January 21, 2020

TO: Cris Matthews (Ecology)
FROM: Karen Mixon (AECOM)

CC: Mike Droppo (Trans Mountain), Patrick Davis (Trans Mountain), Cary Brown (AECOM), Demetrio Cabanillas (AECOM), Dan Heimbigner (Whatcom Environmental)

RE: AECOM Progress Report – July 1 to December 31, 2019
PROJECT: Cleanup Action
Consent Decree No. 14-2-01294-9 (effective 6-5-2014)
Laurel Station
1009 E. Smith Road, Bellingham, Washington

TRANS MOUNTAIN PM: Mike Droppo
ECOLOGY CASE MGR: Cris Matthews
AECOM PM: Karen Mixon
AECOM PROJECT NO: 60606281

Introduction:
This progress report is presented in accordance with Consent Decree 14-2-01294-9 (effective 6-5-2014) and is intended to present the information as noted under Section XI PROGRESS REPORTS in the Consent Decree.

Work Accomplished During Reporting Period:

DPE System Operation
The DPE well locations are shown on attached **Figure 1 Site Plan and DPE Well Locations**.

From July 1, 2019 to December 31, 2019, the DPE system operated only in SVE mode as noted in the table below. Wells were turned on or off based on current site conditions to maximize contaminant recovery. Operational changes were made based on monitoring data which is collected weekly. System downtime was generally short duration related to quarterly groundwater sampling and routine maintenance except for July and December. Through December 2019, the system has operated 89 percent of the time over nearly 4-1/2 years since startup on July 17, 2015.

Month 2019	System Mode	Wells On-line
July	SVE	DPE-1, -2, -3, and -4 (July 1 - 8)
	Shutdown	July 9 - 16 – schedule/actions related to carbon changeout
	SVE	DPE-1, -2, -3, and -4 (July 16 - 22)
	SVE	DPE-1, -2, and -3 (July 23 - 31)
August	SVE	DPE-1, -2, and -3 (August 1 - 31)

AECOM
1111 Third Avenue, Ste 1600
Seattle, WA 98101
Tel: 206.438.2700
Fax: 866.495.5288

Month 2019	System Mode	Wells On-line
September	SVE	DPE-1, -2, and -3 (September 1 - 30 except as noted below)
	Shutdowns	September 5 – partial day for carbon changeout September 8 – one day due to power loss from thunderstorm September 27 – partial day for carbon changeout September 30 – quarterly groundwater sampling
October	SVE	DPE-1, -2, and -3 (October 1 - 31)
	Shutdowns	October 10 – partial day for carbon changeout October 31 – partial day for routine maintenance
November	SVE	DPE-1, -2, and -3 (November 1 – 30)
	Shutdown	November 21 – partial day, mechanical issue
December	SVE	DPE-1, -2, and -3 (December 1 – 16)
	Shutdown	December 16 - 18 – quarterly groundwater sampling and maintenance activities.
	SVE	DPE-1, -2, -3, and -4 (December 18 and 19)
	Shutdown	December 19 – troubleshooting and routine maintenance
	SVE	DPE-1, -2, -3, -4, -5, -6, -7, -8, -9, and -10 (December 19 - 24)
	Shutdown	December 24 - 31 – mechanical failure of SVE blower motor

Treated groundwater from the system was sampled weekly by Whatcom Environmental as required by the Administrative Order to the facility NPDES permit. A total of 162 gallons of water was collected, treated and released from the system from July 1 through December 31, 2019. Water was only discharged from the system in October (89 gallons) and December (73 gallons) this reporting period. There were no exceedances of indicator levels specified in the permit for treated groundwater samples collected during this period. As of December 31, 2019, approximately 170,282 gallons of water have been removed from the subsurface since the system was started in July 2015. A graph showing monthly groundwater volumes removed is included with this report. No measurable product has been observed or recovered by the system to date.

As of December 31, 2019, approximately 7,235 pounds (24.6 barrels) of constituents of concern (COCs) have been removed from the vapor phase since the system started operating in July 2015. Graphs showing the cumulative removal of COCs from vapor by the system through December 31, 2019 are attached to this report. Two separate mass removal calculations are completed for this project, each using a different set of data collected on a regular basis. The primary mass removal estimate (7,235 pounds) is based on calculations made using PID and flow measurements at the combined vapor monitoring point prior to the vapor GAC vessels (system cumulative). The second estimate calculates the mass removal based on individual well measurements which are summed together. The cumulative mass removal estimate based on summation of measurements for each well is 7,876 pounds which is approximately 9 percent higher than the estimate using data from one location prior to GAC treatment.

Vapor-phase monitoring of the extracted air using a PID field instrument was conducted by Whatcom Environmental weekly to monitor the vapor GAC treatment system. The carbon was changed out if the PID measurements at the mid-treatment location exceeded 50 ppm. During this reporting period, the vapor GAC was changed out on July 15, September 5, September 27, October 10, and December 19, 2019.

Groundwater Monitoring
The well locations are shown on **Figure 1 Site Plan and DPE Well Locations**. Wells MW-4, MW-6, MW-15, MW-16, and DPE-4 are intended to be sampled quarterly.

AECOM conducted quarterly groundwater sample collection on October 2, and December 18, 2019. Based on water levels in the wells, only well MW-6 was sampled on these dates; the other wells did not have enough water present to sample. Water level data for the monitoring well network is provided in **Table 1** attached to this progress report.

AECOM completed the data review for both groundwater sampling events. The summary data table (**Table 2**), data validation memos, and laboratory reports are attached to this progress report. Petroleum hydrocarbons (gasoline-, diesel-, and motor oil range), BTEX, and PAHs were not detected or were detected below site groundwater cleanup levels in the samples collected from MW-6 in October and December.

Additional Site Activity
A soil removal action was conducted at the site to remove petroleum contaminated soil in an area surrounding RI boring location SU1-B11 (northwest of the northwest corner of the Pump Station Building). As noted under Submittals/Agency Contacts, Tran Mountain provided a work plan which was approved by Ecology. The field work was started on August 26 and successfully completed in September 2019. A report was submitted to Ecology on October 22, 2019 which indicated all soil from the final excavation limits are below CULs in the subject area following the removal action.

Submittals/Agency Contacts:
- July 11, 2019 - AECOM submitted a progress report for the period January 1 – June 30, 2019.
- July 19, 2019 – AECOM submitted *Removal Action Plan – SU1-B11, Laurel Station Cleanup Action, 1009 East Smith Road, Bellingham, Washington* to Ecology. The work plan described a soil removal action in a small area identified as SU1-B11 in the Pump Station Area.
- July 25, 2019 – Ecology approved the SU1-B11 work plan via email.
- August 25, 2019 – AECOM sent email to Ecology confirming the SU1-B11 soil removal field schedule. In addition, the email notified Ecology of analytical method changes associated with the soil analytical program resulting in the use of EPA Method 8260C and 8270D for the removal action.
- October 22, 2019 – AECOM submitted a letter report summarizing the activities and results of the SU1-B11 soil removal action.
- November 21, 2019 – Ecology approved the SU1-B11 report via email.

Deviations to Approved Plans Not Previously Documented:
None

Deviation to Scope of Work and Schedule as Presented in the Cleanup Action Plan (Exhibit A of Consent Decree):
There were no changes from previous progress reports to the overall Scope of Work described in the Cleanup Action Plan (CAP).

Data Received During Reporting Period: Groundwater monitoring data collected on October 2, and December 18, 2019.

Plans for the Next Reporting Period:
The following are planned activities for the period from January 1 to June 30, 2019.

- Continue to operate and maintain the DPE system.
- Submit report summarizing additional groundwater data collection and evaluation based on the March 29, 2019 memorandum.
- Respond to Ecology comments on draft Environmental Covenant regarding SVI and perched groundwater.
- Submit the Completion Report to Ecology with name revised to As-Built Report once final approval is received.
- Collect 1st and 2nd quarter groundwater monitoring samples. Complete validation of the quarterly groundwater data and submit with Progress Report on July 10, 2020.

Please contact Karen Mixon at (206) 438-2234 if you have any questions or comments regarding this progress report.

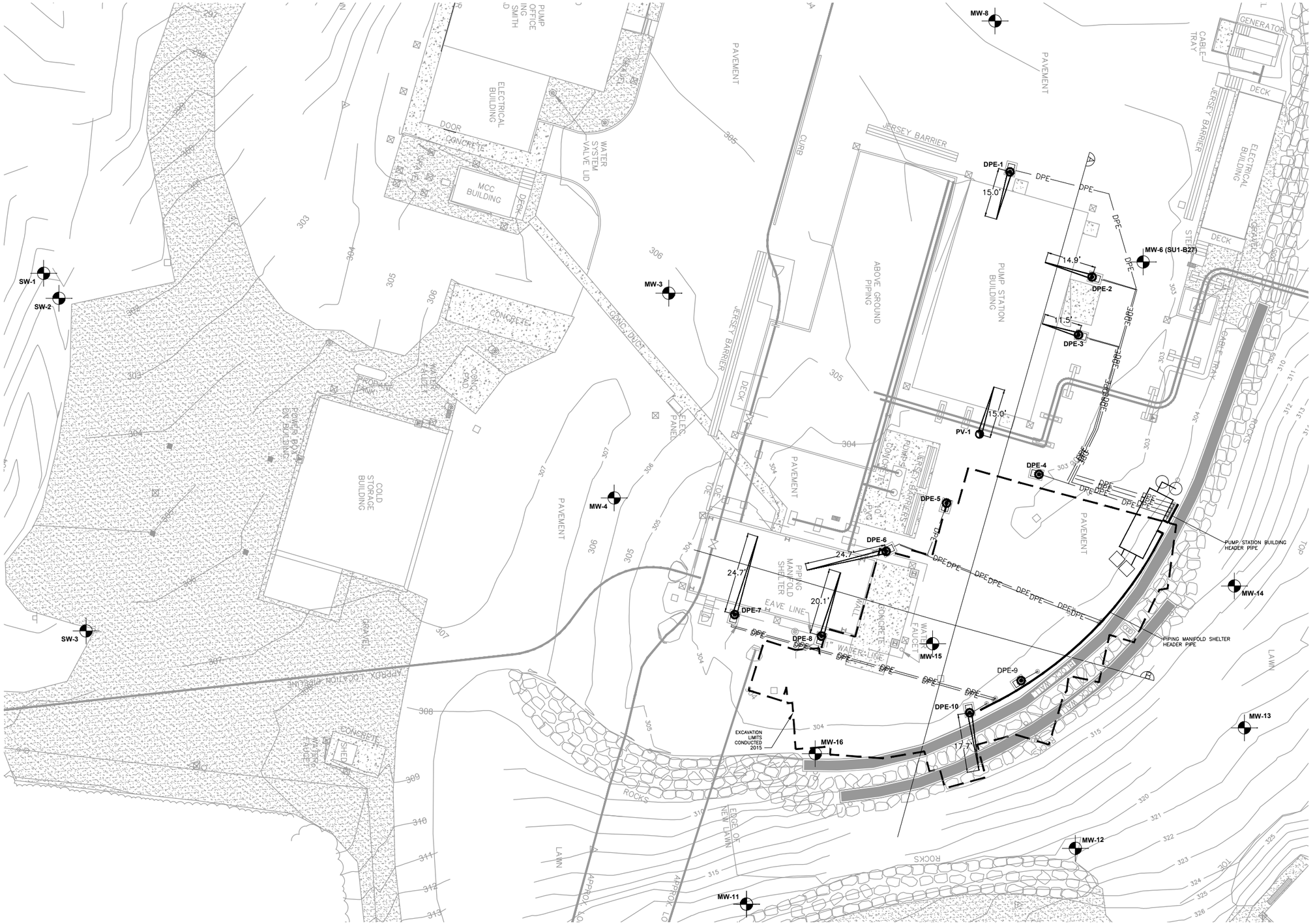
References:
AECOM, 2019. Letter Work Plan, Removal Action Plan – SU1-B11, Laurel Station Cleanup Action, 1009 East Smith Road, Bellingham, Washington. July 19.

AECOM, 2019. Letter Report, Removal Action – SU1-B11, Laurel Station Cleanup Action, 1009 East Smith Road, Bellingham, Washington to Ecology. October 22.

URS Corporation, 2015. Final Compliance Monitoring Plan, Laurel Station, 1009 East Smith Road, Bellingham, Washington, January 16.

URS Corporation, 2017. Completion Report, Laurel Station Cleanup Action, 1009 East Smith Road, Bellingham, Washington, December 22.

At**tachments:**
- Figure 1, Site Plan and DPE Well Locations
- DPE System Performance Graphs
- Table 1 – Monitoring Well Groundwater Elevation Data Summary
- Table 2 – Groundwater Monitoring Results
- Data Validation Report and ARI Lab Report (19J0054) – Quarterly Groundwater Samples – October 2019
- Data Validation Report and ARI Lab Report (19L0355) – Quarterly Groundwater Samples – December 2019



Legend

- Cross Section Location
- DPE Container
- Liquid-Phase Carbon Vessels
- Vapor-Phase Carbon Vessels
- Dual Phase Extraction Well Vault
- Excavation Limits (2014-2015)
- Installed at Angle Shown With Horizontal Extent
- Dual-Phase Extraction (DPE) Well
- Monitoring Well
- Passive Vent Well
- Segmented Concrete Block (Retaining Wall)
- DPE — Underground DPE Lateral Pipe

NT

0 15 30

SCALE IN FEET

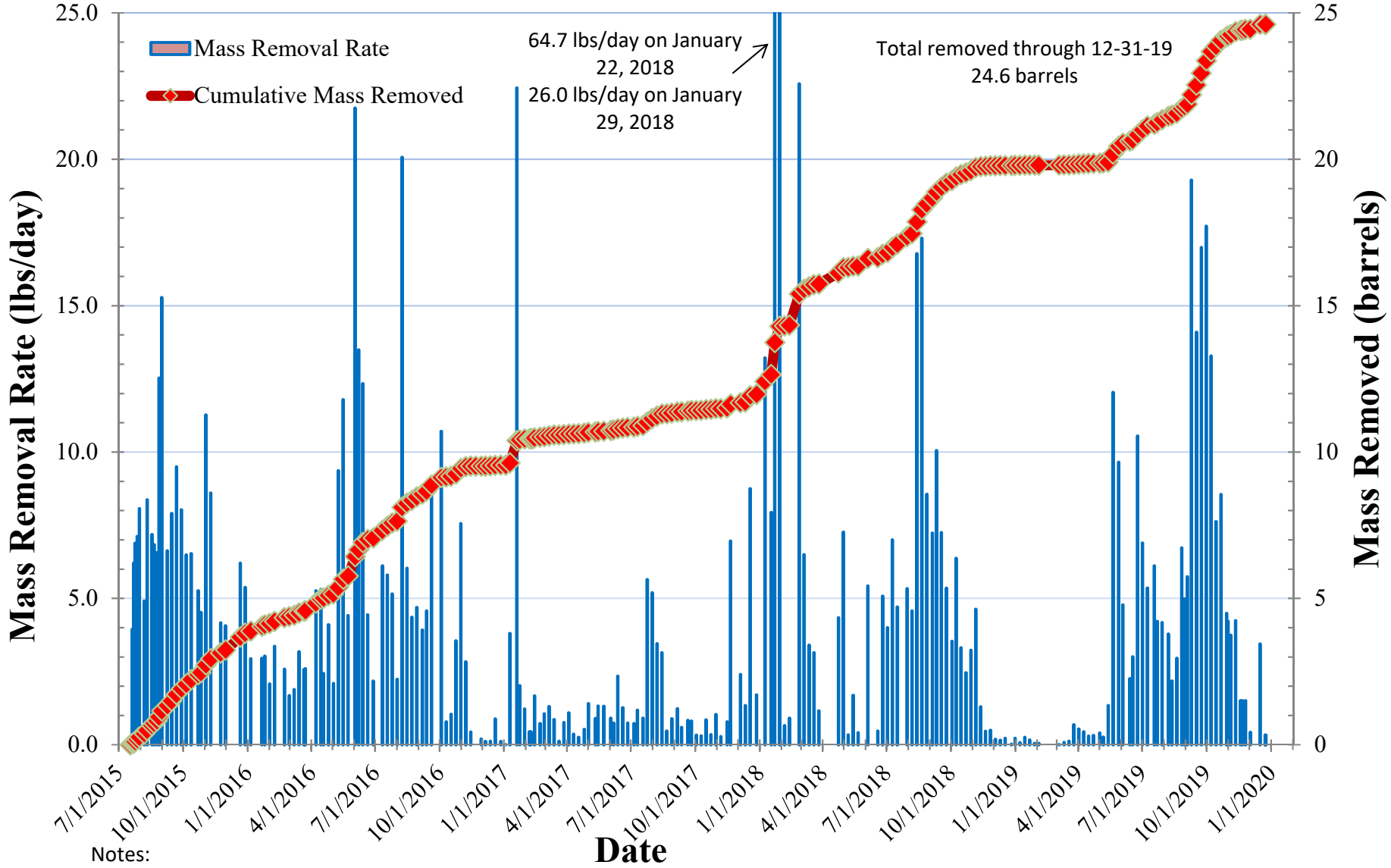
Figure 1
Site Plan and DPE Well Locations

Laurel Station
Bellingham, Washington

URS

COMBINED SYSTEM MASS REMOVAL DATA

Laurel Station DPE System

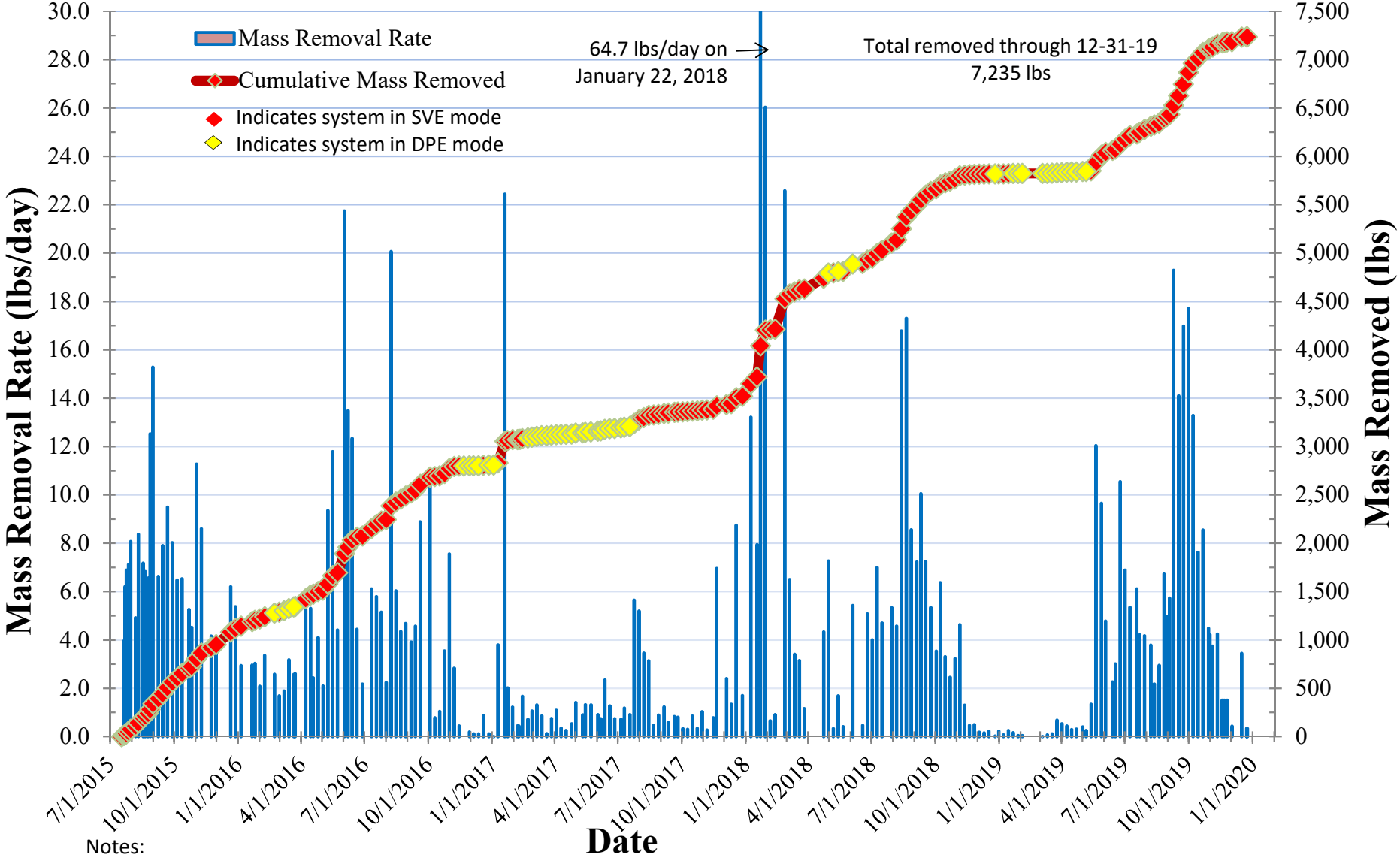


Notes:

1. Data shown from July 17, 2015 through December 31, 2019, after approximately 53 months of operation.
2. The Cumulative Mass Removed is based on data taken from the pre-treatment sampling port directly before carbon treatment.

COMBINED SYSTEM MASS REMOVAL DATA

Laurel Station DPE System

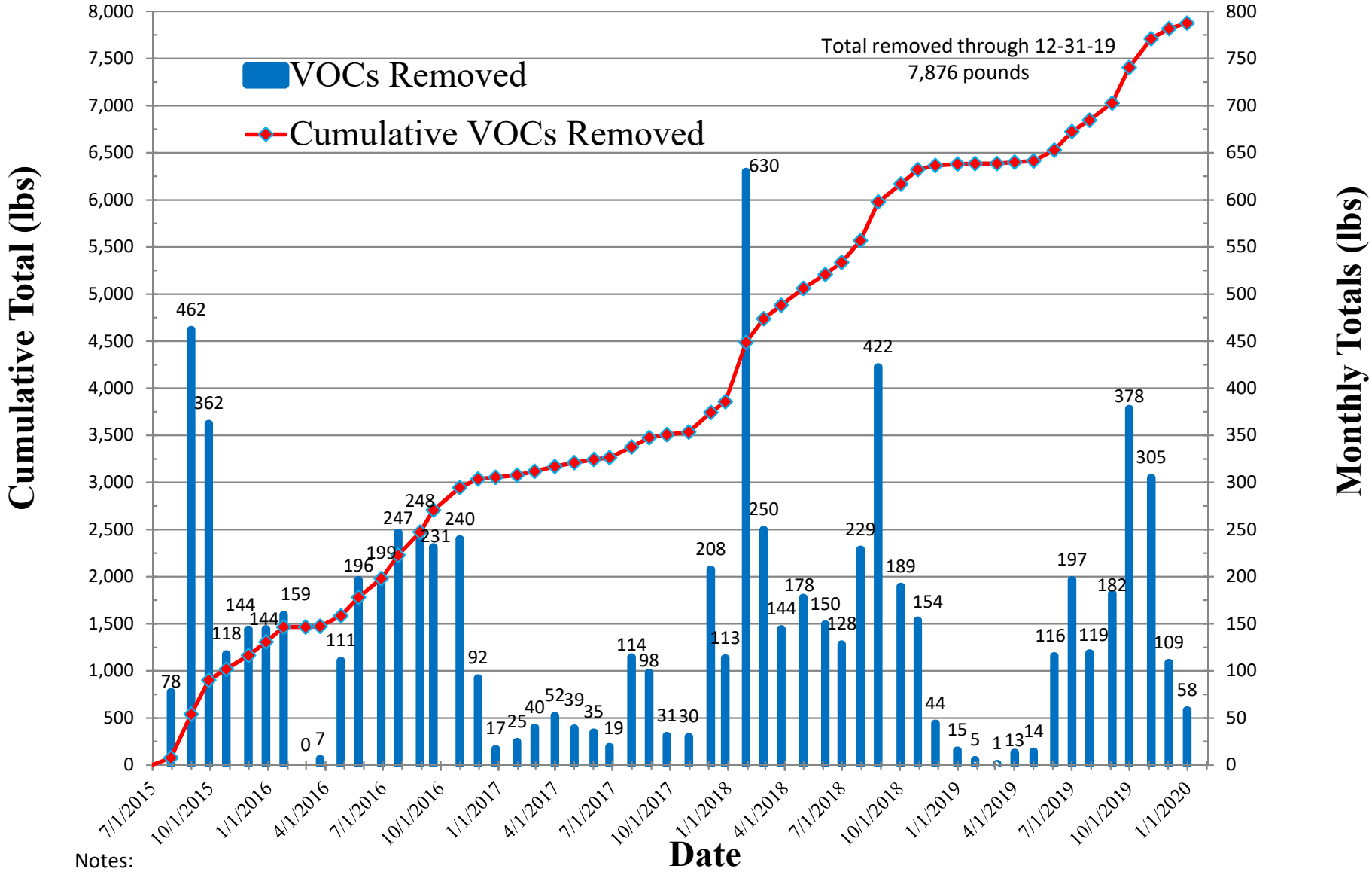


Notes:

1. Data shown from July 17, 2015 through December 31, 2019, after approximately 53 months of operation.
2. The Cumulative Mass Removed is based on data taken from the pre-treatment sampling port directly before carbon treatment.

