarm, see O&M Plan for troubleshooting
160 GALLON TANK WATER LEVEL (Gal):	Ø	Waste characterization/disposal per O&M Plan
LEAD GAC VACUUM (~~in WC~~):	+ 3.5 psi	
LAG GAC VACUUM (~~in WC~~):	+3.5	
TOTAL INFLUENT PID (ppm):	3.40	
GAC BETWEEN PID (ppm):	0.35	
GAC EFFLUENT PID (ppm):	0.15	

	TAG #	
Suma Canister Sample:	Fwl-Effluent-149	14:30
Suma Canister Sample:	Fwl-Btwn-006	14:35
Suma Canister Sample:	Fwl-Influent-158	14:45

← reduced Φ @ VLS to -26" H_2O by opening bleeder valve to enable sampling

SVE WELLS - OPERATION MODE (UPPER/LOWER/MIXED): Lower

	SVE-1		SVE-2		SVE-3		SVE-4		SVE-5	
ZONE	UPPER	LOWER	UPPER	LOWER	UPPER	LOWER	UPPER	LOWER	UPPER	LOWER
SCREEN INTERVAL (FT from TOC)	12.92 - 7.92	19.92 - 14.92	12.96 - 7.96	19.96 - 14.96	12.95 - 7.95	19.45 - 14.95	13.0 - 8.0	20.0 - 15.0	12.95 - 7.95	19.95 - 14.95
MANIFOLD VACUUM (in WC)	|	-39	|	-40	|	-40	|	-39	|	-40
FLOW (CFM)	|	- - - -	|	3.8	|	15	|	- - - -	|	- - - -
PID (ppm)	|	1.30	|	15.00	|	2.25	|	0.90	|	5.95
TEMPERATURE (F)	|	68 - 72	|	73.9	|	74.8	|	72.8	|	73.8
WELL HEAD VACUUM (in WC)	-0.071	-OL	-0.058	-OL	-0.344	-OL	-0.173	-OL	-0.110	-11.78
DTW (FT from TOC)										

SUB SLAB DEPRESSURIZATION MONITORING POINTS

	SS-1	SS-2	SS-3	SS-4	SS-5
VACUUM (in. WC):	-0.017	increased	-0.015	-0.019	-0.011
CONDITION:	okay		okay	okay	okay

NOTES: Target sub-slab vacuum = 0.005 in. H20
Ambient Pressure: _____

TOC = top of casing
bgs = below ground surface

FRANK WEAR SVE SYSTEM - SYSTEM ADJUSTMENT RECORD SHEET

DATE/TIME: 1/26/15 09:00

NOTES: Note any observations, adjustments, or system issues here.

- 70 gallons in poly tank
- Transfer -35 Pre-VLS
- Switch SVE 1 & 2 To upper zone To reduce water intake
- partially opened 1 & 2 upper

AMBIENT TEMPERATURE (F):		70 building
BLOWER INLET VACUUM (in. WC):	-26.5	Keep under 50 in. WC
BLOWER INLET FLOW (CFM):	Δ1.70	
BLOWER INLET TEMPERATURE (F):	51	
BLOWER DISCHARGE TEMPERATURE (F):	118	Keep under 160 F
BLOWER DISCHARGE TEMPERATURE (F) @ PVC:	~	Keep under 140 F, located at steel/PVC transition
VLS VACUUM (in. WC):	-29.5	
VLS MOISTURE LEVEL (NA,1st, 2nd, 3rd Float):	NA	If above LSHH or LSH - alarm, see O&M Plan for troubleshooting
160 GALLON TANK WATER LEVEL (Gal):	110	Waste characterization/disposal per O&M Plan
LEAD GAC VACUUM (~~in. WC~~):	+2.5 psi	
LAG GAC VACUUM (~~in. WC~~):	+3.0 psi	
TOTAL INFLUENT PID (ppm):		Suma Canister Sample:
GAC BETWEEN PID (ppm):		Suma Canister Sample:
GAC EFFLUENT PID (ppm):		Suma Canister Sample:

TAG #

SVE WELLS - OPERATION MODE (UPPER/LOWER/MIXED): Mixed

	SVE-1		SVE-2		SVE-3		SVE-4		SVE-5	
ZONE	UPPER	LOWER	UPPER	LOWER	UPPER	LOWER	UPPER	LOWER	UPPER	LOWER
SCREEN INTERVAL (FT from TOC)	12.92 - 7.92	19.92 - 14.92	12.96 - 7.96	19.96 - 14.96	12.95 - 7.95	19.45 - 14.95	13.0 - 8.0	20.0 - 15.0	12.95 - 7.95	19.95 - 14.95
MANIFOLD VACUUM (in WC)	-10	Ø	-10	Ø	Ø	-23	Ø	-21.5	Ø	-23
FLOW (CFM)										
PID (ppm)										
TEMPERATURE (F)										
WELL HEAD VACUUM (in WC)										
DTW (FT from TOC)										

SUB SLAB DEPRESSURIZATION MONITORING POINTS

	SS-1	SS-2	SS-3	SS-4	SS-5
VACUUM (in. WC):					
CONDITION:					

NOTES: Target sub-slab vacuum = 0.005 in. H20
Ambient Pressure: _____

TOC = top of casing
bgs = below ground surface

FRANK WEAR SVE SYSTEM - SYSTEM PERFORMANCE MONITORING RECORD SHEET

DATE/TIME: 3/16/15 ADJUSTMENT SHEET (Yes/No)? _____ TROUBLESHOOT SHEET (Yes/No)? _____

AMBIENT TEMPERATUR (F):		80 (building)
BLOWER INLET VACUUM (in. WC):	-27.5	Keep under 50 in. WC
BLOWER INLET FLOW (CFM):	81.6	
BLOWER INLET TEMPERATURE (F):	64	Keep under 150 F
BLOWER DISCHARGE TEMPERATURE (F):	126	Keep under 130 F
BLOWER DISCHARGE TEMPERATURE (F) @ PVC:	–	
VLS VACUUM (in. WC):	-25.5	
VLS MOISTURE LEVEL (NA,1st, 2nd, 3rd Float):	NA	If above 2nd/3rd float, see troubleshoot sheet
160 GALLON TANK WATER LEVEL (Gal):	90	Remove as necessary and per O&M Plan
LEAD GAC VACUUM ~~(in. WC)~~:	+ 2.5 psi	
LAG GAC VACUUM ~~(in. WC)~~:	+ 2.5 psi	
GAC INFLUENT PID (ppm):	1.75	← Tedlar bag
GAC BETWEEN PID (ppm):	140	
GAC EFFLUENT PID (ppm):	0.35	

NOTES: Note any observations, adjustments, or system issues here.

SVE3-Lower: highly variable flow 8-120 cfm mostly around 20 cfm.

Time	name
14:05	FW-SVE1L-207
14:00	FW-SVE3L-011
13:55	FW-SVE4L-260
12:20	FW-Effluent-292
12:25	FW-Btwn-324
12:30	FW-Influent-017
13:45	FW-SVE2L-331
13:50	FW-SVE5L-028

SVE WELLS - OPERATION MODE (UPPER/LOWER/MIXED): Mixed

	SVE-1		SVE-2		SVE-3		SVE-4		SVE-5	
ZONE	UPPER	LOWER	UPPER	LOWER	UPPER	LOWER	UPPER	LOWER	UPPER	LOWER
SCREEN INTERVAL (FT from WT)	12.92 - 7.92	19.92 - 14.92	12.96 - 7.96	19.96 - 14.96	12.95 - 7.95	19.45 - 14.95	13.0 - 8.0	20.0 - 15.0	12.95 - 7.95	19.95 - 14.95
MANIFOLD VACUUM (in WC)	-11	⊖	-11	⊖	⊖	-24	⊖	-23	⊖	-24
FLOW (CFM)	33		74			8-120(20)		55		95
PID (ppm)										
TEMPERATURE (F)	67.8		66.2			67.0		70.1		69.2
WELL HEAD VACUUM (in WC)										
DTW (FT from WT)										
RH %	29.7		34.2			30.0		27.2		29.2

too much

SUB SLAB DEPRESSURIZATION MONTIORING POINTS

	SS-1	SS-2	SS-3	SS-4	SS-5
VACUUM (in. WC):	0.017	0.042	0.015	0.016	0.010
CONDITION:	okay	okay	okay	okay	okay

NOTES: Always maintain negative vacuum under slab

Before GAC / After blower

%RH 12.5

Temp 120

FRANK WEAR SVE SYSTEM - SYSTEM ADJUSTMENT RECORD SHEET

DATE/TIME: 5/6/15 13:00

NOTES: Note any observations, adjustments, or system issues here.

System Push Through GAC
SVE-01/SVE-02 UP valve @ 50% open
SVE-03 Lower drop pipe appears skewed.

AMBIENT TEMPERATURE (F):	66°	
BLOWER INLET VACUUM (in. WC):	-26	Keep under 50 in. WC
BLOWER INLET FLOW (CFM):	250 acfm @ 79.9°, 29.98 in Hg, 5.8" ID.	
BLOWER INLET TEMPERATURE (F):	72°	
BLOWER DISCHARGE TEMPERATURE (F):	133°	Keep under 160 F
BLOWER DISCHARGE TEMPERATURE (F) @ PVC:	126°	Keep under 140 F, located at steel/PVC transition
VLS VACUUM (in. WC):	-24	
VLS MOISTURE LEVEL (NA,1st, 2nd, 3rd Float):	NA	If above LSHH or LSH - alarm, see O&M Plan for troubleshooting
160 GALLON TANK WATER LEVEL (Gal):	70	Waste characterization/disposal per O&M Plan
LEAD GAC VACUUM (in. WC):	2.5 psi +	
LAG GAC VACUUM (in. WC):	2.5-3 psi +	TAG #
TOTAL INFLUENT PID (ppm):	—	Suma Canister Sample:
GAC BETWEEN PID (ppm):	—	Suma Canister Sample:
GAC EFFLUENT PID (ppm):	—	Suma Canister Sample:

2.5 psi

2.5 to 30

SVE WELLS - OPERATION MODE (UPPER/LOWER/MIXED): _____

	SVE-1		SVE-2		SVE-3		SVE-4		SVE-5	
ZONE	UPPER	LOWER	UPPER	LOWER	UPPER	LOWER	UPPER	LOWER	UPPER	LOWER
SCREEN INTERVAL (FT from TOC)	12.92 - 7.92	19.92 - 14.92	12.96 - 7.96	19.96 - 14.96	12.95 - 7.95	19.45 - 14.95	13.0 - 8.0	20.0 - 15.0	12.95 - 7.95	19.95 - 14.95
MANIFOLD VACUUM (in WC)	-9.5	-0.002	-8.25	-0.073	-0.25	-23	-0.15	-21	-0.095	-22
FLOW (CFM)	71	0	35.5	0.01	0.75	13.5	0.95	62	0.60	85.
PID (ppm)	—	—	—	—	—	—	—	—	—	—
TEMPERATURE (F)	81°	80.1°	74.6°	73.7°	79.1°	79.9°	78	77.1	73.7	76.1
WELL HEAD VACUUM (in WC)	-1.38	-0.007	-6.41	-0.027	-0.245	OL 716	-0.15	-17.11	-0.139	-6.82
DTW (FT from TOC)	—	—	—	—	—	—	—	—	—	—

SUB SLAB DEPRESSURIZATION MONITORING POINTS

	SS-1	SS-2	SS-3	SS-4	SS-5
VACUUM (in. WC):	-0.029	-0.041	-0.017	—	-0.022
CONDITION:					

NOTES: Target sub-slab vacuum = 0.005 in. H20
Ambient Pressure: _____

TOC = top of casing
bgs = below ground surface

FRANK WEAR SVE SYSTEM - SYSTEM ADJUSTMENT RECORD SHEET

DATE/TIME: 5/6/15 16:00

NOTES: Note any observations, adjustments, or system issues here.
SVE-01 & SVE-02 valve @ 50% open.
SYSTEM CHANGED TO PULL THROUGH GAC UNITS.

AMBIENT TEMPERATURE (F):	63°	29.97 in. Hg.
BLOWER INLET VACUUM (in. WC):	-34	Keep under 50 in. WC
BLOWER INLET FLOW (CFM):	215	
BLOWER INLET TEMPERATURE (F):	82	
BLOWER DISCHARGE TEMPERATURE (F):	124	Keep under 160 F
BLOWER DISCHARGE TEMPERATURE (F) @ PVC:	120	Keep under 140 F, located at steel/PVC transition
VLS VACUUM (in. WC):	23.5	
VLS MOISTURE LEVEL (NA,1st, 2nd, 3rd Float):	NA	If above LSHH or LSH - alarm, see O&M Plan for troubleshooting
160 GALLON TANK WATER LEVEL (Gal):	70	Waste characterization/disposal per O&M Plan
LEAD GAC VACUUM (in. WC):	25	
LAG GAC VACUUM (in. WC):	28.5	
TOTAL INFLUENT PID (ppm):	—	Suma Canister Sample: TAG #
GAC BETWEEN PID (ppm):	—	Suma Canister Sample:
GAC EFFLUENT PID (ppm):	—	Suma Canister Sample:

SVE WELLS - OPERATION MODE (UPPER/LOWER/MIXED): _____

	SVE-1		SVE-2		SVE-3		SVE-4		SVE-5	
ZONE	UPPER	LOWER	UPPER	LOWER	UPPER	LOWER	UPPER	LOWER	UPPER	LOWER
SCREEN INTERVAL (FT from TOC)	12.92 - 7.92	19.92 - 14.92	12.96 - 7.96	19.96 - 14.96	12.95 - 7.95	19.45 - 14.95	13.0 - 8.0	20.0 - 15.0	12.95 - 7.95	19.95 - 14.95
MANIFOLD VACUUM (in WC)	-9.415	-0.008	-8.09	-0.015	-0.25	-22	-0.15	-20	-0.095	-20.5
FLOW (CFM)	63.30	0.01	29.9	0.01	0.62	15	0.70	45	0.55	82
PID (ppm)	—	—	—	—	—	—	—	—	—	—
TEMPERATURE (F)	76.6	73.6	73.4	72.9	73.4	71.4	72.7	72.7	72.1	72.8
WELL HEAD VACUUM (in WC)	-1.39	-0.08	-6.27	+0.016	-0.24	-20	-0.15	-16.79	-0.15	-6.75
DTW (FT from TOC)										

SUB SLAB DEPRESSURIZATION MONITORING POINTS

	SS-1	SS-2	SS-3	SS-4	SS-5
VACUUM (in. WC):	-0.018	-0.047	-0.019	—	-0.034
CONDITION:					

NOTES: Target sub-slab vacuum = 0.005 in. H20
Ambient Pressure: _____

TOC = top of casing
bgs = below ground surface

FRANK WEAR SVE SYSTEM - SYSTEM ADJUSTMENT RECORD SHEET

DATE/TIME: 5/6/15 1731

NOTES: Note any observations, adjustments, or system issues here.
SVE-01 & SVE-02 closed
SVE 3,4,5 Lower Zones 100% open

AMBIENT TEMPERATURE (F):	63°	
BLOWER INLET VACUUM (in. WC):	47.5	Keep under 50 in. WC
BLOWER INLET FLOW (CFM):	817	
BLOWER INLET TEMPERATURE (F):	76	
BLOWER DISCHARGE TEMPERATURE (F):	144	Keep under 160 F
BLOWER DISCHARGE TEMPERATURE (F) @ PVC:	131°	Keep under 140 F, located at steel/PVC transition
VLS VACUUM (in. WC):	39	
VLS MOISTURE LEVEL (NA,1st, 2nd, 3rd Float):	NA	If above LSHH or LSH - alarm, see O&M Plan for troubleshooting
160 GALLON TANK WATER LEVEL (Gal):	70	Waste characterization/disposal per O&M Plan
LEAD GAC VACUUM (in. WC):	41.5	
LAG GAC VACUUM (in. WC):	44	
TOTAL INFLUENT PID (ppm):	—	TAG # Suma Canister Sample:
GAC BETWEEN PID (ppm):	—	Suma Canister Sample:
GAC EFFLUENT PID (ppm):		Suma Canister Sample:

SVE WELLS - OPERATION MODE (UPPER/LOWER/MIXED): _____

	SVE-1		SVE-2		SVE-3		SVE-4		SVE-5	
ZONE	UPPER	LOWER	UPPER	LOWER	UPPER	LOWER	UPPER	LOWER	UPPER	LOWER
SCREEN INTERVAL (FT from TOC)	12.92 - 7.92	19.92 - 14.92	12.96 - 7.96	19.96 - 14.96	12.95 - 7.95	19.45 - 14.95	13.0 - 8.0	20.0 - 15.0	12.95 - 7.95	19.95 - 14.95
MANIFOLD VACUUM (in WC)	-0.024	+0.013	-0.010	-0.004	-0.378	-40	-0.188	-38	-0.112	-39
FLOW (CFM)	0	0	0.01	0.02	0.90	25	0.90	72	0.80	116
PID (ppm)	—	—	—	—	—	—	—	—	—	—
TEMPERATURE (F)	82.3	82.3	72	72.2	77	74.9	73.4	74.1	72.9	74.1
WELL HEAD VACUUM (in WC)	-0.032	-0.008	-0.038	-0.007	-0.383	-36	-0.202	-29	-0.124	-10.73
DTW (FT from TOC)										

SUB SLAB DEPRESSURIZATION MONITORING POINTS

	SS-1	SS-2	SS-3	SS-4	SS-5
VACUUM (in. WC):	-0.025	-0.055	-0.022	—	-0.021
CONDITION:					

NOTES: Target sub-slab vacuum = 0.005 in. H20
Ambient Pressure: _____

TOC = top of casing
bgs = below ground surface

FRANK WEAR SVE SYSTEM - SYSTEM ADJUSTMENT RECORD SHEET

DATE/TIME: 5/7/15 10:00

NOTES: Note any observations, adjustments, or system issues here.

ONLY SVE-3, 4, 5 100 % open.

AMBIENT TEMPERATURE (F):	59°	
BLOWER INLET VACUUM (in. WC):	48	Keep under 50 in. WC
BLOWER INLET FLOW (CFM):	~219	
BLOWER INLET TEMPERATURE (F):	80	
BLOWER DISCHARGE TEMPERATURE (F):	146	Keep under 160 F
BLOWER DISCHARGE TEMPERATURE (F) @ PVC:	139	Keep under 140 F, located at steel/PVC transition
VLS VACUUM (in. WC):	40	
VLS MOISTURE LEVEL (NA,1st, 2nd, 3rd Float):	NA	If above LSHH or LSH - alarm, see O&M Plan for troubleshooting
160 GALLON TANK WATER LEVEL (Gal):	70	Waste characterization/disposal per O&M Plan
LEAD GAC VACUUM (in. WC):	42	
LAG GAC VACUUM (in. WC):	45	
TOTAL INFLUENT PID (ppm):	—	TAG # / Suma Canister Sample:
GAC BETWEEN PID (ppm):	—	Suma Canister Sample:
GAC EFFLUENT PID (ppm):	—	Suma Canister Sample:

SVE WELLS - OPERATION MODE (UPPER/LOWER/MIXED): _____

	SVE-1		SVE-2		SVE-3		SVE-4		SVE-5	
ZONE	UPPER	LOWER	UPPER	LOWER	UPPER	LOWER	UPPER	LOWER	UPPER	LOWER
SCREEN INTERVAL (FT from TOC)	12.92 - 7.92	19.92 - 14.92	12.96 - 7.96	19.96 - 14.96	12.95 - 7.95	19.45 - 14.95	13.0 - 8.0	20.0 - 15.0	12.95 - 7.95	19.95 - 14.95
MANIFOLD VACUUM (in WC)	-0.037	0	-0.085	-0.058	-0.395	-40	-0.228	-38	-0.157	-39
FLOW (CFM)	0.51	0.05	0.02	0.02	14	23	0.93	81.2	0.27	114
PID (ppm)	—	—	—	—	—	—	—	—	—	—
TEMPERATURE (F)	87	87	76	76.6	84.3	77.1	77.1	76.8	76.0	76.6
WELL HEAD VACUUM (in WC)	-0.029	-0.005	-0.029	+0.008	-0.380	-36.5	-0.19	-29	-0.114	-10.61
DTW (FT from TOC)										

SUB SLAB DEPRESSURIZATION MONITORING POINTS

	SS-1	SS-2	SS-3	SS-4	SS-5
VACUUM (in. WC):					
CONDITION:					

COULD NOT ACCESS BLDG

NOTES: Target sub-slab vacuum = 0.005 in. H20

Ambient Pressure: _____

TOC = top of casing

bgs = below ground surface

FRANK WEAR SVE SYSTEM - SYSTEM ADJUSTMENT RECORD SHEET

DATE/TIME: 5/7/15 11:00

NOTES: Note any observations, adjustments, or system issues here.

SVE-04 & 5 closed 50%
SVE-3 100% open.
@ 11:45 Blower discharge temp. @ 175°
2 Removed @ 11:45 to be 134

AMBIENT TEMPERATURE (F):	63	
BLOWER INLET VACUUM (in. WC):	69	Keep under 50 in. WC
BLOWER INLET FLOW (CFM):	160	
BLOWER INLET TEMPERATURE (F):	77.7	
BLOWER DISCHARGE TEMPERATURE (F):	166	Keep under 160 F
BLOWER DISCHARGE TEMPERATURE (F) @ PVC:	150	Keep under 140 F, located at steel/PVC transition
VLS VACUUM (in. WC):	62.5	
VLS MOISTURE LEVEL (NA,1st, 2nd, 3rd Float):	NA	If above LSHH or LSH - alarm, see O&M Plan for troubleshooting
160 GALLON TANK WATER LEVEL (Gal):	70	Waste characterization/disposal per O&M Plan
LEAD GAC VACUUM (in. WC):	760	
LAG GAC VACUUM (in. WC):	>60	
TOTAL INFLUENT PID (ppm):	—	TAG #
GAC BETWEEN PID (ppm):	—	Suma Canister Sample:
GAC EFFLUENT PID (ppm):	—	Suma Canister Sample:
		Suma Canister Sample:

SVE WELLS - OPERATION MODE (UPPER/LOWER/MIXED): _____

	SVE-1		SVE-2		SVE-3		SVE-4		SVE-5	
ZONE	UPPER	LOWER	UPPER	LOWER	UPPER	LOWER	UPPER	LOWER	UPPER	LOWER
SCREEN INTERVAL (FT from TOC)	12.92 - 7.92	19.92 - 14.92	12.96 - 7.96	19.96 - 14.96	12.95 - 7.95	19.45 - 14.95	13.0 - 8.0	20.0 - 15.0	12.95 - 7.95	19.95 - 14.95
MANIFOLD VACUUM (in WC)	-0.015	NM	-0.027	-0.005	-0.453	>60	-0.12	-18	-0.08	-20
FLOW (CFM)	NM	—			1.2	OL	0.27	44	0.57	76
PID (ppm)	—	—	—	—	—	—	—	—	—	—
TEMPERATURE (F)	—	—			86.6	81.7	77.9	81.2	78.7	80.4
WELL HEAD VACUUM (in WC)	-0.016	-0.006	-0.017	+0.001	-0.45	-54	-0.091	-15.05	-0.082	-5.918
DTW (FT from TOC)	—	—	—	—	—	—	—	—	—	—

SUB SLAB DEPRESSURIZATION MONITORING POINTS

	SS-1	SS-2	SS-3	SS-4	SS-5
VACUUM (in. WC):					
CONDITION:					

Could not access bldg.

NOTES: Target sub-slab vacuum = 0.005 in. H20
Ambient Pressure: _____

TOC = top of casing
bgs = below ground surface

FRANK WEAR SVE SYSTEM - SYSTEM ADJUSTMENT RECORD SHEET

DATE/TIME: June 24, 2015 10:30

NOTES: Note any observations, adjustments, or system issues here.

Switched system to all upper zone
Valves 100% open all wells @ 10:00

AMBIENT TEMPERATURE (F):	82	
BLOWER INLET VACUUM (in. WC):	25	Keep under 50 in. WC
BLOWER INLET FLOW (CFM):	265	
BLOWER INLET TEMPERATURE (F):	87.9	
BLOWER DISCHARGE TEMPERATURE (F):	130	Keep under 160 F
BLOWER DISCHARGE TEMPERATURE (F) @ PVC:	NM	Keep under 140 F, located at steel/PVC transition
VLS VACUUM (in. WC):	14	
VLS MOISTURE LEVEL (NA,1st, 2nd, 3rd Float):	NA	If above LSHH or LSH - alarm, see O&M Plan for troubleshooting
160 GALLON TANK WATER LEVEL (Gal):	30	Waste characterization/disposal per O&M Plan
LEAD GAC VACUUM (in. WC):	16	
LAG GAC VACUUM (in. WC):	20	
TOTAL INFLUENT PID (ppm):	NM	Suma Canister Sample: TAG #
GAC BETWEEN PID (ppm):	NM	Suma Canister Sample:
GAC EFFLUENT PID (ppm):	NM	Suma Canister Sample:

SVE WELLS - OPERATION MODE (UPPER/LOWER/MIXED): _____

	SVE-1		SVE-2		SVE-3		SVE-4		SVE-5	
ZONE	UPPER	LOWER	UPPER	LOWER	UPPER	LOWER	UPPER	LOWER	UPPER	LOWER
SCREEN INTERVAL (FT from TOC)	12.92 - 7.92	19.92 - 14.92	12.96 - 7.96	19.96 - 14.96	12.95 - 7.95	19.45 - 14.95	13.0 - 8.0	20.0 - 15.0	12.95 - 7.95	19.95 - 14.95
MANIFOLD VACUUM (in WC)	~~-11.7~~ ~~0.015~~	+0.015	-11.2	-0.038	~~-11.4~~ ~~-0.26~~	~~-0.26~~ ~~-11.4~~	~~-11.2~~ ~~+0.055~~	+0.055	-11.7	-0.098
FLOW (CFM)	76	0.01	39	0	21	0.02	76	0.35	67	0.9
PID (ppm)	—	—	—	—	—	—	—	—	—	—
TEMPERATURE (F)	—	—	—	—	—	—	—	—	—	—
WELL HEAD VACUUM (in WC)	-1.53	+0.02	+0.02	-8.4	-1.5	-0.28	-1.61	-0.16	-2.81	-0.08
DTW (FT from TOC)	—	—	—	—	—	—	—	—	—	—

SUB SLAB DEPRESSURIZATION MONITORING POINTS

	SS-1	SS-2	SS-3	SS-4	SS-5
VACUUM (in. WC):	-0.028	-0.054	-0.029	-0.028	X
CONDITION:	ok	ok	ok	ok	abandoned
	-0.045	-0.036	-0.083	-0.029	

PRE-Switch

NOTES: Target sub-slab vacuum = 0.005 in. H20
Ambient Pressure: _____

TOC = top of casing
bgs = below ground surface

FRANK WEAR SVE SYSTEM - SYSTEM ADJUSTMENT RECORD SHEET

DATE/TIME: 6-25-15 10:00

NOTES: Note any observations, adjustments, or system issues here.

AMBIENT TEMPERATURE (F):	80	
BLOWER INLET VACUUM (in. WC):	24	Keep under 50 in. WC
BLOWER INLET FLOW (CFM):	275	
BLOWER INLET TEMPERATURE (F):	80	
BLOWER DISCHARGE TEMPERATURE (F):	130	Keep under 160 F
BLOWER DISCHARGE TEMPERATURE (F) @ PVC:	—	Keep under 140 F, located at steel/PVC transition
VLS VACUUM (in. WC):	13	
VLS MOISTURE LEVEL (NA,1st, 2nd, 3rd Float):	NA	If above LSHH or LSH - alarm, see O&M Plan for troubleshooting
160 GALLON TANK WATER LEVEL (Gal):	50	Waste characterization/disposal per O&M Plan
LEAD GAC VACUUM (in. WC):	15.8	
LAG GAC VACUUM (in. WC):	19	TAG #
TOTAL INFLUENT PID (ppm):	—	Suma Canister Sample:
GAC BETWEEN PID (ppm):	—	Suma Canister Sample:
GAC EFFLUENT PID (ppm):	—	Suma Canister Sample:

SVE WELLS - OPERATION MODE (UPPER/LOWER/MIXED): UPPER

	SVE-1		SVE-2		SVE-3		SVE-4		SVE-5	
ZONE	UPPER	LOWER	UPPER	LOWER	UPPER	LOWER	UPPER	LOWER	UPPER	LOWER
SCREEN INTERVAL (FT from TOC)	12.92 - 7.92	19.92 - 14.92	12.96 - 7.96	19.96 - 14.96	12.95 - 7.95	19.45 - 14.95	13.0 - 8.0	20.0 - 15.0	12.95 - 7.95	19.95 - 14.95
MANIFOLD VACUUM (in WC)	-10.4	+0.011	+0.02	-10.7	-10.86	-0.43	-10.6	-0.033	-10.7	-0.08
FLOW (CFM)	73	0.04	341	0.04	31	0.37	76	0.62	66	0.34
PID (ppm)	—	—	—	—	—	—	—	—	—	—
TEMPERATURE (F)	—	—	—	—	—	—	—	—	—	—
WELL HEAD VACUUM (in WC)	-1.5	+0.006	-8.13	+0.006	-2.4	-0.44	-2.74	-0.097	-1.57	-0.18
DTW (FT from TOC)										

SUB SLAB DEPRESSURIZATION MONITORING POINTS

	SS-1	SS-2	SS-3	SS-4	SS-5
VACUUM (in. WC):					
CONDITION:					

NOTES: Target sub-slab vacuum = 0.005 in. H20

Ambient Pressure: _____

TOC = top of casing

bgs = below ground surface

FRANK WEAR SVE SYSTEM - SYSTEM PERFORMANCE MONITORING RECORD SHEET

DATE/TIME: 9/25/15 ADJUSTMENT SHEET (Yes/No)? No TROUBLESHOOT SHEET (Yes/No)? No

NOTES: Note any observations, adjustments, or system issues here.

AMBIENT TEMPERATUR (F):	88 building	
BLOWER INLET VACUUM (in. WC):	-24	Keep under 50 in. WC
BLOWER INLET FLOW (CFM):		
BLOWER INLET TEMPERATURE (F):	76	Keep under 150 F
BLOWER DISCHARGE TEMPERATURE (F):	122.5	Keep under 130 F
BLOWER DISCHARGE TEMPERATURE (F) @ PVC:	—	
VLS VACUUM (in. WC):	-12	
VLS MOISTURE LEVEL (NA,1st, 2nd, 3rd Float):	NA	If above 2nd/3rd float, see troubleshoot sheet
160 GALLON TANK WATER LEVEL (Gal):	~10	Remove as necessary and per O&M Plan
LEAD GAC VACUUM (in. WC):	broken gauge, -15 w/ flow meter	
LAG GAC VACUUM (in. WC):	18	
GAC INFLUENT PID (ppm):	Not Measured	
GAC BETWEEN PID (ppm):	NM	
GAC EFFLUENT PID (ppm):	NM	

SVE WELLS - OPERATION MODE (UPPER/LOWER/MIXED):

	SVE-1		SVE-2		SVE-3		SVE-4		SVE-5	
ZONE	UPPER	LOWER	UPPER	LOWER	UPPER	LOWER	UPPER	LOWER	UPPER	LOWER
SCREEN INTERVAL (FT from WT)	12.92 - 7.92	19.92 - 14.92	12.96 - 7.96	19.96 - 14.96	12.95 - 7.95	19.45 - 14.95	13.0 - 8.0	20.0 - 15.0	12.95 - 7.95	19.95 - 14.95
MANIFOLD VACUUM (in WC)	-10		-10.5		-11.5		-11.5		-11	
FLOW (CFM)	[illegible]530		360		162		620		57.8	
PID (ppm)	NM		NM		NM		NM		NM	
TEMPERATURE (F)	[illegible]84.8		86.8		87.9		83.4		83.5	
WELL HEAD VACUUM (in WC)	—		—		—		—		—	
DTW (FT from WT)	—		—		—		—		—	

SUB SLAB DEPRESSURIZATION MONTIORING POINTS

	SS-1	SS-2	SS-3	SS-4	SS-5
VACUUM (in. WC):	-0.039	-0.080	-0.028	X	-0.025
CONDITION:	OK	ok	ok	abandoned	ok

a little crooked installation on the stainless steel cover @ this location.

NOTES: Always maintain negative vacuum under slab

Appendix B

SVE Laboratory Analytical Reports
and Chain-of-Custody Documentation

Mobile Geochemistry Inc.

10 December 2014

Mr. Josh Hopp
Kennedy/Jenks Consultants - Washington
32001 32nd Ave. South, Suite 100
Federal Way, WA 98001

H&P Project: KJ120514-10
Client Project: 1196016.00 Task 8 / Yakima, WA

Dear Mr. Josh Hopp:

Enclosed is the analytical report for the above referenced project. The data herein applies to samples as received by H&P Mobile Geochemistry, Inc. on 05-Dec-14 which were analyzed in accordance with the attached Chain of Custody record(s).

The results for all sample analyses and required QA/QC analyses are presented in the following sections and summarized in the documents:

- Sample Summary
- Case Narrative (if applicable)
- Sample Results
- Quality Control Summary
- Notes and Definitions / Appendix
- Chain of Custody

Unless otherwise noted, all analyses were performed and reviewed in compliance with our Quality Systems Manual and Standard Operating Procedures. This report shall not be reproduced, except in full, without the written approval of H&P Mobile Geochemistry, Inc.

We at H&P Mobile Geochemistry, Inc. sincerely appreciate the opportunity to provide analytical services to you on this project. If you have any questions or concerns regarding this analytical report, please contact me at your convenience at 760-804-9678.

Sincerely,

Janis Villarreal

Janis Villarreal
Laboratory Director

H&P Mobile Geochemistry, Inc. operates under CA Environmental Lab Accreditation Program Numbers 2579, 2740, 2741, 2742, 2743, 2745 and 2754. National Environmental Laboratory Accreditation Conference (NELAC) Standards Lab #11845

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Kennedy/Jenks Consultants - Washington	Project: KJ120514-10	
32001 32nd Ave. South, Suite 100	Project Number: 1196016.00 Task 8 / Yakima, WA	Reported:
Federal Way, WA 98001	Project Manager: Mr. Josh Hopp	10-Dec-14 11:28

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FW-Influent-224	E412017-01	Vapor	04-Dec-14	05-Dec-14
FW-Btwn-129	E412017-02	Vapor	04-Dec-14	05-Dec-14
FW-Effluent-356	E412017-03	Vapor	04-Dec-14	05-Dec-14

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DETECTIONS SUMMARY

Sample ID: **FW-Influent-224** Laboratory ID: **E412017-01**

Analyte	Result	Reporting Limit	Units	Method	Notes
Vinyl chloride	**2800**	13	ug/m3	EPA TO-15	
trans-1,2-Dichloroethene	**65**	40	ug/m3	EPA TO-15	
cis-1,2-Dichloroethene	**9000**	40	ug/m3	EPA TO-15	
Chloroform	**250**	25	ug/m3	EPA TO-15	
Trichloroethene	**1700**	27	ug/m3	EPA TO-15	
Tetrachloroethene	**20000**	69	ug/m3	EPA TO-15	

Sample ID: **FW-Btwn-129** Laboratory ID: **E412017-02**

Analyte	Result	Reporting Limit	Units	Method	Notes
Vinyl chloride	**1800**	5.2	ug/m3	EPA TO-15	
trans-1,2-Dichloroethene	**24**	16	ug/m3	EPA TO-15	
cis-1,2-Dichloroethene	**3700**	40	ug/m3	EPA TO-15	
Chloroform	**26**	9.9	ug/m3	EPA TO-15	
Trichloroethene	**2100**	11	ug/m3	EPA TO-15	
Tetrachloroethene	**18000**	69	ug/m3	EPA TO-15	

Sample ID: **FW-Effluent-356** Laboratory ID: **E412017-03**

Analyte	Result	Reporting Limit	Units	Method	Notes
Vinyl chloride	**370**	26	ug/m3	EPA TO-15	
trans-1,2-Dichloroethene	**21**	8.0	ug/m3	EPA TO-15	
cis-1,2-Dichloroethene	**4200**	40	ug/m3	EPA TO-15	
Chloroform	**9.4**	4.9	ug/m3	EPA TO-15	
Benzene	**9.0**	3.2	ug/m3	EPA TO-15	
Toluene	**11**	3.8	ug/m3	EPA TO-15	

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Volatile Organic Compounds by EPA TO-15

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
FW-Influent-224 (E412017-01) Vapor Sampled: 04-Dec-14 Received: 05-Dec-14									
Vinyl chloride	**2800**	13	ug/m3	5	EL40805	08-Dec-14	08-Dec-14	EPA TO-15	
Methylene chloride (Dichloromethane)	ND	18	"	"	"	"	"	"	
trans-1,2-Dichloroethene	**65**	40	"	"	"	"	"	"	
cis-1,2-Dichloroethene	**9000**	40	"	10	"	"	"	"	
Chloroform	**250**	25	"	5	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	21	"	"	"	"	"	"	
Benzene	ND	16	"	"	"	"	"	"	
Trichloroethene	**1700**	27	"	"	"	"	"	"	
Toluene	ND	19	"	"	"	"	"	"	
Tetrachloroethene	**20000**	69	"	10	"	"	"	"	
Ethylbenzene	ND	22	"	5	"	"	"	"	
m,p-Xylene	ND	44	"	"	"	"	"	"	
o-Xylene	ND	22	"	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*107 %*		*76-134*	"	"	"	"	
Surrogate: Toluene-d8		*109 %*		*78-125*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*86.4 %*		*77-127*	"	"	"	"	
FW-Btwn-129 (E412017-02) Vapor Sampled: 04-Dec-14 Received: 05-Dec-14									
Vinyl chloride	**1800**	5.2	ug/m3	2	EL40503	05-Dec-14	05-Dec-14	EPA TO-15	
Methylene chloride (Dichloromethane)	ND	7.1	"	"	"	"	"	"	
trans-1,2-Dichloroethene	**24**	16	"	"	"	"	"	"	
cis-1,2-Dichloroethene	**3700**	40	"	10	"	"	08-Dec-14	"	
Chloroform	**26**	9.9	"	2	"	"	05-Dec-14	"	
1,2-Dichloroethane (EDC)	ND	8.2	"	"	"	"	"	"	
Benzene	ND	6.5	"	"	"	"	"	"	
Trichloroethene	**2100**	11	"	"	"	"	"	"	
Toluene	ND	7.6	"	"	"	"	"	"	
Tetrachloroethene	**18000**	69	"	10	"	"	08-Dec-14	"	
Ethylbenzene	ND	8.8	"	2	"	"	05-Dec-14	"	
m,p-Xylene	ND	18	"	"	"	"	"	"	
o-Xylene	ND	8.8	"	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*107 %*		*76-134*	"	"	"	"	
Surrogate: Toluene-d8		*106 %*		*78-125*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*83.4 %*		*77-127*	"	"	"	"	

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Volatile Organic Compounds by EPA TO-15

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
FW-Effluent-356 (E412017-03) Vapor	**Sampled: 04-Dec-14**	**Received: 05-Dec-14**							
Vinyl chloride	**370**	26	ug/m3	10	EL40503	05-Dec-14	08-Dec-14	EPA TO-15	
Methylene chloride (Dichloromethane)	ND	3.5	"	1	"	"	05-Dec-14	"	
trans-1,2-Dichloroethene	**21**	8.0	"	"	"	"	"	"	
cis-1,2-Dichloroethene	**4200**	40	"	10	"	"	08-Dec-14	"	
Chloroform	**9.4**	4.9	"	1	"	"	05-Dec-14	"	
1,2-Dichloroethane (EDC)	ND	4.1	"	"	"	"	"	"	
Benzene	**9.0**	3.2	"	"	"	"	"	"	
Trichloroethene	ND	5.5	"	"	"	"	"	"	
Toluene	**11**	3.8	"	"	"	"	"	"	
Tetrachloroethene	ND	6.9	"	"	"	"	"	"	
Ethylbenzene	ND	4.4	"	"	"	"	"	"	
m,p-Xylene	ND	8.8	"	"	"	"	"	"	
o-Xylene	ND	4.4	"	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*108 %*		*76-134*	"	"	"	"	
Surrogate: Toluene-d8		*106 %*		*78-125*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*89.2 %*		*77-127*	"	"	"	"	

