

November 8, 2019

Mr. Panjini Balaraju Washington State Department of Ecology Toxics Cleanup Program Southwest Regional Office 300 Desmond Drive Lacey, WA 98503

Subject: Quarterly Progress Report – Fourth Quarter 2018 D Street Petroleum Site, Tacoma, Washington CONSENT DECREE 91-2-2012-1

Dear Mr. Balaraju:

AECOM submits the following progress report for the D Street Petroleum Site located at 520 East D Street in Tacoma, Washington (the Site). This report is being submitted to the Washington State Department of Ecology (Ecology) on behalf of the D Street Potentially Liable Persons (PLP) Group: ExxonMobil Refining and Supply/Environmental Services (ExxonMobil, formerly Mobil), Shell Oil Company (Shell), and Chevron Environmental Management Company (Chevron EMC), in accordance with Consent Decree No. 91-2-2012-1. The Phillips 66 Company (formerly ConocoPhillips) transferred control of its allocated share of the D Street PLP Group to Chevron EMC, effective April 1, 2011.

A groundwater sampling and monitored natural attenuation program was implemented after the remedial system at the Site was turned off in October 2006. Groundwater monitoring is conducted in accordance with the Sampling and Analysis Plan for Groundwater Performance Monitoring Program and Work Plan for Well Installation/Decommissioning Activities, dated September 2011. This progress report covers the environmental monitoring data collected during the fourth quarter (October 1, 2018 through December 31, 2018). An evaluation of the fourth quarter 2018 data and natural attenuation processes will be presented in the 2019 Annual Progress Report, which is completed following the third quarter (September) 2019 monitoring event.

#### 1.0 Site Description

The Site is an approximately 17 acres former Shell property located at 520 East D Street in Tacoma, Pierce County, Washington (Figure 1). The Site is located on a peninsula in Commencement Bay and is bounded to the west by the Thea Foss Waterway; to the north by various industrial properties, East 3rd Street, and Commencement Bay; to the east by East F Street and the Middle Waterway; and to the south by various industrial properties and 11th Street.

The Site includes an active bulk petroleum storage and distribution area currently occupied by Phillips 66 Company. Previous operators of the petroleum storage and distribution area include Mobil, British Petroleum (BP), Unocal/76 Products, and Tosco. The south and southwest end of the Site is owned and utilized by Globe Machine Manufacturing, a manufacturer of industrial machines. The east and northeast end of the Site is vacant and owned by Targa Resources with the exception of the northeastern-most area which is occupied by a pump station owned by Olympic Pipeline



Quarterly Progress Report Fourth Quarter 2018 November 8, 2019 Page 2 of 6

Company. These areas along with the groundwater monitoring well network and other site features are presented in Figure 2.

#### 2.0 Summary of Sampling Activities Conducted During the Reporting Period

The fourth quarter 2018 monitoring event included the following groundwater sampling activities conducted from December 10<sup>th</sup> through December 12<sup>th</sup>, 2018:

- Water Level and Free Product Gauging
  - AECOM personnel measured water levels and free product, where present, in 36 upper sand unit monitoring wells, seven surface water compliance monitoring wells, and six lower sand unit monitoring wells. Measurable free product was not observed in the monitoring wells sampled during this event.
  - The depths to groundwater and the calculated groundwater elevations based on the December 2018 measurements are presented in Table 1. Groundwater elevation contour maps are not provided due to high variability in the groundwater elevation data caused by tidal influences and other factors.
  - The predominant groundwater flow direction within the upper and lower sand units has historically been toward the southwest (toward the Thea Foss Waterway).
     Groundwater and tidal influence studies conducted in 2011 indicate a more diminished flow pattern toward the Thea Foss Waterway.
- Groundwater/Surface Water Compliance Sampling
  - Groundwater and surface water compliance samples were collected from 18 groundwater monitoring wells during this event:
    - Ten upper sand unit groundwater monitoring wells (B-25, B-31, B-34, E-22, FW-5R, FW-14, HC-111, RW-5R, RW-8, and T-2). Wells E-22, FW-5R, FW-14, and T-2 also serve as sentinel wells
    - Three lower sand unit groundwater monitoring wells (DMW-2, DMW-4 and FW-13)
    - Four surface water compliance monitoring wells (RR-1, RR-2, RR-4, and RR-5)
  - The wells were purged and sampled following low-flow sampling methodology. An inline (i.e., flow-thru cell) multi-parameter water quality measurement device was used to continuously monitor pH, temperature, conductivity, oxidation-reduction potential (ORP), dissolved oxygen (DO), and turbidity. Representative water samples were collected when parameters stabilized over three recording intervals (three to five minutes each).
- Analytical Procedures
  - The groundwater and surface water compliance samples were submitted under proper chain-of-custody protocol to TestAmerica Laboratories, Incorporated of Spokane, Washington. The laboratory analytical report and chain-of-custody are provided in Appendix A.
  - The following methods were used to analyze the samples identified above:



Quarterly Progress Report Fourth Quarter 2018 November 8, 2019 Page 3 of 6

- Benzene, toluene, ethylbenzene, and xylenes (BTEX) by U.S. Environmental Protection Agency (EPA) Method 8260C
- Gasoline-range total petroleum hydrocarbons (TPH-G) by Northwest total petroleum hydrocarbons Method NWTPH-Gx
- Diesel-range total petroleum hydrocarbons (TPH-D) and total petroleum hydrocarbons in the heavy oil range (TPH-O) by Northwest total petroleum hydrocarbons Method NWTPH-Dx
- Naphthalene, 1-methylnapthalene, and 2-methylnaphthalene by EPA Method 8270D selected ion monitoring (SIM)
- Purge water generated during this event was placed in a 55-gallon drum stored at the Site. The contents of the drum will be removed for disposal prior to the next quarterly groundwater monitoring event.

#### 3.0 Summary of Data Validation Completed for Period Sampling Event

A data validation review was completed for the fourth quarter 2018 analytical data. The data was reviewed based on the EPA Contract Laboratory Program's *National Functional Guidelines for Organic Superfund Methods Data Review* dated January 2017 and standard laboratory quality control criteria.

The completeness of the analytical reports for this groundwater monitoring event is 100%. The data qualifiers assigned by the laboratory are shown on the laboratory reports. No additional data qualifiers were assigned based on the data validation review. Sample results and associated data qualifiers are presented in Table 2 and Appendix B: Table 1. The completed data review memorandum for this quarterly sampling event is provided in Appendix B.

#### 4.0 Summary of Analytical Results for Period Sampling Event

This section provides a summary of the groundwater monitoring results from this event. Table 2 summarizes analytical results for groundwater monitoring wells sampled during the fourth quarter 2018. A copy of the laboratory analytical report is presented in Appendix A. Site-specific Surface Water Cleanup Levels and Groundwater Cleanup Levels were established by Ecology and D Street PLP Group representatives (effective September 3, 1991), as written in Appendix B of Consent Decree No. 91-2-2012-1. The cleanup levels were established for the following specific contaminants: benzene, toluene, and ethylbenzene. Cleanup levels were not established for total xylenes, TPH-G, TPH-D, or TPH-O.

 Benzene was detected in six upper sand unit wells (B-25, B-31, B-34, HC-111, RW-5R, and RW-8) and two sentinel wells (E-22 and FW-5R). One well (B-25) was in exceedance of the groundwater cleanup standard of 0.16 milligrams per liter (mg/L). Three of the wells (B-34, HC-111, and RW-5R) were in exceedance of the surface water cleanup standard of 0.04 mg/L but did not exceed the groundwater cleanup standard. Benzene was not detected in the surface compliance wells or lower sand unit wells sampled during this event. Benzene

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Quarterly Progress Report Fourth Quarter 2018 November 8, 2019 Page 4 of 6

concentrations in the upper sand unit and resulting isocontours from this event are presented on Figure 3.

- Toluene was detected in six of the upper sand unit wells (B-25, B-31, B-34, HC-111, RW-5R, and RW-8), one sentinel well (FW-5R), and one surface water compliance well (RR-5). None of the toluene detections exceeded the surface water cleanup standard of 5 mg/L or the groundwater cleanup standard of 20 mg/L. Toluene was not detected in the lower sand unit wells sampled during this event.
- Ethylbenzene was detected in six upper sand unit wells (B-25, B-31, B-34, HC-111, RW-5R, and RW-8) and two sentinel wells (E-22 and FW-5R). None of the ethylbenzene detections exceeded the surface water cleanup standard of 0.43 mg/L or the groundwater cleanup standard of 1.7 mg/L. Ethylbenzene was not detected in the surface water compliance wells or the lower sand unit wells sampled during this event.
- Total xylenes were detected in six upper sand unit wells (B-25, B-31, B-34, HC-111, RW-5R, and RW-8) and one sentinel well (E-22). Total xylenes were not detected in the surface water compliance wells or lower sand unit wells sampled during this event. There are no cleanup standards for total xylenes for the Site.
- TPH-G was detected in six upper sand unit wells (B-25, B-31, B-34, HC-111, RW-5R, and RW-8), two sentinel wells (E-22 and FW-5R), one surface water compliance well (RR-5), and one lower sand unit well (DMW-4). There are no cleanup standards for TPH-G for the Site. TPH-G concentrations in the upper sand unit and resulting isocontours from this event are presented on Figure 4.
- TPH-D was detected in six upper sand unit wells (B-25, B-31, B-34, HC-111, RW-5R, and RW-8), three sentinel wells (E-22, FW-5R, and T-2), two surface water compliance wells (RR-1 and RR-5), and all lower sand unit wells (DMW-2, DMW-4, and FW-13). There are no cleanup standards for TPH-D for the Site. TPH-D concentrations in the upper sand unit and resulting isocontours from this event are presented on Figure 5.
- TPH-O was detected in six upper sand unit wells (B-25, B-31, B-34, HC-111, RW-5R, and RW-8), three sentinel well (E-22, FW-5R, and T-2), one surface water compliance well (RR-5), and all lower sand unit wells (DMW-2, DMW-4, and FW-13). There are no cleanup standards for TPH-O for the Site.
- Naphthalene was analyzed in three select wells (FW-5R, FW-14, and RR-2) during this quarterly sampling event. Naphthalene was detected in one sentinel well (FW-5R). There are no cleanup standards for naphthalene for the Site.

#### 5.0 Summary of Field and Natural Attenuation Results for Period Sampling Event

Table 3 summarizes the field parameters for the groundwater monitoring wells sampled during this quarterly monitoring event. An evaluation of the natural attenuation processes occurring at the Site will be presented in the 2019 Annual Progress Report, which is completed following the third quarter (September) 2019 sampling event.

### 6.0 Discussion of Upper Sand Unit Shoreline Data

There were no exceedances of site groundwater or surface water cleanup standards in the sentinel wells (E-22, FW-5R, FW-14, and T-2) sampled during this event. TPH-D and TPH-O were detected



Quarterly Progress Report Fourth Quarter 2018 November 8, 2019 Page 5 of 6

in three sentinel wells (E-22, FW-5R, and T-2), and TPH-G was detected in two sentinel wells (E-22 and FW-5R). Benzene and ethylbenzene were detected in sentinel wells E-22 and FW-5R. Toluene was detected in sentinel well FW-5R and total xylenes were detected in sentinel well E-22. Naphthalene was detected in sentinel well FW-5R.

There were no exceedances of site groundwater or surface water cleanup standards in the surface water compliance wells (RR-1 through RR-5) sampled during this event. TPH-G and TPH-O were detected in one surface water compliance well (RR-5), and TPH-D was detected in two surface water compliance wells (RR-1 and RR-5). Toluene was detected in one surface water compliance well (RR-5). Benzene, ethylbenzene, and total xylenes were not detected in the surface water compliance wells sampled during this event. Naphthalene was not detected in any of the surface water compliance wells sampled during this event. Further evaluation of this area will be provided in the 2019 Annual Progress Report.

#### 7.0. Discussion of Lower Sand Unit Data

There were no exceedances of site groundwater or surface water cleanup standards in the lower sand unit wells (DMW-2, DMW-4, and FW-13). TPH-D and TPH-O were detected in all three lower sand unit wells. TPH-G was detected in lower sand unit well DMW-4. BTEX constituents were not detected in the lower sand unit wells.

#### 8.0 Status of Recent and Upcoming Deliverables

- The 2018 Annual Progress Report was submitted in October 2019.
- The First Quarter 2019 Progress Report is anticipated to be submitted in November 2019.