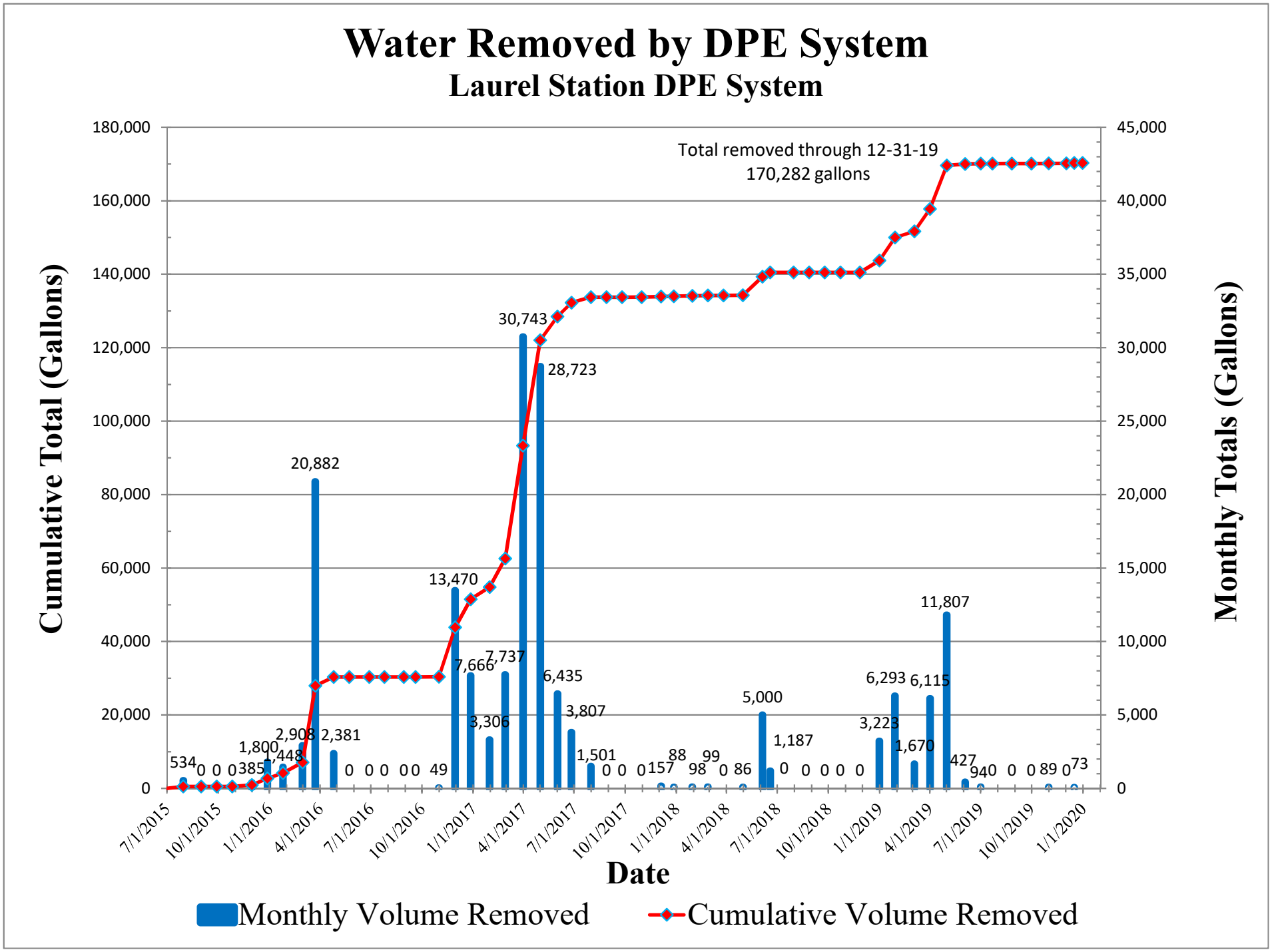
Mass Removed by DPE System

Laurel Station DPE System



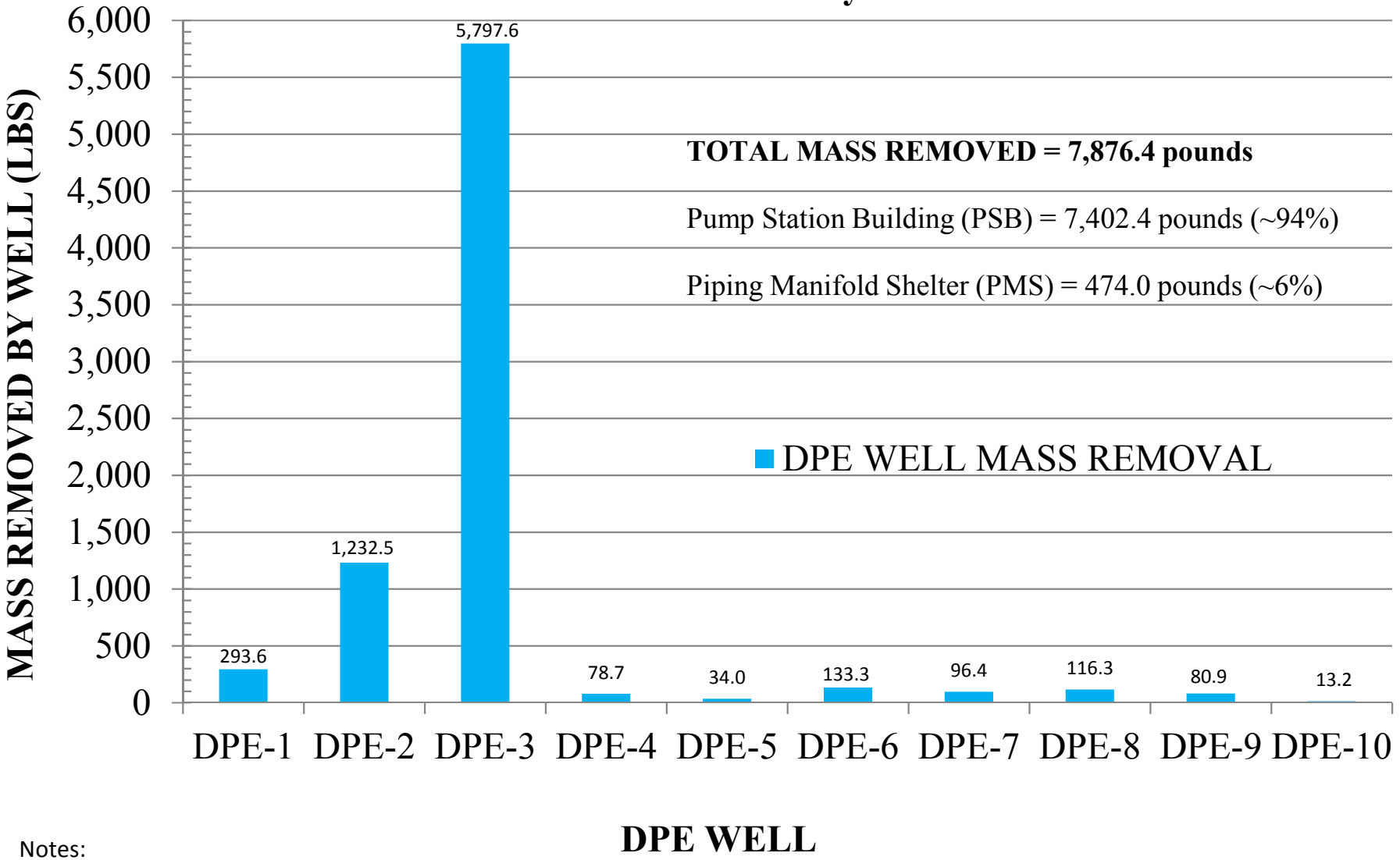
Notes:

1. Data shown from July 17, 2015 through December 31, 2019, after approximately 53 months of operation.
2. The Cumulative Mass Removed is based on data taken from individual wells and added together.


Water Removed by DPE System
Laurel Station DPE System
Total removed through 12-31-19
170,282 gallons
Cumulative Total (Gallons)
Monthly Totals (Gallons)
Date
Monthly Volume Removed
Cumulative Volume Removed
180,000
160,000
140,000
120,000
100,000
80,000
60,000
40,000
20,000
0
45,000
40,000
35,000
30,000
25,000
20,000
15,000
10,000
5,000
0
534 0 0 0 385 1,800 1,448 2,908 20,882 2,381 0 0 0 0 0 49 13,470 7,666 3,306 7,737 30,743 28,723 6,435 3,807 1,501 0 0 0 157 88 98 99 0 86 5,000 1,187 0 0 0 0 0 3,223 6,293 1,670 6,115 11,807 427 940 0 0 89 0 73
7/1/2015
10/1/2015
1/1/2016
4/1/2016
7/1/2016
10/1/2016
1/1/2017
4/1/2017
7/1/2017
10/1/2017
1/1/2018
4/1/2018
7/1/2018
10/1/2018
1/1/2019
4/1/2019
7/1/2019
10/1/2019
1/1/2020

MASS REMOVAL DISTRIBUTION - Cumulative

Laurel Station DPE System



Notes:

1. Estimated mass removal from July 17, 2015 through December 31, 2019
2. The TOTAL represents the sum of all 10 individual wells
3. Mass removed from the PSB and PMS were calculated based on the mass removed from individual wells
4. DPE-1 through 4 are PSB wells, DPE-5 through 10 are PMS wells.

Table 1
Monitoring Well Groundwater Elevation Data Summary
Laurel Station Cleanup Action
Bellingham, Washington

Well ID	Date Measured	Total Depth[a] (ft-TOC)	TOC Elevation[b] (ft-NAVD88)	Approximate Screen Interval (ft-bgs)	Approximate Screen Interval Elevation (ft-NAVD88)	Depth to Groundwater (ft-TOC)	Groundwater Elevation (ft-NAVD88)	Thickness of Water Column (ft)
SW-1	4/23/2015	18.50				4.30	296.34	14.20
	12/14/2015	18.35				4.10	296.54	14.25
	1/25/2016	18.68				5.09	295.55	13.59
	2/22/2016 *	17.39				14.20	286.44	3.19
	3/21/2016	18.57				5.08	295.56	13.49
	4/25/2016	18.59				DRY	NC	NC
	5/23/2016	18.62				DRY	NC	NC
	6/27/2016	18.40				4.72	295.92	13.68
	8/8/2016	18.37				4.85	295.79	13.52
	8/30/2016	18.40				3.60	297.04	14.80
	9/26/2016	18.37				4.85	295.79	13.52
	10/24/2016	18.40				4.54	296.10	13.86
	11/21/2016	18.36				4.65	295.99	13.71
	12/21/2016	18.40				4.43	296.21	13.97
	1/23/2017	18.40				2.80	297.84	15.60
	3/6/2017	18.25				3.48	297.16	14.77
	3/21/2017	18.52				4.17	296.47	14.35
	3/29/2017	18.45				2.82	297.82	15.63
	6/21/2017	18.39				4.95	295.69	13.44
	6/26/2017	18.56				5.65	294.99	12.91
	7/31/2017	18.41				7.18	293.46	11.23
	8/28/2017	18.38				7.69	292.95	10.69
	9/25/2017	18.27				5.70	294.94	12.57
	9/27/2017	18.20				5.97	294.67	12.23
	10/30/2017	18.31				5.00	295.64	13.31
	11/20/2017	18.37				3.09	297.55	15.28
	12/18/2017	18.44				2.99	297.65	15.45
	1/4/2018	18.47				5.00	295.64	13.47
	1/22/2018	18.27	300.64	5 - 20	295.64 - 280.64	4.09	296.55	14.18
	2/26/2018	18.43				4.65	295.99	13.78
	3/26/2018	18.37				4.52	296.12	13.85
	4/5/2018	18.40				3.35	297.29	15.05
	4/23/2018	18.47				5.09	295.55	13.38
	5/21/2018	18.43				5.58	295.06	12.85
	6/18/2018	18.35				6.38	294.26	11.97
	6/27/2018	18.39				6.72	293.92	11.67
	7/30/2018	18.42				7.51	293.13	10.91
	8/27/2018	18.47				8.07	292.57	10.40
	9/24/2018	18.40				4.69	295.95	13.71
	10/1/2018	18.38				4.91	295.73	13.47
	10/22/2018	18.42				5.99	294.65	12.43
	11/26/2018	18.43				4.26	296.38	14.17
	12/19/2018	18.34				4.22	296.42	14.12
	12/31/2018	18.71				4.82	295.82	13.89
	1/28/2019	18.43				4.82	295.82	13.61
	2/25/2019	18.34				4.75	295.89	13.59
	3/18/2019	18.34				4.81	295.83	13.53
	3/20/2019	18.26				4.77	295.87	13.49
	4/15/2019	18.40				4.63	296.01	13.77
	5/20/2019	18.41				5.13	295.51	13.28
	6/17/2019	18.38				5.67	294.97	12.71
	7/22/2019	18.25				6.04	294.60	12.21
	8/26/2019	18.25				Not Measured		
	9/23/2019	18.27				4.81	295.83	13.46
	10/2/2019	18.29				5.21	295.43	13.08
	11/21/2019	18.27				4.70	295.94	13.57
	12/16/2019	18.40				4.68	295.96	13.72
	12/18/2019	18.43				4.83	295.81	13.60

Table 1
Monitoring Well Groundwater Elevation Data Summary
Laurel Station Cleanup Action
Bellingham, Washington

Well ID	Date Measured	Total Depth[a] (ft-TOC)	TOC Elevation[b] (ft-NAVD88)	Approximate Screen Interval (ft-bgs)	Approximate Screen Interval Elevation (ft-NAVD88)	Depth to Groundwater (ft-TOC)	Groundwater Elevation (ft-NAVD88)	Thickness of Water Column (ft)
SW-2	4/23/2015	49.75	301.37	40 - 50	261.37 - 251.37	37.59	263.78	12.16
	2/22/2016	50.26				DRY	NC	NC
	3/21/2016	50.03				36.86	264.51	13.17
	4/25/2016	50.25				DRY	NC	NC
	5/23/2016	50.15				DRY	NC	NC
	6/27/2016	49.75				37.61	263.76	12.14
	8/8/2016	50.20				37.64	263.73	12.56
	8/30/2016 *	56.60				38.02	263.35	18.58
	9/26/2016	50.47				37.87	263.50	12.60
	10/24/2016 *	55.00				38.29	263.08	16.71
	11/21/2016	51.30				37.44	263.93	13.86
	12/21/2016	50.69				37.23	264.14	13.46
	1/23/2017 *	53.50				37.53	263.84	15.97
	3/6/2017	49.60				37.29	264.08	12.31
	3/21/2017	49.91				46.69	254.68	3.22
	3/29/2017	49.89				36.85	264.52	13.04
	6/21/2017	49.61				37.21	264.16	12.40
	6/26/2017	50.10				37.42	263.95	12.68
	7/31/2017	49.81				37.84	263.53	11.97
	8/28/2017	49.82				37.79	263.58	12.03
	9/25/2017	49.87				37.83	263.54	12.04
	9/27/2017	49.69				37.97	263.40	11.72
	10/30/2017	49.84				38.09	263.28	11.75
	11/20/2017	49.83				38.98	262.39	10.85
	12/18/2017	49.92				37.92	263.45	12.00
	1/4/2018	49.92				37.39	263.98	12.53
	1/22/2018	49.81				37.17	264.20	12.64
	2/26/2018	49.84				37.15	264.22	12.69
	3/26/2018	49.80				37.49	263.88	12.31
	4/5/2018	49.68				37.43	263.94	12.25
	4/23/2018	49.89				36.97	264.40	12.92
	5/21/2018	49.82				37.45	263.92	12.37
	6/18/2018	49.74				37.48	263.89	12.26
	6/27/2018	49.87				37.58	263.79	12.29
	7/30/2018	49.81				37.64	263.73	12.17
	8/27/2018	49.83				37.86	263.51	11.97
	9/24/2018	49.84				37.85	263.52	11.99
	10/1/2018	49.80				38.30	263.07	11.50
	10/22/2018	49.81				38.13	263.24	11.68
	11/26/2018	49.84				40.91	260.46	8.93
	12/19/2018	49.78				40.20	261.17	9.58
	12/31/2018	49.89				39.89	261.48	10.00
	1/28/2019	49.84				37.48	263.89	12.36
	2/25/2019	49.89				37.73	263.64	12.16
	3/18/2019	49.83				37.70	263.67	12.13
	3/20/2019	49.71				37.50	263.87	12.21
	4/15/2019	49.84				37.47	263.90	12.37
	5/20/2019	49.82				37.38	263.99	12.44
	6/17/2019	49.80				37.66	263.71	12.14
	7/22/2019	49.83				37.76	263.61	12.07
	8/26/2019	49.83				Not Measured		
	9/23/2019	49.84				38.80	262.57	11.04
	10/2/2019	50.80				39.50	261.87	11.30
	11/21/2019	49.84				41.01	260.36	8.83
	12/16/2019	49.81				40.76	260.61	9.05
	12/18/2019	49.85				40.83	260.54	9.02

Table 1
Monitoring Well Groundwater Elevation Data Summary
Laurel Station Cleanup Action
Bellingham, Washington

Well ID	Date Measured	Total Depth[a] (ft-TOC)	TOC Elevation[b] (ft-NAVD88)	Approximate Screen Interval (ft-bgs)	Approximate Screen Interval Elevation (ft-NAVD88)	Depth to Groundwater (ft-TOC)	Groundwater Elevation (ft-NAVD88)	Thickness of Water Column (ft)
SW-3[c]	4/23/2015	34.75	309.48	22 - 32	284.48 - 274.48	32.19	277.29	2.56
	12/14/2015	34.78				33.11	276.37	1.67
	1/25/2016	35.12				32.40	277.08	2.72
	2/22/2016	34.86				DRY	NC	NC
	3/21/2016	34.91				31.98	277.50	2.93
	4/25/2016	34.91				DRY	NC	NC
	5/23/2016	35.03				DRY	NC	NC
	6/27/2016	34.70				DRY	NC	NC
	8/8/2016 *	32.60				DRY	NC	NC
	8/30/2016	35.10				32.40	277.08	2.70
	9/26/2016	35.20				33.29	276.19	1.91
	10/24/2016	34.69				32.65	276.83	2.04
	11/21/2016 *	33.77				32.17	277.31	1.60
	12/21/2016	35.14				32.29	277.19	2.85
	1/23/2017	34.65				32.70	276.78	1.95
	3/6/2017	34.66				31.69	277.79	2.97
	3/21/0217	34.08				31.70	277.78	2.38
	3/29/2017	34.85				31.82	277.66	3.03
	6/21/2017	34.68				33.63	275.85	1.05
	6/26/2017	34.84				33.70	275.78	1.14
	7/31/2017	34.80				34.42	275.06	0.38
	8/28/2017	34.74				DRY	NC	NC
	9/25/2017	34.64				DRY	NC	NC
	9/27/2017	34.45				DRY	NC	NC
	10/30/2017	30.66				DRY	NC	NC
	11/20/2017	34.66				33.38	276.10	1.28
	12/18/2017	34.71				32.43	277.05	2.28
	1/4/2018	frozen @ 4.79				well frozen at top		
	1/22/2018	34.71				31.94	277.54	2.77
	2/26/2018	34.76				32.15	277.33	2.61
	3/26/2018	34.73				33.00	276.48	1.73
	4/5/2018	34.68				31.91	277.57	2.77
	4/23/2018	34.80				32.07	277.41	2.73
	5/21/2018	34.78				32.23	277.25	2.55
	6/18/2018	34.74				33.86	275.62	0.88
	6/27/2018	34.36				34.05	275.43	0.31
	7/30/2018	34.81				34.62	274.86	0.19
	8/27/2018	34.75				DRY	NC	NC
	9/24/2018	34.72				DRY	NC	NC
	10/1/2018	34.60				DRY	NC	NC
	10/22/2018	34.65				DRY	NC	NC
	11/26/2018	34.68				33.32	276.16	1.36
	12/19/2018	34.70				33.21	276.27	1.49
	12/31/2018	34.68				32.41	277.07	2.27
	1/28/2019	34.70				31.93	277.55	2.77
	2/25/2019	34.73				33.00	276.48	1.73
	3/18/2019	34.74				33.19	276.29	1.55
	3/20/2019	34.64				33.05	276.43	1.59
	4/15/2019	34.74				33.47	276.01	1.27
	5/20/2019	--				could not remove cap		
	6/17/2019	34.74				33.99	275.49	0.75
	7/22/2019	34.70				DRY	NC	NC
	8/26/2019	34.70				Not Measured		
	9/23/2019	34.71				DRY	NC	NC
	10/2/2019	34.58				DRY	NC	NC
	11/21/2019	34.71				33.52	275.96	1.19
	12/16/2019	34.72				33.42	276.06	1.30
	12/18/2019	34.68				33.44	276.04	1.24

Table 1
Monitoring Well Groundwater Elevation Data Summary
Laurel Station Cleanup Action
Bellingham, Washington

Well ID	Date Measured	Total Depth[a] (ft-TOC)	TOC Elevation[b] (ft-NAVD88)	Approximate Screen Interval (ft-bgs)	Approximate Screen Interval Elevation (ft-NAVD88)	Depth to Groundwater (ft-TOC)	Groundwater Elevation (ft-NAVD88)	Thickness of Water Column (ft)
DPE-4	4/23/2015	16.91				8.46	293.30	8.45
	10/26/2015	17.00				16.50	285.80	0.50
	12/14/2015	15.70				15.50	286.80	0.20
	1/25/2016	15.70				14.77	287.53	0.93
	2/22/2016	16.14				15.90	286.40	0.24
	3/21/2016	15.09				14.95	287.35	0.14
	4/25/2016	15.14				DRY	NC	NC
	5/23/2016	15.15				DRY	NC	NC
	6/23/2016	15.13				DRY	NC	NC
	8/1/2016	16.16				DRY	NC	NC
	8/30/2016	15.11				DRY	NC	NC
	9/26/2016	14.88				DRY	NC	NC
	10/24/2016	14.90				DRY	NC	NC
	11/21/2016	15.12				15.07	287.23	0.05
	12/21/2016	15.40				DRY	NC	NC
	1/23/2017	14.82				DRY	NC	NC
	3/9/2017	14.87				DRY	NC	NC
	3/21/2017	15.12				DRY	NC	NC
	3/29/2017	15.12				DRY	NC	NC
	6/21/2017	15.14				DRY	NC	NC
	6/26/2017	15.12				DRY	NC	NC
	7/31/2017	15.14				15.11	287.19	0.03
	8/28/2017	15.14				DRY	NC	NC
	9/25/2017	15.14				DRY	NC	NC
	9/27/2017	15.01				DRY	NC	NC
	10/30/2017	15.14				DRY	NC	NC
	11/20/2017	15.13				DRY	NC	NC
	12/18/2017	15.12				DRY	NC	NC
	1/4/2018	14.85				DRY	NC	NC
	1/22/2018	15.11				DRY	NC	NC
	2/26/2018	15.10				14.88	287.42	0.22
	3/26/2018	15.17	302.30	6.5 - 16.5	298.51 - 288.51	14.03	288.27	1.14
	4/5/2018	15.10				DRY	NC	NC
	4/23/2018	15.12				12.80	289.50	2.32
	5/21/2018	15.14				DRY	NC	NC
	6/18/2018	15.15				DRY	NC	NC
	6/27/2018	15.14				DRY	NC	NC
	7/30/2018	15.14				DRY	NC	NC
	8/27/2018	15.13				DRY	NC	NC
	9/24/2018	15.13				DRY	NC	NC
	10/1/2018	15.15				DRY	NC	NC
	10/22/2018	15.14				15.04	287.26	0.10
	11/26/2018	15.11				DRY	NC	NC
	12/19/2018	15.12				DRY	NC	NC
	12/31/2018	15.12				DRY	NC	NC
	1/28/2019	15.11				DRY	NC	NC
	2/25/2019	15.10				DRY	NC	NC
	3/18/2019	15.10				DRY	NC	NC
	3/20/2019	15.12				DRY	NC	NC
	4/15/2019	15.10				DRY	NC	NC
	5/6/2019	15.11				DRY	NC	NC
	5/8/2019	15.12				DRY	NC	NC
	5/20/2019	15.12				13.39	288.91	1.73
	6/17/2019	15.13				13.00	289.30	2.13
	6/19/2019	15.15				DRY	NC	NC
	7/22/2019	15.15				14.35	287.95	0.80
	8/26/2019	15.15				DRY	NC	NC
	9/23/2019	15.13				DRY	NC	NC
	10/2/2019	15.14				DRY	NC	NC
	10/31/2019	15.13				DRY	NC	NC
	11/21/2019	15.13				DRY	NC	NC
	12/16/2019	15.15				DRY	NC	NC
	12/18/2019	15.10				DRY	NC	NC

Table 1
Monitoring Well Groundwater Elevation Data Summary
Laurel Station Cleanup Action
Bellingham, Washington

Well ID	Date Measured	Total Depth[a] (ft-TOC)	TOC Elevation[b] (ft-NAVD88)	Approximate Screen Interval (ft-bgs)	Approximate Screen Interval Elevation (ft-NAVD88)	Depth to Groundwater (ft-TOC)	Groundwater Elevation (ft-NAVD88)	Thickness of Water Column (ft)
MW-3	4/23/2015	33.40	305.83	24 - 34	281.83 - 271.83	DRY	NC	NC
	12/14/2015	33.55				DRY	NC	NC
	1/25/2016	33.39				DRY	NC	NC
	2/22/2016	33.48				DRY	NC	NC
	3/21/2016	33.99				33.36	272.47	0.63
	4/25/2016 *	34.91				DRY	NC	NC
	5/23/2016	33.86				DRY	NC	NC
	6/23/2016 *	35.10				34.50	271.33	0.60
	6/27/2016 *	34.60				33.73	272.10	0.87
	8/8/2016	33.35				DRY	NC	NC
	8/30/2016	34.09				34.00	271.83	0.09
	9/26/2016	33.33				DRY	NC	NC
	10/24/2016	33.88				33.32	272.51	0.56
	11/21/2016	33.80				33.43	272.40	0.37
	12/21/2016	33.40				33.35	272.48	0.05
	1/23/2017	34.00				29.08	276.75	4.92
	3/6/2017	33.47				DRY	NC	NC
	3/21/2017	33.70				DRY	NC	NC
	3/29/2017	33.60				DRY	NC	NC
	6/21/2017	33.51				DRY	NC	NC
	6/26/2017	33.61				DRY	NC	NC
	7/31/2017	33.56				DRY	NC	NC
	8/28/2017	33.54				33.46	272.37	0.08
	9/25/2017	33.55				33.41	272.42	0.14
	9/27/2017	33.38				DRY	NC	NC
	10/30/2017	33.57				33.42	272.41	0.15
	11/20/2017	33.59				33.49	272.34	0.10
	12/18/2017	33.59				33.43	272.40	0.16
	1/4/2018	33.59				DRY	NC	NC
	1/22/2018	33.58				33.47	272.36	0.11
	2/26/2018	33.58				DRY	NC	NC
	3/26/2018	33.57				33.45	272.38	0.12
	4/5/2018	33.52				DRY	NC	NC
	4/23/2018	33.56				DRY	NC	NC
	5/21/2018	33.59				DRY	NC	NC
	6/18/2018	33.58				33.40	272.43	0.18
	6/27/2018	33.55				33.45	272.38	0.10
	7/30/2018	33.57				DRY	NC	NC
	8/27/2018	33.56				DRY	NC	NC
	9/24/2018	33.59				33.46	272.37	0.13
	10/1/2018	30.21				DRY	NC	NC
	10/22/2018	33.59				DRY	NC	NC
	11/26/2018	33.08				DRY	NC	NC
	12/19/2018	33.55				DRY	NC	NC
	12/31/2018	33.57				33.46	272.37	0.11
	1/28/2019	33.58				33.49	272.34	0.09
	2/25/2019	33.60				33.44	272.39	0.16
	3/18/2019	33.58				DRY	NC	NC
	3/20/2019	33.50				33.43	272.40	0.07
	4/15/2019	33.57				33.43	272.40	0.14
	5/6/2019	33.58				33.47	272.36	0.11
	5/8/2019	33.55				DRY	NC	NC
	5/20/2019	33.57				DRY	NC	NC
	6/17/2019	33.58				33.50	272.33	0.08
	6/19/2019	33.58				DRY	NC	NC
	7/22/2019	33.57				DRY	NC	NC
	8/26/2019	33.59				DRY	NC	NC
	9/23/2019	33.58				DRY	NC	NC
	10/2/2019	33.60				DRY	NC	NC
	11/21/2019	33.58				33.49	272.34	0.09
	12/16/2019	33.58				Truck on top of well		
	12/18/2019	33.54				DRY	NC	NC

Table 1
Monitoring Well Groundwater Elevation Data Summary
Laurel Station Cleanup Action
Bellingham, Washington