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Volatile Organic Compounds by EPA TO-15 - Quality Control

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EL40503 - TO-15										
Blank (EL40503-BLK1)				Prepared & Analyzed: 05-Dec-14						
Vinyl chloride	ND	2.6	ug/m3							
Methylene chloride (Dichloromethane)	ND	3.5	"							
trans-1,2-Dichloroethene	ND	8.0	"							
cis-1,2-Dichloroethene	ND	4.0	"							
Chloroform	ND	4.9	"							
1,2-Dichloroethane (EDC)	ND	4.1	"							
Benzene	ND	3.2	"							
Trichloroethene	ND	5.5	"							
Toluene	ND	3.8	"							
Tetrachloroethene	ND	6.9	"							
Ethylbenzene	ND	4.4	"							
m,p-Xylene	ND	8.8	"							
o-Xylene	ND	4.4	"							
Surrogate: 1,2-Dichloroethane-d4	*235*		*"*	*214*		*110*	*76-134*			
Surrogate: Toluene-d8	*220*		*"*	*207*		*106*	*78-125*			
Surrogate: 4-Bromofluorobenzene	*334*		*"*	*364*		*91.5*	*77-127*			
LCS (EL40503-BS1)				Prepared & Analyzed: 05-Dec-14						
Vinyl chloride	46	2.6	ug/m3	52.0		88.5	70-130			
Methylene chloride (Dichloromethane)	71	3.5	"	70.8		99.7	70-130			
trans-1,2-Dichloroethene	67	8.0	"	80.8		82.7	70-130			
cis-1,2-Dichloroethene	71	4.0	"	80.0		88.2	70-130			
Chloroform	92	4.9	"	99.2		92.7	70-130			
1,2-Dichloroethane (EDC)	76	4.1	"	82.4		91.8	70-130			
Benzene	56	3.2	"	64.8		86.9	70-130			
Trichloroethene	100	5.5	"	110		91.2	70-130			
Toluene	67	3.8	"	76.8		86.6	70-130			
Tetrachloroethene	110	6.9	"	138		79.9	70-130			
Ethylbenzene	77	4.4	"	88.4		87.0	70-130			
m,p-Xylene	180	8.8	"	177		104	70-130			
o-Xylene	89	4.4	"	88.4		101	70-130			
Surrogate: 1,2-Dichloroethane-d4	*231*		*"*	*214*		*108*	*76-134*			

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Volatile Organic Compounds by EPA TO-15 - Quality Control

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EL40503 - TO-15										
LCS (EL40503-BS1)				Prepared & Analyzed: 05-Dec-14						
Surrogate: Toluene-d8	*213*		*ug/m3*	*207*		*103*	*78-125*			
Surrogate: 4-Bromofluorobenzene	*398*		*"*	*364*		*109*	*77-127*			
LCS Dup (EL40503-BSD1)				Prepared & Analyzed: 05-Dec-14						
Vinyl chloride	41	2.6	ug/m3	52.0		78.0	70-130	12.7	25	
Methylene chloride (Dichloromethane)	60	3.5	"	70.8		85.4	70-130	15.4	25	
trans-1,2-Dichloroethene	66	8.0	"	80.8		82.3	70-130	0.483	25	
cis-1,2-Dichloroethene	85	4.0	"	80.0		107	70-130	19.1	25	
Chloroform	84	4.9	"	99.2		85.1	70-130	8.51	25	
1,2-Dichloroethane (EDC)	70	4.1	"	82.4		85.3	70-130	7.37	25	
Benzene	54	3.2	"	64.8		82.7	70-130	4.89	25	
Trichloroethene	100	5.5	"	110		92.7	70-130	1.62	25	
Toluene	66	3.8	"	76.8		86.4	70-130	0.287	25	
Tetrachloroethene	110	6.9	"	138		80.6	70-130	0.806	25	
Ethylbenzene	77	4.4	"	88.4		87.5	70-130	0.570	25	
m,p-Xylene	180	8.8	"	177		102	70-130	2.61	25	
o-Xylene	87	4.4	"	88.4		98.6	70-130	2.59	25	
Surrogate: 1,2-Dichloroethane-d4	*210*		*"*	*214*		*97.8*	*76-134*			
Surrogate: Toluene-d8	*210*		*"*	*207*		*101*	*78-125*			
Surrogate: 4-Bromofluorobenzene	*390*		*"*	*364*		*107*	*77-127*			
Batch EL40805 - TO-15										
Blank (EL40805-BLK1)				Prepared & Analyzed: 08-Dec-14						
Vinyl chloride	ND	2.6	ug/m3							
Methylene chloride (Dichloromethane)	ND	3.5	"							
trans-1,2-Dichloroethene	ND	8.0	"							
cis-1,2-Dichloroethene	ND	4.0	"							
Chloroform	ND	4.9	"							
1,2-Dichloroethane (EDC)	ND	4.1	"							
Benzene	ND	3.2	"							
Trichloroethene	ND	5.5	"							

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Volatile Organic Compounds by EPA TO-15 - Quality Control

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EL40805 - TO-15										
Blank (EL40805-BLK1)				Prepared & Analyzed: 08-Dec-14						
Toluene	ND	3.8	ug/m3							
Tetrachloroethene	ND	6.9	"							
Ethylbenzene	ND	4.4	"							
m,p-Xylene	ND	8.8	"							
o-Xylene	ND	4.4	"							
Surrogate: 1,2-Dichloroethane-d4	*237*		*"*	*214*		*111*	*76-134*			
Surrogate: Toluene-d8	*219*		*"*	*207*		*106*	*78-125*			
Surrogate: 4-Bromofluorobenzene	*329*		*"*	*364*		*90.2*	*77-127*			
LCS (EL40805-BS1)				Prepared & Analyzed: 08-Dec-14						
Vinyl chloride	44	2.6	ug/m3	52.0		84.7	70-130			
Methylene chloride (Dichloromethane)	67	3.5	"	70.8		94.4	70-130			
trans-1,2-Dichloroethene	74	8.0	"	80.8		91.0	70-130			
cis-1,2-Dichloroethene	69	4.0	"	80.0		85.7	70-130			
Chloroform	89	4.9	"	99.2		90.1	70-130			
1,2-Dichloroethane (EDC)	74	4.1	"	82.4		90.1	70-130			
Benzene	57	3.2	"	64.8		88.2	70-130			
Trichloroethene	98	5.5	"	110		89.3	70-130			
Toluene	68	3.8	"	76.8		88.1	70-130			
Tetrachloroethene	110	6.9	"	138		79.4	70-130			
Ethylbenzene	78	4.4	"	88.4		88.8	70-130			
m,p-Xylene	180	8.8	"	177		104	70-130			
o-Xylene	90	4.4	"	88.4		101	70-130			
Surrogate: 1,2-Dichloroethane-d4	*234*		*"*	*214*		*109*	*76-134*			
Surrogate: Toluene-d8	*213*		*"*	*207*		*103*	*78-125*			
Surrogate: 4-Bromofluorobenzene	*414*		*"*	*364*		*113*	*77-127*			
LCS Dup (EL40805-BSD1)				Prepared & Analyzed: 08-Dec-14						
Vinyl chloride	45	2.6	ug/m3	52.0		86.1	70-130	1.58	25	
Methylene chloride (Dichloromethane)	63	3.5	"	70.8		89.4	70-130	5.47	25	
trans-1,2-Dichloroethene	70	8.0	"	80.8		86.8	70-130	4.65	25	

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Volatile Organic Compounds by EPA TO-15 - Quality Control

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EL40805 - TO-15										
LCS Dup (EL40805-BSD1)				Prepared & Analyzed: 08-Dec-14						
cis-1,2-Dichloroethene	71	4.0	ug/m3	80.0		89.3	70-130	4.14	25	
Chloroform	88	4.9	"	99.2		88.4	70-130	1.95	25	
1,2-Dichloroethane (EDC)	72	4.1	"	82.4		86.8	70-130	3.72	25	
Benzene	57	3.2	"	64.8		88.5	70-130	0.339	25	
Trichloroethene	100	5.5	"	110		92.1	70-130	3.07	25	
Toluene	68	3.8	"	76.8		88.7	70-130	0.674	25	
Tetrachloroethene	110	6.9	"	138		80.9	70-130	1.80	25	
Ethylbenzene	77	4.4	"	88.4		86.8	70-130	2.21	25	
m,p-Xylene	180	8.8	"	177		103	70-130	0.913	25	
o-Xylene	88	4.4	"	88.4		99.4	70-130	2.03	25	
Surrogate: 1,2-Dichloroethane-d4	*221*		*"*	*214*		*103*	*76-134*			
Surrogate: Toluene-d8	*212*		*"*	*207*		*102*	*78-125*			
Surrogate: 4-Bromofluorobenzene	*399*		*"*	*364*		*110*	*77-127*			

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Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

Appendix

H&P Mobile Geochemistry, Inc. is approved as an Environmental Testing Laboratory (Certification # L11-175) in accordance with the DoD-ELAP program. H&P is approved by the State of Arizona under Certification Numbers AZM758 and AZ0779. H&P is approved as an Environmental Laboratory in conformance with the Environmental Laboratory Accreditation Program (CA) for the category of Volatile and Semi-Volatile Organic Chemistry of Hazardous Waste for the following methods:

Certificate# 2741, 2743, 2579, 2754 & 2740 approved for EPA 8260 and LUFT GC/MS
Certificate# 2742, 2745, & 2741 approved for LUFT
Certificate# 2745 & 2742 approved for EPA 418.1

H&P Mobile Geochemistry, Inc. is approved as an Environmental Laboratory in conformance with the National Environmental Accreditation Conference Standards for the category Environmental Analysis Air and Emissions for the following analytes and methods:

Hexachlorobutadiene by EPA TO-15 & TO-14A
1,2,4-Trichlorobenzene by EPA TO-15 & TO-14A
1,2-Dichlorobenzene by EPA TO-15 & TO-14A
Dichlorotetrafluoroethane by EPA TO-14A
1,4-Dichlorobenzene by EPA TO-15 & TO-14A
Benzene by EPA TO-15 & TO-14A
Chlorobenzene by EPA TO-15 & TO-14A
Ethyl benzene by EPA TO-15 & TO-14A
Styrene by EPA TO-15 & TO-14A
Toluene by EPA TO-15 & TO-14A
Total Xylenes by EPA TO-15
1,1,1-Trichloroethane by EPA TO-15 & TO-14A
1,1,2,2-Tetrachloroethane by EPA TO-15 & TO-14A
1,1,2-Trichloroethane by EPA TO-15 & TO-14A
1,1-Dichloroethane by EPA TO-15 & TO-14A
1,1-Dichloroethene by EPA TO-15 & TO-14A
1,2-Dichloroethane by EPA TO-15 & TO-14A
1,2-Dichloropropane by EPA TO-15 & TO-14A
Benzyl Chloride by EPA TO-15 & TO-14A
Bromoform by EPA TO-15
Bromomethane by EPA TO-15 & TO-14A
Carbon tetrachloride by EPA TO-15 & TO-14A
Chloroethane by EPA TO-15 & TO-14A
Chloroform by EPA TO-15 & TO-14A
Chloromethane by EPA TO-15 & TO-14A
cis-1,2-Dichloroethene by EPA TO-15 & TO-14A
cis-1,3-Dichloropropene by EPA TO-15 & TO-14A
Methylene chloride by EPA TO -15 & TO-14A
Tetrachloroethane by EPA TO-15 & TO-14A
trans-1,2-Dichloroethene by EPA TO-15
trans-1,3-Dichloropropene by EPA TO-15 & TO-14A
Trichloroethene by EPA TO-15 & TO-14A
Vinyl chloride by EPA TO -15
2-Butanone by EPA TO-15
4-Methyl-2-Pentanone by EPA TO-15
Hexane by EPA TO-15
Methyl tert-butyl ether by EPA TO-15
Vinyl acetate by EPA TO-15

1,3-Dichlorobenzene by EPA TO-15 & TO-14A
Trichlorofluoromethane by EPA TO-14A
Naphthalene by H&P SOP TO-15/GC-MS
1,2-Dibromoethane (EDB) by EPA TO-15 & TO-14A
1,2-Dibromo-3-chloropropane by EPA TO-15
1,3-Butadiene by EPA TO-15
1,1,2-Trichlorotrifluoroethane by EPA TO-14A
Carbon disulfide by EPA TO-15
1,4-Dioxane by EPA TO-15

This certification applies to samples analyzed in summa canisters.

Mobile Geochemistry, Inc.

2470 Impala Drive, Carlsbad, CA 92010
& Field Office - Signal Hill, CA
W handpmg.com E info@handpmg.com
P 760.804.9678 F 760.804.9159

VAPOR / AIR Chain of Custody

DATE: 12/4/14
Page 1 of 1

Lab Client and Project Information

Lab Client/Consultant: Kennedy/Jenks Consultants	Project Name / #: 1196016.00 Task 8 00
Lab Client Project Manager: Josh Hopp	Project Location: Yakima, WA
Lab Client Address: 3200 32nd Ave S, Suite 100	Report E-Mail(s): joshhopp@kennedyjenks.com
Lab Client City, State, Zip: Federal Way, WA 98001	
Phone Number: 253-835-6408	

Reporting Requirements

- [x] Standard Report ☐ Level III ☐ Level IV
- [x] Excel EDD ☐ Other EDD:
- ☐ CA Geotracker Global ID:

Turnaround Time

- [x] 5-7 day Stnd ☐ 24-Hr Rush
- [x] 3-day Rush* ☐ Mobile Lab
- ☐ 48-Hr Rush ☐ Other:

Sampler Information

Sampler(s): Jason Shima
Signature:
Date: 12/4/14

Sample Receipt (Lab Use Only)

Date Rec'd: 12/5/14	Control #: 140964.01
H&P Project # KJ120514-10	
Lab Work Order # E412017	
Sample Intact: [x] Yes ☐ No ☐ See Notes Below	
Receipt Gauge ID: 1116 7	Temp: 21°
Outside Lab:	
Receipt Notes/Tracking #: 12 93T TU1 84 4686 7201	
Lab PM Initials: MA	

Additional Instructions to Laboratory:

[x] Check if Project Analyte List is ~~Attached~~ same as previously reported. JCH 12/4/14

Preferred VOC units (please choose one):

☐ µg/L [x] µg/m³ ☐ ppbv ☐ ppmv

SAMPLE NAME	FIELD POINT NAME (if applicable)	DATE mm/dd/yy	TIME 24hr clock	SAMPLE TYPE Indoor Air (IA), Ambient Air (AA), Subslab (SS), Soil Vapor (SV)	CONTAINER SIZE & TYPE 400mL/1L/6L Summa or Tedlar or Tube	CONTAINER ID (###)	Lab use only: Receipt Vac	VOCs Standard Full List ☐ 8260SV ☐ TO-15	VOCs Short List / Project List ☐ 8260SV [x] TO-15	Oxygenates ☐ 8260SV ☐ TO-15	Naphthalene ☐ 8260SV ☐ TO-15 ☐ TO-17m	TPHv as Gas ☐ 8260SVm ☐ TO-15m	TPHv as Diesel (sorbent tube) ☐ TO-17m	Aromatic/Aliphatic Fractions ☐ 8260SVm ☐ TO-15m	Leak Check Compound ☐ DFA ☐ IPA ☐ He	Methane by EPA 8015m	Fixed Gases by ASTM D1945 ☐ CO2 ☐ O2 ☐ N2			
FWI-Influent-224	Influent	12/4/14	09:05	SV	400mL	224	.88		X											
FWI-Btwn-129	Between	"	09:10	"	"	129	.29		X											
(*) FWI-Effluent-356	Effluent	"	09:20	"	"	356	.22		X						72-hr Rush!					

Approved/Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:
MGHopp	KJ	12/4/14	1510		H&P	12/5/14	1000
Approved/Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:
Approved/Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:

*Approval constitutes as authorization to proceed with analysis and acceptance of conditions on back

Rev 12/31/2013

Mobile Geochemistry Inc.

06 January 2015

Mr. Josh Hopp
Kennedy/Jenks Consultants - Washington
32001 32nd Ave. South, Suite 100
Federal Way, WA 98001

H&P Project: KJ123114-10
Client Project: 1196016.00 / Yakima

Dear Mr. Josh Hopp:

Enclosed is the analytical report for the above referenced project. The data herein applies to samples as received by H&P Mobile Geochemistry, Inc. on 31-Dec-14 which were analyzed in accordance with the attached Chain of Custody record(s).

The results for all sample analyses and required QA/QC analyses are presented in the following sections and summarized in the documents:

- Sample Summary
- Case Narrative (if applicable)
- Sample Results
- Quality Control Summary
- Notes and Definitions / Appendix
- Chain of Custody

Unless otherwise noted, all analyses were performed and reviewed in compliance with our Quality Systems Manual and Standard Operating Procedures. This report shall not be reproduced, except in full, without the written approval of H&P Mobile Geochemistry, Inc.

We at H&P Mobile Geochemistry, Inc. sincerely appreciate the opportunity to provide analytical services to you on this project. If you have any questions or concerns regarding this analytical report, please contact me at your convenience at 760-804-9678.

Sincerely,

Janis Villarreal

Janis Villarreal
Laboratory Director

H&P Mobile Geochemistry, Inc. operates under CA Environmental Lab Accreditation Program Numbers 2579, 2740, 2741, 2742, 2743, 2745 and 2754. National Environmental Laboratory Accreditation Conference (NELAC) Standards Lab #11845

H&P Mobile
Geochemistry Inc.

2470 Impala Drive
Carlsbad, CA 92010
760-804-9678 Phone
760-804-9159 Fax

Kennedy/Jenks Consultants - Washington	Project: KJ123114-10	
32001 32nd Ave. South, Suite 100	Project Number: 1196016.00 / Yakima	Reported:
Federal Way, WA 98001	Project Manager: Mr. Josh Hopp	06-Jan-15 14:02

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FW-Effluent-218	E501006-01	Vapor	29-Dec-14	31-Dec-14

H&P Mobile
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Kennedy/Jenks Consultants - Washington	Project: KJ123114-10	
32001 32nd Ave. South, Suite 100	Project Number: 1196016.00 / Yakima	Reported:
Federal Way, WA 98001	Project Manager: Mr. Josh Hopp	06-Jan-15 14:02

DETECTIONS SUMMARY

Sample ID: **FW-Effluent-218** Laboratory ID: **E501006-01**

Analyte	Result	Reporting Limit	Units	Method	Notes
Vinyl chloride	**200**	2.6	ug/m3	EPA TO-15	
cis-1,2-Dichloroethene	**580**	4.0	ug/m3	EPA TO-15	

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Kennedy/Jenks Consultants - Washington	Project: KJ123114-10	
32001 32nd Ave. South, Suite 100	Project Number: 1196016.00 / Yakima	Reported:
Federal Way, WA 98001	Project Manager: Mr. Josh Hopp	06-Jan-15 14:02

Volatile Organic Compounds by EPA TO-15

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
FW-Effluent-218 (E501006-01) Vapor	**Sampled: 29-Dec-14**	**Received: 31-Dec-14**							
Vinyl chloride	**200**	2.6	ug/m3	1	EA50506	05-Jan-15	05-Jan-15	EPA TO-15	
Methylene chloride (Dichloromethane)	ND	3.5	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	8.0	"	"	"	"	"	"	
cis-1,2-Dichloroethene	**580**	4.0	"	"	"	"	"	"	
Chloroform	ND	4.9	"	"	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	4.1	"	"	"	"	"	"	
Benzene	ND	3.2	"	"	"	"	"	"	
Trichloroethene	ND	5.5	"	"	"	"	"	"	
Toluene	ND	3.8	"	"	"	"	"	"	
Tetrachloroethene	ND	6.9	"	"	"	"	"	"	
Ethylbenzene	ND	4.4	"	"	"	"	"	"	
m,p-Xylene	ND	8.8	"	"	"	"	"	"	
o-Xylene	ND	4.4	"	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*106 %*		*76-134*	"	"	"	"	
Surrogate: Toluene-d8		*105 %*		*78-125*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*88.8 %*		*77-127*	"	"	"	"	

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Kennedy/Jenks Consultants - Washington	Project: KJ123114-10	
32001 32nd Ave. South, Suite 100	Project Number: 1196016.00 / Yakima	Reported:
Federal Way, WA 98001	Project Manager: Mr. Josh Hopp	06-Jan-15 14:02

Volatile Organic Compounds by EPA TO-15 - Quality Control

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EA50506 - TO-15										
Blank (EA50506-BLK1)				Prepared & Analyzed: 05-Jan-15						
Vinyl chloride	ND	2.6	ug/m3							
Methylene chloride (Dichloromethane)	ND	3.5	"							
trans-1,2-Dichloroethene	ND	8.0	"							
cis-1,2-Dichloroethene	ND	4.0	"							
Chloroform	ND	4.9	"							
1,2-Dichloroethane (EDC)	ND	4.1	"							
Benzene	ND	3.2	"							
Trichloroethene	ND	5.5	"							
Toluene	ND	3.8	"							
Tetrachloroethene	ND	6.9	"							
Ethylbenzene	ND	4.4	"							
m,p-Xylene	ND	8.8	"							
o-Xylene	ND	4.4	"							
Surrogate: 1,2-Dichloroethane-d4	*242*		*"*	*214*		*113*	*76-134*			
Surrogate: Toluene-d8	*222*		*"*	*207*		*107*	*78-125*			
Surrogate: 4-Bromofluorobenzene	*340*		*"*	*364*		*93.3*	*77-127*			
LCS (EA50506-BS1)				Prepared & Analyzed: 05-Jan-15						
Vinyl chloride	41	2.6	ug/m3	52.0		79.6	70-130			
Methylene chloride (Dichloromethane)	61	3.5	"	70.8		86.1	70-130			
trans-1,2-Dichloroethene	70	8.0	"	80.8		86.5	70-130			
cis-1,2-Dichloroethene	66	4.0	"	80.0		82.5	70-130			
Chloroform	86	4.9	"	99.2		86.4	70-130			
1,2-Dichloroethane (EDC)	70	4.1	"	82.4		84.8	70-130			
Benzene	50	3.2	"	64.8		77.0	70-130			
Trichloroethene	96	5.5	"	110		87.8	70-130			
Toluene	61	3.8	"	76.8		80.0	70-130			
Tetrachloroethene	100	6.9	"	138		74.3	70-130			
Ethylbenzene	67	4.4	"	88.4		75.5	70-130			
m,p-Xylene	160	8.8	"	177		91.7	70-130			
o-Xylene	77	4.4	"	88.4		87.2	70-130			
Surrogate: 1,2-Dichloroethane-d4	*230*		*"*	*214*		*107*	*76-134*			

H&P Mobile
Geochemistry Inc.

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Kennedy/Jenks Consultants - Washington	Project: KJ123114-10	
32001 32nd Ave. South, Suite 100	Project Number: 1196016.00 / Yakima	Reported:
Federal Way, WA 98001	Project Manager: Mr. Josh Hopp	06-Jan-15 14:02

Volatile Organic Compounds by EPA TO-15 - Quality Control

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EA50506 - TO-15										
LCS (EA50506-BS1)				Prepared & Analyzed: 05-Jan-15						
Surrogate: Toluene-d8	*217*		*ug/m3*	*207*		*105*	*78-125*			
Surrogate: 4-Bromofluorobenzene	*366*		*"*	*364*		*100*	*77-127*			
LCS Dup (EA50506-BSD1)				Prepared & Analyzed: 05-Jan-15						
Vinyl chloride	43	2.6	ug/m3	52.0		82.3	70-130	3.33	25	
Methylene chloride (Dichloromethane)	64	3.5	"	70.8		90.6	70-130	5.02	25	
trans-1,2-Dichloroethene	63	8.0	"	80.8		77.6	70-130	10.8	25	
cis-1,2-Dichloroethene	63	4.0	"	80.0		78.5	70-130	5.06	25	
Chloroform	86	4.9	"	99.2		86.9	70-130	0.574	25	
1,2-Dichloroethane (EDC)	71	4.1	"	82.4		85.8	70-130	1.23	25	
Benzene	50	3.2	"	64.8		77.3	70-130	0.388	25	
Trichloroethene	97	5.5	"	110		88.1	70-130	0.283	25	
Toluene	62	3.8	"	76.8		81.3	70-130	1.66	25	
Tetrachloroethene	100	6.9	"	138		74.9	70-130	0.800	25	
Ethylbenzene	66	4.4	"	88.4		75.1	70-130	0.594	25	
m,p-Xylene	160	8.8	"	177		91.9	70-130	0.163	25	
o-Xylene	77	4.4	"	88.4		87.1	70-130	0.114	25	
Surrogate: 1,2-Dichloroethane-d4	*238*		*"*	*214*		*111*	*76-134*			
Surrogate: Toluene-d8	*215*		*"*	*207*		*104*	*78-125*			
Surrogate: 4-Bromofluorobenzene	*365*		*"*	*364*		*100*	*77-127*			

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Kennedy/Jenks Consultants - Washington	Project: KJ123114-10	
32001 32nd Ave. South, Suite 100	Project Number: 1196016.00 / Yakima	Reported:
Federal Way, WA 98001	Project Manager: Mr. Josh Hopp	06-Jan-15 14:02

Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

Appendix

H&P Mobile Geochemistry, Inc. is approved as an Environmental Testing Laboratory (Certification # L11-175) in accordance with the DoD-ELAP program. H&P is approved by the State of Arizona under Certification Numbers AZM758 and AZ0779. H&P is approved as an Environmental Laboratory in conformance with the Environmental Laboratory Accreditation Program (CA) for the category of Volatile and Semi-Volatile Organic Chemistry of Hazardous Waste for the following methods:

Certificate# 2741, 2743, 2579, 2754 & 2740 approved for EPA 8260 and LUFT GC/MS
Certificate# 2742, 2745, & 2741 approved for LUFT
Certificate# 2745 & 2742 approved for EPA 418.1

H&P Mobile Geochemistry, Inc. is approved as an Environmental Laboratory in conformance with the National Environmental Accreditation Conference Standards for the category Environmental Analysis Air and Emissions for the following analytes and methods:

Hexachlorobutadiene by EPA TO-15 & TO-14A
1,2,4-Trichlorobenzene by EPA TO-15 & TO-14A
1,2-Dichlorobenzene by EPA TO-15 & TO-14A
Dichlorotetrafluoroethane by EPA TO-14A
1,4-Dichlorobenzene by EPA TO-15 & TO-14A
Benzene by EPA TO-15 & TO-14A
Chlorobenzene by EPA TO-15 & TO-14A
Ethyl benzene by EPA TO-15 & TO-14A
Styrene by EPA TO-15 & TO-14A
Toluene by EPA TO-15 & TO-14A
Total Xylenes by EPA TO-15
1,1,1-Trichloroethane by EPA TO-15 & TO-14A
1,1,2,2-Tetrachloroethane by EPA TO-15 & TO-14A
1,1,2-Trichloroethane by EPA TO-15 & TO-14A
1,1-Dichloroethane by EPA TO-15 & TO-14A
1,1-Dichloroethene by EPA TO-15 & TO-14A
1,2-Dichloroethane by EPA TO-15 & TO-14A
1,2-Dichloropropane by EPA TO-15 & TO-14A
Benzyl Chloride by EPA TO-15 & TO-14A
Bromoform by EPA TO-15
Bromomethane by EPA TO-15 & TO-14A
Carbon tetrachloride by EPA TO-15 & TO-14A
Chloroethane by EPA TO-15 & TO-14A
Chloroform by EPA TO-15 & TO-14A
Chloromethane by EPA TO-15 & TO-14A
cis-1,2-Dichloroethene by EPA TO-15 & TO-14A
cis-1,3-Dichloropropene by EPA TO-15 & TO-14A
Methylene chloride by EPA TO -15 & TO-14A
Tetrachloroethane by EPA TO-15 & TO-14A
trans-1,2-Dichloroethene by EPA TO-15
trans-1,3-Dichloropropene by EPA TO-15 & TO-14A
Trichloroethene by EPA TO-15 & TO-14A
Vinyl chloride by EPA TO -15
2-Butanone by EPA TO-15
4-Methyl-2-Pentanone by EPA TO-15
Hexane by EPA TO-15
Methyl tert-butyl ether by EPA TO-15
Vinyl acetate by EPA TO-15

1,3-Dichlorobenzene by EPA TO-15 & TO-14A
Trichlorofluoromethane by EPA TO-14A
Naphthalene by H&P SOP TO-15/GC-MS
1,2-Dibromoethane (EDB) by EPA TO-15 & TO-14A
1,2-Dibromo-3-chloropropane by EPA TO-15
1,3-Butadiene by EPA TO-15
1,1,2-Trichlorotrifluoroethane by EPA TO-14A
Carbon disulfide by EPA TO-15
1,4-Dioxane by EPA TO-15

This certification applies to samples analyzed in summa canisters.

Mobile Geochemistry, Inc.
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& Field Office - Signal Hill, CA
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P 760.804.9678 F 760.804.9159

VAPOR / AIR Chain of Custody

DATE: Dec 29, 2014
Page 1 of 1

Lab Client and Project Information

Lab Client/Consultant: Kennedy Jenks	Project Name / #: 1196016.00
Lab Client Project Manager: Josh Hupp	Project Location: Yakima
Lab Client Address: 32001 32nd Ave S. Suite 100	Report E-Mail(s): josh.hupp@kennedyjenks.com
Lab Client City, State, Zip: Federal Way WA 98001	
Phone Number: 253-835-6400	

Reporting Requirements
- [x] Standard Report [ ] Level III [ ] Level IV
- [ ] Excel EDD [ ] Other EDD:
- [ ] CA Geotracker Global ID:

Turnaround Time
- [ ] 5-7 day Stnd [ ] 24-Hr Rush
- [x] 3-day Rush [ ] Mobile Lab
- [ ] 48-Hr Rush [ ] Other:

Sampler Information
Sampler(s): J-S
Signature:
Date: 12/29/14

Sample Receipt (Lab Use Only)

Date Rec'd: 12/31/14	Control #: 141030.01
H&P Project # KJ123114-10	
Lab Work Order # E501006	
Sample Intact: [x] Yes [ ] No [ ] See Notes Below	
Receipt Gauge ID: 1076084	Temp: 19°C
Outside Lab:	

Receipt Notes/Tracking #:
1293TT61 ~~0347309099~~ 844842930 5 JN
Lab PM Initials: SN

Additional Instructions to Laboratory: * SAME LIST AS DECEMBER EVENT - SN 12/31/14

- [ ] Check if Project Analyte List is Attached
- ** Preferred VOC units (please choose one):*
- [ ] µg/L [ ] µg/m³ [ ] ppbv [ ] ppmv

SAMPLE NAME	FIELD POINT NAME (if applicable)	DATE mm/dd/yy	TIME 24hr clock	SAMPLE TYPE Indoor Air (IA), Ambient Air (AA), Subslab (SS), Soil Vapor (SV)	CONTAINER SIZE & TYPE 400mL/1L/6L Summa or Tedlar or Tube	CONTAINER ID (###)	Lab use only: Receipt Vac	VOCs Standard Full List [ ] 8260SV [ ] TO-15	VOCs Short List / Project List [x] 8260SV [x] TO-15	Oxygenates [ ] 8260SV [ ] TO-15	Naphthalene [ ] 8260SV [ ] TO-15 [ ] TO-17m	TPHv as Gas [ ] 8260SVm [ ] TO-15m	TPHv as Diesel (sorbent tube) [ ] TO-17m	Aromatic/Aliphatic Fractions [ ] 8260SVm [ ] TO-15m	Leak Check Compound [ ] DFA [ ] IPA [ ] He	Methane by EPA 8015m	Fixed Gases by ASTM D1945 [ ] CO2 [ ] O2 [ ] N2	72-hr TAT		
FW-Effluent-218	Effluent	12/29/14	14:30	SV	400mL	218	-.17		1									1		

Approved/Relinquished by:	Company: Kennedy Jenks	Date: 12/29/14	Time: 15:00	Received by: Tom Unswath	Company: H&P	Date: 12/31/14	Time: 11:55
Approved/Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:
Approved/Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:

*Approval constitutes as authorization to proceed with analysis and acceptance of conditions on back

Mobile Geochemistry Inc.

28 January 2015

Mr. Josh Hopp
Kennedy/Jenks Consultants - Washington
32001 32nd Ave. South, Suite 100
Federal Way, WA 98001

H&P Project: KJ012315-10
Client Project: 1196016.00 Task 8 / Yakima

Dear Mr. Josh Hopp:

Enclosed is the analytical report for the above referenced project. The data herein applies to samples as received by H&P Mobile Geochemistry, Inc. on 23-Jan-15 which were analyzed in accordance with the attached Chain of Custody record(s).

The results for all sample analyses and required QA/QC analyses are presented in the following sections and summarized in the documents:

- Sample Summary
- Case Narrative (if applicable)
- Sample Results
- Quality Control Summary
- Notes and Definitions / Appendix
- Chain of Custody

Unless otherwise noted, I certify that all analyses were performed and reviewed in compliance with our Quality Systems Manual and Standard Operating Procedures. This report shall not be reproduced, except in full, without the written approval of H&P Mobile Geochemistry, Inc.

We at H&P Mobile Geochemistry, Inc. sincerely appreciate the opportunity to provide analytical services to you on this project. If you have any questions or concerns regarding this analytical report, please contact me at your convenience at 760-804-9678.

Sincerely,

Janis Villarreal

Janis Villarreal
Laboratory Director

H&P Mobile Geochemistry, Inc. is certified under the California ELAP, the National Environmental Laboratory Accreditation Conference (NELAC) and the Department of Defense Accreditation Programs.

H&P Mobile
Geochemistry Inc.

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760-804-9678 Phone
760-804-9159 Fax

Kennedy/Jenks Consultants - Washington	Project: KJ012315-10	
32001 32nd Ave. South, Suite 100	Project Number: 1196016.00 Task 8 / Yakima	Reported:
Federal Way, WA 98001	Project Manager: Mr. Josh Hopp	28-Jan-15 09:16

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FW-Effluent-149	E501085-01	Vapor	22-Jan-15	23-Jan-15
FW-Btwn-006	E501085-02	Vapor	22-Jan-15	23-Jan-15
FW-Influent-158	E501085-03	Vapor	22-Jan-15	23-Jan-15

H&P Mobile
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Kennedy/Jenks Consultants - Washington	Project: KJ012315-10	
32001 32nd Ave. South, Suite 100	Project Number: 1196016.00 Task 8 / Yakima	Reported:
Federal Way, WA 98001	Project Manager: Mr. Josh Hopp	28-Jan-15 09:16

DETECTIONS SUMMARY

Sample ID: **FW-Effluent-149** Laboratory ID: **E501085-01**

Analyte	Result	Reporting Limit	Units	Method	Notes
Vinyl chloride	**150**	2.6	ug/m3	EPA TO-15	
trans-1,2-Dichloroethene	**8.3**	8.0	ug/m3	EPA TO-15	
cis-1,2-Dichloroethene	**830**	4.0	ug/m3	EPA TO-15	
Trichloroethene	**7.4**	5.5	ug/m3	EPA TO-15	

Sample ID: **FW-Btwn-006** Laboratory ID: **E501085-02**

Analyte	Result	Reporting Limit	Units	Method	Notes
Vinyl chloride	**80**	2.6	ug/m3	EPA TO-15	
Methylene chloride (Dichloromethane)	**4.8**	3.5	ug/m3	EPA TO-15	
cis-1,2-Dichloroethene	**290**	4.0	ug/m3	EPA TO-15	
Trichloroethene	**130**	5.5	ug/m3	EPA TO-15	
Toluene	**15**	3.8	ug/m3	EPA TO-15	
Tetrachloroethene	**120**	6.9	ug/m3	EPA TO-15	

Sample ID: **FW-Influent-158** Laboratory ID: **E501085-03**

Analyte	Result	Reporting Limit	Units	Method	Notes
Vinyl chloride	**170**	13	ug/m3	EPA TO-15	
cis-1,2-Dichloroethene	**3600**	20	ug/m3	EPA TO-15	
Chloroform	**100**	25	ug/m3	EPA TO-15	
Trichloroethene	**640**	27	ug/m3	EPA TO-15	
Tetrachloroethene	**16000**	69	ug/m3	EPA TO-15	

H&P Mobile
Geochemistry Inc.