If you have any questions regarding this progress report, please call me at (503) 222-7200.

Sincerely,

AECOM

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Tyler Hemry Deputy Project Manager/ Technical Manager

cc: Andrea Wing – Shell Oil Company (electronic only) Jennifer Sedlachek – ExxonMobil (electronic only) Ben Terry – Chevron (electronic only) Rich Solomon – Phillips 66 (electronic only)

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Mike Edwards, PE, MBA Vice President



Quarterly Progress Report Fourth Quarter 2018 November 8, 2019 Page 6 of 6

#### ATTACHMENTS:

Figure 1 – Vicinity Map

Figure 2 – Site Map

Figure 3 – Benzene Concentrations in Groundwater (Upper Sand Unit), December 2018

Figure 4 – TPH-G Concentrations in Groundwater (Upper Sand Unit), December 2018

Figure 5 – TPH-D Concentrations in Groundwater (Upper Sand Unit), December 2018

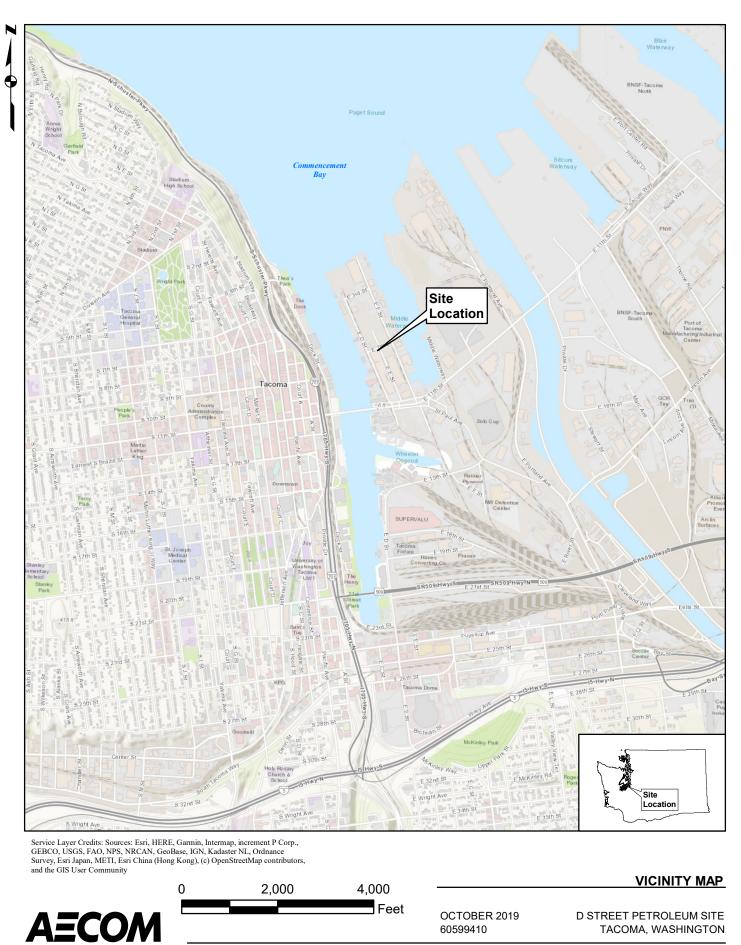
 Table 1 – Groundwater Elevation Data, Fourth Quarter 2018

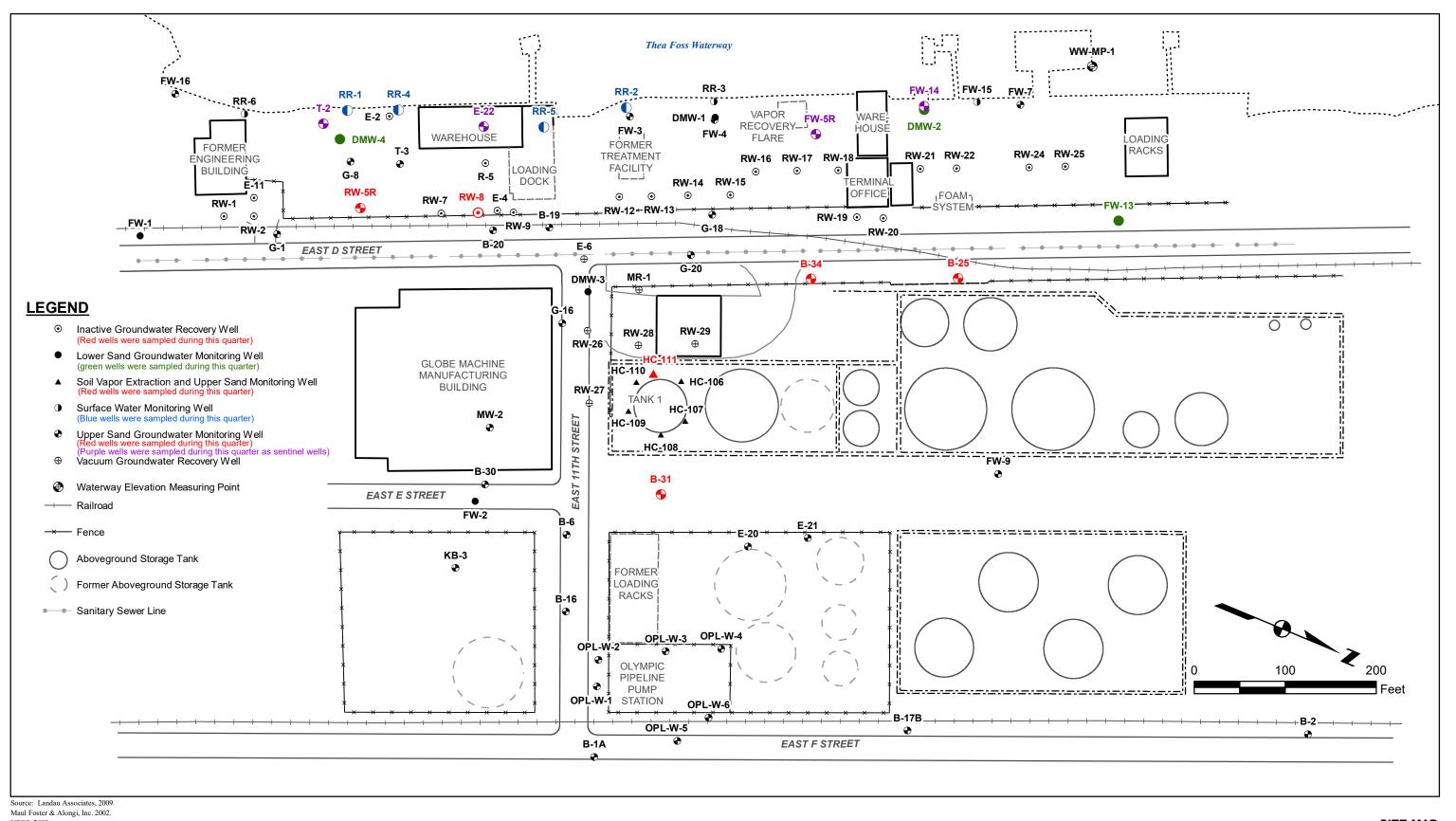
Table 2 – Summary of Groundwater Analytical Results, Fourth Quarter 2018

 Table 3 – Summary of Field Parameters, Fourth Quarter 2018

Appendix A – Laboratory Analytical Data

Appendix B – Data Review





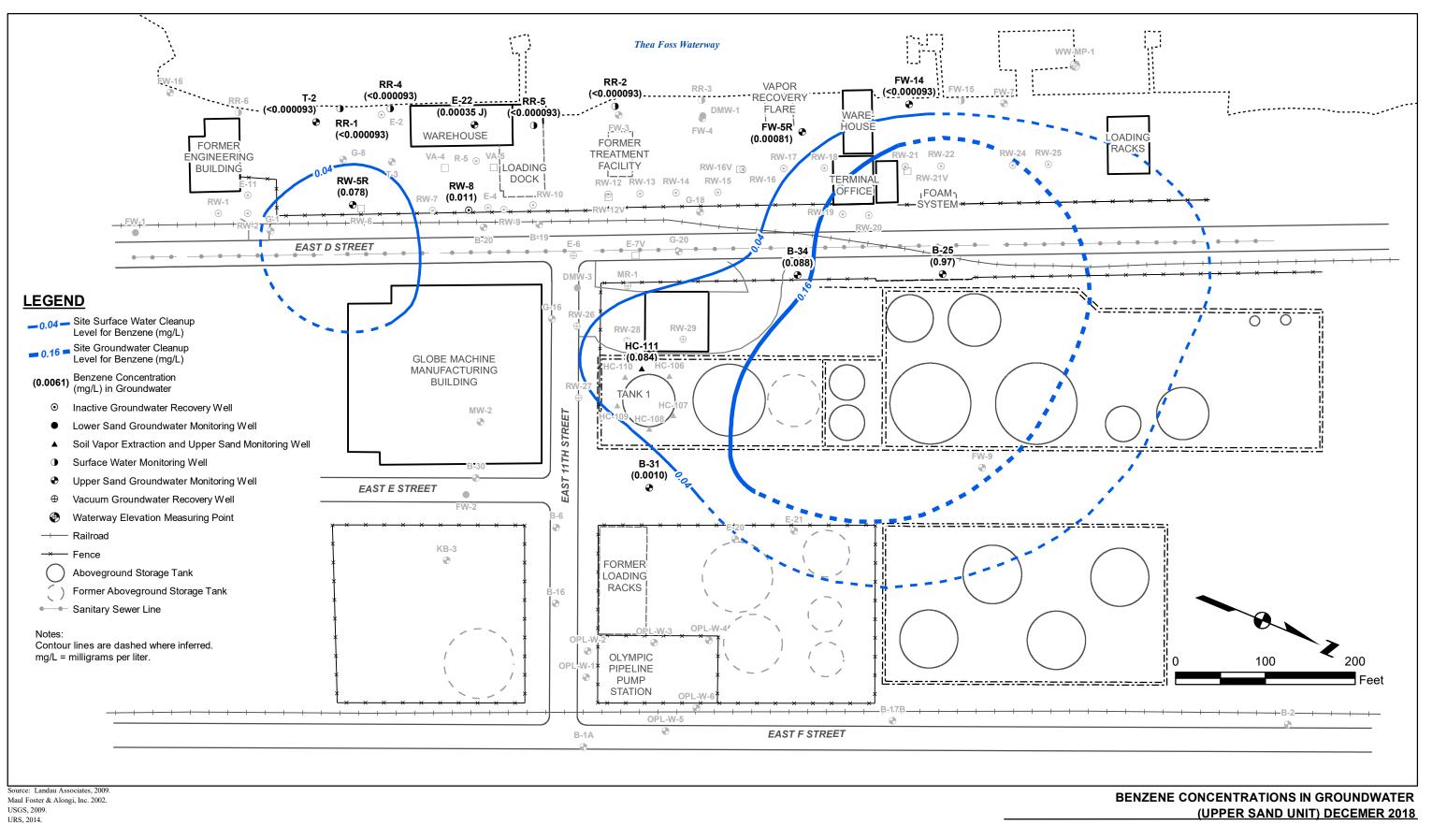
USGS, 2009. URS, 2014.