Well ID	Date Measured	Total Depth[a] (ft-TOC)	TOC Elevation[b] (ft-NAVD88)	Approximate Screen Interval (ft-bgs)	Approximate Screen Interval Elevation (ft-NAVD88)	Depth to Groundwater (ft-TOC)	Groundwater Elevation (ft-NAVD88)	Thickness of Water Column (ft)
MW-4	4/23/2015	30.15	305.68	20 - 30	285.67 - 275.67	28.07	277.61	2.08
	12/14/2015	30.16				DRY	NC	NC
	1/25/2016	30.34				29.04	276.64	1.30
	2/22/2016	30.37				24.33	281.35	6.04
	3/21/2016	30.35				25.86	279.82	4.49
	4/25/2016 *	33.79				DRY	NC	NC
	5/23/2016	30.47				DRY	NC	NC
	6/23/2016	30.15				29.84	275.84	0.31
	6/27/2016	30.12				29.85	275.83	0.27
	8/8/2016	29.87				DRY	NC	NC
	8/30/2016 *	35.40				29.87	275.81	5.53
	9/26/2016	30.03				DRY	NC	NC
	10/24/2016 *	33.50				24.41	281.27	9.09
	11/21/2016 *	31.30				26.71	278.97	4.59
	12/21/2016	30.04				28.74	276.94	1.30
	1/23/2017 *	33.70				33.35	272.33	0.35
	3/6/2017	30.09				27.02	278.66	3.07
	3/21/2017	31.50				24.14	281.54	7.36
	3/29/2017	30.25				28.91	276.77	1.34
	6/21/2017	30.19				29.45	276.23	0.74
	6/26/2017	30.19				29.44	276.24	0.75
	7/31/2017	30.17				29.84	275.84	0.33
	8/28/2017	30.18				DRY	NC	NC
	9/25/2017	30.19				29.94	275.74	0.25
	9/27/2017	29.99				DRY	NC	NC
	10/30/2017	30.19				29.94	275.74	0.25
	11/20/2017	30.21				29.56	276.12	0.65
	12/18/2017	30.20				29.21	276.47	0.99
	1/4/2018	30.19				28.33	277.35	1.86
	1/22/2018	30.21				28.38	277.30	1.83
	2/26/2018	30.23				28.53	277.15	1.70
	3/26/2018	30.19				29.08	276.60	1.11
	4/5/2018	30.15				29.90	275.78	0.25
	4/23/2018	30.22				24.76	280.92	5.46
	5/21/2018	30.22				21.42	284.26	8.80
	6/18/2018	30.23				29.82	275.86	0.41
	6/27/2018	30.18				29.90	275.78	0.28
	7/30/2018	30.21				29.95	275.73	0.26
	8/27/2018	30.20				29.99	275.69	0.21
	9/24/2018	30.21				29.98	275.70	0.23
	10/1/2018	33.57				DRY	NC	NC
	10/22/2018	30.20				30.03	275.65	0.17
	11/26/2018	30.19				29.43	276.25	0.76
	12/19/2018	30.24				29.20	276.48	1.04
	12/31/2018	30.18				29.31	276.37	0.87
	1/28/2019	30.19				29.23	276.45	0.96
	2/25/2019	30.23				28.88	276.80	1.35
	3/18/2019	30.20				29.25	276.43	0.95
	3/20/2019	30.10				28.13	277.55	1.97
	4/15/2019	30.21				29.36	276.32	0.85
	5/6/2019	30.20				29.70	275.98	0.50
	5/8/2019	30.20				28.20	277.48	2.00
	5/20/2019	30.21				29.52	276.16	0.69
	6/17/2019	30.20				29.92	275.76	0.28
	6/19/2019	30.22				29.89	275.79	0.33
	7/22/2019	30.22				29.93	275.75	0.29
	8/26/2019	30.22				29.97	275.71	0.25
	9/23/2019	30.20				29.99	275.69	0.21
	10/2/2019	29.90				DRY	NC	NC
	11/21/2019	30.20				29.64	276.04	0.56
	12/16/2019	30.22				29.61	276.07	0.61
	12/18/2019	30.29				29.60	276.08	0.69

Table 1
Monitoring Well Groundwater Elevation Data Summary
Laurel Station Cleanup Action
Bellingham, Washington

Well ID	Date Measured	Total Depth[a] (ft-TOC)	TOC Elevation[b] (ft-NAVD88)	Approximate Screen Interval (ft-bgs)	Approximate Screen Interval Elevation (ft-NAVD88)	Depth to Groundwater (ft-TOC)	Groundwater Elevation (ft-NAVD88)	Thickness of Water Column (ft)
MW-6	4/23/2015	26.55				16.51	286.27	10.04
	11/30/2015	NA				16.17	286.61	10.38
	12/14/2015	26.56				12.92	289.86	13.64
	1/25/2016	26.74				13.59	289.19	13.15
	2/22/2016	26.77				12.89	289.89	13.88
	3/21/2016	26.65				13.02	289.76	13.63
	4/25/2016	26.73				DRY	NC	NC
	5/23/2016	26.84				DRY	NC	NC
	6/23/2016	26.78				19.17	283.61	7.61
	6/27/2016	26.70				18.52	284.26	8.18
	8/8/2016	26.81				23.31	279.47	3.50
	8/30/2016	27.06				25.91	276.87	1.15
	9/26/2016	26.63				16.67	286.11	9.96
	10/24/2016	26.55				12.94	289.84	13.61
	11/21/2016	26.76				15.20	287.58	11.56
	12/21/2016	26.62				12.81	289.97	13.81
	1/23/2017	26.55				13.25	289.53	13.30
	3/6/2017	26.48				12.81	289.97	13.67
	3/21/2017	26.17				12.76	290.02	13.41
	3/29/2017	26.75				12.55	290.23	14.20
	6/21/2017	26.64				15.63	287.15	11.01
	6/26/2017	26.73				18.54	284.24	8.19
	7/31/2017	26.71				26.14	276.64	0.57
	8/28/2017	26.73				26.15	276.63	0.58
	9/25/2017	26.72				21.48	281.30	5.24
	9/27/2017	26.73				22.32	280.46	4.41
	10/30/2017	26.72				13.45	289.33	13.27
	11/20/2017	26.72				12.86	289.92	13.86
	12/18/2017	26.72				12.62	290.16	14.10
	1/4/2018	26.72				12.89	289.89	13.83
	1/22/2018	26.71				13.01	289.77	13.70
	2/26/2018	26.72	302.78	11 - 26	291.78 - 276.78	12.90	289.88	13.82
	3/26/2018	26.73				12.80	289.98	13.93
	4/5/2018	26.70				12.45	290.33	14.25
	4/23/2018	26.72				12.73	290.05	13.99
	5/21/2018	26.72				18.16	284.62	8.56
	6/18/2018	26.72				21.13	281.65	5.59
	6/27/2018	26.68				23.29	279.49	3.39
	7/30/2018	26.68				22.86	279.92	3.82
	8/27/2018	26.67				25.13	277.65	1.54
	9/24/2018	26.72				13.35	289.43	13.37
	10/1/2018	26.72				14.13	288.65	12.59
	10/22/2018	26.70				17.51	285.27	9.19
	11/26/2018	26.71				12.15	290.63	14.56
	12/19/2018	26.70				12.34	290.44	14.36
	12/31/2018	26.69				12.28	290.50	14.41
	1/28/2019	26.70				12.78	290.00	13.92
	2/25/2019	26.72				12.19	290.59	14.53
	3/18/2019	26.70				12.61	290.17	14.09
	3/20/2019	26.62				12.52	290.26	14.10
	4/15/2019	26.69				11.91	290.87	14.78
	5/6/2019	26.68				12.91	289.87	13.77
	5/8/2019	26.69				13.36	289.42	13.33
	5/20/2019	26.68				13.33	289.45	13.35
	6/17/2019	26.70				19.63	283.15	7.07
	6/19/2019	26.70				23.69	279.09	3.01
	7/22/2019	26.70				15.32	287.46	11.38
	8/26/2019	26.69				23.61	279.17	3.08
	9/23/2019	26.71				23.03	279.75	3.68
	10/2/2019	26.68				14.37	288.41	12.31
	11/21/2019	26.72				12.40	290.38	14.32
	12/16/2019	26.71				12.53	290.25	14.18
	12/18/2019	26.73				12.35	290.43	14.38

Table 1
Monitoring Well Groundwater Elevation Data Summary
Laurel Station Cleanup Action
Bellingham, Washington

Well ID	Date Measured	Total Depth[a] (ft-TOC)	TOC Elevation[b] (ft-NAVD88)	Approximate Screen Interval (ft-bgs)	Approximate Screen Interval Elevation (ft-NAVD88)	Depth to Groundwater (ft-TOC)	Groundwater Elevation (ft-NAVD88)	Thickness of Water Column (ft)
MW-8	4/23/2015	37.10	302.24	23 - 38	279.24 - 264.24	DRY	NC	NC
	12/14/2015	37.08				DRY	NC	NC
	1/25/2016	37.28				DRY	NC	NC
	2/22/2016	37.13				36.91	265.33	0.22
	3/21/2016	37.45				37.00	265.24	0.45
	4/25/2016	37.41				DRY	NC	NC
	5/23/2016	37.55				37.05	265.19	0.50
	6/23/2016	37.50				37.04	265.20	0.46
	6/27/2016	37.20				DRY	NC	NC
	8/8/2016	37.68				37.08	265.16	0.60
	8/30/2016	37.96				DRY	NC	NC
	9/26/2016	37.80				37.10	265.14	0.70
	10/24/2016	37.60				37.08	265.16	0.52
	11/21/2016	37.40				37.15	265.09	0.25
	12/21/2016	37.14				37.08	265.16	0.06
	1/23/2017	37.59				36.97	265.27	0.62
	3/6/2017	37.15				DRY	NC	NC
	3/21/2017	31.42				31.05	271.19	0.37
	3/29/2017	37.40				DRY	NC	NC
	6/21/2017	37.40				DRY	NC	NC
	6/26/2017	37.03				DRY	NC	NC
	7/31/2017	37.28				37.05	265.19	0.23
	8/28/2017	37.29				37.09	265.15	0.20
	9/25/2017	37.26				37.09	265.15	0.17
	9/27/2017	37.08				DRY	NC	NC
	10/30/2017	37.29				37.08	265.16	0.21
	11/20/2017	37.27				33.83	268.41	3.44
	12/18/2017	37.30				37.08	265.16	0.22
	1/4/2018	37.26				37.08	265.16	0.18
	1/22/2018	37.26				37.00	265.24	0.26
	2/26/2018	37.29				37.02	265.22	0.27
	3/26/2018	37.27				37.05	265.19	0.22
	4/5/2018	37.21				37.00	265.24	0.21
	4/23/2018	37.30				37.03	265.21	0.27
	5/21/2018	37.28				37.05	265.19	0.23
	6/18/2018	37.26				37.04	265.20	0.22
	6/27/2018	37.24				37.05	265.19	0.19
	7/30/2018	37.29				37.07	265.17	0.22
	8/27/2018	37.28				37.07	265.17	0.21
	9/24/2018	37.26				37.07	265.17	0.19
	10/1/2018	37.12				DRY	NC	NC
	10/22/2018	37.27				37.08	265.16	0.19
	11/26/2018	37.28				37.08	265.16	0.20
	12/19/2018	37.26				DRY	NC	NC
	12/31/2018	37.27				37.09	265.15	0.18
	1/28/2018	37.26				37.03	265.21	0.23
	2/25/2019	37.31				37.05	265.19	0.26
	3/18/2019	37.27				37.05	265.19	0.22
	3/20/2019	37.18				37.00	265.24	0.18
	4/15/2019	37.26				37.05	265.19	0.21
	5/6/2019	37.25				37.03	265.21	0.22
	5/8/2019	37.30				37.05	265.19	0.25
	5/20/2019	37.30				37.05	265.19	0.25
	6/17/2019	37.28				37.04	265.20	0.24
	6/19/2019	37.29				37.08	265.16	0.21
	7/22/2019	37.32				37.09	265.15	0.23
	8/26/2019	37.28				37.06	265.18	0.22
	9/23/2019	37.29				37.08	265.16	0.21
	10/2/2019	37.30				DRY	NC	NC
	11/21/2019	37.28				DRY	NC	NC
	12/16/2019	37.33				37.06	265.18	0.27
	12/18/2019	37.25				DRY	NC	NC

Table 1
Monitoring Well Groundwater Elevation Data Summary
Laurel Station Cleanup Action
Bellingham, Washington

Well ID	Date Measured	Total Depth[a] (ft-TOC)	TOC Elevation[b] (ft-NAVD88)	Approximate Screen Interval (ft-bgs)	Approximate Screen Interval Elevation (ft-NAVD88)	Depth to Groundwater (ft-TOC)	Groundwater Elevation (ft-NAVD88)	Thickness of Water Column (ft)
MW-11[c]	4/23/2015	48.15	321.31	25 - 45	293.31 - 273.31	DRY	NC	NC
	11/30/2015	NA				47.54	273.77	0.61
	12/14/2015	48.17				47.21	274.10	0.96
	1/25/2016 *	46.93				DRY	NC	NC
	2/22/2016	48.21				46.86	274.45	1.35
	3/21/2016	48.52				46.96	274.35	1.56
	4/25/2016	48.69				DRY	NC	NC
	5/23/2016	48.73				DRY	NC	NC
	6/27/2016	48.30				DRY	NC	NC
	8/8/2016	48.02				DRY	NC	NC
	8/30/2016	48.80				48.48	272.83	0.32
	10/24/2016	48.95				48.00	273.31	0.95
	9/26/2016 *	38.00				DRY	NC	NC
	11/21/2016	48.42				47.22	274.09	1.20
	12/21/2016	48.60				47.60	273.71	1.00
	1/23/2017	48.90				47.23	274.08	1.67
	3/6/2017	48.24				46.91	274.40	1.33
	3/21/2017	48.48				46.85	274.46	1.63
	3/29/2017	48.41				47.05	274.26	1.36
	6/21/2017	48.30				47.98	273.33	0.32
	6/26/2017	48.58				48.08	273.23	0.50
	7/31/2017	48.40				48.08	273.23	0.32
	8/28/2017	48.36				48.09	273.22	0.27
	9/25/2017	48.38				48.08	273.23	0.30
	9/27/2017	48.18				48.09	273.22	0.09
	10/30/2017	48.42				48.10	273.21	0.32
	11/20/2017	48.41				47.61	273.70	0.80
	12/18/2017	48.39				48.07	273.24	0.32
	1/4/2018	48.45				47.90	273.41	0.55
	1/22/2018	48.45				47.36	273.95	1.09
	2/26/2018	48.42				47.46	273.85	0.96
	3/26/2018	48.40				47.41	273.90	0.99
	4/5/2018	48.41				47.23	274.08	1.18
	4/23/2018	48.38				47.01	274.30	1.37
	5/21/2018	48.41				48.08	273.23	0.33
	6/18/2018	48.43				48.09	273.22	0.34
	6/27/2018	48.35				48.10	273.21	0.25
	7/30/2018	48.37				48.10	273.21	0.27
	8/27/2018	48.37				48.10	273.21	0.27
	9/24/2018	48.47				48.10	273.21	0.37
	10/1/2018	48.31				DRY	NC	NC
	10/22/2018	48.41				48.11	273.20	0.30
	11/26/2018	48.42				47.61	273.70	0.81
	12/19/2018	48.35				47.55	273.76	0.80
	12/31/2018	48.42				47.38	273.93	1.04
	1/28/2019	48.41				47.18	274.13	1.23
	2/25/2019	48.38				47.15	274.16	1.23
	3/18/2019	48.43				47.16	274.15	1.27
	3/20/2019	48.30				47.08	274.23	1.22
	4/15/2019	48.41				47.06	274.25	1.35
	5/20/2019	48.39				48.08	273.23	0.31
	6/17/2019	48.38				48.07	273.24	0.31
	6/19/2019	48.40				48.09	273.22	0.31
	7/22/2019	48.39				48.12	273.19	0.27
	8/26/2019	48.45				48.09	273.22	0.36
	9/23/2019	48.39				48.11	273.20	0.28
	10/2/2019	48.37				48.10	273.21	0.27
	11/21/2019	48.23				47.65	273.66	0.58
	12/16/2019	48.41				47.67	273.64	0.74
	12/18/2019	48.38				47.60	273.71	0.78

Table 1
Monitoring Well Groundwater Elevation Data Summary
Laurel Station Cleanup Action
Bellingham, Washington

Well ID	Date Measured	Total Depth[a] (ft-TOC)	TOC Elevation[b] (ft-NAVD88)	Approximate Screen Interval (ft-bgs)	Approximate Screen Interval Elevation (ft-NAVD88)	Depth to Groundwater (ft-TOC)	Groundwater Elevation (ft-NAVD88)	Thickness of Water Column (ft)
MW-12[c]	4/23/2015	51.60				DRY	NC	NC
	11/30/2015	NA				50.69	272.84	0.91
	12/14/2015	51.80				51.20	272.33	0.60
	1/25/2016	52.12				DRY	NC	NC
	2/22/2016	51.99				DRY	NC	NC
	3/21/2016	52.20				51.74	271.79	0.46
	4/25/2016	52.12				DRY	NC	NC
	5/23/2016	52.22				DRY	NC	NC
	6/27/2016	51.75				DRY	NC	NC
	8/8/2016	51.72				DRY	NC	NC
	8/30/2016	52.55				DRY	NC	NC
	9/26/2016	52.50				DRY	NC	NC
	10/24/2016	52.50				DRY	NC	NC
	11/21/2016	51.89				51.80	271.73	0.09
	12/21/2016	52.67				51.77	271.76	0.90
	1/23/2017	52.25				DRY	NC	NC
	3/6/2017	51.69				DRY	NC	NC
	3/21/2017	52.45				DRY	NC	NC
	3/29/2017	51.89				DRY	NC	NC
	6/21/2017	51.70				DRY	NC	NC
	6/26/2017	51.83				DRY	NC	NC
	7/31/2017	51.83				DRY	NC	NC
	8/28/2017	51.82				DRY	NC	NC
	9/25/2017	51.87				DRY	NC	NC
	9/27/2017	51.65				DRY	NC	NC
	10/30/2017	51.92				DRY	NC	NC
	11/20/2017	51.89				DRY	NC	NC
	12/18/2017	51.86				DRY	NC	NC
	1/4/2018	51.86				51.60	271.93	0.26
	1/22/2018	51.82	323.53	29 - 49	291.53 - 271.53	DRY	NC	NC
	2/26/2018	51.90				DRY	NC	NC
	3/26/2018	51.86				DRY	NC	NC
	4/5/2018	51.85				DRY	NC	NC
	4/23/2018	51.87				DRY	NC	NC
	5/21/2018	51.88				DRY	NC	NC
	6/18/2018	51.90				DRY	NC	NC
	6/27/2018	51.83				DRY	NC	NC
	7/30/2018	51.88				DRY	NC	NC
	8/27/2018	51.83				DRY	NC	NC
	9/24/2018	51.94				DRY	NC	NC
	10/1/2018	51.85				DRY	NC	NC
	10/22/2018	51.86				DRY	NC	NC
	11/26/2018	51.84				DRY	NC	NC
	12/19/2018	51.85				DRY	NC	NC
	12/31/2018	51.90				DRY	NC	NC
	1/28/2019	51.88				DRY	NC	NC
	2/25/2019	51.87				DRY	NC	NC
	3/18/2019	51.90				DRY	NC	NC
	3/20/2019	51.76				DRY	NC	NC
	4/15/2019	51.87				DRY	NC	NC
	5/20/2019	51.89				DRY	NC	NC
	6/17/2019	51.90				DRY	NC	NC
	6/19/2019	51.87				DRY	NC	NC
	7/22/2019	51.88				DRY	NC	NC
	8/26/2019	51.88				DRY	NC	NC
	9/23/2019	51.81				DRY	NC	NC
	10/2/2019	51.89				DRY	NC	NC
	11/21/2019	51.86				DRY	NC	NC
	12/16/2019	51.88				DRY	NC	NC
	12/18/2019	51.86				DRY	NC	NC

Table 1
Monitoring Well Groundwater Elevation Data Summary
Laurel Station Cleanup Action
Bellingham, Washington

Well ID	Date Measured	Total Depth[a] (ft-TOC)	TOC Elevation[b] (ft-NAVD88)	Approximate Screen Interval (ft-bgs)	Approximate Screen Interval Elevation (ft-NAVD88)	Depth to Groundwater (ft-TOC)	Groundwater Elevation (ft-NAVD88)	Thickness of Water Column (ft)
MW-13	4/23/2015	62.45	323.20	39 - 59	281.20 - 261.20	DRY	NC	NC
	11/30/2015	NA				63.48	NC	NC
	12/14/2015	62.62				DRY	NC	NC
	1/25/2016	63.21				62.45	260.75	0.76
	2/22/2016	62.56				DRY	NC	NC
	3/21/2016	63.06				DRY	NC	NC
	4/25/2016	63.09				DRY	NC	NC
	5/23/2016	63.11				DRY	NC	NC
	6/27/2016	62.60				DRY	NC	NC
	8/8/2016	62.50				DRY	NC	NC
	8/30/2016	63.29				DRY	NC	NC
	9/26/2016	63.91				DRY	NC	NC
	10/24/2016 *	63.70				DRY	NC	NC
	11/21/2016	63.00				62.52	260.68	0.48
	12/21/2016	62.90				DRY	NC	NC
	1/23/2017	63.36				DRY	NC	NC
	3/6/2017	62.50				DRY	NC	NC
	3/21/2017	63.47				DRY	NC	NC
	3/29/2017	62.68				DRY	NC	NC
	6/21/2017	62.60				DRY	NC	NC
	6/26/2017	63.08				DRY	NC	NC
	7/31/2017	62.70				62.57	260.63	0.13
	8/28/2017	62.68				62.58	260.62	0.10
	9/25/2017	62.68				62.61	260.59	0.07
	9/27/2017	62.54				DRY	NC	NC
	10/30/2017	62.66				62.62	260.58	0.04
	11/20/2017	62.69				62.61	260.59	0.08
	12/18/2017	62.76				62.61	260.59	0.15
	1/4/2018	62.69				DRY	NC	NC
	1/22/2018	62.65				DRY	NC	NC
	2/26/2018	62.69				DRY	NC	NC
	3/26/2018	62.69				DRY	NC	NC
	4/5/2018	62.68				62.62	260.58	0.06
	4/23/2018	62.68				DRY	NC	NC
	5/21/2018	62.68				DRY	NC	NC
	6/18/2018	62.68				DRY	NC	NC
	6/27/2018	62.65				DRY	NC	NC
	7/30/2018	62.67				DRY	NC	NC
	8/27/2018	62.69				DRY	NC	NC
	9/24/2018	62.71				DRY	NC	NC
	10/1/2018	62.67				DRY	NC	NC
	10/22/2018	62.71				DRY	NC	NC
	11/26/2018	62.67				DRY	NC	NC
	12/19/2018	62.79				DRY	NC	NC
	12/31/2018	62.79				DRY	NC	NC
	1/28/2019	62.69				DRY	NC	NC
	2/25/2019	62.68				DRY	NC	NC
	3/18/2019	62.75				DRY	NC	NC
	3/20/2019	63.26				DRY	NC	NC
	4/15/2019	62.67				DRY	NC	NC
	5/20/2019	62.66				DRY	NC	NC
	6/17/2019	62.66				DRY	NC	NC
	6/19/2019	62.67				DRY	NC	NC
	7/22/2019	62.67				DRY	NC	NC
	8/26/2019	62.68				DRY	NC	NC
	9/23/2019	62.65				DRY	NC	NC
	10/2/2019	60.65				DRY	NC	NC
	11/21/2019	62.68				DRY	NC	NC
	12/16/2019	62.72				DRY	NC	NC
	12/18/2019	62.67				DRY	NC	NC

Table 1
Monitoring Well Groundwater Elevation Data Summary
Laurel Station Cleanup Action
Bellingham, Washington

Well ID	Date Measured	Total Depth[a] (ft-TOC)	TOC Elevation[b] (ft-NAVD88)	Approximate Screen Interval (ft-bgs)	Approximate Screen Interval Elevation (ft-NAVD88)	Depth to Groundwater (ft-TOC)	Groundwater Elevation (ft-NAVD88)	Thickness of Water Column (ft)
MW-14	4/23/2015	50.75				DRY	NC	NC
	11/30/2015	NA				50.72	266.05	0.03
	12/14/2015	50.94				DRY	NC	NC
	1/25/2016	51.37				DRY	NC	NC
	2/22/2016	51.24				50.77	266.00	0.47
	3/21/2016	51.46				50.73	266.04	0.73
	4/25/2016	51.46				DRY	NC	NC
	5/23/2016	51.12				DRY	NC	NC
	6/27/2016	50.90				DRY	NC	NC
	8/8/2016	51.30				DRY	NC	NC
	8/30/2016 *	52.00				DRY	NC	NC
	9/26/2016	51.80				50.72	266.05	1.08
	10/24/2016	51.65				46.90	269.87	4.75
	11/21/2016	51.20				50.85	265.92	0.35
	12/21/2016	51.30				51.23	265.54	0.07
	1/23/2017	51.50				50.61	266.16	0.89
	3/6/2017	50.82				50.69	266.08	0.13
	3/21/2017	51.35				50.78	265.99	0.57
	3/29/2017	50.89				DRY	NC	NC
	6/21/2017	50.65				DRY	NC	NC
	6/26/2017	50.98				50.77	266.00	0.21
	7/31/2017	50.96				50.76	266.01	0.20
	8/28/2017	50.96				50.78	265.99	0.18
	9/25/2017	50.97				50.83	265.94	0.14
	9/27/2017	50.80				DRY	NC	NC
	10/30/2017	51.02				50.82	265.95	0.20
	11/20/2017	50.99				50.81	265.96	0.18
	12/18/2017	51.02				50.85	265.92	0.17
	1/4/2018	51.01				50.88	265.89	0.13
	1/22/2018	51.02	316.77	30 - 50	286.77 - 266.77	50.87	265.90	0.15
	2/26/2018	51.01				50.76	266.01	0.25
	3/26/2018	51.01				50.78	265.99	0.23
	4/5/2018	50.98				50.78	265.99	0.20
	4/23/2018	51.01				50.73	266.04	0.28
	5/21/2018	51.02				50.75	266.02	0.27
	6/18/2018	51.02				DRY	NC	NC
	6/27/2018	50.95				50.75	266.02	0.20
	7/30/2018	50.98				50.77	266.00	0.21
	8/27/2018	50.98				50.79	265.98	0.19
	9/24/2018	51.01				50.77	266.00	0.24
	10/1/2018	50.97				DRY	NC	NC
	10/22/2018	51.01				DRY	NC	NC
	11/26/2018	50.98				50.87	265.90	0.11
	12/19/2018	51.10				DRY	NC	NC
	12/31/2018	51.00				50.84	265.93	0.16
	1/28/2019	51.00				50.84	265.93	0.16
	2/25/2019	51.01				50.75	266.02	0.26
	3/18/2019	51.04				50.78	265.99	0.26
	3/20/2019	50.87				DRY	NC	NC
	4/15/2019	51.01				50.77	266.00	0.24
	5/20/2019	50.98				DRY	NC	NC
	6/17/2019	51.00				50.79	265.98	0.21
	6/19/2019	50.98				50.79	265.98	0.19
	7/22/2019	51.00				50.80	265.97	0.20
	8/26/2019	51.02				50.82	265.95	0.20
	9/23/2019	51.03				50.80	265.97	0.23
	10/2/2019	50.98				50.80	265.97	0.18
	11/21/2019	50.99				DRY	NC	NC
	12/16/2019	51.04				DRY	NC	NC
	12/18/2019	51.00				DRY	NC	NC

