MONTROSE ENVIRONMENTAL

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January 23, 2020

Mr. Hamed Adib
Eagle Canyon Capital, LLC
3223 Crow Canyon Road, Suite 300
San Ramon, CA 94583

Fourth Quarter 2019
Remediation System Status Report
Site No. 3520
4200 Wheaton Way
Bremerton, Washington

Dear Mr. Adib:

Montrose Environmental (Montrose), has prepared this *Fourth Quarter 2019 Remediation System Status Report* (Report) for the above-referenced site.

A soil vapor extraction (SVE) system is operated at the site to remediate fuel hydrocarbon-impacted soil. This Report summarizes remediation system operations and performance and includes the field data and analytical results collected during the period of October 1, 2019 through December 31, 2019. Laboratory data packages and field notes are attached as Appendix A and Appendix B, respectively.

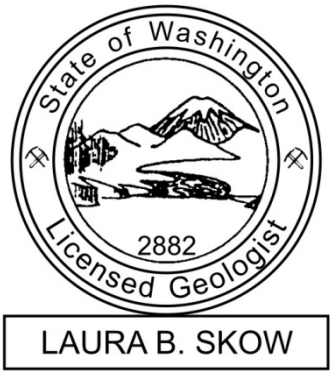
Montrose appreciates the opportunity to be of service. If you have any questions or require additional information regarding this report, please do not hesitate to contact us at (714) 919-6500.

Sincerely,

Montrose Environmental

Dane Nygaard
Senior Manager

Laura Skow, L.G. 2882
Project Manager



SITE INFORMATION AND CONTRACTOR OVERVIEW

Site Location:	Site No. 3520 4200 Wheaton Way Bremerton, Washington
Eagle Canyon Capital, LLC Contact:	Mr. Hamed Adib
Montrose Contact:	Ms. Laura Skow
Regulatory Agency:	Ms. Glynis Carrosino Toxics Cleanup Program Washington Department of Ecology NWRO 3190 160th Avenue SE Bellevue, WA 98008-5452
File No:	VCP No. NW2340
Laboratory Contractors:	Libby Environmental, Inc. 4139 Libby Road NE Olympia, Washington 98506 WADOE Accreditation No. C855

SITE BACKGROUND

The subject site is located at 4200 Wheaton Way in Bremerton, Washington and is approximately a 0.5-acre rectangular-shaped, outparcel of commercial land located on the northeast corner of Wheaton Way and Hollis Street. The site is a fuel retail station with four underground storage tanks (USTs) and three pump islands that are located near (west of) a single-story convenience store. The USTs include one 6,000-gallon tank (diesel), two 12,000-gallon tanks (regular gasoline) and one 12,000-gallon tank (premium gasoline). The site is relatively flat, covered with asphalt and concrete, and is part of a larger retail shopping center. Surrounding land use includes commercial properties including retail shops and restaurants.

The site lies at an elevation of approximately 300 feet above mean sea level (ft amsl) on a small peninsula within Puget Sound. It is located approximately 2 miles from Port Orchard Waterway, Dyes Inlet and Sinclair Inlet, which surround the peninsula to the east, west and south, respectively. A site location map is provided as Figure 1. Pertinent site features are shown on Figure 2.

In September and October 1996, the fuel distribution system at the subject site was upgraded. During system upgrades, hydrocarbon-affected soil was encountered in the tank cavity and

450 tons of impacted soil was excavated and transported to a disposal facility in Tacoma, Washington. The release was reported to the Washington Department of Ecology (Ecology) and five verification soil samples were collected from the tank cavity for laboratory analysis. In addition, five soil samples were collected from the beneath the product lines and pump islands. The samples were analyzed for benzene, toluene, ethylbenzene, and xylenes (BTEX) compounds and total petroleum hydrocarbons quantified as gasoline (TPH-Gx). Hydrocarbon impacts in excess of Model Toxics Cleanup Act (MTCA) Method A Cleanup Levels were identified in all ten soil samples. Specifically, the highest levels of fuel hydrocarbons were reported in a composite sample (identified as N&E Wall-8'), which was collected from the north and east sidewall of the diesel tank cavity at a depth of 8 feet. Sample N&E Wall-8' contained TPH-Gx at 7,220 milligrams per kilogram (mg/kg), benzene at 27.6 mg/kg, toluene at 191 mg/kg, ethylbenzene at 111 mg/kg and total xylenes at 626 mg/kg.

In June 1997, Clearwater conducted subsurface site assessment activities. During Clearwater's investigation, 17 soil borings (GP-1 through GP-17) were installed at various locations around the site to delineate the extent of hydrocarbon-affected soil. Borings were terminated at a depth of 17 feet bgs due to refusal. Twenty-six (26) soil samples collected from the borings were analyzed for TPH-Gx and BTEX compounds. Hydrocarbon-affected soil was detected in a majority of the soil borings. The highest concentration of TPH-Gx (1,410 mg/kg) was in a 10-foot sample from boring GP-7 located near the southwest corner of the tank cavity. Similarly, benzene was detected at a maximum level of 11.9 mg/kg in a 10-foot sample collected from GP-5 located east of the existing tank cavity.

In May 2010, Environ Strategy conducted an additional site assessment to evaluate subsurface conditions in the vicinity of the fuel distribution system (USTs and pump islands). Six soil borings (identified as SB-1 through SB-6) were advanced, of which, Borings SB-1, SB-2 and SB-3 were located near the existing tank cavity and advanced to a depth of 30 feet. Borings SB-4, SB-5 and SB-6 were drilled at the west end of the southern, central and northern pump islands, respectively, and extended to a depth of 25 feet at SB-4 and to 20 feet bgs at SB-5 and SB-6. Assessment findings are detailed in the *Focused Phase II Site Assessment Report,* dated May 30, 2010.

Based on the results of site assessment, an SVE system was designed and vapor extraction wells VE-1 through VE-4 were installed from March 29 to 31, 2011. Remediation by SVE was pilot tested at the site from April 4 to 7, 2011, and proved effective at removing hydrocarbons from subsurface soil, as detailed in the *Soil Vapor Extraction Well Installation and Pilot Test Report*, dated June 21, 2011. An application for an air discharge permit for the operation of SVE equipment at the site for the remediation of hydrocarbons in soil was submitted on June 6, 2011.

The air discharge permit for the operation of SVE equipment at the site was received from the Puget Sound Clean Air Agency on November 7, 2011, and following system installation, baseline samples were collected on February 15, 2012, to demonstrate compliance with the air discharge permit requirements.

On February 28, 2012, the SVE system began continuous operation for the remediation of hydrocarbons in subsurface soil. Environ Strategy began bi-monthly site visits for operation and maintenance (O&M) of the system.

As reported in the *Remediation System Status Report,* dated October 15, 2012, field observations and laboratory test results demonstrate that soil vapor extraction is effective at removing petroleum constituents from subsurface soil beneath the site. During the first six months of system operation an estimated total of 7,461 pounds of petroleum hydrocarbons were extracted from the site subsurface. Based on the results of the first six months of system operation, Environ Strategy recommended continued operation of the SVE system until hydrocarbon removal rates reached asymptotic levels.

In March of 2013, the thermal oxidizer system was replaced with a carbon adsorption abatement system. As of September 30, 2013, an estimated 12,179 pounds of hydrocarbons were removed from the site subsurface through SVE. Monitoring data through September 2013 showed fluctuating hydrocarbon concentrations in system influent vapor since system start-up but showed a decreasing trend as select extraction wells were opened/closed to optimize system performance. Data collected from October 2013 through January 2014 showed similar trends in concentrations; therefore, confirmation sampling was proposed to confirm remediation and/or attenuation of hydrocarbons in soil characterized during previous assessments.

In December 2016, ES Engineering conducted confirmation soil sampling to evaluate remedial progress. Four confirmation borings (CB-1 through CB-4) were installed at the site to assess soil conditions following SVE remediation activities. Analytical results of the confirmation sampling indicated that COC concentrations in soil still exceeded MTCA Method A CULs in some areas of the site. Based on the findings, installation of additional extraction wells and re-instatement of SVE remediation were recommended. Additional details regarding the confirmation soil sampling are provided in the *Confirmation Soil Sampling Report*, dated March 30, 2017.

In January 2018, three additional remediation wells (RW-1 through RW-3) were installed at the site and connected to the remediation system. Well installation activities are detailed in the *Well Installation Report*, dated March 9, 2018.

REMEDIATION ACTIVITIES PERFORMED

- In October 2019, twice weekly O&M visits were conducted to monitor the system in accordance with the Puget Sound Clean Air Agency (PSCAA) permit. Vapor flow rates, vacuum, system temperatures, and concentrations of unspeciated hydrocarbons in vapor in system influent, midpoint, effluent, and individual wells were recorded. Vapor samples were collected from the system influent, midpoint and effluent sample ports and submitted for laboratory analysis. Laboratory Analytical Reports are provided as Appendix A.
- In November 2019, Montrose requested a reduction in the system monitoring frequency to a weekly basis which was approved by the Puget Sound Clean Air Agency (PSCAA).
- On November 6, 2019, the system was found offline upon arrival and troubleshooting of the electrical panel was performed. The system was restarted and running normally upon departure.
- On November 27, 2019, Montrose visited the site to perform O&M and the system was shut off based on the elevated concentration of volatile organic carbons (VOCs) measured with the field photoionization detector (PID) in the midpoint vapor sample; effluent vapor PID readings were well below the permit requirement. The system was left offline pending collection of vapor samples for laboratory analysis to evaluate potential breakthrough for the first carbon and confirm compliance with permit limits.
- On December 9, 2019, Montrose was onsite to restart the SVE system and conduct O&M. Following restart, the system was allowed to run and the measured mid-point vapor PID reading was low. The system was left running and the midpoint VOC concentration increased after several days of operation; system influent, midpoint and effluent vapor samples were collected for laboratory analysis on December 12, 2019. Additionally, a sample of the condensate water in the main holding tank was collected for waste profiling purposes. Based on laboratory results, the mid-point vapor sample did not contain detectible TPH-Gx or BTEX concentrations and the system was left running.
- On December 19, 2019, condensate water was pumped from the main holding tank into 55-gallon Department of Transportation-approved drums and stored onsite pending waste profiling and disposal. The laboratory analytical report documenting the waste profiling is included as Appendix A.

Remediation system operational data is tabulated in Table 1. SVE individual well data is summarized in Table 2. Soil vapor sample analytical data is summarized in Table 3. Calculated recovery and emission rates are tabulated in Table 4. System destruction efficiencies are

summarized in Table 5. O&M field forms are provided in Appendix B. Historical O&M data tables and charts are presented as Appendix D.

REMEDIATION SYSTEM SUMMARY DATA

Facility:	Bremerton Food Mart (Site No. 3520)
Facility Address:	4200 Wheaton Way, Bremerton, WA
Remediation Technology:	SVE
Equipment Type:	Roots 200 cfm blower
Operation Mode:	Carbon Adsorption
Permit to Operate:	PSCAA Order of Approval No. 11837
Discharge Limits:	<10 ppmv (as measured by hexane or its equivalent)
Expiration Date:	Not Specified

SVE SYSTEM DATA (Table 1)

SVE System Re-start Date:	September 16, 2019

Fourth Quarter 2019 (October 1, 2019 – December 31, 2019)

Period Hours of Operation:	1,547*
Percent Time Operational:	75%*
TPH Recovered:	852 pounds**
Wells online:	3 (RW-1, RW-2 and RW-3)(1)
Wells offline:	3 (VE-1, VE-2, VE-3 and VE-4)(1)

*Calculated from September 16, 2019 (system restart date) to December 30, 2019 (Table 1)
**Calculated based on field PID readings (Table 1)
(1) Based on December 30, 2019 data; extraction wells are opened/closed to optimize system performance

Cumulative

Since Initial Startup:	February 28, 2012 – December 31, 2019
Total Hours of Operation:	15,820
Total Hydrocarbons Recovered:	13,677 pounds

COMPLIANCE SAMPLING

On October 30 and December 12, 2019, Montrose collected influent, midpoint, and effluent vapor samples from the SVE system to demonstrate compliance with air discharge conditions (Table 4). The vapor samples were collected in tedlar bags and submitted to Libby Environmental, Inc. in Olympia, Washington under chain-of-custody procedure. The vapor samples were analyzed for TPH-Gx and BTEX by EPA Method 8260. Laboratory analytical results indicate that TPH-Gx and BTEX were not present in the midpoint or effluent vapor samples.

The laboratory analytical results for the samples collected on October 30 and December 12, 2019 were used to calculate mass recovery and discharge emissions for the current reporting period (Tables 4 and 5). The estimated discharge emissions do not exceed annual emission limits for TPH-Gx and BTEX.

The laboratory analytical reports for the vapor samples are provided as Appendix A.

DISCUSSION AND CONCLUSIONS

The SVE system was restarted on September 16, 2019. During the reporting period, approximately 852 pounds of petroleum hydrocarbons in vapor phase were extracted for treatment based on field PID readings. Since remediation was initiated in February 2012, an estimated total of 13,677 pounds of petroleum hydrocarbons have been extracted from the site subsurface, treated and discharged.