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#### SITE MAP

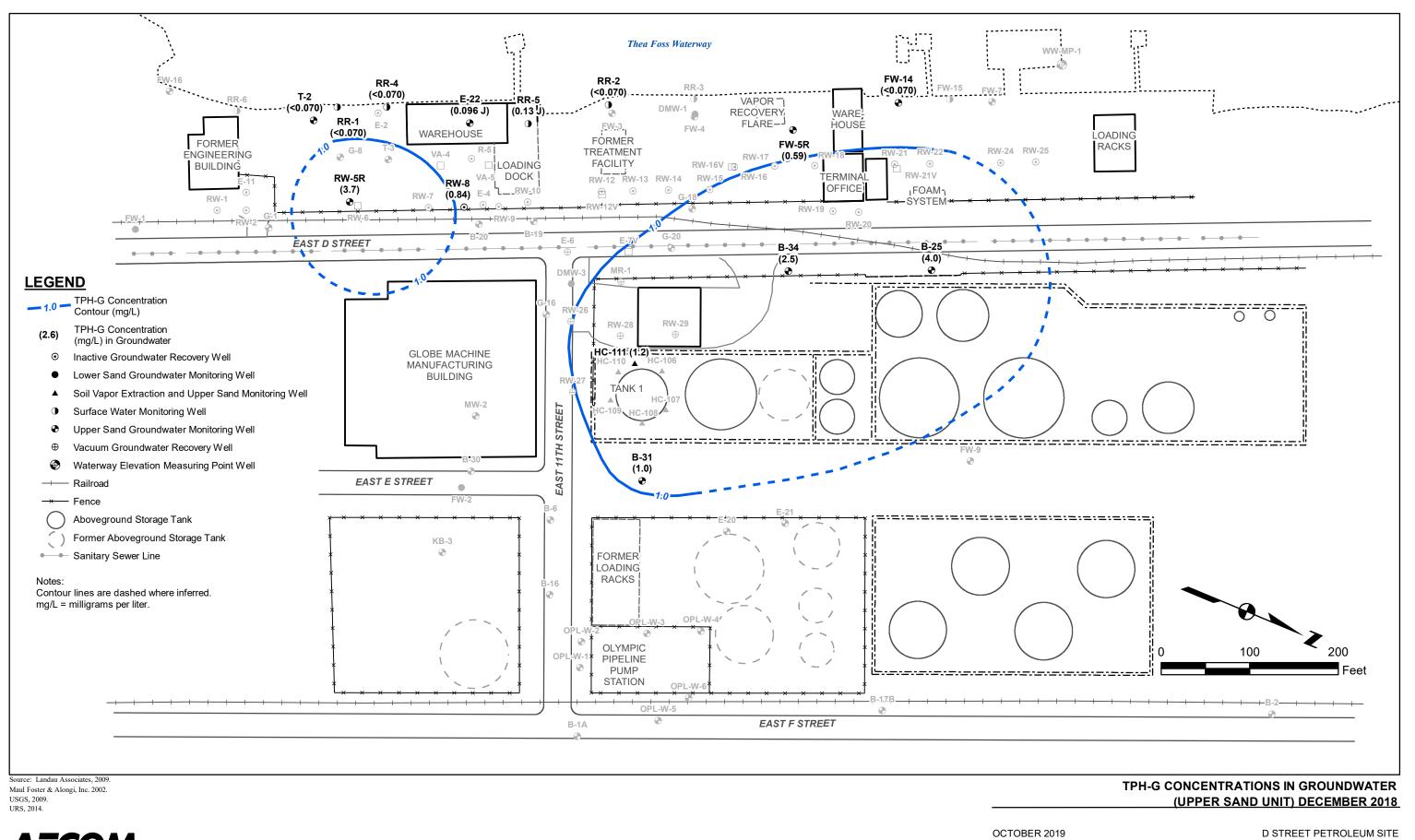
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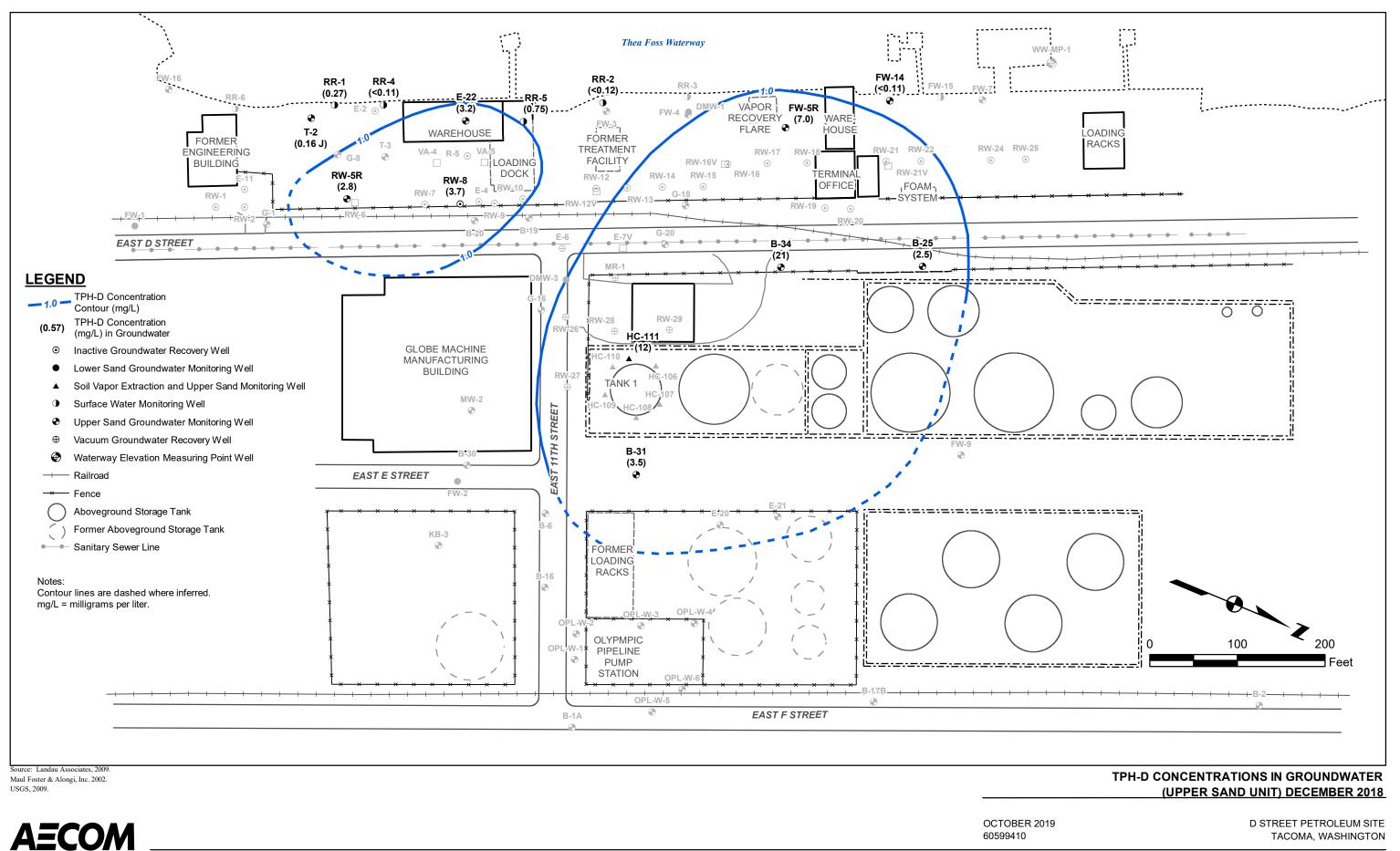
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D STREET PETROLEUM SITE TACOMA, WASHINGTON



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D STREET PETROLEUM SITE TACOMA, WASHINGTON

TABLES

#### Table 1 Groundwater Elevation Data Fourth Quarter 2018 D Street Petroleum Site

	Well			Depth to	Apparent	Groundwater	
Well ID	Elevation	Date	Time	Groundwater	Product	Elevation	
	(ft) (a)			(ft)	Thickness	(ft)	
					(ft)		
Upper San B-1A	14.15	12/12/2018	10:35	7.20		6.95	
B-1A B-2	13.78	12/12/2018	10:33	7.00		6.78	
B-6	14.25	12/11/2018	8:45	NR		NR	Dry
B-16	14.40	12/11/2018	8:55	NR		NR	Unable to remove PVC cap
B-17B	14.16	12/12/2018	10:39	6.65		7.51	
B-19	13.31	12/12/2018	11:02	6.68		6.63	
B-20	13.48	12/12/2018	11:04	6.85		6.63	
B-25	13.96	12/11/2018	10:28	7.41		6.55	
B-30	14.46	12/12/2018	10:33	7.90		6.56	
B-31	14.46	12/11/2018	10:50	8.25		6.21	
B-34	14.36	12/10/2018	11:46	8.85		5.51	
E-4	12.09	12/12/2008	NR	NR		NR	Well cap stuck
E-6	12.14	12/12/2018	NR	NR		NR	In street
E-20	NS	12/11/2018	9:03	6.85		NS	
E-21	14.13	12/11/2018	9:00	7.25		6.88	
FW-3	14.11 (b)	12/10/2018	13:50	6.92		7.19	
FW-4	14.21	12/12/2018	11:54	6.98		7.23	
FW-16	12.35	12/12/2018	NR	NR		NR	Car parked on well
G-1	13.43 (b)	12/12/2018	11:30 NR	7.22		6.21 NR	Linder treiler
G-8 G-16	13.25 13.23	12/12/2018 12/12/2018	10:29	NR 6.95		6.28	Under trailer
G-18	13.54	12/12/2018	11:36	6.82		6.72	
G-18 G-20	13.11	12/12/2018	NR	NR		NR	In street
HC-108	15.30	12/12/2018	11:13	8.63		6.67	
HC-111	14.62	12/10/2018	10:34	8.82		5.80	
MR-1	14.26	12/12/2018	NR	NR		NR	Lid bolted down
MW-2	NS	12/12/2018	10:20	8.59		NS	Gritty film on probe
R-5	11.69	12/12/2018	NR	NR		NR	Truck on well
RW-1	12.94	12/12/2018	11:13	5.82		7.12	
RW-2	12.76	12/12/2018	11:12	5.70		7.06	
RW-5R	13.76	12/10/2018	12:30	7.42		6.34	
RW-7	12.46	12/12/2012	NR	NR		NR	Steel beams on well
RW-8	12.71	12/10/2018	10:45	6.32		6.39	
RW-9	12.59	12/12/2018	NR	NR		NR	Under trailer
RW-12	13.21	12/12/2018	12:00	6.78		6.43	
RW-13	13.94	12/12/2018	12:02	7.15		6.79	
RW-14	13.52	12/12/2018	12:03	6.52		7.00	
RW-15	13.15	12/12/2018	12:04	6.35		6.80	
RW-17	12.29	12/12/2018	12:06	5.51		6.78	
RW-19	12.97	12/12/2018	10:09 10:08	6.57		6.40	
RW-20 RW-22	12.80 12.72	12/12/2018 12/12/2018	10:08 NR	6.33 NR		6.47 NR	Well cap glued on
RW-22 RW-24	12.72	12/12/2018	12:09	7.00		6.63	wen cap glueu oli
RW-24	11.93	12/12/2018	NR	NR		0.03	PVC
RW-20	14.62	12/12/2018	11:00	NR		NR	Well lid stuck
RW-20	13.83	12/12/2018	11:00	NR		NR	Well lid stuck
T-3	13.03	12/12/2018	11:23	6.41		6.62	
	d Unit - Sen			0.11		0.02	
E-22	16.74	12/11/2018	9:30	9.75		6.99	
FW-5R	12.78	12/10/2018	14:23	6.22		6.56	
FW-14	13.17	12/11/118	12:40	5.90		7.27	
T-2	11.62	12/10/2018	15:10	5.00		6.62	
h	-		-			-	

#### Table 1 Groundwater Elevation Data Fourth Quarter 2018 D Street Petroleum Site

Well ID	Well Elevation (ft) (a)	Date	Time	Depth to Groundwater (ft)	Apparent Product Thickness (ft)	Groundwater Elevation (ft)						
Lower San	Lower Sand Unit											
FW-1	13.63	12/12/2018	11:15	6.28		7.35						
FW-2	14.32	NR	NR	NR		NR	paved over					
FW-13	13.13	12/11/2018	12:49	5.58		7.55						
DMW-1	13.72	12/12/2018	11:47	6.15		7.57						
DMW-2	12.97	12/11/2018	13:45	6.20		6.77						
DMW-3	12.83	12/12/2018	10:53	4.95		7.88						
DMW-4	11.72	12/12/2018	8:05	3.92		NR						
Upper San	d Unit - Suri	face Water C	ompliance									
RR-1	14.79 (b)	12/11/2018	14:23	7.71		7.08						
RR-2	15.71 (b)	12/10/2018	13:10	8.84		6.87						
RR-3	15.78 (b)	12/12/2018	11:45	7.68		8.10						
RR-4	13.19 (c)	12/10/2018	13:25	6.40		6.79						
RR-5	16.53	12/11/2018	14:50	6.50		10.03						
RR-6	11.31	12/12/2018	11:10	3.44		7.87						
FW-15	NS	12/12/2018	12:15	6.45		NS						

Notes

Groundwater elevations corrected for free product using following equation, if applicable:

Well Elevation - Depth to Groundwater + (Apparent Product Thickness x 0.80)

ID = Identification

NS = No survey data provided or available

NR = Not recorded

-- = Product was not detected

(a) Top of casing elevation, October 2013, based on NAVD 88, unless otherwise noted