Table 1
Monitoring Well Groundwater Elevation Data Summary
Laurel Station Cleanup Action
Bellingham, Washington

Well ID	Date Measured	Total Depth[a] (ft-TOC)	TOC Elevation[b] (ft-NAVD88)	Approximate Screen Interval (ft-bgs)	Approximate Screen Interval Elevation (ft-NAVD88)	Depth to Groundwater (ft-TOC)	Groundwater Elevation (ft-NAVD88)	Thickness of Water Column (ft)
MW-15	4/23/2015	34.25				DRY	NC	NC
	10/26/2015	33.76				33.72	269.40	0.04
	11/30/2015	NA				33.82	269.30	NC
	12/14/2015	34.24				33.79	269.33	0.45
	1/25/2016	35.15				33.80	269.32	1.35
	2/22/2016 *	33.39				33.19	269.93	0.20
	3/21/2016	34.82				33.78	269.34	1.04
	4/25/2016	34.71				DRY	NC	NC
	5/23/2016	34.80				DRY	NC	NC
	6/27/2016 *	33.52				DRY	NC	NC
	8/8/2016	34.31				33.74	269.38	0.57
	8/30/2016 *	35.26				33.74	269.38	1.52
	9/26/2016 *	36.00				DRY	NC	NC
	10/24/2016	35.15				33.63	269.49	1.52
	11/21/2016	33.80				33.73	269.39	0.07
	12/21/2016	34.39				33.72	269.40	0.67
	1/23/2017	35.25				33.70	269.42	1.55
	3/6/2017	34.08				33.74	269.38	0.34
	3/21/2017	35.30				DRY	NC	NC
	3/29/2017	34.37				DRY	NC	NC
	6/21/2017	34.31				DRY	NC	NC
	6/26/2017	34.67				33.75	269.37	0.92
	7/31/2017	34.26				33.79	269.33	0.47
	8/28/2017	34.31				33.77	269.35	0.54
	9/25/2017	34.28				33.76	269.36	0.52
	9/27/2017	34.07				33.77	269.35	0.30
	10/30/2017	34.28				33.78	269.34	0.50
	11/20/2017	34.24				33.79	269.33	0.45
	12/18/2017	34.31				33.76	269.36	0.55
	1/4/2018	34.36				33.77	269.35	0.59
	1/22/2018	34.38				33.82	269.30	0.56
	2/26/2018	34.28	303.12	25 - 35	278.12 - 268.12	33.82	269.30	0.46
	3/26/2018	34.32				33.91	269.21	0.41
	4/5/2018	34.35				33.65	269.47	0.70
	4/23/2018	34.40				33.79	269.33	0.61
	5/21/2018	34.39				33.79	269.33	0.60
	6/18/2018	34.38				33.74	269.38	0.64
	6/27/2018	34.43				33.77	269.35	0.66
	7/30/2018	34.46				33.73	269.39	0.73
	8/27/2018	34.32				33.79	269.33	0.53
	9/24/2018	34.38				33.78	269.34	0.60
	10/1/2018	34.35				DRY	NC	NC
	10/22/2018	34.39				33.79	269.33	0.60
	11/26/2018	34.34				33.79	269.33	0.55
	12/19/2018	33.82				DRY	NC	NC
	12/31/2018	34.34				33.81	269.31	0.53
	1/28/2019	34.32				33.79	269.33	0.53
	2/25/2019	34.35				33.79	269.33	0.56
	3/18/2019	34.37				33.80	269.32	0.57
	3/20/2019	34.16				DRY	NC	NC
	4/15/2019	34.34				33.77	269.35	0.57
	5/6/2019	34.31				33.74	269.38	0.57
	5/8/2019	34.20				33.70	269.42	0.50
	5/20/2019	34.37				33.79	269.33	0.58
	6/17/2019	34.32				34.13	268.99	0.19
	6/19/2019	34.35				33.80	269.32	0.55
	7/22/2019	34.35				33.81	269.31	0.54
	8/26/2019	34.31				33.80	269.32	0.51
	9/23/2019	34.41				33.81	269.31	0.60
	10/2/2019	34.26				33.81	269.31	0.45
	11/21/2019	34.33				33.81	269.31	0.52
	12/16/2019	34.28				33.82	269.30	0.46
	12/18/2019	34.30				33.90	269.22	0.40

Table 1
Monitoring Well Groundwater Elevation Data Summary
Laurel Station Cleanup Action
Bellingham, Washington

Well ID	Date Measured	Total Depth[a] (ft-TOC)	TOC Elevation[b] (ft-NAVD88)	Approximate Screen Interval (ft-bgs)	Approximate Screen Interval Elevation (ft-NAVD88)	Depth to Groundwater (ft-TOC)	Groundwater Elevation (ft-NAVD88)	Thickness of Water Column (ft)
MW-16	4/23/2015	34.82	303.91	25 - 35	278.91 - 268.91	DRY	NC	NC
	10/26/2015	34.91				34.80	269.11	0.11
	12/14/2015	34.83				DRY	NC	NC
	1/25/2016	35.73				DRY	NC	NC
	2/22/2016	35.72				34.97	268.94	0.75
	3/21/2016	35.61				33.81	270.10	1.80
	4/25/2016	35.41				DRY	NC	NC
	5/23/2016	35.58				DRY	NC	NC
	6/27/2016	34.70				DRY	NC	NC
	8/8/2016	35.50				34.73	269.18	0.77
	8/30/2016 *	36.23				34.74	269.17	1.49
	9/26/2016 *	36.50				DRY	NC	NC
	10/24/2016 *	36.65				DRY	NC	NC
	11/21/2016	35.46				34.60	269.31	0.86
	12/21/2016 *	36.10				DRY	NC	NC
	1/23/2017	35.70				34.36	269.55	1.34
	3/6/2017	34.61				34.02	269.89	0.59
	3/21/2017	35.73				DRY	NC	NC
	3/29/2017	34.87				DRY	NC	NC
	6/21/2017	34.69				DRY	NC	NC
	6/26/2017	34.72				DRY	NC	NC
	7/31/2017	35.95				34.75	269.16	1.20
	8/28/2017	34.85				34.74	269.17	0.11
	9/25/2017	34.93				34.68	269.23	0.25
	9/27/2017	34.77				DRY	NC	NC
	10/30/2017	34.97				34.92	268.99	0.05
	11/20/2017	34.71				DRY	NC	NC
	12/18/2017	35.01				34.88	269.03	0.13
	1/4/2018	35.45				34.72	269.19	0.73
	1/22/2018	34.81				34.64	269.27	0.17
	2/26/2018	34.89				34.74	269.17	0.15
	3/26/2018	34.84				DRY	NC	NC
	4/5/2018	34.83				34.55	269.36	0.28
	4/23/2018	35.02				DRY	NC	NC
	5/21/2018	34.84				34.71	269.20	0.13
	6/18/2018	34.87				34.68	269.23	0.19
	6/27/2018	35.05				34.92	268.99	0.13
	7/30/2018	34.96				DRY	NC	NC
	8/27/2018	34.83				DRY	NC	NC
	9/24/2018	34.82				DRY	NC	NC
	10/1/2018	34.91				DRY	NC	NC
	10/22/2018	34.99				DRY	NC	NC
	11/26/2018	34.83				DRY	NC	NC
	12/19/2018	34.82				DRY	NC	NC
	12/31/2018	34.70				DRY	NC	NC
	1/28/2019	34.88				DRY	NC	NC
	2/25/2019	Frozen				Frozen		
	3/18/2019	34.77				DRY	NC	NC
	3/20/2019	34.89				DRY	NC	NC
	4/15/2019	34.81				DRY	NC	NC
	5/6/2019	34.80				34.76	269.15	0.04
	5/8/2019	34.80				DRY	NC	NC
	5/20/2019	34.97				33.79	270.12	1.18
	6/17/2019	34.88				34.77	269.14	0.11
	6/19/2019	34.82				DRY	NC	NC
	7/22/2019	34.95				DRY	NC	NC
	8/26/2019	35.01				34.91	269.00	0.10
	9/23/2019	34.87				DRY	NC	NC
	10/2/2019	35.55				DRY	NC	NC
	11/21/2019	34.84				DRY	NC	NC
	12/16/2019	35.01				DRY	NC	NC
	12/18/2019	35.14				34.72	269.19	0.42

[a]Total depth was measured by sounding the wells prior to sampling and may differ from total depth as installed.
[b]Source of TOC elevations is Larry Steele & Associates. The TOC noted for DPE-4 is the elevation for the sampling port due to the DPE equipment installed in the well. For DPE-4, the measurement on April 23, 2015 was TOC for well casing (pre-dated DPE installation).

Notes:

Highlighted cells recorded a water column less than 0.7 foot. This is an indication that the well is dry and the water measured in the well is due to the collection of water in the bottom cap of the well.
Well is dry.

* - Indicates measured depth to bottom of well is very different than expected; impacts calculation of thickness of water column.

ft - foot
ft-TOC - feet below top of well casing
ft-NAVD88 - vertical elevation in feet relative to North American Vertical Datum of 1988
ft-bgs - feet below ground surface
NC - not calculated
NM - not measured

Table 2
Quarterly Groundwater Monitoring Results
Laurel Station Cleanup Action
Bellingham, Washington

Sample ID	Groundwater Cleanup	MW4		MW-6						
Sample Date	Levels	4/23/15	5/8/19	4/23/15	4/23/15 (DUP)	12/14/15	3/29/16	3/29/16 (DUP)	6/27/16	6/27/16 (DUP)
Total Petroleum Hydrocarbons (TPH, mg/L)										
Gasoline-range (Gx)	0.8/1.0 [a]	0.25 U	NA	0.25 U	0.25 U	0.25 U	0.10 U	0.10 U	0.10 U	0.10 U
Diesel-range (Dx)	NE	**0.94**	**4.11**	0.10 U	0.13 U	**0.12**	0.10 U	0.10 U	**0.11**	0.10 U
Motor Oil-range	NE	**0.47**	**2.33**	0.20 U	0.25 U	**0.22**	0.20 U	0.20 U	0.20 U	0.20 U
Total TPH (Sum Dx, Oil-range, mg/L)	0.5	**1.41**	**6.44**	ND	ND	**0.34**	ND	ND	**0.11**	ND
BTEX (ug/L)										
Benzene	5	0.20 U	NA	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Toluene	640	0.20 U	NA	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Ethylbenzene	700	0.20 U	NA	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
m,p-Xylene	1,600	0.40 U	NA	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U
o-Xylene	1,600	0.20 U	NA	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Polycyclic Aromatic Hydrocarbons (ug/L)										
1-Methylnaphthalene	1.51	NA	NA	0.010 U	NA	0.010 U	0.10 U	0.10 U	0.10 U	0.10 U
2-Methylnaphthalene	32	NA	NA	**0.019**	NA	0.010 U	0.10 U	0.10 U	0.10 U	0.10 U
Acenaphthene	960	NA	NA	0.010 U	NA	0.010 U	0.10 U	0.10 U	0.10 U	0.10 U
Acenaphthylene	NE	NA	NA	0.010 U	NA	0.010 U	0.10 U	0.10 U	0.10 U	0.10 U
Anthracene	4,800	NA	NA	0.010 U	NA	0.010 U	0.10 U	0.10 U	0.10 U	0.10 U
Benzo(a)anthracene [1]	0.12	NA	NA	**0.013**	NA	0.010 U	0.10 U	0.10 U	0.10 U	0.10 U
Benzo(b)fluoranthene [1]	0.12	NA	NA	**0.011**	NA	0.010 U	NA	NA	NA	NA
Benzo(k)fluoranthene [1]	1.2	NA	NA	0.010 U	NA	0.010 U	NA	NA	NA	NA
Benzo(a)pyrene [1]	0.12	NA	NA	**0.012**	NA	0.010 U	0.10 U	0.10 U	0.10 U	0.10 U
Benzo(g,h,i)perylene	NE	NA	NA	0.010 U	NA	0.010 U	0.10 U	0.10 U	0.10 U	0.10 U
Chrysene [1]	12	NA	NA	**0.015**	NA	**0.012**	0.10 U	0.10 U	0.10 U	0.10 U
Dibenz(a,h)anthracene [1]	0.012	NA	NA	0.010 U	NA	0.010 U	0.10 U	0.10 U	0.10 U	0.10 U
Dibenzofuran	16	NA	NA	0.010 U	NA	0.010 U	0.10 U	0.10 U	0.10 U	0.10 U
Fluoranthene	640	NA	NA	**0.017**	NA	**0.013**	0.10 U	0.10 U	0.10 U	0.10 U
Fluorene	640	NA	NA	0.010 U	NA	0.010 U	0.10 U	0.10 U	0.10 U	0.10 U
Indeno(1,2,3-cd)pyrene [1]	0.12	NA	NA	0.010 U	NA	0.010 U	0.10 U	0.10 U	0.10 U	0.10 U
Naphthalene	160	NA	NA	0.010 U	NA	0.010 U	0.10 U	0.10 U	**0.22**	**0.15**
Phenanthrene	NE	NA	NA	0.010 U	NA	**0.010**	0.10 U	0.10 U	0.10 U	0.10 U
Pyrene	480	NA	NA	**0.022**	NA	**0.014**	0.10 U	0.10 U	0.10 U	0.10 U
Total Benzofluoranthenes [2]	0.12	NA	NA	**0.024 J**	NA	0.020 U	0.10 U	0.10 U	0.10 U	0.10 U
TTEC	0.12	NA	NA	0.015	NA	0.00012	NC	NC	NC	NC

Notes:
Bolded values indicate that analyte was detected above the laboratory reporting limit.
Bolded and highlighted values exceed the project cleanup levels.
BTEX - benzene, toluene, ethylbenzene, and xylenes
J - estimated value
mg/L - milligram per liter
NA - not analyzed or not applicable
NC- not calculable
ND - not detected
NE - not established
TTEC - Total Toxicity Equivalent Concentration, reference WAC173-340-708
U - Compound was analyzed for but not detected above the reporting limit shown.
UJ - Compound was analyzed for but not detected above the reporting limit shown. Reporting limit is an estimated value.
ug/L - microgram per liter
[a] Gasoline with benzene present/without benzene present
[1] This is considered a carcinogenic polycyclic aromatic hydrocarbon compound.
[2] Total benzofluoranthenes is the sum of the benzo(b)fluoranthene, benzo(j)fluoranthene, and benzo(k)fluoranthene isomers.
The cleanup level of 0.12 ug/L is based on benzo(b)fluoranthene.

Table 2
Quarterly Groundwater Monitoring Results
Laurel Station Cleanup Action
Bellingham, Washington

Sample ID / Sample Date	Groundwater Cleanup Levels	MW-6 (continued) 9/26/16	12/21/16	12/21/16 (DUP)	3/29/17	6/21/17	6/21/17 (DUP)	9/27/17	1/4/18	4/5/18
Total Petroleum Hydrocarbons (TPH, mg/L)										
Gasoline-range (Gx)	0.8/1.0 [a]	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U
Diesel-range (Dx)	NE	**0.273**	0.100 U	0.100 U	0.100 U	0.115 U	**0.124**	**0.421**	**0.117**	0.100 U
Motor Oil-range	NE	0.200 U	0.200 U	0.200 U	0.200 U	0.230 U	**0.269**	**0.336**	0.200 U	0.200 U
Total TPH (Sum Dx, Oil-range, mg/L)	0.5	**0.273**	ND	ND	ND	ND	**0.393**	**0.757**	**0.117**	ND
BTEX (ug/L)										
Benzene	5	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Toluene	640	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Ethylbenzene	700	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
m,p-Xylene	1,600	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U
o-Xylene	1,600	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Polycyclic Aromatic Hydrocarbons (ug/L)										
1-Methylnaphthalene	1.51	**0.020**	**0.017**	**0.012**	0.010 U	0.013 U	0.011 U	NA	0.010 U	0.010 U
2-Methylnaphthalene	32	**0.049**	**0.048**	**0.033**	**0.026**	**0.018**	**0.017**	NA	0.010 U	0.010 U
Acenaphthene	960	0.010 U	0.010 U	0.010 U	0.010 U	0.013 U	0.011 U	NA	0.010 U	0.010 U
Acenaphthylene	NE	0.010 U	0.010 U	0.010 U	0.010 U	0.013 U	0.011 U	NA	0.010 U	0.010 U
Anthracene	4,800	**0.014**	0.010 U	0.010 U	0.010 U	0.013 U	0.011 U	NA	0.010 U	0.010 U
Benzo(a)anthracene [1]	0.12	**0.020**	0.010 U	0.010 U	0.010 U	0.013 U	0.011 U	NA	0.010 U	0.010 U
Benzo(b)fluoranthene [1]	0.12	**0.013**	0.010 U	0.010 U	0.010 U	0.013 U	0.011 U	NA	0.010 U	0.010 U
Benzo(k)fluoranthene [1]	1.2	0.010 U	0.010 U	0.010 U	0.010 U	0.013 U	0.011 U	NA	0.010 U	0.010 U
Benzo(a)pyrene [1]	0.12	**0.014**	0.010 U	0.010 U	0.010 U	0.013 U	0.011 U	NA	0.010 U	0.010 U
Benzo(g,h,i)perylene	NE	0.010 UJ	0.010 U	0.010 U	0.010 U	0.013 U	0.011 U	NA	0.010 U	0.010 U
Chrysene [1]	12	**0.023**	0.010 U	0.010 U	0.010 U	0.013 U	0.011 U	NA	0.010 U	0.010 U
Dibenz(a,h)anthracene [1]	0.012	0.010 UJ	0.010 U	0.010 U	0.010 U	0.013 U	0.011 U	NA	0.010 U	0.010 U
Dibenzofuran	16	0.010 U	0.010 U	0.010 U	0.010 U	0.013 U	0.011 U	NA	0.010 U	0.010 U
Fluoranthene	640	**0.045**	0.010 U	0.010 U	0.010 U	0.013 U	**0.015**	NA	0.010 U	0.010 U
Fluorene	640	0.010 U	0.010 U	0.010 U	0.010 U	0.013 U	0.011 U	NA	0.010 U	0.010 U
Indeno(1,2,3-cd)pyrene [1]	0.12	0.010 UJ	0.010 U	0.010 U	0.010 U	0.013 U	0.011 U	NA	0.010 U	0.010 U
Naphthalene	160	**0.670**	**0.303 J**	**0.209 J**	**0.153**	**0.164**	**0.150**	NA	**0.040**	**0.013**
Phenanthrene	NE	**0.024**	0.010 U	0.010 U	0.010 U	0.013 U	0.011 U	NA	0.010 U	0.010 U
Pyrene	480	**0.054**	0.010 U	0.010 U	0.010 U	0.013 U	**0.012**	NA	0.010 U	0.010 U
Total Benzofluoranthenes [2]	0.12	NA	NA	NA	NA	NA	NA	NA	NA	NA
TTEC	0.12	0.0175	NC	NC	NC	NC	NC	NC	NC	NC

Notes:
Bolded values indicate that analyte was detected above the laboratory reporting limit.
Bolded and highlighted values exceed the project cleanup levels.
BTEX - benzene, toluene, ethylbenzene, and xylenes
J - estimated value
mg/L - milligram per liter
NA - not analyzed or not applicable
NC- not calculable
ND - not detected
NE - not established
TTEC - Total Toxicity Equivalent Concentration, reference WAC173-340-708
U - Compound was analyzed for but not detected above the reporting limit shown.
UJ - Compound was analyzed for but not detected above the reporting limit shown. Reporting limit is an estimated value.
ug/L - microgram per liter
[a] Gasoline with benzene present/without benzene present
[1] This is considered a carcinogenic polycyclic aromatic hydrocarbon compound.
[2] Total benzofluoranthenes is the sum of the benzo(b)fluoranthene, benzo(j)fluoranthene, and benzo(k)fluoranthene isomers. The cleanup level of 0.12 ug/L is based on benzo(b)fluoranthene.

Table 2
Quarterly Groundwater Monitoring Results
Laurel Station Cleanup Action
Bellingham, Washington

Sample ID	Groundwater Cleanup	MW-6 (continued)								
Sample Date	Levels	4/5/18 (DUP)	6/27/18	10/1/18	12/19/18	3/20/19	5/8/19	6/19/19	10/2/19	10/2/19 (DUP)
Total Petroleum Hydrocarbons (TPH, mg/L)										
Gasoline-range (Gx)	0.8/1.0 [a]	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	NA	0.100 U	0.100 U	0.100 U
Diesel-range (Dx)	NE	0.100 U	0.100 U	**0.141**	0.100 U	0.100 U	0.100 U	NA	0.100 U	0.100 U
Motor Oil-range	NE	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	NA	0.200 U	0.200 U
Total TPH (Sum Dx, Oil-range, mg/L)	0.5	ND	ND	**0.141**	ND	ND	ND	NC	ND	ND
BTEX (ug/L)										
Benzene	5	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	NA	0.20 U	0.20 U	0.20 U
Toluene	640	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	NA	**0.21**	0.20 U	0.20 U
Ethylbenzene	700	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	NA	0.20 U	0.20 U	0.20 U
m,p-Xylene	1,600	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	NA	0.40 U	0.40 U	0.40 U
o-Xylene	1,600	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	NA	0.20 U	0.20 U	0.20 U
Polycyclic Aromatic Hydrocarbons (ug/L)										
1-Methylnaphthalene	1.51	0.010 U	NA	0.010 U	0.010 U	0.010 UJ	NA	**0.049**	**0.016**	**0.011**
2-Methylnaphthalene	32	0.010 U	NA	0.010 U	**0.018**	**0.015 J**	NA	**0.122**	**0.032**	**0.031**
Acenaphthene	960	0.010 U	NA	0.010 U	0.010 U	0.010 UJ	NA	0.019 U	0.010 U	0.010 U
Acenaphthylene	NE	0.010 U	NA	0.010 U	0.010 U	0.010 UJ	NA	0.019 U	0.010 U	0.010 U
Anthracene	4,800	0.010 U	NA	0.010 U	0.010 U	0.010 UJ	NA	**0.050**	0.010 U	0.010 U
Benzo(a)anthracene [1]	0.12	0.010 U	NA	0.010 U	0.010 U	0.010 UJ	NA	**0.201 J**	0.010 U	0.010 U
Benzo(b)fluoranthene [1]	0.12	0.010 U	NA	0.010 U	0.010 U	0.010 UJ	NA	**0.131 J**	0.010 U	0.010 U
Benzo(k)fluoranthene [1]	1.2	0.010 U	NA	0.010 U	0.010 U	0.010 UJ	NA	**0.080 J**	0.010 U	0.010 U
Benzo(a)pyrene [1]	0.12	0.010 U	NA	0.010 U	0.010 U	0.010 UJ	NA	**0.166 J**	0.010 U	0.010 U
Benzo(g,h,i)perylene	NE	0.010 U	NA	0.010 U	0.010 U	0.010 UJ	NA	**0.097 J**	0.010 U	0.010 U
Chrysene [1]	12	0.010 U	NA	0.010 U	0.010 U	0.010 UJ	NA	**0.203 J**	0.010 U	0.010 U
Dibenz(a,h)anthracene [1]	0.012	0.010 U	NA	0.010 U	0.010 U	0.010 UJ	NA	**0.025 J**	0.010 U	0.010 U
Dibenzofuran	16	0.010 U	NA	0.010 U	0.010 U	0.010 UJ	NA	**0.019**	0.010 U	0.010 U
Fluoranthene	640	0.010 U	NA	**0.014**	0.010 U	0.010 UJ	NA	**0.180**	0.010 U	0.010 U
Fluorene	640	0.010 U	NA	0.010 U	0.010 U	0.010 UJ	NA	**0.019**	0.010 U	0.010 U
Indeno(1,2,3-cd)pyrene [1]	0.12	0.010 U	NA	0.010 U	0.010 U	0.010 UJ	NA	**0.082 J**	0.010 U	0.010 U
Naphthalene	160	**0.013**	NA	**0.083**	**0.088**	**0.073 J**	NA	**0.934**	**0.248**	**0.241**
Phenanthrene	NE	0.010 U	NA	0.010 U	0.010 U	0.010 UJ	NA	**0.099**	0.010 U	0.010 U
Pyrene	480	0.010 U	NA	**0.012**	0.010 U	0.010 UJ	NA	**0.188 J**	0.010 U	0.010 U
Total Benzofluoranthenes [2]	0.12	NA	NA	NA	NA	NA	NA	NA	NA	NA
TTEC	0.12	NC	NC	NC	NC	NC	NA	0.220	NC	NC

Notes:
Bolded values indicate that analyte was detected above the laboratory reporting limit.
Bolded and highlighted values exceed the project cleanup levels.
BTEX - benzene, toluene, ethylbenzene, and xylenes
J - estimated value
mg/L - milligram per liter
NA - not analyzed or not applicable
NC- not calculable
ND - not detected
NE - not established
TTEC - Total Toxicity Equivalent Concentration, reference WAC173-340-708
U - Compound was analyzed for but not detected above the reporting limit shown.
UJ - Compound was analyzed for but not detected above the reporting limit shown. Reporting limit is an estimated value.
ug/L - microgram per liter
[a] Gasoline with benzene present/without benzene present
[1] This is considered a carcinogenic polycyclic aromatic hydrocarbon compound.
[2] Total benzofluoranthenes is the sum of the benzo(b)fluoranthene, benzo(j)fluoranthene, and benzo(k)fluoranthene isomers.
The cleanup level of 0.12 ug/L is based on benzo(b)fluoranthene.