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Kennedy/Jenks Consultants - Washington	Project: KJ012315-10	
32001 32nd Ave. South, Suite 100	Project Number: 1196016.00 Task 8 / Yakima	Reported:
Federal Way, WA 98001	Project Manager: Mr. Josh Hopp	28-Jan-15 09:16

Volatile Organic Compounds by EPA TO-15

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
FW-Effluent-149 (E501085-01) Vapor Sampled: 22-Jan-15 Received: 23-Jan-15									
Vinyl chloride	**150**	2.6	ug/m3	1	EA52603	26-Jan-15	26-Jan-15	EPA TO-15	
Methylene chloride (Dichloromethane)	ND	3.5	"	"	"	"	"	"	
trans-1,2-Dichloroethene	**8.3**	8.0	"	"	"	"	"	"	
cis-1,2-Dichloroethene	**830**	4.0	"	"	"	"	"	"	
Chloroform	ND	4.9	"	"	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	4.1	"	"	"	"	"	"	
Benzene	ND	3.2	"	"	"	"	"	"	
Trichloroethene	**7.4**	5.5	"	"	"	"	"	"	
Toluene	ND	3.8	"	"	"	"	"	"	
Tetrachloroethene	ND	6.9	"	"	"	"	"	"	
Ethylbenzene	ND	4.4	"	"	"	"	"	"	
m,p-Xylene	ND	8.8	"	"	"	"	"	"	
o-Xylene	ND	4.4	"	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*114 %*		*76-134*	"	"	"	"	
Surrogate: Toluene-d8		*116 %*		*78-125*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*86.4 %*		*77-127*	"	"	"	"	
FW-Btwn-006 (E501085-02) Vapor Sampled: 22-Jan-15 Received: 23-Jan-15									
Vinyl chloride	**80**	2.6	ug/m3	1	EA52603	26-Jan-15	26-Jan-15	EPA TO-15	
Methylene chloride (Dichloromethane)	**4.8**	3.5	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	8.0	"	"	"	"	"	"	
cis-1,2-Dichloroethene	**290**	4.0	"	"	"	"	"	"	
Chloroform	ND	4.9	"	"	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	4.1	"	"	"	"	"	"	
Benzene	ND	3.2	"	"	"	"	"	"	
Trichloroethene	**130**	5.5	"	"	"	"	"	"	
Toluene	**15**	3.8	"	"	"	"	"	"	
Tetrachloroethene	**120**	6.9	"	"	"	"	"	"	
Ethylbenzene	ND	4.4	"	"	"	"	"	"	
m,p-Xylene	ND	8.8	"	"	"	"	"	"	
o-Xylene	ND	4.4	"	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*117 %*		*76-134*	"	"	"	"	
Surrogate: Toluene-d8		*114 %*		*78-125*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*86.7 %*		*77-127*	"	"	"	"	

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32001 32nd Ave. South, Suite 100	Project Number: 1196016.00 Task 8 / Yakima	Reported:
Federal Way, WA 98001	Project Manager: Mr. Josh Hopp	28-Jan-15 09:16

Volatile Organic Compounds by EPA TO-15

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
FW-Influent-158 (E501085-03) Vapor	**Sampled: 22-Jan-15**	**Received: 23-Jan-15**							
Vinyl chloride	**170**	13	ug/m3	5	EA52603	26-Jan-15	26-Jan-15	EPA TO-15	
Methylene chloride (Dichloromethane)	ND	18	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	40	"	"	"	"	"	"	
cis-1,2-Dichloroethene	**3600**	20	"	"	"	"	"	"	
Chloroform	**100**	25	"	"	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	21	"	"	"	"	"	"	
Benzene	ND	16	"	"	"	"	"	"	
Trichloroethene	**640**	27	"	"	"	"	"	"	
Toluene	ND	19	"	"	"	"	"	"	
Tetrachloroethene	**16000**	69	"	10	"	"	"	"	
Ethylbenzene	ND	22	"	5	"	"	"	"	
m,p-Xylene	ND	44	"	"	"	"	"	"	
o-Xylene	ND	22	"	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*117 %*		*76-134*	"	"	"	"	
Surrogate: Toluene-d8		*110 %*		*78-125*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*79.6 %*		*77-127*	"	"	"	"	

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32001 32nd Ave. South, Suite 100	Project Number: 1196016.00 Task 8 / Yakima	Reported:
Federal Way, WA 98001	Project Manager: Mr. Josh Hopp	28-Jan-15 09:16

Volatile Organic Compounds by EPA TO-15 - Quality Control

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EA52603 - TO-15										
Blank (EA52603-BLK1)				Prepared & Analyzed: 26-Jan-15						
Vinyl chloride	ND	2.6	ug/m3							
Methylene chloride (Dichloromethane)	ND	3.5	"							
trans-1,2-Dichloroethene	ND	8.0	"							
cis-1,2-Dichloroethene	ND	4.0	"							
Chloroform	ND	4.9	"							
1,2-Dichloroethane (EDC)	ND	4.1	"							
Benzene	ND	3.2	"							
Trichloroethene	ND	5.5	"							
Toluene	ND	3.8	"							
Tetrachloroethene	ND	6.9	"							
Ethylbenzene	ND	4.4	"							
m,p-Xylene	ND	8.8	"							
o-Xylene	ND	4.4	"							
Surrogate: 1,2-Dichloroethane-d4	*265*		*"*	*214*		*124*	*76-134*			
Surrogate: Toluene-d8	*214*		*"*	*207*		*104*	*78-125*			
Surrogate: 4-Bromofluorobenzene	*302*		*"*	*364*		*82.7*	*77-127*			
LCS (EA52603-BS1)				Prepared & Analyzed: 26-Jan-15						
Vinyl chloride	58	2.6	ug/m3	52.0		112	70-130			
Methylene chloride (Dichloromethane)	68	3.5	"	70.8		96.7	70-130			
trans-1,2-Dichloroethene	79	8.0	"	80.8		98.2	70-130			
cis-1,2-Dichloroethene	94	4.0	"	80.0		117	70-130			
Chloroform	120	4.9	"	99.2		122	70-130			
1,2-Dichloroethane (EDC)	100	4.1	"	82.4		126	70-130			
Benzene	79	3.2	"	64.8		121	70-130			
Trichloroethene	140	5.5	"	110		124	70-130			
Toluene	90	3.8	"	76.8		117	70-130			
Tetrachloroethene	160	6.9	"	138		113	70-130			
Ethylbenzene	98	4.4	"	88.4		111	70-130			
m,p-Xylene	220	8.8	"	177		126	70-130			
o-Xylene	110	4.4	"	88.4		122	70-130			
Surrogate: 1,2-Dichloroethane-d4	*256*		*"*	*214*		*120*	*76-134*			

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32001 32nd Ave. South, Suite 100	Project Number: 1196016.00 Task 8 / Yakima	Reported:
Federal Way, WA 98001	Project Manager: Mr. Josh Hopp	28-Jan-15 09:16

Volatile Organic Compounds by EPA TO-15 - Quality Control

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EA52603 - TO-15										
LCS (EA52603-BS1)				Prepared & Analyzed: 26-Jan-15						
Surrogate: Toluene-d8	*221*		*ug/m3*	*207*		*107*	*78-125*			
Surrogate: 4-Bromofluorobenzene	*369*		*"*	*364*		*101*	*77-127*			
LCS Dup (EA52603-BSD1)				Prepared & Analyzed: 26-Jan-15						
Vinyl chloride	58	2.6	ug/m3	52.0		111	70-130	0.802	25	
Methylene chloride (Dichloromethane)	78	3.5	"	70.8		111	70-130	13.4	25	
trans-1,2-Dichloroethene	83	8.0	"	80.8		102	70-130	4.22	25	
cis-1,2-Dichloroethene	94	4.0	"	80.0		118	70-130	0.128	25	
Chloroform	120	4.9	"	99.2		117	70-130	3.99	25	
1,2-Dichloroethane (EDC)	99	4.1	"	82.4		121	70-130	4.40	25	
Benzene	77	3.2	"	64.8		119	70-130	1.70	25	
Trichloroethene	130	5.5	"	110		122	70-130	2.11	25	
Toluene	89	3.8	"	76.8		116	70-130	0.641	25	
Tetrachloroethene	150	6.9	"	138		110	70-130	2.60	25	
Ethylbenzene	96	4.4	"	88.4		108	70-130	2.18	25	
m,p-Xylene	220	8.8	"	177		125	70-130	0.974	25	
o-Xylene	100	4.4	"	88.4		117	70-130	3.62	25	
Surrogate: 1,2-Dichloroethane-d4	*255*		*"*	*214*		*119*	*76-134*			
Surrogate: Toluene-d8	*218*		*"*	*207*		*105*	*78-125*			
Surrogate: 4-Bromofluorobenzene	*364*		*"*	*364*		*99.9*	*77-127*			

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Federal Way, WA 98001	Project Manager: Mr. Josh Hopp	28-Jan-15 09:16

Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

Appendix

H&P Mobile Geochemistry, Inc. is approved as an Environmental Testing Laboratory and Mobile Laboratory in accordance with the DoD-ELAP and the ISO 17025 programs, certification number L11-175.

H&P is approved by the State of Arizona as an Environmental Testing Laboratory and Mobile Laboratory, certification numbers AZM758 and AZ0779.

H&P is approved by the State of California as an Environmental Laboratory and Mobile Laboratory in conformance with the Environmental Laboratory Accreditation Program (ELAP) for the category of Volatile and Semi-Volatile Organic Chemistry of Hazardous Waste, certification numbers 2740, 2741, 2743, 2744, 2745, 2754 & 2930.

H&P is approved by the State of Florida Department of Health under the National Environmental Laboratory Accreditation Conference (NELAC) certification number E871100.

The complete list of stationary and mobile laboratory certifications along with the fields of testing (FOTs) and analyte lists are available at www.handpmg.com/about/certifications.

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VAPOR / AIR Chain of Custody

DATE: 1/22/15
Page 1 of 1

Lab Client and Project Information

Lab Client/Consultant: Kennedy Jenks
Lab Client Project Manager: Josh Hopp
Lab Client Address: 32001 32nd Ave S. Suite 100
Lab Client City, State, Zip: Federal Way WA 98001
Phone Number: (253) 835-6400

Project Name / #: Yakima Proj 1196016.00 Task 8
Project Location: Yakima
Report E-Mail(s): ~~joshhopp~~ @ kennedyjenks.com
josh hopp

Reporting Requirements

☒ Standard Report ☐ Level III ☐ Level IV
☒ Excel EDD ☐ Other EDD:
☐ CA Geotracker Global ID:

Turnaround Time

☑ 5-7 day Stnd ☐ 24-Hr Rush
☒ 3-day Rush ☐ Mobile Lab
☐ 48-Hr Rush ☐ Other:

Sampler Information

Sampler(s): Josh Shaw
Signature:
Date: 1/22/15

Sample Receipt (Lab Use Only)

Date Rec'd: 1-23-15
Control #: 150032.01
H&P Project # KJ012315-10
Lab Work Order # E501085
Sample Intact: ☑ Yes ☐ No ☐ See Notes Below
Receipt Gauge ID: 11167
Temp: 21 °C
Outside Lab:
Receipt Notes/Tracking #:
1Z93TT61 8447080826
Lab PM Initials: MA

Additional Instructions to Laboratory:

☒ Check if Project Analyte List is ~~Attached~~ Same as previously reported. MA 1/23/15
** Preferred VOC units (please choose one):*
☐ µg/L ☑ µg/m³ ☐ ppbv ☐ ppmv

SAMPLE NAME	FIELD POINT NAME (if applicable)	DATE mm/dd/yy	TIME 24hr clock	SAMPLE TYPE Indoor Air (IA), Ambient Air (AA), Subslab (SS), Soil Vapor (SV)	CONTAINER SIZE & TYPE 400mL/1L/6L Summa or Tedlar or Tube	CONTAINER ID (###)	Lab use only: Receipt Vac	VOCs Standard Full List ☐ 8260SV ☐ TO-15	VOCs Short List / Project List ☐ 8260SV ☒ TO-15 MA 1/23/15	Oxygenates ☐ 8260SV ☐ TO-15	Naphthalene ☐ 8260SV ☐ TO-15 ☐ TO-17m	TPHv as Gas ☐ 8260SVm ☐ TO-15m	TPHv as Diesel (sorbent tube) ☐ TO-17m	Aromatic/Aliphatic Fractions ☐ 8260SVm ☐ TO-15m	Leak Check Compound ☐ DFA ☐ IPA ☐ He	Methane by EPA 8015m	Fixed Gases by ASTM D1945 ☐ CO2 ☐ O2 ☐ N2	72-h. TAT	TO-15	
FW-Effluent-149	Effluent	1/22/15	14:30	SV	400mL	149	-.14											X	X*	
FW-Btwn-006	Between	"	14:35	"	"	006	.07													
FW-Influent-158	Influent	"	14:45	"	"	158	-3.33													

	Company:	Date:	Time:		Company:	Date:	Time:
Approved/Relinquished by:	Ecology	1/22/15	16:30	Received by:	UPS		
Approved/Relinquished by:	UPS			Received by: GVillarreal	H+P	1/23/15	11:58
Approved/Relinquished by:				Received by:			

*Approval constitutes as authorization to proceed with analysis and acceptance of conditions on back

Rev 12/31/2013

Mobile Geochemistry Inc.

01 April 2015

Mr. Josh Hopp
Kennedy/Jenks Consultants - Washington
32001 32nd Ave. South, Suite 100
Federal Way, WA 98001

H&P Project: KJ031915-12
Client Project: 1196016.00/Task 8/00 / Yakima, WA

Dear Mr. Josh Hopp:

Enclosed is the analytical report for the above referenced project. The data herein applies to samples as received by H&P Mobile Geochemistry, Inc. on 19-Mar-15 which were analyzed in accordance with the attached Chain of Custody record(s).

The results for all sample analyses and required QA/QC analyses are presented in the following sections and summarized in the documents:

- Sample Summary
- Case Narrative (if applicable)
- Sample Results
- Quality Control Summary
- Notes and Definitions / Appendix
- Chain of Custody

Unless otherwise noted, I certify that all analyses were performed and reviewed in compliance with our Quality Systems Manual and Standard Operating Procedures. This report shall not be reproduced, except in full, without the written approval of H&P Mobile Geochemistry, Inc.

We at H&P Mobile Geochemistry, Inc. sincerely appreciate the opportunity to provide analytical services to you on this project. If you have any questions or concerns regarding this analytical report, please contact me at your convenience at 760-804-9678.

Sincerely,

Janis Villarreal

Janis Villarreal
Laboratory Director

H&P Mobile Geochemistry, Inc. is certified under the California ELAP, the National Environmental Laboratory Accreditation Conference (NELAC) and the Department of Defense Accreditation Programs.

H&P Mobile
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Kennedy/Jenks Consultants - Washington	Project: KJ031915-12	
32001 32nd Ave. South, Suite 100	Project Number: 1196016.00/Task 8/00 / Yakima, WA	Reported:
Federal Way, WA 98001	Project Manager: Mr. Josh Hopp	01-Apr-15 10:03

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FW-Effluent-292	E503094-01	Vapor	16-Mar-15	19-Mar-15
FW-Btwn-324	E503094-02	Vapor	16-Mar-15	19-Mar-15
FW-Influent-017	E503094-03	Vapor	16-Mar-15	19-Mar-15
FW-SVE2U-331	E503094-04	Vapor	16-Mar-15	19-Mar-15
FW-SVE5L-028	E503094-05	Vapor	16-Mar-15	19-Mar-15
FW-SVE4L-260	E503094-06	Vapor	16-Mar-15	19-Mar-15
FW-SVE3L-011	E503094-07	Vapor	16-Mar-15	19-Mar-15
FW-SVE1U-207	E503094-08	Vapor	16-Mar-15	19-Mar-15

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32001 32nd Ave. South, Suite 100	Project Number: 1196016.00/Task 8/00 / Yakima, WA	Reported:
Federal Way, WA 98001	Project Manager: Mr. Josh Hopp	01-Apr-15 10:03

DETECTIONS SUMMARY

Sample ID: **FW-Effluent-292** Laboratory ID: **E503094-01**

Analyte	Result	Reporting Limit	Units	Method	Notes
Methylene chloride (Dichloromethane)	**28**	3.5	ug/m3	EPA TO-15	
trans-1,2-Dichloroethene	**9.0**	8.0	ug/m3	EPA TO-15	
cis-1,2-Dichloroethene	**6.2**	4.0	ug/m3	EPA TO-15	
1,2-Dichloroethane (EDC)	**18**	4.1	ug/m3	EPA TO-15	
Benzene	**4.5**	3.2	ug/m3	EPA TO-15	
Toluene	**190**	3.8	ug/m3	EPA TO-15	
Tetrachloroethene	**25**	6.9	ug/m3	EPA TO-15	
m,p-Xylene	**8.9**	8.8	ug/m3	EPA TO-15	

Sample ID: **FW-Btwn-324** Laboratory ID: **E503094-02**

Analyte	Result	Reporting Limit	Units	Method	Notes
Vinyl chloride	**25**	2.6	ug/m3	EPA TO-15	
trans-1,2-Dichloroethene	**20**	8.0	ug/m3	EPA TO-15	
cis-1,2-Dichloroethene	**1900**	20	ug/m3	EPA TO-15	
Trichloroethene	**200**	5.5	ug/m3	EPA TO-15	
Tetrachloroethene	**230**	6.9	ug/m3	EPA TO-15	

Sample ID: **FW-Influent-017** Laboratory ID: **E503094-03**

Analyte	Result	Reporting Limit	Units	Method	Notes
Vinyl chloride	**17**	5.2	ug/m3	EPA TO-15	
trans-1,2-Dichloroethene	**24**	16	ug/m3	EPA TO-15	
cis-1,2-Dichloroethene	**750**	8.0	ug/m3	EPA TO-15	
Chloroform	**26**	9.9	ug/m3	EPA TO-15	
1,2-Dichloroethane (EDC)	**23**	8.2	ug/m3	EPA TO-15	
Trichloroethene	**350**	11	ug/m3	EPA TO-15	
Toluene	**69**	7.6	ug/m3	EPA TO-15	
Tetrachloroethene	**7900**	69	ug/m3	EPA TO-15	

Sample ID: **FW-SVE2U-331** Laboratory ID: **E503094-04**

Analyte	Result	Reporting Limit	Units	Method	Notes
Vinyl chloride	**23**	5.2	ug/m3	EPA TO-15	
cis-1,2-Dichloroethene	**800**	8.0	ug/m3	EPA TO-15	
Benzene	**8.5**	6.5	ug/m3	EPA TO-15	
Trichloroethene	**660**	11	ug/m3	EPA TO-15	

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Kennedy/Jenks Consultants - Washington	Project: KJ031915-12	
32001 32nd Ave. South, Suite 100	Project Number: 1196016.00/Task 8/00 / Yakima, WA	Reported:
Federal Way, WA 98001	Project Manager: Mr. Josh Hopp	01-Apr-15 10:03

Sample ID: **FW-SVE2U-331** Laboratory ID: **E503094-04**

Analyte	Result	Reporting Limit	Units	Method	Notes
Toluene	**15**	7.6	ug/m3	EPA TO-15	
Tetrachloroethene	**13000**	69	ug/m3	EPA TO-15	

Sample ID: **FW-SVE5L-028** Laboratory ID: **E503094-05**

Analyte	Result	Reporting Limit	Units	Method	Notes
Vinyl chloride	**4.4**	2.6	ug/m3	EPA TO-15	
Methylene chloride (Dichloromethane)	**27**	3.5	ug/m3	EPA TO-15	
trans-1,2-Dichloroethene	**70**	8.0	ug/m3	EPA TO-15	
cis-1,2-Dichloroethene	**180**	4.0	ug/m3	EPA TO-15	
Chloroform	**7.1**	4.9	ug/m3	EPA TO-15	
1,2-Dichloroethane (EDC)	**140**	4.1	ug/m3	EPA TO-15	
Benzene	**22**	3.2	ug/m3	EPA TO-15	
Trichloroethene	**79**	5.5	ug/m3	EPA TO-15	
Toluene	**560**	3.8	ug/m3	EPA TO-15	
Tetrachloroethene	**1500**	34	ug/m3	EPA TO-15	
Ethylbenzene	**9.9**	4.4	ug/m3	EPA TO-15	
m,p-Xylene	**21**	8.8	ug/m3	EPA TO-15	
o-Xylene	**7.9**	4.4	ug/m3	EPA TO-15	

Sample ID: **FW-SVE4L-260** Laboratory ID: **E503094-06**

Analyte	Result	Reporting Limit	Units	Method	Notes
Methylene chloride (Dichloromethane)	**8.6**	3.5	ug/m3	EPA TO-15	
trans-1,2-Dichloroethene	**8.2**	8.0	ug/m3	EPA TO-15	
1,2-Dichloroethane (EDC)	**15**	4.1	ug/m3	EPA TO-15	
Benzene	**4.5**	3.2	ug/m3	EPA TO-15	
Toluene	**130**	3.8	ug/m3	EPA TO-15	
m,p-Xylene	**9.0**	8.8	ug/m3	EPA TO-15	

Sample ID: **FW-SVE3L-011** Laboratory ID: **E503094-07**

Analyte	Result	Reporting Limit	Units	Method	Notes
Vinyl chloride	**16**	5.2	ug/m3	EPA TO-15	
cis-1,2-Dichloroethene	**860**	8.0	ug/m3	EPA TO-15	
Chloroform	**11**	9.9	ug/m3	EPA TO-15	
Benzene	**130**	6.5	ug/m3	EPA TO-15	
Trichloroethene	**190**	11	ug/m3	EPA TO-15	
Toluene	**54**	7.6	ug/m3	EPA TO-15	

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Sample ID: **FW-SVE3L-011** Laboratory ID: **E503094-07**

Analyte	Result	Reporting Limit	Units	Method	Notes
Tetrachloroethene	**7000**	69	ug/m3	EPA TO-15	

Sample ID: **FW-SVE1U-207** Laboratory ID: **E503094-08**

Analyte	Result	Reporting Limit	Units	Method	Notes
cis-1,2-Dichloroethene	**75**	4.0	ug/m3	EPA TO-15	
Chloroform	**15**	4.9	ug/m3	EPA TO-15	
Benzene	**85**	3.2	ug/m3	EPA TO-15	
Trichloroethene	**33**	5.5	ug/m3	EPA TO-15	
Toluene	**26**	3.8	ug/m3	EPA TO-15	
Tetrachloroethene	**320**	6.9	ug/m3	EPA TO-15	

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Volatile Organic Compounds by EPA TO-15

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Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
FW-Effluent-292 (E503094-01) Vapor Sampled: 16-Mar-15 Received: 19-Mar-15									
Vinyl chloride	ND	2.6	ug/m3	1	EC52710	27-Mar-15	27-Mar-15	EPA TO-15	
Methylene chloride (Dichloromethane)	**28**	3.5	"	"	"	"	"	"	
trans-1,2-Dichloroethene	**9.0**	8.0	"	"	"	"	"	"	
cis-1,2-Dichloroethene	**6.2**	4.0	"	"	"	"	"	"	
Chloroform	ND	4.9	"	"	"	"	"	"	
1,2-Dichloroethane (EDC)	**18**	4.1	"	"	"	"	"	"	
Benzene	**4.5**	3.2	"	"	"	"	"	"	
Trichloroethene	ND	5.5	"	"	"	"	"	"	
Toluene	**190**	3.8	"	"	"	"	"	"	
Tetrachloroethene	**25**	6.9	"	"	"	"	"	"	
Ethylbenzene	ND	4.4	"	"	"	"	"	"	
m,p-Xylene	**8.9**	8.8	"	"	"	"	"	"	
o-Xylene	ND	4.4	"	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*98.6 %*		*76-134*	"	"	"	"	
Surrogate: Toluene-d8		*105 %*		*78-125*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*111 %*		*77-127*	"	"	"	"	
FW-Btwn-324 (E503094-02) Vapor Sampled: 16-Mar-15 Received: 19-Mar-15									
Vinyl chloride	**25**	2.6	ug/m3	1	EC52710	27-Mar-15	27-Mar-15	EPA TO-15	
Methylene chloride (Dichloromethane)	ND	3.5	"	"	"	"	"	"	
trans-1,2-Dichloroethene	**20**	8.0	"	"	"	"	"	"	
cis-1,2-Dichloroethene	**1900**	20	"	5	"	"	"	"	
Chloroform	ND	4.9	"	1	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	4.1	"	"	"	"	"	"	
Benzene	ND	3.2	"	"	"	"	"	"	
Trichloroethene	**200**	5.5	"	"	"	"	"	"	
Toluene	ND	3.8	"	"	"	"	"	"	
Tetrachloroethene	**230**	6.9	"	"	"	"	"	"	
Ethylbenzene	ND	4.4	"	"	"	"	"	"	
m,p-Xylene	ND	8.8	"	"	"	"	"	"	
o-Xylene	ND	4.4	"	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*96.3 %*		*76-134*	"	"	"	"	
Surrogate: Toluene-d8		*105 %*		*78-125*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*104 %*		*77-127*	"	"	"	"	

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Volatile Organic Compounds by EPA TO-15

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Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
FW-Influent-017 (E503094-03) Vapor	**Sampled: 16-Mar-15**	**Received: 19-Mar-15**							
Vinyl chloride	**17**	5.2	ug/m3	2	EC52710	27-Mar-15	28-Mar-15	EPA TO-15	
Methylene chloride (Dichloromethane)	ND	7.1	"	"	"	"	"	"	
trans-1,2-Dichloroethene	**24**	16	"	"	"	"	"	"	
cis-1,2-Dichloroethene	**750**	8.0	"	"	"	"	"	"	
Chloroform	**26**	9.9	"	"	"	"	"	"	
1,2-Dichloroethane (EDC)	**23**	8.2	"	"	"	"	"	"	
Benzene	ND	6.5	"	"	"	"	"	"	
Trichloroethene	**350**	11	"	"	"	"	"	"	
Toluene	**69**	7.6	"	"	"	"	"	"	
Tetrachloroethene	**7900**	69	"	10	"	"	"	"	
Ethylbenzene	ND	8.8	"	2	"	"	"	"	
m,p-Xylene	ND	18	"	"	"	"	"	"	
o-Xylene	ND	8.8	"	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*99.6 %*		*76-134*	"	"	"	"	
Surrogate: Toluene-d8		*106 %*		*78-125*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*108 %*		*77-127*	"	"	"	"	
FW-SVE2U-331 (E503094-04) Vapor	**Sampled: 16-Mar-15**	**Received: 19-Mar-15**							
Vinyl chloride	**23**	5.2	ug/m3	2	EC52710	27-Mar-15	28-Mar-15	EPA TO-15	
Methylene chloride (Dichloromethane)	ND	7.1	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	16	"	"	"	"	"	"	
cis-1,2-Dichloroethene	**800**	8.0	"	"	"	"	"	"	
Chloroform	ND	9.9	"	"	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	8.2	"	"	"	"	"	"	
Benzene	**8.5**	6.5	"	"	"	"	"	"	
Trichloroethene	**660**	11	"	"	"	"	"	"	
Toluene	**15**	7.6	"	"	"	"	"	"	
Tetrachloroethene	**13000**	69	"	10	"	"	"	"	
Ethylbenzene	ND	8.8	"	2	"	"	"	"	
m,p-Xylene	ND	18	"	"	"	"	"	"	
o-Xylene	ND	8.8	"	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*98.8 %*		*76-134*	"	"	"	"	
Surrogate: Toluene-d8		*79.8 %*		*78-125*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*115 %*		*77-127*	"	"	"	"	

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Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
FW-SVE5L-028 (E503094-05) Vapor Sampled: 16-Mar-15 Received: 19-Mar-15									
Vinyl chloride	**4.4**	2.6	ug/m3	1	EC52710	27-Mar-15	28-Mar-15	EPA TO-15	
Methylene chloride (Dichloromethane)	**27**	3.5	"	"	"	"	"	"	
trans-1,2-Dichloroethene	**70**	8.0	"	"	"	"	"	"	
cis-1,2-Dichloroethene	**180**	4.0	"	"	"	"	"	"	
Chloroform	**7.1**	4.9	"	"	"	"	"	"	
1,2-Dichloroethane (EDC)	**140**	4.1	"	"	"	"	"	"	
Benzene	**22**	3.2	"	"	"	"	"	"	
Trichloroethene	**79**	5.5	"	"	"	"	"	"	
Toluene	**560**	3.8	"	"	"	"	"	"	
Tetrachloroethene	**1500**	34	"	5	"	"	"	"	
Ethylbenzene	**9.9**	4.4	"	1	"	"	"	"	
m,p-Xylene	**21**	8.8	"	"	"	"	"	"	
o-Xylene	**7.9**	4.4	"	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*104 %*	*76-134*		"	"	"	"	
Surrogate: Toluene-d8		*108 %*	*78-125*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*105 %*	*77-127*		"	"	"	"	
FW-SVE4L-260 (E503094-06) Vapor Sampled: 16-Mar-15 Received: 19-Mar-15									
Vinyl chloride	ND	2.6	ug/m3	1	EC52710	27-Mar-15	27-Mar-15	EPA TO-15	
Methylene chloride (Dichloromethane)	**8.6**	3.5	"	"	"	"	"	"	
trans-1,2-Dichloroethene	**8.2**	8.0	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	4.0	"	"	"	"	"	"	
Chloroform	ND	4.9	"	"	"	"	"	"	
1,2-Dichloroethane (EDC)	**15**	4.1	"	"	"	"	"	"	
Benzene	**4.5**	3.2	"	"	"	"	"	"	
Trichloroethene	ND	5.5	"	"	"	"	"	"	
Toluene	**130**	3.8	"	"	"	"	"	"	
Tetrachloroethene	ND	6.9	"	"	"	"	"	"	
Ethylbenzene	ND	4.4	"	"	"	"	"	"	
m,p-Xylene	**9.0**	8.8	"	"	"	"	"	"	
o-Xylene	ND	4.4	"	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*99.3 %*	*76-134*		"	"	"	"	
Surrogate: Toluene-d8		*107 %*	*78-125*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*107 %*	*77-127*		"	"	"	"	

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Volatile Organic Compounds by EPA TO-15

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Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
FW-SVE3L-011 (E503094-07) Vapor Sampled: 16-Mar-15 Received: 19-Mar-15									
Vinyl chloride	**16**	5.2	ug/m3	2	EC52710	27-Mar-15	28-Mar-15	EPA TO-15	
Methylene chloride (Dichloromethane)	ND	7.1	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	16	"	"	"	"	"	"	
cis-1,2-Dichloroethene	**860**	8.0	"	"	"	"	"	"	
Chloroform	**11**	9.9	"	"	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	8.2	"	"	"	"	"	"	
Benzene	**130**	6.5	"	"	"	"	"	"	
Trichloroethene	**190**	11	"	"	"	"	"	"	
Toluene	**54**	7.6	"	"	"	"	"	"	
Tetrachloroethene	**7000**	69	"	10	"	"	"	"	
Ethylbenzene	ND	8.8	"	2	"	"	"	"	
m,p-Xylene	ND	18	"	"	"	"	"	"	
o-Xylene	ND	8.8	"	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*99.7 %*		*76-134*	"	"	"	"	
Surrogate: Toluene-d8		*108 %*		*78-125*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*102 %*		*77-127*	"	"	"	"	
FW-SVE1U-207 (E503094-08) Vapor Sampled: 16-Mar-15 Received: 19-Mar-15									
Vinyl chloride	ND	2.6	ug/m3	1	EC52710	27-Mar-15	27-Mar-15	EPA TO-15	
Methylene chloride (Dichloromethane)	ND	3.5	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	8.0	"	"	"	"	"	"	
cis-1,2-Dichloroethene	**75**	4.0	"	"	"	"	"	"	
Chloroform	**15**	4.9	"	"	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	4.1	"	"	"	"	"	"	
Benzene	**85**	3.2	"	"	"	"	"	"	
Trichloroethene	**33**	5.5	"	"	"	"	"	"	
Toluene	**26**	3.8	"	"	"	"	"	"	
Tetrachloroethene	**320**	6.9	"	"	"	"	"	"	
Ethylbenzene	ND	4.4	"	"	"	"	"	"	
m,p-Xylene	ND	8.8	"	"	"	"	"	"	
o-Xylene	ND	4.4	"	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*103 %*		*76-134*	"	"	"	"	
Surrogate: Toluene-d8		*106 %*		*78-125*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*102 %*		*77-127*	"	"	"	"	

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Volatile Organic Compounds by EPA TO-15 - Quality Control

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EC52710 - TO-15										
Blank (EC52710-BLK1)				Prepared & Analyzed: 27-Mar-15						
Vinyl chloride	ND	2.6	ug/m3							
Methylene chloride (Dichloromethane)	ND	3.5	"							
trans-1,2-Dichloroethene	ND	8.0	"							
cis-1,2-Dichloroethene	ND	4.0	"							
Chloroform	ND	4.9	"							
1,2-Dichloroethane (EDC)	ND	4.1	"							
Benzene	ND	3.2	"							
Trichloroethene	ND	5.5	"							
Toluene	ND	3.8	"							
Tetrachloroethene	ND	6.9	"							
Ethylbenzene	ND	4.4	"							
m,p-Xylene	ND	8.8	"							
o-Xylene	ND	4.4	"							
Surrogate: 1,2-Dichloroethane-d4	*235*		*"*	*214*		*110*	*76-134*			
Surrogate: Toluene-d8	*219*		*"*	*207*		*106*	*78-125*			
Surrogate: 4-Bromofluorobenzene	*386*		*"*	*364*		*106*	*77-127*			
LCS (EC52710-BS1)				Prepared & Analyzed: 27-Mar-15						
Vinyl chloride	26	2.6	ug/m3	26.0		101	70-130			
Methylene chloride (Dichloromethane)	35	3.5	"	35.4		98.5	70-130			
trans-1,2-Dichloroethene	43	8.0	"	40.4		108	70-130			
cis-1,2-Dichloroethene	45	4.0	"	40.0		113	70-130			
Chloroform	60	4.9	"	49.6		120	70-130			
1,2-Dichloroethane (EDC)	48	4.1	"	41.2		117	70-130			
Benzene	34	3.2	"	32.4		105	70-130			
Trichloroethene	57	5.5	"	54.8		104	70-130			
Toluene	39	3.8	"	38.4		101	70-130			
Tetrachloroethene	70	6.9	"	69.0		101	70-130			
Ethylbenzene	41	4.4	"	44.2		93.8	70-130			
m,p-Xylene	91	8.8	"	88.4		103	70-130			
o-Xylene	45	4.4	"	44.2		101	70-130			
Surrogate: 1,2-Dichloroethane-d4	*236*		*"*	*214*		*110*	*76-134*			

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Volatile Organic Compounds by EPA TO-15 - Quality Control

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EC52710 - TO-15										
LCS (EC52710-BS1)				Prepared & Analyzed: 27-Mar-15						
Surrogate: Toluene-d8	*218*		*ug/m3*	*207*		*105*	*78-125*			
Surrogate: 4-Bromofluorobenzene	*404*		*"*	*364*		*111*	*77-127*			
LCS Dup (EC52710-BSD1)				Prepared & Analyzed: 27-Mar-15						
Vinyl chloride	24	2.6	ug/m3	26.0		94.1	70-130	7.36	25	
Methylene chloride (Dichloromethane)	31	3.5	"	35.4		88.5	70-130	10.7	25	
trans-1,2-Dichloroethene	38	8.0	"	40.4		94.0	70-130	13.4	25	
cis-1,2-Dichloroethene	40	4.0	"	40.0		98.9	70-130	13.6	25	
Chloroform	51	4.9	"	49.6		104	70-130	14.6	25	
1,2-Dichloroethane (EDC)	42	4.1	"	41.2		102	70-130	13.1	25	
Benzene	29	3.2	"	32.4		90.4	70-130	14.7	25	
Trichloroethene	57	5.5	"	54.8		103	70-130	0.939	25	
Toluene	31	3.8	"	38.4		80.4	70-130	23.0	25	
Tetrachloroethene	57	6.9	"	69.0		82.8	70-130	20.1	25	
Ethylbenzene	34	4.4	"	44.2		76.4	70-130	20.4	25	
m,p-Xylene	79	8.8	"	88.4		89.6	70-130	14.1	25	
o-Xylene	37	4.4	"	44.2		82.7	70-130	19.7	25	
Surrogate: 1,2-Dichloroethane-d4	*213*		*"*	*214*		*99.4*	*76-134*			
Surrogate: Toluene-d8	*181*		*"*	*207*		*87.6*	*78-125*			
Surrogate: 4-Bromofluorobenzene	*332*		*"*	*364*		*91.1*	*77-127*			

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Notes and Definitions

LCC	Leak Check Compound
ND	Analyte NOT DETECTED at or above the reporting limit
MDL	Method Detection Limit
%REC	Percent Recovery
RPD	Relative Percent Difference

Appendix

H&P Mobile Geochemistry, Inc. is approved as an Environmental Testing Laboratory and Mobile Laboratory in accordance with the DoD-ELAP and the ISO 17025 programs, certification number L11-175.

H&P is approved by the State of Arizona as an Environmental Testing Laboratory and Mobile Laboratory, certification numbers AZM758 and AZ0779.

H&P is approved by the State of California as an Environmental Laboratory and Mobile Laboratory in conformance with the Environmental Laboratory Accreditation Program (ELAP) for the category of Volatile and Semi-Volatile Organic Chemistry of Hazardous Waste, certification numbers 2740, 2741, 2743, 2744, 2745, 2754 & 2930.

H&P is approved by the State of Florida Department of Health under the National Environmental Laboratory Accreditation Conference (NELAC) certification number E871100.

The complete list of stationary and mobile laboratory certifications along with the fields of testing (FOTs) and analyte lists are available at www.handpmg.com/about/certifications.

Mobile Geochemistry, Inc.
2470 Impala Drive, Carlsbad, CA 92010
& Field Office - Signal Hill, CA
W handpmg.com E info@handpmg.com
P 760.804.9678 F 760.804.9159

VAPOR / AIR Chain of Custody

DATE: 3-16-15
Page 1 of 1

Lab Client and Project Information

Lab Client/Consultant: Kennedy/Jenks Consultants	Project Name / #: 1196016.00/TASK8/00
Lab Client Project Manager: Josh Hopp	Project Location: Yakima, WA
Lab Client Address: 32001 32nd Ave S, Suite 100	Report E-Mail(s): joshhopp@kennedyjenks.com
Lab Client City, State, Zip: Federal Way, WA 98001	
Phone Number: 253-835-6408	

Reporting Requirements
- [x] Standard Report [ ] Level III [ ] Level IV
- [x] Excel EDD [ ] Other EDD:
- [ ] CA Geotracker Global ID:

Turnaround Time
- [x] 5-7 day Stnd [ ] 24-Hr Rush
- [ ] 3-day Rush [ ] Mobile Lab
- [ ] 48-Hr Rush [ ] Other:

Sampler Information
Sampler(s): J. Shing
Signature:
Date: 3/16/15

Sample Receipt (Lab Use Only)

Date Rec'd: 3/19/15	Control #: 150194.01
H&P Project # KJ031915-12	
Lab Work Order # E503094	
Sample Intact: [x] Yes [ ] No [ ] See Notes Below	
Receipt Gauge ID: 11167	Temp: 23°C
Outside Lab:	
Receipt Notes/Tracking #: 1Z93TT61 84 4770 6383 CONTAINER 202 IS ACTUALLY 207.	
Lab PM Initials: SN	

Additional Instructions to Laboratory:

[x] Check if Project Analyte List ~~is Attached~~ previously sent to H&P (USE SAME LIST AS PREVIOUS EVENT IN DECEMBER 2014- SN 3/19/15)

** Preferred VOC units (please choose one):*

[ ] µg/L [x] µg/m³ [ ] ppbv [ ] ppmv

SAMPLE NAME	FIELD POINT NAME (if applicable)	DATE mm/dd/yy	TIME 24hr clock	SAMPLE TYPE Indoor Air (IA), Ambient Air (AA), Subslab (SS), Soil Vapor (SV)	CONTAINER SIZE & TYPE 400mL/1L/6L Summa or Tedlar or Tube	CONTAINER ID (###)	Lab use only: Receipt Vac	VOCs Standard Full List [ ] 8260SV [ ] TO-15	VOCs Short List (Project List) SN 3/19/15 [x] 8260SV [x] TO-15	Oxygenates [ ] 8260SV [ ] TO-15	Naphthalene [ ] 8260SV [ ] TO-15 [ ] TO-17m	TPHv as Gas [ ] 8260SVm [ ] TO-15m	TPHv as Diesel (sorbent tube) [ ] TO-17m	Aromatic/Aliphatic Fractions [ ] 8260SVm [ ] TO-15m	Leak Check Compound [ ] DFA [ ] IPA [ ] He	Methane by EPA 8015m	Fixed Gases by ASTM D1945 [ ] CO2 [ ] O2 [ ] N2			
FW-Effluent-292	Effluent	3/16/15	12:20	SV	400mL	292	.16		X											
FW-Btwn-324	In between	↓	12:25	↓	↓	324	-.25		X											
FW-Influent-017	Influent		12:30			017	-2.50		X											
FW-SVE2U-331	SVE-2 Upper		13:45			331	-1.66		X											
FW-SVE5L-028	SVE-5 Lower		13:50			028	.11		X											
FW-SVE4L-200	SVE-4 Lower		13:55			200	-1.19		X											
FW-SVE3L-011	SVE-3 Lower		14:00			011	-3.00		X											
~~FW-SVE~~ SN 3/19/15																				
FW-SVE1U-~~202~~ 207	SVE-1 Upper		14:05			207-TV 3/19/15 ~~202~~	-1.74		X											

Approved/Relinquished by:	Company: KJC	Date: 3/17/15	Time: 1000	Received by: Jori Unsworth	Company: H&P	Date: 3/19/15	Time: 9:30
Approved/Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:
Approved/Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:

*Approval constitutes as authorization to proceed with analysis and acceptance of conditions on back

Rev 12/31/2013

Mobile Geochemistry Inc.

07 July 2015

Mr. Josh Hopp
Kennedy/Jenks Consultants - Washington
32001 32nd Ave. South, Suite 100
Federal Way, WA 98001

H&P Project: KJ062915-11
Client Project: 1196016*00 Task 8 / Yakima, WA

Dear Mr. Josh Hopp:

Enclosed is the analytical report for the above referenced project. The data herein applies to samples as received by H&P Mobile Geochemistry, Inc. on 29-Jun-15 which were analyzed in accordance with the attached Chain of Custody record(s).