Period trends in hydrocarbon concentrations in vapor, cumulative mass removed and individual well concentrations are graphically illustrated in Graphs 1 and 2. As shown in Graph 1, elevated hydrocarbon concentrations in system influent were sustained throughout the operational period. Field PID readings from the individual extraction wells show an increasing trend in hydrocarbon concentrations over the period (Graph 2). Note that well VE-3 and RW-2 share a common line to the system; when both wells are utilized for extraction a combined concentration (identified as VE-3/RW-2) is reported on Table 2 and Graph 2. In December 2019, well VW-3 was closed to focus extraction at well RW-2 and optimize operations; subsequent monitoring show elevated hydrocarbon concentrations were measured in extraction wells RW-3 and RW-2. RW-3 is located adjacent to the southernmost dispenser and RW-2 is located south of the UST cavity.

Montrose will continue to conduct weekly O&M visits to monitor the system as required by the PSCAA permit and to ensure the system is operating properly. Field PID monitoring and laboratory analytical results show effluent vapor is non-detect for TPH-Gx and BTEX constituents. Based on field PID readings, select extraction wells may be opened/closed to optimize system performance. System vapor samples will be collected and analyzed on a monthly basis to demonstrate compliance with permit discharge requirements.

Montrose is pleased to be of service to Eagle Canyon Capital. If there are questions regarding this report or if additional site information is required, please do not hesitate to contact Montrose at (714) 919-6500.

ATTACHMENTS:

FIGURES

Figure 1:	Site Location Map
Figure 2:	Site Plan Showing Well Locations

TABLES

Table 1:	Summary of Vapor Extraction System Operational Data
Table 2:	SVE Individual Well Data
Table 3:	Soil Vapor Sample Analytical Data
Table 4:	Subsurface Hydrocarbon Mass Calculations
Table 5:	System Destruction Efficiencies

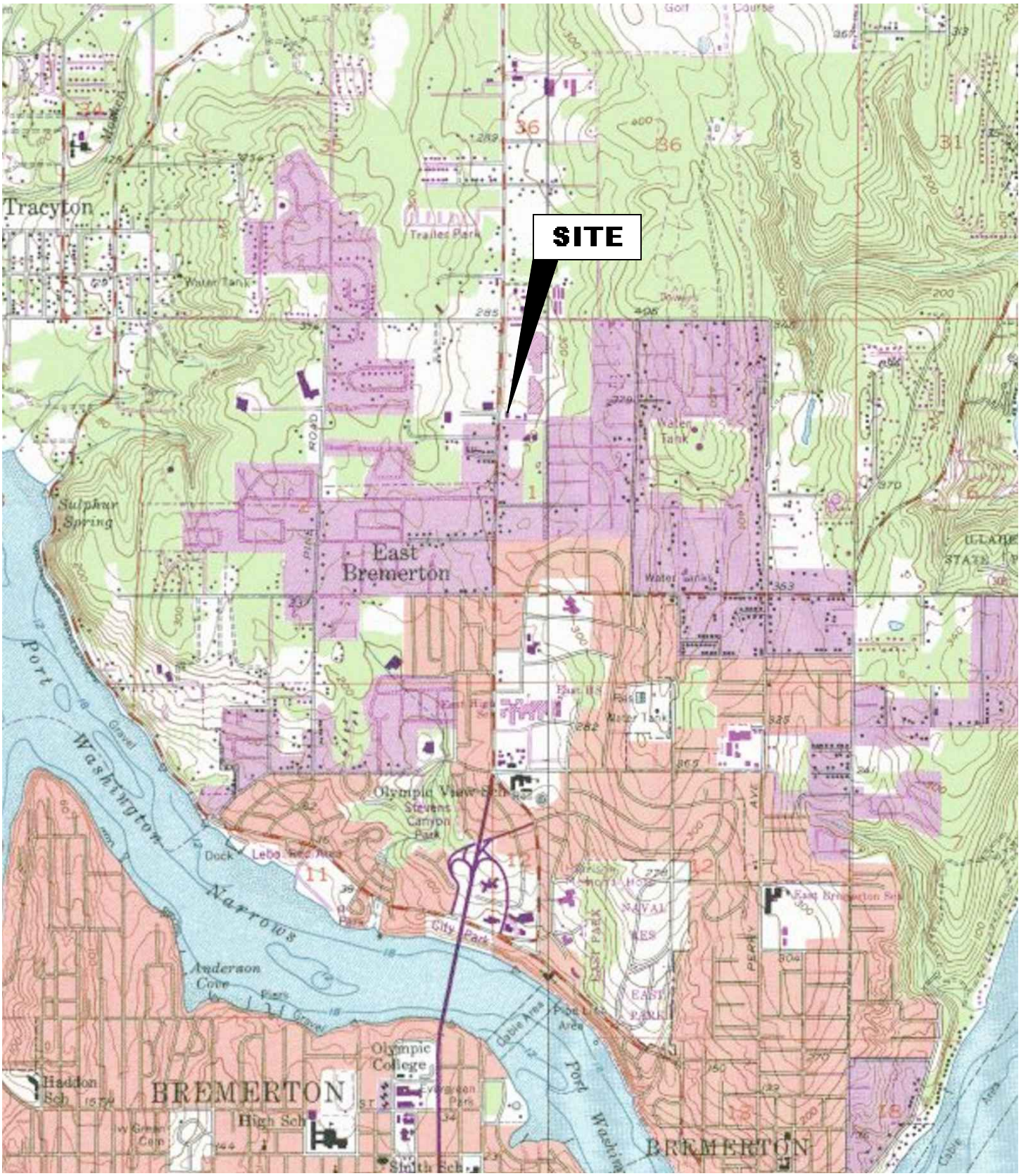
GRAPHS

Graph 1:	Vapor Extraction Remediation System – Mass Removal Trend
Graph 2:	Vapor Extraction Remediation System – Hydrocarbon Concentrations by Well

APPENDICES

Appendix A:	Laboratory Analytical Reports
Appendix B:	Field Data Sheets
Appendix C:	Historical O&M Data Tables and Graphs

FIGURES



Map Information: Maptech
Terrain Navigator–2nd Ed.–San Juan Island
Olympic Peninsula/Sea–Tac (WA)
42°36'10"N 122°37'42"W

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N

0 2000

APPROX. SCALE: 1" = 2000'

FIGURE 1

SITE LOCATION MAP

Site No. 3520
4200 Wheaton Way
Bremerton, Washington

DATE DRAWN
10/15/2019

PROJECT NO.
123155

FILE NO.
123155F1–SLM

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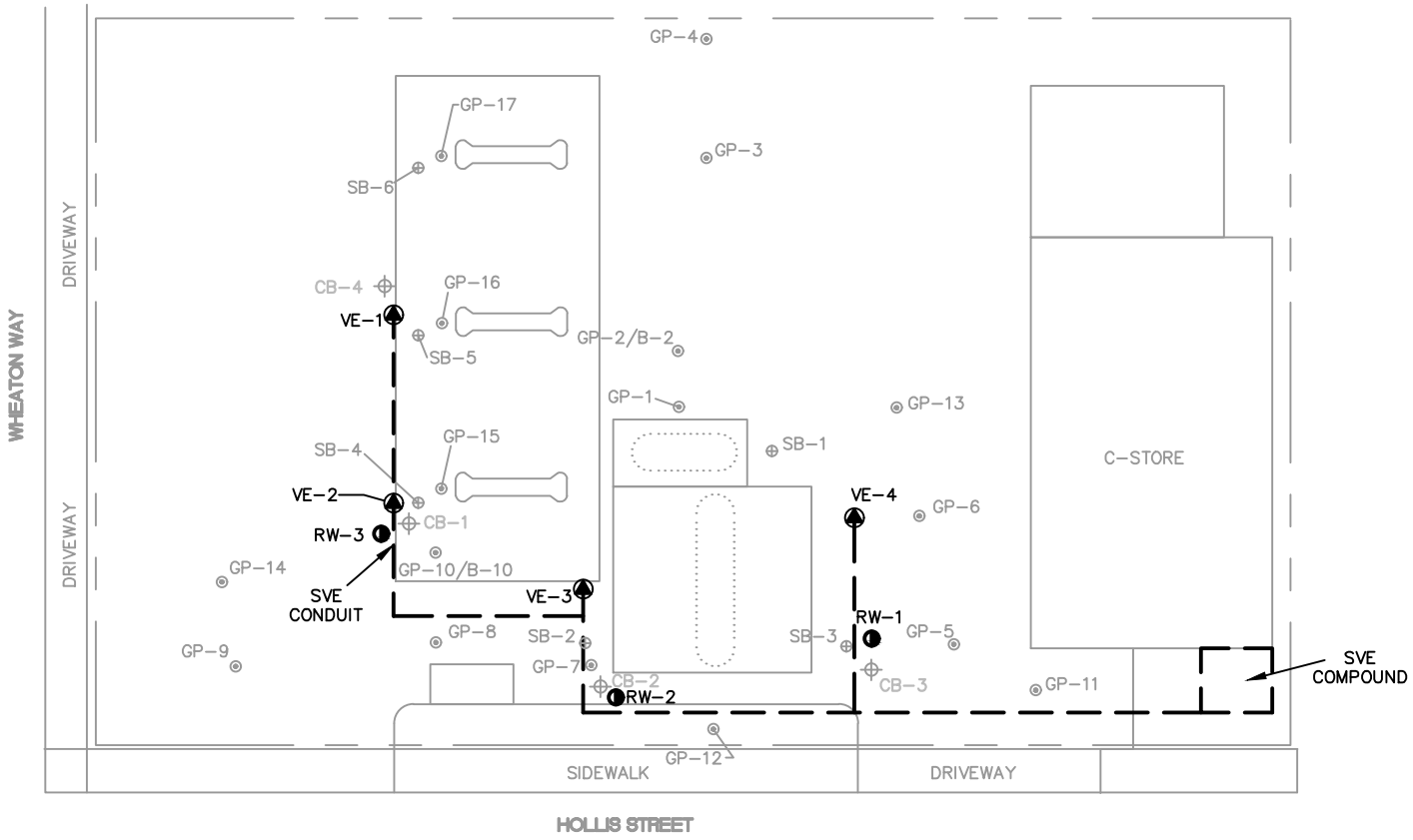

LEGEND

SB-1 ⊕	Soil Boring (Environ Strategy, 2010)
GP-1 ⊙	Soil Boring (Clearwater, 1997)
▲	Soil Vapor Extraction Well
◑	Remediation Well
▭	Underground Storage Tank
▭	Pump Island
⊕	Confirmation Soil Boring (ES Engineering, 2016)
SVE	Soil Vapor Extraction

N

30 0 30

APPROXIMATE SCALE: 1" = 30'

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FIGURE 2

SITE PLAN PLAN SHOWING SOIL BORING AND WELL LOCATIONS

Site No. 3520
4200 Wheaton Way
Bremerton, Washington

DATE DRAWN
12/18/2019

PROJECT NO.
123155

FILE NO.
123155F2-SP

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TABLES

TABLE 1
Summary of Soil Vapor Extraction System Operational Data
Site No. 3520
Bremerton, Washington
1 of 1