(b) Top of casing elevation, March 2011, based on NAVD 88

(c) Top of casing elevation, October 2011, based on NAVD 88

ft = Feet

#### Table 2 Summary of Groundwater Analytical Results Fourth Quarter 2018 **D** Street Petroleum Site

	Surf	ace Water Clear	Analyte:	трн.с	TPH-D	трн-о	eues Beuze 8 0.04	Ethylbenzene	m-Xylene & p-Xylene	o-Xylene	Toluene	Xylenes (total)	Naphthalene	2-Methylaphthalene		1-Methylaphthalene
		oundwater Clear					0.16	1.7			20				_	
	Sample ID	Lab ID	Date Collected													
	B-25	580-82564-11	12/11/2018	4.0	2.5	0.58	0.97	0.0031	0.0064	0.00071 J	0.0053	0.0071				
÷	B-31	580-82564-12	12/11/2018	0.89	3.2	0.71	0.00092	0.0066	0.0084	0.00099 J	0.0035	0.0094				
Unit	B-31 (DUP)	580-82564-13	12/11/2018	1.0	3.5	0.79	0.0010	0.0072	0.0092	0.0011	0.0038	0.010				
Sand	B-34	580-82564-4	12/10/2018	2.5	21	3.5	0.088	0.0046	0.0011 J	0.00016 U	0.0051	0.0011 J				
erS	HC-111	580-82564-1	12/10/2018	1.2	12	2.7	0.084	0.020	0.0020	0.0010	0.0040	0.0030				
Upper	RW-5R	580-82564-5	12/10/2018	3.7	2.8	0.82	0.078	0.017	0.00028 U	0.00073 J	0.00072 J	0.00073 J				
_	RW-8	580-82564-2	12/10/2018	0.78	3.6	0.91	0.010	0.00071 J	0.0015 J	0.0012	0.0010	0.0027 J				
	RW-8 (DUP)	580-82564-3	12/10/2018	0.84	3.7	0.99	0.011	0.00064 J	0.0017 J	0.0013	0.00110	0.0030				
er Sand Sentinel	E-22	580-82564-10	12/11/2018	0.096 J	3.2	0.56	0.00035 <b>J</b>	0.00045 J	0.00044 J	0.00016 U	0.00031 U	0.00044 J				
Sal	FW-5R	580-82564-8	12/11/2018	0.59	7.0	1.1	0.00081	0.00052 J	0.00028 U	0.00016 U	0.00040 J	0.00044 U	0.0010	0.350		0.320
Upper Unit - Si	FW-14	580-82564-14	12/11/2018	0.070 U	0.11 U	0.12 U	0.000093 U	0.00020 U	0.00028 U	0.00016 U	0.00031 U	0.00044 U	0.000054 U	0.000045	U 0.	.000023 U
	T-2	580-82564-9	12/11/2018	0.070 U	0.16 J	0.16 J	0.000093 U	0.00020 U	0.00028 U	0.00016 U	0.00031 U	0.00044 U				
nd ace ce	RR-1	580-82564-17	12/11/2018	0.070 U	0.27	0.14 U	0.000093 U	0.00020 U	0.00028 U	0.00016 U	0.00031 U	0.00044 U				
per Sand t - Surface Water mpliance	RR-2	580-82564-6	12/11/2018	0.070 U	0.12 U	0.13 U	0.000093 U	0.00020 U	0.00028 U	0.00016 U	0.00031 U	0.00044 U	0.000057 U	0.000047	U 0.	.000025 U
Upper Sand Unit - Surface Water Compliance	RR-4	580-82564-7	12/11/2018	0.070 U	0.11 U	0.12 U	0.000093 U	0.00020 U	0.00028 U	0.00016 U	0.00031 U	0.00044 U				
μη Έ.Ε. Ο	RR-5	580-82564-18	12/11/2018	0.13 J	0.75	0.65	0.000093 U	0.00020 U	0.00028 U	0.00016 U	0.018	0.00044 U				
init Init	DMW-2	580-82564-16	12/11/2018	0.070 U	1.7	0.70	0.000093 U	0.00020 U	0.00028 U	0.00016 U	0.00031 U	0.00044 U				
Lower Sand Unit	DMW-4	580-82564-19	12/11/2018	0.37	0.44	0.27 J	0.000093 U	0.00020 U	0.00028 U	0.00016 U	0.00031 U	0.00044 U				
Sai	FW-13	580-82564-15	12/11/2018	0.070 U	0.82	0.43	0.000093 U	0.00020 U	0.00028 U	0.00016 U	0.00031 U	0.00044 U				

#### Notes:

All results in milligrams per liter (mg/L).

-- = Not analyzed.

(DUP) = Field duplicate

EPA = Environmental Protection Agency

ID = Identification

J = The analyte is present in the sample; the reported concentration is an estimate.

TPH = Total Petroleum Hydrocarbons

NWTPH-Gx= Northwest Analytical method, Northwest Total Petroleum Hydrocarbons as Gasoline

NWTPH-Dx w SGC = Northwest Analytical method, Northwest Total Petroleum Hydrocarbons as Diesel with Silica Gel Cleanup

TPH-G = Total Petroleum Hydrocarbons as Gasoline

TPH-D = Total Petroleum Hydrocarbons as Diesel

TPH-O = Total Petroleum Hydrocarbons as Oil

U = Not detected above the reported quantitation limit. Bold indicates an exceedance of surface water cleanup levels.

Bold indicates an exceedance of groundwater cleanup levels.

Site-Specific Surface Cleanup Level, Consent Decree No. 91-2-2012-1, effective 9/3/91

Site-Specific Groundwater Cleanup Level, Consent Decree No. 91-2-2012-1, effective 9/3/91

#### Table 3 Summary of Field Parameters Fourth Quarter 2018 D Street Petroleum Site

	Sample ID	Date Collected	Temperature (°C)	Hd	Conductivity (mS/cm)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/L)
	B-25	12/11/2018	10.59	6.63	0.625	-100	6.21
	B-31	12/11/2018	12.42	6.77	0.420	-212	1.77
Upper Sand Unit	B-34	12/10/2018	14.38	6.39	1.04	-88	7.04
	HC-111	12/10/2018	12.31	6.23	0.867	-87	7.30
	RW-5R	12/10/2018	13.37	6.93	1.52	-72	2.61
	RW-8	12/10/2018	12.83	6.99	2.78	-108	3.43
	E-22	12/11/2018	13.71	7.19	15.6	-32.5	1.60
Upper Sand Unit -	FW-5R	12/10/2018	14.67	6.47	4.31	-105	1.18
Sentinel	FW-14	12/11/2018	8.95	7.17	30.2	43	6.70
	T-2	12/10/2018	11.44	6.50	23.2	-44	1.81
Upper Sand Unit -	RR-1	12/11/2018	10.01	6.33	31.7	25	3.62
Surface Water	RR-2	12/10/2018	11.20	6.86	33.2	40	6.97
	RR-4	12/10/2018	10.88	6.99	30.7	69	7.98
Compliance	RR-5	12/11/2018	8.83	6.70	11.6	-170	1.70
	DMW-2	12/11/2018	9.40	7.63	12.2	-181	1.96
Lower Sand Unit	DMW-4	12/12/2018	11.38	7.10	27.0	-308	11.56
	FW-13	12/11/2018	11.63	7.06	0.653	-116	4.53

#### Notes:

°C = degrees Celsius

mg/L = milligrams per liter

mS/m = millisiemens per meter

mV = millivolts

ID = Identification

Field parameters (pH, conductivity, dissolved oxygen, temperature, and Oxygen Reduction Potential) are measured during well purging. Final stabilized parameters are shown in the table above.

Conductivity units may have been incorrectly entered in the field - results may not be accurate.

<sup>a</sup>FW-28 is a duplicate of FW-13

<sup>b</sup>RW-18R is a duplicate of RW-5R

## APPENDIX A Laboratory Analytical Data



THE LEADER IN ENVIRONMENTAL TESTING

# **ANALYTICAL REPORT**

### TestAmerica Laboratories, Inc.

TestAmerica Seattle 5755 8th Street East Tacoma, WA 98424 Tel: (253)922-2310

### TestAmerica Job ID: 580-82564-1 Client Project/Site: Tacoma D St Terminal-Phillips 66

### For:

AECOM 111 SW Columbia Street, Suite 1500 Portland, Oregon 97201

Attn: Mr. Tyler Hemry

Candre Arrington

Authorized for release by: 12/20/2018 2:13:25 PM

Randee Arrington, Project Manager II (509)924-9200 randee.arrington@testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.



# **Table of Contents**

Table of Contents2Case Narrative3Definitions4Client Sample Results5
Definitions 4
Definitions 4
Client Sample Results 5
QC Sample Results 29
Chronicle
Certification Summary 30
Sample Summary 3
Chain of Custody 38
Receipt Checklists 44

#### Job ID: 580-82564-1

#### Laboratory: TestAmerica Seattle

Narrative

#### Receipt

The samples were received on 12/12/2018 12:40 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 0.3° C and 1.3° C.

#### GC/MS Semi VOA

Method 8270D SIM: The following sample required a dilution due to the nature of the sample matrix: FW-5R (580-82564-8). Because of this dilution, the surrogate spike concentration in the sample was reduced to a level where the recovery calculation does not provide useful information.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### GC Semi VOA

Method NWTPH-Dx: Detected hydrocarbons appear to be due to weathered diesel in the following samples: HC-11 (580-82564-1), RW-8 (580-82564-2), RW-8 DUP (580-82564-3), B-34 (580-82564-4), FW-5R (580-82564-8), T-2 (580-82564-9), E-22 (580-82564-10), FW-13 (580-82564-15), DMW-2 (580-82564-16), RR-5 (580-82564-18) and DMW-4 (580-82564-19).

Method NWTPH-Dx: Detected hydrocarbons in the diesel range appear to be due to weathered diesel as well as gasoline overlap in the following samples: RW-5R (580-82564-5), B-25 (580-82564-11), B-31 (580-82564-12) and B-31-DUP (580-82564-13).

Method NWTPH-Dx: Detected hydrocarbons appear to be due to individual peaks and are a non-typical hydrocarbon pattern in the following sample: RR-1 (580-82564-17).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### **Organic Prep**

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

#### **VOA Prep**

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

## **Definitions/Glossary**

#### Client: AECOM Project/Site: Tacoma D St Terminal-Phillips 66

#### Qualifiers

#### **GC/MS VOA**

GC/WIS VOA	A	4
Qualifier	Qualifier Description	4
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.	5
F5	Duplicate RPD exceeds limit, and one or both sample results are less than 5 times RL. The data are considered valid because the absolute difference is less than the RL.	
GC/MS Sem	ni VOA	0
Qualifier	Qualifier Description	
X	Surrogate is outside control limits	- 1
GC Semi VC	AC	8
Qualifier	Qualifier Description	
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.	9
Glossary		1
Abbreviation	These commonly used abbreviations may or may not be present in this report.	
	Listed under the UDU actives to design at the the next tip several and an ender unight basis	-

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

RL

0.40

1.0

2.0

1.0

1.0

3.0

Limits

70 - 125

69 - 120

80 - 120

80 - 120

MDL Unit

0.093 ug/L

0.20 ug/L

0.28 ug/L

0.16 ug/L

0.31 ug/L

0.44 ug/L

D

Prepared

Client: AECOM Project/Site: Tacoma D St Terminal-Phillips 66

Method: 8260C - Volatile Organic Compounds by GC/MS

**Client Sample ID: HC-11** 

Date Collected: 12/10/18 11:03

Date Received: 12/12/18 12:40

Analyte

Benzene

o-Xylene

**Toluene** 

Surrogate

Ethylbenzene

**Xylenes**, Total

Toluene-d8 (Surr)

1,2-Dichloroethane-d4 (Surr)

4-Bromofluorobenzene (Surr)

Dibromofluoromethane (Surr)

m,p-Xylene

TestAmerica Job ID: 580-82564-1

Lab Sample ID: 580-82564-1

Analyzed

12/17/18 13:49

12/17/18 13:49

12/17/18 13:49

12/17/18 13:49

12/17/18 13:49

12/17/18 13:49

Matrix: Water

Dil Fac

1

1

1

1

1

1

 Prepared
 Analyzed
 Dil Fac

 12/17/18
 13:49
 1

 12/17/18
 13:49
 1

 12/17/18
 13:49
 1

 12/17/18
 13:49
 1

 12/17/18
 13:49
 1

#### Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC/MS)