The results for all sample analyses and required QA/QC analyses are presented in the following sections and summarized in the documents:

- Sample Summary
- Case Narrative (if applicable)
- Sample Results
- Quality Control Summary
- Notes and Definitions / Appendix
- Chain of Custody

Unless otherwise noted, I certify that all analyses were performed and reviewed in compliance with our Quality Systems Manual and Standard Operating Procedures. This report shall not be reproduced, except in full, without the written approval of H&P Mobile Geochemistry, Inc.

We at H&P Mobile Geochemistry, Inc. sincerely appreciate the opportunity to provide analytical services to you on this project. If you have any questions or concerns regarding this analytical report, please contact me at your convenience at 760-804-9678.

Sincerely,

Janis Villarreal

Janis Villarreal
Laboratory Director

H&P Mobile Geochemistry, Inc. is certified under the California ELAP, the National Environmental Laboratory Accreditation Conference (NELAC) and the Department of Defense Accreditation Programs.

H&P Mobile
Geochemistry Inc.

2470 Impala Drive
Carlsbad, CA 92010
760-804-9678 Phone
760-804-9159 Fax

Kennedy/Jenks Consultants - Washington	Project: KJ062915-11	
32001 32nd Ave. South, Suite 100	Project Number: 1196016*00 Task 8 / Yakima, WA	Reported:
Federal Way, WA 98001	Project Manager: Mr. Josh Hopp	07-Jul-15 10:41

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FW-Influent-460	E506122-01	Vapor	25-Jun-15	29-Jun-15
FW-Btwn-264	E506122-02	Vapor	25-Jun-15	29-Jun-15
FW-Effluent-461	E506122-03	Vapor	25-Jun-15	29-Jun-15

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Kennedy/Jenks Consultants - Washington	Project: KJ062915-11	
32001 32nd Ave. South, Suite 100	Project Number: 1196016*00 Task 8 / Yakima, WA	Reported:
Federal Way, WA 98001	Project Manager: Mr. Josh Hopp	07-Jul-15 10:41

DETECTIONS SUMMARY

Sample ID: **FW-Influent-460** Laboratory ID: **E506122-01**

Analyte	Result	Reporting Limit	Units	Method	Notes
Vinyl chloride	**22**	5.2	ug/m3	EPA TO-15	
cis-1,2-Dichloroethene	**710**	8.0	ug/m3	EPA TO-15	
Chloroform	**25**	9.9	ug/m3	EPA TO-15	
Benzene	**6.9**	6.5	ug/m3	EPA TO-15	
Trichloroethene	**840**	11	ug/m3	EPA TO-15	
Tetrachloroethene	**4200**	14	ug/m3	EPA TO-15	

Sample ID: **FW-Btwn-264** Laboratory ID: **E506122-02**

Analyte	Result	Reporting Limit	Units	Method	Notes
Vinyl chloride	**19**	2.6	ug/m3	EPA TO-15	
trans-1,2-Dichloroethene	**9.5**	8.0	ug/m3	EPA TO-15	
cis-1,2-Dichloroethene	**660**	4.0	ug/m3	EPA TO-15	
Chloroform	**23**	4.9	ug/m3	EPA TO-15	
Benzene	**13**	3.2	ug/m3	EPA TO-15	
Trichloroethene	**200**	5.5	ug/m3	EPA TO-15	
Tetrachloroethene	**2100**	6.9	ug/m3	EPA TO-15	

Sample ID: **FW-Effluent-461** Laboratory ID: **E506122-03**

Analyte	Result	Reporting Limit	Units	Method	Notes
Vinyl chloride	**20**	2.6	ug/m3	EPA TO-15	
trans-1,2-Dichloroethene	**64**	8.0	ug/m3	EPA TO-15	
cis-1,2-Dichloroethene	**4900**	20	ug/m3	EPA TO-15	
Chloroform	**70**	4.9	ug/m3	EPA TO-15	
Benzene	**550**	3.2	ug/m3	EPA TO-15	
Trichloroethene	**7.4**	5.5	ug/m3	EPA TO-15	
Toluene	**7.3**	3.8	ug/m3	EPA TO-15	
Tetrachloroethene	**21**	6.9	ug/m3	EPA TO-15	

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32001 32nd Ave. South, Suite 100	Project Number: 1196016*00 Task 8 / Yakima, WA	Reported:
Federal Way, WA 98001	Project Manager: Mr. Josh Hopp	07-Jul-15 10:41

Volatile Organic Compounds by EPA TO-15

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
FW-Influent-460 (E506122-01) Vapor Sampled: 25-Jun-15 Received: 29-Jun-15									
Vinyl chloride	**22**	5.2	ug/m3	2	EG50208	02-Jul-15	02-Jul-15	EPA TO-15	
Methylene chloride (Dichloromethane)	ND	7.1	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	16	"	"	"	"	"	"	
cis-1,2-Dichloroethene	**710**	8.0	"	"	"	"	"	"	
Chloroform	**25**	9.9	"	"	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	8.2	"	"	"	"	"	"	
Benzene	**6.9**	6.5	"	"	"	"	"	"	
Trichloroethene	**840**	11	"	"	"	"	"	"	
Toluene	ND	7.6	"	"	"	"	"	"	
Tetrachloroethene	**4200**	14	"	"	"	"	"	"	
Ethylbenzene	ND	8.8	"	"	"	"	"	"	
m,p-Xylene	ND	18	"	"	"	"	"	"	
o-Xylene	ND	8.8	"	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*109 %*		*76-134*	"	"	"	"	
Surrogate: Toluene-d8		*104 %*		*78-125*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*89.6 %*		*77-127*	"	"	"	"	
FW-Btwn-264 (E506122-02) Vapor Sampled: 25-Jun-15 Received: 29-Jun-15									
Vinyl chloride	**19**	2.6	ug/m3	1	EG50208	02-Jul-15	02-Jul-15	EPA TO-15	
Methylene chloride (Dichloromethane)	ND	3.5	"	"	"	"	"	"	
trans-1,2-Dichloroethene	**9.5**	8.0	"	"	"	"	"	"	
cis-1,2-Dichloroethene	**660**	4.0	"	"	"	"	"	"	
Chloroform	**23**	4.9	"	"	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	4.1	"	"	"	"	"	"	
Benzene	**13**	3.2	"	"	"	"	"	"	
Trichloroethene	**200**	5.5	"	"	"	"	"	"	
Toluene	ND	3.8	"	"	"	"	"	"	
Tetrachloroethene	**2100**	6.9	"	"	"	"	"	"	
Ethylbenzene	ND	4.4	"	"	"	"	"	"	
m,p-Xylene	ND	8.8	"	"	"	"	"	"	
o-Xylene	ND	4.4	"	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*79.9 %*		*76-134*	"	"	"	"	
Surrogate: Toluene-d8		*100 %*		*78-125*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*86.0 %*		*77-127*	"	"	"	"	

H&P Mobile
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Kennedy/Jenks Consultants - Washington	Project: KJ062915-11	
32001 32nd Ave. South, Suite 100	Project Number: 1196016*00 Task 8 / Yakima, WA	Reported:
Federal Way, WA 98001	Project Manager: Mr. Josh Hopp	07-Jul-15 10:41

Volatile Organic Compounds by EPA TO-15

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
FW-Effluent-461 (E506122-03) Vapor	**Sampled: 25-Jun-15**	**Received: 29-Jun-15**							
Vinyl chloride	**20**	2.6	ug/m3	1	EG50208	02-Jul-15	02-Jul-15	EPA TO-15	
Methylene chloride (Dichloromethane)	ND	3.5	"	"	"	"	"	"	
trans-1,2-Dichloroethene	**64**	8.0	"	"	"	"	"	"	
cis-1,2-Dichloroethene	**4900**	20	"	5	"	"	03-Jul-15	"	
Chloroform	**70**	4.9	"	1	"	"	02-Jul-15	"	
1,2-Dichloroethane (EDC)	ND	4.1	"	"	"	"	"	"	
Benzene	**550**	3.2	"	"	"	"	"	"	
Trichloroethene	**7.4**	5.5	"	"	"	"	"	"	
Toluene	**7.3**	3.8	"	"	"	"	"	"	
Tetrachloroethene	**21**	6.9	"	"	"	"	"	"	
Ethylbenzene	ND	4.4	"	"	"	"	"	"	
m,p-Xylene	ND	8.8	"	"	"	"	"	"	
o-Xylene	ND	4.4	"	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*111 %*		*76-134*	"	"	"	"	
Surrogate: Toluene-d8		*101 %*		*78-125*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*85.8 %*		*77-127*	"	"	"	"	

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Kennedy/Jenks Consultants - Washington	Project: KJ062915-11	
32001 32nd Ave. South, Suite 100	Project Number: 1196016*00 Task 8 / Yakima, WA	Reported:
Federal Way, WA 98001	Project Manager: Mr. Josh Hopp	07-Jul-15 10:41

Volatile Organic Compounds by EPA TO-15 - Quality Control

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EG50208 - TO-15										
Blank (EG50208-BLK1)				Prepared & Analyzed: 02-Jul-15						
Vinyl chloride	ND	2.6	ug/m3							
Methylene chloride (Dichloromethane)	ND	3.5	"							
trans-1,2-Dichloroethene	ND	8.0	"							
cis-1,2-Dichloroethene	ND	4.0	"							
Chloroform	ND	4.9	"							
1,2-Dichloroethane (EDC)	ND	4.1	"							
Benzene	ND	3.2	"							
Trichloroethene	ND	5.5	"							
Toluene	ND	3.8	"							
Tetrachloroethene	ND	6.9	"							
Ethylbenzene	ND	4.4	"							
m,p-Xylene	ND	8.8	"							
o-Xylene	ND	4.4	"							
Surrogate: 1,2-Dichloroethane-d4	*232*		*"*	*214*		*108*	*76-134*			
Surrogate: Toluene-d8	*211*		*"*	*207*		*102*	*78-125*			
Surrogate: 4-Bromofluorobenzene	*328*		*"*	*364*		*90.1*	*77-127*			
LCS (EG50208-BS1)				Prepared & Analyzed: 02-Jul-15						
Vinyl chloride	51	2.6	ug/m3	52.0		98.8	70-130			
Methylene chloride (Dichloromethane)	76	3.5	"	70.8		107	70-130			
trans-1,2-Dichloroethene	73	8.0	"	80.8		90.9	70-130			
cis-1,2-Dichloroethene	73	4.0	"	80.0		91.2	70-130			
Chloroform	100	4.9	"	99.2		102	70-130			
1,2-Dichloroethane (EDC)	84	4.1	"	82.4		102	70-130			
Benzene	63	3.2	"	64.8		97.0	70-130			
Trichloroethene	110	5.5	"	110		99.7	70-130			
Toluene	74	3.8	"	76.8		97.0	70-130			
Tetrachloroethene	130	6.9	"	138		96.2	70-130			
Ethylbenzene	86	4.4	"	88.4		97.3	70-130			
m,p-Xylene	180	8.8	"	177		102	70-130			
o-Xylene	88	4.4	"	88.4		99.4	70-130			
Surrogate: 1,2-Dichloroethane-d4	*234*		*"*	*214*		*109*	*76-134*			

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Kennedy/Jenks Consultants - Washington	Project: KJ062915-11	
32001 32nd Ave. South, Suite 100	Project Number: 1196016*00 Task 8 / Yakima, WA	Reported:
Federal Way, WA 98001	Project Manager: Mr. Josh Hopp	07-Jul-15 10:41

Volatile Organic Compounds by EPA TO-15 - Quality Control

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EG50208 - TO-15										
LCS (EG50208-BS1)				Prepared & Analyzed: 02-Jul-15						
Surrogate: Toluene-d8	*210*		*ug/m3*	*207*		*102*	*78-125*			
Surrogate: 4-Bromofluorobenzene	*359*		*"*	*364*		*98.5*	*77-127*			
LCS Dup (EG50208-BSD1)				Prepared: 02-Jul-15 Analyzed: 03-Jul-15						
Vinyl chloride	53	2.6	ug/m3	52.0		102	70-130	3.03	25	
Methylene chloride (Dichloromethane)	74	3.5	"	70.8		104	70-130	2.87	25	
trans-1,2-Dichloroethene	74	8.0	"	80.8		91.2	70-130	0.328	25	
cis-1,2-Dichloroethene	76	4.0	"	80.0		94.4	70-130	3.47	25	
Chloroform	99	4.9	"	99.2		99.7	70-130	2.03	25	
1,2-Dichloroethane (EDC)	81	4.1	"	82.4		98.6	70-130	3.38	25	
Benzene	63	3.2	"	64.8		97.8	70-130	0.769	25	
Trichloroethene	110	5.5	"	110		101	70-130	1.04	25	
Toluene	75	3.8	"	76.8		97.2	70-130	0.205	25	
Tetrachloroethene	130	6.9	"	138		96.7	70-130	0.517	25	
Ethylbenzene	89	4.4	"	88.4		101	70-130	3.66	25	
m,p-Xylene	180	8.8	"	177		104	70-130	2.07	25	
o-Xylene	90	4.4	"	88.4		102	70-130	2.23	25	
Surrogate: 1,2-Dichloroethane-d4	*227*		*"*	*214*		*106*	*76-134*			
Surrogate: Toluene-d8	*211*		*"*	*207*		*102*	*78-125*			
Surrogate: 4-Bromofluorobenzene	*357*		*"*	*364*		*97.9*	*77-127*			

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32001 32nd Ave. South, Suite 100	Project Number: 1196016*00 Task 8 / Yakima, WA	Reported:
Federal Way, WA 98001	Project Manager: Mr. Josh Hopp	07-Jul-15 10:41

Notes and Definitions

LCC	Leak Check Compound
ND	Analyte NOT DETECTED at or above the reporting limit
MDL	Method Detection Limit
%REC	Percent Recovery
RPD	Relative Percent Difference

Appendix

H&P Mobile Geochemistry, Inc. is approved as an Environmental Testing Laboratory and Mobile Laboratory in accordance with the DoD-ELAP and the ISO 17025 programs, certification number L11-175.

H&P is approved by the State of Arizona as an Environmental Testing Laboratory and Mobile Laboratory, certification numbers AZM758 and AZ0779.

H&P is approved by the State of California as an Environmental Laboratory and Mobile Laboratory in conformance with the Environmental Laboratory Accreditation Program (ELAP) for the category of Volatile and Semi-Volatile Organic Chemistry of Hazardous Waste, certification numbers 2740, 2741, 2743, 2744, 2745, 2754 & 2930.

H&P is approved by the State of Florida Department of Health under the National Environmental Laboratory Accreditation Conference (NELAC) certification number E871100.

The complete list of stationary and mobile laboratory certifications along with the fields of testing (FOTs) and analyte lists are available at www.handpmg.com/about/certifications.

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VAPOR / AIR Chain of Custody

DATE:_____
Page ____ of ____

Lab Client and Project Information

Lab Client/Consultant: Kennedy Jenks
Lab Client Project Manager: Josh Hopp
Lab Client Address: 32001 32nd Ave S. Ste 100
Lab Client City, State, Zip: Federal Way, WA 98001
Phone Number: 253 835 6400

Project Name / #: Frank Wear / 119601600 Task 8
Project Location: Yakima
Report E-Mail(s): JoshHopp@KennedyJenks.com
JarodFisher@KennedyJenks.com

Sample Receipt (Lab Use Only)

Date Rec'd: 6/29/15 Control #: 150465-01
H&P Project # KJ062915-11
Lab Work Order # E506122
Sample Intact: [X] Yes [ ] No [ ] See Notes Below
Receipt Gauge ID: 11167 Temp: 22°C
Outside Lab:
Receipt Notes/Tracking #: 1293TT618447012720
Lab PM Initials: MA

Reporting Requirements

[X] Standard Report [ ] Level III [ ] Level IV
[X] Excel EDD [ ] Other EDD:_____
[ ] CA Geotracker Global ID:_____

Turnaround Time

[X] 5-7 day Stnd [ ] 24-Hr Rush
[ ] 3-day Rush [ ] Mobile Lab
[ ] 48-Hr Rush [ ] Other:____

Sampler Information

Sampler(s):
Signature:
Date:

Additional Instructions to Laboratory:

[X] Check if Project Analyte List is Attached SAME AS PREV. REPORT MA 6/29/15
*** Preferred VOC units (please choose one):***
[ ] µg/L [ ] µg/m³ [ ] ppbv [ ] ppmv

SAMPLE NAME	FIELD POINT NAME (if applicable)	DATE mm/dd/yy	TIME 24hr clock	SAMPLE TYPE Indoor Air (IA), Ambient Air (AA), Subslab (SS), Soil Vapor (SV)	CONTAINER SIZE & TYPE 400mL/1L/6L Summa or Tedlar or Tube	CONTAINER ID (###)	Lab use only: Receipt Vac	VOCs Standard Full List [ ] 8260SV [ ] TO-15	VOCs Short List / Project List [X] 8260SV [X] TO-15	Oxygenates [ ] 8260SV [ ] TO-15	Naphthalene [ ] 8260SV [ ] TO-15 [ ] TO-17m	TPHv as Gas [ ] 8260SVm [ ] TO-15m	TPHv as Diesel (sorbent tube) [ ] TO-17m	Aromatic/Aliphatic Fractions [ ] 8260SVm [ ] TO-15m	Leak Check Compound [ ] DFA [ ] IPA [ ] He	Methane by EPA 8015m	Fixed Gases by ASTM D1945 [ ] CO2 [ ] O2 [ ] N2	72hr start	10-15 day	
FW-Influent-460	Influent	6/25/15	1040	SV	400 ml	460	-3.93		X											
FW-Btwn-264	Between	↓	1050		↓	264	-3.48		X											
FW-Effluent-461	Effluent	↓	1055	↓ 6/25/15	↓	461	-3.80		X											

Approved/Relinquished by: Jarod Fisher	Company: Kennedy Jenks	Date: 6/25/15	Time: 11:45	Received by: Jozi Chusworth	Company: H&P	Date: 6/29/15	Time: 1035
Approved/Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:
Approved/Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:

*Approval constitutes as authorization to proceed with analysis and acceptance of conditions on back

TO-15 List

Vinyl Chloride
trans,cis-1,2-DCE
Chloroform
1,2-DCA (EDC)
Benzene
Trichloroethene
Toluene
Tetrachloroethene
Ethylbenzene
m,p-xylene
o-xylene
Methylene Chloride

SP
6/30/15

Mobile Geochemistry Inc.

05 October 2015

Mr. Josh Hopp
Kennedy/Jenks Consultants - Washington
32001 32nd Ave. South, Suite 100
Federal Way, WA 98001

H&P Project: KJ092915-11
Client Project: 1196016.00 Task 8 / Yakima, WA

Dear Mr. Josh Hopp:

Enclosed is the analytical report for the above referenced project. The data herein applies to samples as received by H&P Mobile Geochemistry, Inc. on 29-Sep-15 which were analyzed in accordance with the attached Chain of Custody record(s).

The results for all sample analyses and required QA/QC analyses are presented in the following sections and summarized in the documents:

- Sample Summary
- Case Narrative (if applicable)
- Sample Results
- Quality Control Summary
- Notes and Definitions / Appendix
- Chain of Custody
- Sampling Logs (if applicable)

Unless otherwise noted, I certify that all analyses were performed and reviewed in compliance with our Quality Systems Manual and Standard Operating Procedures. This report shall not be reproduced, except in full, without the written approval of H&P Mobile Geochemistry, Inc.

We at H&P Mobile Geochemistry, Inc. sincerely appreciate the opportunity to provide analytical services to you on this project. If you have any questions or concerns regarding this analytical report, please contact me at your convenience at 760-804-9678.

Sincerely,

Janis Villarreal

Janis Villarreal
Laboratory Director

H&P Mobile Geochemistry, Inc. is certified under the California ELAP, the National Environmental Laboratory Accreditation Conference (NELAC) and the Department of Defense Accreditation Programs.

H&P Mobile
Geochemistry Inc.

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760-804-9678 Phone
760-804-9159 Fax

Kennedy/Jenks Consultants - Washington	Project: KJ092915-11	
32001 32nd Ave. South, Suite 100	Project Number: 1196016.00 Task 8 / Yakima, WA	Reported:
Federal Way, WA 98001	Project Manager: Mr. Josh Hopp	05-Oct-15 15:04

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FW-Effluent-219	E509128-01	Vapor	25-Sep-15	29-Sep-15
FW-Btwn-355	E509128-02	Vapor	25-Sep-15	29-Sep-15
FW-Influent-041	E509128-03	Vapor	25-Sep-15	29-Sep-15

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32001 32nd Ave. South, Suite 100	Project Number: 1196016.00 Task 8 / Yakima, WA	Reported:
Federal Way, WA 98001	Project Manager: Mr. Josh Hopp	05-Oct-15 15:04

DETECTIONS SUMMARY

Sample ID: **FW-Effluent-219** Laboratory ID: **E509128-01**

Analyte	Result	Reporting Limit	Units	Method	Notes
Vinyl chloride	**7.5**	2.6	ug/m3	EPA TO-15	
trans-1,2-Dichloroethene	**21**	8.0	ug/m3	EPA TO-15	
cis-1,2-Dichloroethene	**1500**	20	ug/m3	EPA TO-15	
Chloroform	**44**	4.9	ug/m3	EPA TO-15	
Benzene	**590**	3.2	ug/m3	EPA TO-15	
Trichloroethene	**160**	5.5	ug/m3	EPA TO-15	
Toluene	**7.7**	3.8	ug/m3	EPA TO-15	

Sample ID: **FW-Btwn-355** Laboratory ID: **E509128-02**

Analyte	Result	Reporting Limit	Units	Method	Notes
Vinyl chloride	**5.6**	2.6	ug/m3	EPA TO-15	
cis-1,2-Dichloroethene	**660**	4.0	ug/m3	EPA TO-15	
Chloroform	**18**	4.9	ug/m3	EPA TO-15	
Benzene	**150**	3.2	ug/m3	EPA TO-15	
Trichloroethene	**2300**	5.5	ug/m3	EPA TO-15	
Toluene	**8.5**	3.8	ug/m3	EPA TO-15	
Tetrachloroethene	**12000**	34	ug/m3	EPA TO-15	
m,p-Xylene	**12**	8.8	ug/m3	EPA TO-15	
o-Xylene	**5.7**	4.4	ug/m3	EPA TO-15	

Sample ID: **FW-Influent-041** Laboratory ID: **E509128-03**

Analyte	Result	Reporting Limit	Units	Method	Notes
Vinyl chloride	**7.2**	2.6	ug/m3	EPA TO-15	
trans-1,2-Dichloroethene	**8.6**	8.0	ug/m3	EPA TO-15	
cis-1,2-Dichloroethene	**810**	4.0	ug/m3	EPA TO-15	
Chloroform	**22**	4.9	ug/m3	EPA TO-15	
Benzene	**13**	3.2	ug/m3	EPA TO-15	
Trichloroethene	**850**	5.5	ug/m3	EPA TO-15	
Toluene	**12**	3.8	ug/m3	EPA TO-15	
Tetrachloroethene	**4000**	34	ug/m3	EPA TO-15	

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32001 32nd Ave. South, Suite 100	Project Number: 1196016.00 Task 8 / Yakima, WA	Reported:
Federal Way, WA 98001	Project Manager: Mr. Josh Hopp	05-Oct-15 15:04

Volatile Organic Compounds by EPA TO-15

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
FW-Effluent-219 (E509128-01) Vapor Sampled: 25-Sep-15 Received: 29-Sep-15									
Vinyl chloride	**7.5**	2.6	ug/m3	1	EJ50110	01-Oct-15	01-Oct-15	EPA TO-15	
Methylene chloride (Dichloromethane)	ND	3.5	"	"	"	"	"	"	
trans-1,2-Dichloroethene	**21**	8.0	"	"	"	"	"	"	
cis-1,2-Dichloroethene	**1500**	20	"	5	"	"	"	"	
Chloroform	**44**	4.9	"	1	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	4.1	"	"	"	"	"	"	
Benzene	**590**	3.2	"	"	"	"	"	"	
Trichloroethene	**160**	5.5	"	"	"	"	"	"	
Toluene	**7.7**	3.8	"	"	"	"	"	"	
Tetrachloroethene	ND	6.9	"	"	"	"	"	"	
Ethylbenzene	ND	4.4	"	"	"	"	"	"	
m,p-Xylene	ND	8.8	"	"	"	"	"	"	
o-Xylene	ND	4.4	"	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*96.3 %*		*76-134*	"	"	"	"	
Surrogate: Toluene-d8		*103 %*		*78-125*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*98.8 %*		*77-127*	"	"	"	"	
FW-Btwn-355 (E509128-02) Vapor Sampled: 25-Sep-15 Received: 29-Sep-15									
Vinyl chloride	**5.6**	2.6	ug/m3	1	EJ50110	01-Oct-15	01-Oct-15	EPA TO-15	
Methylene chloride (Dichloromethane)	ND	3.5	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	8.0	"	"	"	"	"	"	
cis-1,2-Dichloroethene	**660**	4.0	"	"	"	"	"	"	
Chloroform	**18**	4.9	"	"	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	4.1	"	"	"	"	"	"	
Benzene	**150**	3.2	"	"	"	"	"	"	
Trichloroethene	**2300**	5.5	"	"	"	"	"	"	
Toluene	**8.5**	3.8	"	"	"	"	"	"	
Tetrachloroethene	**12000**	34	"	5	"	"	"	"	
Ethylbenzene	ND	4.4	"	1	"	"	"	"	
m,p-Xylene	**12**	8.8	"	"	"	"	"	"	
o-Xylene	**5.7**	4.4	"	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*98.3 %*		*76-134*	"	"	"	"	
Surrogate: Toluene-d8		*89.1 %*		*78-125*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*84.9 %*		*77-127*	"	"	"	"	

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32001 32nd Ave. South, Suite 100	Project Number: 1196016.00 Task 8 / Yakima, WA	Reported:
Federal Way, WA 98001	Project Manager: Mr. Josh Hopp	05-Oct-15 15:04

Volatile Organic Compounds by EPA TO-15

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
FW-Influent-041 (E509128-03) Vapor	**Sampled: 25-Sep-15**	**Received: 29-Sep-15**							
Vinyl chloride	**7.2**	2.6	ug/m3	1	EJ50110	01-Oct-15	01-Oct-15	EPA TO-15	
Methylene chloride (Dichloromethane)	ND	3.5	"	"	"	"	"	"	
trans-1,2-Dichloroethene	**8.6**	8.0	"	"	"	"	"	"	
cis-1,2-Dichloroethene	**810**	4.0	"	"	"	"	"	"	
Chloroform	**22**	4.9	"	"	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	4.1	"	"	"	"	"	"	
Benzene	**13**	3.2	"	"	"	"	"	"	
Trichloroethene	**850**	5.5	"	"	"	"	"	"	
Toluene	**12**	3.8	"	"	"	"	"	"	
Tetrachloroethene	**4000**	34	"	5	"	"	"	"	
Ethylbenzene	ND	4.4	"	1	"	"	"	"	
m,p-Xylene	ND	8.8	"	"	"	"	"	"	
o-Xylene	ND	4.4	"	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*109 %*		*76-134*	"	"	"	"	
Surrogate: Toluene-d8		*102 %*		*78-125*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*92.2 %*		*77-127*	"	"	"	"	

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Federal Way, WA 98001	Project Manager: Mr. Josh Hopp	05-Oct-15 15:04

Volatile Organic Compounds by EPA TO-15 - Quality Control

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EJ50110 - TO-15										
Blank (EJ50110-BLK1)				Prepared & Analyzed: 01-Oct-15						
Vinyl chloride	ND	2.6	ug/m3							
Methylene chloride (Dichloromethane)	ND	3.5	"							
trans-1,2-Dichloroethene	ND	8.0	"							
cis-1,2-Dichloroethene	ND	4.0	"							
Chloroform	ND	4.9	"							
1,2-Dichloroethane (EDC)	ND	4.1	"							
Benzene	ND	3.2	"							
Trichloroethene	ND	5.5	"							
Toluene	ND	3.8	"							
Tetrachloroethene	ND	6.9	"							
Ethylbenzene	ND	4.4	"							
m,p-Xylene	ND	8.8	"							
o-Xylene	ND	4.4	"							
Surrogate: 1,2-Dichloroethane-d4	*47.9*		*"*	*42.9*		*112*	*76-134*			
Surrogate: Toluene-d8	*42.1*		*"*	*41.4*		*102*	*78-125*			
Surrogate: 4-Bromofluorobenzene	*67.3*		*"*	*72.9*		*92.3*	*77-127*			
LCS (EJ50110-BS1)				Prepared & Analyzed: 01-Oct-15						
Vinyl chloride	4.5	2.6	ug/m3	5.20		86.5	70-130			
Methylene chloride (Dichloromethane)	6.5	3.5	"	7.08		92.1	70-130			
trans-1,2-Dichloroethene	7.5	8.0	"	8.08		93.4	70-130			
cis-1,2-Dichloroethene	6.9	4.0	"	8.00		85.9	70-130			
Chloroform	9.6	4.9	"	9.92		97.2	70-130			
1,2-Dichloroethane (EDC)	8.0	4.1	"	8.24		97.5	70-130			
Benzene	5.7	3.2	"	6.48		88.0	70-130			
Trichloroethene	9.7	5.5	"	11.0		88.9	70-130			
Toluene	7.0	3.8	"	7.68		91.4	70-130			
Tetrachloroethene	13	6.9	"	13.8		94.9	70-130			
Ethylbenzene	7.4	4.4	"	8.84		84.2	70-130			
m,p-Xylene	16	8.8	"	17.7		91.2	70-130			
o-Xylene	7.8	4.4	"	8.84		88.7	70-130			
Surrogate: 1,2-Dichloroethane-d4	*45.6*		*"*	*42.9*		*106*	*76-134*			

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32001 32nd Ave. South, Suite 100	Project Number: 1196016.00 Task 8 / Yakima, WA	Reported:
Federal Way, WA 98001	Project Manager: Mr. Josh Hopp	05-Oct-15 15:04

Volatile Organic Compounds by EPA TO-15 - Quality Control

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EJ50110 - TO-15										
LCS (EJ50110-BS1)				Prepared & Analyzed: 01-Oct-15						
Surrogate: Toluene-d8	*41.9*		*ug/m3*	*41.4*		*101*	*78-125*			
Surrogate: 4-Bromofluorobenzene	*72.4*		*"*	*72.9*		*99.3*	*77-127*			
LCS Dup (EJ50110-BSD1)				Prepared & Analyzed: 01-Oct-15						
Vinyl chloride	5.0	2.6	ug/m3	5.20		95.3	70-130	9.60	25	
Methylene chloride (Dichloromethane)	7.1	3.5	"	7.08		99.8	70-130	7.99	25	
trans-1,2-Dichloroethene	7.9	8.0	"	8.08		98.0	70-130	4.84	25	
cis-1,2-Dichloroethene	9.6	4.0	"	8.00		120	70-130	33.2	25	QR-02
Chloroform	10	4.9	"	9.92		104	70-130	6.49	25	
1,2-Dichloroethane (EDC)	8.5	4.1	"	8.24		103	70-130	5.57	25	
Benzene	6.6	3.2	"	6.48		103	70-130	15.3	25	
Trichloroethene	10	5.5	"	11.0		95.2	70-130	6.81	25	
Toluene	6.9	3.8	"	7.68		90.3	70-130	1.20	25	
Tetrachloroethene	12	6.9	"	13.8		90.1	70-130	5.23	25	
Ethylbenzene	7.2	4.4	"	8.84		81.5	70-130	3.30	25	
m,p-Xylene	15	8.8	"	17.7		84.9	70-130	7.12	25	
o-Xylene	7.1	4.4	"	8.84		80.7	70-130	9.40	25	
Surrogate: 1,2-Dichloroethane-d4	*48.6*		*"*	*42.9*		*113*	*76-134*			
Surrogate: Toluene-d8	*41.2*		*"*	*41.4*		*99.6*	*78-125*			
Surrogate: 4-Bromofluorobenzene	*60.5*		*"*	*72.9*		*82.9*	*77-127*			

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Federal Way, WA 98001	Project Manager: Mr. Josh Hopp	05-Oct-15 15:04

Notes and Definitions

QR-02	The RPD result exceeded the QC control limits. Sample results for the QC batch were accepted based on percent recoveries and completeness of QC data.
LCC	Leak Check Compound
ND	Analyte NOT DETECTED at or above the reporting limit
MDL	Method Detection Limit
%REC	Percent Recovery
RPD	Relative Percent Difference

Appendix

H&P Mobile Geochemistry, Inc. is approved as an Environmental Testing Laboratory and Mobile Laboratory in accordance with the DoD-ELAP and the ISO 17025 programs, certification number L11-175.

H&P is approved by the State of Arizona as an Environmental Testing Laboratory and Mobile Laboratory, certification numbers AZM758 and AZ0779.

H&P is approved by the State of California as an Environmental Laboratory and Mobile Laboratory in conformance with the Environmental Laboratory Accreditation Program (ELAP) for the category of Volatile and Semi-Volatile Organic Chemistry of Hazardous Waste, certification numbers 2740, 2741, 2743, 2744, 2745, 2754 & 2930.

H&P is approved by the State of Florida Department of Health under the National Environmental Laboratory Accreditation Conference (NELAC) certification number E871100.

The complete list of stationary and mobile laboratory certifications along with the fields of testing (FOTs) and analyte lists are available at www.handpmg.com/about/certifications.

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VAPOR / AIR Chain of Custody

DATE: 9/25/15
Page 1 of 1

Lab Client and Project Information

Lab Client/Consultant: Kennedy/Jenks Consultants	Project Name / #: Frank Wear 1196016.00 Task 8
Lab Client Project Manager: Josh Hopp	Project Location: Yakima, WA
Lab Client Address: 32001 32nd Ave S, Ste 100	Report E-Mail(s): JoshHopp@kennedyjenks.com
Lab Client City, State, Zip: Federal Way WA 98001	Jarod Fisher@kennedyjenks.com
Phone Number: 253-835-6908	

Reporting Requirements

- [X] Standard Report ☐ Level III ☐ Level IV
- [X] Excel EDD ☐ Other EDD:_____
- ☐ CA Geotracker Global ID:_____

Turnaround Time

- [X] 5-7 day Stnd ☐ 24-Hr Rush
- ☐ 3-day Rush ☐ Mobile Lab
- ☐ 48-Hr Rush ☐ Other:____

Sampler Information

Sampler(s): Josh Hopp
Signature: [signature]
Date: 9-25-15

Sample Receipt (Lab Use Only)

Date Rec'd: 9/29/15	Control #: 150767.01
H&P Project # KJ092915-11	
Lab Work Order # E509128	
Sample Intact: [X] Yes ☐ No ☐ See Notes Below	
Receipt Gauge ID: L1167	Temp: 22°C
Outside Lab:	
Receipt Notes/Tracking #: 1Z93TT618748076208	
Lab PM Initials: SN	

Additional Instructions to Laboratory:

[X] Check if Project Analyte List ~~is Attached~~ previously provided to H&P

Preferred VOC units (please choose one):

☐ µg/L [X] µg/m³ ☐ ppbv ☐ ppmv

SAMPLE NAME	FIELD POINT NAME (if applicable)	DATE mm/dd/yy	TIME 24hr clock	SAMPLE TYPE Indoor Air (IA), Ambient Air (AA), Subslab (SS), Soil Vapor (SV)	CONTAINER SIZE & TYPE 400mL/1L/6L Summa or Tedlar or Tube	CONTAINER ID (###)	Lab use only: Receipt Vac	VOCs Standard Full List ☐ 8260SV ☐ TO-15	VOCs Short List (Project List) ☐ 8260SV ☐ TO-15	Oxygenates ☐ 8260SV ☐ TO-15	Naphthalene ☐ 8260SV ☐ TO-15 ☐ TO-17m	TPHv as Gas ☐ 8260SVm ☐ TO-15m	TPHv as Diesel (sorbent tube) ☐ TO-17m	Aromatic/Aliphatic Fractions ☐ 8260SVm ☐ TO-15m	Leak Check Compound ☐ DFA ☐ IPA ☐ He	Methane by EPA 8015m	Fixed Gases by ASTM D1945 ☐ CO2 ☐ O2 ☐ N2			
FW-Effluent-219	Effluent	9/25/15	1555	SV	400ml	219	-3.31		X											
FW-Btwn-355	Btwn	↓	1600	↓	↓	355	-2.91		X											
FW-Influent-041	Influent	↓	1605	↓	↓	041	-2.64		X											

Approved/Relinquished by: [signature]	Company: KJC	Date: 09/25/15	Time: 1630	Received by: Tori Unsworth	Company: H&P	Date: 9/29/15	Time: 1030
Approved/Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:
Approved/Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:

*Approval constitutes as authorization to proceed with analysis and acceptance of conditions on back

Rev 08/18/2014

Appendix C

Indoor Air and Subslab Sampling Field Logs

Ecology Former Frank Wear Site (Yakima, WA)
FIELD INDOOR AIR SAMPLING LOG

Project No.: 1196016.00

Date: 12-4-2014

Sampling Location ID: Buckle My Shoes Early Learning Center

Sampling Personnel: JCH

Weather conditions (Note approximate wind speed/direction, rain, and temperature): ~30°F with temps reaching mid-30's, wind is calm, with very light precipitation (rain)

Number of canisters placed in building: 2 indoors, 1 outdoors

Location of canister(s) within building: M1 in Northeast play area on a shelf near the North wall of building; M3 in southeast play area on shelf in center of the room near the vertical column

Location of duplicate sample(s), if taken: none

Sample ID	Canister serial no.	Flow controller serial no.	Temp. at sample	LAB initial vacuum of canister (in.	FIELD Initial vacuum of canister	Sample start time	Sample end time	Final vacuum of canister (in. Hg)
BMS-M1-120414	24493	FC00080	~70°F	—	-30+	0610	1755	-8
BMS-M3-120414	12685	FC00494	~70°F	—	-30+	0610	1750	-8
AMB-UPWIND-120414	4250	FC00447*	~30°F	—	-28	0612	1759	-5.5

* broken gauge on this flow controller; used separate gauge to measure canister vacuum on this canister.

Comments (Odors present, smoking, windows/doors open during sampling, etc.): HVAC + ceiling fans running. Occupants clean w/ bleach throughout the day.

Ecology Former Frank Wear Site (Yakima, WA)
FIELD INDOOR AIR SAMPLING LOG

Project No.: 1196016.00

Date: 12-3-2014

Sampling Location ID: 310 West Walnut Avenue – quad plex, residential property

Sampling Personnel: JLH

Weather conditions (Note approximate wind speed/direction, rain, and temperature): 30°F, cloudy, variable wind ~5mph reaching temperatures in mid 20°F overnight

Number of canisters placed in building: 2

Location of canister(s) within building: "M" 24-hr canister placed on main floor, in north eastern-most quadrant/suite, in back office at breathing air height (~6 feet); "B" 24-hr canister placed in Basement, half way between laundry area and liquor closet, closer to retaining wall, atop a box (~5 feet).

Location of duplicate sample(s), if taken: none

Sample ID	Canister serial no.	Flow controller serial no.	Temp. at sample	LAB initial vacuum of canister (in.	FIELD initial vacuum of canister	Sample start time	Sample end time	Final vacuum of canister (in. Hg)
310Walnut-M-120314	6L0052	30778	~65°F	—	-29	1750	1820	-5
310Walnut-B-120314	33326	40069	~50°F	—	-29.5	1755	1812	-6.5

Comments (Odors present, smoking, windows/doors open during sampling, etc.): client + occupant removed potential PCE-containing sources (silk screened shirts in main floor office + caulking, etc in basement) in the sampling areas approximately 4-8hrs prior to 24hr air sampling.