Date	Hour Meter Reading	Operational Hours	# of Wells Online	Influent Vacuum (in H_2O or Hg)[1]	System Combustion Temp / GAC Inlet (°F)	Temp below cat. Bed (°F)	Temp above cat. Bed (°F)	Flow (scfm)	Influent PID Reading (ppmV)	Midpoint PID Reading (ppmV)	First carbon Destruction Efficiency (%)	Effluent PID Reading (ppmV)	Total Destruction Efficiency (%)	Cumulative Hydrocarbon Mass Removed (lbs)	Hydrocarbon Removal Rate (lbs/day)	Remarks
09/03/19	70,095	13,892	7	6.0	109	-	-	135	49.4	-	-	43.5	12%	12,740	0.1	System offline, Start up for Baseline testing then shut off system
09/03/19	70,096	13,893	7	6.5	112	-	-	135	66.0	-	-	78.1	-18%	12,740	2.55	System offline, Start up for Baseline testing then shut off system
09/03/19	70,097	13,894	7	7.0	112	-	-	135	71.0	-	-	57.0	20%	12,741	3.02	System offline, Start up for Baseline testing then shut off system
09/06/19	70,097	13,895	-	-	-	-	-	-	-	-	-	-	-	12,741	-	System offline - Carbon Change Out
09/16/19	70,100	13,897	7	6.5	109	-	-	138	53.5	-	-	0.0	100%	12,741	2.41	**System Startup**
09/16/19	70,101	13,899	7	6.5	110	-	-	137	495	-	-	0.3	100%	12,742	12.28	
09/17/19	70,118	13,916	7	6.5	100	-	-	138	455	-	-	1.2	100%	12,756	20.18	
09/19/19	70,123	13,921	7	-	-	-	-	-	-	-	-	-	-	12,756	-	System off upon arrival; troubleshoot and re-started
09/20/19	70,141	13,939	7	6.5	110	-	-	123	349	0.2	100%	0.0	100%	12,769	14.03	
09/23/19	70,216	14,014	7	7.0	105	-	-	127	43	0.0	100%	0.0	100%	12,795	8.13	
09/26/19	70,284	14,081	5	8.0	112	-	-	108	51	0.0	100%	0.0	100%	12,800	1.65	Vapor wells VE-2 and VE-4 off upon departure
09/26/19	70,285	14,082	5	10	130	-	-	77	131	0.0	100%	0.0	100%	12,800	2.28	
09/30/19	70,383	14,180	5	10	135	-	-	195	68	0.0	100%	0.0	100%	12,825	6.33	
10/04/19	70,475	14,273	5	8.0	72	-	-	185	240	0.0	100%	0.0	100%	12,861	9.30	
10/08/19	70,575	14,372	5	8.0	70	-	-	175	221	0.0	100%	0.0	100%	12,916	13.18	
10/10/19	70,626	14,423	5	8.0	72	-	-	178	266	0.0	100%	0.0	100%	12,946	14.16	
10/15/19	70,747	14,544	5	5.5	68	-	-	170	226	0.0	100%	0.0	100%	13,015	13.66	Closed vapor well VE-1 upon departure
10/18/19	70,811	14,609	4	12	56.0	-	-	170	297	6.0	98%	0.0	100%	13,054	0.61	
10/21/19	70,830	14,628	4	12	57.5	-	-	155	289	0.0	100%	0.0	100%	13,066	14.84	
10/24/19	70,841	14,639	4	-	-	-	-	-	-	-	-	-	-		-	
10/25/19	70,864	14,661	4	12	54.1	-	-	162	375	2.0	99%	0.0	100%	13,090	17.57	
10/28/19	70,935	14,733	4	12	50.1	-	-	170	380	5.5	99%	0.5	100%	13,153	20.97	
10/30/19	70,980	14,777	4	8	48.1	-	-	90	453	2.8	99%	0.6	100%	13,175	12.25	
11/06/19	71,018	14,815	4	8	51.7	-	-	113	163	0.3	100%	0.0	100%	13,193	11.37	System off upon arrival. Troubleshoot and restart system.
11/15/19	71,234	15,032	4	10	69.0	-	-	106	350	14.0	96%	0.5	100%	13,273	8.88	
11/21/19	71,378	15,176	4	10	79.0	-	-	129	370	40.0	89%	1.0	100%	13,364	15.17	
11/27/19	71,521	15,319	4	11	72.1	-	-	123	268	42.7	84%	1.4	99%	13,441	12.82	System shut off upon depraprture
12/09/19	71,523	15,320	4	10	45.6	-	-	143	315	5.0	98%	0.2	100%	13,442	13.62	System restarted
12/12/19	71,589	15,387	4	11	69.5	-	-	126	290	54.7	81%	1.5	99%	13,476	12.45	
12/19/19	71,758	15,555	3	10	61.5	-	-	112	305	55.0	82%	7.9	97%	13,553	10.89	
12/24/19	71,975	15,773	3	8.5	45.5	-	-	82.5	452	70.1	84%	4.5	99%	13,645	10.20	
12/24/19	71,876	15,673	3	10	-	-	-	80.1	603	60.1	90%	4.5	99%	13,588	13.81	
12/30/19	72,022	15,820	3	10	56.4	-	-	93	352	19.6	94%	4.0	99%	13,677	14.51	

Notes and abbreviations: **91**

Hydrocarbon removal rate and cumulative hydrocarbon removal were calculated using the following formula:

$$lbs = \frac{ppmv\ (60\ min/hr)\ (24\ hr/day)\ (acfm)\ (86\ lb/lb\text{-}mole)}{(1{,}000{,}000)\ (379\ ft^3/lb\text{-}mole)}$$

Where: ppmv = average hydrocarbon concentration in parts per million by volume
ft3/min = velocity or flow rate in standard cubic feet per minute
acfm = vapor flow rate in actual cubic feet per minute
86 lb/lb-mole = average molecular weight of gasoline
379 ft^3/lb-mole = standard volume that 1 mole of gas occupies

(1): measurement in in. of H2O through 3/13/14 and in inches Hg begininning 9/3/19
- : not measured
lbs: pounds
lbs/day: pounds per day
PID: photo-ionization detector calibrated to hexane
ppmV: parts per million by volume
acfm: actual cubic feet per minute
scfm: standard cubic feet per minute
in H_2O: inches of water
in Hg: inches of mercury
Temp: temperature
°F: degrees Farenheit

TABLE 2
SVE Individual Well Data
Site No. 3520
Bremerton, Washington
1 of 2

	VE-1	Vac	Status	VE-2	Vac	Status	VE-3	Vac	Status	VE-4	Vac	Status
Date	(ppmv)	(in Hg)	(%)	(ppmv)	(in Hg)	(%)	(ppmv)	(in Hg)	(%)	(ppmv)	(in Hg)	(%)
09/03/19	11.7	-	100%	12.9	-	100%	231	-	100%	17.9	-	100%
09/03/19	21.3	-	100%	18.2	-	100%	340	-	100%	30.3	-	100%
09/03/19	24.5	-	100%	22.4	-	100%	215	-	100%	35.0	-	100%
09/16/19	54.7	-	100%	50.2	-	100%	4,400	-	100%	34.8	-	100%
09/16/19	576	-	100%	166	-	100%	8,530	-	100%	340	-	100%
09/17/19	-	-	-	-	-	-	-	-	-	-	-	-
09/19/19	-	-	-	-	-	-	-	-	-	-	-	-
09/26/19	13.3	-	100%	-	-	0%	-	-	100%	-	-	0%
09/30/19	-	7.0	100%	-	-	0%	-	-	100%	-	-	0%
10/04/19	-	5.0	100%	-	-	0%	-	-	100%	-	-	0%
10/08/19	-	5.0	100%	-	-	0%	-	-	100%	-	-	0%
10/10/19	64.0	5.0	100%	-	-	0%	-	-	100%	-	-	0%
10/15/19	-	-	0%	-	-	0%	-	-	100%	-	-	0%
10/18/19	-	-	0%	-	-	0%	-	-	100%	-	-	0%
10/21/19	-	-	0%	-	-	0%	-	-	100%	-	-	0%
10/24/19	-	-	0%	-	-	0%	-	-	100%	-	-	0%
10/25/19	-	-	0%	-	-	0%	-	-	100%	-	-	0%
10/28/19	-	-	0%	-	-	0%	-	-	100%	-	-	0%
10/30/19	-	-	0%	-	-	0%	-	-	100%	-	-	0%
11/06/19	-	-	0%	-	-	0%	-	-	100%	-	-	0%
11/21/19	-	-	0%	-	-	0%	-	-	100%	-	-	0%
11/27/19	-	-	0%	-	-	0%	-	-	100%	-	-	0%
12/09/19	-	-	0%	-	-	0%	-	-	100%	-	-	0%
12/12/19	-	-	0%	-	-	0%	-	-	100%	-	-	0%
12/19/19	-	-	0%	-	-	0%	-	-	0%	-	-	0%
12/24/19	-	-	0%	-	-	0%	-	-	0%	-	-	0%
12/24/19	-	-	0%	-	-	0%	-	-	0%	-	-	0%
12/30/19	-	-	0%	-	-	0%	-	-	0%	-	-	0%

TABLE 2
SVE Individual Well Data
Site No. 3520
Bremerton, Washington
2 of 2

Date	RW-1 (ppmv)	Vac (in Hg)	Status (%)	RW-2 (ppmv)	Vac (in Hg)	Status (%)	RW-3 (ppmv)	Vac (in Hg)	Status (%)	VE-3/RW-2 (ppmv)	Vac (in Hg)	Status (%)
09/03/19	108	-	100%	160	-	100%	55.8	-	100%	-	-	-
09/03/19	125	-	100%	123	-	100%	54.8	-	100%	-	-	-
09/03/19	62.8	-	100%	92.8	-	100%	28.8	-	100%	-	-	-
09/16/19	296	-	100%	142	-	100%	73	-	100%	-	-	-
09/16/19	669	-	100%	1,062	-	100%	450	-	100%	-	-	-
09/17/19	-	-	-	-	-	-	-	-	-	-	-	-
09/19/19	-	-	-	-	-	-	-	-	-	-	-	-
09/26/19	17.8	-	100%	-	-	100%	8.4	-	100%	203	-	100%
09/30/19	-	7.0	100%	-	-	100%	-	7.5	100%	-	7.5	100%
10/04/19	-	5.0	100%	-	-	100%	-	5.0	100%	-	5.0	100%
10/08/19	-	5.0	100%	-	-	100%	-	5.0	100%	-	5.5	100%
10/10/19	64.7	5.0	100%	-	-	100%	45.3	5.0	100%	333	5.0	100%
10/15/19	-	-	-	-	-	100%	-	-	100%	-	-	100%
10/18/19	26.6	8.6	100%	-	-	100%	145	9.0	100%	331		100%
10/21/19	-	-	100%	-	-	100%	-	-	100%	-	-	100%
10/24/19	-	-	100%	-	-	100%	-	-	100%	-	-	100%
10/25/19	-	-	100%	-	-	100%	-	-	100%	-	-	100%
10/28/19	32.5	9	100%	-	-	100%	1,085	9.0	100%	300	8.5	100%
10/30/19	-	-	100%	-	-	100%	-	-	100%	-	-	100%
11/06/19	-	8.5	100%	-	-	100%	-	8.0	100%	-	8.0	100%
11/15/19	-	9.0	100%	-	-	100%	-	9.0	100%	-	9.5	100%
11/21/19	-	8.5	100%	-	-	100%	-	8.5	100%	-	8.5	100%
11/27/19	79.5	8.5	100%	-	-	100%	3,450	8.5	100%	1,924	9.0	100%
12/09/19	-	9.0	100%	-	-	100%	-	9	100%	-	8	100%
12/12/19	-	9.0	100%	-	-	100%	-	9	100%	-	8	100%
12/19/19	87	8.5	100%	9,999	-	100%	5,500	9	100%	-	-	0%
12/24/19	635	9.0	100%	9,999	-	100%	9,999	9	100%	-	-	0%
12/24/19	-	-	100%	-	-	100%	-	-	100%	-	-	0%
12/30/19	675	-	100%	9,999	-	100%	4,940	-	100%	-	-	0%

Notes:

Baseline Well Sampling on 9/03/19
System re-start up on 9/16/19
in Hg = inches of mercury
ppmv = parts per million by volume, based on field photo-ionization detector readings
acfm = actual cubic feet per minute
1% LEL = 138 ppmv (approximately)
"-" = not measured
%: percent
Status: well status, percent open
Vac: vacuum
Vapor wells VE-3 and RW-2 share the common line

TABLE 3
Soil Vapor Sample Analytical Data
Site No. 3520
Bremerton, Washington
1 of 1

SAMPLE ID	Date	EPA METHOD 8260				
		TPH-Gx	Benzene	Toluene	Ethylbenzene	Xylenes
		ppmv	ppmv	ppmv	ppmv	ppmv
INFLUENT	09/16/19	290	0.19	2.3	0.63	1.9
	09/20/19	-	-	-	-	-
	09/30/19	110	0.056	1.6	0.74	3.1
	10/30/19	66	0.023	0.44	0.31	1.30
	12/12/19	196	0.053	0.88	1.3	5.3
MIDPOINT	09/16/19	<1.0	<0.007	<0.04	<0.05	<0.03
	09/20/19	-	-	-	-	-
	09/30/19	<1.0	<0.007	<0.04	<0.05	<0.03
	10/30/19	<1.0	<0.007	<0.04	<0.05	<0.03
	12/12/19	<1.0	<0.007	<0.04	<0.05	<0.03
EFFLUENT	09/16/19	-	-	-	-	-
	09/20/19	<1.0	<0.007	<0.04	<0.05	<0.03
	09/30/19	<1.0	<0.007	<0.04	<0.05	<0.03
	10/30/19	<1.0	<0.007	<0.04	<0.05	<0.03
	12/12/19	<1.0	<0.007	<0.04	<0.05	<0.03
VE-1	09/03/19	78.24	0.018	0.080	0.078	0.322
VE-2	09/03/19	73.35	0.023	0.101	0.041	0.198
VE-3	09/03/19	1,589	0.153	0.478	0.299	0.598
VE-4	09/03/19	154	0.157	0.902	0.074	0.391
RW-1	09/03/19	538	0.500	3.18	0.668	1.91
RW-2	09/03/19	269	<0.003	0.080	0.115	0.322
RW-3	09/03/19	64	<0.003	0.066	0.576	0.193

Notes:

< = not detected at listed detection limit
Baseline well sampling on 9/03/19
Sytem restarted on 09/16/19
ppmv = parts per million by volume
TPH-Gx = total petroleum hydrocarbons quantified as gasoline
- = not applicable/sampled