Table 2
Quarterly Groundwater Monitoring Results
Laurel Station Cleanup Action
Bellingham, Washington

Sample ID	Groundwater Cleanup	MW-6 (continued)	PV-1	DPE-1	DPE-2			DPE-3	DPE-4
Sample Date	Levels	12/18/19	4/24/15	4/24/15	4/24/15	5/8/19	5/8/19 (DUP)	4/23/15	4/24/15
Total Petroleum Hydrocarbons (TPH, mg/L)									
Gasoline-range (Gx)	0.8/1.0 [a]	0.100 U	0.25 U	0.25 U	0.25 U	NA	NA	0.25 U	0.25 U
Diesel-range (Dx)	NE	0.100 U	**0.38**	**2.1**	**0.59**	**0.230**	**0.349**	**0.86**	**0.14**
Motor Oil-range	NE	0.200 U	0.20 U	**0.54**	**0.23**	0.200 U	0.200 U	**0.82**	0.20 U
Total TPH (Sum Dx, Oil-range, mg/L)	0.5	ND	**0.38**	**2.64**	**0.82**	**0.230**	**0.349**	**1.68**	**0.14**
BTEX (ug/L)									
Benzene	5	0.20 U	0.20 U	0.20 U	0.20 U	NA	NA	0.20 U	0.20 U
Toluene	640	0.20 U	**0.26**	0.20 U	**0.55**	NA	NA	**0.37**	0.20 U
Ethylbenzene	700	0.20 U	0.20 U	0.20 U	0.20 U	NA	NA	0.20 U	0.20 U
m,p-Xylene	1,600	0.40 U	0.40 U	0.40 U	0.40 U	NA	NA	0.40 U	0.40 U
o-Xylene	1,600	0.20 U	0.20 U	0.20 U	0.20 U	NA	NA	0.20 U	0.20 U
Polycyclic Aromatic Hydrocarbons (ug/L)									
1-Methylnaphthalene	1.51	0.010 U	0.010 U	0.010 U	**0.010**	NA	NA	**0.019**	0.010 U
2-Methylnaphthalene	32	**0.021**	0.010 U	0.010 U	0.010 U	NA	NA	**0.022**	0.010 U
Acenaphthene	960	0.010 U	0.010 U	0.010 U	0.010 U	NA	NA	0.010 U	0.010 U
Acenaphthylene	NE	0.010 U	0.010 U	0.010 U	0.010 U	NA	NA	0.010 U	0.010 U
Anthracene	4,800	0.010 U	0.010 U	0.010 U	0.010 U	NA	NA	0.010 U	0.010 U
Benzo(a)anthracene [1]	0.12	0.010 U	0.010 U	0.010 U	0.010 U	NA	NA	0.010 U	0.010 U
Benzo(b)fluoranthene [1]	0.12	0.010 U	0.010 U	**0.015**	0.010 U	NA	NA	**0.016**	0.010 U
Benzo(k)fluoranthene [1]	1.2	0.010 U	0.010 U	0.010 U	0.010 U	NA	NA	0.010 U	0.010 U
Benzo(a)pyrene [1]	0.12	0.010 U	0.010 U	0.010 U	0.010 U	NA	NA	0.010 U	0.010 U
Benzo(g,h,i)perylene	NE	0.010 U	0.010 U	0.010 U	0.010 U	NA	NA	**0.015**	0.010 U
Chrysene [1]	12	0.010 U	0.010 U	**0.098**	**0.013**	NA	NA	**0.044**	0.010 U
Dibenz(a,h)anthracene [1]	0.012	0.010 U	0.010 U	0.010 U	0.010 U	NA	NA	0.010 U	0.010 U
Dibenzofuran	16	0.010 U	0.010 U	0.010 U	0.010 U	NA	NA	**0.012**	0.010 U
Fluoranthene	640	0.010 U	0.010 U	0.010 U	0.010 U	NA	NA	0.010 U	0.010 U
Fluorene	640	0.010 U	0.010 U	0.010 U	**0.018**	NA	NA	**0.012**	0.010 U
Indeno(1,2,3-cd)pyrene [1]	0.12	0.010 U	0.010 U	0.010 U	0.010 U	NA	NA	0.010 U	0.010 U
Naphthalene	160	**0.119**	0.010 U	0.021 U	0.031 U	NA	NA	0.010 U	0.019 U
Phenanthrene	NE	0.010 U	0.010 U	0.010 U	0.010 U	NA	NA	**0.013**	0.010 U
Pyrene	480	0.010 U	0.010 U	**0.057**	**0.020**	NA	NA	**0.031**	0.010 U
Total Benzofluoranthenes [2]	0.12	NA	0.020 U	0.020 U	0.020 U	NA	NA	0.020 U	0.020 U
TTEC	0.12	NC	NC	0.0025	0.00013	NA	NA	0.0020	NC

Notes:
Bolded values indicate that analyte was detected above the laboratory reporting limit.
Bolded and highlighted values exceed the project cleanup levels.
BTEX - benzene, toluene, ethylbenzene, and xylenes
J - estimated value
mg/L - milligram per liter
NA - not analyzed or not applicable
NC- not calculable
ND - not detected
NE - not established
TTEC - Total Toxicity Equivalent Concentration, reference WAC173-340-708
U - Compound was analyzed for but not detected above the reporting limit shown.
UJ - Compound was analyzed for but not detected above the reporting limit shown. Reporting limit is an estimated value.
ug/L - microgram per liter

[a] Gasoline with benzene present/without benzene present
[1] This is considered a carcinogenic polycyclic aromatic hydrocarbon compound.
[2] Total benzofluoranthenes is the sum of the benzo(b)fluoranthene, benzo(j)fluoranthene, and benzo(k)fluoranthene isomers. The cleanup level of 0.12 ug/L is based on benzo(b)fluoranthene.

Table 2
Quarterly Groundwater Monitoring Results
Laurel Station Cleanup Action
Bellingham, Washington

Sample ID / Sample Date	Groundwater Cleanup Levels	DPE-5 4/24/15	DPE-5 5/8/19	DPE-7 5/8/19	DPE-8 4/23/15
Total Petroleum Hydrocarbons (TPH, mg/L)					
Gasoline-range (Gx)	0.8/1.0 [a]	0.25 U	NA	NA	0.25 U
Diesel-range (Dx)	NE	**0.46**	**0.332**	**7.01**	**0.60**
Motor Oil-range	NE	0.20 U	**0.442**	**2.11**	0.20 U
Total TPH (Sum Dx, Oil-range, mg/L)	0.5	**0.46**	**0.774**	**9.12**	**0.60**
BTEX (ug/L)					
Benzene	5	0.20 U	NA	NA	0.20 U
Toluene	640	0.20 U	NA	NA	**0.44**
Ethylbenzene	700	0.20 U	NA	NA	0.20 U
m,p-Xylene	1,600	0.40 U	NA	NA	0.40 U
o-Xylene	1,600	0.20 U	NA	NA	0.20 U
Polycyclic Aromatic Hydrocarbons (ug/L)					
1-Methylnaphthalene	1.51	0.010 U	NA	NA	0.010 U
2-Methylnaphthalene	32	0.010 U	NA	NA	0.010 U
Acenaphthene	960	0.010 U	NA	NA	0.010 U
Acenaphthylene	NE	0.010 U	NA	NA	0.010 U
Anthracene	4,800	0.010 U	NA	NA	0.010 U
Benzo(a)anthracene [1]	0.12	0.010 U	NA	NA	0.010 U
Benzo(b)fluoranthene [1]	0.12	0.010 U	NA	NA	0.010 U
Benzo(k)fluoranthene [1]	1.2	0.010 U	NA	NA	0.010 U
Benzo(a)pyrene [1]	0.12	0.010 U	NA	NA	0.010 U
Benzo(g,h,i)perylene	NE	0.010 U	NA	NA	0.010 U
Chrysene [1]	12	0.010 U	NA	NA	**0.011**
Dibenz(a,h)anthracene [1]	0.012	0.010 U	NA	NA	0.010 U
Dibenzofuran	16	0.010 U	NA	NA	0.010 U
Fluoranthene	640	0.010 U	NA	NA	0.010 U
Fluorene	640	**0.027**	**NA**	**NA**	0.010 U
Indeno(1,2,3-cd)pyrene [1]	0.12	0.010 U	NA	NA	0.010 U
Naphthalene	160	0.033 U	NA	NA	0.020 U
Phenanthrene	NE	0.010 U	NA	NA	0.010 U
Pyrene	480	0.010 U	NA	NA	**0.012**
Total Benzofluoranthenes [2]	0.12	0.020 U	NA	NA	0.020 U
TTEC	0.12	NC	NA	NA	0.00011

Notes:
Bolded values indicate that analyte was detected above the laboratory reporting limit.
Bolded and highlighted values exceed the project cleanup levels.
BTEX - benzene, toluene, ethylbenzene, and xylenes
J - estimated value
mg/L - milligram per liter
NA - not analyzed or not applicable
NC- not calculable
ND - not detected
NE - not established
TTEC - Total Toxicity Equivalent Concentration, reference WAC173-340-708
U - Compound was analyzed for but not detected above the reporting limit shown.
UJ - Compound was analyzed for but not detected above the reporting limit shown. Reporting limit is an estimated value.
ug/L - microgram per liter
[a] Gasoline with benzene present/without benzene present
[1] This is considered a carcinogenic polycyclic aromatic hydrocarbon compound.
[2] Total benzofluoranthenes is the sum of the benzo(b)fluoranthene, benzo(j)fluoranthene, and benzo(k)fluoranthene isomers. The cleanup level of 0.12 ug/L is based on benzo(b)fluoranthene.

Memo

AECOM

1111 3rd Avenue, Suite 1600
Seattle, Washington 98101
206.438.2700 Telephone
206.438.2699 Fax

To:	Karen Mixon, Project Manager	**Info:**	Final
From:	Chelsey Cook, Chemist Lucy Panteleeff, Chemist	**Date:**	January 8, 2020
RE:	Data Quality Review Quarterly Groundwater Samples – October 2019 Laurel Station Cleanup Action		

The data quality review of 1 groundwater sample, 1 field duplicate sample, and 1 trip blank collected on October 2, 2019, has been completed. The samples were analyzed by Analytical Resources, Incorporated (ARI) located in Tukwila, Washington for benzene, toluene, ethylbenzene, m,p-xylene, and o-xylene (BTEX) by EPA Method 8260C, total petroleum hydrocarbons (TPHs) by Washington State Department of Ecology (Ecology) Methods NWTPH-Gx (gasoline-range TPH) and NWTPH-Dx (diesel-range and motor oil-range TPH), and/or polycyclic aromatic hydrocarbons (PAHs) by EPA Method 8270D-SIM. Samples were analyzed for the chemical constituents as described in the *Final Compliance Monitoring Plan, Laurel Station, 1009 East Smith Road, Bellingham, Washington* dated January 16, 2015 (CMP). Due to changes in laboratory procedures, NWTPH-Gx analysis was performed using GC/MS instrumentation instead of GC/FID.

The analyses were performed in general accordance with methods specified in EPA's *Test Methods for Evaluating Solid Waste (SW-846)* and Ecology's *Analytical Methods for Petroleum Hydrocarbons*, June 1997. The laboratory provided a full data package containing sample results and associated QA/QC data. The following samples are associated with ARI group 19J0054:

Sample ID	Laboratory ID
MW-6	19J0054-01
DUP-1	19J0054-02
Trip Blank	19J0054-03

The following comments refer to ARI's performance in meeting the quality control specifications described in the analytical methods. Data were qualified based on the method criteria and guidance provided in the EPA document *USEPA National Functional Guidelines for Organic Superfund Methods Data Review*, January 2017. Data qualifiers that may be assigned to data from this laboratory group include:

- U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
- J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- UJ - The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- R - The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

- DNR - Do Not Report. Multiple results reported from different analytical dates and/or dilutions. Value from another analysis should be used.

Sample Receipt

Upon receipt by ARI, the sample jar information was compared to the chain-of-custody (COC) and the cooler temperature was recorded. The cooler was received at a temperature within the EPA-recommended limits of greater than 0°C and less than or equal to 6°C. The laboratory noted that the trip blank was not marked on the COC. At the direction of AECOM, the laboratory logged the trip blank according to the sample label.

Organic Analyses

Samples were analyzed for BTEX, TPHs, and PAHs by the methods identified in the introduction to this report.

1. Holding Times – Acceptable

2. Instrument Performance and Calibrations (initial and continuing) – Acceptable

3. Blanks – Acceptable

4. Surrogates – Acceptable

5. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) – Acceptable

6. Matrix Spike/Matrix Spike Duplicate (MS/MSD) – Acceptable except as noted below:

   PAHs by Method 8270D-SIM – An MS/MSD was performed using MW-6. The relative percent differences (RPDs) for the following analytes exceeded the control limit of 30%:

Analyte	RPD
1-Methylnaphthalene	30.60%
Acenaphthene	30.40%
Dibenzofuran	30.90%
Fluorene	31.10%
Phenanthrene	35.90%
Anthracene	32.70%
Fluoranthene	40.10%
Pyrene	42.10%
Benzo(a)anthracene	37.80%
Chrysene	36.60%
Benzo(b)fluoranthene	30.80%
Benzo(a)pyrene	35.00%

   The percent recoveries in the MS and the MSD were acceptable; therefore, data were not qualified based on these elevated RPDs.

7. Field Duplicates – Acceptable except as noted below:

   General – A field duplicate was submitted for MW-6 and identified as DUP-1. Results were comparable for all organic analytes reported at concentrations greater than five times the reporting limits.

8. Reporting Limits – Acceptable

Overall Assessment of Data

The data reported in this laboratory group are considered usable for meeting project objectives. The completeness for laboratory group 19J0054 is 100%.

Table 1. Summary of Qualified Data

Sample ID	ARI ID	Analyte	Result	Units	Final Result
No data qualifiers were assigned to the results reported in laboratory group 19J0054 during validation.					

Analytical Resources, Incorporated
Analytical Chemists and Consultants

17 October 2019

Karen Mixon
AECOM
1111 Third Avenue, Suite 1600
Seattle, WA 98101

RE: Laurel Station

Please find enclosed sample receipt documentation and analytical results for samples from the project referenced above.

Sample analyses were performed according to ARI's Quality Assurance Plan and any provided project specific Quality Assurance Plan. Each analytical section of this report has been approved and reviewed by an analytical peer, the appropriate Laboratory Supervisor or qualified substitute, and a technical reviewer.

Should you have any questions or problems, please feel free to contact us at your convenience.

Associated Work Order(s)	Associated SDG ID(s)
19J0054	N/A

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the enclose Narrative. ARI, an accredited laboratory, certifies that the report results for which ARI is accredited meets all the requirements of the accrediting body. A list of certified analyses, accreditations, and expiration dates is included in this report.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Analytical Resources, Inc.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

ACCREDITED IN ACCORDANCE WITH nelac
Cert# 100006

PJLA Testing
Accreditation # 66169

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: 19J0054	Turn-around Requested: Standard	Page:	of
ARI Client Company: AECOM	Phone: 206-438-2700	Date: 10-2-19	Ice Present?
Client Contact: Karen Mixon		No. of Coolers: 1	Cooler Temps: 3.6
Client Project Name: Laurel Station Groundwater Sampling			
Client Project #:	Samplers: Demetrio Cabanillas		

Analytical Resources, Incorporated
Analytical Chemists and Consultants
4611 South 134th Place, Suite 100
Tukwila, WA 98168
206-695-6200 206-695-6201 (fax)
www.arilabs.com

Sample ID	Date	Time	Matrix	No. Containers	Analysis Requested: BTEX 8260	cPAH 8270 SIM	Notes/Comments
MW-6	10-2-19	1145	W	7	X	X	
DUP-1	10-2-19	X	W	7	X	X	

Comments/Special Instructions

	Relinquished by: (Signature)	Received by: (Signature)	Relinquished by: (Signature)	Received by: (Signature)
Printed Name:	Demetrio Cabanillas	Kenny Dang		
Company:	AECOM	ARI		
Date & Time:	10-3-19 800	10/3/19 1120		

Limits of Liability: *ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.*

Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.

AECOM	Project: Laurel Station	
1111 Third Avenue, Suite 1600	Project Number: Laurel Station	**Reported:**
Seattle WA, 98101	Project Manager: Karen Mixon	17-Oct-2019 15:52

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-6	19J0054-01	Water	02-Oct-2019 11:45	03-Oct-2019 11:20
DUP-1	19J0054-02	Water	02-Oct-2019 00:00	03-Oct-2019 11:20
Trip Blank	19J0054-03	Water	02-Oct-2019 11:45	03-Oct-2019 11:20

4611 S. 134th Place, Suite 100 • Tukwila, WA 98168 • Ph: (206) 695-6200 • Fax: (206) 695-6202

AECOM	Project: Laurel Station	
1111 Third Avenue, Suite 1600	Project Number: Laurel Station	**Reported:**
Seattle WA, 98101	Project Manager: Karen Mixon	17-Oct-2019 15:52

Work Order Case Narrative

Volatiles - EPA Method SW8260C

The sample(s) were analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The LCS/LCSD percent recoveries and RPD were within control limits.

Gasoline by NWTPH-g (GC/MS)

The sample(s) were analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The LCS/LCSD percent recoveries and RPD were within control limits.

Diesel/Heavy Oil Range Organics - WA-Ecology Method NW-TPHDx

The sample(s) were extracted and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The LCS percent recoveries were within control limits.

AECOM	Project: Laurel Station	
1111 Third Avenue, Suite 1600	Project Number: Laurel Station	**Reported:**
Seattle WA, 98101	Project Manager: Karen Mixon	17-Oct-2019 15:52

Polynuclear Aromatic Hydrocarbons (PAH) - EPA Method SW8270D-SIM

The sample(s) were extracted and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The LCS percent recoveries were within control limits.

The matrix spike/matrix spike duplicate recoveries and RPD were within limits with the exception of analytes flagged on the associated forms.

4611 S. 134th Place, Suite 100 • Tukwila, WA 98168 • Ph: (206) 695-6200 • Fax: (206) 695-6202

WORK ORDER

19J0054

Client: AECOM
Project: Laurel Station
Project Manager: Kelly Bottem
Project Number: Laurel Station

Report To:
AECOM
Karen Mixon
1111 Third Avenue, Suite 1600
Seattle, WA 98101
Phone: (206) 438-2700
Fax: 1(206) 438-2699

Invoice To:
Trans Mountain Pipeline (Puget Sound) LLC
Mike Droppo
300- 5th AVE Suite 2700
Calgary, Alberta, BC TZP 512
Phone :-
Fax:

Date Due: 17-Oct-2019 18:00 (10 day TAT)
Received By: Kenny Dang
Logged In By: Kenny Dang
Date Received: 03-Oct-2019 11:20
Date Logged In: 03-Oct-2019 13:45

Samples Received at: **3.6°C**

Intact, properly signed and dated custody seals attached to outside of cooler(s)	Yes	Custody papers included with the cooler	Yes
Custody papers properly filled out (in, signed, analyses requested, etc)	Yes	Was a temperature blank included in the cooler	No
Was sufficient ice used (if appropriate)	Yes	All bottles sealed in individual plastic bags	No
All bottles arrived in good condition (unbroken)	Yes	All bottle labels complete and legible	Yes
Number of containers listed on COC match number received	Yes	Bottle labels and tags agree with COC	Yes
Correct bottles used for the requested analyses	Yes	All VOC vials free of air bubbles	Yes
Analyses/bottles require preservation (attach preservation sheet excluding VOC)	No	Sufficient amount of sample sent in each bottle	Yes
Sample split at ARI	No		

Analysis	Due	TAT	Expires	Comments

19J0054-01 MW-6 [Water] Sampled 02-Oct-2019 11:45 (GMT-08:00) Pacific Time (US & Canada)

A = Glass NM, Amber, 500 mL *B = Glass NM, Amber, 500 mL* *C = Glass NM, Amber, 500 mL* *D = Glass NM, Amber, 500 mL*
E = VOA Vial, Clear, 40 mL, HCL *F = VOA Vial, Clear, 40 mL, HCL* *G = VOA Vial, Clear, 40 mL, HCL*

8270D-SIM PAH Low (0.01 ug/L - 0.5 u	17-Oct-2019 15:00	10	09-Oct-2019 11:45
TPH NW (Extractables) low level	17-Oct-2019 15:00	10	09-Oct-2019 11:45
8260C VOA	17-Oct-2019 15:00	10	16-Oct-2019 11:45
8260C Gas (NWTPH)	17-Oct-2019 15:00	10	16-Oct-2019 11:45

19J0054-02 DUP-1 [Water] Sampled 02-Oct-2019 00:00 (GMT-08:00) Pacific Time (US & Canada)

A = Glass NM, Amber, 500 mL *B = Glass NM, Amber, 500 mL* *C = Glass NM, Amber, 500 mL* *D = Glass NM, Amber, 500 mL*
E = VOA Vial, Clear, 40 mL, HCL *F = VOA Vial, Clear, 40 mL, HCL* *G = VOA Vial, Clear, 40 mL, HCL*

8270D-SIM PAH Low (0.01 ug/L - 0.5 u	17-Oct-2019 15:00	10	09-Oct-2019 00:00
TPH NW (Extractables) low level	17-Oct-2019 15:00	10	09-Oct-2019 00:00
8260C VOA	17-Oct-2019 15:00	10	16-Oct-2019 00:00
8260C Gas (NWTPH)	17-Oct-2019 15:00	10	16-Oct-2019 00:00

19J0054-03 Trip Blank [Water] Sampled 02-Oct-2019 11:45 (GMT-08:00) Pacific Time (US & Canada)

A = VOA Vial, Clear, 40 mL, HCL

8260C VOA	17-Oct-2019 15:00	10	16-Oct-2019 11:45
8260C Gas (NWTPH)	17-Oct-2019 15:00	10	16-Oct-2019 11:45

Reviewed By _____ Date _____

WORK ORDER

19J0054

Client: AECOM	**Project Manager:** Kelly Bottem
Project: Laurel Station	**Project Number:** Laurel Station

Reviewed By

Date

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: AECOM Project Name: Laurel Station

COC No(s): _____ (NA) Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____

Assigned ARI Job No: 19J0054 Tracking No: _____ (NA)

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of the cooler?	(YES)	NO
Were custody papers included with the cooler?	(YES)	NO
Were custody papers properly filled out (ink, signed, etc.)	(YES)	NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)

Time 1210 3.6

If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: D00520C

Cooler Accepted by: KD Date: 10/3/19 Time: 1120

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler?		YES	(NO)
What kind of packing material was used?	Bubble Wrap (Wet Ice) Gel Packs Baggies Foam Block Paper Other: _____		
Was sufficient ice used (if appropriate)?	NA	(YES)	NO
How were bottles sealed in plastic bags?	Individually	Grouped	(Not)
Did all bottles arrive in good condition (unbroken)?		(YES)	NO
Were all bottle labels complete and legible?		(YES)	NO
Did the number of containers listed on COC match with the number of containers received?		(YES)	NO
Did all bottle labels and tags agree with custody papers?		(YES)	NO
Were all bottles used correct for the requested analyses?		(YES)	NO
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)	(NA)	YES	NO
Were all VOC vials free of air bubbles?	NA	(YES)	NO
Was sufficient amount of sample sent in each bottle?		(YES)	NO
Date VOC Trip Blank was made at ARI	NA	3/18/19	

Were the sample(s) split by ARI? (NA) YES Date/Time: _____ Equipment: _____ Split by: _____

Samples Logged by: KD Date: 10/3/19 Time: 1345 Labels checked by: KD

*** Notify Project Manager of discrepancies or concerns ***

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

-Trip Blank was not listed on COC

By: KD Date: 10/3/19

AECOM	Project: Laurel Station	
1111 Third Avenue, Suite 1600	Project Number: Laurel Station	**Reported:**
Seattle WA, 98101	Project Manager: Karen Mixon	17-Oct-2019 15:52

MW-6

19J0054-01 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 10/02/2019 11:45
Instrument: NT2 Analyst: PKC — Analyzed: 10/03/2019 15:58

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19J0054-01 E
Preparation Batch: BHJ0092 — Sample Size: 10 mL
Prepared: 03-Oct-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Benzene	71-43-2	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Surrogate: Toluene-d8			*80-120 %*	*96.6*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*85.2*	*%*	

AECOM	Project: Laurel Station	
1111 Third Avenue, Suite 1600	Project Number: Laurel Station	**Reported:**
Seattle WA, 98101	Project Manager: Karen Mixon	17-Oct-2019 15:52

MW-6

19J0054-01 (Water)

Volatile Organic Compounds

Method: NWTPHg — Sampled: 10/02/2019 11:45
Instrument: NT2 Analyst: PKC — Analyzed: 10/03/2019 15:58

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19J0054-01 E
Preparation Batch: BHJ0092 — Sample Size: 10 mL
Prepared: 03-Oct-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	0.100	ND	mg/L	U
Surrogate: Toluene-d8			*80-120 %*	*96.6*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*85.2*	*%*	

4611 S. 134th Place, Suite 100 • Tukwila, WA 98168 • Ph: (206) 695-6200 • Fax: (206) 695-6202

AECOM	Project: Laurel Station	
1111 Third Avenue, Suite 1600	Project Number: Laurel Station	**Reported:**
Seattle WA, 98101	Project Manager: Karen Mixon	17-Oct-2019 15:52

MW-6

19J0054-01 (Water)

Semivolatile Organic Compounds - SIM

Method: EPA 8270D-SIM — Sampled: 10/02/2019 11:45
Instrument: NT11 Analyst: VTS — Analyzed: 10/16/2019 19:22

Sample Preparation: Preparation Method: EPA 3510C SepF — Extract ID: 19J0054-01 B 01
Preparation Batch: BHJ0188 — Sample Size: 500 mL
Prepared: 09-Oct-2019 — Final Volume: 0.5 mL

Sample Cleanup: Cleanup Method: Silica Gel — Extract ID: 19J0054-01 B 01
Cleanup Batch: CHJ0102 — Initial Volume: 0.5 mL
Cleaned: 11-Oct-2019 — Final Volume: 0.5 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Naphthalene	91-20-3	1	0.010	**0.248**	ug/L	
2-Methylnaphthalene	91-57-6	1	0.010	**0.032**	ug/L	
1-Methylnaphthalene	90-12-0	1	0.010	**0.016**	ug/L	
Acenaphthylene	208-96-8	1	0.010	ND	ug/L	U
Acenaphthene	83-32-9	1	0.010	ND	ug/L	U
Dibenzofuran	132-64-9	1	0.010	ND	ug/L	U
Fluorene	86-73-7	1	0.010	ND	ug/L	U
Phenanthrene	85-01-8	1	0.010	ND	ug/L	U
Anthracene	120-12-7	1	0.010	ND	ug/L	U
Fluoranthene	206-44-0	1	0.010	ND	ug/L	U
Pyrene	129-00-0	1	0.010	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	0.010	ND	ug/L	U
Chrysene	218-01-9	1	0.010	ND	ug/L	U
Benzo(b)fluoranthene	205-99-2	1	0.010	ND	ug/L	U
Benzo(k)fluoranthene	207-08-9	1	0.010	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.010	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.010	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.010	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.010	ND	ug/L	U
Surrogate: 2-Methylnaphthalene-d10			*42-120 %*	*75.4*	*%*	
Surrogate: Dibenzo[a,h]anthracene-d14			*29-120 %*	*99.0*	*%*	
Surrogate: Fluoranthene-d10			*57-120 %*	*82.4*	*%*	

4611 S. 134th Place, Suite 100 • Tukwila, WA 98168 • Ph: (206) 695-6200 • Fax: (206) 695-6202

AECOM	Project: Laurel Station	
1111 Third Avenue, Suite 1600	Project Number: Laurel Station	**Reported:**
Seattle WA, 98101	Project Manager: Karen Mixon	17-Oct-2019 15:52

MW-6

19J0054-01 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx — Sampled: 10/02/2019 11:45
Instrument: FID3 Analyst: CTO/JGR/VT — Analyzed: 10/10/2019 03:16

Sample Preparation: Preparation Method: EPA 3510C SepF — Extract ID: 19J0054-01 A 01
Preparation Batch: BHJ0178 — Sample Size: 500 mL
Prepared: 08-Oct-2019 — Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	0.100	ND	mg/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	0.200	ND	mg/L	U
Surrogate: o-Terphenyl			*50-150 %*	*93.2*	*%*	

4611 S. 134th Place, Suite 100 • Tukwila, WA 98168 • Ph: (206) 695-6200 • Fax: (206) 695-6202

AECOM	Project: Laurel Station	
1111 Third Avenue, Suite 1600	Project Number: Laurel Station	**Reported:**
Seattle WA, 98101	Project Manager: Karen Mixon	17-Oct-2019 15:52

DUP-1

19J0054-02 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 10/02/2019 00:00
Instrument: NT2 Analyst: PKC — Analyzed: 10/03/2019 16:18