Result Qualifier

84

20

2.0

1.0

4.0

3.0

104

105

102

95

%Recovery Qualifier

Analyte Gasoline	Result 1200	Qualifier	<b>RL</b> 150	<b>MDL</b> 70	Unit ug/L	<u>D</u>	Prepared	Analyzed 12/17/18 13:49	Dil Fac
Surrogate 4-Bromofluorobenzene (Surr)	%Recovery 105	Qualifier	Limits 68.7 - 141				Prepared	Analyzed 12/17/18 13:49	Dil Fac

Analyte	Result	Qualifier	RL	MDL	Únit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO) (C10-C25)	12		0.26	0.12	mg/L		12/14/18 11:07	12/14/18 15:56	1
Residual Range Organics (RRO) (C25-C36)	2.7		0.44	0.13	mg/L		12/14/18 11:07	12/14/18 15:56	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
o-Terphenyl	95		50 - 150				12/14/18 11:07	12/14/18 15:56	1
n-Triacontane-d62	95		50 - 150				12/14/18 11:07	12/14/18 15:56	1

RL

0.40

1.0

2.0

1.0

1.0

3.0

Limits

70 - 125

69 - 120

80 - 120

80 - 120

MDL Unit

0.093 ug/L

0.20 ug/L

0.28 ug/L

0.16 ug/L

0.31 ug/L

0.44 ug/L

D

Prepared

**Client: AECOM** Project/Site: Tacoma D St Terminal-Phillips 66

Method: 8260C - Volatile Organic Compounds by GC/MS

**Client Sample ID: RW-8** 

Analyte

Benzene

o-Xylene

**Toluene** 

Surrogate

Ethylbenzene

**Xylenes**, Total

Toluene-d8 (Surr)

1,2-Dichloroethane-d4 (Surr)

4-Bromofluorobenzene (Surr)

Dibromofluoromethane (Surr)

m,p-Xylene

Date Collected: 12/10/18 11:30

Date Received: 12/12/18 12:40

12/17/18 14:11

12/17/18 14:11

Analyzed

12/17/18 14:11

12/17/18 14:11

12/17/18 14:11

12/17/18 14:11

	TestAmerica Job ID: 580-82564-1										
	2564-2 Water	e ID: 580-82 Matrix	ab Sampl	La							
5	Dil Fac	Analyzed	Prepared	D							
	1	12/17/18 14:11									
	1	12/17/18 14:11									
	1	12/17/18 14:11									
	1	12/17/18 14:11									
	1	12/17/18 14.11									

Dil Fac 1 1

1

1

1

Method: NWTPH-Gx - No	rthwest - Volatile	Potroloum I	Producte (GC/MS)
	I LIIWESL - VUIALIIE	r eu oleuill i	

Result Qualifier

10

0.71 J

1.5 J

2.7 J

%Recovery Qualifier

104

104

98

98

1.2

1.0

Analyte Gasoline	Result 780	Qualifier	RL 150	<b>MDL</b> 70	Unit ug/L	<u>D</u>	Prepared	Analyzed 12/17/18 14:11	Dil Fac
Surrogate 4-Bromofluorobenzene (Surr)	%Recovery 104	Qualifier	<i>Limits</i> 68.7 - 141				Prepared	Analyzed 12/17/18 14:11	Dil Fac

Analyte	Result	Qualifier	RL	MDL	Únit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO) (C10-C25)	3.6		0.24	0.11	mg/L		12/14/18 11:07	12/14/18 16:17	1
Residual Range Organics (RRO) (C25-C36)	0.91		0.41	0.12	mg/L		12/14/18 11:07	12/14/18 16:17	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
o-Terphenyl	86		50 - 150				12/14/18 11:07	12/14/18 16:17	1
n-Triacontane-d62	89		50 - 150				12/14/18 11:07	12/14/18 16:17	1

RL

0.40

1.0

2.0

1.0

1.0

3.0

Limits

70 - 125

69 - 120

80 - 120

80 - 120

MDL Unit

0.093 ug/L

0.20 ug/L

0.28 ug/L

0.16 ug/L

0.31 ug/L

0.44 ug/L

D

Prepared

Client: AECOM Project/Site: Tacoma D St Terminal-Phillips 66

Method: 8260C - Volatile Organic Compounds by GC/MS

**Client Sample ID: RW-8 DUP** 

Date Collected: 12/10/18 11:30

Date Received: 12/12/18 12:40

Analyte

Benzene

o-Xylene

**Toluene** 

Surrogate

Ethylbenzene

**Xylenes**, Total

Toluene-d8 (Surr)

1,2-Dichloroethane-d4 (Surr)

4-Bromofluorobenzene (Surr)

Dibromofluoromethane (Surr)

m,p-Xylene

TestAmerica Job ID: 580-82564-1

Lab Sample ID: 580-82564-3

Analyzed

12/17/18 14:33

12/17/18 14:33

12/17/18 14:33

12/17/18 14:33

12/17/18 14:33

12/17/18 14:33

Matrix: Water

Dil Fac

1

1

1

1

1

1

Prepared	Analyzed	Dil Fac	ī
	12/17/18 14:33	1	
	12/17/18 14:33	1	
	12/17/18 14:33	1	
	12/17/18 14:33	1	

#### Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC/MS)

Result Qualifier

11

0.64 J

1.7 J

1.3

1.1

3.0

%Recovery Qualifier

102

102

98

100

Analyte Gasoline	Result 840	Qualifier	RL	 Unit ug/L	<u>D</u>	Prepared	Analyzed 12/17/18 14:33	Dil Fac
Surrogate 4-Bromofluorobenzene (Surr)	%Recovery 102	Qualifier	Limits 68.7 - 141		-	Prepared	Analyzed 12/17/18 14:33	Dil Fac

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO) (C10-C25)	3.7		0.25	0.11	mg/L		12/14/18 11:07	12/14/18 16:38	1
Residual Range Organics (RRO) (C25-C36)	0.99		0.41	0.12	mg/L		12/14/18 11:07	12/14/18 16:38	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
o-Terphenyl	88		50 - 150				12/14/18 11:07	12/14/18 16:38	1
n-Triacontane-d62	91		50 - 150				12/14/18 11:07	12/14/18 16:38	1

Client: AECOM Project/Site: Tacoma D St Terminal-Phillips 66 TestAmerica Job ID: 580-82564-1

lient Sample ID: B-34 ate Collected: 12/10/18 12:08 ate Received: 12/12/18 12:40						L	ab Sample	e ID: 580-82 Matrix:	
Method: 8260C - Volatile Orga	anic Compo	unds by C	GC/MS						
Analyte		Qualifier	RL	MDL		D	Prepared	Analyzed	Dil Fac
Benzene	88		0.40	0.093	-			12/17/18 14:56	1
Ethylbenzene	4.6		1.0		ug/L			12/17/18 14:56	1
m,p-Xylene	1.1	J	2.0		ug/L			12/17/18 14:56	1
o-Xylene	ND		1.0		ug/L			12/17/18 14:56	1
Toluene	5.1		1.0	0.31	ug/L			12/17/18 14:56	1
Xylenes, Total	1.1	J	3.0	0.44	ug/L			12/17/18 14:56	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	106		70 - 125					12/17/18 14:56	1
4-Bromofluorobenzene (Surr)	102		69 - 120					12/17/18 14:56	1
Dibromofluoromethane (Surr)	97		80 - 120					12/17/18 14:56	1
Toluene-d8 (Surr)	99		80 - 120					12/17/18 14:56	1
Method: NWTPH-Gx - Northw	est - Volatile	e Petroleu	m Products (	GC/MS)					
Analyte		Qualifier	RL	MDĹ	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	2500		150	70	ug/L			12/17/18 14:56	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	102		68.7 - 141					12/17/18 14:56	1
Method: NWTPH-Dx - Northwe	est - Semi-V	olatile Pe	troleum Prod	ucts (G	C)				
Analyte		Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO) (C10-C25)	21		0.26	0.12	mg/L		12/14/18 11:07	12/14/18 16:59	1
	3.5		0.43		mg/L		12/14/18 11:07	10111110 10 50	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	83		50 - 150	12/14/18 11:07	12/14/18 16:59	1
n-Triacontane-d62	97		50 - 150	12/14/18 11:07	12/14/18 16:59	1

RL

0.40

1.0

2.0

1.0

1.0

3.0

Limits

70 - 125

69 - 120

80 - 120

80 - 120

MDL Unit

0.093 ug/L

0.20 ug/L

0.28 ug/L

0.16 ug/L

0.31 ug/L

0.44 ug/L

D

Prepared

Prepared

Client: AECOM Project/Site: Tacoma D St Terminal-Phillips 66

Method: 8260C - Volatile Organic Compounds by GC/MS

**Client Sample ID: RW-5R** 

Date Collected: 12/10/18 13:00

Date Received: 12/12/18 12:40

Analyte

Benzene

m,p-Xylene

o-Xylene

**Toluene** 

Surrogate

Ethylbenzene

**Xylenes**, Total

Toluene-d8 (Surr)

1,2-Dichloroethane-d4 (Surr)

4-Bromofluorobenzene (Surr)

Dibromofluoromethane (Surr)

TestAmerica Job ID: 580-82564-1

Lab Sample ID: 580-82564-5

Analyzed

12/17/18 16:03

12/17/18 16:03

12/17/18 16:03

12/17/18 16:03

12/17/18 16:03

12/17/18 16:03

Analyzed

12/17/18 16:03

12/17/18 16:03

12/17/18 16:03

12/17/18 16:03

Matrix: Water

Dil Fac

1

1

1

1

1

1

1

1

1

1

Dil Fac

5

#### Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC/MS)

Result Qualifier

78

17

ND

0.73 J

0.72 J

0.73 J

%Recovery Qualifier

96

108

95

101

Analyte Gasoline	Result 3700	Qualifier	<b>RL</b> 150	<b>MDL</b> 70	Unit ug/L	<u>D</u>	Prepared	Analyzed 12/17/18 16:03	Dil Fac
Surrogate 4-Bromofluorobenzene (Surr)	%Recovery 108	Qualifier	Limits 68.7 - 141				Prepared	Analyzed 12/17/18 16:03	Dil Fac

Analyte	Result	Qualifier	RL	MDL	Únit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO) (C10-C25)	2.8		0.24	0.11	mg/L		12/14/18 11:07	12/14/18 17:19	1
Residual Range Organics (RRO) (C25-C36)	0.82		0.40	0.12	mg/L		12/14/18 11:07	12/14/18 17:19	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
o-Terphenyl	89		50 - 150				12/14/18 11:07	12/14/18 17:19	1
n-Triacontane-d62	93		50 - 150				12/14/18 11:07	12/14/18 17:19	1

RL

0.40

1.0

2.0

1.0

1.0

3.0

Limits

70 - 125

69 - 120

80 - 120

80 - 120

MDL Unit

0.093 ug/L

0.20 ug/L

0.28 ug/L

0.16 ug/L

0.31 ug/L

0.44 ug/L

D

Prepared

Method: 8260C - Volatile Organic Compounds by GC/MS

**Client Sample ID: RR-2** 

Analyte

Benzene

Ethylbenzene

Xylenes, Total

Toluene-d8 (Surr)

1,2-Dichloroethane-d4 (Surr)

4-Bromofluorobenzene (Surr)

Dibromofluoromethane (Surr)

Surrogate

m,p-Xylene

o-Xylene

Toluene

Date Collected: 12/10/18 13:36

Date Received: 12/12/18 12:40

Lab Sample ID: 580-82564-6

Analyzed

12/17/18 16:25

12/17/18 16:25

12/17/18 16:25

12/17/18 16:25

12/17/18 16:25

12/17/18 16:25

Matrix: Water

Dil Fac

1

1

1

1

1

1

5

Prepared	Analyzed	Dil Fac	
	12/17/18 16:25	1	
	12/17/18 16:25	1	
	12/17/18 16:25	1	
	12/17/18 16:25	1	

#### Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC/MS)

**Result Qualifier** 

ND

ND

ND

ND

ND

ND

%Recovery Qualifier

104

100

103

103

Analyte Gasoline	Result ND	Qualifier	RL 150	MDL 70	Unit ug/L	D	Prepared	Analyzed 12/17/18 16:25	Dil Fac
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	100		68.7 - 141					12/17/18 16:25	1

#### Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND	0.096	0.057	ug/L		12/14/18 13:13	12/14/18 22:53	1
2-Methylnaphthalene	ND	0.096	0.047	ug/L		12/14/18 13:13	12/14/18 22:53	1
1-Methylnaphthalene	ND	0.096	0.025	ug/L		12/14/18 13:13	12/14/18 22:53	1
Surrogate	%Recovery Qualifier	Limits				Prepared	Analyzed	Dil Fac
Nitrobenzene-d5	56	45 - 126				12/14/18 13:13	12/14/18 22:53	1

Method: NWTPH-Dx - North	west - Semi-Vo	olatile Pet	roleum Prod	ucts (GC	C)				
Analyte	Result (	Qualifier	RL	MDL	Únit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO) (C10-C25)	ND		0.26	0.12	mg/L		12/14/18 11:07	12/14/18 17:39	1
Residual Range Organics (RRO) (C25-C36)	ND		0.43	0.13	mg/L		12/14/18 11:07	12/14/18 17:39	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
o-Terphenyl	93		50 - 150				12/14/18 11:07	12/14/18 17:39	1
n-Triacontane-d62	88		50 - 150				12/14/18 11:07	12/14/18 17:39	1

**TestAmerica Seattle** 

RL

0.40

1.0

2.0

1.0

1.0

3.0

Limits

70 - 125

69 - 120

80 - 120

80 - 120

MDL Unit

0.093 ug/L

0.20 ug/L

0.28 ug/L

0.16 ug/L

0.31 ug/L

0.44 ug/L

Method: 8260C - Volatile Organic Compounds by GC/MS

**Client Sample ID: RR-4** 

Analyte

Benzene

Ethylbenzene

Xylenes, Total

Toluene-d8 (Surr)

1,2-Dichloroethane-d4 (Surr)

4-Bromofluorobenzene (Surr)

Dibromofluoromethane (Surr)

Surrogate

m,p-Xylene

o-Xylene

Toluene

Date Collected: 12/10/18 14:00

Date Received: 12/12/18 12:40

Lab Sample ID: 580-82564-7

Analyzed

12/17/18 17:09

12/17/18 17:09

12/17/18 17:09

12/17/18 17:09

12/17/18 17:09

12/17/18 17:09

Matrix: Water

Dil Fac

1

1

1

1

1

1

## 8 9 10

 Prepared
 Analyzed
 Dil Fac

 12/17/18 17:09
 1

 12/17/18 17:09
 1

 12/17/18 17:09
 1

 12/17/18 17:09
 1

 12/17/18 17:09
 1

Prepared

D

#### Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC/MS)

**Result Qualifier** 

ND

ND

ND

ND

ND

ND

%Recovery Qualifier

107

101

101

100

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		150	70	ug/L			12/17/18 17:09	1
Surrogate 4-Bromofluorobenzene (Surr)	%Recovery 101	Qualifier	Limits 68.7 - 141				Prepared	Analyzed 12/17/18 17:09	Dil Fac

#### Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Únit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO) (C10-C25)	ND		0.24	0.11	mg/L		12/14/18 11:07	12/14/18 17:58	1
Residual Range Organics (RRO) (C25-C36)	ND		0.40	0.12	mg/L		12/14/18 11:07	12/14/18 17:58	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
o-Terphenyl	91		50 - 150				12/14/18 11:07	12/14/18 17:58	1
n-Triacontane-d62	87		50 - 150				12/14/18 11:07	12/14/18 17:58	1

#### **TestAmerica Seattle**

RL

0.40

1.0

2.0

1.0

1.0

3.0

Limits

70 - 125

69 - 120

80 - 120

80 - 120

MDL Unit

0.093 ug/L

0.20 ug/L

0.28 ug/L

0.16 ug/L

0.31 ug/L

0.44 ug/L

D

Prepared

Prepared

Client: AECOM Project/Site: Tacoma D St Terminal-Phillips 66

Method: 8260C - Volatile Organic Compounds by GC/MS

**Client Sample ID: FW-5R** 

Date Collected: 12/10/18 14:59

Date Received: 12/12/18 12:40

Analyte

Benzene

m,p-Xylene

o-Xylene

Toluene

Surrogate

Xylenes, Total

Toluene-d8 (Surr)

1,2-Dichloroethane-d4 (Surr)

4-Bromofluorobenzene (Surr)

Dibromofluoromethane (Surr)

Ethylbenzene

TestAmerica Job ID: 580-82564-1

Lab Sample ID: 580-82564-8

Analyzed

12/17/18 17:31

12/17/18 17:31

12/17/18 17:31

12/17/18 17:31

12/17/18 17:31

12/17/18 17:31

Analyzed

12/17/18 17:31

12/17/18 17:31

12/17/18 17:31

12/17/18 17:31

Matrix: Water

Dil Fac

1

1

1

1

1

1

1

1

1

1

Dil Fac

_				
Method: NWTPH-Gx -	<ul> <li>Northwest - Volatile</li> </ul>	Petroleum	Products	(GC/MS)

%Recovery

**Result Qualifier** 

0.81

0.52 J

ND

ND

ND

104

102

98

118

0.40 J

Qualifier

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac	
Gasoline	590		150	70	ug/L			12/17/18 17:31	1	
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac	
4-Bromofluorobenzene (Surr)	102		68.7 - 141					12/17/18 17:31	1	

#### Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result Qualifier	r RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	1.0	0.10	0.060	ug/L		12/14/18 13:13	12/14/18 23:19	1
2-Methylnaphthalene	350	10	5.0	ug/L		12/14/18 13:13	12/17/18 14:35	100
1-Methylnaphthalene	320	10	2.6	ug/L		12/14/18 13:13	12/17/18 14:35	100
Surrogate	%Recovery Qualifie	r Limits				Prepared	Analyzed	Dil Fac

Sunoyale	/arrecovery	Quanner	Linits	riepaieu	Analyzeu	Dirrac	
Nitrobenzene-d5	62		45 - 126	12/14/18 13:13	12/14/18 23:19	1	
Nitrobenzene-d5	142	X	45 - 126	12/14/18 13:13	12/17/18 14:35	100	
_							

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)										
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac	
Diesel Range Organics (DRO) (C10-C25)	7.0		0.27	0.12	mg/L		12/14/18 11:07	12/14/18 18:38	1	
Residual Range Organics (RRO) (C25-C36)	1.1		0.45	0.14	mg/L		12/14/18 11:07	12/14/18 18:38	1	
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac	
o-Terphenyl	87		50 - 150				12/14/18 11:07	12/14/18 18:38	1	
n-Triacontane-d62	102		50 - 150				12/14/18 11:07	12/14/18 18:38	1	

RL

0.40

1.0

2.0

1.0

1.0

3.0

Limits

70 - 125

69 - 120

80 - 120

80 - 120

MDL Unit

0.093 ug/L

0.20 ug/L

0.28 ug/L

0.16 ug/L

0.31 ug/L

0.44 ug/L

D

Prepared

Prepared

Client: AECOM Project/Site: Tacoma D St Terminal-Phillips 66

Method: 8260C - Volatile Organic Compounds by GC/MS

**Client Sample ID: T-2** 

Analyte

Benzene

Ethylbenzene

Xylenes, Total

Toluene-d8 (Surr)

1,2-Dichloroethane-d4 (Surr)

4-Bromofluorobenzene (Surr)

Dibromofluoromethane (Surr)

Surrogate

m,p-Xylene

o-Xylene

Toluene

Date Collected: 12/10/18 15:50

Date Received: 12/12/18 12:40

TestAmerica Job ID: 580-82564-1

Lab Sample ID: 580-82564-9

Analyzed

12/17/18 17:53

12/17/18 17:53

12/17/18 17:53

12/17/18 17:53

12/17/18 17:53

12/17/18 17:53

Analyzed

12/17/18 17:53

12/17/18 17:53

12/17/18 17:53

12/17/18 17:53

Matrix: Water

Dil Fac

1

1

1

1

1

1

1

1

1

1

Dil Fac

## 7 8 9 1(

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC/MS)

%Recovery

**Result Qualifier** 

ND

ND

ND

ND

ND

ND

106

103

102

97

Qualifier

Analyte Gasoline	Result ND	Qualifier	<b>RL</b> 150	<b>MDL</b> 70	Unit ug/L	<u>D</u>	Prepared	Analyzed 12/17/18 17:53	Dil Fac 1	
Surrogate 4-Bromofluorobenzene (Surr)	%Recovery 103	Qualifier	Limits 68.7 - 141				Prepared	Analyzed 12/17/18 17:53	Dil Fac	

Analyte	Result	Qualifier	RL	MDL	Únit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO) (C10-C25)	0.16	J	0.23	0.11	mg/L		12/14/18 11:07	12/14/18 18:57	1
Residual Range Organics (RRO) (C25-C36)	0.16	J	0.39	0.12	mg/L		12/14/18 11:07	12/14/18 18:57	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
o-Terphenyl	91		50 - 150				12/14/18 11:07	12/14/18 18:57	1
n-Triacontane-d62	89		50 - 150				12/14/18 11:07	12/14/18 18:57	1

Client: AECOM Project/Site: Tacoma D St Terminal-Phillips 66 TestAmerica Job ID: 580-82564-1

Client Sample ID: E-22           ate Collected: 12/11/18 10:10           ate Received: 12/12/18 12:40						La	ab Sample	ID: 580-825 Matrix:	64-10 Water
Method: 8260C - Volatile Orga Analyte		unds by C Qualifier	GC/MS RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.35	J	0.40	0.093	ug/L			12/17/18 18:15	1
Ethylbenzene	0.45	J	1.0	0.20	ug/L			12/17/18 18:15	1
m,p-Xylene	0.44	J	2.0	0.28	ug/L			12/17/18 18:15	1
o-Xylene	ND		1.0	0.16	ug/L			12/17/18 18:15	1
Toluene	ND		1.0	0.31	ug/L			12/17/18 18:15	1
Xylenes, Total	0.44	J	3.0	0.44	ug/L			12/17/18 18:15	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	97		70 - 125					12/17/18 18:15	1
4-Bromofluorobenzene (Surr)	104		69 - 120					12/17/18 18:15	1
Dibromofluoromethane (Surr)	98		80 - 120					12/17/18 18:15	1
Toluene-d8 (Surr)	100		80 - 120					12/17/18 18:15	1
Method: NWTPH-Gx - Northw			•						
Method: NWTPH-Gx - Northw Analyte	Result	Qualifier	RL	MDĹ	Unit	D	Prepared	Analyzed	Dil Fac
Method: NWTPH-Gx - Northw Analyte		Qualifier	•	MDĹ	Unit ug/L	D	Prepared	Analyzed 12/17/18 18:15	
	Result	Qualifier J	RL	MDĹ		D	Prepared	•	Dil Fac
Method: NWTPH-Gx - Northw Analyte Gasoline Surrogate	Result 96	Qualifier J	RL	MDĹ		<u>D</u>		12/17/18 18:15	Dil Fac
Method: NWTPH-Gx - Northw Analyte Gasoline Surrogate 4-Bromofluorobenzene (Surr)	Result 96 %Recovery 104	Qualifier J Qualifier	RL           150           Limits           68.7 - 141	<b>MDL</b> 70	ug/L	<u>D</u>		12/17/18 18:15 Analyzed	Dil Fac 1 Dil Fac
Method: NWTPH-Gx - Northwe Analyte Gasoline Surrogate 4-Bromofluorobenzene (Surr) Method: NWTPH-Dx - Northwe	Result 96 %Recovery 104 est - Semi-V	Qualifier J Qualifier	<u>Limits</u> 68.7 - 141 troleum Prod RL	MDĹ 70	ug/L	D		12/17/18 18:15 Analyzed	Dil Fac 1 Dil Fac
Method: NWTPH-Gx - Northwy Analyte Gasoline Surrogate 4-Bromofluorobenzene (Surr) Method: NWTPH-Dx - Northwy Analyte Diesel Range Organics (DRO)	Result 96 %Recovery 104 est - Semi-V	Qualifier J Qualifier Volatile Pe	<u>Limits</u> 68.7 - 141	MDĽ 70 ucts (G( MDL	ug/L		Prepared	12/17/18 18:15 Analyzed 12/17/18 18:15	Dil Fac 1 Dil Fac 1
Method: NWTPH-Gx - Northwy Analyte Gasoline Surrogate 4-Bromofluorobenzene (Surr) Method: NWTPH-Dx - Northwy Analyte Diesel Range Organics (DRO) (C10-C25) Residual Range Organics (RRO)	Result 96 %Recovery 104 est - Semi-V Result	Qualifier J Qualifier Volatile Pe	<u>Limits</u> 68.7 - 141 troleum Prod RL	MDL 70 ucts (G MDL 0.11	ug/L C) Unit		Prepared Prepared 12/14/18 11:07	12/17/18 18:15 Analyzed 12/17/18 18:15 Analyzed	Dil Fac 1 Dil Fac 1 Dil Fac
Method: NWTPH-Gx - Northw Analyte Gasoline	Result 96 %Recovery 104 est - Semi-V Result 3.2	Qualifier J Qualifier Colatile Pe Qualifier	RL       150       Limits       68.7 - 141       troleum Prod       RL       0.23	MDL 70 ucts (G MDL 0.11	Unit mg/L		Prepared Prepared 12/14/18 11:07	Analyzed           12/17/18         18:15           Analyzed         12/17/18           12/17/18         18:15           Analyzed         12/14/18	Dil Fac 1 Dil Fac 1 Dil Fac 1
Method: NWTPH-Gx - Northwa Analyte Gasoline Surrogate 4-Bromofluorobenzene (Surr) Method: NWTPH-Dx - Northwa Analyte Diesel Range Organics (DRO) (C10-C25) Residual Range Organics (RRO) (C25-C36)	Result           96           %Recovery           104           est - Semi-V           Result           3.2           0.56	Qualifier J Qualifier Colatile Pe Qualifier	RL       150       Limits       68.7 - 141       troleum Prod       RL       0.23       0.39	MDL 70 ucts (G MDL 0.11	Unit mg/L		Prepared Prepared 12/14/18 11:07 12/14/18 11:07	Analyzed           12/17/18 18:15           Analyzed           12/17/18 18:15           Analyzed           12/14/18 19:17           12/14/18 19:17           12/14/18 19:17	Dil Fac 1 Dil Fac 1 Dil Fac 1 1