TABLE 4
Subsurface Hydrocarbon Mass Removal and Emission Calculations
Site No. 3520
Bremerton, Washington
1 of 1

Sample ID	Sampling Date	Cumulative Operating Hours	System Flowrate (scfm)	TPH			Benzene			Ethylbenzene			Toluene			Xylenes		
				Conc. (ppmv)	Periodic Removal (lbs)	Removal Rate (lbs/day)	Conc. (ppmv)	Periodic Removal (lbs)	Removal Rate (lbs/day)	Conc. (ppmv)	Periodic Removal (lbs)	Removal Rate (lbs/day)	Conc. (ppmv)	Periodic Removal (lbs)	Removal Rate (lbs/day)	Conc. (ppmv)	Periodic Removal (lbs)	Removal Rate (lbs/day)
Influent	09/16/19	13,899	137	290	0	13	0.19	0.00	0.008	0.63	0.00	0.00	2.3	0.0	0.0	1.9	0.0	0.09
	09/20/19	13,939	123	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	09/30/19	14,180	195	110	82	7	0.06	0.04	0.003	0.74	0.68	0.05	1.6	1.2	0.1	3.1	2.3	0.20
	10/30/19	14,273	185	66	21	5	0.02	0.01	0.002	0.31	0.15	0.03	0.4	0.2	0.0	1.3	0.3	0.13
	12/12/19	14,372	175	196	31	7	0.05	0.01	0.002	1.30	0.23	0.01	0.9	0.2	0.0	5.3	1.3	0.19

Sample ID	Sampling Date	Cumulative Operating Hours	System Flowrate (scfm)	TPH			Benzene			Ethylbenzene			Toluene			Xylenes		
				Conc. (ppmv)	Periodic Emissions (lbs)	Emissions Rate (lbs/day)	Conc. (ppmv)	Periodic Emissions (lbs)	Emissions Rate (lbs/day)	Conc. (ppmv)	Periodic Emissions (lbs)	Emissions Rate (lbs/day)	Conc. (ppmv)	Periodic Emissions (lbs)	Emissions Rate (lbs/day)	Conc. (ppmv)	Periodic Emissions (lbs)	Emissions Rate (lbs/day)
Effluent	09/16/19	13,899	137	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	09/20/19	13,939	123	<1	0.07	0.04	<0.007	0.00	0.0003	<0.05	0.00	0.000	<0.04	0.0	0.0000	<0.03	0.0	0.001
	09/30/19	14,180	195	<1	0.64	0.06	<0.007	0.00	0.0004	<0.05	0.04	0.000	<0.04	0.0	0.0000	<0.03	0.0	0.002
	10/30/19	14,273	185	<1	0.23	0.06	<0.007	0.00	0.0004	<0.05	0.01	0.000	<0.04	0.0	0.0000	<0.03	0.0	0.002
	12/12/19	14,372	175	<1	0.24	0.06	<0.007	0.00	0.0004	<0.05	0.01	0.000	<0.04	0.0	0.0000	<0.03	0.0	0.002

Note: calculated cumulative using reporting limit if no detection

- : Not Sampled
Conc.: Concentration
lbs: pounds
lbs/day: pounds per day
ppmV: parts per million by volume
TPH: Total Petroleum Hydrocarbons

TPH emissions calculation = $\frac{\text{TPH-Gx parts per million x cubic feet per minute x 60 minutes/hour x hours x 86 pounds per lb mol x 24 hours/day}}{\text{1,000,000 x 379 cubic feet per lb mol}}$

Benezene emissions calculation = $\frac{\text{Benzene parts per million x cubic feet per minute x 60 minutes/hour x hours x 78 pounds per lb mol x 24 hours/day}}{\text{1,000,000 x 379 cubic feet per lb mol}}$

Ethybenzene emissions calculation = $\frac{\text{Ethylbenzene parts per million x cubic feet per minute x 60 minutes/hour x hours x 106 pounds per lb mol x 24 hours/day}}{\text{1,000,000 x 379 cubic feet per lb mol}}$

Toluene emissions calculation = $\frac{\text{Toluene parts per million x cubic feet per minute x 60 minutes/hour x hours x 92 pounds per lb mol x 24 hours/day}}{\text{1,000,000 x 379 cubic feet per lb mol}}$

Xylenes emissions calculation = $\frac{\text{Xylenes parts per million x cubic feet per minute x 60 minutes/hour x hours x 106 pounds per lb mol x 24 hours/day}}{\text{1,000,000 x 379 cubic feet per lb mol}}$

Carbon change out of first vessel required at: 10% of inlet stream concentration to the carbon vessel or 10 ppmv (measured as hexane or its equivalent)

TABLE 5
System Destruction Efficiencies
Site No. 3520
Bremerton, Washington
1 of 1

Sample Date	Destruction Efficiencies				
	TPH-Gx	Benzene	Toluene	Ethylbenzene	Xylenes
09/16/19*	99.66%	96.32%	98.26%	92.06%	98.42%
09/30/19	99.09%	87.50%	97.50%	93.24%	99.03%
10/30/19**	99.24%	84.78%	95.45%	91.94%	98.85%
12/12/19**	99.74%	93.40%	97.73%	98.08%	99.72%

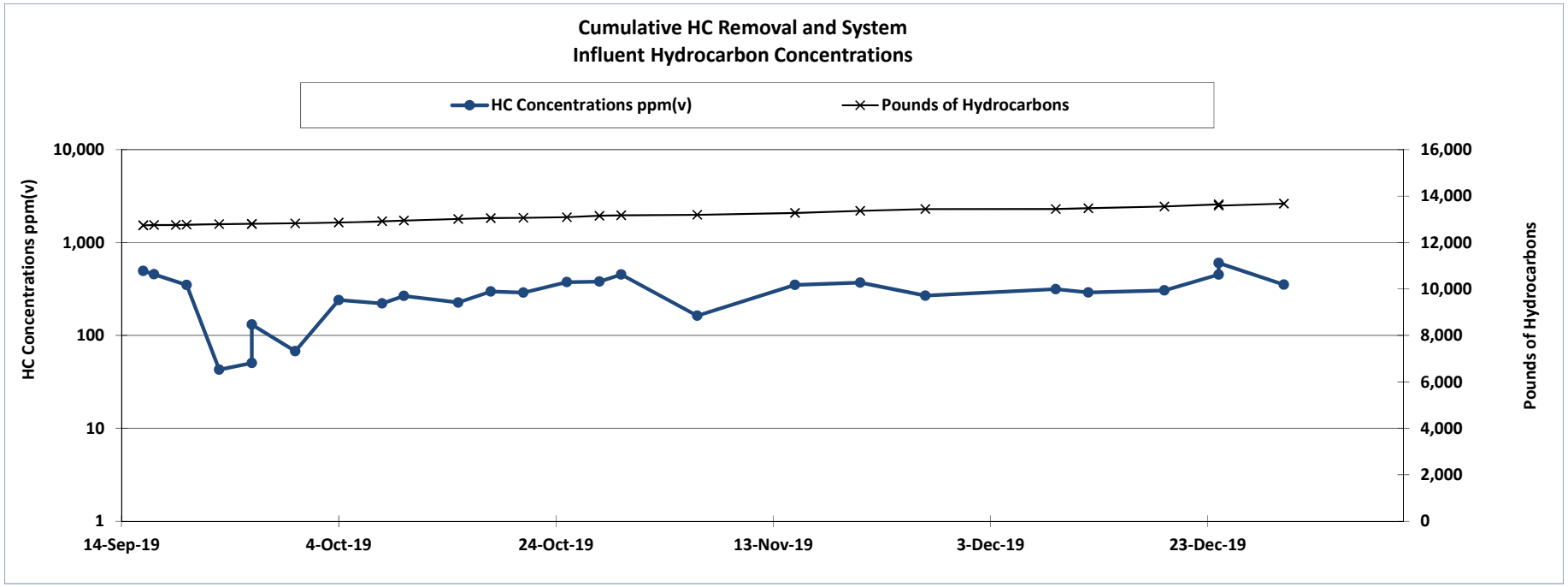
Notes:

* = Destruction efficiency was calculated with influent sample collected on 9/16/19 and effluent sample collected on 9/20/19

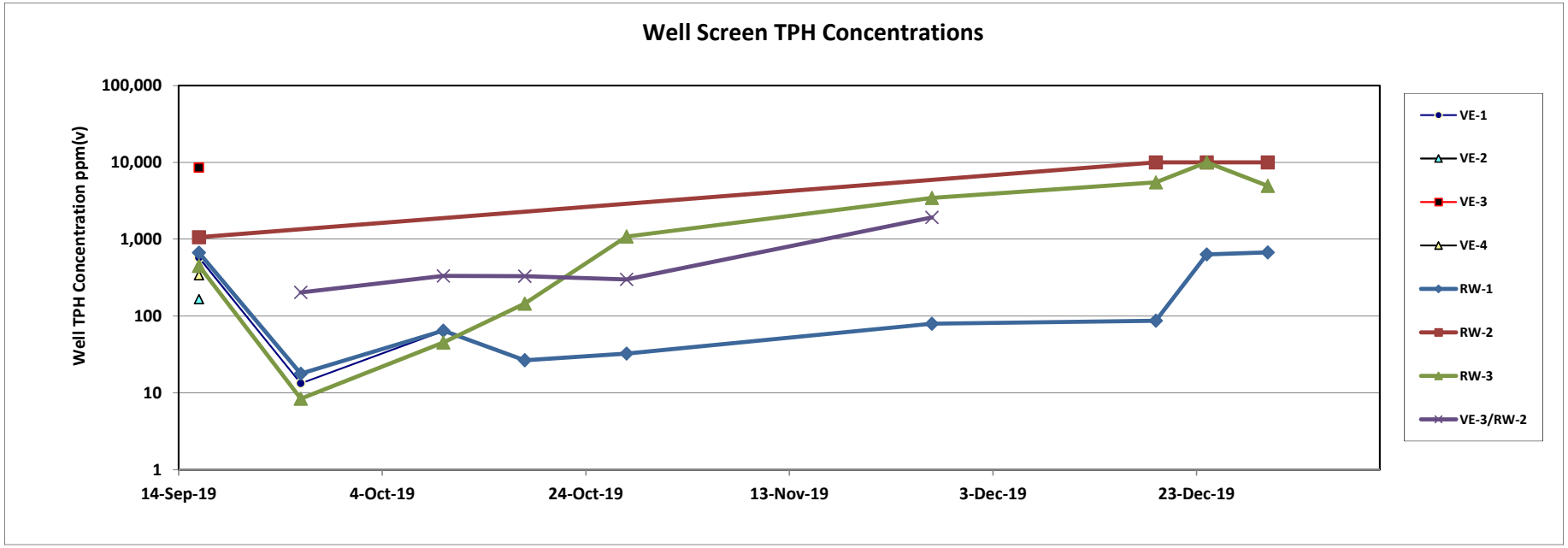
** = Destruction efficiency calculated with 1/2 reporting limit due to no laboratory detection

GRAPHS

GRAPH 1
Vapor Extraction System - Mass Removal Trend
Site No. 3520
Bremerton, Washington



GRAPH 2
Vapor Extraction System - Hydrocarbon Concentrations by Well
SiteNo. 3520
Bremerton, Washington



APPENDIX A

Laboratory Analytical Reports

Libby Environmental, Inc.
3322 South Bay Road NE • Olympia, WA 98506-2957

November 6, 2019

Laura Skow
Montrose Environmental
4150 B Place NW, Suite 106
Auburn, WA 98001

Dear Ms. Skow:

Please find enclosed the analytical data report for the Site No. 3520 Project located in Bremerton, Washington.

The results of the analyses are summarized in the attached tables. Applicable detection limits and QA/QC data are included. The sample(s) will be disposed of within 30 days unless we are contacted to arrange long term storage.

Libby Environmental, Inc. appreciates the opportunity to have provided analytical services for this project. If you have any further questions about the data report, please give me a call. It was a pleasure working with you on this project, and we are looking forward to the next opportunity to work together.

Sincerely,

Sherry L. Chilcutt
Senior Chemist
Libby Environmental, Inc.

Phone (360) 352-2110 • Fax (360) 352-4154 • libbyenv@gmail.com

Libby Environmental, Inc.