Ecology Former Frank Wear Site (Yakima, WA)
FIELD INDOOR AIR SAMPLING LOG

Project No.: 1196016.00

Date: 3-16-15

Sampling Location ID: Buckle My Shoes Early Learning Center

Sampling Personnel: Josh Hopp

Weather conditions (Note approximate wind speed/direction, rain, and temperature): sunny, 45-65°F, no precipitation, wind from WNW ~5mph

Number of canisters placed in building: 2 inside, 1 outside

Location of canister(s) within building: M1 located in Northeast play area on a shelf near the north wall of the bldg; M3 located in the Southeast play area on a shelf in the center of the room near the vertical column

Location of duplicate sample(s), if taken: none

Sample ID	Canister serial no.	Flow controller serial no.	Temp. at sample	LAB initial vacuum of canister (in.	FIELD initial vacuum of canister	Sample start time	Sample end time	Final vacuum of canister (in. Hg)
BMS-M1-031615	20946	FC00399	~65°F		-32	0615	1918	-6.5
BMS-M3-031615	22503	0000006837	~65°F		-34	0617	1917	-5.5
AMB-UPWIND-031615	24491	FC00553	~40°F		-30+	0620	1920	-7

Comments (Odors present, smoking, windows/doors open during sampling, etc.): HVAC & ceiling fans running; occupants still cleaning w/ bleach throughout the day; paint supplies stored in upstairs storage area

Ecology Former Frank Wear Site (Yakima, WA)
FIELD INDOOR AIR SAMPLING LOG

Project No.: 1196016.00

Date: 6-24-15

Sampling Location ID: Former Buckle My Shoes Early Learning Center

Sampling Personnel: Jayl Happ

Weather conditions (Note approximate wind speed/direction, rain, and temperature): Sunny, 65-90°F, no precip. wind from WSW ~5-10 mph

Number of canisters placed in building: 2 inside, 1 outside

Location of canister(s) within building: M1 located on shelf near north wall of building, M3 located on a small table in the southeast portion of the building near the vertical columns.

Location of duplicate sample(s), if taken: none

Sample ID	Canister serial no.	Flow controller serial no.	Temp. at sample	LAB initial vacuum of canister (in.	FIELD initial vacuum of canister	Sample start time	Sample end time	Final vacuum of canister (in. Hg)
BMS-M1-062415	5595	FC00861	~85°F	—	-29	0620	1756	-6.5
BMS-M3-062415	6L1291	6669	~85°F	—	-28.5	0619	1751	~~-2~~ -5.5
AMB-UPWIND-062415	6L1287	20881	~90°F	—	-30	0617	1759	-6.5

Comments (Odors present, smoking, windows/doors open during sampling, etc.): no HVAC running. Windows & doors were open upon arrival. New wood products have been placed in the building. Floor slab has been sealed and painted. Plaster, caulking, new paint have been applied throughout the building. Former childcare center occupants have vacated the building & it's currently under renovation.

Ecology Former Frank Wear Site (Yakima, WA)
FIELD INDOOR AIR SAMPLING LOG

Project No.: 1196016.00

Date: 9-25-15

Sampling Location ID: Learning Tree – formerly Buckle My Shoes Early Learning Center

Sampling Personnel: Josh Hopp

Weather conditions (Note approximate wind speed/direction, rain, and temperature): Calm wind, no precipitation, partly cloudy, approx 55-75°F

Number of canisters placed in building: 2 inside, 1 outside

Location of canister(s) within building: M1 located along the North wall of the structure on top of a shelf, and M3 located in Southeast play area, center of room, on top of a shelf. AMB sample @ NW corner of fence.

Location of duplicate sample(s), if taken: None

Sample ID	Canister serial no.	Flow controller serial no.	Temp. at sample	LAB initial vacuum of canister (in.	FIELD initial vacuum of canister	Sample start time	Sample end time	Final vacuum of canister (in. Hg)
BMS-M1-092515	94943	FC00303	55-70°F		-29.5	0650	1830	-8
BMS-M3-092515	33799	FC00289	↓		-29.5	0655	1835	-9
AMB-UPWIND-092515	34244	FC00619	↓		-29	0700	1840	-9.5

Comments (Odors present, smoking, windows/doors open during sampling, etc.): Ceiling fans were running with the HVAC system; no odors present.

Kennedy/Jenks Consultants

Subslab and Soil Vapor Survey Log Sheet

Project Name / Location: Buckle My shoes Early Learning Center - Yakima **Date:** 12-4-14

Client: Ecology **Field Representative(s):** Jason Shira **Arrival Time:** 0605 -

Samplers Name: Josh **Departure Time:** 1800

Weather / Site Conditions: ~30°F, calm wind, light rain

Sample ID	Installation Time	Canister/ Controller No.	Sample Collection		Probe Depth (ft)	Tubing Length (ft)	Purge Volume (mL)	Sample Volume (mL)	Flow Rate (mL/min)	Summa Vacuum Pressure (in Hg)		Tracer Gas Concentrations			Shut-In Test <100" H_2O	Probe Vacuum Pressure <100" H_2O
			Start Time	End Time						Initial	Final	Initial Shroud Conc. (%)	Final Shroud Conc. (%)	Sample (%)		
BMS-SS-1-120414	—	342/1871	1414	1441	SS	2ft	~200	6L	200	-26.5	-5	81.5%	84.4%	750ppm	✓	—
BMS-SS-4-120414	—	454/1447	1258	1323	SS	2ft	~200	6L	200	-26	-5	85.4%	80.5%	2675ppm	✓	—

Probe Installation Materials

Filter: none

Tubing: SS - vapor pin

Termination: 1/4" barb

Probe Construction Specifications

Borehole Diam: NA

Subslab Sand Pack: NA

Soil Gas Sand Pack: NA

PV's 1' 1/4-inch tubing = 5 ml 1' 1/8-inch tubing = 1 ml

Field Notes:

Kennedy/Jenks Consultants

Subslab and Soil Vapor Survey Log Sheet

Project Name / Location: WDOE Frank Wear / Buckle My Shoes Early Learning Center **Date:** 3-16-15

Client: Ecology **Field Representative(s):** Jason Shira **Arrival Time:** 0600

Samplers Name: Josh Happ **Departure Time:** 1900

Weather / Site Conditions: Sunny, 45-65°F, Wind out of WNW ~5mph

Sample ID	Installation Time	Canister/ Controller No.	Sample Collection		Probe Depth (ft)	Tubing Length (ft)	Purge Volume (mL)	Sample Volume (mL)	Flow Rate (mL/min)	Summa Vacuum Pressure (in Hg)		Tracer Gas Concentrations			Shut-In Test <100" H_2O	Probe Vacuum Pressure <100" H_2O
			Start Time	End Time						Initial	Final	Initial Shroud Conc. (%)	Final Shroud Conc. (%)	Sample (%)		
BMS-SS-4-031615	—	5702/165	1300	1410	SS	2	200	6,000	~200	-26	-1.5	94	84	8	✓	✓
BMS-SS-1-031615	—	342/107	1425	1505	SS	2	200	6,000	~200	-29	-1	79	76	0	✓	✓

Probe Installation Materials

Filter: N/A

Tubing: Vapor pin + 1/16" poly tube

Termination: 3-way valve

Probe Construction Specifications

Borehole Diam: —

Subslab Sand Pack: none

Soil Gas Sand Pack: none

PV's ✱ 1' 1/4-inch tubing = 5 ml 1' 1/8-inch tubing = 1 ml

Field Notes: SS-4 clogged w/ dust particles; filled slower than normal

SS-4 = -0.016 SS-3 = -0.015

SS-1 = -0.017 SS-5 = -0.010

SS-2 = -0.042

Kennedy/Jenks Consultants

Subslab and Soil Vapor Survey Log Sheet

Project Name / Location: Frank Wear, Yakima **Date:** 6-24-15

Client: Ecology **Field Representative(s):** **Arrival Time:** 0600

Samplers Name: Josh Hoppe **Departure Time:** 1800

Weather / Site Conditions: Clear, 65-90°F, wind from WSW 5-10mph

Sample ID	Installation Time	Canister/ Controller No.	Sample Collection		Probe Depth (ft)	Tubing Length (ft)	Purge Volume (mL)	Sample Volume (mL)	Flow Rate (mL/min)	Summa Vacuum Pressure (in Hg)		Tracer Gas Concentrations			Shut-In Test <100" H_2O	Probe Vacuum Pressure <100" H_2O
			Start Time	End Time						Initial	Final	Initial Shroud Conc. (%)	Final Shroud Conc. (%)	Sample (%)		
BMS-SS-5-062415	—	294/467	0702	0744	SS	2	200	6L	200	-30+	-4.5	98.0	89.3	12000 ppm	✓	—
BMS-SS-1-062415	—	177/259	0800	0836	SS	2	200	6L	200	-25.5	-5	91.7	87.5	150 ppm	✓	—

Probe Installation Materials

Filter: _____

Tubing: _____

Termination: _____

Probe Construction Specifications

Borehole Diam: _____

Subslab Sand Pack: _____

Soil Gas Sand Pack: _____

PV's 1' 1/4-inch tubing = 5 ml 1' 1/8-inch tubing = 1 ml

Field Notes: SS-4 = -0.028

SS-2 = -0.054

SS-3 = -0.029

SS-1 = -0.028

need "chain" to anchor to interior SVE compound walls to secure helium cylinder

Kennedy/Jenks Consultants

Subslab and Soil Vapor Survey Log Sheet

Project Name / Location: Ecology Frank Wear, Yakima, WA **Date:** 9-25-15

Client: Ecology **Field Representative(s):** ~~Josh~~ Matt Durkee **Arrival Time:** 0600

Samplers Name: Josh **Departure Time:** 1900

Weather / Site Conditions: clear, no wind, 55-75°F, no precip.

Sample ID	Installation Time	Canister/ Controller No.	Sample Collection		Probe Depth (ft)	Tubing Length (ft)	Purge Volume (mL)	Sample Volume (mL)	Flow Rate (mL/min)	Summa Vacuum Pressure (in Hg)		Tracer Gas Concentrations			Shut-In Test <100" H_2O	Probe Vacuum Pressure <100" H_2O
			Start Time	End Time						Initial	Final	Initial Shroud Conc. (%)	Final Shroud Conc. (%)	Sample (%)		
BMS-SS-1-092515	—	490/157	1245	1330	SS	2	200	6L	200	-30+	-5	87.2	80.1	~~0~~	✓	—
BMS-SS-5-092515	—	454/074	1345	1416	SS	2	200	6L	200	-30+	-5	86.3	80.3	2725ppm	✓	—

Probe Installation Materials

Filter: none

Tubing: Vapor Pin

Termination: Barb

Probe Construction Specifications

Borehole Diam:

Subslab Sand Pack:

Soil Gas Sand Pack:

PV's 1' 1/4-inch tubing = 5 ml 1' 1/8-inch tubing = 1 ml

Field Notes:

Appendix D

Indoor Air and Subslab Sampling Laboratory Analytical Reports
and Chain-of-Custody Documentation

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12/31/2014

Ms. Sherri Peterson
Kennedy/Jenks Consultants
1191 2nd Ave.
Suite 630
Seattle WA 98101

Project Name: WDOE Yakima
Project #: 1196016.00 Task 9 00
Workorder #: 1412146R1

Dear Ms. Sherri Peterson

The following report includes the data for the above referenced project for sample(s) received on 12/9/2014 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 Air Toxics Ltd. for your air analysis needs. Air Toxics Ltd. 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 #: 1412146R1

Work Order Summary

CLIENT:	Ms. Sherri Peterson Kennedy Jenks Consultants 1191 2nd Ave. Suite 630 Seattle, WA 98101	**BILL TO:**	Ms. Sherri Peterson Kennedy Jenks Consultants 32001 32nd Avenue South Suite 100 Federal Way, WA 98001
PHONE:	206-652-4905	**P.O. #**	
FAX:		**PROJECT #**	1196016.00 Task 9 00 WDOE Yakima
DATE RECEIVED:	12/09/2014	**CONTACT:**	Kelly Buettner
DATE COMPLETED:	12/22/2014		
DATE REISSUED:	12/31/2014		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	BMS-M1-120414	Modified TO-15	6.7 "Hg	5.3 psi
01B	BMS-M1-120414	Modified TO-15	6.7 "Hg	5.3 psi
02A	BMS-M3-120414	Modified TO-15	6.9 "Hg	5 psi
02B	BMS-M3-120414	Modified TO-15	6.9 "Hg	5 psi
03A	AMB-UPWIND-120414	Modified TO-15	6.9 "Hg	5.1 psi
03B	AMB-UPWIND-120414	Modified TO-15	6.9 "Hg	5.1 psi
04A	Lab Blank	Modified TO-15	NA	NA
04B	Lab Blank	Modified TO-15	NA	NA
05A	CCV	Modified TO-15	NA	NA
05B	CCV	Modified TO-15	NA	NA
06A	LCS	Modified TO-15	NA	NA
06AA	LCSD	Modified TO-15	NA	NA
06B	LCS	Modified TO-15	NA	NA
06BB	LCSD	Modified TO-15	NA	NA

CERTIFIED BY: Heidi Hayes DATE: 12/31/14

Technical Director

Certification numbers: AZ Licensure AZ0775, NJ NELAP - CA016, NY NELAP - 11291,
TX NELAP - T104704343-14-7, UT NELAP CA009332014-5, VA NELAP - 460197, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005, Effective date: 10/18/2014, Expiration date: 10/17/2015.
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 - 956
(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

LABORATORY NARRATIVE
Modified TO-15 Full Scan/SIM
Kennedy/Jenks Consultants
Workorder# 1412146R1

Three 6 Liter Summa Special (SIM Certified) samples were received on December 09, 2014. 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 liters 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 taken to run these samples are summarized in the table below. Specific project requirements may over-ride the ATL modifications.

Requirement	***TO-15***	***ATL Modifications***
ICAL %RSD acceptance criteria	</=30% RSD with 2 compounds allowed out to < 40% RSD	For Full Scan: 30% RSD with 4 compounds allowed out to < 40% RSD For SIM: Project specific; default criteria is </=30% RSD with 10% of compounds allowed out to < 40% RSD
Daily Calibration	+- 30% Difference	For Full Scan: </= 30% Difference with four 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
Blank and standards	Zero air	Nitrogen
Method Detection Limit	Follow 40CFR Pt.136 App. B	The MDL met all relevant requirements in Method TO-15 (statistical MDL less than the LOQ). The concentration of the spiked replicate may have exceeded 10X the calculated MDL in some cases

Receiving Notes

There were no receiving discrepancies.

THE WORK ORDER WAS REISSUED ON 12/31/14 TO CORRECT IDENTIFICATION OF SAMPLE BMS-M3-120414 DUE TO LABORATORY TRANSCRIPTION ERROR.

Analytical Notes

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.

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

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Summary of Detected Compounds
MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

Client Sample ID: BMS-M1-120414

Lab ID#: 1412146R1-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Chloroform	0.18	0.42	0.85	2.0

Client Sample ID: BMS-M1-120414

Lab ID#: 1412146R1-01B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.018	0.027	0.045	0.070
Benzene	0.088	0.41	0.28	1.3
Trichloroethene	0.0052	0.012	0.028	0.066
Toluene	0.035	1.1	0.13	4.2
Tetrachloroethene	0.035	0.042	0.24	0.28
Ethyl Benzene	0.035	0.11	0.15	0.50
m,p-Xylene	0.070	0.40	0.30	1.7
o-Xylene	0.035	0.14	0.15	0.62

Client Sample ID: BMS-M3-120414

Lab ID#: 1412146R1-02A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Chloroform	0.17	0.37	0.85	1.8

Client Sample ID: BMS-M3-120414

Lab ID#: 1412146R1-02B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.017	0.034	0.044	0.086
Benzene	0.087	0.40	0.28	1.3
Trichloroethene	0.0052	0.014	0.028	0.075
Toluene	0.035	1.1	0.13	4.2
Tetrachloroethene	0.035	0.043	0.24	0.29
Ethyl Benzene	0.035	0.12	0.15	0.53
m,p-Xylene	0.070	0.42	0.30	1.8

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Summary of Detected Compounds
MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

Client Sample ID: BMS-M3-120414

Lab ID#: 1412146R1-02B

o-Xylene	0.035	0.15	0.15	0.64

Client Sample ID: AMB-UPWIND-120414

Lab ID#: 1412146R1-03A

No Detections Were Found.

Client Sample ID: AMB-UPWIND-120414

Lab ID#: 1412146R1-03B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.018	0.026	0.045	0.067
cis-1,2-Dichloroethene	0.035	0.052	0.14	0.21
Benzene	0.088	0.39	0.28	1.2
Trichloroethene	0.0052	0.0099	0.028	0.053
Toluene	0.035	0.94	0.13	3.6
Ethyl Benzene	0.035	0.13	0.15	0.55
m,p-Xylene	0.070	0.44	0.30	1.9
o-Xylene	0.035	0.15	0.15	0.67

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Client Sample ID: BMS-M1-120414

Lab ID#: 1412146R1-01A

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

File Name:	**v121606**	**Date of Collection: 12/4/14 5:55:00 PM**	
Dil. Factor:	**1.75**	**Date of Analysis: 12/16/14 12:01 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Methylene Chloride	0.35	Not Detected	1.2	Not Detected
Chloroform	0.18	0.42	0.85	2.0

Container Type: 6 Liter Summa Special (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	106	70-130
Toluene-d8	104	70-130
4-Bromofluorobenzene	95	70-130

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Client Sample ID: BMS-M1-120414

Lab ID#: 1412146R1-01B

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

File Name:	**v121606sim**	**Date of Collection: 12/4/14 5:55:00 PM**	
Dil. Factor:	**1.75**	**Date of Analysis: 12/16/14 12:01 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.018	0.027	0.045	0.070
cis-1,2-Dichloroethene	0.035	Not Detected	0.14	Not Detected
Benzene	0.088	0.41	0.28	1.3
1,2-Dichloroethane	0.035	Not Detected	0.14	Not Detected
Trichloroethene	0.0052	0.012	0.028	0.066
Toluene	0.035	1.1	0.13	4.2
Tetrachloroethene	0.035	0.042	0.24	0.28
Ethyl Benzene	0.035	0.11	0.15	0.50
m,p-Xylene	0.070	0.40	0.30	1.7
o-Xylene	0.035	0.14	0.15	0.62
trans-1,2-Dichloroethene	0.18	Not Detected	0.69	Not Detected

Container Type: 6 Liter Summa Special (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	107	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	95	70-130

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Client Sample ID: BMS-M3-120414

Lab ID#: 1412146R1-02A

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

File Name:	**v121607**	**Date of Collection: 12/4/14 5:50:00 PM**	
Dil. Factor:	**1.74**	**Date of Analysis: 12/16/14 12:36 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Methylene Chloride	0.35	Not Detected	1.2	Not Detected
Chloroform	0.17	0.37	0.85	1.8

Container Type: 6 Liter Summa Special (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	102	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	99	70-130

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Client Sample ID: BMS-M3-120414

Lab ID#: 1412146R1-02B

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

File Name:	**v121607sim**	**Date of Collection: 12/4/14 5:50:00 PM**	
Dil. Factor:	**1.74**	**Date of Analysis: 12/16/14 12:36 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.017	0.034	0.044	0.086
cis-1,2-Dichloroethene	0.035	Not Detected	0.14	Not Detected
Benzene	0.087	0.40	0.28	1.3
1,2-Dichloroethane	0.035	Not Detected	0.14	Not Detected
Trichloroethene	0.0052	0.014	0.028	0.075
Toluene	0.035	1.1	0.13	4.2
Tetrachloroethene	0.035	0.043	0.24	0.29
Ethyl Benzene	0.035	0.12	0.15	0.53
m,p-Xylene	0.070	0.42	0.30	1.8
o-Xylene	0.035	0.15	0.15	0.64
trans-1,2-Dichloroethene	0.17	Not Detected	0.69	Not Detected

Container Type: 6 Liter Summa Special (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	107	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	99	70-130

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Client Sample ID: AMB-UPWIND-120414

Lab ID#: 1412146R1-03A

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

File Name:	**v121608**	**Date of Collection: 12/4/14 5:59:00 PM**	
Dil. Factor:	**1.75**	**Date of Analysis: 12/16/14 01:13 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Methylene Chloride	0.35	Not Detected	1.2	Not Detected
Chloroform	0.18	Not Detected	0.85	Not Detected

Container Type: 6 Liter Summa Special (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	105	70-130
Toluene-d8	104	70-130
4-Bromofluorobenzene	96	70-130

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Client Sample ID: AMB-UPWIND-120414

Lab ID#: 1412146R1-03B

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

File Name:	**v121608sim**	**Date of Collection: 12/4/14 5:59:00 PM**	
Dil. Factor:	**1.75**	**Date of Analysis: 12/16/14 01:13 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.018	0.026	0.045	0.067
cis-1,2-Dichloroethene	0.035	0.052	0.14	0.21
Benzene	0.088	0.39	0.28	1.2
1,2-Dichloroethane	0.035	Not Detected	0.14	Not Detected
Trichloroethene	0.0052	0.0099	0.028	0.053
Toluene	0.035	0.94	0.13	3.6
Tetrachloroethene	0.035	Not Detected	0.24	Not Detected
Ethyl Benzene	0.035	0.13	0.15	0.55
m,p-Xylene	0.070	0.44	0.30	1.9
o-Xylene	0.035	0.15	0.15	0.67
trans-1,2-Dichloroethene	0.18	Not Detected	0.69	Not Detected

Container Type: 6 Liter Summa Special (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	107	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	98	70-130

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Client Sample ID: Lab Blank

Lab ID#: 1412146R1-04A

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

File Name:	**v121605a**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/16/14 11:11 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Methylene Chloride	0.20	Not Detected	0.69	Not Detected
Chloroform	0.10	Not Detected	0.49	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	103	70-130
Toluene-d8	103	70-130
4-Bromofluorobenzene	93	70-130

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Client Sample ID: Lab Blank

Lab ID#: 1412146R1-04B

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

File Name:	**v121605sima**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/16/14 11:11 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.010	Not Detected	0.026	Not Detected
cis-1,2-Dichloroethene	0.020	Not Detected	0.079	Not Detected
Benzene	0.050	Not Detected	0.16	Not Detected
1,2-Dichloroethane	0.020	Not Detected	0.081	Not Detected
Trichloroethene	0.0030	Not Detected	0.016	Not Detected
Toluene	0.020	Not Detected	0.075	Not Detected
Tetrachloroethene	0.020	Not Detected	0.14	Not Detected
Ethyl Benzene	0.020	Not Detected	0.087	Not Detected
m,p-Xylene	0.040	Not Detected	0.17	Not Detected
o-Xylene	0.020	Not Detected	0.087	Not Detected
trans-1,2-Dichloroethene	0.10	Not Detected	0.40	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	105	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	96	70-130

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Client Sample ID: CCV

Lab ID#: 1412146R1-05A

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

File Name:	**v121602**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/16/14 08:42 AM**	

Compound	%Recovery
Methylene Chloride	119
Chloroform	113

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	99	70-130
Toluene-d8	103	70-130
4-Bromofluorobenzene	96	70-130

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Client Sample ID: CCV

Lab ID#: 1412146R1-05B

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

File Name:	**v121602sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/16/14 08:42 AM**	

Compound	**%Recovery**
Vinyl Chloride	116
cis-1,2-Dichloroethene	114
Benzene	102
1,2-Dichloroethane	108
Trichloroethene	103
Toluene	107
Tetrachloroethene	90
Ethyl Benzene	102
m,p-Xylene	102
o-Xylene	100
trans-1,2-Dichloroethene	114

Container Type: NA - Not Applicable

Surrogates	**%Recovery**	**Method Limits**
1,2-Dichloroethane-d4	104	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	98	70-130

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Client Sample ID: LCS

Lab ID#: 1412146R1-06A

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

File Name:	**v121603**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/16/14 09:39 AM**	

Compound	%Recovery	Method Limits
Methylene Chloride	114	70-130
Chloroform	107	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	101	70-130
Toluene-d8	107	70-130
4-Bromofluorobenzene	101	70-130

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Client Sample ID: LCSD

Lab ID#: 1412146R1-06AA

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

File Name:	**v121604**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/16/14 10:21 AM**	

Compound	%Recovery	Method Limits
Methylene Chloride	114	70-130
Chloroform	105	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	99	70-130
Toluene-d8	106	70-130
4-Bromofluorobenzene	98	70-130

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Client Sample ID: LCS

Lab ID#: 1412146R1-06B

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

File Name:	**v121603sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/16/14 09:39 AM**	

Compound	%Recovery	Method Limits
Vinyl Chloride	111	70-130
cis-1,2-Dichloroethene	108	70-130
Benzene	93	70-130
1,2-Dichloroethane	100	70-130
Trichloroethene	93	70-130
Toluene	100	70-130
Tetrachloroethene	86	70-130
Ethyl Benzene	98	70-130
m,p-Xylene	101	70-130
o-Xylene	100	70-130
trans-1,2-Dichloroethene	101	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	103	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	98	70-130

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Client Sample ID: LCSD

Lab ID#: 1412146R1-06BB

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

File Name:	**v121604sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/16/14 10:21 AM**	

Compound	%Recovery	Method Limits
Vinyl Chloride	110	70-130
cis-1,2-Dichloroethene	109	70-130
Benzene	94	70-130
1,2-Dichloroethane	101	70-130
Trichloroethene	94	70-130
Toluene	99	70-130
Tetrachloroethene	86	70-130
Ethyl Benzene	97	70-130
m,p-Xylene	100	70-130
o-Xylene	100	70-130
trans-1,2-Dichloroethene	102	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	103	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	98	70-130

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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

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

Page 1 of 1

Project Manager: Josh Hopp
Collected by: (Print and Sign) Josh Hopp
Company: Kennedy/Jenks Consultants Email: joshhopp@kennedyjenks.com
Address: 32001 32nd Ave S, Suite 100 City: Federal Way State: WA Zip: 98001
Phone: 253-835-6408 Fax:

Project Info:
P.O. #
Project #: 1496016.00 Task 1 00
Project Name: Lower Yakima

Turn Around Time: ☒ Normal ☐ Rush

Lab Use Only: Pressurized by: / Date: / Pressurization Gas: N₂ He

Lab I.D.	Field Sample I.D. (Location)	Can #	Date of Collection	Time of Collection	Analyses Requested	Canister Pressure/Vacuum Initial	Final	Receipt	Final (psi)
01A	BMS-M1-120414		12/4/14	0600-1755	TO-15 X	-30+	-5		
02A	BMS-M3-120414		12/4/14	0600-1757	TO-15 X	-30+	-5		
03A	AMB-UPWIND-120414		12/4/14	0612-1759	TO-15 X	-28	-5.5		

Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
[signature]	12/4/14 1900	[signature] EAT2	12-9-14 1025
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time

Notes: Please report project-specific analyte list. JH 12/4/14

Lab Use Only	Shipper Name	Air Bill #	Temp (°C)	Condition	Custody Seals Intact?	Work Order #
	UPS		NA	Good	Yes No None	1412146

Form 1293 rev. 1

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12/22/2014
Ms. Sherri Peterson
Kennedy/Jenks Consultants
1191 2nd Ave.
Suite 630
Seattle WA 98101

Project Name: WDOE Yakima
Project #: 1196016.00 Task 9 00
Workorder #: 1412147

Dear Ms. Sherri Peterson

The following report includes the data for the above referenced project for sample(s) received on 12/9/2014 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 Air Toxics Ltd. for your air analysis needs. Air Toxics Ltd. 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 #: 1412147

Work Order Summary

CLIENT:	Ms. Sherri Peterson Kennedy Jenks Consultants 1191 2nd Ave. Suite 630 Seattle, WA 98101	**BILL TO:**	Ms. Sherri Peterson Kennedy Jenks Consultants 1191 2nd Ave. Suite 630 Seattle, WA 98101
PHONE:	206-652-4905	**P.O. #**	
FAX:		**PROJECT #**	1196016.00 Task 9 00 WDOE Yakima
DATE RECEIVED:	12/09/2014	**CONTACT:**	Kelly Buettner
DATE COMPLETED:	12/22/2014		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	310 WALNUT-M-120314	Modified TO-15	4.5 "Hg	4.9 psi
01B	310 WALNUT-M-120314	Modified TO-15	4.5 "Hg	4.9 psi
02A	310 WALNUT-B-120314	Modified TO-15	6.1 "Hg	5.3 psi
02B	310 WALNUT-B-120314	Modified TO-15	6.1 "Hg	5.3 psi
03A	Lab Blank	Modified TO-15	NA	NA
03B	Lab Blank	Modified TO-15	NA	NA
04A	CCV	Modified TO-15	NA	NA
04B	CCV	Modified TO-15	NA	NA
05A	LCS	Modified TO-15	NA	NA
05AA	LCSD	Modified TO-15	NA	NA
05B	LCS	Modified TO-15	NA	NA
05BB	LCSD	Modified TO-15	NA	NA

CERTIFIED BY:  DATE: 12/22/14

Technical Director

Certification numbers: AZ Licensure AZ0775, NJ NELAP - CA016, NY NELAP - 11291,
TX NELAP - T104704343-14-7, UT NELAP CA009332014-5, VA NELAP - 460197, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005, Effective date: 10/18/2014, Expiration date: 10/17/2015.
Eurofins Air Toxics Inc.. certifies that the test results contained in this report meet all requirements of the NELAC standards

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LABORATORY NARRATIVE
Modified TO-15 Full Scan/SIM
Kennedy/Jenks Consultants
Workorder# 1412147

Two 6 Liter Summa Special (SIM Certified) samples were received on December 09, 2014. 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 liters 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 taken to run these samples are summarized in the table below. Specific project requirements may over-ride the ATL modifications.

Requirement	***TO-15***	***ATL Modifications***
ICAL %RSD acceptance criteria	</=30% RSD with 2 compounds allowed out to < 40% RSD	For Full Scan: 30% RSD with 4 compounds allowed out to < 40% RSD For SIM: Project specific; default criteria is </=30% RSD with 10% of compounds allowed out to < 40% RSD
Daily Calibration	+- 30% Difference	For Full Scan: </= 30% Difference with four 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
Blank and standards	Zero air	Nitrogen
Method Detection Limit	Follow 40CFR Pt.136 App. B	The MDL met all relevant requirements in Method TO-15 (statistical MDL less than the LOQ). The concentration of the spiked replicate may have exceeded 10X the calculated MDL in some cases

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

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.

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

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Summary of Detected Compounds
MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

Client Sample ID: 310 WALNUT-M-120314

Lab ID#: 1412147-01A

No Detections Were Found.

Client Sample ID: 310 WALNUT-M-120314

Lab ID#: 1412147-01B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	0.078	0.51	0.25	1.6
1,2-Dichloroethane	0.031	0.10	0.13	0.42
Trichloroethene	0.0047	0.020	0.025	0.10
Toluene	0.031	1.4	0.12	5.1
Tetrachloroethene	0.031	0.051	0.21	0.34
Ethyl Benzene	0.031	0.50	0.14	2.2
m,p-Xylene	0.063	1.4	0.27	6.3
o-Xylene	0.031	0.62	0.14	2.7

Client Sample ID: 310 WALNUT-B-120314

Lab ID#: 1412147-02A

No Detections Were Found.

Client Sample ID: 310 WALNUT-B-120314

Lab ID#: 1412147-02B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	0.086	0.39	0.27	1.2
Trichloroethene	0.0051	0.013	0.028	0.072
Toluene	0.034	0.90	0.13	3.4
Tetrachloroethene	0.034	0.051	0.23	0.35
Ethyl Benzene	0.034	0.13	0.15	0.56
m,p-Xylene	0.068	0.45	0.30	1.9
o-Xylene	0.034	0.16	0.15	0.68

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Client Sample ID: 310 WALNUT-M-120314

Lab ID#: 1412147-01A

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

File Name:	**v121522**	**Date of Collection: 12/4/14 6:20:00 PM**	
Dil. Factor:	**1.57**	**Date of Analysis: 12/16/14 05:29 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Methylene Chloride	0.31	Not Detected	1.1	Not Detected
Chloroform	0.16	Not Detected	0.77	Not Detected

Container Type: 6 Liter Summa Special (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	103	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	96	70-130

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Client Sample ID: 310 WALNUT-M-120314

Lab ID#: 1412147-01B

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

File Name:	**v121522sim**	**Date of Collection: 12/4/14 6:20:00 PM**	
Dil. Factor:	**1.57**	**Date of Analysis: 12/16/14 05:29 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.016	Not Detected	0.040	Not Detected
cis-1,2-Dichloroethene	0.031	Not Detected	0.12	Not Detected
Benzene	0.078	0.51	0.25	1.6
1,2-Dichloroethane	0.031	0.10	0.13	0.42
Trichloroethene	0.0047	0.020	0.025	0.10
Toluene	0.031	1.4	0.12	5.1
Tetrachloroethene	0.031	0.051	0.21	0.34
Ethyl Benzene	0.031	0.50	0.14	2.2
m,p-Xylene	0.063	1.4	0.27	6.3
o-Xylene	0.031	0.62	0.14	2.7
trans-1,2-Dichloroethene	0.16	Not Detected	0.62	Not Detected

Container Type: 6 Liter Summa Special (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	106	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	99	70-130

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Client Sample ID: 310 WALNUT-B-120314

Lab ID#: 1412147-02A

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

File Name:	**v121523**	**Date of Collection: 12/4/14 6:12:00 PM**	
Dil. Factor:	**1.71**	**Date of Analysis: 12/16/14 06:05 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Methylene Chloride	0.34	Not Detected	1.2	Not Detected
Chloroform	0.17	Not Detected	0.83	Not Detected

Container Type: 6 Liter Summa Special (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	107	70-130
Toluene-d8	103	70-130
4-Bromofluorobenzene	96	70-130

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Client Sample ID: 310 WALNUT-B-120314

Lab ID#: 1412147-02B

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

File Name:	**v121523sim**	**Date of Collection: 12/4/14 6:12:00 PM**	
Dil. Factor:	**1.71**	**Date of Analysis: 12/16/14 06:05 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.017	Not Detected	0.044	Not Detected
cis-1,2-Dichloroethene	0.034	Not Detected	0.14	Not Detected
Benzene	0.086	0.39	0.27	1.2
1,2-Dichloroethane	0.034	Not Detected	0.14	Not Detected
Trichloroethene	0.0051	0.013	0.028	0.072
Toluene	0.034	0.90	0.13	3.4
Tetrachloroethene	0.034	0.051	0.23	0.35
Ethyl Benzene	0.034	0.13	0.15	0.56
m,p-Xylene	0.068	0.45	0.30	1.9
o-Xylene	0.034	0.16	0.15	0.68
trans-1,2-Dichloroethene	0.17	Not Detected	0.68	Not Detected

Container Type: 6 Liter Summa Special (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	106	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	98	70-130

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Client Sample ID: Lab Blank

Lab ID#: 1412147-03A

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

File Name:	**v121507**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/15/14 12:22 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Methylene Chloride	0.20	Not Detected	0.69	Not Detected
Chloroform	0.10	Not Detected	0.49	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	104	70-130
Toluene-d8	106	70-130
4-Bromofluorobenzene	103	70-130

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Client Sample ID: Lab Blank

Lab ID#: 1412147-03B

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

File Name:	**v121507sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/15/14 12:22 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.010	Not Detected	0.026	Not Detected
cis-1,2-Dichloroethene	0.020	Not Detected	0.079	Not Detected
Benzene	0.050	Not Detected	0.16	Not Detected
1,2-Dichloroethane	0.020	Not Detected	0.081	Not Detected
Trichloroethene	0.0030	Not Detected	0.016	Not Detected
Toluene	0.020	Not Detected	0.075	Not Detected
Tetrachloroethene	0.020	Not Detected	0.14	Not Detected
Ethyl Benzene	0.020	Not Detected	0.087	Not Detected
m,p-Xylene	0.040	Not Detected	0.17	Not Detected
o-Xylene	0.020	Not Detected	0.087	Not Detected
trans-1,2-Dichloroethene	0.10	Not Detected	0.40	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	104	70-130
Toluene-d8	103	70-130
4-Bromofluorobenzene	101	70-130

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Client Sample ID: CCV

Lab ID#: 1412147-04A

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

File Name:	**v121503**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/15/14 09:21 AM**	

Compound	%Recovery
Methylene Chloride	113
Chloroform	107

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	103	70-130
Toluene-d8	105	70-130
4-Bromofluorobenzene	106	70-130

eurofins | Air Toxics

Client Sample ID: CCV

Lab ID#: 1412147-04B

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

File Name:	**v121503sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/15/14 09:21 AM**	

Compound	%Recovery
Vinyl Chloride	104
cis-1,2-Dichloroethene	105
Benzene	91
1,2-Dichloroethane	98
Trichloroethene	91
Toluene	99
Tetrachloroethene	82
Ethyl Benzene	100
m,p-Xylene	107
o-Xylene	108
trans-1,2-Dichloroethene	105

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	102	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	105	70-130

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Client Sample ID: LCS

Lab ID#: 1412147-05A

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

File Name:	**v121504**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/15/14 10:05 AM**	

Compound	%Recovery	Method Limits
Methylene Chloride	119	70-130
Chloroform	110	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	100	70-130
Toluene-d8	107	70-130
4-Bromofluorobenzene	101	70-130

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Client Sample ID: LCSD

Lab ID#: 1412147-05AA

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

File Name:	**v121505**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/15/14 11:02 AM**	

Compound	%Recovery	Method Limits
Methylene Chloride	124	70-130
Chloroform	112	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	103	70-130
Toluene-d8	104	70-130
4-Bromofluorobenzene	97	70-130

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Client Sample ID: LCS

Lab ID#: 1412147-05B

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

File Name:	**v121504sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/15/14 10:05 AM**	

Compound	%Recovery	Method Limits
Vinyl Chloride	112	70-130
cis-1,2-Dichloroethene	110	70-130
Benzene	94	70-130
1,2-Dichloroethane	101	70-130
Trichloroethene	94	70-130
Toluene	102	70-130
Tetrachloroethene	86	70-130
Ethyl Benzene	101	70-130
m,p-Xylene	106	70-130
o-Xylene	107	70-130
trans-1,2-Dichloroethene	103	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	102	70-130
Toluene-d8	103	70-130
4-Bromofluorobenzene	103	70-130

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Client Sample ID: LCSD

Lab ID#: 1412147-05BB

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

File Name:	**v121505sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/15/14 11:02 AM**	

Compound	%Recovery	Method Limits
Vinyl Chloride	112	70-130
cis-1,2-Dichloroethene	110	70-130
Benzene	94	70-130
1,2-Dichloroethane	101	70-130
Trichloroethene	94	70-130
Toluene	100	70-130
Tetrachloroethene	88	70-130
Ethyl Benzene	100	70-130
m,p-Xylene	104	70-130
o-Xylene	104	70-130
trans-1,2-Dichloroethene	102	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	102	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	101	70-130

Please report these samples on a separate analytical report!

Air Toxics LTD.

CHAIN-OF-CUSTODY RECORD

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: Josh Hopp
Collected by: (Print and Sign) Josh Hopp
Company: Kennedy/Jenks Consultants Email: joshhopp@kennedyjenks.com
Address: 32001 32nd Ave S, Suite 100 City: Federal Way State: WA Zip: 98383
Phone: 253-835-6408 Fax:

Project Info:
P.O. #:
Project #: 196016.00 Task 9 00
Project Name: WDOE Yakima

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	310 WALNUT-M-120314	6L0052	12/3-12/4/14	1750-1820	TO-15 project-specific analyte list!	-29	-5		
02A	310 WALNUT-B-120314	33326	12/3-12/4/14	1755-1812		-29.5	-6.5		

Relinquished by: (signature) Date/Time: 12/5/14 1330
Received by: (signature) Date/Time: 12-9-14 1125
Relinquished by: (signature) Date/Time:
Received by: (signature) Date/Time:
Relinquished by: (signature) Date/Time:
Received by: (signature) Date/Time:

Notes:
Please report these samples on a separate analytical report!
JCH 12/4/14

Lab Use Only	Shipper Name	Air Bill #	Temp (°C)	Condition	Custody Seals Intact?	Work Order #
	UPS		NA	Good	Yes No (None)	1412147

Form 1293 rev.11

Mobile Geochemistry Inc.