12/20/2018

Client: AECOM Project/Site: Tacoma D St Terminal-Phillips 66 TestAmerica Job ID: 580-82564-1

Lab Sample ID: 580-82564-11

12/18/18 13:10

1

Matrix: Water

#### Client Sample ID: B-25 Date Collected: 12/11/18 10:56

Date Received: 12/12/18 12:40

4-Bromofluorobenzene (Surr)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	970		40	9.3	ug/L			12/18/18 21:14	100
Ethylbenzene	3.1		1.0	0.20	ug/L			12/18/18 13:10	1
m,p-Xylene	6.4		2.0	0.28	ug/L			12/18/18 13:10	1
o-Xylene	0.71	J	1.0	0.16	ug/L			12/18/18 13:10	1
Toluene	5.3		1.0	0.31	ug/L			12/18/18 13:10	1
Xylenes, Total	7.1		3.0	0.44	ug/L			12/18/18 13:10	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	102		70 - 125					12/18/18 13:10	1
1,2-Dichloroethane-d4 (Surr)	109		70 - 125					12/18/18 21:14	100
4-Bromofluorobenzene (Surr)	99		69 - 120					12/18/18 13:10	1
4-Bromofluorobenzene (Surr)	119		69 - 120					12/18/18 21:14	100
Dibromofluoromethane (Surr)	99		80 - 120					12/18/18 13:10	1
Dibromofluoromethane (Surr)	104		80 - 120					12/18/18 21:14	100
Toluene-d8 (Surr)	95		80 - 120					12/18/18 13:10	1
Toluene-d8 (Surr)	99		80 - 120					12/18/18 21:14	100
Method: NWTPH-Gx - Nort	hwest - Volatile	e Petroleu	n Products (	GC/MS)					
Analyte		Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	4000		150	70	ug/L			12/18/18 13:10	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac

#### Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

99

Analyte	Result	Qualifier	RL	MDL	Únit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO) (C10-C25)	2.5		0.28	0.13	mg/L		12/14/18 11:07	12/14/18 19:36	1
Residual Range Organics (RRO) (C25-C36)	0.58		0.47	0.14	mg/L		12/14/18 11:07	12/14/18 19:36	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
o-Terphenyl	98		50 - 150				12/14/18 11:07	12/14/18 19:36	1
n-Triacontane-d62	93		50 - 150				12/14/18 11:07	12/14/18 19:36	1

68.7 - 141

Client: AECOM Project/Site: Tacoma D St Terminal-Phillips 66 TestAmerica Job ID: 580-82564-1

Client Sample ID: B-31 Date Collected: 12/11/18 11:35 Date Received: 12/12/18 12:40							Lab Sample ID: 580-82564-12 Matrix: Water				
Method: 8260C - Volatile Orga					11-14	-	Durand	A	D'' 5		
Analyte		Qualifier		MDL 0.093		D	Prepared	Analyzed 12/17/18 18:59	Dil Fac		
Benzene	0.92		1.0		ug/L ug/L			12/17/18 18:59	1		
Ethylbenzene m.n. Yulana	6.6 8.4		2.0		ug/L			12/17/18 18:59	1		
m,p-Xylene	8.4 0.99		2.0		ug/L			12/17/18 18:59	ا 1		
o-Xylene Toluene	3.5	J	1.0		ug/L			12/17/18 18:59	1		
	3.5 9.4		3.0		ug/L			12/17/18 18:59	1		
Xylenes, Total	9.4		3.0	0.44	ug/L			12/11/10 10.39	I		
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac		
1,2-Dichloroethane-d4 (Surr)	99		70 - 125					12/17/18 18:59	1		
4-Bromofluorobenzene (Surr)	104		69 - 120					12/17/18 18:59	1		
Dibromofluoromethane (Surr)	98		80 - 120					12/17/18 18:59	1		
Toluene-d8 (Surr)	99		80 - 120					12/17/18 18:59	1		
Method: NWTPH-Gx - Northw	est - Volatile	e Petroleu	Im Products (	GC/MS)							
Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac		
Gasoline	890		150	70	ug/L			12/17/18 18:59	1		
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac		
4-Bromofluorobenzene (Surr)	104		68.7 - 141					12/17/18 18:59	1		
Method: NWTPH-Dx - Northw	est - Semi-V	olatile Pe	troleum Prod	ucts (G	C)						
Analyte	Result	Qualifier	RL	MDL	Únit	D	Prepared	Analyzed	Dil Fac		
Diesel Range Organics (DRO) (C10-C25)	3.2		0.25	0.11	mg/L		12/14/18 11:07	12/14/18 19:56	1		
Residual Range Organics (RRO) (C25-C36)	0.71		0.41	0.12	mg/L		12/14/18 11:07	12/14/18 19:56	1		
(010 000)			1				Prepared	Analyzed	Dil Fac		
Surrogate	%Recovery	Qualifier	Limits				riopurou	Analyzeu	Dirrac		
	%Recovery 88	Qualifier	50 - 150				•	12/14/18 19:56	1		

TestAmerica Seattle

Client: AFCOM

TestAmerica Job ID: 580-82564-1

ient Sample ID: B-31-DU te Collected: 12/11/18 11:35 te Received: 12/12/18 12:40	5					La	b Sample I	ID: 580-825 Matrix:	
Method: 8260C - Volatile Orga		unds by G	iC/MS						
Analyte		Qualifier	RL	MDL		D	Prepared	Analyzed	Dil Fac
Benzene	1.0		0.40	0.093	ug/L			12/17/18 19:21	1
Ethylbenzene	7.2		1.0	0.20	ug/L			12/17/18 19:21	1
m,p-Xylene	9.2		2.0	0.28	0			12/17/18 19:21	1
o-Xylene	1.1		1.0	0.16	-			12/17/18 19:21	1
Toluene	3.8		1.0	0.31	ug/L			12/17/18 19:21	1
Xylenes, Total	10		3.0	0.44	ug/L			12/17/18 19:21	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	103		70 - 125					12/17/18 19:21	1
4-Bromofluorobenzene (Surr)	106		69 - 120					12/17/18 19:21	1
Dibromofluoromethane (Surr)	98		80 - 120					12/17/18 19:21	1
Toluene-d8 (Surr)	100		80 - 120					12/17/18 19:21	1
		Petroleui		GC/MS)				12/17/18 19:21	1
Method: NWTPH-Gx - Northw Analyte	vest - Volatile Result	e Petroleui Qualifier	m Products (( RL	MDL		D	Prepared	Analyzed	1 Dil Fac
Method: NWTPH-Gx - Northw Analyte	vest - Volatile		m Products (	MDL	Unit ug/L	<u>D</u>	Prepared		
Toluene-d8 (Surr) Method: NWTPH-Gx - Northw Analyte Gasoline Surrogate	vest - Volatile Result 1000 %Recovery	Qualifier	m Products ( RL 150 Limits	MDL		D	Prepared Prepared	Analyzed 12/17/18 19:21 Analyzed	Dil Fac
Method: NWTPH-Gx - Northw Analyte Gasoline	vest - Volatile Result 1000	Qualifier	m Products (( 	MDL		<u>D</u>		Analyzed 12/17/18 19:21	Dil Fac
Method: NWTPH-Gx - Northw Analyte Gasoline Surrogate 4-Bromofluorobenzene (Surr)	vest - Volatile Result 1000 %Recovery 106	Qualifier Qualifier	m Products (4 RL 150 Limits 68.7 - 141	<b>MDL</b> 70	ug/L	<u>D</u>		Analyzed 12/17/18 19:21 Analyzed	Dil Fac 1 Dil Fac
Method: NWTPH-Gx - Northw Analyte Gasoline Surrogate 4-Bromofluorobenzene (Surr) Method: NWTPH-Dx - Northw	vest - Volatile Result 1000 %Recovery 106 vest - Semi-V	Qualifier Qualifier	m Products (f RL 150 Limits 68.7 - 141 troleum Product RL	<b>MDL</b> 70	ug/L		Prepared	Analyzed 12/17/18 19:21 Analyzed 12/17/18 19:21 Analyzed	Dil Fac 1 Dil Fac
Method: NWTPH-Gx - Northw Analyte Gasoline Surrogate 4-Bromofluorobenzene (Surr) Method: NWTPH-Dx - Northw Analyte Diesel Range Organics (DRO)	vest - Volatile Result 1000 %Recovery 106 vest - Semi-V	Qualifier Qualifier Volatile Pet	m Products (f	MDL 70 ucts (GC MDL	ug/L		Prepared	Analyzed 12/17/18 19:21 Analyzed 12/17/18 19:21	Dil Fac 1 Dil Fac 1
Method: NWTPH-Gx - Northw Analyte Gasoline Surrogate 4-Bromofluorobenzene (Surr) Method: NWTPH-Dx - Northw Analyte	vest - Volatile Result 1000 %Recovery 106 vest - Semi-V Result	Qualifier Qualifier Volatile Pet	m Products (f RL 150 Limits 68.7 - 141 troleum Product RL	MDL 70 ucts (GC MDL 0.12	ug/L C) Unit	D	Prepared	Analyzed 12/17/18 19:21 Analyzed 12/17/18 19:21 Analyzed 12/14/18 20:15	Dil Fac 1 Dil Fac 1 Dil Fac
Method: NWTPH-Gx - Northw Analyte Gasoline Surrogate 4-Bromofluorobenzene (Surr) Method: NWTPH-Dx - Northw Analyte Diesel Range Organics (DRO) (C10-C25) Residual Range Organics (RRO) (C25-C36) Surrogate	Vest - Volatile Result 1000 %Recovery 106 Vest - Semi-V Result 3.5 0.79 %Recovery	Qualifier Qualifier Volatile Pet Qualifier	m Products (1 <u>RL</u> 150 <u>Limits</u> 68.7 - 141 troleum Produ <u>RL</u> 0.25 0.42 Limits	MDL 70 ucts (GC MDL 0.12	ug/L Unit mg/L	D	Prepared Prepared 12/14/18 11:07 12/14/18 11:07 Prepared	Analyzed 12/17/18 19:21 Analyzed 12/17/18 19:21 Analyzed 12/14/18 20:15 12/14/18 20:15 Analyzed	Dil Fac 1 Dil Fac 1 Dil Fac 1
Method: NWTPH-Gx - Northw Analyte Gasoline Surrogate 4-Bromofluorobenzene (Surr) Method: NWTPH-Dx - Northw Analyte Diesel Range Organics (DRO) (C10-C25) Residual Range Organics (RRO) (C25-C36)	vest - Volatile Result 1000 %Recovery 106 vest - Semi-V Result 3.5 0.79	Qualifier Qualifier Volatile Pet Qualifier	m Products (1 <u>RL</u> 150 <u>Limits</u> 68.7 - 141 troleum Produ <u>RL</u> 0.25 0.42	MDL 70 ucts (GC MDL 0.12	ug/L Unit mg/L	D	Prepared Prepared 12/14/18 11:07 12/14/18 11:07	Analyzed 12/17/18 19:21 Analyzed 12/17/18 19:21 Analyzed 12/14/18 20:15 12/14/18 20:15 Analyzed	Dil Fac 1 Dil Fac 1 Dil Fac 1