Chain of Custody Record

www.LibbyEnvironmental.com

4139 Libby Road NE
Olympia, WA 98506
Ph: 360-352-2110
Fax: 360-352-4154

Date: 10/30/19 Page: 1 of 1

Client: Montrose Environmental
Project Manager: Laura Skow
Address: 4150 B Pl NW Ste 106
Project Name: Site No. 3520
City: Auburn State: WA Zip: 98001
Location: 4200 Wheaton Way City, State: Bremerton, WA
Phone: 253-656-4856 Fax:
Collector: Nick Olivier Date of Collection: 10/30/19
Client Project # PO1041505
Email:

	Sample Number	Depth	Time	Sample Type	Container Type	VOC 8260	NWTPH-Gx	BTEX 8021	NWTPH-HCID	NWTPH-Dx	NWTPH-Dx/Dx	c PAH 8270	PAH 8270	Semi Vol 8270	PCB 8082	MTCA 5 Metals	RCRA 8 Metals				Field Notes
1	INFLUENT	n/a	10:00	air	Tedlar		X	X													
2	MID-POINT		9:55				X	X													
3	EFFLUENT		9:50				X	X													
4																					
5																					
6																					
7																					
8																					
9																					
10																					
11																					
12																					
13																					
14																					
15																					
16																					
17																					

Relinquished by:	Date / Time	Received by:	Date / Time
[signature]	10/30/19 13:55	[signature]	10/30/19 1355
Relinquished by:	Date / Time	Received by:	Date / Time
Relinquished by:	Date / Time	Received by:	Date / Time

Sample Receipt

Good Condition?	Y	N	
Temp.			°C
Seals Intact?	Y	N	N/A
Total Number of Containers			

Remarks:

TAT: 24HR 48HR (5-DAY)

Distribution: White - Lab, Yellow - File, Pink - Originator

Libby Environmental, Inc.

3322 South Bay Road NE
Olympia, WA 98506
Phone: (360) 352-2110
FAX: (360) 352-4154
Email: libbyenv@gmail.com

SITE NO. 3520 PROJECT
Montrose Environmental, Inc.
Bremerton, Washington
Libby Project # L191030-2
Client Project # PO 1041505

Analyses of Gasoline (NWTPH-Gx) & BTEX (EPA Method 8260D) in Vapor

Sample Description		Method Blank	Influent	Influent Dup	Mid-Point	Effluent
Date Sampled		N/A	10/30/19	10/30/19	10/30/19	10/30/19
Date Analyzed	PQL	11/1/19	11/1/19	11/1/19	11/1/19	11/1/19
	ppmv	ppmv	ppmv	ppmv	ppmv	ppmv
Benzene	0.007	nd	0.023	0.024	nd	nd
Toluene	0.04	nd	0.44	0.41	nd	nd
Ethylbenzene	0.05	nd	0.31	0.31	nd	nd
Total Xylenes	0.03	nd	1.30	1.26	nd	nd
Gasoline	1.0	nd	66	67	nd	nd
Surrogate Recovery						
Dibromofluoromethane		98	93	104	98	107
1,2-Dichloroethane-d4		101	124	129	121	128
Toluene-d8		93	101	102	96	103
4-Bromofluorobenzene		97	103	105	100	102

"nd" Indicates not detected at listed detection limit.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE : 65% TO 135%

ANALYSES PERFORMED BY: Paul Burke

Libby Environmental, Inc.

3322 South Bay Road NE
Olympia, WA 98506
Phone: (360) 352-2110
FAX: (360) 352-4154
Email: libbyenv@gmail.com

SITE NO. 3520 PROJECT
Montrose Environmental, Inc.
Bremerton, Washington
Libby Project # L191030-2
Client Project # PO 1041505

QA/QC for Gasoline (NWTPH-Gx) & BTEX (EPA Method 8260D) in Vapor

Laboratory Control Sample

	Spiked Conc. ug/l	LCS Response ug/l	LCS Recovery (%)	LCS Recovery Limits (%)	Data Flag
Benzene	0.25	0.26	105	80-120	
Toluene	0.25	0.26	104	80-120	
Ethylbenzene	0.25	0.25	98	80-120	
Total Xylenes	0.75	0.74	98	80-120	
Surrogate Recovery					
Dibromofluoromethane			107	65-135	
1,2-Dichloroethane-d4			122	65-135	
Toluene-d8			96	65-135	
4-Bromofluorobenzene			103	65-135	

Libby Environmental, Inc.

3322 South Bay Road NE
Olympia, WA 98506
Phone: (360) 352-2110
FAX: (360) 352-4154
Email: libbyenv@gmail.com

SITE NO. 3520 PROJECT
Montrose Environmental, Inc.
Libby Project # L191030-2
Date Received 10/30/2019
Time Received 1:55 PM

Received By KD

Sample Receipt Checklist

Chain of Custody

1. Is the Chain of Custody complete?	☑	Yes	☐	No		
2. How was the sample delivered?	☐	Hand Delivered	☑	Picked Up	☐	Shipped

Log In

3. Cooler or Shipping Container is present.	☐	Yes	☑	No	☐	N/A
4. Cooler or Shipping Container is in good condition.	☐	Yes	☐	No	☑	N/A
5. Cooler or Shipping Container has Custody Seals present.	☐	Yes	☐	No	☑	N/A
6. Was an attempt made to cool the samples?	☐	Yes	☐	No	☑	N/A
7. Temperature of cooler (0°C to 8°C recommended)	N/A °C					
8. Temperature of sample(s) (0°C to 8°C recommended)	N/A °C					
9. Did all containers arrive in good condition (unbroken)?	☑	Yes	☐	No		
10. Is it clear what analyses were requested?	☑	Yes	☐	No		
11. Did container labels match Chain of Custody?	☑	Yes	☐	No		
12. Are matrices correctly identified on Chain of Custody?	☑	Yes	☐	No		
13. Are correct containers used for the analysis indicated?	☑	Yes	☐	No		
14. Is there sufficient sample volume for indicated analysis?	☑	Yes	☐	No		
15. Were all containers properly preserved per each analysis?	☑	Yes	☐	No		
16. Were VOA vials collected correctly (no headspace)?	☐	Yes	☐	No	☑	N/A
17. Were all holding times able to be met?	☑	Yes	☐	No		

Discrepancies/ Notes

18. Was client notified of all discrepancies?	☐	Yes	☐	No	☑	N/A

Person Notified: _____ Date: _____

By Whom: _____ Via: _____

Regarding: _____

19. Comments. Vapor samples

Libby Environmental, Inc.
3322 South Bay Road NE • Olympia, WA 98506-2957

December 19, 2019

Laura Skow
Montrose Environmental
4150 B Place NW, Suite 106
Auburn, WA 98001

Dear Ms. Skow:

Please find enclosed the analytical data report for the Site No. 3520 Project located in Bremerton, Washington.

The results of the analyses are summarized in the attached tables. Applicable detection limits and QA/QC data are included. The sample(s) will be disposed of within 30 days unless we are contacted to arrange long term storage.

Libby Environmental, Inc. appreciates the opportunity to have provided analytical services for this project. If you have any further questions about the data report, please give me a call. It was a pleasure working with you on this project, and we are looking forward to the next opportunity to work together.

Sincerely,

Sherry L. Chilcutt
Senior Chemist
Libby Environmental, Inc.

Phone (360) 352-2110 • Fax (360) 352-4154 • libbyenv@gmail.com

Libby Environmental, Inc.

Chain of Custody Record

www.LibbyEnvironmental.com

4139 Libby Road NE
Olympia, WA 98506
Ph: 360-352-2110
Fax: 360-352-4154

Date: 12/12/19 Page: 1 of 1

Client: Montrose Environmental
Project Manager: Laura Skow
Address: 4150 B Pl NW Ste 106
Project Name: Site No. 3520
City: Auburn State: WA Zip: 98001
Location: 4200 Wheaton Way City, State: Bremerton, WA
Phone: 253 656 4856 Fax:
Collector: Nick Olivier Date of Collection: 12/12/19
Client Project # PO 1041505
Email: LSkow@montrose-env.com

Sample Number	Depth	Time	Sample Type	Container Type	VOC 8260	NWTPH-Gx	BTEX 8021	NWTPH-HCID	NWTPH-Dx	NWTPH-Dx/Dx	c PAH 8270	PAH 8270	Semi Vol 8270	PCB 8082	MTCA 5 Metals	RCRA 8 Metals	BTEX	total lead	Field Notes
1 influent	n/a	10:10	Vapor	Tedlar		✓										✓			
2 mid-point		10:05	↓	↓		✓										✓			
3 effluent		10:00	↓	↓		✓										✓			2 bags (1 extra in case of rupture during transport)
4																			
5 discharge	n/a	10:15	Water	VOA/Poly		✓										✓	✓		
6																			
7																			
8																			
9																			
10																			
11																			
12																			
13																			
14																			
15																			
16																			
17																			

Relinquished by:	Date / Time	Received by:	Date / Time
[signature]	12/13/19 10:55	[signature]	12/13/19 1055
Relinquished by:	Date / Time	Received by:	Date / Time
Relinquished by:	Date / Time	Received by:	Date / Time

Sample Receipt

Good Condition?	Y	N	
Temp.		°C	
Seals Intact?	Y	N	N/A
Total Number of Containers			

Remarks:

TAT: 24HR 48HR (5-DAY)

Distribution: White - Lab, Yellow - File, Pink - Originator

Libby Environmental, Inc.

3322 South Bay Road NE
Olympia, WA 98506
Phone: (360) 352-2110
FAX: (360) 352-4154
Email: libbyenv@gmail.com

SITE NO. 3520 PROJECT
Montrose Environmental, Inc.
Bremerton, Washington
Libby Project # L191213-7
Client Project # PO 1041505

Analyses of Gasoline (NWTPH-Gx) & BTEX (EPA Method 8260D) in Vapor

Sample Description		Method Blank	Influent	Influent Dup	Mid-Point	Effluent
Date Sampled		N/A	12/12/19	12/12/19	12/12/19	12/12/19
Date Analyzed	PQL	12/13/19	12/13/19	12/13/19	12/13/19	12/13/19
	ppmv	ppmv	ppmv	ppmv	ppmv	ppmv
Benzene	0.007	nd	0.053	0.047	nd	nd
Toluene	0.04	nd	0.88	0.74	nd	nd
Ethylbenzene	0.05	nd	1.3	1.2	nd	nd
Total Xylenes	0.03	nd	5.3	4.5	nd	nd
Gasoline	1.0	nd	196	110 E	nd	nd
Surrogate Recovery						
Dibromofluoromethane		116	73	83	80	101
1,2-Dichloroethane-d4		122	103	82	84	96
Toluene-d8		89	108	99	100	99
4-Bromofluorobenzene		97	117	124	114	101

"E" Value above quantitation range.
"nd" Indicates not detected at listed detection limit.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE : 65% TO 135%

ANALYSES PERFORMED BY: Sherry Chilcutt

Libby Environmental, Inc.

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Olympia, WA 98506
Phone: (360) 352-2110
FAX: (360) 352-4154
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SITE NO. 3520 PROJECT
Montrose Environmental, Inc.
Bremerton, Washington
Libby Project # L191213-7
Client Project # PO 1041505

QA/QC for Gasoline (NWTPH-Gx) & BTEX (EPA Method 8260D) in Vapor

Laboratory Control Sample

	Spiked Conc. ug/l	LCS Response ug/l	LCS Recovery (%)	LCS Recovery Limits (%)	Data Flag
Benzene	0.25	0.23	92	80-120	
Toluene	0.25	0.22	88	80-120	
Ethylbenzene	0.25	0.24	95	80-120	
Total Xylenes	0.75	0.71	95	80-120	
Surrogate Recovery					
Dibromofluoromethane			117	65-135	
1,2-Dichloroethane-d4			121	65-135	
Toluene-d8			94	65-135	
4-Bromofluorobenzene			104	65-135	

ANALYSES PERFORMED BY: Sherry Chilcutt

Libby Environmental, Inc.

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Olympia, WA 98506
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SITE NO. 3520 PROJECT
Montrose Environmental, Inc.
Bremerton, Washington
Libby Project # L191213-7
Client Project # PO 1041505

Analyses of Gasoline (NWTPH-Gx) & BTEX (EPA Method 8260D) in Water

Sample Description		Method Blank	Discharge	Discharge Dup
Date Sampled		N/A	12/12/19	12/12/19
Date Analyzed	PQL (µg/L)	12/13/19 (µg/L)	12/13/19 (µg/L)	12/13/19 (µg/L)
Benzene	1.0	nd	nd	nd
Toluene	2.0	nd	nd	nd
Ethylbenzene	1.0	nd	nd	nd
Total Xylenes	2.0	nd	nd	nd
Gasoline	100	nd	nd	nd
Surrogate Recovery				
Dibromofluoromethane		116	103	107
1,2-Dichloroethane-d4		122	101	100
Toluene-d8		89	96	96
4-Bromofluorobenzene		97	100	97

"nd" Indicates not detected at listed detection limit.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE : 65% TO 135%

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SITE NO. 3520 PROJECT
Montrose Environmental, Inc.
Bremerton, Washington
Libby Project # L191213-7
Client Project # PO 1041505

QA/QC for Gasoline (NWTPH-Gx) & BTEX (EPA Method 8260D) in Water

Matrix Spike Sample Identification: Discharge

	Spiked Conc. (µg/L)	MS Response (µg/L)	MSD Response (µg/L)	MS Recovery (%)	MSD Recovery (%)	RPD (%)	Limits Recovery (%)	Data Flag
Benzene	5.0	4.6	4.5	92	90	2.2	65-135	
Toluene	5.0	4.6	4.5	92	90	2.2	65-135	
Ethylbenzene	5.0	4.9	5.1	98	102	4.0	65-135	
Total Xylenes	15.0	15.3	14.4	102	96	6.1	65-135	

Surrogate Recovery (%)	MS	MSD	
Dibromofluoromethane	106	99	65-135
1,2-Dichloroethane-d4	92	87	65-135
Toluene-d8	99	100	65-135
4-Bromofluorobenzene	100	96	65-135

ACCEPTABLE RPD IS 35%

ANALYSES PERFORMED BY: Sherry Chilcutt

Laboratory Control Sample

	Spiked Conc. (µg/L)	LCS Response (µg/L)	LCS Recovery (%)	LCS Recovery Limits (%)	Data Flag
Benzene	5.0	4.6	92	80-120	
Toluene	5.0	4.4	88	80-120	
Ethylbenzene	5.0	4.8	96	80-120	
Total Xylenes	15.0	14.2	95	80-120	

Surrogate Recovery			
Dibromofluoromethane	117	65-135	
1,2-Dichloroethane-d4	121	65-135	
Toluene-d8	94	65-135	
4-Bromofluorobenzene	104	65-135	

ANALYSES PERFORMED BY: Sherry Chilcutt

Libby Environmental, Inc.