16 December 2014

Mr. Josh Hopp
Kennedy/Jenks Consultants - Washington
32001 32nd Ave. South, Suite 100
Federal Way, WA 98001

H&P Project: KJ120814-14
Client Project: 1196016.00 Task 9 00 / Yakima

Dear Mr. Josh Hopp:

Enclosed is the analytical report for the above referenced project. The data herein applies to samples as received by H&P Mobile Geochemistry, Inc. on 08-Dec-14 which were analyzed in accordance with the attached Chain of Custody record(s).

The results for all sample analyses and required QA/QC analyses are presented in the following sections and summarized in the documents:

- Sample Summary
- Case Narrative (if applicable)
- Sample Results
- Quality Control Summary
- Notes and Definitions / Appendix
- Chain of Custody

Unless otherwise noted, all analyses were performed and reviewed in compliance with our Quality Systems Manual and Standard Operating Procedures. This report shall not be reproduced, except in full, without the written approval of H&P Mobile Geochemistry, Inc.

We at H&P Mobile Geochemistry, Inc. sincerely appreciate the opportunity to provide analytical services to you on this project. If you have any questions or concerns regarding this analytical report, please contact me at your convenience at 760-804-9678.

Sincerely,

Janis Villarreal

Janis Villarreal
Laboratory Director

H&P Mobile Geochemistry, Inc. operates under CA Environmental Lab Accreditation Program Numbers 2579, 2740, 2741, 2742, 2743, 2745 and 2754. National Environmental Laboratory Accreditation Conference (NELAC) Standards Lab #11845

H&P Mobile
Geochemistry Inc.

2470 Impala Drive
Carlsbad, CA 92010
760-804-9678 Phone
760-804-9159 Fax

Kennedy/Jenks Consultants - Washington	Project: KJ120814-14	
32001 32nd Ave. South, Suite 100	Project Number: 1196016.00 Task 9 00 / Yakima	Reported:
Federal Way, WA 98001	Project Manager: Mr. Josh Hopp	16-Dec-14 12:45

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BMS-SS-1-120414	E412022-01	Vapor	04-Dec-14	08-Dec-14
BMS-SS-4-120414	E412022-02	Vapor	04-Dec-14	08-Dec-14

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32001 32nd Ave. South, Suite 100	Project Number: 1196016.00 Task 9 00 / Yakima	Reported:
Federal Way, WA 98001	Project Manager: Mr. Josh Hopp	16-Dec-14 12:45

DETECTIONS SUMMARY

Sample ID: **BMS-SS-1-120414** Laboratory ID: **E412022-01**

Analyte	Result	Reporting Limit	Units	Method	Notes
Toluene	**0.76**	0.76	ug/m3	EPA TO-15	
Tetrachloroethene	**27**	0.69	ug/m3	EPA TO-15	
m,p-Xylene	**0.69**	0.44	ug/m3	EPA TO-15	

Sample ID: **BMS-SS-4-120414** Laboratory ID: **E412022-02**

Analyte	Result	Reporting Limit	Units	Method	Notes
Methylene chloride (Dichloromethane)	**5.3**	0.35	ug/m3	EPA TO-15	
Chloroform	**1.1**	0.25	ug/m3	EPA TO-15	
Benzene	**0.49**	0.16	ug/m3	EPA TO-15	
Toluene	**2.3**	0.76	ug/m3	EPA TO-15	
Tetrachloroethene	**84**	0.69	ug/m3	EPA TO-15	
m,p-Xylene	**1.6**	0.44	ug/m3	EPA TO-15	
o-Xylene	**0.55**	0.44	ug/m3	EPA TO-15	

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32001 32nd Ave. South, Suite 100	Project Number: 1196016.00 Task 9 00 / Yakima	Reported:
Federal Way, WA 98001	Project Manager: Mr. Josh Hopp	16-Dec-14 12:45

Soil Gas and Vapor Analysis

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
BMS-SS-1-120414 (E412022-01) Vapor	**Sampled: 04-Dec-14**	**Received: 08-Dec-14**							
Helium (LCC)	ND	0.10	%	1	EL41102	10-Dec-14	10-Dec-14	ASTM D1945M	
BMS-SS-4-120414 (E412022-02) Vapor	**Sampled: 04-Dec-14**	**Received: 08-Dec-14**							
Helium (LCC)	ND	0.10	%	1	EL41102	10-Dec-14	10-Dec-14	ASTM D1945M	

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32001 32nd Ave. South, Suite 100	Project Number: 1196016.00 Task 9 00 / Yakima	Reported:
Federal Way, WA 98001	Project Manager: Mr. Josh Hopp	16-Dec-14 12:45

Volatile Organic Compounds by EPA TO-15

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
BMS-SS-1-120414 (E412022-01) Vapor	**Sampled: 04-Dec-14**	**Received: 08-Dec-14**							
Vinyl chloride	ND	0.13	ug/m3	1	EL41009	10-Dec-14	11-Dec-14	EPA TO-15	
Methylene chloride (Dichloromethane)	ND	0.35	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.40	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	0.40	"	"	"	"	"	"	
Chloroform	ND	0.25	"	"	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	0.41	"	"	"	"	"	"	
Benzene	ND	0.16	"	"	"	"	"	"	
Trichloroethene	ND	0.55	"	"	"	"	"	"	
Toluene	**0.76**	0.76	"	"	"	"	"	"	
Tetrachloroethene	**27**	0.69	"	"	"	"	"	"	
Ethylbenzene	ND	0.44	"	"	"	"	"	"	
m,p-Xylene	**0.69**	0.44	"	"	"	"	"	"	
o-Xylene	ND	0.44	"	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*96.1 %*		*76-134*	"	"	"	"	
Surrogate: Toluene-d8		*95.4 %*		*78-125*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*104 %*		*77-127*	"	"	"	"	
BMS-SS-4-120414 (E412022-02) Vapor	**Sampled: 04-Dec-14**	**Received: 08-Dec-14**							
Vinyl chloride	ND	0.13	ug/m3	1	EL41009	10-Dec-14	11-Dec-14	EPA TO-15	
Methylene chloride (Dichloromethane)	**5.3**	0.35	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.40	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	0.40	"	"	"	"	"	"	
Chloroform	**1.1**	0.25	"	"	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	0.41	"	"	"	"	"	"	
Benzene	**0.49**	0.16	"	"	"	"	"	"	
Trichloroethene	ND	0.55	"	"	"	"	"	"	
Toluene	**2.3**	0.76	"	"	"	"	"	"	
Tetrachloroethene	**84**	0.69	"	"	"	"	"	"	
Ethylbenzene	ND	0.44	"	"	"	"	"	"	
m,p-Xylene	**1.6**	0.44	"	"	"	"	"	"	
o-Xylene	**0.55**	0.44	"	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*93.8 %*		*76-134*	"	"	"	"	
Surrogate: Toluene-d8		*96.7 %*		*78-125*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*106 %*		*77-127*	"	"	"	"	

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32001 32nd Ave. South, Suite 100	Project Number: 1196016.00 Task 9 00 / Yakima	Reported:
Federal Way, WA 98001	Project Manager: Mr. Josh Hopp	16-Dec-14 12:45

Soil Gas and Vapor Analysis - Quality Control

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EL41102 - GC										
Blank (EL41102-BLK1)				Prepared & Analyzed: 10-Dec-14						
Helium (LCC)	ND	0.10	%							

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32001 32nd Ave. South, Suite 100	Project Number: 1196016.00 Task 9 00 / Yakima	Reported:
Federal Way, WA 98001	Project Manager: Mr. Josh Hopp	16-Dec-14 12:45

Volatile Organic Compounds by EPA TO-15 - Quality Control

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EL41009 - TO-15										
Blank (EL41009-BLK1)				Prepared & Analyzed: 10-Dec-14						
Vinyl chloride	ND	0.13	ug/m3							
Methylene chloride (Dichloromethane)	ND	0.35	"							
trans-1,2-Dichloroethene	ND	0.40	"							
cis-1,2-Dichloroethene	ND	0.40	"							
Chloroform	ND	0.25	"							
1,2-Dichloroethane (EDC)	ND	0.41	"							
Benzene	ND	0.16	"							
Trichloroethene	ND	0.55	"							
Toluene	ND	0.76	"							
Tetrachloroethene	ND	0.69	"							
Ethylbenzene	ND	0.44	"							
m,p-Xylene	ND	0.44	"							
o-Xylene	ND	0.44	"							
Surrogate: 1,2-Dichloroethane-d4	*209*		*"*	*214*		*97.7*	*76-134*			
Surrogate: Toluene-d8	*198*		*"*	*207*		*95.6*	*78-125*			
Surrogate: 4-Bromofluorobenzene	*378*		*"*	*364*		*104*	*77-127*			
LCS (EL41009-BS1)				Prepared & Analyzed: 10-Dec-14						
Vinyl chloride	3.9	0.13	ug/m3	5.20		75.0	70-130			
Methylene chloride (Dichloromethane)	5.7	0.35	"	7.08		80.2	70-130			
trans-1,2-Dichloroethene	6.2	0.40	"	8.08		76.7	70-130			
cis-1,2-Dichloroethene	6.9	0.40	"	8.00		86.3	70-130			
Chloroform	9.8	0.25	"	9.92		98.7	70-130			
1,2-Dichloroethane (EDC)	8.0	0.41	"	8.24		97.6	70-130			
Benzene	5.4	0.16	"	6.48		83.9	70-130			
Trichloroethene	10	0.55	"	11.0		95.5	70-130			
Toluene	6.7	0.76	"	7.68		87.7	70-130			
Tetrachloroethene	14	0.69	"	13.8		103	70-130			
Ethylbenzene	8.4	0.44	"	8.84		95.5	70-130			
m,p-Xylene	18	0.44	"	17.7		99.9	70-130			
o-Xylene	8.7	0.44	"	8.84		98.8	70-130			
Surrogate: 1,2-Dichloroethane-d4	*215*		*"*	*214*		*100*	*70-130*			

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32001 32nd Ave. South, Suite 100	Project Number: 1196016.00 Task 9 00 / Yakima	Reported:
Federal Way, WA 98001	Project Manager: Mr. Josh Hopp	16-Dec-14 12:45

Volatile Organic Compounds by EPA TO-15 - Quality Control

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EL41009 - TO-15										
LCS (EL41009-BS1)				Prepared & Analyzed: 10-Dec-14						
Surrogate: Toluene-d8	*194*		*ug/m3*	*207*		*93.7*	*70-130*			
Surrogate: 4-Bromofluorobenzene	*385*		*"*	*364*		*106*	*70-130*			
LCS Dup (EL41009-BSD1)				Prepared & Analyzed: 10-Dec-14						
Vinyl chloride	3.9	0.13	ug/m3	5.20		74.6	70-130	0.467	25	
Methylene chloride (Dichloromethane)	5.8	0.35	"	7.08		82.4	70-130	2.63	25	
trans-1,2-Dichloroethene	6.5	0.40	"	8.08		79.9	70-130	4.01	25	
cis-1,2-Dichloroethene	7.2	0.40	"	8.00		89.4	70-130	3.55	25	
Chloroform	9.6	0.25	"	9.92		96.7	70-130	2.09	25	
1,2-Dichloroethane (EDC)	8.0	0.41	"	8.24		96.7	70-130	0.975	25	
Benzene	5.6	0.16	"	6.48		85.8	70-130	2.29	25	
Trichloroethene	10	0.55	"	11.0		93.1	70-130	2.48	25	
Toluene	6.7	0.76	"	7.68		87.8	70-130	0.0566	25	
Tetrachloroethene	14	0.69	"	13.8		105	70-130	1.20	25	
Ethylbenzene	8.5	0.44	"	8.84		96.6	70-130	1.19	25	
m,p-Xylene	18	0.44	"	17.7		101	70-130	1.33	25	
o-Xylene	9.0	0.44	"	8.84		101	70-130	2.68	25	
Surrogate: 1,2-Dichloroethane-d4	*213*		*"*	*214*		*99.6*	*70-130*			
Surrogate: Toluene-d8	*197*		*"*	*207*		*95.2*	*70-130*			
Surrogate: 4-Bromofluorobenzene	*384*		*"*	*364*		*105*	*70-130*			

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Kennedy/Jenks Consultants - Washington	Project: KJ120814-14	
32001 32nd Ave. South, Suite 100	Project Number: 1196016.00 Task 9 00 / Yakima	Reported:
Federal Way, WA 98001	Project Manager: Mr. Josh Hopp	16-Dec-14 12:45

Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

Appendix

H&P Mobile Geochemistry, Inc. is approved as an Environmental Testing Laboratory (Certification # L11-175) in accordance with the DoD-ELAP program. H&P is approved by the State of Arizona under Certification Numbers AZM758 and AZ0779. H&P is approved as an Environmental Laboratory in conformance with the Environmental Laboratory Accreditation Program (CA) for the category of Volatile and Semi-Volatile Organic Chemistry of Hazardous Waste for the following methods:

Certificate# 2741, 2743, 2579, 2754 & 2740 approved for EPA 8260 and LUFT GC/MS
Certificate# 2742, 2745, & 2741 approved for LUFT
Certificate# 2745 & 2742 approved for EPA 418.1

H&P Mobile Geochemistry, Inc. is approved as an Environmental Laboratory in conformance with the National Environmental Accreditation Conference Standards for the category Environmental Analysis Air and Emissions for the following analytes and methods:

Hexachlorobutadiene by EPA TO-15 & TO-14A
1,2,4-Trichlorobenzene by EPA TO-15 & TO-14A
1,2-Dichlorobenzene by EPA TO-15 & TO-14A
Dichlorotetrafluoroethane by EPA TO-14A
1,4-Dichlorobenzene by EPA TO-15 & TO-14A
Benzene by EPA TO-15 & TO-14A
Chlorobenzene by EPA TO-15 & TO-14A
Ethyl benzene by EPA TO-15 & TO-14A
Styrene by EPA TO-15 & TO-14A
Toluene by EPA TO-15 & TO-14A
Total Xylenes by EPA TO-15
1,1,1-Trichloroethane by EPA TO-15 & TO-14A
1,1,2,2-Tetrachloroethane by EPA TO-15 & TO-14A
1,1,2-Trichloroethane by EPA TO-15 & TO-14A
1,1-Dichloroethane by EPA TO-15 & TO-14A
1,1-Dichloroethene by EPA TO-15 & TO-14A
1,2-Dichloroethane by EPA TO-15 & TO-14A
1,2-Dichloropropane by EPA TO-15 & TO-14A
Benzyl Chloride by EPA TO-15 & TO-14A
Bromoform by EPA TO-15
Bromomethane by EPA TO-15 & TO-14A
Carbon tetrachloride by EPA TO-15 & TO-14A
Chloroethane by EPA TO-15 & TO-14A
Chloroform by EPA TO-15 & TO-14A
Chloromethane by EPA TO-15 & TO-14A
cis-1,2-Dichloroethene by EPA TO-15 & TO-14A
cis-1,3-Dichloropropene by EPA TO-15 & TO-14A
Methylene chloride by EPA TO -15 & TO-14A
Tetrachloroethane by EPA TO-15 & TO-14A
trans-1,2-Dichloroethene by EPA TO-15
trans-1,3-Dichloropropene by EPA TO-15 & TO-14A
Trichloroethene by EPA TO-15 & TO-14A
Vinyl chloride by EPA TO -15
2-Butanone by EPA TO-15
4-Methyl-2-Pentanone by EPA TO-15
Hexane by EPA TO-15
Methyl tert-butyl ether by EPA TO-15
Vinyl acetate by EPA TO-15

1,3-Dichlorobenzene by EPA TO-15 & TO-14A
Trichlorofluoromethane by EPA TO-14A
Naphthalene by H&P SOP TO-15/GC-MS
1,2-Dibromoethane (EDB) by EPA TO-15 & TO-14A
1,2-Dibromo-3-chloropropane by EPA TO-15
1,3-Butadiene by EPA TO-15
1,1,2-Trichlorotrifluoroethane by EPA TO-14A
Carbon disulfide by EPA TO-15
1,4-Dioxane by EPA TO-15

This certification applies to samples analyzed in summa canisters.

H&P Mobile Geochemistry, Inc.

2470 Impala Drive, Carlsbad, CA 92010
& Field Office - Signal Hill, CA
W handpmg.com E info@handpmg.com
P 760.804.9678 F 760.804.9159

VAPOR / AIR Chain of Custody

DATE: 12/4/14
Page 1 of 1

Lab Client and Project Information

→ 1196016.00 Task 9 00

Lab Client/Consultant: Kennedy/Jenks Consultants
Project Name (#): Yakima – Former Frankwear Cleaners
Lab Client Project Manager: Josh Hopp
Project Location: WA (Yakima)
Lab Client Address: 32001 32nd Ave S, Suite 100
Report E-Mail(s): joshhopp@kennedyjenks.com
Lab Client City, State, Zip: Federal Way, WA 98001
Phone Number: 253-835-6408

Sample Receipt (Lab Use Only)

Date Rec'd: 12/8/14 Control #: 140963.01
H&P Project # KJ120814-14
Lab Work Order # E412022
Sample Intact: [X] Yes [ ] No [ ] See Notes Below
Receipt Gauge ID: 12172014 Temp: 22°
Outside Lab:
Receipt Notes/Tracking #: 1Z 93T T61 4638 2381
Lab PM Initials: WA

Reporting Requirements

[X] Standard Report [ ] Level III [ ] Level IV
[X] Excel EDD [ ] Other EDD:_____
[ ] CA Geotracker Global ID:_____

Turnaround Time

[X] 5-7 day Stnd [ ] 24-Hr Rush
[ ] 3-day Rush [ ] Mobile Lab
[ ] 48-Hr Rush [ ] Other:____

Sampler Information

Sampler(s): Josh Hopp
Signature:
Date: 12-4-14

Additional Instructions to Laboratory:

[X] Check if Project Analyte List is ~~Attached~~ → same as previously reported JCH 12/4/14

** Preferred VOC units (please choose one):*

[ ] µg/L [X] µg/m³ [ ] ppbv [ ] ppmv

SAMPLE NAME	FIELD POINT NAME (if applicable)	DATE mm/dd/yy	TIME 24hr clock	SAMPLE TYPE Indoor Air (IA), Ambient Air (AA), Subslab (SS), Soil Vapor (SV)	CONTAINER SIZE & TYPE 400mL/1L/6L Summa or Tedlar or Tube	CONTAINER ID (###)	Lab use only: Receipt Vac	VOCs Standard Full List [ ] 8260SV [ ] TO-15	VOCs Short List / Project List [ ] 8260SV [X] TO-15	Oxygenates [ ] 8260SV [ ] TO-15	Naphthalene [ ] 8260SV [ ] TO-15 [ ] TO-17m	TPHv as Gas [ ] 8260SVm [ ] TO-15m	TPHv as Diesel (sorbent tube) [ ] TO-17m	Aromatic/Aliphatic Fractions [ ] 8260SVm [ ] TO-15m	Leak Check Compound [ ] DFA [ ] IPA [X] He	Methane by EPA 8015m	Fixed Gases by ASTM D1945 [ ] CO2 [ ] O2 [ ] N2			
BMS-SS-1-120414		12/04/14	1414	SS	6L Summa	342	-6.09		X						X					
BMS-SS-4-120414		12/04/14	1258	SS	6L Summa	454	-6.84		X						X					

Approved/Relinquished by:	Company: Kennedy/Jenks	Date: 12/4/14	Time: 1600	Received by:	Company: H&P	Date: 12/8/14	Time: 1400
Approved/Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:
Approved/Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:

*Approval constitutes as authorization to proceed with analysis and acceptance of conditions on back

Rev 12/31/2013

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4/2/2015

Ms. Sherri Peterson
Kennedy/Jenks Consultants
1191 2nd Ave.
Suite 630
Seattle WA 98101

Project Name: WDOE YAKIMA
Project #: 1196016.00 TASK9 00
Workorder #: 1503377

Dear Ms. Sherri Peterson

The following report includes the data for the above referenced project for sample(s) received on 3/20/2015 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 Air Toxics Ltd. for your air analysis needs. Air Toxics Ltd. 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 #: 1503377

Work Order Summary

CLIENT:	Ms. Sherri Peterson Kennedy Jenks Consultants 1191 2nd Ave. Suite 630 Seattle, WA 98101	**BILL TO:**	Ms. Sherri Peterson Kennedy Jenks Consultants 32001 32nd Avenue South Suite 100 Federal Way, WA 98001
PHONE:	206-652-4905	**P.O. #**	
FAX:		**PROJECT #**	1196016.00 TASK9 00 WDOE YAKIMA
DATE RECEIVED:	03/20/2015	**CONTACT:**	Kelly Buettner
DATE COMPLETED:	04/02/2015		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	BMS-M1-031615	Modified TO-15	6.0 "Hg	5 psi
01B	BMS-M1-031615	Modified TO-15	6.0 "Hg	5 psi
02A	BMS-M3-031615	Modified TO-15	5.0"Hg	5 psi
02B	BMS-M3-031615	Modified TO-15	5.0"Hg	5 psi
03A	AMB-UPWIND-031615	Modified TO-15	5.0"Hg	5 psi
03B	AMB-UPWIND-031615	Modified TO-15	5.0"Hg	5 psi
04A	Lab Blank	Modified TO-15	NA	NA
04B	Lab Blank	Modified TO-15	NA	NA
05A	CCV	Modified TO-15	NA	NA
05B	CCV	Modified TO-15	NA	NA
06A	LCS	Modified TO-15	NA	NA
06AA	LCSD	Modified TO-15	NA	NA
06B	LCS	Modified TO-15	NA	NA
06BB	LCSD	Modified TO-15	NA	NA

CERTIFIED BY:  DATE: 04/02/15

Technical Director

Certification numbers: AZ Licensure AZ0775, NJ NELAP - CA016, NY NELAP - 11291,
TX NELAP - T104704343-14-7, UT NELAP CA009332014-5, VA NELAP - 460197, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005, Effective date: 10/18/2014, Expiration date: 10/17/2015.
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 - 9563
(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

LABORATORY NARRATIVE
Modified TO-15 Full Scan/SIM
Kennedy/Jenks Consultants
Workorder# 1503377

Three 6 Liter Summa Special (SIM Certified) samples were received on March 20, 2015. 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 liters 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 taken to run these samples are summarized in the table below. Specific project requirements may over-ride the ATL modifications.

Requirement	***TO-15***	***ATL Modifications***
ICAL %RSD acceptance criteria	</=30% RSD with 2 compounds allowed out to < 40% RSD	For Full Scan: 30% RSD with 4 compounds allowed out to < 40% RSD For SIM: Project specific; default criteria is </=30% RSD with 10% of compounds allowed out to < 40% RSD
Daily Calibration	+- 30% Difference	For Full Scan: </= 30% Difference with four 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
Blank and standards	Zero air	Nitrogen
Method Detection Limit	Follow 40CFR Pt.136 App. B	The MDL met all relevant requirements in Method TO-15 (statistical MDL less than the LOQ). The concentration of the spiked replicate may have exceeded 10X the calculated MDL in some cases

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

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.

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

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Summary of Detected Compounds
MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

Client Sample ID: BMS-M1-031615

Lab ID#: 1503377-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Chloroform	0.17	0.34	0.82	1.7

Client Sample ID: BMS-M1-031615

Lab ID#: 1503377-01B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
cis-1,2-Dichloroethene	0.034	0.040	0.13	0.16
Benzene	0.084	0.18	0.27	0.59
Trichloroethene	0.0050	0.010	0.027	0.056
Toluene	0.034	0.52	0.13	2.0
Tetrachloroethene	0.034	0.092	0.23	0.62
Ethyl Benzene	0.034	0.056	0.14	0.24
m,p-Xylene	0.067	0.18	0.29	0.80
o-Xylene	0.034	0.066	0.14	0.29

Client Sample ID: BMS-M3-031615

Lab ID#: 1503377-02A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Chloroform	0.16	0.31	0.79	1.5

Client Sample ID: BMS-M3-031615

Lab ID#: 1503377-02B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
cis-1,2-Dichloroethene	0.032	0.036	0.13	0.14
Benzene	0.080	0.19	0.26	0.61
1,2-Dichloroethane	0.032	0.041	0.13	0.16
Trichloroethene	0.0048	0.015	0.026	0.080
Toluene	0.032	1.0	0.12	3.9
Tetrachloroethene	0.032	0.091	0.22	0.62
Ethyl Benzene	0.032	0.079	0.14	0.34

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Summary of Detected Compounds
MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

Client Sample ID: BMS-M3-031615

Lab ID#: 1503377-02B

m,p-Xylene	0.064	0.23	0.28	0.98
o-Xylene	0.032	0.081	0.14	0.35

Client Sample ID: AMB-UPWIND-031615

Lab ID#: 1503377-03A

No Detections Were Found.

Client Sample ID: AMB-UPWIND-031615

Lab ID#: 1503377-03B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.016	0.025	0.041	0.065
cis-1,2-Dichloroethene	0.032	0.054	0.13	0.22
Benzene	0.080	0.17	0.26	0.54
Trichloroethene	0.0048	0.021	0.026	0.11
Toluene	0.032	0.35	0.12	1.3
Tetrachloroethene	0.032	0.22	0.22	1.5
Ethyl Benzene	0.032	0.051	0.14	0.22
m,p-Xylene	0.064	0.16	0.28	0.71
o-Xylene	0.032	0.060	0.14	0.26

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Client Sample ID: BMS-M1-031615

Lab ID#: 1503377-01A

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

File Name:	**v032420**	**Date of Collection: 3/16/15 6:15:00 AM**	
Dil. Factor:	**1.68**	**Date of Analysis: 3/24/15 09:51 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Methylene Chloride	0.34	Not Detected	1.2	Not Detected
Chloroform	0.17	0.34	0.82	1.7

Container Type: 6 Liter Summa Special (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	92	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	96	70-130

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Client Sample ID: BMS-M1-031615

Lab ID#: 1503377-01B

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

File Name:	**v032420sim**	**Date of Collection:**	**3/16/15 6:15:00 AM**
Dil. Factor:	**1.68**	**Date of Analysis:**	**3/24/15 09:51 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.017	Not Detected	0.043	Not Detected
cis-1,2-Dichloroethene	0.034	0.040	0.13	0.16
Benzene	0.084	0.18	0.27	0.59
1,2-Dichloroethane	0.034	Not Detected	0.14	Not Detected
Trichloroethene	0.0050	0.010	0.027	0.056
Toluene	0.034	0.52	0.13	2.0
Tetrachloroethene	0.034	0.092	0.23	0.62
Ethyl Benzene	0.034	0.056	0.14	0.24
m,p-Xylene	0.067	0.18	0.29	0.80
o-Xylene	0.034	0.066	0.14	0.29
trans-1,2-Dichloroethene	0.17	Not Detected	0.67	Not Detected

Container Type: 6 Liter Summa Special (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	98	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	99	70-130

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Client Sample ID: BMS-M3-031615

Lab ID#: 1503377-02A

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

File Name:	**v032421**	**Date of Collection: 3/16/15 6:17:00 AM**	
Dil. Factor:	**1.61**	**Date of Analysis: 3/24/15 10:29 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Methylene Chloride	0.32	Not Detected	1.1	Not Detected
Chloroform	0.16	0.31	0.79	1.5

Container Type: 6 Liter Summa Special (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	94	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	98	70-130

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Client Sample ID: BMS-M3-031615

Lab ID#: 1503377-02B

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

File Name:	**v032421sim**	**Date of Collection:**	**3/16/15 6:17:00 AM**
Dil. Factor:	**1.61**	**Date of Analysis:**	**3/24/15 10:29 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.016	Not Detected	0.041	Not Detected
cis-1,2-Dichloroethene	0.032	0.036	0.13	0.14
Benzene	0.080	0.19	0.26	0.61
1,2-Dichloroethane	0.032	0.041	0.13	0.16
Trichloroethene	0.0048	0.015	0.026	0.080
Toluene	0.032	1.0	0.12	3.9
Tetrachloroethene	0.032	0.091	0.22	0.62
Ethyl Benzene	0.032	0.079	0.14	0.34
m,p-Xylene	0.064	0.23	0.28	0.98
o-Xylene	0.032	0.081	0.14	0.35
trans-1,2-Dichloroethene	0.16	Not Detected	0.64	Not Detected

Container Type: 6 Liter Summa Special (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	97	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	99	70-130

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Client Sample ID: AMB-UPWIND-031615

Lab ID#: 1503377-03A

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

File Name:	**v032422**	**Date of Collection: 3/16/15 6:20:00 AM**	
Dil. Factor:	**1.61**	**Date of Analysis: 3/24/15 11:04 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Methylene Chloride	0.32	Not Detected	1.1	Not Detected
Chloroform	0.16	Not Detected	0.79	Not Detected

Container Type: 6 Liter Summa Special (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	92	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	96	70-130

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Client Sample ID: AMB-UPWIND-031615

Lab ID#: 1503377-03B

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

File Name:	**v032422sim**	**Date of Collection: 3/16/15 6:20:00 AM**	
Dil. Factor:	**1.61**	**Date of Analysis: 3/24/15 11:04 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.016	0.025	0.041	0.065
cis-1,2-Dichloroethene	0.032	0.054	0.13	0.22
Benzene	0.080	0.17	0.26	0.54
1,2-Dichloroethane	0.032	Not Detected	0.13	Not Detected
Trichloroethene	0.0048	0.021	0.026	0.11
Toluene	0.032	0.35	0.12	1.3
Tetrachloroethene	0.032	0.22	0.22	1.5
Ethyl Benzene	0.032	0.051	0.14	0.22
m,p-Xylene	0.064	0.16	0.28	0.71
o-Xylene	0.032	0.060	0.14	0.26
trans-1,2-Dichloroethene	0.16	Not Detected	0.64	Not Detected

Container Type: 6 Liter Summa Special (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	100	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	100	70-130

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Client Sample ID: Lab Blank

Lab ID#: 1503377-04A

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

File Name:	**v032407**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/24/15 10:06 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Methylene Chloride	0.20	Not Detected	0.69	Not Detected
Chloroform	0.10	Not Detected	0.49	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	96	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	97	70-130

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Client Sample ID: Lab Blank

Lab ID#: 1503377-04B

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

File Name:	**v032407simc**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/24/15 10:06 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.010	Not Detected	0.026	Not Detected
cis-1,2-Dichloroethene	0.020	Not Detected	0.079	Not Detected
Benzene	0.050	Not Detected	0.16	Not Detected
1,2-Dichloroethane	0.020	Not Detected	0.081	Not Detected
Trichloroethene	0.0030	Not Detected	0.016	Not Detected
Toluene	0.020	Not Detected	0.075	Not Detected
Tetrachloroethene	0.020	Not Detected	0.14	Not Detected
Ethyl Benzene	0.020	Not Detected	0.087	Not Detected
m,p-Xylene	0.040	Not Detected	0.17	Not Detected
o-Xylene	0.020	Not Detected	0.087	Not Detected
trans-1,2-Dichloroethene	0.10	Not Detected	0.40	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	99	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	98	70-130

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Client Sample ID: CCV

Lab ID#: 1503377-05A

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

File Name:	**v032403**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/24/15 07:08 AM**	

Compound	**%Recovery**
Methylene Chloride	95
Chloroform	97

Container Type: NA - Not Applicable

Surrogates	**%Recovery**	**Method Limits**
1,2-Dichloroethane-d4	95	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	96	70-130

eurofins | Air Toxics

Client Sample ID: CCV

Lab ID#: 1503377-05B

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

File Name:	**v032403sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/24/15 07:08 AM**	

Compound	%Recovery
Vinyl Chloride	99
cis-1,2-Dichloroethene	100
Benzene	87
1,2-Dichloroethane	101
Trichloroethene	97
Toluene	93
Tetrachloroethene	94
Ethyl Benzene	93
m,p-Xylene	89
o-Xylene	87
trans-1,2-Dichloroethene	100

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	99	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	104	70-130

eurofins | Air Toxics

Client Sample ID: LCS

Lab ID#: 1503377-06A

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

File Name:	**v032404**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/24/15 07:55 AM**	

Compound	%Recovery	Method Limits
Methylene Chloride	101	70-130
Chloroform	102	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	93	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	97	70-130

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Client Sample ID: LCSD

Lab ID#: 1503377-06AA

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

File Name:	**v032405**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/24/15 08:38 AM**	

Compound	%Recovery	Method Limits
Methylene Chloride	103	70-130
Chloroform	104	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	94	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	99	70-130

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Client Sample ID: LCS

Lab ID#: 1503377-06B

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

File Name:	**v032404sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/24/15 07:55 AM**	

Compound	%Recovery	Method Limits
Vinyl Chloride	110	70-130
cis-1,2-Dichloroethene	118	70-130
Benzene	96	70-130
1,2-Dichloroethane	108	70-130
Trichloroethene	105	70-130
Toluene	102	70-130
Tetrachloroethene	101	70-130
Ethyl Benzene	100	70-130
m,p-Xylene	96	70-130
o-Xylene	96	70-130
trans-1,2-Dichloroethene	92	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	98	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	105	70-130

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Client Sample ID: LCSD

Lab ID#: 1503377-06BB

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

File Name:	**v032405sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/24/15 08:38 AM**	

Compound	%Recovery	Method Limits
Vinyl Chloride	109	70-130
cis-1,2-Dichloroethene	119	70-130
Benzene	97	70-130
1,2-Dichloroethane	111	70-130
Trichloroethene	107	70-130
Toluene	102	70-130
Tetrachloroethene	105	70-130
Ethyl Benzene	100	70-130
m,p-Xylene	94	70-130
o-Xylene	93	70-130
trans-1,2-Dichloroethene	93	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	98	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	101	70-130

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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 Josh Hoppe

Collected by: (Print and Sign) Josh Hoppe

Company Kennedy/Jenks Consultants Email joshhoppe@kennedyjenks.com

Address 32001 32nd Avenue S, Suite 100 City Federal Way State WA Zip 98001

Phone 253-835-6400 Fax

Project Info:
P.O. #
Project # 119601 6.00 TASK 9 00
Project Name WOOD YAKIMA

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	BMS-M1-031615	20946	03/16/15	0615-	TO-15	-32			
02A	BMS-M3-031615	22503	03/16/15	0617-	TO-15	-34			
	AMB-OUTDOOR-0 (JCH)								
03A	AMB-UPWIND-031615	24491	03/16/15	0620-	TO-15	-30+			

Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
	3/17/15 1000		3.20.15 1210
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time

Notes:
Use project-specific analyte list for analyses + report. (JCH)

Lab Use Only	Shipper Name	Air Bill #	Temp (°C)	Condition	Custody Seals Intact?	Work Order #
	UPS		NA	Good	Yes No None	1503377

Form 1293 rev.11

Mobile Geochemistry Inc.

27 March 2015

Mr. Josh Hopp
Kennedy/Jenks Consultants - Washington
32001 32nd Ave. South, Suite 100
Federal Way, WA 98001

H&P Project: KJ032015-10
Client Project: 1196016.00/Task 9/00 / Yakima, WA

Dear Mr. Josh Hopp:

Enclosed is the analytical report for the above referenced project. The data herein applies to samples as received by H&P Mobile Geochemistry, Inc. on 20-Mar-15 which were analyzed in accordance with the attached Chain of Custody record(s).

The results for all sample analyses and required QA/QC analyses are presented in the following sections and summarized in the documents:

- Sample Summary
- Case Narrative (if applicable)
- Sample Results
- Quality Control Summary
- Notes and Definitions / Appendix
- Chain of Custody

Unless otherwise noted, I certify that all analyses were performed and reviewed in compliance with our Quality Systems Manual and Standard Operating Procedures. This report shall not be reproduced, except in full, without the written approval of H&P Mobile Geochemistry, Inc.

We at H&P Mobile Geochemistry, Inc. sincerely appreciate the opportunity to provide analytical services to you on this project. If you have any questions or concerns regarding this analytical report, please contact me at your convenience at 760-804-9678.

Sincerely,

Janis Villarreal

Janis Villarreal
Laboratory Director

H&P Mobile Geochemistry, Inc. is certified under the California ELAP, the National Environmental Laboratory Accreditation Conference (NELAC) and the Department of Defense Accreditation Programs.

H&P Mobile
Geochemistry Inc.