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19J0054-02 E
Preparation Batch: BHJ0092 — Sample Size: 10 mL
Prepared: 03-Oct-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Benzene	71-43-2	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Surrogate: Toluene-d8			*80-120 %*	*96.0*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*85.6*	*%*	

4611 S. 134th Place, Suite 100 • Tukwila, WA 98168 • Ph: (206) 695-6200 • Fax: (206) 695-6202

AECOM	Project: Laurel Station	
1111 Third Avenue, Suite 1600	Project Number: Laurel Station	**Reported:**
Seattle WA, 98101	Project Manager: Karen Mixon	17-Oct-2019 15:52

DUP-1

19J0054-02 (Water)

Volatile Organic Compounds

Method: NWTPHg — Sampled: 10/02/2019 00:00
Instrument: NT2 Analyst: PKC — Analyzed: 10/03/2019 16:18

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19J0054-02 E
Preparation Batch: BHJ0092 — Sample Size: 10 mL
Prepared: 03-Oct-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	0.100	ND	mg/L	U
Surrogate: Toluene-d8			*80-120 %*	*96.0*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*85.6*	*%*	

4611 S. 134th Place, Suite 100 • Tukwila, WA 98168 • Ph: (206) 695-6200 • Fax: (206) 695-6202

AECOM	Project: Laurel Station	
1111 Third Avenue, Suite 1600	Project Number: Laurel Station	**Reported:**
Seattle WA, 98101	Project Manager: Karen Mixon	17-Oct-2019 15:52

DUP-1

19J0054-02 (Water)

Semivolatile Organic Compounds - SIM

Method: EPA 8270D-SIM — Sampled: 10/02/2019 00:00
Instrument: NT11 Analyst: VTS — Analyzed: 10/16/2019 19:52

Sample Preparation: Preparation Method: EPA 3510C SepF; Preparation Batch: BHJ0188; Prepared: 09-Oct-2019; Sample Size: 500 mL; Final Volume: 0.5 mL — Extract ID: 19J0054-02 B 01

Sample Cleanup: Cleanup Method: Silica Gel; Cleanup Batch: CHJ0102; Cleaned: 11-Oct-2019; Initial Volume: 0.5 mL; Final Volume: 0.5 mL — Extract ID: 19J0054-02 B 01

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Naphthalene	91-20-3	1	0.010	**0.241**	ug/L	
2-Methylnaphthalene	91-57-6	1	0.010	**0.031**	ug/L	
1-Methylnaphthalene	90-12-0	1	0.010	**0.011**	ug/L	
Acenaphthylene	208-96-8	1	0.010	ND	ug/L	U
Acenaphthene	83-32-9	1	0.010	ND	ug/L	U
Dibenzofuran	132-64-9	1	0.010	ND	ug/L	U
Fluorene	86-73-7	1	0.010	ND	ug/L	U
Phenanthrene	85-01-8	1	0.010	ND	ug/L	U
Anthracene	120-12-7	1	0.010	ND	ug/L	U
Fluoranthene	206-44-0	1	0.010	ND	ug/L	U
Pyrene	129-00-0	1	0.010	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	0.010	ND	ug/L	U
Chrysene	218-01-9	1	0.010	ND	ug/L	U
Benzo(b)fluoranthene	205-99-2	1	0.010	ND	ug/L	U
Benzo(k)fluoranthene	207-08-9	1	0.010	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.010	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.010	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.010	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.010	ND	ug/L	U
Surrogate: 2-Methylnaphthalene-d10			*42-120 %*	*81.2*	*%*	
Surrogate: Dibenzo[a,h]anthracene-d14			*29-120 %*	*105*	*%*	
Surrogate: Fluoranthene-d10			*57-120 %*	*89.5*	*%*	

4611 S. 134th Place, Suite 100 • Tukwila, WA 98168 • Ph: (206) 695-6200 • Fax: (206) 695-6202

AECOM	Project: Laurel Station	
1111 Third Avenue, Suite 1600	Project Number: Laurel Station	**Reported:**
Seattle WA, 98101	Project Manager: Karen Mixon	17-Oct-2019 15:52

DUP-1

19J0054-02 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx — Sampled: 10/02/2019 00:00
Instrument: FID3 Analyst: CTO/JGR/VT — Analyzed: 10/10/2019 03:36

Sample Preparation: Preparation Method: EPA 3510C SepF — Extract ID: 19J0054-02 A 01
Preparation Batch: BHJ0178 — Sample Size: 500 mL
Prepared: 08-Oct-2019 — Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	0.100	ND	mg/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	0.200	ND	mg/L	U
Surrogate: o-Terphenyl			*50-150 %*	*95.5*	*%*	

4611 S. 134th Place, Suite 100 • Tukwila, WA 98168 • Ph: (206) 695-6200 • Fax: (206) 695-6202

AECOM	Project: Laurel Station	
1111 Third Avenue, Suite 1600	Project Number: Laurel Station	**Reported:**
Seattle WA, 98101	Project Manager: Karen Mixon	17-Oct-2019 15:52

Trip Blank

19J0054-03 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 10/02/2019 11:45
Instrument: NT2 Analyst: PKC — Analyzed: 10/03/2019 15:17

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19J0054-03 A
Preparation Batch: BHJ0092 — Sample Size: 10 mL
Prepared: 03-Oct-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Benzene	71-43-2	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Surrogate: Toluene-d8			*80-120 %*	*94.3*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*84.5*	*%*	

4611 S. 134th Place, Suite 100 • Tukwila, WA 98168 • Ph: (206) 695-6200 • Fax: (206) 695-6202

AECOM	Project: Laurel Station	
1111 Third Avenue, Suite 1600	Project Number: Laurel Station	**Reported:**
Seattle WA, 98101	Project Manager: Karen Mixon	17-Oct-2019 15:52

Trip Blank

19J0054-03 (Water)

Volatile Organic Compounds

Method: NWTPHg — Sampled: 10/02/2019 11:45
Instrument: NT2 Analyst: PKC — Analyzed: 10/03/2019 15:17

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19J0054-03 A
Preparation Batch: BHJ0092 — Sample Size: 10 mL
Prepared: 03-Oct-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	0.100	ND	mg/L	U
Surrogate: Toluene-d8			*80-120 %*	*94.3*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*84.5*	*%*	

4611 S. 134th Place, Suite 100 • Tukwila, WA 98168 • Ph: (206) 695-6200 • Fax: (206) 695-6202

AECOM	Project: Laurel Station	
1111 Third Avenue, Suite 1600	Project Number: Laurel Station	**Reported:**
Seattle WA, 98101	Project Manager: Karen Mixon	17-Oct-2019 15:52

Volatile Organic Compounds - Quality Control

Batch BHJ0092 - EPA 5030 (Purge and Trap)

Instrument: NT2 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHJ0092-BLK1)				Prepared: 03-Oct-2019 Analyzed: 03-Oct-2019 12:04						
Gasoline Range Organics (Tol-Nap)	ND	0.100	mg/L							U
Surrogate: Toluene-d8	4.70		mg/L	*5.00*		*94.1*	*80-120*			
Surrogate: 4-Bromofluorobenzene	4.57		mg/L	*5.00*		*91.5*	*80-120*			
Blank (BHJ0092-BLK2)				Prepared: 03-Oct-2019 Analyzed: 03-Oct-2019 12:04						
Benzene	ND	0.20	ug/L							U
Toluene	ND	0.20	ug/L							U
Ethylbenzene	ND	0.20	ug/L							U
m,p-Xylene	ND	0.40	ug/L							U
o-Xylene	ND	0.20	ug/L							U
Surrogate: Toluene-d8	4.70		ug/L	*5.00*		*94.1*	*80-120*			
Surrogate: 4-Bromofluorobenzene	4.57		ug/L	*5.00*		*91.5*	*80-120*			
LCS (BHJ0092-BS1)				Prepared: 03-Oct-2019 Analyzed: 03-Oct-2019 10:20						
Gasoline Range Organics (Tol-Nap)	0.991	0.100	mg/L	1.00		99.1	72-128			
Surrogate: Toluene-d8	5.04		mg/L	*5.00*		*101*	*80-120*			
Surrogate: 4-Bromofluorobenzene	5.23		mg/L	*5.00*		*105*	*80-120*			
LCS (BHJ0092-BS2)				Prepared: 03-Oct-2019 Analyzed: 03-Oct-2019 11:00						
Benzene	10.0	0.20	ug/L	10.0		100	80-120			
Toluene	9.88	0.20	ug/L	10.0		98.8	80-120			
Ethylbenzene	10.0	0.20	ug/L	10.0		100	80-120			
m,p-Xylene	21.5	0.40	ug/L	20.0		107	80-121			
o-Xylene	10.7	0.20	ug/L	10.0		107	80-121			
Surrogate: Toluene-d8	5.00		ug/L	*5.00*		*100*	*80-120*			
Surrogate: 4-Bromofluorobenzene	5.20		ug/L	*5.00*		*104*	*80-120*			
LCS Dup (BHJ0092-BSD1)				Prepared: 03-Oct-2019 Analyzed: 03-Oct-2019 10:40						
Gasoline Range Organics (Tol-Nap)	1.02	0.100	mg/L	1.00		102	72-128	3.35	30	
Surrogate: Toluene-d8	5.10		mg/L	*5.00*		*102*	*80-120*			
Surrogate: 4-Bromofluorobenzene	5.33		mg/L	*5.00*		*107*	*80-120*			
LCS Dup (BHJ0092-BSD2)				Prepared: 03-Oct-2019 Analyzed: 03-Oct-2019 11:21						
Benzene	10.0	0.20	ug/L	10.0		100	80-120	0.04	30	

AECOM	Project: Laurel Station	
1111 Third Avenue, Suite 1600	Project Number: Laurel Station	**Reported:**
Seattle WA, 98101	Project Manager: Karen Mixon	17-Oct-2019 15:52

Volatile Organic Compounds - Quality Control

Batch BHJ0092 - EPA 5030 (Purge and Trap)

Instrument: NT2 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BHJ0092-BSD2)				Prepared: 03-Oct-2019 Analyzed: 03-Oct-2019 11:21						
Toluene	9.82	0.20	ug/L	10.0		98.2	80-120	0.66	30	
Ethylbenzene	9.92	0.20	ug/L	10.0		99.2	80-120	0.89	30	
m,p-Xylene	21.0	0.40	ug/L	20.0		105	80-121	2.14	30	
o-Xylene	10.7	0.20	ug/L	10.0		107	80-121	0.41	30	
Surrogate: Toluene-d8	5.00		ug/L	*5.00*		*100*	*80-120*			
Surrogate: 4-Bromofluorobenzene	5.16		ug/L	*5.00*		*103*	*80-120*			

AECOM	Project: Laurel Station	
1111 Third Avenue, Suite 1600	Project Number: Laurel Station	**Reported:**
Seattle WA, 98101	Project Manager: Karen Mixon	17-Oct-2019 15:52

Semivolatile Organic Compounds - SIM - Quality Control

Batch BHJ0188 - EPA 3510C SepF

Instrument: NT11 Analyst: VTS

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHJ0188-BLK1)				Prepared: 09-Oct-2019 Analyzed: 16-Oct-2019 16:54						
Naphthalene	ND	0.010	ug/L							U
2-Methylnaphthalene	ND	0.010	ug/L							U
1-Methylnaphthalene	ND	0.010	ug/L							U
Acenaphthylene	ND	0.010	ug/L							U
Acenaphthene	ND	0.010	ug/L							U
Dibenzofuran	ND	0.010	ug/L							U
Fluorene	ND	0.010	ug/L							U
Phenanthrene	ND	0.010	ug/L							U
Anthracene	ND	0.010	ug/L							U
Fluoranthene	ND	0.010	ug/L							U
Pyrene	ND	0.010	ug/L							U
Benzo(a)anthracene	ND	0.010	ug/L							U
Chrysene	ND	0.010	ug/L							U
Benzo(b)fluoranthene	ND	0.010	ug/L							U
Benzo(k)fluoranthene	ND	0.010	ug/L							U
Benzo(a)pyrene	ND	0.010	ug/L							U
Indeno(1,2,3-cd)pyrene	ND	0.010	ug/L							U
Dibenzo(a,h)anthracene	ND	0.010	ug/L							U
Benzo(g,h,i)perylene	ND	0.010	ug/L							U
Surrogate: 2-Methylnaphthalene-d10	0.236		ug/L	*0.300*		*78.6*	*42-120*			
Surrogate: Dibenzo[a,h]anthracene-d14	0.329		ug/L	*0.300*		*110*	*29-120*			
Surrogate: Fluoranthene-d10	0.261		ug/L	*0.300*		*87.0*	*57-120*			
LCS (BHJ0188-BS1)				Prepared: 09-Oct-2019 Analyzed: 16-Oct-2019 17:24						
Naphthalene	0.215	0.010	ug/L	0.300		71.8	37-120			
2-Methylnaphthalene	0.217	0.010	ug/L	0.300		72.2	37-120			
1-Methylnaphthalene	0.219	0.010	ug/L	0.300		73.1	29-120			
Acenaphthylene	0.204	0.010	ug/L	0.300		68.0	41-120			
Acenaphthene	0.218	0.010	ug/L	0.300		72.6	41-120			
Dibenzofuran	0.225	0.010	ug/L	0.300		75.1	38-120			
Fluorene	0.225	0.010	ug/L	0.300		74.9	43-120			
Phenanthrene	0.242	0.010	ug/L	0.300		80.7	41-120			
Anthracene	0.195	0.010	ug/L	0.300		64.9	40-120			
Fluoranthene	0.229	0.010	ug/L	0.300		76.3	45-120			
Pyrene	0.222	0.010	ug/L	0.300		74.2	41-120			

AECOM	Project: Laurel Station	
1111 Third Avenue, Suite 1600	Project Number: Laurel Station	**Reported:**
Seattle WA, 98101	Project Manager: Karen Mixon	17-Oct-2019 15:52

Semivolatile Organic Compounds - SIM - Quality Control

Batch BHJ0188 - EPA 3510C SepF

Instrument: NT11 Analyst: VTS

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BHJ0188-BS1)				Prepared: 09-Oct-2019 Analyzed: 16-Oct-2019 17:24						
Benzo(a)anthracene	0.216	0.010	ug/L	0.300		71.8	42-120			
Chrysene	0.224	0.010	ug/L	0.300		74.6	44-120			
Benzo(b)fluoranthene	0.231	0.010	ug/L	0.300		77.0	44-120			
Benzo(k)fluoranthene	0.229	0.010	ug/L	0.300		76.4	50-120			
Benzo(a)pyrene	0.214	0.010	ug/L	0.300		71.2	35-120			
Indeno(1,2,3-cd)pyrene	0.267	0.010	ug/L	0.300		88.9	37-120			
Dibenzo(a,h)anthracene	0.274	0.010	ug/L	0.300		91.4	34-120			
Benzo(g,h,i)perylene	0.263	0.010	ug/L	0.300		87.6	38-120			
Surrogate: 2-Methylnaphthalene-d10	0.236		ug/L	*0.300*		*78.6*	*42-120*			
Surrogate: Dibenzo[a,h]anthracene-d14	0.313		ug/L	*0.300*		*104*	*29-120*			
Surrogate: Fluoranthene-d10	0.240		ug/L	*0.300*		*79.9*	*57-120*			
LCS Dup (BHJ0188-BSD1)				Prepared: 09-Oct-2019 Analyzed: 16-Oct-2019 17:53						
Naphthalene	0.206	0.010	ug/L	0.300		68.6	37-120	4.57	30	
2-Methylnaphthalene	0.206	0.010	ug/L	0.300		68.5	37-120	5.17	30	
1-Methylnaphthalene	0.208	0.010	ug/L	0.300		69.2	29-120	5.51	30	
Acenaphthylene	0.191	0.010	ug/L	0.300		63.7	41-120	6.57	30	
Acenaphthene	0.204	0.010	ug/L	0.300		67.9	41-120	6.76	30	
Dibenzofuran	0.210	0.010	ug/L	0.300		70.1	38-120	6.83	30	
Fluorene	0.209	0.010	ug/L	0.300		69.7	43-120	7.30	30	
Phenanthrene	0.226	0.010	ug/L	0.300		75.4	41-120	6.78	30	
Anthracene	0.180	0.010	ug/L	0.300		59.9	40-120	7.96	30	
Fluoranthene	0.219	0.010	ug/L	0.300		73.0	45-120	4.43	30	
Pyrene	0.212	0.010	ug/L	0.300		70.5	41-120	5.04	30	
Benzo(a)anthracene	0.204	0.010	ug/L	0.300		68.1	42-120	5.28	30	
Chrysene	0.218	0.010	ug/L	0.300		72.5	44-120	2.85	30	
Benzo(b)fluoranthene	0.221	0.010	ug/L	0.300		73.8	44-120	4.35	30	
Benzo(k)fluoranthene	0.217	0.010	ug/L	0.300		72.5	50-120	5.25	30	
Benzo(a)pyrene	0.198	0.010	ug/L	0.300		65.8	35-120	7.83	30	
Indeno(1,2,3-cd)pyrene	0.249	0.010	ug/L	0.300		83.0	37-120	6.87	30	
Dibenzo(a,h)anthracene	0.241	0.010	ug/L	0.300		80.2	34-120	13.00	30	
Benzo(g,h,i)perylene	0.252	0.010	ug/L	0.300		84.0	38-120	4.24	30	
Surrogate: 2-Methylnaphthalene-d10	0.224		ug/L	*0.300*		*74.6*	*42-120*			
Surrogate: Dibenzo[a,h]anthracene-d14	0.280		ug/L	*0.300*		*93.2*	*29-120*			

AECOM	Project: Laurel Station	
1111 Third Avenue, Suite 1600	Project Number: Laurel Station	**Reported:**
Seattle WA, 98101	Project Manager: Karen Mixon	17-Oct-2019 15:52

Semivolatile Organic Compounds - SIM - Quality Control

Batch BHJ0188 - EPA 3510C SepF

Instrument: NT11 Analyst: VTS

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BHJ0188-BSD1)				Prepared: 09-Oct-2019 Analyzed: 16-Oct-2019 17:53						
Surrogate: Fluoranthene-d10	0.226		ug/L	*0.300*		*75.4*	*57-120*			
Matrix Spike (BHJ0188-MS1)	**Source: 19J0054-01**			Prepared: 09-Oct-2019 Analyzed: 16-Oct-2019 18:23						
Naphthalene	0.537	0.010	ug/L	0.300	0.248	96.3	37-120			
2-Methylnaphthalene	0.264	0.010	ug/L	0.300	0.032	77.4	37-120			
1-Methylnaphthalene	0.246	0.010	ug/L	0.300	0.016	76.5	29-120			
Acenaphthylene	0.219	0.010	ug/L	0.300	ND	73.0	41-120			
Acenaphthene	0.231	0.010	ug/L	0.300	ND	77.1	41-120			
Dibenzofuran	0.236	0.010	ug/L	0.300	ND	78.5	38-120			
Fluorene	0.242	0.010	ug/L	0.300	ND	80.8	43-120			
Phenanthrene	0.276	0.010	ug/L	0.300	ND	90.5	41-120			
Anthracene	0.225	0.010	ug/L	0.300	ND	75.1	40-120			
Fluoranthene	0.285	0.010	ug/L	0.300	ND	93.2	45-120			
Pyrene	0.290	0.010	ug/L	0.300	ND	95.0	41-120			
Benzo(a)anthracene	0.276	0.010	ug/L	0.300	ND	90.8	42-120			
Chrysene	0.261	0.010	ug/L	0.300	ND	85.8	44-120			
Benzo(b)fluoranthene	0.245	0.010	ug/L	0.300	ND	81.0	44-120			
Benzo(k)fluoranthene	0.235	0.010	ug/L	0.300	ND	78.2	50-120			
Benzo(a)pyrene	0.253	0.010	ug/L	0.300	ND	83.3	35-120			
Indeno(1,2,3-cd)pyrene	0.250	0.010	ug/L	0.300	ND	82.8	37-120			
Dibenzo(a,h)anthracene	0.241	0.010	ug/L	0.300	ND	80.5	34-120			
Benzo(g,h,i)perylene	0.250	0.010	ug/L	0.300	ND	82.4	38-120			
Surrogate: 2-Methylnaphthalene-d10	0.247		ug/L	*0.300*	*0.226*	*82.3*	*42-120*			
Surrogate: Dibenzo[a,h]anthracene-d14	0.290		ug/L	*0.300*	*0.297*	*96.6*	*29-120*			
Surrogate: Fluoranthene-d10	0.265		ug/L	*0.300*	*0.247*	*88.2*	*57-120*			
Matrix Spike Dup (BHJ0188-MSD1)	**Source: 19J0054-01**			Prepared: 09-Oct-2019 Analyzed: 16-Oct-2019 18:53						
Naphthalene	0.430	0.010	ug/L	0.300	0.248	60.6	37-120	22.20	30	
2-Methylnaphthalene	0.199	0.010	ug/L	0.300	0.032	55.7	37-120	28.10	30	
1-Methylnaphthalene	0.180	0.010	ug/L	0.300	0.016	54.8	29-120	30.60	30	*
Acenaphthylene	0.165	0.010	ug/L	0.300	ND	55.0	41-120	28.10	30	
Acenaphthene	0.170	0.010	ug/L	0.300	ND	56.8	41-120	30.40	30	*
Dibenzofuran	0.173	0.010	ug/L	0.300	ND	57.5	38-120	30.90	30	*
Fluorene	0.177	0.010	ug/L	0.300	ND	59.0	43-120	31.10	30	*

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

AECOM	Project: Laurel Station	
1111 Third Avenue, Suite 1600	Project Number: Laurel Station	**Reported:**
Seattle WA, 98101	Project Manager: Karen Mixon	17-Oct-2019 15:52

Semivolatile Organic Compounds - SIM - Quality Control

Batch BHJ0188 - EPA 3510C SepF

Instrument: NT11 Analyst: VTS

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike Dup (BHJ0188-MSD1)	**Source: 19J0054-01**		Prepared: 09-Oct-2019 Analyzed: 16-Oct-2019 18:53							
Phenanthrene	0.192	0.010	ug/L	0.300	ND	62.6	41-120	35.90	30	*
Anthracene	0.162	0.010	ug/L	0.300	ND	54.0	40-120	32.70	30	*
Fluoranthene	0.190	0.010	ug/L	0.300	ND	61.5	45-120	40.10	30	*
Pyrene	0.189	0.010	ug/L	0.300	ND	61.4	41-120	42.10	30	*
Benzo(a)anthracene	0.188	0.010	ug/L	0.300	ND	61.6	42-120	37.80	30	*
Chrysene	0.180	0.010	ug/L	0.300	ND	58.9	44-120	36.60	30	*
Benzo(b)fluoranthene	0.180	0.010	ug/L	0.300	ND	59.2	44-120	30.80	30	*
Benzo(k)fluoranthene	0.176	0.010	ug/L	0.300	ND	58.5	50-120	28.80	30	
Benzo(a)pyrene	0.178	0.010	ug/L	0.300	ND	58.2	35-120	35.00	30	*
Indeno(1,2,3-cd)pyrene	0.201	0.010	ug/L	0.300	ND	66.2	37-120	22.10	30	
Dibenzo(a,h)anthracene	0.202	0.010	ug/L	0.300	ND	67.2	34-120	18.00	30	
Benzo(g,h,i)perylene	0.198	0.010	ug/L	0.300	ND	65.3	38-120	22.90	30	
Surrogate: 2-Methylnaphthalene-d10	0.181		ug/L	*0.300*	*0.226*	*60.3*	*42-120*			
Surrogate: Dibenzo[a,h]anthracene-d14	0.237		ug/L	*0.300*	*0.297*	*79.1*	*29-120*			
Surrogate: Fluoranthene-d10	0.195		ug/L	*0.300*	*0.247*	*65.0*	*57-120*			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

AECOM	Project: Laurel Station	
1111 Third Avenue, Suite 1600	Project Number: Laurel Station	**Reported:**
Seattle WA, 98101	Project Manager: Karen Mixon	17-Oct-2019 15:52

Petroleum Hydrocarbons - Quality Control

Batch BHJ0178 - EPA 3510C SepF

Instrument: FID3 Analyst: CTO/JGR

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHJ0178-BLK1)				Prepared: 08-Oct-2019 Analyzed: 10-Oct-2019 14:43						
Diesel Range Organics (C12-C24)	ND	0.100	mg/L							U
Surrogate: o-Terphenyl	0.216		mg/L	*0.225*		*96.1*	*50-150*			
LCS (BHJ0178-BS1)				Prepared: 08-Oct-2019 Analyzed: 10-Oct-2019 15:04						
Diesel Range Organics (C12-C24)	2.47	0.100	mg/L	3.00		82.2	70-120			
Surrogate: o-Terphenyl	0.201		mg/L	*0.225*		*89.4*	*50-150*			
LCS Dup (BHJ0178-BSD1)				Prepared: 08-Oct-2019 Analyzed: 10-Oct-2019 15:24						
Diesel Range Organics (C12-C24)	2.58	0.100	mg/L	3.00		85.9	70-120	4.47	30	
Surrogate: o-Terphenyl	0.217		mg/L	*0.225*		*96.4*	*50-150*			

AECOM	Project: Laurel Station	
1111 Third Avenue, Suite 1600	Project Number: Laurel Station	**Reported:**
Seattle WA, 98101	Project Manager: Karen Mixon	17-Oct-2019 15:52

Certified Analyses included in this Report

Analyte	Certifications
EPA 8260C in Water	
Chloromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Vinyl Chloride	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Bromomethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Chloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Trichlorofluoromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Acrolein	DoD-ELAP,NELAP,CALAP,WADOE
1,1,2-Trichloro-1,2,2-Trifluoroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Acetone	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,1-Dichloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Bromoethane	DoD-ELAP,NELAP,CALAP,WADOE
Iodomethane	DoD-ELAP,NELAP,CALAP,WADOE
Methylene Chloride	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Acrylonitrile	DoD-ELAP,NELAP,CALAP,WADOE
Carbon Disulfide	DoD-ELAP,NELAP,CALAP,WADOE
trans-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Vinyl Acetate	DoD-ELAP,NELAP,CALAP,WADOE
1,1-Dichloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
2-Butanone	DoD-ELAP,NELAP,CALAP,WADOE
2,2-Dichloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
cis-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Chloroform	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Bromochloromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,1,1-Trichloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,1-Dichloropropene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Carbon tetrachloride	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2-Dichloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Benzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Trichloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2-Dichloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Bromodichloromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Dibromomethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
2-Chloroethyl vinyl ether	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
4-Methyl-2-Pentanone	DoD-ELAP,NELAP,CALAP,WADOE
cis-1,3-Dichloropropene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Toluene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE

AECOM	Project: Laurel Station	
1111 Third Avenue, Suite 1600	Project Number: Laurel Station	**Reported:**
Seattle WA, 98101	Project Manager: Karen Mixon	17-Oct-2019 15:52

trans-1,3-Dichloropropene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
2-Hexanone	DoD-ELAP,NELAP,CALAP,WADOE
1,1,2-Trichloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,3-Dichloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Tetrachloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Dibromochloromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2-Dibromoethane	DoD-ELAP,NELAP,CALAP,WADOE
Chlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Ethylbenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,1,1,2-Tetrachloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
m,p-Xylene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
o-Xylene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Styrene	DoD-ELAP,NELAP,CALAP,WADOE
Bromoform	DoD-ELAP,NELAP,CALAP,WADOE
1,1,2,2-Tetrachloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2,3-Trichloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
trans-1,4-Dichloro 2-Butene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
n-Propylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
Bromobenzene	DoD-ELAP,NELAP,CALAP,WADOE
Isopropyl Benzene	DoD-ELAP,NELAP,CALAP,WADOE
2-Chlorotoluene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
4-Chlorotoluene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
t-Butylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
1,3,5-Trimethylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
1,2,4-Trimethylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
s-Butylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
4-Isopropyl Toluene	DoD-ELAP,NELAP,CALAP,WADOE
1,3-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,4-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
n-Butylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
1,2-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2-Dibromo-3-chloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2,4-Trichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Hexachloro-1,3-Butadiene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Naphthalene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2,3-Trichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Dichlorodifluoromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Methyl tert-butyl Ether	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
n-Hexane	WADOE
2-Pentanone	WADOE

AECOM	Project: Laurel Station	
1111 Third Avenue, Suite 1600	Project Number: Laurel Station	**Reported:**
Seattle WA, 98101	Project Manager: Karen Mixon	17-Oct-2019 15:52

EPA 8270D-SIM in Water

Naphthalene	ADEC,DoD-ELAP,NELAP,CALAP,WADOE
2-Methylnaphthalene	ADEC,DoD-ELAP,NELAP,CALAP
1-Methylnaphthalene	ADEC,DoD-ELAP,NELAP,CALAP,WADOE
Biphenyl	NELAP
Acenaphthylene	ADEC,DoD-ELAP,NELAP,CALAP,WADOE
Acenaphthene	ADEC,DoD-ELAP,NELAP,CALAP,WADOE
Dibenzofuran	ADEC,DoD-ELAP,NELAP,CALAP
Fluorene	ADEC,DoD-ELAP,NELAP,CALAP,WADOE
Phenanthrene	ADEC,DoD-ELAP,NELAP,CALAP,WADOE
Anthracene	ADEC,DoD-ELAP,NELAP,CALAP,WADOE
Carbazole	NELAP
Fluoranthene	ADEC,DoD-ELAP,NELAP,CALAP,WADOE
Pyrene	ADEC,DoD-ELAP,NELAP,CALAP,WADOE
Benzo(a)anthracene	ADEC,DoD-ELAP,NELAP,CALAP,WADOE
Chrysene	ADEC,DoD-ELAP,NELAP,CALAP,WADOE
Benzo(b)fluoranthene	ADEC,DoD-ELAP,NELAP,CALAP,WADOE
Benzo(k)fluoranthene	ADEC,DoD-ELAP,NELAP,CALAP,WADOE
Benzo(j)fluoranthene	ADEC,DoD-ELAP,NELAP,WADOE
Benzo(e)pyrene	NELAP
Benzo(a)pyrene	ADEC,DoD-ELAP,NELAP,CALAP,WADOE
Perylene	ADEC,NELAP,CALAP
Indeno(1,2,3-cd)pyrene	ADEC,DoD-ELAP,NELAP,CALAP,WADOE
Dibenzo(a,h)anthracene	ADEC,DoD-ELAP,NELAP,CALAP,WADOE
Benzo(g,h,i)perylene	ADEC,DoD-ELAP,NELAP,CALAP,WADOE

NWTPH-Dx in Water

Diesel Range Organics (C12-C24)	DoD-ELAP,NELAP,WADOE
Diesel Range Organics (C10-C25)	DoD-ELAP,NELAP,WADOE
Diesel Range Organics (Tol-C18)	DoD-ELAP,NELAP,WADOE
Diesel Range Organics (C10-C24)	DoD-ELAP,NELAP,WADOE
Diesel Range Organics (C10-C28)	DoD-ELAP,NELAP,WADOE
Diesel Range Organics (C12-C22)	DoD-ELAP
Diesel Range Organics (C12-C25)	DoD-ELAP
Motor Oil Range Organics (C24-C38)	DoD-ELAP,NELAP,WADOE
Motor Oil Range Organics (C25-C36)	DoD-ELAP,NELAP,WADOE
Motor Oil Range Organics (C24-C40)	DoD-ELAP,NELAP,WADOE
Residual Range Organics (C23-C32)	DoD-ELAP
Mineral Spirits Range Organics (Tol-C12)	DoD-ELAP,NELAP,WADOE
Mineral Oil Range Organics (C16-C28)	DoD-ELAP,NELAP,WADOE

AECOM	Project: Laurel Station	
1111 Third Avenue, Suite 1600	Project Number: Laurel Station	**Reported:**
Seattle WA, 98101	Project Manager: Karen Mixon	17-Oct-2019 15:52

Kerosene Range Organics (Tol-C18)	DoD-ELAP,NELAP,WADOE
JP8 Range Organics (C8-C18)	DoD-ELAP,NELAP,WADOE
JP5 Range Organics (C10-C16)	DoD-ELAP,NELAP,WADOE
JP4 Range Organics (Tol-C14)	DoD-ELAP,NELAP,WADOE
Jet-A Range Organics (C10-C18)	DoD-ELAP,NELAP,WADOE
Creosote Range Organics (C12-C22)	DoD-ELAP,NELAP,WADOE
Bunker C Range Organics (C10-C38)	DoD-ELAP,NELAP,WADOE
Stoddard Range Organics (C8-C12)	DoD-ELAP,NELAP,WADOE
Transformer Oil Range Organics (C12-C28)	DoD-ELAP,NELAP,WADOE

NWTPHg in Water

Gasoline Range Organics (Tol-Nap)	WADOE,DoD-ELAP
Gasoline Range Organics (2MP-TMB)	WADOE,DoD-ELAP
Gasoline Range Organics (Tol-C12)	WADOE,DoD-ELAP
Gasoline Range Organics (C6-C10)	WADOE,ADEC,DoD-ELAP
Gasoline Range Organics (C5-C12)	WADOE,DoD-ELAP

Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	01/31/2021
CALAP	California Department of Public Health CAELAP	2748	06/30/2019
DoD-ELAP	DoD-Environmental Laboratory Accreditation Program	66169	01/01/2021
NELAP	ORELAP - Oregon Laboratory Accreditation Program	WA100006-012	05/12/2020
WADOE	WA Dept of Ecology	C558	06/30/2019
WA-DW	Ecology - Drinking Water	C558	06/30/2019

AECOM	Project: Laurel Station	
1111 Third Avenue, Suite 1600	Project Number: Laurel Station	**Reported:**
Seattle WA, 98101	Project Manager: Karen Mixon	17-Oct-2019 15:52

Notes and Definitions

*	Flagged value is not within established control limits.
B	This analyte was detected in the method blank.
D	The reported value is from a dilution
Q	Indicates a detected analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20% RSD, <20% drift or minimum RRF)
U	This analyte is not detected above the reporting limit (RL) or if noted, not detected above the limit of detection (LOD).
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
[2C]	Indicates this result was quantified on the second column on a dual column analysis.

Memo

AECOM

1111 3rd Avenue, Suite 1600
Seattle, Washington 98101
206.438.2700 Telephone
206.438.2699 Fax

To:	Karen Mixon, Project Manager	**Info:**	Final
From:	Chelsey Cook, Chemist Lucy Panteleeff, Chemist	**Date:**	January 9, 2020
RE:	Data Quality Review Quarterly Groundwater Samples – December 2019 Laurel Station Cleanup Action		

The data quality review of 1 groundwater sample and 1 trip blank collected on December 18, 2019, has been completed. The samples were analyzed by Analytical Resources, Incorporated (ARI) located in Tukwila, Washington for benzene, toluene, ethylbenzene, m,p-xylene, and o-xylene (BTEX) by EPA Method 8260C, total petroleum hydrocarbons (TPHs) by Washington State Department of Ecology (Ecology) Methods NWTPH-Gx (gasoline-range TPH) and NWTPH-Dx (diesel-range and motor oil-range TPH), and/or polycyclic aromatic hydrocarbons (PAHs) by EPA Method 8270D-SIM. Samples were analyzed for the chemical constituents as described in the *Final Compliance Monitoring Plan, Laurel Station, 1009 East Smith Road, Bellingham, Washington* dated January 16, 2015 (CMP). Due to changes in laboratory procedures, NWTPH-Gx analysis was performed using GC/MS instrumentation instead of GC/FID.

The analyses were performed in general accordance with methods specified in EPA's *Test Methods for Evaluating Solid Waste (SW-846)* and Ecology's *Analytical Methods for Petroleum Hydrocarbons*, June 1997. The laboratory provided a full data package containing sample results and associated QA/QC data. The following samples are associated with ARI group 19L0355:

Sample ID	Laboratory ID
MW-6	19L0355-01
Trip Blank	19L0355-02

The following comments refer to ARI's performance in meeting the quality control specifications described in the analytical methods. Data were qualified based on the method criteria and guidance provided in the EPA document *USEPA National Functional Guidelines for Organic Superfund Methods Data Review*, January 2017. Data qualifiers that may be assigned to data from this laboratory group include:

- U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
- J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- UJ - The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- R - The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

- DNR - Do Not Report. Multiple results reported from different analytical dates and/or dilutions. Value from another analysis should be used.

Sample Receipt

Upon receipt by ARI, the sample jar information was compared to the chain-of-custody (COC) and the cooler temperature was recorded. The cooler was received at a temperature within the EPA-recommended limits of greater than 0°C and less than or equal to 6°C. No issues related to sample identification were noted by ARI.

Organic Analyses

Samples were analyzed for BTEX, TPHs, and PAHs by the methods identified in the introduction to this report.

1. Holding Times – Acceptable

2. Instrument Performance and Calibrations (initial and continuing) – Acceptable

3. Blanks – Acceptable

4. Surrogates – Acceptable

5. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) – Acceptable

6. Matrix Spike/Matrix Spike Duplicate (MS/MSD) – Acceptable except as noted below:

   General – MS/MSDs were performed using MW-6. Results were acceptable with the following exceptions.

   PAHs by Method 8270D-SIM – The relative percent differences (RPDs) for the following analytes exceeded the control limit of 30%:

Analyte	RPD
Naphthalene	47.10%
2-Methylnaphthalene	34.20%
1-Methylnaphthalene	32.60%

   The percent recoveries in the MS and the MSD were acceptable; therefore, data were not qualified based on these elevated RPDs.

7. Reporting Limits – Acceptable

Overall Assessment of Data

The data reported in this laboratory group are considered usable for meeting project objectives. The completeness for laboratory group 19L0355 is 100%.

Table 1. Summary of Qualified Data

Sample ID	ARI ID	Analyte	Result	Units	Final Result
No data qualifiers were assigned to the results reported in laboratory group 19L0355 during validation.					

Analytical Resources, Incorporated
Analytical Chemists and Consultants

08 January 2020

Karen Mixon
AECOM
1111 Third Avenue, Suite 1600
Seattle, WA 98101

RE: Laurel Station

Please find enclosed sample receipt documentation and analytical results for samples from the project referenced above.

Sample analyses were performed according to ARI's Quality Assurance Plan and any provided project specific Quality Assurance Plan. Each analytical section of this report has been approved and reviewed by an analytical peer, the appropriate Laboratory Supervisor or qualified substitute, and a technical reviewer.

Should you have any questions or problems, please feel free to contact us at your convenience.

Associated Work Order(s)	Associated SDG ID(s)
19L0355	N/A

Kelly Bottem

Digitally signed by Kelly Bottem
DN: c=US, st=Washington, l=Tukwila, o=Analytical Resources, Inc., ou=Client Services, cn=Kelly Bottem, email=kelly.bottem@arilabs.com
Date: 2020.01.08 12:45:10 -08'00'

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the enclose Narrative. ARI, an accredited laboratory, certifies that the report results for which ARI is accredited meets all the requirements of the accrediting body. A list of certified analyses, accreditations, and expiration dates is included in this report.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Analytical Resources, Inc.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

ACCREDITED IN ACCORDANCE WITH nelac
Cert# 100006

PJLA Testing
Accreditation # 66169

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: 19L0355	Turn-around Requested: Standard	Page: 1 of 1	
ARI Client Company: AECOM	Phone: 206-438-2700	Date:	Ice Present?
Client Contact: Karen Mixon		No. of Coolers: 1	Cooler Temps: 4.3
Client Project Name: Laurel Station Groundwater Sampling			
Client Project #: 60606281	Samplers: DC/BD		

Analytical Resources, Incorporated
Analytical Chemists and Consultants
4611 South 134th Place, Suite 100
Tukwila, WA 98168
206-695-6200 206-695-6201 (fax)
www.arilabs.com

Sample ID	Date	Time	Matrix	No. Containers	Analysis Requested: BTEX 8260	Gx NWTPH-Gx	Dx NWTPH-Dx	PAHs 8270 SIM					Notes/Comments
MW-6	12/18/19	1130	W	17	X	X	X	X					MS/MSD
Trip Blank													

Comments/Special Instructions	Relinquished by: (Signature)	Received by: (Signature)	Relinquished by: (Signature)	Received by: (Signature)
	Printed Name: Demetrio Cabanillas	Printed Name: Erin Salle	Printed Name:	Printed Name:
	Company: AECOM	Company: ARI	Company:	Company:
	Date & Time: 12-19-19 800	Date & Time: 12/19/19 1207	Date & Time:	Date & Time:

Limits of Liability: *ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.*

Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.

AECOM	Project: Laurel Station	
1111 Third Avenue, Suite 1600	Project Number: Laurel Station	**Reported:**
Seattle WA, 98101	Project Manager: Karen Mixon	08-Jan-2020 12:15

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-6	19L0355-01	Water	18-Dec-2019 11:30	19-Dec-2019 12:07
Trip Blank	19L0355-02	Water	18-Dec-2019 11:30	19-Dec-2019 12:07

AECOM	Project: Laurel Station	
1111 Third Avenue, Suite 1600	Project Number: Laurel Station	**Reported:**
Seattle WA, 98101	Project Manager: Karen Mixon	08-Jan-2020 12:15

Work Order Case Narrative

Gasoline by NWTPH-g (GC/MS)

The sample(s) were analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The LCS/LCSD percent recoveries and RPD were within control limits.

The matrix spike/matrix spike duplicate recoveries and RPD were within limits.

Volatiles - EPA Method SW8260C

The sample(s) were analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The LCS/LCSD percent recoveries and RPD were within control limits.

The matrix spike/matrix spike duplicate recoveries and RPD were within limits.

Diesel/Heavy Oil Range Organics - WA-Ecology Method NW-TPHDx

The sample(s) were extracted and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

AECOM	Project: Laurel Station	
1111 Third Avenue, Suite 1600	Project Number: Laurel Station	**Reported:**
Seattle WA, 98101	Project Manager: Karen Mixon	08-Jan-2020 12:15

The LCS percent recoveries were within control limits.

The matrix spike/matrix spike duplicate recoveries and RPD were within limits.

Polynuclear Aromatic Hydrocarbons (PAH) - EPA Method SW8270D-SIM

The sample(s) were extracted and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The LCS percent recoveries were within control limits.

The matrix spike/matrix spike duplicate recoveries and RPD were within limits with the exception of analytes flagged on the associated forms.

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: AECOM Project Name: Laurel Station

COC No(s): _____ (NA) Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____

Assigned ARI Job No: 192035S Tracking No: _____ (NA)

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of the cooler?	YES	(NO)
Were custody papers included with the cooler?	(YES)	NO
Were custody papers properly filled out (ink, signed, etc.)	(YES)	NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)

Time 1310 4.3 _____ _____ _____ _____ _____

If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: DOO5206

Cooler Accepted by: [signature] Date: 12/19/19 Time: 1207

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler?		YES	(NO)
What kind of packing material was used?	(Bubble Wrap) (Wet Ice) (Gel Packs) Baggies (Foam Block) Paper Other: _____		
Was sufficient ice used (if appropriate)?	NA	(YES)	NO
How were bottles sealed in plastic bags?	Individually	Grouped	(Not)
Did all bottles arrive in good condition (unbroken)?		(YES)	NO
Were all bottle labels complete and legible?		(YES)	NO
Did the number of containers listed on COC match with the number of containers received?		(YES)	NO
Did all bottle labels and tags agree with custody papers?		(YES)	NO
Were all bottles used correct for the requested analyses?		(YES)	NO
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)	(NA)	YES	NO
Were all VOC vials free of air bubbles?	NA	(YES)	NO
Was sufficient amount of sample sent in each bottle?		(YES)	NO
Date VOC Trip Blank was made at ARI	NA	03/18/19	

Were the sample(s) split by ARI? (NA) YES Date/Time: _____ Equipment: _____ Split by: _____

Samples Logged by: JSm Date: 12/19/19 Time: 1436 Labels checked by: JSm

*** Notify Project Manager of discrepancies or concerns ***

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

By: Date:

AECOM	Project: Laurel Station	
1111 Third Avenue, Suite 1600	Project Number: Laurel Station	**Reported:**
Seattle WA, 98101	Project Manager: Karen Mixon	08-Jan-2020 12:15

MW-6

19L0355-01 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 12/18/2019 11:30
Instrument: NT3 Analyst: PKC — Analyzed: 12/20/2019 17:15

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19L0355-01 J
Preparation Batch: BHL0610 — Sample Size: 10 mL
Prepared: 20-Dec-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Benzene	71-43-2	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Surrogate: Toluene-d8			*80-120 %*	*99.4*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*98.9*	*%*	

AECOM	Project: Laurel Station	
1111 Third Avenue, Suite 1600	Project Number: Laurel Station	**Reported:**
Seattle WA, 98101	Project Manager: Karen Mixon	08-Jan-2020 12:15

MW-6

19L0355-01 (Water)

Volatile Organic Compounds

Method: NWTPHg — Sampled: 12/18/2019 11:30
Instrument: NT3 Analyst: PKC — Analyzed: 12/20/2019 17:15

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19L0355-01 J
Preparation Batch: BHL0610 — Sample Size: 10 mL
Prepared: 20-Dec-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	0.100	ND	mg/L	U
Surrogate: Toluene-d8			*80-120 %*	*99.4*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*98.9*	*%*	

AECOM	Project: Laurel Station	
1111 Third Avenue, Suite 1600	Project Number: Laurel Station	**Reported:**
Seattle WA, 98101	Project Manager: Karen Mixon	08-Jan-2020 12:15

MW-6

19L0355-01 (Water)

Semivolatile Organic Compounds - SIM

Method: EPA 8270D-SIM — Sampled: 12/18/2019 11:30
Instrument: NT11 Analyst: VTS — Analyzed: 01/07/2020 17:42

Sample Preparation: Preparation Method: EPA 3510C SepF; Preparation Batch: BHL0642; Prepared: 24-Dec-2019; Sample Size: 500 mL; Final Volume: 0.5 mL — Extract ID: 19L0355-01 D 01

Sample Cleanup: Cleanup Method: Silica Gel; Cleanup Batch: CIA0026; Cleaned: 03-Jan-2020; Initial Volume: 0.5 mL; Final Volume: 0.5 mL — Extract ID: 19L0355-01 D 01

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Naphthalene	91-20-3	1	0.010	**0.119**	ug/L	
2-Methylnaphthalene	91-57-6	1	0.010	**0.021**	ug/L	
1-Methylnaphthalene	90-12-0	1	0.010	ND	ug/L	U
Acenaphthylene	208-96-8	1	0.010	ND	ug/L	U
Acenaphthene	83-32-9	1	0.010	ND	ug/L	U
Dibenzofuran	132-64-9	1	0.010	ND	ug/L	U
Fluorene	86-73-7	1	0.010	ND	ug/L	U
Phenanthrene	85-01-8	1	0.010	ND	ug/L	U
Anthracene	120-12-7	1	0.010	ND	ug/L	U
Fluoranthene	206-44-0	1	0.010	ND	ug/L	U
Pyrene	129-00-0	1	0.010	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	0.010	ND	ug/L	U
Chrysene	218-01-9	1	0.010	ND	ug/L	U
Benzo(b)fluoranthene	205-99-2	1	0.010	ND	ug/L	U
Benzo(k)fluoranthene	207-08-9	1	0.010	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.010	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.010	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.010	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.010	ND	ug/L	U
Surrogate: 2-Methylnaphthalene-d10			*42-120 %*	*66.3*	*%*	
Surrogate: Dibenzo[a,h]anthracene-d14			*29-120 %*	*73.3*	*%*	
Surrogate: Fluoranthene-d10			*57-120 %*	*75.6*	*%*	

AECOM	Project: Laurel Station	
1111 Third Avenue, Suite 1600	Project Number: Laurel Station	**Reported:**
Seattle WA, 98101	Project Manager: Karen Mixon	08-Jan-2020 12:15

MW-6

19L0355-01 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx — Sampled: 12/18/2019 11:30
Instrument: FID4 Analyst: CTO — Analyzed: 12/31/2019 22:28

Sample Preparation: Preparation Method: EPA 3510C SepF — Extract ID: 19L0355-01 A 01
Preparation Batch: BHL0638 — Sample Size: 500 mL
Prepared: 22-Dec-2019 — Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	0.100	ND	mg/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	0.200	ND	mg/L	U
Surrogate: o-Terphenyl			*50-150 %*	*65.5*	*%*	

AECOM	Project: Laurel Station	
1111 Third Avenue, Suite 1600	Project Number: Laurel Station	**Reported:**
Seattle WA, 98101	Project Manager: Karen Mixon	08-Jan-2020 12:15

Trip Blank

19L0355-02 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 12/18/2019 11:30
Instrument: NT3 Analyst: PKC — Analyzed: 12/20/2019 13:29

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19L0355-02 A
Preparation Batch: BHL0610 — Sample Size: 10 mL
Prepared: 20-Dec-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Benzene	71-43-2	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Surrogate: Toluene-d8			*80-120 %*	*100*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*96.6*	*%*	

AECOM	Project: Laurel Station	
1111 Third Avenue, Suite 1600	Project Number: Laurel Station	**Reported:**
Seattle WA, 98101	Project Manager: Karen Mixon	08-Jan-2020 12:15

Trip Blank

19L0355-02 (Water)

Volatile Organic Compounds

Method: NWTPHg — Sampled: 12/18/2019 11:30
Instrument: NT3 Analyst: PKC — Analyzed: 12/20/2019 13:29

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19L0355-02 A
Preparation Batch: BHL0610 — Sample Size: 10 mL
Prepared: 20-Dec-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	0.100	ND	mg/L	U
Surrogate: Toluene-d8			*80-120 %*	*100*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*96.6*	*%*	

AECOM	Project: Laurel Station	
1111 Third Avenue, Suite 1600	Project Number: Laurel Station	**Reported:**
Seattle WA, 98101	Project Manager: Karen Mixon	08-Jan-2020 12:15

Volatile Organic Compounds - Quality Control

Batch BHL0610 - EPA 5030 (Purge and Trap)

Instrument: NT3 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHL0610-BLK1)				Prepared: 20-Dec-2019 Analyzed: 20-Dec-2019 12:33						
Benzene	ND	0.20	ug/L							U
Toluene	ND	0.20	ug/L							U
Ethylbenzene	ND	0.20	ug/L							U
m,p-Xylene	ND	0.40	ug/L							U
o-Xylene	ND	0.20	ug/L							U
Surrogate: Toluene-d8	4.98		ug/L	*5.00*		*99.6*	*80-120*			
Surrogate: 4-Bromofluorobenzene	5.02		ug/L	*5.00*		*100*	*80-120*			
Blank (BHL0610-BLK2)				Prepared: 20-Dec-2019 Analyzed: 20-Dec-2019 12:33						
Gasoline Range Organics (Tol-Nap)	ND	0.100	mg/L							U
Surrogate: Toluene-d8	4.98		mg/L	*5.00*		*99.6*	*80-120*			
Surrogate: 4-Bromofluorobenzene	5.02		mg/L	*5.00*		*100*	*80-120*			
LCS (BHL0610-BS1)				Prepared: 20-Dec-2019 Analyzed: 20-Dec-2019 10:41						
Benzene	11.0	0.20	ug/L	10.0		110	80-120			
Toluene	10.8	0.20	ug/L	10.0		108	80-120			
Ethylbenzene	10.6	0.20	ug/L	10.0		106	80-120			
m,p-Xylene	21.3	0.40	ug/L	20.0		106	80-121			
o-Xylene	10.6	0.20	ug/L	10.0		106	80-121			
Surrogate: Toluene-d8	4.93		ug/L	*5.00*		*98.6*	*80-120*			
Surrogate: 4-Bromofluorobenzene	5.14		ug/L	*5.00*		*103*	*80-120*			
LCS (BHL0610-BS2)				Prepared: 20-Dec-2019 Analyzed: 20-Dec-2019 11:37						
Gasoline Range Organics (Tol-Nap)	1.08	0.100	mg/L	1.00		108	72-128			
Surrogate: Toluene-d8	5.14		mg/L	*5.00*		*103*	*80-120*			
Surrogate: 4-Bromofluorobenzene	5.21		mg/L	*5.00*		*104*	*80-120*			
LCS Dup (BHL0610-BSD1)				Prepared: 20-Dec-2019 Analyzed: 20-Dec-2019 11:09						
Benzene	10.2	0.20	ug/L	10.0		102	80-120	7.75	30	
Toluene	10.2	0.20	ug/L	10.0		102	80-120	5.81	30	
Ethylbenzene	9.87	0.20	ug/L	10.0		98.7	80-120	6.99	30	
m,p-Xylene	19.7	0.40	ug/L	20.0		98.5	80-121	7.70	30	
o-Xylene	10.2	0.20	ug/L	10.0		102	80-121	3.84	30	
Surrogate: Toluene-d8	4.99		ug/L	*5.00*		*99.8*	*80-120*			

AECOM	Project: Laurel Station	
1111 Third Avenue, Suite 1600	Project Number: Laurel Station	**Reported:**
Seattle WA, 98101	Project Manager: Karen Mixon	08-Jan-2020 12:15

Volatile Organic Compounds - Quality Control

Batch BHL0610 - EPA 5030 (Purge and Trap)