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SITE NO. 3520 PROJECT
Montrose Environmental, Inc.
Bremerton, Washington
Libby Project # L191213-7
Client Project # PO 1041505

Analyses of Total Lead in Water by EPA 7010 Series

Sample Number	Date Analyzed	Lead (µg/L)
Method Blank	12/17/19	nd
Discharge	12/17/19	nd
Practical Quantitation Limit		5.0

"nd" Indicates not detected at the listed detection limits.

ANALYSES PERFORMED BY: Dirk Peterson

QA/QC for Total Lead in Water by EPA 7010 Series

Sample Number	Date Analyzed	Lead (% Recovery)
LCS	12/17/19	94%
L191213-6 MS	12/17/19	108%
L191213-6 MSD	12/17/19	108%
RPD	12/17/19	0%

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 75%-125%
ACCEPTABLE RPD IS 20%

ANALYSES PERFORMED BY: Dirk Peterson

Libby Environmental, Inc.

3322 South Bay Road NE
Olympia, WA 98506
Phone: (360) 352-2110
FAX: (360) 352-4154
Email: libbyenv@gmail.com

SITE NO. 3520 PROJECT
Montrose Environmental, Inc.
Libby Project # L191213-7
Date Received 12/13/2019
Time Received 10:55 AM

Received By KD

Sample Receipt Checklist

Chain of Custody

1. Is the Chain of Custody complete?	☑ Yes	☐ No	
2. How was the sample delivered?	☐ Hand Delivered	☑ Picked Up	☐ Shipped

Log In

3. Cooler or Shipping Container is present.	☑ Yes	☐ No	☐ N/A
4. Cooler or Shipping Container is in good condition.	☑ Yes	☐ No	☐ N/A
5. Cooler or Shipping Container has Custody Seals present.	☐ Yes	☑ No	☐ N/A
6. Was an attempt made to cool the samples?	☑ Yes	☐ No	☐ N/A
7. Temperature of cooler (0°C to 8°C recommended)	0.0 °C		
8. Temperature of sample(s) (0°C to 8°C recommended)	5.7 °C		
9. Did all containers arrive in good condition (unbroken)?	☑ Yes	☐ No	
10. Is it clear what analyses were requested?	☑ Yes	☐ No	
11. Did container labels match Chain of Custody?	☑ Yes	☐ No	
12. Are matrices correctly identified on Chain of Custody?	☑ Yes	☐ No	
13. Are correct containers used for the analysis indicated?	☑ Yes	☐ No	
14. Is there sufficient sample volume for indicated analysis?	☑ Yes	☐ No	
15. Were all containers properly preserved per each analysis?	☑ Yes	☐ No	
16. Were VOA vials collected correctly (no headspace)?	☑ Yes	☐ No	☐ N/A
17. Were all holding times able to be met?	☑ Yes	☐ No	

Discrepancies/ Notes

18. Was client notified of all discrepancies?	☐ Yes	☐ No	☑ N/A

Person Notified: _____ Date: _____

By Whom: _____ Via: _____

Regarding: _____

19. Comments. Vapor and water samples

APPENDIX B

Field Data Sheets

Vapor Extraction System Data Sheet

Station No: 3250 Project Number: 029RC1-123155

Max Flow Rate: _____ Address: 4200 Wheaton Way, Bremerton, Washington Max. VOC Out: _____ Min Op. Temp: _____

Date	Time	# of Wells (Zones) On-line	Arrival Status (on/off)	Departure Status (on/off)	System Hour Meter	System Influent Vacuum (in. Hg)	System Flow Rate ~~(CFM)~~ SCFM	Total System Influent VOC Concentration (ppmV)	Mid-Point VOC Concentration (ppmV)	Effluent VOC Concentration (ppmV)	Post-blower flow temperature (deg. F)	Water Holding Tank Fluid Level (%)	Influent ~~Comments~~ temp. (°F)
10/4/19	9:00	5	ON	ON	70475.4	8.0	185	240	0.0	0.0	72	0.0	55.0
10/8/19	12:30	5	ON	ON	70574.8	8.0	175	221	0.0	0.0	70	0.0	52.0
10/10/19	16:00	5	ON	ON	70625.5	8.0	178	266	0.0	0.0	72	0.0	56.4

Vapor Extraction System Maintenance Service Record

Date	Electric Meter Reading	Blower Amperage	Test Safety Interlock System	Replaced V-Belts	Changed Blower Oil	Greased Motor	Greased Blower	Inspect Fire Supression Device	Empty Water Holding Tank	Comments
10/4/19	nm	24.0	Yes	NO	NO	Yes	Yes	NO	NO	System running normally.
10/8/19	nm	23.8	Yes	NO	NO	NO	NO	NO	NO	↓
10/10/19	nm	nm	NO	NO	NO	Yes	Yes	Yes	NO	↓

Notes: nm = not measured

Vapor Extraction Individual Well Data Sheet

City: Bremerton, WA

Station No.: 3520

	Date	Vapor System			VE-1			VE-2			VE-3			VE-4			VE-3 / RW-2		
		Pre-Dilution (ppmV)	Vac (H^2O")	Status (on/off)	Conc. (ppmV)	Vac (~~H^2O"~~ Hg")	Status (on/off)	Conc. (ppmV)	Vac (H^2O")	Status (on/off)	Conc. (ppmV)	Vac (H^2O")	Status (on/off)	Conc. (ppmV)	Vac (H^2O")	Status (on/off)	Conc. (ppmV)	Vac (H^2O")	Status (on/off)
11:45	9/3/19	[~~ON~~	OFF/ON/		11.7	NM		12.9	NM		231	NM		17.9	NM				
12:45	9/3/19				21.3			18.2			340			30.3					
14:45	↓	L		OFF]	24.5			22.4			215			35.0					
14:30	9/16/19			OFF/ON	54.7			50.2			4400			34.8					
16:30	↓			ON/ON	576	↓		166	↓		8350	↓		340	↓				
10:30	9/26/19			ON/ON	13.3	↓	ON	OFF →			*			OFF →			203	nm	ON
12:20	9/30/19			ON/ON	nm	7.0	ON	OFF →			*			OFF →			nm	7.5	ON
9:00	10/4/19			ON/ON	nm	5.0	ON	OFF →			*			OFF →			nm	5.0	ON
12:30	10/3/19			ON/ON	nm	5.0	ON	OFF →			*			OFF →			nm	5.5	ON
16:00	10/10/19			ON/ON	64.0	5.0	ON	OFF →			*			OFF →			333	5.0	ON

	Date	Vapor System			RW-1			RW-2			RW-3								
		Pre-Dilution (ppmV)	Vac (H^2O")	Status (on/off)	Conc. (ppmV)	Vac (H^2O")	Status (on/off)	Conc. (ppmV)	Vac (H^2O")	Status (on/off)	Conc. (ppmV)	Vac (H^2O")	Status (on/off)	Conc. (ppmV)	Vac (H^2O")	Status (on/off)	Conc. (ppmV)	Vac (H^2O")	Status (on/off)
11:45	9/3/19	[			108	NM		160	NM		55.8	NM							
12:45	9/3/19	OFF/ON/OFF			125			123			54.8								
14:45	↓	]			62.8			92.8			28.8								
14:30	9/16/19			OFF/ON	296			142			73								
16:30	↓			ON/ON	669	↓		1062	↓		450	↓							
10:30	9/26/19			ON/ON	17.8	↓	ON	*			8.4	↓	ON						
12:20	9/30/19			ON/ON	nm	7.0	ON	*			nm	7.5	ON						
9:00	10/4/19			ON/ON	nm	5.0	ON	*			nm	5.0	ON						
12:30	10/3/19			ON/ON	nm	5.0	ON	*			nm	5.0	ON						
16:00	10/10/19			ON/ON	64.7	5.0	ON	*			45.3	5.0	ON						

* VE-3/RW-2 Share common line, concentration is for both wells.

Vapor Extraction System Data Sheet

Station No: 3250 Project Number: 029RC1-123155

Max Flow Rate: _____ Address: 4200 Wheaton Way, Bremerton, Washington Max. VOC Out: _____ Min Op. Temp: _____

Date	Time	# of Wells (Zones) On-line	Arrival Status (on/off)	Departure Status (on/off)	System Hour Meter	System Influent Vacuum (in. Hg)	System Influent Temp (deg. F)	System Flow Rate (SCFM)	Total System Influent VOC Concentration (ppmV)	Mid-Point VOC Concentration (ppmV)	Effluent VOC Concentration (ppmV)	Post-blower flow temperature (deg. F)	Water Holding Tank Fluid Level (%)	Comments
10/18/19	10:05	4	on	on	70811.0	12	56.0	170	297	6.0	0.0	75	5	
10/21/19	13:30	4	off	on	70830.5	12	57.5	155	289	0.0	0.0	70	30	
10/24/19	13:45	4	off	on	70840.9	nm	nm	nm	nm	nm	nm	nm	30	
10/25/19	13:00	4	on	on	70863.6	12	54.1	162	375	2.0	0.0	70	35	
10/28/19	12:40	4	on	on	70935.0	12	50.1	170	380	5.5	0.5	80	35	
10/30/19	9:30	4	on	on	70979.5	8	48.1	90	453	2.8	0.6	70	40	
11/6/19	9:00	4	off	on	71017.8	8	51.7	113	163	0.3	0.0	72	40	
11/15/19	11:00	4	on	on	71234.0	10	69.0+	106+	350	14.0	0.5	70	50	
11/21/19	11:30	~~4~~ NM	on	~~off~~ NM on	71378.0	10	79.0+	129+	370	40.0	1.0	90	60	
11/~~29~~ 27/19 NM	12:30	4	on	off	71521.1	11	72.1+	123+	268	42.7	1.4	62	85	

Vapor Extraction System Maintenance Service Record

Date	Electric Meter Reading	Blower Amperage	Test Safety Interlock System	Replaced V-Belts	Changed Blower Oil	Greased Motor		Greased Blower	Inspect Fire Supression Device	Empty Water Holding Tank	Comments
10/18/19	nm	29	Yes	NO	NO	Yes		Yes	Yes	NO	
10/21/19	nm	28	Yes	NO	NO	NO		NO	NO	NO	
10/24/19	nm	nm	NO	NO	NO	NO		NO	NO	NO	
10/25/19	nm	30	NO	NO	NO	Yes		Yes	NO	NO	
10/28/19	nm	28	NO	NO	NO	NO		NO	NO	NO	
10/30/19	nm	22	NO	NO	NO	Yes		Yes	Yes	NO	
11/6/19	nm	22	Yes	No	NO	Yes		Yes	Yes	NO	
11/15/19	nm	24.5	Yes	NO	NO	Yes		Yes	NO	NO	
11/21/19	nm	24.0	Yes	NO	NO	Yes		Yes	NO	NO	
11/27/19	nm	nm	Yes	NO	NO	NO		NO	Yes	NO	

Notes: 11/6/19. System off upon arrival. Troubleshooted to blown 7A, 240V fuse on 120V transformer. Replaced fuse and restarted system. Running normally upon departure.

11/15/19 "+" means began measuring system flow on the exhaust stack, rather than at the influent pipe. Also measuring "flow temp" inside of exhaust stack.

11/27/19 Departed w/ system off due to high concs. in mid-point and holding tank approaching full.