2470 Impala Drive
Carlsbad, CA 92010
760-804-9678 Phone
760-804-9159 Fax

Kennedy/Jenks Consultants - Washington	Project: KJ032015-10	
32001 32nd Ave. South, Suite 100	Project Number: 1196016.00/Task 9/00 / Yakima, WA	Reported:
Federal Way, WA 98001	Project Manager: Mr. Josh Hopp	27-Mar-15 12:48

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BMS-SS-1-031615	E503098-01	Vapor	16-Mar-15	20-Mar-15
BMS-SS-4-031615	E503098-02	Vapor	16-Mar-15	20-Mar-15

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32001 32nd Ave. South, Suite 100	Project Number: 1196016.00/Task 9/00 / Yakima, WA	Reported:
Federal Way, WA 98001	Project Manager: Mr. Josh Hopp	27-Mar-15 12:48

DETECTIONS SUMMARY

Sample ID: **BMS-SS-1-031615** Laboratory ID: **E503098-01**

Analyte	Result	Reporting Limit	Units	Method	Notes
Methylene chloride (Dichloromethane)	**0.74**	0.71	ug/m3	EPA TO-15	
Toluene	**8.2**	1.5	ug/m3	EPA TO-15	
Tetrachloroethene	**47**	1.4	ug/m3	EPA TO-15	
m,p-Xylene	**0.96**	0.88	ug/m3	EPA TO-15	

Sample ID: **BMS-SS-4-031615** Laboratory ID: **E503098-02**

Analyte	Result	Reporting Limit	Units	Method	Notes
Helium (LCC)	**1.19**	0.10	%	ASTM D1945M	
Methylene chloride (Dichloromethane)	**8.4**	0.35	ug/m3	EPA TO-15	
Chloroform	**1.7**	0.25	ug/m3	EPA TO-15	
Benzene	**0.67**	0.16	ug/m3	EPA TO-15	
Toluene	**17**	0.76	ug/m3	EPA TO-15	
Tetrachloroethene	**4.4**	0.69	ug/m3	EPA TO-15	
Ethylbenzene	**0.87**	0.44	ug/m3	EPA TO-15	
m,p-Xylene	**3.0**	0.44	ug/m3	EPA TO-15	
o-Xylene	**1.4**	0.44	ug/m3	EPA TO-15	

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32001 32nd Ave. South, Suite 100	Project Number: 1196016.00/Task 9/00 / Yakima, WA	Reported:
Federal Way, WA 98001	Project Manager: Mr. Josh Hopp	27-Mar-15 12:48

Soil Gas and Vapor Analysis

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
BMS-SS-1-031615 (E503098-01) Vapor	**Sampled: 16-Mar-15**	**Received: 20-Mar-15**							
Helium (LCC)	ND	0.10	%	1	EC52305	23-Mar-15	23-Mar-15	ASTM D1945M	
BMS-SS-4-031615 (E503098-02) Vapor	**Sampled: 16-Mar-15**	**Received: 20-Mar-15**							
Helium (LCC)	**1.19**	0.10	%	1	EC52305	23-Mar-15	23-Mar-15	ASTM D1945M	

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Kennedy/Jenks Consultants - Washington	Project: KJ032015-10	
32001 32nd Ave. South, Suite 100	Project Number: 1196016.00/Task 9/00 / Yakima, WA	Reported:
Federal Way, WA 98001	Project Manager: Mr. Josh Hopp	27-Mar-15 12:48

Volatile Organic Compounds by EPA TO-15

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
BMS-SS-1-031615 (E503098-01) Vapor	**Sampled: 16-Mar-15**	**Received: 20-Mar-15**							
Vinyl chloride	ND	0.26	ug/m3	2	EC52504	24-Mar-15	25-Mar-15	EPA TO-15	
Methylene chloride (Dichloromethane)	**0.74**	0.71	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.80	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	0.80	"	"	"	"	"	"	
Chloroform	ND	0.49	"	"	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	0.82	"	"	"	"	"	"	
Benzene	ND	0.32	"	"	"	"	"	"	
Trichloroethene	ND	1.1	"	"	"	"	"	"	
Toluene	**8.2**	1.5	"	"	"	"	"	"	
Tetrachloroethene	**47**	1.4	"	"	"	"	"	"	
Ethylbenzene	ND	0.88	"	"	"	"	"	"	
m,p-Xylene	**0.96**	0.88	"	"	"	"	"	"	
o-Xylene	ND	0.88	"	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*100 %*		*76-134*	"	"	"	"	
Surrogate: Toluene-d8		*108 %*		*78-125*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*112 %*		*77-127*	"	"	"	"	
BMS-SS-4-031615 (E503098-02) Vapor	**Sampled: 16-Mar-15**	**Received: 20-Mar-15**							
Vinyl chloride	ND	0.13	ug/m3	1	EC52504	24-Mar-15	24-Mar-15	EPA TO-15	
Methylene chloride (Dichloromethane)	**8.4**	0.35	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.40	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	0.40	"	"	"	"	"	"	
Chloroform	**1.7**	0.25	"	"	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	0.41	"	"	"	"	"	"	
Benzene	**0.67**	0.16	"	"	"	"	"	"	
Trichloroethene	ND	0.55	"	"	"	"	"	"	
Toluene	**17**	0.76	"	"	"	"	"	"	
Tetrachloroethene	**4.4**	0.69	"	"	"	"	"	"	
Ethylbenzene	**0.87**	0.44	"	"	"	"	"	"	
m,p-Xylene	**3.0**	0.44	"	"	"	"	"	"	
o-Xylene	**1.4**	0.44	"	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*97.3 %*		*76-134*	"	"	"	"	
Surrogate: Toluene-d8		*106 %*		*78-125*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*89.7 %*		*77-127*	"	"	"	"	

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Kennedy/Jenks Consultants - Washington	Project: KJ032015-10	
32001 32nd Ave. South, Suite 100	Project Number: 1196016.00/Task 9/00 / Yakima, WA	Reported:
Federal Way, WA 98001	Project Manager: Mr. Josh Hopp	27-Mar-15 12:48

Soil Gas and Vapor Analysis - Quality Control

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EC52305 - GC										
Blank (EC52305-BLK1)				Prepared & Analyzed: 23-Mar-15						
Helium (LCC)	ND	0.10	%							

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32001 32nd Ave. South, Suite 100	Project Number: 1196016.00/Task 9/00 / Yakima, WA	Reported:
Federal Way, WA 98001	Project Manager: Mr. Josh Hopp	27-Mar-15 12:48

Volatile Organic Compounds by EPA TO-15 - Quality Control

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EC52504 - TO-15										
Blank (EC52504-BLK1)				Prepared & Analyzed: 24-Mar-15						
Vinyl chloride	ND	0.13	ug/m3							
Methylene chloride (Dichloromethane)	ND	0.35	"							
trans-1,2-Dichloroethene	ND	0.40	"							
cis-1,2-Dichloroethene	ND	0.40	"							
Chloroform	ND	0.25	"							
1,2-Dichloroethane (EDC)	ND	0.41	"							
Benzene	ND	0.16	"							
Trichloroethene	ND	0.55	"							
Toluene	ND	0.76	"							
Tetrachloroethene	ND	0.69	"							
Ethylbenzene	ND	0.44	"							
m,p-Xylene	ND	0.44	"							
o-Xylene	ND	0.44	"							
Surrogate: 1,2-Dichloroethane-d4	*209*		*"*	*214*		*97.5*	*76-134*			
Surrogate: Toluene-d8	*218*		*"*	*207*		*105*	*78-125*			
Surrogate: 4-Bromofluorobenzene	*400*		*"*	*364*		*110*	*77-127*			
LCS (EC52504-BS1)				Prepared & Analyzed: 24-Mar-15						
Vinyl chloride	4.3	0.13	ug/m3	5.20		82.9	70-130			
Methylene chloride (Dichloromethane)	5.9	0.35	"	7.08		82.9	70-130			
trans-1,2-Dichloroethene	7.3	0.40	"	8.08		90.1	70-130			
cis-1,2-Dichloroethene	7.5	0.40	"	8.00		93.6	70-130			
Chloroform	9.8	0.25	"	9.92		98.5	70-130			
1,2-Dichloroethane (EDC)	7.9	0.41	"	8.24		96.0	70-130			
Benzene	5.6	0.16	"	6.48		85.9	70-130			
Trichloroethene	11	0.55	"	11.0		97.4	70-130			
Toluene	7.3	0.76	"	7.68		95.5	70-130			
Tetrachloroethene	15	0.69	"	13.8		109	70-130			
Ethylbenzene	7.8	0.44	"	8.84		88.4	70-130			
m,p-Xylene	17	0.44	"	17.7		97.3	70-130			
o-Xylene	8.4	0.44	"	8.84		95.2	70-130			
Surrogate: 1,2-Dichloroethane-d4	*208*		*"*	*214*		*96.9*	*70-130*			

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32001 32nd Ave. South, Suite 100	Project Number: 1196016.00/Task 9/00 / Yakima, WA	Reported:
Federal Way, WA 98001	Project Manager: Mr. Josh Hopp	27-Mar-15 12:48

Volatile Organic Compounds by EPA TO-15 - Quality Control

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EC52504 - TO-15										
LCS (EC52504-BS1)				Prepared & Analyzed: 24-Mar-15						
Surrogate: Toluene-d8	*218*		*ug/m3*	*207*		*105*	*70-130*			
Surrogate: 4-Bromofluorobenzene	*433*		*"*	*364*		*119*	*70-130*			
LCS Dup (EC52504-BSD1)				Prepared & Analyzed: 24-Mar-15						
Vinyl chloride	5.6	0.13	ug/m3	5.20		108	70-130	26.3	25	QR-02
Methylene chloride (Dichloromethane)	7.2	0.35	"	7.08		102	70-130	21.0	25	
trans-1,2-Dichloroethene	8.8	0.40	"	8.08		109	70-130	19.0	25	
cis-1,2-Dichloroethene	8.5	0.40	"	8.00		106	70-130	12.3	25	
Chloroform	12	0.25	"	9.92		119	70-130	18.9	25	
1,2-Dichloroethane (EDC)	9.5	0.41	"	8.24		116	70-130	18.6	25	
Benzene	6.6	0.16	"	6.48		103	70-130	17.6	25	
Trichloroethene	11	0.55	"	11.0		102	70-130	4.20	25	
Toluene	7.6	0.76	"	7.68		99.6	70-130	4.13	25	
Tetrachloroethene	16	0.69	"	13.8		113	70-130	4.27	25	
Ethylbenzene	7.7	0.44	"	8.84		87.4	70-130	1.19	25	
m,p-Xylene	17	0.44	"	17.7		97.2	70-130	0.0767	25	
o-Xylene	8.4	0.44	"	8.84		95.0	70-130	0.261	25	
Surrogate: 1,2-Dichloroethane-d4	*243*		*"*	*214*		*113*	*70-130*			
Surrogate: Toluene-d8	*218*		*"*	*207*		*105*	*70-130*			
Surrogate: 4-Bromofluorobenzene	*407*		*"*	*364*		*112*	*70-130*			

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Kennedy/Jenks Consultants - Washington	Project: KJ032015-10	
32001 32nd Ave. South, Suite 100	Project Number: 1196016.00/Task 9/00 / Yakima, WA	Reported:
Federal Way, WA 98001	Project Manager: Mr. Josh Hopp	27-Mar-15 12:48

Notes and Definitions

QR-02	The RPD result exceeded the QC control limits. Sample results for the QC batch were accepted based on percent recoveries and completeness of QC data.
LCC	Leak Check Compound
ND	Analyte NOT DETECTED at or above the reporting limit
MDL	Method Detection Limit
%REC	Percent Recovery
RPD	Relative Percent Difference

Appendix

H&P Mobile Geochemistry, Inc. is approved as an Environmental Testing Laboratory and Mobile Laboratory in accordance with the DoD-ELAP and the ISO 17025 programs, certification number L11-175.

H&P is approved by the State of Arizona as an Environmental Testing Laboratory and Mobile Laboratory, certification numbers AZM758 and AZ0779.

H&P is approved by the State of California as an Environmental Laboratory and Mobile Laboratory in conformance with the Environmental Laboratory Accreditation Program (ELAP) for the category of Volatile and Semi-Volatile Organic Chemistry of Hazardous Waste, certification numbers 2740, 2741, 2743, 2744, 2745, 2754 & 2930.

H&P is approved by the State of Florida Department of Health under the National Environmental Laboratory Accreditation Conference (NELAC) certification number E871100.

The complete list of stationary and mobile laboratory certifications along with the fields of testing (FOTs) and analyte lists are available at www.handpmg.com/about/certifications.

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VAPOR / AIR Chain of Custody

DATE: 3-16-15
Page 1 of 1

Lab Client and Project Information

Lab Client/Consultant: Kennedy/Jenks Consultants	Project Name / #: 1196016.00/TASK 9/00
Lab Client Project Manager: J. Hopp	Project Location: Yakima, WA
Lab Client Address: 32001 32nd Ave S, Suite 100	Report E-Mail(s): joshhoppe kennedyjenks.com
Lab Client City, State, Zip: Federal Way, WA 98001	
Phone Number: 253-835-6400	

Sample Receipt (Lab Use Only)

Date Rec'd: 3/20/15	Control #: 150195.01
H&P Project # KJ032015-10	
Lab Work Order # E503098	
Sample Intact: ☑ Yes ☐ No ☐ See Notes Below	
Receipt Gauge ID: 11167 ~~10760~~ MTN 3/20/15	Temp: 21.4°
Outside Lab:	
Receipt Notes/Tracking #: 1Z 93T T61 87 4807 1203	
Lab PM Initials: SN	

Reporting Requirements

☒ Standard Report ☐ Level III ☐ Level IV
☒ Excel EDD ☐ Other EDD:_____
☐ CA Geotracker Global ID:_____

Turnaround Time

☒ 5-7 day Stnd ☐ 24-Hr Rush
☐ 3-day Rush ☐ Mobile Lab
☐ 48-Hr Rush ☐ Other:____

Sampler Information

Sampler(s): J. Hopp
Signature: [signature]
Date: 3-16-15

Additional Instructions to Laboratory:

☒ Check if Project Analyte List is ~~Attached~~ SAME AS DECEMBER EVENT- SN 3/20/15

** Preferred VOC units (please choose one):*

☐ µg/L ☒ µg/m³ ☐ ppbv ☐ ppmv

SAMPLE NAME	FIELD POINT NAME (if applicable)	DATE mm/dd/yy	TIME 24hr clock	SAMPLE TYPE Indoor Air (IA), Ambient Air (AA), Subslab (SS), Soil Vapor (SV)	CONTAINER SIZE & TYPE 400mL/1L/6L Summa or Tedlar or Tube	CONTAINER ID (###)	Lab use only: Receipt Vac	VOCs Standard Full List ☐ 8260SV ☐ TO-15	VOCs Short List (Project List) ☐ 8260SV ☒ TO-15	Oxygenates ☐ 8260SV ☐ TO-15	Naphthalene ☐ 8260SV ☐ TO-15 ☐ TO-17m	TPHv as Gas ☐ 8260SVm ☐ TO-15m	TPHv as Diesel (sorbent tube) ☐ TO-17m	Aromatic/Aliphatic Fractions ☐ 8260SVm ☐ TO-15m	Leak Check Compound ☐ DFA ☐ IPA ☒ He	Methane by EPA 8015m	Fixed Gases by ASTM D1945 ☐ CO2 ☐ O2 ☐ N2			
BMS-SS-1-031615		03/16/15	1425	SS	6L	ST021	-2.35		X						X					
BMS-SS-4-031615		↓	1300	SS	6L	342	-3.35		X						X					

Approved/Relinquished by: [signature]	Company: KJC	Date: 3/17/15	Time: 1000	Received by: T Nguyen	Company: H&P	Date: 3/20/15	Time: 1110
Approved/Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:
Approved/Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:

*Approval constitutes as authorization to proceed with analysis and acceptance of conditions on back

eurofins | Air Toxics

7/14/2015
Mr. Josh Hopp
Kennedy Jenks Consultants
32001 32nd Avenue South
Suite 100
Federal Way WA 98001

Project Name: WDOE Yakima
Project #: 1196016.00-Task9-00
Workorder #: 1506552

Dear Mr. Josh Hopp

The following report includes the data for the above referenced project for sample(s) received on 6/30/2015 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 Air Toxics Ltd. for your air analysis needs. Air Toxics Ltd. 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 #: 1506552

Work Order Summary

CLIENT:	Mr. Josh Hopp Kennedy Jenks Consultants 32001 32nd Avenue South Suite 100 Federal Way, WA 98001	**BILL TO:**	Mr. Josh Hopp Kennedy Jenks Consultants 32001 32nd Avenue South Suite 100 Federal Way, WA 98001
PHONE:	253-874-0555	**P.O. #**	
FAX:	253-952-3435	**PROJECT #**	1196016.00-Task9-00 WDOE Yakima
DATE RECEIVED:	06/30/2015	**CONTACT:**	Kelly Buettner
DATE COMPLETED:	07/14/2015		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	BMS-M1-062415	Modified TO-15	7.3 "Hg	5 psi
01B	BMS-M1-062415	Modified TO-15	7.3 "Hg	5 psi
02A	BMS-M3-062415	Modified TO-15	5.9 "Hg	4.9 psi
02B	BMS-M3-062415	Modified TO-15	5.9 "Hg	4.9 psi
03A	AMB-UPWIND-062415	Modified TO-15	7.1 "Hg	5 psi
03B	AMB-UPWIND-062415	Modified TO-15	7.1 "Hg	5 psi
04A	Lab Blank	Modified TO-15	NA	NA
04B	Lab Blank	Modified TO-15	NA	NA
05A	CCV	Modified TO-15	NA	NA
05B	CCV	Modified TO-15	NA	NA
06A	LCS	Modified TO-15	NA	NA
06AA	LCSD	Modified TO-15	NA	NA
06B	LCS	Modified TO-15	NA	NA
06BB	LCSD	Modified TO-15	NA	NA

CERTIFIED BY: Heidi Hayes DATE: 07/14/15

Technical Director

Certification numbers: AZ Licensure AZ0775, NJ NELAP - CA016, NY NELAP - 11291,
TX NELAP - T104704343-14-7, UT NELAP CA009332014-5, VA NELAP - 460197, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005, Effective date: 10/18/2014, Expiration date: 10/17/2015.
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 - 9563
(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

LABORATORY NARRATIVE
Modified TO-15 Full Scan/SIM
Kennedy Jenks Consultants
Workorder# 1506552

Three 6 Liter Summa Special (SIM Certified) samples were received on June 30, 2015. 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 liters 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 taken to run these samples are summarized in the table below. Specific project requirements may over-ride the ATL modifications.

Requirement	***TO-15***	***ATL Modifications***
ICAL %RSD acceptance criteria	</=30% RSD with 2 compounds allowed out to < 40% RSD	For Full Scan: 30% RSD with 4 compounds allowed out to < 40% RSD For SIM: Project specific; default criteria is </=30% RSD with 10% of compounds allowed out to < 40% RSD
Daily Calibration	+- 30% Difference	For Full Scan: </= 30% Difference with four 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
Blank and standards	Zero air	Nitrogen
Method Detection Limit	Follow 40CFR Pt.136 App. B	The MDL met all relevant requirements in Method TO-15 (statistical MDL less than the LOQ). The concentration of the spiked replicate may have exceeded 10X the calculated MDL in some cases

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

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.

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

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Summary of Detected Compounds
MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

Client Sample ID: BMS-M1-062415

Lab ID#: 1506552-01A

No Detections Were Found.

Client Sample ID: BMS-M1-062415

Lab ID#: 1506552-01B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
cis-1,2-Dichloroethene	0.035	0.47	0.14	1.8
Benzene	0.088	0.10	0.28	0.32
Trichloroethene	0.0053	0.025	0.028	0.13
Toluene	0.035	0.35	0.13	1.3
Tetrachloroethene	0.035	0.077	0.24	0.52
Ethyl Benzene	0.035	0.40	0.15	1.8
m,p-Xylene	0.071	1.2	0.31	5.3
o-Xylene	0.035	0.28	0.15	1.2

Client Sample ID: BMS-M3-062415

Lab ID#: 1506552-02A

No Detections Were Found.

Client Sample ID: BMS-M3-062415

Lab ID#: 1506552-02B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
cis-1,2-Dichloroethene	0.033	0.57	0.13	2.3
Benzene	0.083	0.089	0.26	0.28
Trichloroethene	0.0050	0.026	0.027	0.14
Toluene	0.033	0.33	0.12	1.2
Tetrachloroethene	0.033	0.087	0.22	0.59
Ethyl Benzene	0.033	0.48	0.14	2.1
m,p-Xylene	0.066	1.4	0.29	6.1
o-Xylene	0.033	0.32	0.14	1.4

Client Sample ID: AMB-UPWIND-062415

Lab ID#: 1506552-03A

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Summary of Detected Compounds
MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

Client Sample ID: AMB-UPWIND-062415

Lab ID#: 1506552-03A

No Detections Were Found.

Client Sample ID: AMB-UPWIND-062415

Lab ID#: 1506552-03B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
cis-1,2-Dichloroethene	0.035	0.12	0.14	0.47
Trichloroethene	0.0053	0.030	0.028	0.16
Toluene	0.035	0.33	0.13	1.2
Tetrachloroethene	0.035	0.10	0.24	0.70
Ethyl Benzene	0.035	0.063	0.15	0.28
m,p-Xylene	0.070	0.22	0.30	0.95
o-Xylene	0.035	0.076	0.15	0.33

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Client Sample ID: BMS-M1-062415

Lab ID#: 1506552-01A

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

File Name:	**20070614**	**Date of Collection: 6/24/15 5:56:00 PM**	
Dil. Factor:	**1.77**	**Date of Analysis: 7/6/15 08:21 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Methylene Chloride	0.35	Not Detected	1.2	Not Detected
Chloroform	0.18	Not Detected	0.86	Not Detected

Container Type: 6 Liter Summa Special (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	106	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	99	70-130

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Client Sample ID: BMS-M1-062415

Lab ID#: 1506552-01B

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

File Name:	**20070614sim**	**Date of Collection:**	**6/24/15 5:56:00 PM**
Dil. Factor:	**1.77**	**Date of Analysis:**	**7/6/15 08:21 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.018	Not Detected	0.045	Not Detected
cis-1,2-Dichloroethene	0.035	0.47	0.14	1.8
Benzene	0.088	0.10	0.28	0.32
1,2-Dichloroethane	0.035	Not Detected	0.14	Not Detected
Trichloroethene	0.0053	0.025	0.028	0.13
Toluene	0.035	0.35	0.13	1.3
Tetrachloroethene	0.035	0.077	0.24	0.52
Ethyl Benzene	0.035	0.40	0.15	1.8
m,p-Xylene	0.071	1.2	0.31	5.3
o-Xylene	0.035	0.28	0.15	1.2
trans-1,2-Dichloroethene	0.18	Not Detected	0.70	Not Detected

Container Type: 6 Liter Summa Special (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	110	0-130
Toluene-d8	102	0-130
4-Bromofluorobenzene	104	0-130

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Client Sample ID: BMS-M3-062415

Lab ID#: 1506552-02A

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

File Name:	**20070615**	**Date of Collection: 6/24/15 5:51:00 PM**	
Dil. Factor:	**1.66**	**Date of Analysis: 7/6/15 09:07 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Methylene Chloride	0.33	Not Detected	1.2	Not Detected
Chloroform	0.17	Not Detected	0.81	Not Detected

Container Type: 6 Liter Summa Special (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	107	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	98	70-130

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Client Sample ID: BMS-M3-062415

Lab ID#: 1506552-02B

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

File Name:	**20070615sim**	**Date of Collection:**	**6/24/15 5:51:00 PM**
Dil. Factor:	**1.66**	**Date of Analysis:**	**7/6/15 09:07 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.017	Not Detected	0.042	Not Detected
cis-1,2-Dichloroethene	0.033	0.57	0.13	2.3
Benzene	0.083	0.089	0.26	0.28
1,2-Dichloroethane	0.033	Not Detected	0.13	Not Detected
Trichloroethene	0.0050	0.026	0.027	0.14
Toluene	0.033	0.33	0.12	1.2
Tetrachloroethene	0.033	0.087	0.22	0.59
Ethyl Benzene	0.033	0.48	0.14	2.1
m,p-Xylene	0.066	1.4	0.29	6.1
o-Xylene	0.033	0.32	0.14	1.4
trans-1,2-Dichloroethene	0.17	Not Detected	0.66	Not Detected

Container Type: 6 Liter Summa Special (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	109	0-130
Toluene-d8	100	0-130
4-Bromofluorobenzene	101	0-130

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Client Sample ID: AMB-UPWIND-062415

Lab ID#: 1506552-03A

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

File Name:	**20070616**	**Date of Collection: 6/24/15 5:59:00 PM**	
Dil. Factor:	**1.76**	**Date of Analysis: 7/6/15 09:49 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Methylene Chloride	0.35	Not Detected	1.2	Not Detected
Chloroform	0.18	Not Detected	0.86	Not Detected

Container Type: 6 Liter Summa Special (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	111	70-130
Toluene-d8	97	70-130
4-Bromofluorobenzene	90	70-130

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Client Sample ID: AMB-UPWIND-062415

Lab ID#: 1506552-03B

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

File Name:	**20070616sim**	**Date of Collection:**	**6/24/15 5:59:00 PM**
Dil. Factor:	**1.76**	**Date of Analysis:**	**7/6/15 09:49 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.018	Not Detected	0.045	Not Detected
cis-1,2-Dichloroethene	0.035	0.12	0.14	0.47
Benzene	0.088	Not Detected	0.28	Not Detected
1,2-Dichloroethane	0.035	Not Detected	0.14	Not Detected
Trichloroethene	0.0053	0.030	0.028	0.16
Toluene	0.035	0.33	0.13	1.2
Tetrachloroethene	0.035	0.10	0.24	0.70
Ethyl Benzene	0.035	0.063	0.15	0.28
m,p-Xylene	0.070	0.22	0.30	0.95
o-Xylene	0.035	0.076	0.15	0.33
trans-1,2-Dichloroethene	0.18	Not Detected	0.70	Not Detected

Container Type: 6 Liter Summa Special (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	110	0-130
Toluene-d8	99	0-130
4-Bromofluorobenzene	94	0-130

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Client Sample ID: Lab Blank

Lab ID#: 1506552-04A

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

File Name:	**20070606**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 7/6/15 12:58 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Methylene Chloride	0.20	Not Detected	0.69	Not Detected
Chloroform	0.10	Not Detected	0.49	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	107	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	97	70-130

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Client Sample ID: Lab Blank

Lab ID#: 1506552-04B

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

File Name:	**20070606sima**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 7/6/15 12:58 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.010	Not Detected	0.026	Not Detected
cis-1,2-Dichloroethene	0.020	Not Detected	0.079	Not Detected
Benzene	0.050	Not Detected	0.16	Not Detected
1,2-Dichloroethane	0.020	Not Detected	0.081	Not Detected
Trichloroethene	0.0030	Not Detected	0.016	Not Detected
Toluene	0.020	Not Detected	0.075	Not Detected
Tetrachloroethene	0.020	Not Detected	0.14	Not Detected
Ethyl Benzene	0.020	Not Detected	0.087	Not Detected
m,p-Xylene	0.040	Not Detected	0.17	Not Detected
o-Xylene	0.020	Not Detected	0.087	Not Detected
trans-1,2-Dichloroethene	0.10	Not Detected	0.40	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	109	0-130
Toluene-d8	99	0-130
4-Bromofluorobenzene	99	0-130

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Client Sample ID: CCV

Lab ID#: 1506552-05A

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

File Name:	**20070602**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 7/6/15 09:25 AM**	

Compound	**%Recovery**
Methylene Chloride	98
Chloroform	102

Container Type: NA - Not Applicable

Surrogates	**%Recovery**	**Method Limits**
1,2-Dichloroethane-d4	100	70-130
Toluene-d8	105	70-130
4-Bromofluorobenzene	99	70-130

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Client Sample ID: CCV

Lab ID#: 1506552-05B

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

File Name:	**20070602sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 7/6/15 09:25 AM**	

Compound	%Recovery
Vinyl Chloride	97
cis-1,2-Dichloroethene	96
Benzene	95
1,2-Dichloroethane	96
Trichloroethene	94
Toluene	101
Tetrachloroethene	92
Ethyl Benzene	101
m,p-Xylene	102
o-Xylene	100
trans-1,2-Dichloroethene	96

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	100	70-130
Toluene-d8	104	70-130
4-Bromofluorobenzene	104	70-130

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Client Sample ID: LCS

Lab ID#: 1506552-06A

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

File Name:	**20070603**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 7/6/15 10:09 AM**	

Compound	%Recovery	Method Limits
Methylene Chloride	95	70-130
Chloroform	97	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	101	70-130
Toluene-d8	105	70-130
4-Bromofluorobenzene	100	70-130

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Client Sample ID: LCSD

Lab ID#: 1506552-06AA

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

File Name:	**20070604**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 7/6/15 10:53 AM**	

Compound	%Recovery	Method Limits
Methylene Chloride	96	70-130
Chloroform	97	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	97	70-130
Toluene-d8	104	70-130
4-Bromofluorobenzene	100	70-130

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Client Sample ID: LCS

Lab ID#: 1506552-06B

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

File Name:	**20070603sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 7/6/15 10:09 AM**	

Compound	%Recovery	Method Limits
Vinyl Chloride	98	70-130
cis-1,2-Dichloroethene	103	70-130
Benzene	94	70-130
1,2-Dichloroethane	94	70-130
Trichloroethene	93	70-130
Toluene	100	70-130
Tetrachloroethene	91	70-130
Ethyl Benzene	98	70-130
m,p-Xylene	100	70-130
o-Xylene	99	70-130
trans-1,2-Dichloroethene	82	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	100	70-130
Toluene-d8	105	70-130
4-Bromofluorobenzene	103	70-130

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Client Sample ID: LCSD

Lab ID#: 1506552-06BB

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

File Name:	**20070604sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 7/6/15 10:53 AM**	

Compound	%Recovery	Method Limits
Vinyl Chloride	97	70-130
cis-1,2-Dichloroethene	102	70-130
Benzene	94	70-130
1,2-Dichloroethane	94	70-130
Trichloroethene	93	70-130
Toluene	100	70-130
Tetrachloroethene	91	70-130
Ethyl Benzene	98	70-130
m,p-Xylene	100	70-130
o-Xylene	99	70-130
trans-1,2-Dichloroethene	82	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	100	70-130
Toluene-d8	106	70-130
4-Bromofluorobenzene	104	70-130

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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 Josh Hopp
Collected by: (Print and Sign) Josh Hopp
Company Kennedy Jenks Consultants Email joshhopp@kennedyjenks.com
Address 32001 32nd Ave S, Ste 100 City Federal Way State WA Zip 98001
Phone 253-835-6408 Fax

Project Info:
P.O. #
Project # 1196016.00-Task 9-00
Project Name WDOE Yakima

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	BMS-M1-062415	5595	6/24/15	0620-1736	TO-15	-29	-6.5		
02A	BMS-M3-062415	6L1291	↓	0619-1751	↓	-28.5	-5.5		
03A	AMB-UPWIND-062415	6L1287	↓	0617-1759	↓	-30	-6.5		

Relinquished by: (signature) Josh Hopp Date/Time 062515 1900 → to UPS
Received by: (signature) Date/Time

Relinquished by: (signature) Date/Time
Received by: (signature) MEATL Date/Time 6/30/15 1105

Relinquished by: (signature) Date/Time
Received by: (signature) Date/Time

Notes:
Please use project-specific analyte list & report in ug/m3 units.

Lab Use Only

Shipper Name	Air Bill #	Temp (°C)	Condition	Custody Seals Intact?	Work Order #
UPS		NA	Good	Yes No (None)	1506552

Form 1293 rev.11

Mobile Geochemistry Inc.

10 July 2015

Mr. Josh Hopp
Kennedy/Jenks Consultants - Washington
32001 32nd Ave. South, Suite 100
Federal Way, WA 98001

H&P Project: KJ070115-12
Client Project: 1196016.00/Task 9/00 / Yakima, WA

Dear Mr. Josh Hopp:

Enclosed is the analytical report for the above referenced project. The data herein applies to samples as received by H&P Mobile Geochemistry, Inc. on 01-Jul-15 which were analyzed in accordance with the attached Chain of Custody record(s).

The results for all sample analyses and required QA/QC analyses are presented in the following sections and summarized in the documents:

- Sample Summary
- Case Narrative (if applicable)
- Sample Results
- Quality Control Summary
- Notes and Definitions / Appendix
- Chain of Custody

Unless otherwise noted, I certify that all analyses were performed and reviewed in compliance with our Quality Systems Manual and Standard Operating Procedures. This report shall not be reproduced, except in full, without the written approval of H&P Mobile Geochemistry, Inc.

We at H&P Mobile Geochemistry, Inc. sincerely appreciate the opportunity to provide analytical services to you on this project. If you have any questions or concerns regarding this analytical report, please contact me at your convenience at 760-804-9678.

Sincerely,

Janis Villarreal

Janis Villarreal
Laboratory Director

H&P Mobile Geochemistry, Inc. is certified under the California ELAP, the National Environmental Laboratory Accreditation Conference (NELAC) and the Department of Defense Accreditation Programs.

2470 Impala Drive, Carlsbad, CA 92010 & Field Office - Signal Hill, CA
P 1.800.834.9888 / 760.804.9678 F 760.804.9159 W handpmg.com

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Geochemistry Inc.

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Kennedy/Jenks Consultants - Washington	Project: KJ070115-12	
32001 32nd Ave. South, Suite 100	Project Number: 1196016.00/Task 9/00 / Yakima, WA	Reported:
Federal Way, WA 98001	Project Manager: Mr. Josh Hopp	10-Jul-15 10:05

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BMS-SS-5-062415	E507006-01	Vapor	24-Jun-15	01-Jul-15
BMS-SS-1-062415	E507006-02	Vapor	24-Jun-15	01-Jul-15

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Federal Way, WA 98001	Project Manager: Mr. Josh Hopp	10-Jul-15 10:05

DETECTIONS SUMMARY

Sample ID: **BMS-SS-5-062415** Laboratory ID: **E507006-01**

Analyte	Result	Reporting Limit	Units	Method	Notes
Helium (LCC)	**0.76**	0.10	%	ASTM D1945M	
cis-1,2-Dichloroethene	**4.14**	0.40	ug/m3	EPA TO-15	
Chloroform	**0.30**	0.25	ug/m3	EPA TO-15	
Benzene	**0.36**	0.16	ug/m3	EPA TO-15	
Toluene	**2.10**	0.76	ug/m3	EPA TO-15	
Tetrachloroethene	**9.64**	0.69	ug/m3	EPA TO-15	
Ethylbenzene	**0.88**	0.44	ug/m3	EPA TO-15	
m,p-Xylene	**2.33**	0.44	ug/m3	EPA TO-15	
o-Xylene	**1.01**	0.44	ug/m3	EPA TO-15	

Sample ID: **BMS-SS-1-062415** Laboratory ID: **E507006-02**

Analyte	Result	Reporting Limit	Units	Method	Notes
Tetrachloroethene	**166**	1.38	ug/m3	EPA TO-15	

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32001 32nd Ave. South, Suite 100	Project Number: 1196016.00/Task 9/00 / Yakima, WA	Reported:
Federal Way, WA 98001	Project Manager: Mr. Josh Hopp	10-Jul-15 10:05

Soil Gas and Vapor Analysis

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
BMS-SS-5-062415 (E507006-01) Vapor	**Sampled: 24-Jun-15**	**Received: 01-Jul-15**							
Helium (LCC)	**0.76**	0.10	%	1	EG50207	02-Jul-15	02-Jul-15	ASTM D1945M	
BMS-SS-1-062415 (E507006-02) Vapor	**Sampled: 24-Jun-15**	**Received: 01-Jul-15**							
Helium (LCC)	ND	0.10	%	1	EG50207	02-Jul-15	02-Jul-15	ASTM D1945M	

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32001 32nd Ave. South, Suite 100	Project Number: 1196016.00/Task 9/00 / Yakima, WA	Reported:
Federal Way, WA 98001	Project Manager: Mr. Josh Hopp	10-Jul-15 10:05

Volatile Organic Compounds by EPA TO-15

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
BMS-SS-5-062415 (E507006-01) Vapor Sampled: 24-Jun-15 Received: 01-Jul-15									
Vinyl chloride	ND	0.13	ug/m3	1	EG50803	08-Jul-15	08-Jul-15	EPA TO-15	
Methylene chloride (Dichloromethane)	ND	0.35	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.40	"	"	"	"	"	"	
cis-1,2-Dichloroethene	**4.14**	0.40	"	"	"	"	"	"	
Chloroform	**0.30**	0.25	"	"	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	0.41	"	"	"	"	"	"	
Benzene	**0.36**	0.16	"	"	"	"	"	"	
Trichloroethene	ND	0.55	"	"	"	"	"	"	
Toluene	**2.10**	0.76	"	"	"	"	"	"	
Tetrachloroethene	**9.64**	0.69	"	"	"	"	"	"	
Ethylbenzene	**0.88**	0.44	"	"	"	"	"	"	
m,p-Xylene	**2.33**	0.44	"	"	"	"	"	"	
o-Xylene	**1.01**	0.44	"	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*103 %*	*76-134*		"	"	"	"	
Surrogate: Toluene-d8		*102 %*	*78-125*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*96.9 %*	*77-127*		"	"	"	"	
BMS-SS-1-062415 (E507006-02) Vapor Sampled: 24-Jun-15 Received: 01-Jul-15									
Vinyl chloride	ND	0.26	ug/m3	2	EG50803	08-Jul-15	09-Jul-15	EPA TO-15	
Methylene chloride (Dichloromethane)	ND	0.71	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.80	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	0.80	"	"	"	"	"	"	
Chloroform	ND	0.49	"	"	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	0.82	"	"	"	"	"	"	
Benzene	ND	0.32	"	"	"	"	"	"	
Trichloroethene	ND	1.09	"	"	"	"	"	"	
Toluene	ND	1.53	"	"	"	"	"	"	
Tetrachloroethene	**166**	1.38	"	"	"	"	"	"	
Ethylbenzene	ND	0.88	"	"	"	"	"	"	
m,p-Xylene	ND	0.88	"	"	"	"	"	"	
o-Xylene	ND	0.88	"	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*102 %*	*76-134*		"	"	"	"	
Surrogate: Toluene-d8		*99.0 %*	*78-125*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*94.1 %*	*77-127*		"	"	"	"	

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Federal Way, WA 98001	Project Manager: Mr. Josh Hopp	10-Jul-15 10:05

Soil Gas and Vapor Analysis - Quality Control

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EG50207 - GC										
Blank (EG50207-BLK1)				Prepared & Analyzed: 02-Jul-15						
Helium (LCC)	ND	0.10	%							

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32001 32nd Ave. South, Suite 100	Project Number: 1196016.00/Task 9/00 / Yakima, WA	Reported:
Federal Way, WA 98001	Project Manager: Mr. Josh Hopp	10-Jul-15 10:05

Volatile Organic Compounds by EPA TO-15 - Quality Control

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EG50803 - TO-15										
Blank (EG50803-BLK1)				Prepared & Analyzed: 08-Jul-15						
Vinyl chloride	ND	0.13	ug/m3							
Methylene chloride (Dichloromethane)	ND	0.35	"							
trans-1,2-Dichloroethene	ND	0.40	"							
cis-1,2-Dichloroethene	ND	0.40	"							
Chloroform	ND	0.25	"							
1,2-Dichloroethane (EDC)	ND	0.41	"							
Benzene	ND	0.16	"							
Trichloroethene	ND	0.55	"							
Toluene	ND	0.76	"							
Tetrachloroethene	ND	0.69	"							
Ethylbenzene	ND	0.44	"							
m,p-Xylene	ND	0.44	"							
o-Xylene	ND	0.44	"							
Surrogate: 1,2-Dichloroethane-d4	*212*		*"*	*214*		*99.1*	*76-134*			
Surrogate: Toluene-d8	*207*		*"*	*207*		*100*	*78-125*			
Surrogate: 4-Bromofluorobenzene	*342*		*"*	*364*		*94.0*	*77-127*			
LCS (EG50803-BS1)				Prepared & Analyzed: 08-Jul-15						
Vinyl chloride	44	0.13	ug/m3	52.0		83.8	70-130			
Methylene chloride (Dichloromethane)	62	0.35	"	70.8		87.8	70-130			
trans-1,2-Dichloroethene	74	0.40	"	80.8		91.6	70-130			
cis-1,2-Dichloroethene	79	0.40	"	80.0		98.6	70-130			
Chloroform	92	0.25	"	99.2		92.4	70-130			
1,2-Dichloroethane (EDC)	76	0.41	"	82.4		92.4	70-130			
Benzene	67	0.16	"	64.8		103	70-130			
Trichloroethene	110	0.55	"	110		97.9	70-130			
Toluene	77	0.76	"	76.8		100	70-130			
Tetrachloroethene	140	0.69	"	138		98.3	70-130			
Ethylbenzene	93	0.44	"	88.4		105	70-130			
m,p-Xylene	180	0.44	"	177		104	70-130			
o-Xylene	88	0.44	"	88.4		99.8	70-130			
Surrogate: 1,2-Dichloroethane-d4	*210*		*"*	*214*		*97.9*	*70-130*			

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Federal Way, WA 98001	Project Manager: Mr. Josh Hopp	10-Jul-15 10:05

Volatile Organic Compounds by EPA TO-15 - Quality Control

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EG50803 - TO-15										
LCS (EG50803-BS1)				Prepared & Analyzed: 08-Jul-15						
Surrogate: Toluene-d8	*212*		*ug/m3*	*207*		*102*	*70-130*			
Surrogate: 4-Bromofluorobenzene	*360*		*"*	*364*		*98.8*	*70-130*			
LCS Dup (EG50803-BSD1)				Prepared & Analyzed: 08-Jul-15						
Vinyl chloride	44	0.13	ug/m3	52.0		84.6	70-130	0.947	25	
Methylene chloride (Dichloromethane)	65	0.35	"	70.8		92.0	70-130	4.71	25	
trans-1,2-Dichloroethene	78	0.40	"	80.8		96.0	70-130	4.78	25	
cis-1,2-Dichloroethene	79	0.40	"	80.0		98.5	70-130	0.0510	25	
Chloroform	93	0.25	"	99.2		93.7	70-130	1.34	25	
1,2-Dichloroethane (EDC)	78	0.41	"	82.4		94.7	70-130	2.45	25	
Benzene	67	0.16	"	64.8		103	70-130	0.485	25	
Trichloroethene	110	0.55	"	110		98.6	70-130	0.709	25	
Toluene	78	0.76	"	76.8		101	70-130	1.14	25	
Tetrachloroethene	140	0.69	"	138		99.6	70-130	1.36	25	
Ethylbenzene	92	0.44	"	88.4		104	70-130	0.901	25	
m,p-Xylene	180	0.44	"	177		103	70-130	0.766	25	
o-Xylene	89	0.44	"	88.4		100	70-130	0.695	25	
Surrogate: 1,2-Dichloroethane-d4	*210*		*"*	*214*		*97.8*	*70-130*			
Surrogate: Toluene-d8	*213*		*"*	*207*		*103*	*70-130*			
Surrogate: 4-Bromofluorobenzene	*359*		*"*	*364*		*98.4*	*70-130*			

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32001 32nd Ave. South, Suite 100	Project Number: 1196016.00/Task 9/00 / Yakima, WA	Reported:
Federal Way, WA 98001	Project Manager: Mr. Josh Hopp	10-Jul-15 10:05

Notes and Definitions

LCC	Leak Check Compound
ND	Analyte NOT DETECTED at or above the reporting limit
MDL	Method Detection Limit
%REC	Percent Recovery
RPD	Relative Percent Difference

Appendix

H&P Mobile Geochemistry, Inc. is approved as an Environmental Testing Laboratory and Mobile Laboratory in accordance with the DoD-ELAP and the ISO 17025 programs, certification number L11-175.