Instrument: NT3 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BHL0610-BSD1)				Prepared: 20-Dec-2019 Analyzed: 20-Dec-2019 11:09						
Surrogate: 4-Bromofluorobenzene	4.94		ug/L	*5.00*		*98.8*	*80-120*			
LCS Dup (BHL0610-BSD2)				Prepared: 20-Dec-2019 Analyzed: 20-Dec-2019 12:05						
Gasoline Range Organics (Tol-Nap)	1.11	0.100	mg/L	1.00		111	72-128	2.05	30	
Surrogate: Toluene-d8	5.01		mg/L	*5.00*		*100*	*80-120*			
Surrogate: 4-Bromofluorobenzene	5.10		mg/L	*5.00*		*102*	*80-120*			
Matrix Spike (BHL0610-MS1)	**Source: 19L0355-01**			Prepared: 20-Dec-2019 Analyzed: 20-Dec-2019 20:30						
Benzene	9.39	0.20	ug/L	10.0	ND	93.9	80-120			
Toluene	9.28	0.20	ug/L	10.0	ND	92.3	80-120			
Ethylbenzene	9.21	0.20	ug/L	10.0	ND	92.1	80-120			
m,p-Xylene	18.2	0.40	ug/L	20.0	ND	90.9	80-121			
o-Xylene	9.28	0.20	ug/L	10.0	ND	92.8	80-121			
Surrogate: Toluene-d8	5.08		ug/L	*5.00*	*4.97*	*102*	*80-120*			
Surrogate: 4-Bromofluorobenzene	4.92		ug/L	*5.00*	*4.94*	*98.3*	*80-120*			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.										
Matrix Spike (BHL0610-MS2)	**Source: 19L0355-01**			Prepared: 20-Dec-2019 Analyzed: 20-Dec-2019 21:26						
Gasoline Range Organics (Tol-Nap)	1.01	0.100	mg/L	1.00	ND	101	72-128			
Surrogate: Toluene-d8	5.07		mg/L	*5.00*	*4.97*	*101*	*80-120*			
Surrogate: 4-Bromofluorobenzene	4.91		mg/L	*5.00*	*4.94*	*98.3*	*80-120*			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.										
Matrix Spike Dup (BHL0610-MSD1)	**Source: 19L0355-01**			Prepared: 20-Dec-2019 Analyzed: 20-Dec-2019 20:58						
Benzene	9.63	0.20	ug/L	10.0	ND	96.3	80-120	2.47	30	
Toluene	9.38	0.20	ug/L	10.0	ND	93.4	80-120	1.15	30	
Ethylbenzene	9.27	0.20	ug/L	10.0	ND	92.7	80-120	0.58	30	
m,p-Xylene	18.4	0.40	ug/L	20.0	ND	92.2	80-121	1.38	30	
o-Xylene	9.39	0.20	ug/L	10.0	ND	93.9	80-121	1.25	30	
Surrogate: Toluene-d8	5.08		ug/L	*5.00*	*4.97*	*102*	*80-120*			
Surrogate: 4-Bromofluorobenzene	5.10		ug/L	*5.00*	*4.94*	*102*	*80-120*			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.										
Matrix Spike Dup (BHL0610-MSD2)	**Source: 19L0355-01**			Prepared: 20-Dec-2019 Analyzed: 20-Dec-2019 21:54						

AECOM	Project: Laurel Station	
1111 Third Avenue, Suite 1600	Project Number: Laurel Station	**Reported:**
Seattle WA, 98101	Project Manager: Karen Mixon	08-Jan-2020 12:15

Volatile Organic Compounds - Quality Control

Batch BHL0610 - EPA 5030 (Purge and Trap)

Instrument: NT3 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike Dup (BHL0610-MSD2)	**Source: 19L0355-01**		Prepared: 20-Dec-2019 Analyzed: 20-Dec-2019 21:54							
Gasoline Range Organics (Tol-Nap)	1.02	0.100	mg/L	1.00	ND	102	72-128	1.20	30	
Surrogate: Toluene-d8	5.04		mg/L	*5.00*	*4.97*	*101*	*80-120*			
Surrogate: 4-Bromofluorobenzene	5.06		mg/L	*5.00*	*4.94*	*101*	*80-120*			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

AECOM	Project: Laurel Station	
1111 Third Avenue, Suite 1600	Project Number: Laurel Station	**Reported:**
Seattle WA, 98101	Project Manager: Karen Mixon	08-Jan-2020 12:15

Semivolatile Organic Compounds - SIM - Quality Control

Batch BHL0642 - EPA 3510C SepF

Instrument: NT11 Analyst: VTS

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHL0642-BLK1)				Prepared: 24-Dec-2019 Analyzed: 07-Jan-2020 16:13						
Naphthalene	ND	0.010	ug/L							U
2-Methylnaphthalene	ND	0.010	ug/L							U
1-Methylnaphthalene	ND	0.010	ug/L							U
Acenaphthylene	ND	0.010	ug/L							U
Acenaphthene	ND	0.010	ug/L							U
Dibenzofuran	ND	0.010	ug/L							U
Fluorene	ND	0.010	ug/L							U
Phenanthrene	ND	0.010	ug/L							U
Anthracene	ND	0.010	ug/L							U
Fluoranthene	ND	0.010	ug/L							U
Pyrene	ND	0.010	ug/L							U
Benzo(a)anthracene	ND	0.010	ug/L							U
Chrysene	ND	0.010	ug/L							U
Benzo(b)fluoranthene	ND	0.010	ug/L							U
Benzo(k)fluoranthene	ND	0.010	ug/L							U
Benzo(a)pyrene	ND	0.010	ug/L							U
Indeno(1,2,3-cd)pyrene	ND	0.010	ug/L							U
Dibenzo(a,h)anthracene	ND	0.010	ug/L							U
Benzo(g,h,i)perylene	ND	0.010	ug/L							U
Surrogate: 2-Methylnaphthalene-d10	0.226		ug/L	*0.300*		*75.2*	*42-120*			
Surrogate: Dibenzo[a,h]anthracene-d14	0.218		ug/L	*0.300*		*72.5*	*29-120*			
Surrogate: Fluoranthene-d10	0.238		ug/L	*0.300*		*79.4*	*57-120*			
LCS (BHL0642-BS1)				Prepared: 24-Dec-2019 Analyzed: 07-Jan-2020 16:43						
Naphthalene	0.231	0.010	ug/L	0.300		77.1	37-120			
2-Methylnaphthalene	0.226	0.010	ug/L	0.300		75.2	37-120			
1-Methylnaphthalene	0.224	0.010	ug/L	0.300		74.7	29-120			
Acenaphthylene	0.221	0.010	ug/L	0.300		73.5	41-120			
Acenaphthene	0.232	0.010	ug/L	0.300		77.2	41-120			
Dibenzofuran	0.244	0.010	ug/L	0.300		81.5	38-120			
Fluorene	0.229	0.010	ug/L	0.300		76.5	43-120			
Phenanthrene	0.241	0.010	ug/L	0.300		80.3	41-120			
Anthracene	0.200	0.010	ug/L	0.300		66.5	40-120			
Fluoranthene	0.237	0.010	ug/L	0.300		79.1	45-120			
Pyrene	0.229	0.010	ug/L	0.300		76.5	41-120			

AECOM	Project: Laurel Station	
1111 Third Avenue, Suite 1600	Project Number: Laurel Station	**Reported:**
Seattle WA, 98101	Project Manager: Karen Mixon	08-Jan-2020 12:15

Semivolatile Organic Compounds - SIM - Quality Control

Batch BHL0642 - EPA 3510C SepF

Instrument: NT11 Analyst: VTS

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BHL0642-BS1)				Prepared: 24-Dec-2019 Analyzed: 07-Jan-2020 16:43						
Benzo(a)anthracene	0.230	0.010	ug/L	0.300		76.6	42-120			
Chrysene	0.244	0.010	ug/L	0.300		81.3	44-120			
Benzo(b)fluoranthene	0.220	0.010	ug/L	0.300		73.4	44-120			
Benzo(k)fluoranthene	0.250	0.010	ug/L	0.300		83.3	50-120			
Benzo(a)pyrene	0.200	0.010	ug/L	0.300		66.6	35-120			
Indeno(1,2,3-cd)pyrene	0.241	0.010	ug/L	0.300		80.2	37-120			
Dibenzo(a,h)anthracene	0.234	0.010	ug/L	0.300		78.2	34-120			
Benzo(g,h,i)perylene	0.239	0.010	ug/L	0.300		79.7	38-120			
Surrogate: 2-Methylnaphthalene-d10	0.241		ug/L	*0.300*		*80.3*	*42-120*			
Surrogate: Dibenzo[a,h]anthracene-d14	0.249		ug/L	*0.300*		*82.9*	*29-120*			
Surrogate: Fluoranthene-d10	0.236		ug/L	*0.300*		*78.7*	*57-120*			
LCS Dup (BHL0642-BSD1)				Prepared: 24-Dec-2019 Analyzed: 07-Jan-2020 17:12						
Naphthalene	0.232	0.010	ug/L	0.300		77.5	37-120	0.52	30	
2-Methylnaphthalene	0.227	0.010	ug/L	0.300		75.7	37-120	0.63	30	
1-Methylnaphthalene	0.227	0.010	ug/L	0.300		75.7	29-120	1.31	30	
Acenaphthylene	0.228	0.010	ug/L	0.300		76.0	41-120	3.36	30	
Acenaphthene	0.236	0.010	ug/L	0.300		78.8	41-120	2.03	30	
Dibenzofuran	0.251	0.010	ug/L	0.300		83.7	38-120	2.62	30	
Fluorene	0.235	0.010	ug/L	0.300		78.3	43-120	2.35	30	
Phenanthrene	0.247	0.010	ug/L	0.300		82.3	41-120	2.46	30	
Anthracene	0.219	0.010	ug/L	0.300		73.0	40-120	9.25	30	
Fluoranthene	0.243	0.010	ug/L	0.300		81.1	45-120	2.47	30	
Pyrene	0.233	0.010	ug/L	0.300		77.6	41-120	1.45	30	
Benzo(a)anthracene	0.236	0.010	ug/L	0.300		78.7	42-120	2.65	30	
Chrysene	0.250	0.010	ug/L	0.300		83.3	44-120	2.44	30	
Benzo(b)fluoranthene	0.223	0.010	ug/L	0.300		74.4	44-120	1.29	30	
Benzo(k)fluoranthene	0.255	0.010	ug/L	0.300		85.1	50-120	2.12	30	
Benzo(a)pyrene	0.222	0.010	ug/L	0.300		74.1	35-120	10.60	30	
Indeno(1,2,3-cd)pyrene	0.246	0.010	ug/L	0.300		81.8	37-120	1.98	30	
Dibenzo(a,h)anthracene	0.241	0.010	ug/L	0.300		80.3	34-120	2.71	30	
Benzo(g,h,i)perylene	0.242	0.010	ug/L	0.300		80.5	38-120	1.03	30	
Surrogate: 2-Methylnaphthalene-d10	0.240		ug/L	*0.300*		*80.0*	*42-120*			
Surrogate: Dibenzo[a,h]anthracene-d14	0.244		ug/L	*0.300*		*81.2*	*29-120*			

AECOM	Project: Laurel Station	
1111 Third Avenue, Suite 1600	Project Number: Laurel Station	**Reported:**
Seattle WA, 98101	Project Manager: Karen Mixon	08-Jan-2020 12:15

Semivolatile Organic Compounds - SIM - Quality Control

Batch BHL0642 - EPA 3510C SepF

Instrument: NT11 Analyst: VTS

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BHL0642-BSD1)				Prepared: 24-Dec-2019 Analyzed: 07-Jan-2020 17:12						
Surrogate: Fluoranthene-d10	0.236		ug/L	*0.300*		*78.7*	*57-120*			
Matrix Spike (BHL0642-MS1)	**Source: 19L0355-01**			Prepared: 24-Dec-2019 Analyzed: 07-Jan-2020 18:11						
Naphthalene	0.387	0.010	ug/L	0.300	0.119	89.1	37-120			
2-Methylnaphthalene	0.227	0.010	ug/L	0.300	0.021	68.6	37-120			
1-Methylnaphthalene	0.205	0.010	ug/L	0.300	ND	66.0	29-120			
Acenaphthylene	0.207	0.010	ug/L	0.300	ND	69.0	41-120			
Acenaphthene	0.211	0.010	ug/L	0.300	ND	70.3	41-120			
Dibenzofuran	0.212	0.010	ug/L	0.300	ND	70.5	38-120			
Fluorene	0.216	0.010	ug/L	0.300	ND	72.0	43-120			
Phenanthrene	0.238	0.010	ug/L	0.300	ND	78.7	41-120			
Anthracene	0.214	0.010	ug/L	0.300	ND	71.3	40-120			
Fluoranthene	0.232	0.010	ug/L	0.300	ND	77.4	45-120			
Pyrene	0.234	0.010	ug/L	0.300	ND	78.2	41-120			
Benzo(a)anthracene	0.239	0.010	ug/L	0.300	ND	79.6	42-120			
Chrysene	0.231	0.010	ug/L	0.300	ND	76.3	44-120			
Benzo(b)fluoranthene	0.219	0.010	ug/L	0.300	ND	73.2	44-120			
Benzo(k)fluoranthene	0.223	0.010	ug/L	0.300	ND	74.3	50-120			
Benzo(a)pyrene	0.223	0.010	ug/L	0.300	ND	74.2	35-120			
Indeno(1,2,3-cd)pyrene	0.234	0.010	ug/L	0.300	ND	78.0	37-120			
Dibenzo(a,h)anthracene	0.235	0.010	ug/L	0.300	ND	78.3	34-120			
Benzo(g,h,i)perylene	0.230	0.010	ug/L	0.300	ND	76.7	38-120			
Surrogate: 2-Methylnaphthalene-d10	0.217		ug/L	*0.300*	*0.199*	*72.3*	*42-120*			
Surrogate: Dibenzo[a,h]anthracene-d14	0.257		ug/L	*0.300*	*0.220*	*85.6*	*29-120*			
Surrogate: Fluoranthene-d10	0.239		ug/L	*0.300*	*0.227*	*79.5*	*57-120*			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Matrix Spike Dup (BHL0642-MSD1)	**Source: 19L0355-01**			Prepared: 24-Dec-2019 Analyzed: 07-Jan-2020 18:41						
Naphthalene	0.239	0.010	ug/L	0.300	0.119	40.0	37-120	47.10	30	*
2-Methylnaphthalene	0.161	0.010	ug/L	0.300	0.021	46.5	37-120	34.20	30	*
1-Methylnaphthalene	0.148	0.010	ug/L	0.300	ND	46.9	29-120	32.60	30	*
Acenaphthylene	0.164	0.010	ug/L	0.300	ND	54.7	41-120	23.10	30	
Acenaphthene	0.167	0.010	ug/L	0.300	ND	55.7	41-120	23.20	30	
Dibenzofuran	0.179	0.010	ug/L	0.300	ND	59.7	38-120	16.60	30	
Fluorene	0.181	0.010	ug/L	0.300	ND	60.2	43-120	17.80	30	

AECOM	Project: Laurel Station	
1111 Third Avenue, Suite 1600	Project Number: Laurel Station	**Reported:**
Seattle WA, 98101	Project Manager: Karen Mixon	08-Jan-2020 12:15

Semivolatile Organic Compounds - SIM - Quality Control

Batch BHL0642 - EPA 3510C SepF

Instrument: NT11 Analyst: VTS

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike Dup (BHL0642-MSD1)	**Source: 19L0355-01**		Prepared: 24-Dec-2019 Analyzed: 07-Jan-2020 18:41							
Phenanthrene	0.195	0.010	ug/L	0.300	ND	64.3	41-120	19.90	30	
Anthracene	0.186	0.010	ug/L	0.300	ND	62.0	40-120	14.00	30	
Fluoranthene	0.207	0.010	ug/L	0.300	ND	68.9	45-120	11.70	30	
Pyrene	0.206	0.010	ug/L	0.300	ND	68.7	41-120	12.80	30	
Benzo(a)anthracene	0.215	0.010	ug/L	0.300	ND	71.6	42-120	10.60	30	
Chrysene	0.209	0.010	ug/L	0.300	ND	68.9	44-120	10.10	30	
Benzo(b)fluoranthene	0.196	0.010	ug/L	0.300	ND	65.5	44-120	11.10	30	
Benzo(k)fluoranthene	0.200	0.010	ug/L	0.300	ND	66.8	50-120	10.60	30	
Benzo(a)pyrene	0.202	0.010	ug/L	0.300	ND	67.2	35-120	9.87	30	
Indeno(1,2,3-cd)pyrene	0.211	0.010	ug/L	0.300	ND	70.3	37-120	10.40	30	
Dibenzo(a,h)anthracene	0.212	0.010	ug/L	0.300	ND	70.5	34-120	10.50	30	
Benzo(g,h,i)perylene	0.207	0.010	ug/L	0.300	ND	68.9	38-120	10.80	30	
Surrogate: 2-Methylnaphthalene-d10	0.150		ug/L	*0.300*	*0.199*	*50.0*	*42-120*			
Surrogate: Dibenzo[a,h]anthracene-d14	0.217		ug/L	*0.300*	*0.220*	*72.2*	*29-120*			
Surrogate: Fluoranthene-d10	0.204		ug/L	*0.300*	*0.227*	*68.1*	*57-120*			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

AECOM	Project: Laurel Station	
1111 Third Avenue, Suite 1600	Project Number: Laurel Station	**Reported:**
Seattle WA, 98101	Project Manager: Karen Mixon	08-Jan-2020 12:15

Petroleum Hydrocarbons - Quality Control

Batch BHL0638 - EPA 3510C SepF

Instrument: FID4 Analyst: CTO

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHL0638-BLK1)				Prepared: 22-Dec-2019 Analyzed: 31-Dec-2019 21:10						
Diesel Range Organics (C12-C24)	ND	0.100	mg/L							U
Motor Oil Range Organics (C24-C38)	ND	0.200	mg/L							U
Surrogate: o-Terphenyl	0.206		mg/L	*0.225*		*91.6*	*50-150*			
LCS (BHL0638-BS1)				Prepared: 22-Dec-2019 Analyzed: 31-Dec-2019 21:30						
Diesel Range Organics (C12-C24)	2.55	0.100	mg/L	3.00		85.2	56-120			
Surrogate: o-Terphenyl	0.207		mg/L	*0.225*		*91.9*	*50-150*			
LCS Dup (BHL0638-BSD1)				Prepared: 22-Dec-2019 Analyzed: 31-Dec-2019 21:49						
Diesel Range Organics (C12-C24)	2.47	0.100	mg/L	3.00		82.4	56-120	3.34	30	
Surrogate: o-Terphenyl	0.202		mg/L	*0.225*		*90.0*	*50-150*			
Matrix Spike (BHL0638-MS1)	**Source: 19L0355-01**			Prepared: 22-Dec-2019 Analyzed: 01-Jan-2020 00:25						
Diesel Range Organics (C12-C24)	2.56	0.100	mg/L	3.00	ND	85.2	56-120			
Surrogate: o-Terphenyl	0.199		mg/L	*0.225*	*0.147*	*88.4*	*50-150*			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.										
Matrix Spike Dup (BHL0638-MSD1)	**Source: 19L0355-01**			Prepared: 22-Dec-2019 Analyzed: 01-Jan-2020 00:45						
Diesel Range Organics (C12-C24)	2.58	0.100	mg/L	3.00	ND	85.9	56-120	0.76	30	
Surrogate: o-Terphenyl	0.209		mg/L	*0.225*	*0.147*	*93.0*	*50-150*			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.										

AECOM	Project: Laurel Station	
1111 Third Avenue, Suite 1600	Project Number: Laurel Station	**Reported:**
Seattle WA, 98101	Project Manager: Karen Mixon	08-Jan-2020 12:15

Certified Analyses included in this Report

Analyte	Certifications
EPA 8260C in Water	
Chloromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Vinyl Chloride	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Bromomethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Chloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Trichlorofluoromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Acrolein	DoD-ELAP,NELAP,CALAP,WADOE
1,1,2-Trichloro-1,2,2-Trifluoroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Acetone	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,1-Dichloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Bromoethane	DoD-ELAP,NELAP,CALAP,WADOE
Iodomethane	DoD-ELAP,NELAP,CALAP,WADOE
Methylene Chloride	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Acrylonitrile	DoD-ELAP,NELAP,CALAP,WADOE
Carbon Disulfide	DoD-ELAP,NELAP,CALAP,WADOE
trans-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Vinyl Acetate	DoD-ELAP,NELAP,CALAP,WADOE
1,1-Dichloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
2-Butanone	DoD-ELAP,NELAP,CALAP,WADOE
2,2-Dichloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
cis-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Chloroform	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Bromochloromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,1,1-Trichloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,1-Dichloropropene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Carbon tetrachloride	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2-Dichloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Benzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Trichloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2-Dichloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Bromodichloromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Dibromomethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
2-Chloroethyl vinyl ether	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
4-Methyl-2-Pentanone	DoD-ELAP,NELAP,CALAP,WADOE
cis-1,3-Dichloropropene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Toluene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE

AECOM	Project: Laurel Station	
1111 Third Avenue, Suite 1600	Project Number: Laurel Station	**Reported:**
Seattle WA, 98101	Project Manager: Karen Mixon	08-Jan-2020 12:15

trans-1,3-Dichloropropene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
2-Hexanone	DoD-ELAP,NELAP,CALAP,WADOE
1,1,2-Trichloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,3-Dichloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Tetrachloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Dibromochloromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2-Dibromoethane	DoD-ELAP,NELAP,CALAP,WADOE
Chlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Ethylbenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,1,1,2-Tetrachloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
m,p-Xylene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
o-Xylene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Styrene	DoD-ELAP,NELAP,CALAP,WADOE
Bromoform	DoD-ELAP,NELAP,CALAP,WADOE
1,1,2,2-Tetrachloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2,3-Trichloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
trans-1,4-Dichloro 2-Butene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
n-Propylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
Bromobenzene	DoD-ELAP,NELAP,CALAP,WADOE
Isopropyl Benzene	DoD-ELAP,NELAP,CALAP,WADOE
2-Chlorotoluene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
4-Chlorotoluene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
t-Butylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
1,3,5-Trimethylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
1,2,4-Trimethylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
s-Butylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
4-Isopropyl Toluene	DoD-ELAP,NELAP,CALAP,WADOE
1,3-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,4-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
n-Butylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
1,2-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2-Dibromo-3-chloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2,4-Trichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Hexachloro-1,3-Butadiene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Naphthalene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2,3-Trichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Dichlorodifluoromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Methyl tert-butyl Ether	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
n-Hexane	WADOE
2-Pentanone	WADOE

AECOM	Project: Laurel Station	
1111 Third Avenue, Suite 1600	Project Number: Laurel Station	**Reported:**
Seattle WA, 98101	Project Manager: Karen Mixon	08-Jan-2020 12:15

EPA 8270D-SIM in Water

Naphthalene	ADEC,DoD-ELAP,NELAP,CALAP,WADOE
2-Methylnaphthalene	ADEC,DoD-ELAP,NELAP,CALAP
1-Methylnaphthalene	ADEC,DoD-ELAP,NELAP,CALAP,WADOE
Biphenyl	NELAP
Acenaphthylene	ADEC,DoD-ELAP,NELAP,CALAP,WADOE
Acenaphthene	ADEC,DoD-ELAP,NELAP,CALAP,WADOE
Dibenzofuran	ADEC,DoD-ELAP,NELAP,CALAP
Fluorene	ADEC,DoD-ELAP,NELAP,CALAP,WADOE
Phenanthrene	ADEC,DoD-ELAP,NELAP,CALAP,WADOE
Anthracene	ADEC,DoD-ELAP,NELAP,CALAP,WADOE
Carbazole	NELAP
Fluoranthene	ADEC,DoD-ELAP,NELAP,CALAP,WADOE
Pyrene	ADEC,DoD-ELAP,NELAP,CALAP,WADOE
Benzo(a)anthracene	ADEC,DoD-ELAP,NELAP,CALAP,WADOE
Chrysene	ADEC,DoD-ELAP,NELAP,CALAP,WADOE
Benzo(b)fluoranthene	ADEC,DoD-ELAP,NELAP,CALAP,WADOE
Benzo(k)fluoranthene	ADEC,DoD-ELAP,NELAP,CALAP,WADOE
Benzo(j)fluoranthene	ADEC,DoD-ELAP,NELAP,WADOE
Benzo(e)pyrene	NELAP
Benzo(a)pyrene	ADEC,DoD-ELAP,NELAP,CALAP,WADOE
Perylene	ADEC,NELAP,CALAP
Indeno(1,2,3-cd)pyrene	ADEC,DoD-ELAP,NELAP,CALAP,WADOE
Dibenzo(a,h)anthracene	ADEC,DoD-ELAP,NELAP,CALAP,WADOE
Benzo(g,h,i)perylene	ADEC,DoD-ELAP,NELAP,CALAP,WADOE

NWTPH-Dx in Water

Diesel Range Organics (C12-C24)	DoD-ELAP,NELAP,WADOE
Diesel Range Organics (C10-C25)	DoD-ELAP,NELAP,WADOE
Diesel Range Organics (Tol-C18)	DoD-ELAP,NELAP,WADOE
Diesel Range Organics (C10-C24)	DoD-ELAP,NELAP,WADOE
Diesel Range Organics (C10-C28)	DoD-ELAP,NELAP,WADOE
Diesel Range Organics (C12-C22)	DoD-ELAP
Diesel Range Organics (C12-C25)	DoD-ELAP
Motor Oil Range Organics (C24-C38)	DoD-ELAP,NELAP,WADOE
Motor Oil Range Organics (C25-C36)	DoD-ELAP,NELAP,WADOE
Motor Oil Range Organics (C24-C40)	DoD-ELAP,NELAP,WADOE
Residual Range Organics (C23-C32)	DoD-ELAP
Mineral Spirits Range Organics (Tol-C12)	DoD-ELAP,NELAP,WADOE
Mineral Oil Range Organics (C16-C28)	DoD-ELAP,NELAP,WADOE

AECOM	Project: Laurel Station	
1111 Third Avenue, Suite 1600	Project Number: Laurel Station	**Reported:**
Seattle WA, 98101	Project Manager: Karen Mixon	08-Jan-2020 12:15

Kerosene Range Organics (Tol-C18)	DoD-ELAP,NELAP,WADOE
JP8 Range Organics (C8-C18)	DoD-ELAP,NELAP,WADOE
JP5 Range Organics (C10-C16)	DoD-ELAP,NELAP,WADOE
JP4 Range Organics (Tol-C14)	DoD-ELAP,NELAP,WADOE
Jet-A Range Organics (C10-C18)	DoD-ELAP,NELAP,WADOE
Creosote Range Organics (C12-C22)	DoD-ELAP,NELAP,WADOE
Bunker C Range Organics (C10-C38)	DoD-ELAP,NELAP,WADOE
Stoddard Range Organics (C8-C12)	DoD-ELAP,NELAP,WADOE
Transformer Oil Range Organics (C12-C28)	DoD-ELAP,NELAP,WADOE

NWTPHg in Water

Gasoline Range Organics (Tol-Nap)	WADOE,DoD-ELAP
Gasoline Range Organics (2MP-TMB)	WADOE,DoD-ELAP
Gasoline Range Organics (Tol-C12)	WADOE,DoD-ELAP
Gasoline Range Organics (C6-C10)	WADOE,ADEC,DoD-ELAP
Gasoline Range Organics (C5-C12)	WADOE,DoD-ELAP

Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	01/31/2021
CALAP	California Department of Public Health CAELAP	2748	06/30/2019
DoD-ELAP	DoD-Environmental Laboratory Accreditation Program	66169	01/01/2021
NELAP	ORELAP - Oregon Laboratory Accreditation Program	WA100006-012	05/12/2020
WADOE	WA Dept of Ecology	C558	06/30/2019
WA-DW	Ecology - Drinking Water	C558	06/30/2019

AECOM	Project: Laurel Station	
1111 Third Avenue, Suite 1600	Project Number: Laurel Station	**Reported:**
Seattle WA, 98101	Project Manager: Karen Mixon	08-Jan-2020 12:15

Notes and Definitions

*	Flagged value is not within established control limits.
D	The reported value is from a dilution
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL)
U	This analyte is not detected above the reporting limit (RL) or if noted, not detected above the limit of detection (LOD).
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
[2C]	Indicates this result was quantified on the second column on a dual column analysis.