2019

Vapor Extraction Individual Well Data Sheet

City: Bremerton, WA

Station No.: 3520

(common line)

Date	Vapor System			VE-1			VE-2			VE-3/RW-2			VE-4			RW-1		
	Pre-Dilution (ppmV)	Vac (H^2O")	Status (on/off)	Conc. (ppmV)	Vac (H^2O")	Status (on/off)	Conc. (ppmV)	Vac (H^2O")	Status (on/off)	Conc. (ppmV)	Vac (Hg)	Status (on/off)	Conc. (ppmV)	Vac (H^2O")	Status (on/off)	Conc. (ppmV)	Vac (Hg)	Status (on/off)
10/18/19			ON/ON	—	—	OFF	—	—	OFF	331	8.5	ON	—	—	OFF	26.6	8.6	ON
10/21/19			off/on	—	—	off	—	—	off	nm	nm	ON	—	—	off	nm	nm	on
10/24/19			off/on	—	—	off	—	—	off	nm	nm	ON	—	—	off	nm	nm	on
10/25			on/on	—	—	off	—	—	off	nm	nm	ON	—	—	off	nm	nm	on
10/28			on/on	—	—	off	—	—	off	300	8.5	ON	—	—	off	32.5	9	ON
10/30			on/on	—	—	off	—	—	off	nm	nm	on	—	—	off	nm	nm	ON
11/6			off/on	—	—	off	—	—	off	nm	8.0	on	—	—	off	nm	8.5	ON
11/15			on/on	—	—	off	—	—	off	nm	9.5	on	—	—	off	nm	9.0	ON
11/21			on/on	—	—	off	—	—	off	nm	8.5	on	—	—	off	nm	8.5	ON
11/27			on/off	—	—	off	—	—	off	1924	9.0	on	—	—	off	79.5	8.5	ON

Date	Vapor System			RW-3														
	Pre-Dilution (ppmV)	Vac (H^2O")	Status (on/off)	Conc. (ppmV)	Vac (Hg)	Status (on/off)	Conc. (ppmV)	Vac (H^2O")	Status (on/off)	Conc. (ppmV)	Vac (H^2O")	Status (on/off)	Conc. (ppmV)	Vac (H^2O")	Status (on/off)	Conc. (ppmV)	Vac (H^2O")	Status (on/off)
10/18/19			ON/ON	145	9.0	ON												
10/21/19			off/ON	nm	nm	ON												
10/24/19			off/on	nm	nm	on												
10/25			on/on	~~1085~~	~~nm~~	on												
10/28			on/on	1085	9.0	on												
10/30			on/on	nm	nm	on												
11/6			off/on	nm	8.0	on												
11/15			on/on	nm	9.0	on												
11/21			on/on	nm	8.5	on												
11/27			on/off	3450	8.5	on												

Vapor Extraction System Data Sheet

Station No: 3250 Project Number: 029RC1-123155

Max Flow Rate: _____ Address: 4200 Wheaton Way, Bremerton, Washington Max. VOC Out: _____ Min Op. Temp: _____

Date	Time	# of Wells (Zones) On-line	Arrival Status (on/off)	Departure Status (on/off)	System Hour Meter	System Influent Vacuum (in. Hg)	System Flow Rate (CFM)	Total System Influent VOC Concentration (ppmV)	Mid-Point VOC Concentration (ppmV)	Effluent VOC Concentration (ppmV)	Post-blower flow temperature (deg. F)	Water Holding Tank Fluid Level (%)	Comments
12/9/19	15:00	4	OFF	ON	71522.8	10	143	315	5.0	0.2	68	50	flow temp = 45.6°F
12/12/19	9:40	4	ON	ON	71589.2	11	126	290	54.7	1.5	68	50	" " = 69.5°F
12/19/19	11:30	3+	ON	ON	71757.7	10	112	305	55.0	7.9	65	10	" " = 61.5°F
12/24/19	10:00	3+	ON	ON	71875.3	8.5	82.5	452	70.1	4.5	50	15	" " = 45.5°F
12/24/19	10:30	3+	ON	ON	71875.8	10	80.1	603	60.1	4.5	nm	15	nm
12/30/19	13:00	3+	ON	ON	72022.4	10	93	352	196	4.0	70	15	" " 56.4

Vapor Extraction System Maintenance Service Record

Date	Electric Meter Reading	Blower Amperage	Test Safety Interlock System	Replaced V-Belts	Changed Blower Oil	Greased Motor	Greased Blower	Inspect Fire Supression Device	Empty Water Holding Tank	Comments
12/9/19	nm	26.9	Yes	NO	NO	Yes	Yes	Yes	Yes	Pumped approx 50 gallons into available drums in compound.
12/12/19	nm	26.6	Yes	NO	NO	NO	NO	NO	NO	
12/19/19	nm	25.8	Yes	NO	NO	Yes	Yes	NO	Yes	Pumped 110 gallons into 2 new drums
12/24/19	nm	20.1	NO	NO	NO	NO	NO	Yes	NO	Partially closed well RW-1
12/24/19	nm	22.4	NO	NO	NO	NO	NO	NO	NO	
12/30/19	nm	24.2	Yes	NO	NO	NO	Yes	NO	NO	closed well RW-1 following o&m.

Notes: + Wells RW-1, RW-2, RW-3.

Vapor Extraction Individual Well Data Sheet

City: Bremerton, WA

Station No.: 3520

Date	Vapor System			VE-1			VE-2			VE-3 / RW-2			VE-4			RW-1		
	Pre-Dilution (ppmV)	Vac ("H2O)	Status (on/off)	Conc. (ppmV)	Vac ("H2O)	Status (on/off)	Conc. (ppmV)	Vac ("H2O)	Status (on/off)	Conc. (ppmV)	Vac ("Hg)	Status (on/off)	Conc. (ppmV)	Vac ("H2O)	Status (on/off)	Conc. (ppmV)	Vac ("Hg)	Status (on/off)
12/9/19			OFF/ON	—	—	off	—	—	off	nm	8	ON	—	—	off	nm	9.0	ON
12/12/19			ON/ON	—	—	off	—	—	off	nm	8	ON	—	—	off	nm	9.0	ON
12/19			ON/ON	—	—	off	—	—	off	off / See RW-2			—	—	off	57.1	5.5	ON
10:00 12/24			ON/ON	—	—	off	—	—	off	—	—	—	—	—	off	635	9.0	ON
10:30 12/24			ON/ON	—	—	off	—	—	off	—	—	—	—	—	off	nm	nm	ON
12/30			ON/ON	—	—	off	—	—	off	—	—	—	—	—	off	675	nm	ON

Date	Vapor System			RW-3			RW-2 only											
	Pre-Dilution (ppmV)	Vac ("H2O)	Status (on/off)	Conc. (ppmV)	Vac ("Hg)	Status (on/off)	Conc. (ppmV)	Vac ("H2O)	Status (on/off)	Conc. (ppmV)	Vac ("H2O)	Status (on/off)	Conc. (ppmV)	Vac ("H2O)	Status (on/off)	Conc. (ppmV)	Vac ("H2O)	Status (on/off)
12/9/19			OFF/ON	nm	9	ON	—	—	—									
12/12			ON/ON	nm	9	ON	—	—	—									
12/19			ON/ON	5500	9	ON	9999	8.5	ON									
10:00 12/24			ON/ON	9999Δ	9	ON	9999Δ	9.0	ON									
10:30 12/24			ON/ON	nm	nm	ON	nm	nm	ON									
12/30			ON/ON	4940	nm	ON	9999Δ	nm	ON									

Δ = PID Over range

APPENDIX C

Historical O&M Data Tables and Graphs

TABLE 1
Summary of Soil Vapor Extraction System Operational Data
Site 01-352
Bremerton, Washington
1 of 1

Date	Hour Meter Reading	Operational Hours	# of Wells Online	Influent Vacuum (in H_2O)	System Combustion Temp/ GAC Inlet (°F)	Temp below cat. Bed (°F)	Temp above cat. Bed (°F)	Flow (acfm)	Influent PID Reading (ppmV)	Effluent PID Reading (ppmV)	Hydrocarbon Mass Removed (lbs)	Hydrocarbon Removal Rate (lbs/day)	Remarks
2/28/2012	603,986		4	18	625	665	896	82	600	-	-	-	
3/14/2012	604,346	360	4	60	620	620	740	197	800	5	676	45.1	
3/30/2012	604,730	744	4	68	625	630	700	188	450	4	1,290	38.4	
4/10/2012	604,994	1,008	4	58	640	692	690	190	492	-	1,612	29.2	
5/15/2012	605,834	1,848	4	45	650	650	699	170	1,199	-	3,256	47.0	
5/30/2012	606,194	2,208	4	48	650	650	677	176	1,009	-	4,208	63.5	
6/19/2012	630,872	2,688	3	45	600	600	602	160	660	3	5,081	43.6	
6/30/2012	633,512	2,952	2	59	650	650	687	176	700	5	5,511	39.1	Wells #3 and #4 closed due to decreasing concentrations
7/17/2012	636,688	3,360	3	55	650	680	700	140	948	8.4	6,152	37.7	System found down due to power outage, storms in area
7/31/2012	636,688	3,696	2	59	650	650	687	176	400	9	6,694	38.8	
8/15/2012	637,404	4,056	3	65	650	650	699	90	1,200	-	7,047	23.5	
8/20/2012	638,122	4,176	3	48	650	650	677	176	1,678	-	7,461	82.8	System shutting down due to cat cell likely plugged
9/12/2012	638,472	4,728	3	off	-	-	-	0	0	-	7,461	0.0	
9/19/2012	638,472	4,896	3	61	645	650	757	148	2,178	-	8,114	93.2	
10/17/2012	643,472	5,568	3	off	-	-	-	0	0	-	8,114	0.0	
10/18/2012	638,472	5,592	3	65	650	650	728	128	2,778	-	8,217	103.6	
11/19/2012	644,874	6,360	4	off	-	-	-	0	0	-	8,217	0.0	System down due to blown control fuses
11/26/2012	644,898	6,528	3	68	650	650	700	108	938	20	8,676	65.6	
12/13/2012	647,404	6,936	4	off	645	640	680	0	0	8	8,676	0.0	System off due water in knock out & low pressure alarm
12/21/2012	649,328	7,128	4	68	650	650	700	108	938	12	8,941	33.1	
1/10/2013	64,708	7,608	4	50	650	658	690	150	680	12	9,734	39.7	
1/28/2013	64,940	8,040	4	off	-	-	-	0	0	-	9,734	0.0	System off due water in knock out /thermal couple repair
2/12/2013	64,940	8,400	3	50	650	728	700	150	480	13	10,160	28.4	
2/26/2013	65,298	8,736	3	52	904	781	781	119	540	8	10,438	19.8	System overtemp
3/19/2013	65,604	9,042	4	52	90	-	-	140	150	0	10,639	9.6	System converted to carbon abatement
3/28/2013	65,749	9,187	4	52	90	-	-	141	120	8	10,677	4.2	
4/10/2013	66,037	9,475	3	52	90	-	-	131	110	0	10,736	4.5	
4/23/2013	66,200	9,638	3	52	90	-	-	126	115	0	10,767	2.4	
5/13/2013	66,254	9,693	3	48	72	-	-	130	112	2	10,778	0.5	System off upon arrival due to blown fuse
5/20/2013	66,257	9,695	2	65	90	-	-	131	100	-	10,779	0.1	System off upon arrival. Cause unknown
6/5/2013	66,615	10,054	2	60	64	-	-	125.5	122	2	10,847	4.3	System off upon arrival due to power interruption
6/19/2013	66,950	10,389	2	63	88	-	-	114.5	107	1.0	10,907	4.3	
7/12/2013	67,114	10,552	2	off	-	-	-	0	0	-	10,907	0.0	System off for broken vapor lines in planter
7/29/2013	67,114	10,552	2	63	81	-	-	115.5	109	-	10,907	0.0	Lines repaired system re-started
8/12/2013	67,450	10,889	3	60	94	-	-	158.3	92	10	10,979	5.2	
8/27/2013	67,809	11,248	3	55	98	-	-	168.3	1,222	40	11,520	36.0	
9/4/2013	67,642	11,440	3	60	94	-	-	155.9	110	8	11,791	33.9	
9/30/2013	68,021	11,819	3	50	58	-	-	161.3	822	25	12,179	14.9	
10/8/2013	68,212	12,010	3	55	82	-	-	151.2	122	8	12,365	23.2	
10/28/2013	68,635	12,433	4	48	58	-	-	152.7	222	0	12,516	7.6	
11/11/2013	68,712	12,510	3	65	62	-	-	141.7	100	5	12,540	1.7	System off upon arrival due to power interruption, re-started
11/26/2013	68,798	12,596	3	70	58	-	-	146.7	0	-	12,548	0.6	Power interruption/ extreme winds, re-started
12/11/2013	69,039	12,837	4	off	-	-	-	0	0	-	12,548	0.0	System off due to extremely cold weather, left offline
12/23/2013	69,039	12,837	4	50	58	-	-	146.7	0	-	12,548	0.0	System re-started
1/6/2014	69,343	13,141	4	50	48	-	-	146.7	30	3	12,557	0.7	
1/23/2014	69,535	13,333	4	50	58	-	-	146.7	123	8	12,587	1.7	System off at arrival due to high winds and severe rain, re-started
2/11/2014	69,641	13,439	4	50	34	-	-	140.0	-	-	-	-	
2/28/2014	69,657	13,455	4	50	48	-	-	140.0	148	18	12,618	0.9	
3/13/2014	70,087	13,885	4	50	78	-	-	140.0	-	-	12,740	9.3	System shut down by request