H&P is approved by the State of Arizona as an Environmental Testing Laboratory and Mobile Laboratory, certification numbers AZM758 and AZ0779.

H&P is approved by the State of California as an Environmental Laboratory and Mobile Laboratory in conformance with the Environmental Laboratory Accreditation Program (ELAP) for the category of Volatile and Semi-Volatile Organic Chemistry of Hazardous Waste, certification numbers 2740, 2741, 2743, 2744, 2745, 2754 & 2930.

H&P is approved by the State of Florida Department of Health under the National Environmental Laboratory Accreditation Conference (NELAC) certification number E871100.

The complete list of stationary and mobile laboratory certifications along with the fields of testing (FOTs) and analyte lists are available at www.handpmg.com/about/certifications.

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VAPOR / AIR Chain of Custody

DATE: 6/24/15
Page 1 of 1

Lab Client and Project Information

Lab Client/Consultant: Kennedy Jenks Consultants	Project Name / #: 119b016.00 Task 9 00
Lab Client Project Manager: Josh Hopp	Project Location: Yakima WA
Lab Client Address: 32001 32nd Ave S, Suite 100	Report E-Mail(s): joshhopp@kennedyjenks.com
Lab Client City, State, Zip: Federal Way WA 98001	
Phone Number: 253-835-6408	

Reporting Requirements

- [x] Standard Report ☐ Level III ☐ Level IV
- [x] Excel EDD ☐ Other EDD:_____
- ☐ CA Geotracker Global ID:_____

Turnaround Time

- [x] 5-7 day Stnd ☐ 24-Hr Rush
- ☐ 3-day Rush ☐ Mobile Lab
- ☐ 48-Hr Rush ☐ Other:____

Sampler Information

Sampler(s): Josh Hopp
Signature: [signature]
Date: 6-24-15

Sample Receipt (Lab Use Only)

Date Rec'd: 7/1/15	Control #: 150466.01
H&P Project # KJ070115-12	
Lab Work Order # E507006	
Sample Intact: [x] Yes ☐ No ☐ See Notes Below	
Receipt Gauge ID: 11167	Temp: 22°
Outside Lab:	
Receipt Notes/Tracking #: 1Z 93T T61 87 4663 8364	
Lab PM Initials: WA	

Additional Instructions to Laboratory:

[x] Check if Project Analyte List is ~~Attached~~ previously provided. (JCH)

** Preferred VOC units (please choose one):*

☐ µg/L [x] µg/m³ ☐ ppbv ☐ ppmv

SAMPLE NAME	FIELD POINT NAME (if applicable)	DATE mm/dd/yy	TIME 24hr clock	SAMPLE TYPE Indoor Air (IA), Ambient Air (AA), Subslab (SS), Soil Vapor (SV)	CONTAINER SIZE & TYPE 400mL/1L/6L Summa or Tedlar or Tube	CONTAINER ID (###)	Lab use only: Receipt Vac	VOCs Standard Full List ☐ 8260SV ☐ TO-15	VOCs Short List (Project List) ☐ 8260SV [x] TO-15	Oxygenates ☐ 8260SV ☐ TO-15	Naphthalene ☐ 8260SV ☐ TO-15 ☐ TO-17m	TPHv as Gas ☐ 8260SVm ☐ TO-15m	TPHv as Diesel (sorbent tube) ☐ TO-17m	Aromatic/Aliphatic Fractions ☐ 8260SVm ☐ TO-15m	Leak Check Compound ☐ DFA ☐ IPA [x] He	Methane by EPA 8015m	Fixed Gases by ASTM D1945 ☐ CO2 ☐ O2 ☐ N2			
BMS-SS-5-062415		06/24/15	0744	SS	6L Summa	294	-5.88		x						x					
BMS-SS-1-062415		06/24/15	0836	SS	6L Summa	~~177~~ 299 MTN 7/1/15	-5.98		x						x					

Approved/Relinquished by: [signature]	Company: Kennedy Jenks	Date: 6/25/15	Time: 1000	Received by: → to UPS	Company:	Date:	Time:
Approved/Relinquished by:	Company:	Date:	Time:	Received by: [signature]	Company: H&P	Date: 7/1/15	Time: 09:00
Approved/Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:

*Approval constitutes as authorization to proceed with analysis and acceptance of conditions on back

Rev 08/18/2014

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10/12/2015
Mr. Josh Hopp
Kennedy Jenks Consultants
32001 32nd Avenue South
Suite 100
Federal Way WA 98001

Project Name: WDOE Yakima
Project #: 1196016.00 Task9 00
Workorder #: 1509491

Dear Mr. Josh Hopp

The following report includes the data for the above referenced project for sample(s) received on 9/30/2015 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 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 #: 1509491

Work Order Summary

CLIENT:	Mr. Josh Hopp Kennedy Jenks Consultants 32001 32nd Avenue South Suite 100 Federal Way, WA 98001	**BILL TO:**	Mr. Josh Hopp Kennedy Jenks Consultants 32001 32nd Avenue South Suite 100 Federal Way, WA 98001
PHONE:	253-874-0555	**P.O. #**	NA
FAX:	253-952-3435	**PROJECT #**	1196016.00 Task9 00 WDOE Yakima
DATE RECEIVED:	09/30/2015	**CONTACT:**	Kelly Buettner
DATE COMPLETED:	10/12/2015		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	BMS-M1-092515	Modified TO-15	8 "Hg	5 psi
01B	BMS-M1-092515	Modified TO-15	8 "Hg	5 psi
02A	BMS-M3-092515	Modified TO-15	9.8 "Hg	4.8 psi
02B	BMS-M3-092515	Modified TO-15	9.8 "Hg	4.8 psi
03A	AMB-UPWIND-092515	Modified TO-15	10.4 "Hg	5 psi
03B	AMB-UPWIND-092515	Modified TO-15	10.4 "Hg	5 psi
04A	Lab Blank	Modified TO-15	NA	NA
04B	Lab Blank	Modified TO-15	NA	NA
05A	CCV	Modified TO-15	NA	NA
05B	CCV	Modified TO-15	NA	NA
06A	LCS	Modified TO-15	NA	NA
06AA	LCSD	Modified TO-15	NA	NA
06B	LCS	Modified TO-15	NA	NA
06BB	LCSD	Modified TO-15	NA	NA

CERTIFIED BY: Heidi Hayes DATE: 10/12/15

Technical Director

Certification numbers: AZ Licensure AZ0775, NJ NELAP - CA016, NY NELAP - 11291,
TX NELAP - T104704343-14-7, UT NELAP CA009332014-5, VA NELAP - 460197, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005, Effective date: 10/18/2014, Expiration date: 10/17/2015.
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 - 9563
(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

LABORATORY NARRATIVE
Modified TO-15 Full Scan/SIM
Kennedy Jenks Consultants
Workorder# 1509491

Three 6 Liter Summa Special (SIM Certified) samples were received on September 30, 2015. 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 liters 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 taken to run these samples are summarized in the table below. Specific project requirements may over-ride the ATL modifications.

Requirement	***TO-15***	***ATL Modifications***
ICAL %RSD acceptance criteria	</=30% RSD with 2 compounds allowed out to < 40% RSD	For Full Scan: 30% RSD with 4 compounds allowed out to < 40% RSD For SIM: Project specific; default criteria is </=30% RSD with 10% of compounds allowed out to < 40% RSD
Daily Calibration	+- 30% Difference	For Full Scan: </= 30% Difference with four 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
Blank and standards	Zero air	Nitrogen
Method Detection Limit	Follow 40CFR Pt.136 App. B	The MDL met all relevant requirements in Method TO-15 (statistical MDL less than the LOQ). The concentration of the spiked replicate may have exceeded 10X the calculated MDL in some cases

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

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

Nine 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.

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

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Summary of Detected Compounds
MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

Client Sample ID: BMS-M1-092515

Lab ID#: 1509491-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Chloroform	0.18	0.27	0.89	1.3

Client Sample ID: BMS-M1-092515

Lab ID#: 1509491-01B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
cis-1,2-Dichloroethene	0.036	0.13	0.14	0.51
Benzene	0.091	0.25	0.29	0.79
1,2-Dichloroethane	0.036	0.20	0.15	0.83
Trichloroethene	0.0055	0.025	0.029	0.13
Toluene	0.036	1.1	0.14	4.3
Tetrachloroethene	0.036	0.10	0.25	0.70
Ethyl Benzene	0.036	0.37	0.16	1.6
m,p-Xylene	0.073	1.1	0.32	4.7
o-Xylene	0.036	0.29	0.16	1.2

Client Sample ID: BMS-M3-092515

Lab ID#: 1509491-02A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Chloroform	0.20	0.28	0.96	1.4

Client Sample ID: BMS-M3-092515

Lab ID#: 1509491-02B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
cis-1,2-Dichloroethene	0.039	0.096	0.16	0.38
Benzene	0.098	0.24	0.31	0.78
1,2-Dichloroethane	0.039	0.21	0.16	0.86
Trichloroethene	0.0059	0.024	0.032	0.13
Toluene	0.039	1.1	0.15	4.2
Tetrachloroethene	0.039	0.10	0.27	0.69

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Summary of Detected Compounds
MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

Client Sample ID: BMS-M3-092515

Lab ID#: 1509491-02B

Ethyl Benzene	0.039	0.37	0.17	1.6
m,p-Xylene	0.079	1.1	0.34	4.6
o-Xylene	0.039	0.29	0.17	1.2

Client Sample ID: AMB-UPWIND-092515

Lab ID#: 1509491-03A

No Detections Were Found.

Client Sample ID: AMB-UPWIND-092515

Lab ID#: 1509491-03B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
cis-1,2-Dichloroethene	0.041	0.067	0.16	0.26
Benzene	0.10	0.20	0.33	0.66
Trichloroethene	0.0062	0.022	0.033	0.12
Toluene	0.041	0.81	0.15	3.0
Tetrachloroethene	0.041	0.10	0.28	0.71
Ethyl Benzene	0.041	0.097	0.18	0.42
m,p-Xylene	0.082	0.32	0.36	1.4
o-Xylene	0.041	0.12	0.18	0.51

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Client Sample ID: BMS-M1-092515

Lab ID#: 1509491-01A

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

File Name:	**e100213**	**Date of Collection: 9/25/15 6:30:00 PM**	
Dil. Factor:	**1.82**	**Date of Analysis: 10/2/15 03:24 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Methylene Chloride	0.36	Not Detected	1.3	Not Detected
Chloroform	0.18	0.27	0.89	1.3

Container Type: 6 Liter Summa Special (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	101	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	105	70-130

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Client Sample ID: BMS-M1-092515

Lab ID#: 1509491-01B

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

File Name:	**e100213sim**	**Date of Collection: 9/25/15 6:30:00 PM**	
Dil. Factor:	**1.82**	**Date of Analysis: 10/2/15 03:24 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.018	Not Detected	0.046	Not Detected
cis-1,2-Dichloroethene	0.036	0.13	0.14	0.51
Benzene	0.091	0.25	0.29	0.79
1,2-Dichloroethane	0.036	0.20	0.15	0.83
Trichloroethene	0.0055	0.025	0.029	0.13
Toluene	0.036	1.1	0.14	4.3
Tetrachloroethene	0.036	0.10	0.25	0.70
Ethyl Benzene	0.036	0.37	0.16	1.6
m,p-Xylene	0.073	1.1	0.32	4.7
o-Xylene	0.036	0.29	0.16	1.2
trans-1,2-Dichloroethene	0.18	Not Detected	0.72	Not Detected

Container Type: 6 Liter Summa Special (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	107	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	104	70-130

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Client Sample ID: BMS-M3-092515

Lab ID#: 1509491-02A

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

File Name:	**e100214**	**Date of Collection: 9/25/15 6:35:00 PM**	
Dil. Factor:	**1.97**	**Date of Analysis: 10/2/15 04:12 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Methylene Chloride	0.39	Not Detected	1.4	Not Detected
Chloroform	0.20	0.28	0.96	1.4

Container Type: 6 Liter Summa Special (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	109	70-130
Toluene-d8	95	70-130
4-Bromofluorobenzene	102	70-130

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Client Sample ID: BMS-M3-092515

Lab ID#: 1509491-02B

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

File Name:	**e100214sim**	**Date of Collection:**	**9/25/15 6:35:00 PM**
Dil. Factor:	**1.97**	**Date of Analysis:**	**10/2/15 04:12 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.020	Not Detected	0.050	Not Detected
cis-1,2-Dichloroethene	0.039	0.096	0.16	0.38
Benzene	0.098	0.24	0.31	0.78
1,2-Dichloroethane	0.039	0.21	0.16	0.86
Trichloroethene	0.0059	0.024	0.032	0.13
Toluene	0.039	1.1	0.15	4.2
Tetrachloroethene	0.039	0.10	0.27	0.69
Ethyl Benzene	0.039	0.37	0.17	1.6
m,p-Xylene	0.079	1.1	0.34	4.6
o-Xylene	0.039	0.29	0.17	1.2
trans-1,2-Dichloroethene	0.20	Not Detected	0.78	Not Detected

Container Type: 6 Liter Summa Special (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	107	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	104	70-130

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Client Sample ID: AMB-UPWIND-092515

Lab ID#: 1509491-03A

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

File Name:	**e100215**	**Date of Collection: 9/25/15 6:40:00 PM**	
Dil. Factor:	**2.05**	**Date of Analysis: 10/2/15 04:59 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Methylene Chloride	0.41	Not Detected	1.4	Not Detected
Chloroform	0.20	Not Detected	1.0	Not Detected

Container Type: 6 Liter Summa Special (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	101	70-130
Toluene-d8	96	70-130
4-Bromofluorobenzene	94	70-130

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Client Sample ID: AMB-UPWIND-092515

Lab ID#: 1509491-03B

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

File Name:	**e100215sim**	**Date of Collection: 9/25/15 6:40:00 PM**	
Dil. Factor:	**2.05**	**Date of Analysis: 10/2/15 04:59 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.020	Not Detected	0.052	Not Detected
cis-1,2-Dichloroethene	0.041	0.067	0.16	0.26
Benzene	0.10	0.20	0.33	0.66
1,2-Dichloroethane	0.041	Not Detected	0.16	Not Detected
Trichloroethene	0.0062	0.022	0.033	0.12
Toluene	0.041	0.81	0.15	3.0
Tetrachloroethene	0.041	0.10	0.28	0.71
Ethyl Benzene	0.041	0.097	0.18	0.42
m,p-Xylene	0.082	0.32	0.36	1.4
o-Xylene	0.041	0.12	0.18	0.51
trans-1,2-Dichloroethene	0.20	Not Detected	0.81	Not Detected

Container Type: 6 Liter Summa Special (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	107	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	101	70-130

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Client Sample ID: Lab Blank

Lab ID#: 1509491-04A

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

File Name:	**e100211**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/2/15 01:17 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Methylene Chloride	0.20	Not Detected	0.69	Not Detected
Chloroform	0.10	Not Detected	0.49	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	105	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	99	70-130

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Client Sample ID: Lab Blank

Lab ID#: 1509491-04B

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

File Name:	**e100211simc**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/2/15 01:17 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.010	Not Detected	0.026	Not Detected
cis-1,2-Dichloroethene	0.020	Not Detected	0.079	Not Detected
Benzene	0.050	Not Detected	0.16	Not Detected
1,2-Dichloroethane	0.020	Not Detected	0.081	Not Detected
Trichloroethene	0.0030	Not Detected	0.016	Not Detected
Toluene	0.020	Not Detected	0.075	Not Detected
Tetrachloroethene	0.020	Not Detected	0.14	Not Detected
Ethyl Benzene	0.020	Not Detected	0.087	Not Detected
m,p-Xylene	0.040	Not Detected	0.17	Not Detected
o-Xylene	0.020	Not Detected	0.087	Not Detected
trans-1,2-Dichloroethene	0.10	Not Detected	0.40	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	105	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	101	70-130

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Client Sample ID: CCV

Lab ID#: 1509491-05A

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

File Name:	**e100202**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/2/15 06:02 AM**	

Compound	**%Recovery**
Methylene Chloride	99
Chloroform	110

Container Type: NA - Not Applicable

Surrogates	**%Recovery**	**Method Limits**
1,2-Dichloroethane-d4	107	70-130
Toluene-d8	94	70-130
4-Bromofluorobenzene	104	70-130

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Client Sample ID: CCV

Lab ID#: 1509491-05B

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

File Name:	**e100202sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/2/15 06:02 AM**	

Compound	%Recovery
Vinyl Chloride	100
cis-1,2-Dichloroethene	103
Benzene	92
1,2-Dichloroethane	102
Trichloroethene	93
Toluene	106
Tetrachloroethene	106
Ethyl Benzene	120
m,p-Xylene	125
o-Xylene	125
trans-1,2-Dichloroethene	97

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	106	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	104	70-130

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Client Sample ID: LCS

Lab ID#: 1509491-06A

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

File Name:	**e100205**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/2/15 08:37 AM**	

Compound	%Recovery	Method Limits
Methylene Chloride	91	70-130
Chloroform	104	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	102	70-130
Toluene-d8	93	70-130
4-Bromofluorobenzene	108	70-130

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Client Sample ID: LCSD

Lab ID#: 1509491-06AA

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

File Name:	**e100206**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/2/15 09:25 AM**	

Compound	%Recovery	Method Limits
Methylene Chloride	89	70-130
Chloroform	98	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	100	70-130
Toluene-d8	94	70-130
4-Bromofluorobenzene	103	70-130

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Client Sample ID: LCS

Lab ID#: 1509491-06B

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

File Name:	**e100205sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/2/15 08:37 AM**	

Compound	%Recovery	Method Limits
Vinyl Chloride	94	70-130
cis-1,2-Dichloroethene	107	70-130
Benzene	86	70-130
1,2-Dichloroethane	96	70-130
Trichloroethene	88	70-130
Toluene	100	70-130
Tetrachloroethene	101	70-130
Ethyl Benzene	112	70-130
m,p-Xylene	118	70-130
o-Xylene	121	70-130
trans-1,2-Dichloroethene	79	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	106	70-130
Toluene-d8	97	70-130
4-Bromofluorobenzene	106	70-130

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Client Sample ID: LCSD

Lab ID#: 1509491-06BB

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

File Name:	**e100206sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/2/15 09:25 AM**	

Compound	%Recovery	Method Limits
Vinyl Chloride	93	70-130
cis-1,2-Dichloroethene	107	70-130
Benzene	85	70-130
1,2-Dichloroethane	96	70-130
Trichloroethene	88	70-130
Toluene	100	70-130
Tetrachloroethene	100	70-130
Ethyl Benzene	112	70-130
m,p-Xylene	118	70-130
o-Xylene	120	70-130
trans-1,2-Dichloroethene	79	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	106	70-130
Toluene-d8	97	70-130
4-Bromofluorobenzene	105	70-130

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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 Josh Hopp
Collected by: (Print and Sign) Josh Hopp
Company Kennedy/Jenks Consultants Email Josh.Hopp@kennedyjenks.com
Address 3200 132nd Ave S, Ste 100 City Federal Way State WA Zip 98001
Phone 253-835-6408 Fax

Project Info:
P.O. # NA
Project # 1196016.00 Task 9 00
Project Name WDOE Yakima

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	BMS-M2-092515	94943	09/25/15	0650-1830	TO-15	-29.5	-8		
02A	BMS-M3-092515	33799	↓	0655-1835	↓	-29.5	-9		
03A	AMB-UPWIND-092515	34244	↓	0700-1840	↓	-29	-9.5		

Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
[signature]	9/25/15 2000	[signature]	9/30/15 1035
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time

Notes:
Please use project-specific analyte list

Lab Use Only	Shipper Name	Air Bill #	Temp (°C)	Condition	Custody Seals Intact?	Work Order #
	UPS		NA	Good	Yes No None	1509491

Form 1293 rev.11

Mobile Geochemistry Inc.

05 October 2015

Mr. Josh Hopp
Kennedy/Jenks Consultants - Washington
32001 32nd Ave. South, Suite 100
Federal Way, WA 98001

H&P Project: KJ092915-12
Client Project: 1196016.00 /Task 9 / Yakima, WA

Dear Mr. Josh Hopp:

Enclosed is the analytical report for the above referenced project. The data herein applies to samples as received by H&P Mobile Geochemistry, Inc. on 29-Sep-15 which were analyzed in accordance with the attached Chain of Custody record(s).

The results for all sample analyses and required QA/QC analyses are presented in the following sections and summarized in the documents:

- Sample Summary
- Case Narrative (if applicable)
- Sample Results
- Quality Control Summary
- Notes and Definitions / Appendix
- Chain of Custody
- Sampling Logs (if applicable)

Unless otherwise noted, I certify that all analyses were performed and reviewed in compliance with our Quality Systems Manual and Standard Operating Procedures. This report shall not be reproduced, except in full, without the written approval of H&P Mobile Geochemistry, Inc.

We at H&P Mobile Geochemistry, Inc. sincerely appreciate the opportunity to provide analytical services to you on this project. If you have any questions or concerns regarding this analytical report, please contact me at your convenience at 760-804-9678.

Sincerely,

Janis Villarreal

Janis Villarreal
Laboratory Director

H&P Mobile Geochemistry, Inc. is certified under the California ELAP, the National Environmental Laboratory Accreditation Conference (NELAC) and the Department of Defense Accreditation Programs.

H&P Mobile
Geochemistry Inc.

2470 Impala Drive
Carlsbad, CA 92010
760-804-9678 Phone
760-804-9159 Fax

Kennedy/Jenks Consultants - Washington	Project: KJ092915-12	
32001 32nd Ave. South, Suite 100	Project Number: 1196016.00 /Task 9 / Yakima, WA	Reported:
Federal Way, WA 98001	Project Manager: Mr. Josh Hopp	05-Oct-15 15:30

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BMS-SS-1-092515	E509132-01	Vapor	25-Sep-15	29-Sep-15
BMS-SS-5-092515	E509132-02	Vapor	25-Sep-15	29-Sep-15

H&P Mobile
Geochemistry Inc.

2470 Impala Drive
Carlsbad, CA 92010
760-804-9678 Phone
760-804-9159 Fax

Kennedy/Jenks Consultants - Washington	Project: KJ092915-12	
32001 32nd Ave. South, Suite 100	Project Number: 1196016.00 /Task 9 / Yakima, WA	Reported:
Federal Way, WA 98001	Project Manager: Mr. Josh Hopp	05-Oct-15 15:30

DETECTIONS SUMMARY

Sample ID: **BMS-SS-1-092515** Laboratory ID: **E509132-01**

Analyte	Result	Reporting Limit	Units	Method	Notes
cis-1,2-Dichloroethene	**0.54**	0.40	ug/m3	EPA TO-15	
Toluene	**1.1**	0.76	ug/m3	EPA TO-15	
Tetrachloroethene	**37**	0.69	ug/m3	EPA TO-15	
Ethylbenzene	**0.47**	0.44	ug/m3	EPA TO-15	
m,p-Xylene	**2.1**	0.44	ug/m3	EPA TO-15	
o-Xylene	**1.2**	0.44	ug/m3	EPA TO-15	

Sample ID: **BMS-SS-5-092515** Laboratory ID: **E509132-02**

Analyte	Result	Reporting Limit	Units	Method	Notes
Methylene chloride (Dichloromethane)	**0.43**	0.35	ug/m3	EPA TO-15	
cis-1,2-Dichloroethene	**0.95**	0.40	ug/m3	EPA TO-15	
Chloroform	**3.1**	0.25	ug/m3	EPA TO-15	
1,2-Dichloroethane (EDC)	**1.0**	0.41	ug/m3	EPA TO-15	
Benzene	**0.99**	0.16	ug/m3	EPA TO-15	
Toluene	**4.1**	0.76	ug/m3	EPA TO-15	
Tetrachloroethene	**1.8**	0.69	ug/m3	EPA TO-15	
Ethylbenzene	**1.5**	0.44	ug/m3	EPA TO-15	
m,p-Xylene	**5.0**	0.44	ug/m3	EPA TO-15	
o-Xylene	**1.9**	0.44	ug/m3	EPA TO-15	

H&P Mobile
Geochemistry Inc.

2470 Impala Drive
Carlsbad, CA 92010
760-804-9678 Phone
760-804-9159 Fax

Kennedy/Jenks Consultants - Washington	Project: KJ092915-12	
32001 32nd Ave. South, Suite 100	Project Number: 1196016.00 /Task 9 / Yakima, WA	Reported:
Federal Way, WA 98001	Project Manager: Mr. Josh Hopp	05-Oct-15 15:30

Soil Gas and Vapor Analysis

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
BMS-SS-1-092515 (E509132-01) Vapor	**Sampled: 25-Sep-15**	**Received: 29-Sep-15**							
Helium (LCC)	ND	0.10	%	1	EI53008	30-Sep-15	30-Sep-15	ASTM D1945M	
BMS-SS-5-092515 (E509132-02) Vapor	**Sampled: 25-Sep-15**	**Received: 29-Sep-15**							
Helium (LCC)	ND	0.10	%	1	EI53008	30-Sep-15	30-Sep-15	ASTM D1945M	

H&P Mobile
Geochemistry Inc.

2470 Impala Drive
Carlsbad, CA 92010
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Kennedy/Jenks Consultants - Washington	Project: KJ092915-12	
32001 32nd Ave. South, Suite 100	Project Number: 1196016.00 /Task 9 / Yakima, WA	Reported:
Federal Way, WA 98001	Project Manager: Mr. Josh Hopp	05-Oct-15 15:30

Volatile Organic Compounds by EPA TO-15

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
BMS-SS-1-092515 (E509132-01) Vapor	**Sampled: 25-Sep-15**	**Received: 29-Sep-15**							
Vinyl chloride	ND	0.13	ug/m3	1	EJ50110	30-Sep-15	01-Oct-15	EPA TO-15	
Methylene chloride (Dichloromethane)	ND	0.35	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.40	"	"	"	"	"	"	
cis-1,2-Dichloroethene	**0.54**	0.40	"	"	"	"	"	"	
Chloroform	ND	0.25	"	"	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	0.41	"	"	"	"	"	"	
Benzene	ND	0.16	"	"	"	"	"	"	
Trichloroethene	ND	0.55	"	"	"	"	"	"	
Toluene	**1.1**	0.76	"	"	"	"	"	"	
Tetrachloroethene	**37**	0.69	"	"	"	"	"	"	
Ethylbenzene	**0.47**	0.44	"	"	"	"	"	"	
m,p-Xylene	**2.1**	0.44	"	"	"	"	"	"	
o-Xylene	**1.2**	0.44	"	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*108 %*	*76-134*		"	"	"	"	
Surrogate: Toluene-d8		*103 %*	*78-125*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*97.2 %*	*77-127*		"	"	"	"	
BMS-SS-5-092515 (E509132-02) Vapor	**Sampled: 25-Sep-15**	**Received: 29-Sep-15**							
Vinyl chloride	ND	0.13	ug/m3	1	EJ50110	30-Sep-15	01-Oct-15	EPA TO-15	
Methylene chloride (Dichloromethane)	**0.43**	0.35	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.40	"	"	"	"	"	"	
cis-1,2-Dichloroethene	**0.95**	0.40	"	"	"	"	"	"	
Chloroform	**3.1**	0.25	"	"	"	"	"	"	
1,2-Dichloroethane (EDC)	**1.0**	0.41	"	"	"	"	"	"	
Benzene	**0.99**	0.16	"	"	"	"	"	"	
Trichloroethene	ND	0.55	"	"	"	"	"	"	
Toluene	**4.1**	0.76	"	"	"	"	"	"	
Tetrachloroethene	**1.8**	0.69	"	"	"	"	"	"	
Ethylbenzene	**1.5**	0.44	"	"	"	"	"	"	
m,p-Xylene	**5.0**	0.44	"	"	"	"	"	"	
o-Xylene	**1.9**	0.44	"	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*111 %*	*76-134*		"	"	"	"	
Surrogate: Toluene-d8		*103 %*	*78-125*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*92.4 %*	*77-127*		"	"	"	"	

H&P Mobile
Geochemistry Inc.

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760-804-9159 Fax

Kennedy/Jenks Consultants - Washington	Project: KJ092915-12	
32001 32nd Ave. South, Suite 100	Project Number: 1196016.00 /Task 9 / Yakima, WA	Reported:
Federal Way, WA 98001	Project Manager: Mr. Josh Hopp	05-Oct-15 15:30

Soil Gas and Vapor Analysis - Quality Control

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EI53008 - GC										
Blank (EI53008-BLK1)				Prepared & Analyzed: 30-Sep-15						
Helium (LCC)	ND	0.10	%							

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32001 32nd Ave. South, Suite 100	Project Number: 1196016.00 /Task 9 / Yakima, WA	Reported:
Federal Way, WA 98001	Project Manager: Mr. Josh Hopp	05-Oct-15 15:30

Volatile Organic Compounds by EPA TO-15 - Quality Control

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EJ50110 - TO-15										
Blank (EJ50110-BLK1)				Prepared & Analyzed: 01-Oct-15						
Vinyl chloride	ND	0.13	ug/m3							
Methylene chloride (Dichloromethane)	ND	0.35	"							
trans-1,2-Dichloroethene	ND	0.40	"							
cis-1,2-Dichloroethene	ND	0.40	"							
Chloroform	ND	0.25	"							
1,2-Dichloroethane (EDC)	ND	0.41	"							
Benzene	ND	0.16	"							
Trichloroethene	ND	0.55	"							
Toluene	ND	0.76	"							
Tetrachloroethene	ND	0.69	"							
Ethylbenzene	ND	0.44	"							
m,p-Xylene	ND	0.44	"							
o-Xylene	ND	0.44	"							
Surrogate: 1,2-Dichloroethane-d4	*47.9*		*"*	*42.9*		*112*	*76-134*			
Surrogate: Toluene-d8	*42.1*		*"*	*41.4*		*102*	*78-125*			
Surrogate: 4-Bromofluorobenzene	*67.3*		*"*	*72.9*		*92.3*	*77-127*			
LCS (EJ50110-BS1)				Prepared & Analyzed: 01-Oct-15						
Vinyl chloride	4.5	0.13	ug/m3	5.20		86.5	70-130			
Methylene chloride (Dichloromethane)	6.5	0.35	"	7.08		92.1	70-130			
trans-1,2-Dichloroethene	7.5	0.40	"	8.08		93.4	70-130			
cis-1,2-Dichloroethene	6.9	0.40	"	8.00		85.9	70-130			
Chloroform	9.6	0.25	"	9.92		97.2	70-130			
1,2-Dichloroethane (EDC)	8.0	0.41	"	8.24		97.5	70-130			
Benzene	5.7	0.16	"	6.48		88.0	70-130			
Trichloroethene	9.7	0.55	"	11.0		88.9	70-130			
Toluene	7.0	0.76	"	7.68		91.4	70-130			
Tetrachloroethene	13	0.69	"	13.8		94.9	70-130			
Ethylbenzene	7.4	0.44	"	8.84		84.2	70-130			
m,p-Xylene	16	0.44	"	17.7		91.2	70-130			
o-Xylene	7.8	0.44	"	8.84		88.7	70-130			
Surrogate: 1,2-Dichloroethane-d4	*45.6*		*"*	*42.9*		*106*	*70-130*			

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32001 32nd Ave. South, Suite 100	Project Number: 1196016.00 /Task 9 / Yakima, WA	Reported:
Federal Way, WA 98001	Project Manager: Mr. Josh Hopp	05-Oct-15 15:30

Volatile Organic Compounds by EPA TO-15 - Quality Control

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EJ50110 - TO-15										
LCS (EJ50110-BS1)				Prepared & Analyzed: 01-Oct-15						
Surrogate: Toluene-d8	*41.9*		*ug/m3*	*41.4*		*101*	*70-130*			
Surrogate: 4-Bromofluorobenzene	*72.4*		*"*	*72.9*		*99.3*	*70-130*			
LCS Dup (EJ50110-BSD1)				Prepared & Analyzed: 01-Oct-15						
Vinyl chloride	5.0	0.13	ug/m3	5.20		95.3	70-130	9.60	25	
Methylene chloride (Dichloromethane)	7.1	0.35	"	7.08		99.8	70-130	7.99	25	
trans-1,2-Dichloroethene	7.9	0.40	"	8.08		98.0	70-130	4.84	25	
cis-1,2-Dichloroethene	9.6	0.40	"	8.00		120	70-130	33.2	25	QR-02
Chloroform	10	0.25	"	9.92		104	70-130	6.49	25	
1,2-Dichloroethane (EDC)	8.5	0.41	"	8.24		103	70-130	5.57	25	
Benzene	6.6	0.16	"	6.48		103	70-130	15.3	25	
Trichloroethene	10	0.55	"	11.0		95.2	70-130	6.81	25	
Toluene	6.9	0.76	"	7.68		90.3	70-130	1.20	25	
Tetrachloroethene	12	0.69	"	13.8		90.1	70-130	5.23	25	
Ethylbenzene	7.2	0.44	"	8.84		81.5	70-130	3.30	25	
m,p-Xylene	15	0.44	"	17.7		84.9	70-130	7.12	25	
o-Xylene	7.1	0.44	"	8.84		80.7	70-130	9.40	25	
Surrogate: 1,2-Dichloroethane-d4	*48.6*		*"*	*42.9*		*113*	*70-130*			
Surrogate: Toluene-d8	*41.2*		*"*	*41.4*		*99.6*	*70-130*			
Surrogate: 4-Bromofluorobenzene	*60.5*		*"*	*72.9*		*82.9*	*70-130*			

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32001 32nd Ave. South, Suite 100	Project Number: 1196016.00 /Task 9 / Yakima, WA	Reported:
Federal Way, WA 98001	Project Manager: Mr. Josh Hopp	05-Oct-15 15:30

Notes and Definitions

QR-02	The RPD result exceeded the QC control limits. Sample results for the QC batch were accepted based on percent recoveries and completeness of QC data.
LCC	Leak Check Compound
ND	Analyte NOT DETECTED at or above the reporting limit
MDL	Method Detection Limit
%REC	Percent Recovery
RPD	Relative Percent Difference

Appendix

H&P Mobile Geochemistry, Inc. is approved as an Environmental Testing Laboratory and Mobile Laboratory in accordance with the DoD-ELAP and the ISO 17025 programs, certification number L11-175.

H&P is approved by the State of Arizona as an Environmental Testing Laboratory and Mobile Laboratory, certification numbers AZM758 and AZ0779.

H&P is approved by the State of California as an Environmental Laboratory and Mobile Laboratory in conformance with the Environmental Laboratory Accreditation Program (ELAP) for the category of Volatile and Semi-Volatile Organic Chemistry of Hazardous Waste, certification numbers 2740, 2741, 2743, 2744, 2745, 2754 & 2930.

H&P is approved by the State of Florida Department of Health under the National Environmental Laboratory Accreditation Conference (NELAC) certification number E871100.

The complete list of stationary and mobile laboratory certifications along with the fields of testing (FOTs) and analyte lists are available at www.handpmg.com/about/certifications.

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VAPOR / AIR Chain of Custody

DATE: 9/25/15
Page 1 of 1

Lab Client and Project Information

Lab Client/Consultant: Kennedy/Jenks Consultants	Project Name / #: Frank Wear - 1196016.00 TASK 9
Lab Client Project Manager: Josh Hopp	Project Location: Yakima, WA
Lab Client Address: 32001 32nd Ave S, Suite 100	Report E-Mail(s): JoshHopp@KennedyJenks.com
Lab Client City, State, Zip: Federal Way, WA 98001	
Phone Number: 1196016.00 Task 9 00	

SN 9/29

Sample Receipt (Lab Use Only)

Date Rec'd: 9/29/15	Control #: 150768.01
H&P Project # KJ092915-12	
Lab Work Order # E509132	
Sample Intact: ☒ Yes ☐ No ☐ See Notes Below	
Receipt Gauge ID: 1076084	Temp: 23°C
Outside Lab:	
Receipt Notes/Tracking #: 1293TT6187471113B6	
Lab PM Initials: SN	

Reporting Requirements

☐ Standard Report ☐ Level III ☐ Level IV
☒ Excel EDD ☐ Other EDD:_____
☐ CA Geotracker Global ID:_____

Turnaround Time

☒ 5-7 day Stnd ☐ 24-Hr Rush
☐ 3-day Rush ☐ Mobile Lab
☐ 48-Hr Rush ☐ Other:____

Sampler Information

Sampler(s): Josh Hopp
Signature: [signature]
Date: 9/25/15

Additional Instructions to Laboratory:

☒ Check if Project Analyte List ~~is Attached~~, previously provided. JCH 9/25/15

** Preferred VOC units (please choose one):*

☐ µg/L ☒ µg/m³ ☐ ppbv ☐ ppmv

SAMPLE NAME	FIELD POINT NAME (if applicable)	DATE mm/dd/yy	TIME 24hr clock	SAMPLE TYPE Indoor Air (IA), Ambient Air (AA), Subslab (SS), Soil Vapor (SV)	CONTAINER SIZE & TYPE 400mL/1L/6L Summa or Tedlar or Tube	CONTAINER ID (###)	Lab use only: Receipt Vac	VOCs Standard Full List ☐ 8260SV ☐ TO-15	VOCs Short List / Project List ☐ 8260SV ☒ TO-15	Oxygenates ☐ 8260SV ☐ TO-15	Naphthalene ☐ 8260SV ☐ TO-15 ☐ TO-17m	TPHv as Gas ☐ 8260SVm ☐ TO-15m	TPHv as Diesel (sorbent tube) ☐ TO-17m	Aromatic/Aliphatic Fractions ☐ 8260SVm ☐ TO-15m	Leak Check Compound ☐ DFA ☐ IPA ☒ He	Methane by EPA 8015m	Fixed Gases by ASTM D1945 ☐ CO2 ☐ O2 ☐ N2			
BMS-SS-1-092515		09/25/15	1245	SS	6L Summa	490	-5.68		X						X					
BMS-SS-5-092515		09/25/15	1345	SS	6L Summa	454	-4.93		X						X					

Approved/Relinquished by: [signature]	Company: KJC	Date: 9-25-15	Time: 1500	Received by: Jon Unsworth	Company: H&P	Date: 9/29/15	Time: 1055
Approved/Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:
Approved/Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:

*Approval constitutes as authorization to proceed with analysis and acceptance of conditions on back

Rev 08/18/2014