Notes and abbreviations:

Hydrocarbon removal rate and cumulative hydrocarbon removal were calculated using the following formula:

$$lbs = \frac{ppmv\ (60\ min/hr)\ (24\ hr/day)\ (acfm)\ (86\ lb/lb\text{-}mole)}{(1{,}000{,}000)\ (379\ ft^3/lb\text{-}mole)}$$

Where: ppmv = average hydrocarbon concentration in parts per million by volume
ft3/min = velocity or flow rate in standard cubic feet per minute
acfm = vapor flow rate in actual cubic feet per minute
86 lb/lb-mole = average molecular weight of gasoline
379 ft^3/lb-mole = standard volume that 1 mole of gas occupies

- : not measured
lbs: pounds
lbs/day: pounds per day
PID: photo-ionization detector calibrated to hexane
ppmV: parts per million by volume
acfm: actual cubic feet per minute
in H_2O: inches of water
Temp: temperature
°F: degrees Farenheit

TABLE 2
SVE Well Data
Site 01-352
Bremerton, Washington
1 of 1

	#1	Vac	Status	Flow	**#2**	Vac	Status	Flow	**#3**	Vac	Status	Flow	**#4**	Vac	Status	Flow
Date	(ppmv)	(H_2O")	(%)	(acfm)	(ppmv)	(H_2O")	(%)	(acfm)	(ppmv)	(H_2O")	(%)	(acfm)	(ppmv)	(H_2O")	(%)	(acfm)
02/28/12	230	12	100%	-	400	10	100%	-	130	11	100%	-	278	10	100%	-
03/14/12	1,220	29	100%	60	280	30	100%	60	380	25	100%	60	227	27	100%	60
03/30/12	1,007	28	100%	55	125	29	100%	45	270	30	100%	60	200	30	100%	58
04/10/12	1,262	31	100%	-	298	30	100%	-	272	22	100%	-	325	31	100%	-
05/15/12	296	32.5	100%	45	767	26	100%	40	638	26	100%	40	1,125	28.6	100%	45
05/30/12	250	36	100%	45	600	26	100%	45	555	26	100%	45	980	30	100%	44
06/19/12	692	34	100%	45	780	35	100%	40	400	34	50%	40	-	-	0%	-
06/30/12	680	54	100%	45	230	30	50%	45	-	-	0%	-	-	-	0%	-
07/17/12	220	42	100%	40	200	38	100%	40	85	34	50%	40	-	-	0%	-
07/31/12	280	54	100%	67	230	55	100%	59	-	-	0%	-	-	-	0%	-
08/15/12	306	52.5	100%	40	445	50	100%	40	500	50	100%	40	-	-	0%	-
08/20/12	2,065	36	100%	45	802	34	100%	45	462	35	100%	45	-	-	0%	-
09/19/12	1,890	40	100%	4	672	36	100%	45	225	35	100%	45	-	-	0%	-
10/18/12	790	35	100%	4	790	45	100%	45	185	35	100%	45	-	-	0%	-
11/26/12	468	38	100%	45	602	38	100%	45	195	35	100%	45	-	-	0%	-
12/13/12	210	30	100%	45	270	28	100%	45	200	30	100%	45	88	32	100%	45
12/21/12	648	38	100%	45	602	38	100%	45	195	35	100%	45	108	34	100%	45
01/10/13	350	35	100%	30	120	32	100%	28	248	35	100%	30	14	32	100%	28
02/12/13	250	35	100%	30	128	32	100%	28	300	35	100%	30	off	-	0%	-
02/28/13	134	40	100%	23	88	38	100%	25	555	38	100%	28	off	-	0%	-
03/19/13	135	38	100%	-	89	32	100%	-	100	33	100%	-	off	-	0%	-
03/28/13	225	35	100%	-	102	30	100%	-	150	32	100%	-	off	-	0%	-
04/10/13	75	38	100%	-	99	32	100%	-	85	33	100%	-	off	-	0%	-
04/23/13	65	35	100%	-	82	30	100%	-	100	32	100%	-	off	-	0%	-
05/13/13	45	32	100%	-	78	30	100%	-	110	30	100%	-	-	-	0%	-
05/20/13	-	-	0%	-	188	45	100%	-	-	-	0%	-	80	44	100%	-
06/05/13	-	-	0%	-	80	55	100%	-	-	-	0%	-	60	54	100%	-
06/19/13	-	-	0%	-	102	45	100%	-	-	3	0%	-	70	44	100%	-
07/12/13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
07/29/13	-	-	0%	-	112	48	100%	-	-	-	0%	-	90	45	100%	-
08/12/13	50	0	100%	-	30	55	100%	-	-	-	0%	-	10	54	100%	-
08/29/13	60	0	100%	-	90	55	100%	-	-	-	0%	-	80	54	100%	-
09/04/13	60	30	100%	-	45	55	100%	-	-	-	0%	-	18	54	100%	-
09/30/13	40	30	100%	-	120	45	100%	-	-	-	0%	-	60	40	100%	-
10/08/13	90	30	100%	-	45	28	100%	-	-	-	0%	-	118	40	100%	-
10/28/13	30	30	100%	-	120	45	100%	-	20	0	100%	-	40	40	100%	-
11/11/13	110	40	100%	-	55	38	100%	-	10	45	100%	-	108	40	100%	-
11/26/13	130	30	100%	-	120	45	100%	-	10	45	100%	-	60	40	100%	-
12/11/13	0	0	100%	-	0	0	100%	-	-	-	0%	-	0	0	100%	-
12/23/13	130	30	100%	-	120	45	100%	-	10	45	100%	-	60	40	100%	-
01/06/14	100	30	100%	-	70	40	100%	-	10	45	100%	-	30	40	100%	-
01/23/14	70	35	100%	-	50	40	100%	-	10	40	100%	-	50	40	100%	-
02/11/14	-	35	100%	-	-	40	100%	-	-	45	100%	-	-	40	100%	-
02/28/14	80	35	100%	-	20	40	100%	-	10	40	100%	-	50	40	100%	-
03/13/14	-	35	100%	-	-	40	100%	-	-	40	100%	-	-	40	100%	-

Notes:

System start up on 02/28/2012
H_2O" = inches of water
ppmv = parts per million by volume, based on field photo-ionization detector readings
acfm = actual cubic feet per minute
1% LEL = 138 ppmv (approximately)
"-" = not measured
%: percent
Status: well status, percent open
Vac: vacuum

TABLE 3
SVE Influent and Effluent Analytical Data
Site 01-352
Bremerton, Washington
1 of 1

SYSTEM VAPOR EXTRACTION	EPA METHOD 8260				
INLET	**TPH-Gx**	**Benzene**	**Toluene**	**Ethylbenzene**	**Xylenes**
Date	µg/m^3	µg/m^3	µg/m^3	µg/m^3	µg/m^3
02/15/12	3,300,000	29,000	22,000	13,000	40,000
03/14/12	1,400,000	13,000	29,000	9,000	31,000
04/10/12	90,000	410	860	410	1,500
05/15/12	74,000	360	890	220	1,100
06/19/12	44,000	280	1,100	170	1,100
07/17/12	170,000	160	890	320	2,600
08/20/12	1,400,000	870	2,700	340	2,600
09/19/12	550,000	1,800	3,600	440	2,900
10/18/12	290,000	600	2,100	400	1,700
11/26/12	110,000	1,600	2,000	1,000	3,200
12/13/12	190,000	920	2,800	250	1,500
02/26/13	730	1.6	10	2.2	10
04/24/13	170	<10	<10	<10	<10
05/13/13	41,000	290	390	49	290
06/19/13	15,300	43	290	56	420
07/29/13	110,000	270	830	51	520
08/27/13	77,000	27	190	39	400
09/30/13	196,000	670	3,600	790	3,700
10/30/13	6,300	16	75	15	95
11/26/13	2,800,000	980	3,400	570	3,000
12/23/13	9,630,000	420	1,400	380	2,000
01/23/14	670,000	140	560	150	950
02/13/14	1,100,000	310	130	290	1,600

	EPA METHOD 8260				
OUTLET	**TPH-Gx**	**Benzene**	**Toluene**	**Ethylbenzene**	**Xylenes**
Date	µg/m^3	µg/m^3	µg/m^3	µg/m^3	µg/m^3
02/15/12	38,000	<100	110	<100	260
03/14/12	32,000	<100	<100	<100	<100
04/10/12	4,200	8.9	19	8.3	38
05/15/12	6,900	13	54	22	180
06/19/12	7,500	<10	<10	<10	17
07/17/12	5,100	13	22	<10	35
08/20/12	19,000	21	38	<10	37
09/19/12	30,000	63	130	18	130
10/18/12	8,400	14	48	12	46
11/26/12	7,800	31	86	14	61
12/13/12	5,400	41	110	11	68
02/26/13	31	<0.1	0.37	<0.1	0.40
04/24/13	<10	<10	<10	<10	<10
05/13/13	2,400	<0.1	<0.1	<0.1	<0.1
06/19/13	2,100	0.4	1.5	0.3	2.8
07/29/13	5,300	0.6	2.4	<0.1	4.8
08/27/13	11,000	<0.1	3.5	<0.1	1.9
09/30/13	9,600	<0.1	40	<0.1	86
10/30/13	1,000	<0.1	1.6	0.16	2.0
11/26/13	140,000	<10	<10	<10	<10
12/23/13	1,200,000	<10	<10	<10	<10
01/23/14	550,000	<10	24	12	37
02/13/14	710,000	<10	22	<10	21

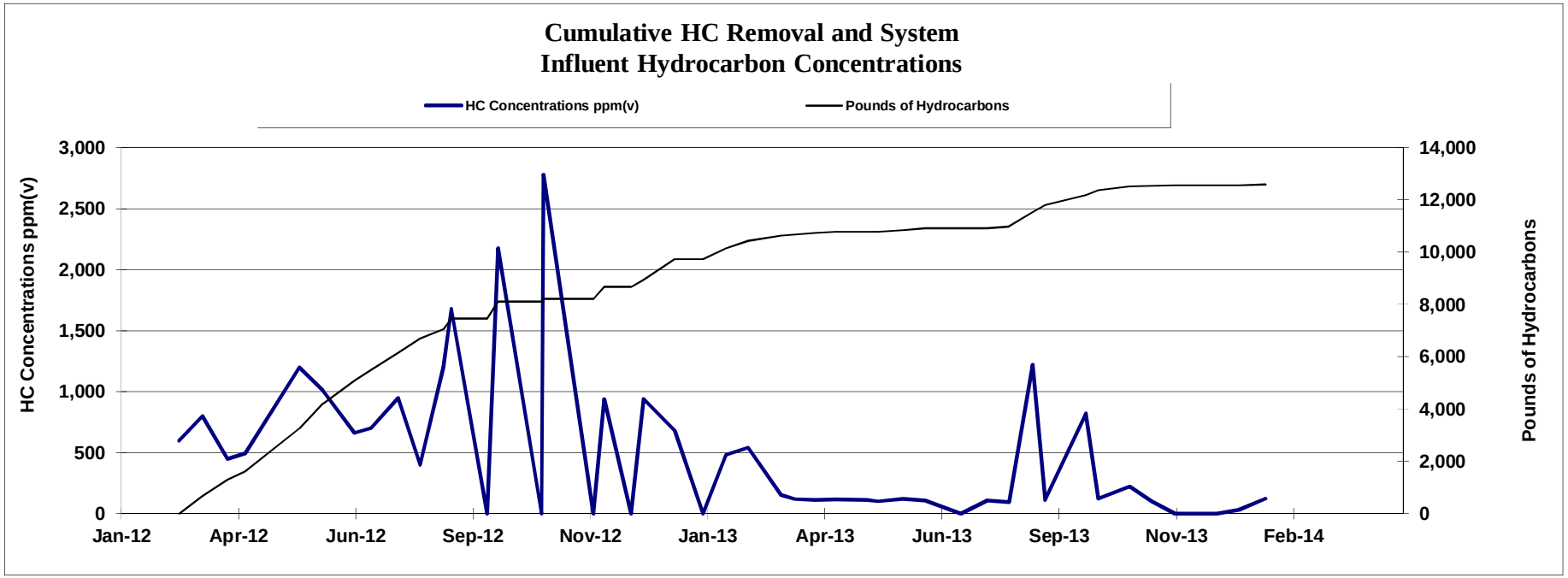
Notes:

<100 = not detected at listed detection limit

µg/m^3 = micrograms per cubic meter

TPH-Gx: total petroleum hydrocarbons quantified as gasoline

GRAPH 1
Vapor Extraction System - Mass Removal Trend
Site 01-352
Bremerton, Washington



GRAPH 2
Vapor Extraction System - Hydrocarbon Concentrations by Well
Site 01-352
Bremerton, Washington