Method: 8260C - Volatile Organic Compounds by GC/MS

Lab Sample ID: 580-82564-14

Matrix: Water

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C	lie	nt	Sa	m	ple	Ι	D:	F۷	V-14	1
_		-								

Date Collected: 12/11/18 13:10 Date Received: 12/12/18 12:40

Analyte		Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.40	0.093	ug/L			12/17/18 19:43	1
Ethylbenzene	ND		1.0	0.20	ug/L			12/17/18 19:43	1
m,p-Xylene	ND		2.0	0.28	ug/L			12/17/18 19:43	1
o-Xylene	ND		1.0	0.16	ug/L			12/17/18 19:43	1
Toluene	ND		1.0	0.31	ug/L			12/17/18 19:43	1
Xylenes, Total	ND		3.0	0.44	ug/L			12/17/18 19:43	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	106		70 - 125					12/17/18 19:43	1
4-Bromofluorobenzene (Surr)	105		69 - 120					12/17/18 19:43	1
Dibromofluoromethane (Surr)	104		80 - 120					12/17/18 19:43	1
Toluene-d8 (Surr)	101		80 - 120					12/17/18 19:43	1
Method: NWTPH-Gx - North	west - Volatile	e Petroleu	m Products (	GC/MS)					
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		150	70	ug/L			12/17/18 19:43	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	105		68.7 - 141					12/17/18 19:43	1
4-BIOIIIOIIUOIODEIIZEIIE (Suii)	100		<b>68.7 -</b> 141					12/11/10 19.43	1
								12/11/10 19.43	I
Method: 8270D SIM - Semive	olatile Organi				Unit	D	Prepared		/ Dil Fac
Method: 8270D SIM - Semive Analyte	olatile Organi Result	C Compou Qualifier	inds (GC/MS RL	MDL		D	Prepared 12/14/18 13:13	Analyzed	
Method: 8270D SIM - Semive Analyte Naphthalene	olatile Organi Result		Inds (GC/MS 	<b>MDL</b> 0.054	ug/L	<u>D</u>	12/14/18 13:13	Analyzed 12/14/18 23:46	Dil Fac
Method: 8270D SIM - Semive Analyte Naphthalene 2-Methylnaphthalene	olatile Organi Result		inds (GC/MS RL	MDL	ug/L ug/L	D	12/14/18 13:13 12/14/18 13:13	Analyzed	Dil Fac
Method: 8270D SIM - Semive Analyte Naphthalene 2-Methylnaphthalene 1-Methylnaphthalene	olatile Organi Result ND ND ND	Qualifier	Inds (GC/MS RL 0.091 0.091 0.091	MDL 0.054 0.045	ug/L ug/L	D	12/14/18 13:13 12/14/18 13:13 12/14/18 13:13	Analyzed 12/14/18 23:46 12/14/18 23:46 12/14/18 23:46	<b>Dil Fac</b> 1 1
Method: 8270D SIM - Semive Analyte Naphthalene 2-Methylnaphthalene 1-Methylnaphthalene Surrogate	olatile Organi Result ND ND ND ND	Qualifier	Inds (GC/MS RL 0.091 0.091 0.091 Limits	MDL 0.054 0.045	ug/L ug/L	<u>D</u>	12/14/18 13:13 12/14/18 13:13 12/14/18 13:13 12/14/18 13:13 <b>Prepared</b>	Analyzed 12/14/18 23:46 12/14/18 23:46 12/14/18 23:46 Analyzed	Dil Fac 1 1 1 Dil Fac
Method: 8270D SIM - Semive Analyte Naphthalene 2-Methylnaphthalene 1-Methylnaphthalene	olatile Organi Result ND ND ND	Qualifier	Inds (GC/MS RL 0.091 0.091 0.091	MDL 0.054 0.045	ug/L ug/L	D	12/14/18 13:13 12/14/18 13:13 12/14/18 13:13 12/14/18 13:13 <b>Prepared</b>	Analyzed 12/14/18 23:46 12/14/18 23:46 12/14/18 23:46	<b>Dil Fac</b> 1 1
Method: 8270D SIM - Semive Analyte Naphthalene 2-Methylnaphthalene 1-Methylnaphthalene Surrogate Nitrobenzene-d5	olatile Organi Result ND ND ND ND ND	Qualifier Qualifier	Limits           45 - 126	MDL 0.054 0.045 0.023	ug/L ug/L ug/L	<u>D</u>	12/14/18 13:13 12/14/18 13:13 12/14/18 13:13 12/14/18 13:13 <b>Prepared</b>	Analyzed 12/14/18 23:46 12/14/18 23:46 12/14/18 23:46 Analyzed	Dil Fac 1 1 1 Dil Fac
Method: 8270D SIM - Semive Analyte Naphthalene 2-Methylnaphthalene 1-Methylnaphthalene Surrogate Nitrobenzene-d5 Method: NWTPH-Dx - Northy	olatile Organi Result ND ND ND ND ND ND ND ND ND ND ND ND ND	Qualifier Qualifier	Inds (GC/MS RL 0.091 0.091 0.091 <u>Limits</u> 45 - 126 troleum Prod RL	MDL 0.054 0.045 0.023	ug/L ug/L ug/L	D	12/14/18 13:13 12/14/18 13:13 12/14/18 13:13 12/14/18 13:13 <b>Prepared</b> 12/14/18 13:13 <b>Prepared</b>	Analyzed 12/14/18 23:46 12/14/18 23:46 12/14/18 23:46 Analyzed 12/14/18 23:46	Dil Fac 1 1 1 Dil Fac
Method: 8270D SIM - Semivo Analyte Naphthalene 2-Methylnaphthalene 1-Methylnaphthalene Surrogate Nitrobenzene-d5 Method: NWTPH-Dx - Northy Analyte	olatile Organi Result ND ND ND <u>%Recovery</u> 60 west - Semi-V	Qualifier Qualifier	inds (GC/MS <u>RL</u> 0.091 0.091 0.091 <u>Limits</u> 45 - 126 troleum Prod	MDL 0.054 0.045 0.023 ucts (GC MDL	ug/L ug/L ug/L		12/14/18 13:13 12/14/18 13:13 12/14/18 13:13 12/14/18 13:13 <b>Prepared</b> 12/14/18 13:13 <b>Prepared</b>	Analyzed 12/14/18 23:46 12/14/18 23:46 12/14/18 23:46 Analyzed 12/14/18 23:46	Dil Fac           1           1           1           1           1           1           1           1
Method: 8270D SIM - Semive Analyte Naphthalene 2-Methylnaphthalene 1-Methylnaphthalene Surrogate Nitrobenzene-d5 Method: NWTPH-Dx - Northy Analyte Diesel Range Organics (DRO) (C10-C25)	olatile Organi Result ND ND ND ND ND ND ND ND ND Kecovery 60 West - Semi-V Result ND	Qualifier Qualifier	Limits         45 - 126         troleum Prod         RL         0.091	MDL 0.054 0.023 0.023 ucts (GC MDL 0.11	ug/L ug/L ug/L <b>C)</b> Unit mg/L		12/14/18 13:13 12/14/18 13:13 12/14/18 13:13 12/14/18 13:13 <b>Prepared</b> 12/14/18 13:13 <b>Prepared</b> 12/14/18 11:07	Analyzed 12/14/18 23:46 12/14/18 23:46 12/14/18 23:46 Analyzed 12/14/18 23:46 Analyzed 12/14/18 23:46	Dil Fac           1           1           1           Dil Fac           1           Dil Fac           1
Method: 8270D SIM - Semive Analyte Naphthalene 2-Methylnaphthalene 1-Methylnaphthalene Surrogate Nitrobenzene-d5 Method: NWTPH-Dx - Northe Analyte Diesel Range Organics (DRO) (C10-C25) Residual Range Organics (RRO)	olatile Organi Result ND ND ND ND ND ND ND ND ND ND ND ND ND	Qualifier Qualifier	Inds (GC/MS RL 0.091 0.091 0.091 <u>Limits</u> 45 - 126 troleum Prod RL	MDL 0.054 0.023 0.023 ucts (GC MDL 0.11	ug/L ug/L ug/L C) Unit		12/14/18 13:13 12/14/18 13:13 12/14/18 13:13 12/14/18 13:13 <b>Prepared</b> 12/14/18 13:13 <b>Prepared</b> 12/14/18 11:07	Analyzed 12/14/18 23:46 12/14/18 23:46 12/14/18 23:46 Analyzed 12/14/18 23:46	Dil Fac 1 1 1 1 Dil Fac Dil Fac
Method: 8270D SIM - Semive Analyte Naphthalene 2-Methylnaphthalene 1-Methylnaphthalene Surrogate Nitrobenzene-d5 Method: NWTPH-Dx - Northe Analyte Diesel Range Organics (DRO) (C10-C25) Residual Range Organics (RRO)	olatile Organi Result ND ND ND ND ND ND ND ND ND Kecovery 60 West - Semi-V Result ND	Qualifier Qualifier	Limits         45 - 126         troleum Prod         RL         0.091	MDL 0.054 0.023 0.023 ucts (GC MDL 0.11	ug/L ug/L ug/L <b>C)</b> Unit mg/L		12/14/18 13:13 12/14/18 13:13 12/14/18 13:13 12/14/18 13:13 <b>Prepared</b> 12/14/18 13:13 <b>Prepared</b> 12/14/18 11:07	Analyzed 12/14/18 23:46 12/14/18 23:46 12/14/18 23:46 Analyzed 12/14/18 23:46 Analyzed 12/14/18 23:46	Dil Fac           1           1           1           1           Dil Fac           1           Dil Fac           1
Method: 8270D SIM - Semive Analyte Naphthalene 2-Methylnaphthalene 1-Methylnaphthalene Surrogate Nitrobenzene-d5 Method: NWTPH-Dx - Northy Analyte Diesel Range Organics (DRO) (C10-C25) Residual Range Organics (RRO) (C25-C36) Surrogate	olatile Organi Result ND ND ND West - Semi-V Result ND ND ND	Qualifier Qualifier Olatile Per Qualifier	Inds (GC/MS RL 0.091 0.091 0.091 Limits 45 - 126 troleum Prod RL 0.24 0.39 Limits	MDL 0.054 0.023 0.023 ucts (GC MDL 0.11	ug/L ug/L ug/L <b>C)</b> Unit mg/L		12/14/18 13:13 12/14/18 13:13 12/14/18 13:13 Prepared 12/14/18 13:13 Prepared 12/14/18 13:13 12/14/18 11:07 12/14/18 11:07 Prepared	Analyzed 12/14/18 23:46 12/14/18 23:46 12/14/18 23:46 Analyzed 12/14/18 23:46 Analyzed 12/14/18 20:35 12/14/18 20:35 Analyzed	Dil Fac           1           1           1           1           Dil Fac           1           Dil Fac           1
Method: 8270D SIM - Semiva Analyte Naphthalene 2-Methylnaphthalene 1-Methylnaphthalene Surrogate Nitrobenzene-d5 Method: NWTPH-Dx - Northy Analyte Diesel Range Organics (DRO) (C10-C25) Residual Range Organics (RRO) (C25-C36)	olatile Organi Result ND ND ND West - Semi-V Result ND ND	Qualifier Qualifier Olatile Per Qualifier	Inds (GC/MS <u>RL</u> 0.091 0.091 0.091 <u>Limits</u> 45 - 126 troleum Prod <u>RL</u> 0.24 0.39	MDL 0.054 0.023 0.023 ucts (GC MDL 0.11	ug/L ug/L ug/L <b>C)</b> Unit mg/L		12/14/18 13:13 12/14/18 13:13 12/14/18 13:13 Prepared 12/14/18 13:13 Prepared 12/14/18 13:13 12/14/18 11:07 12/14/18 11:07 Prepared	Analyzed 12/14/18 23:46 12/14/18 23:46 12/14/18 23:46 Analyzed 12/14/18 23:46 Analyzed 12/14/18 20:35 12/14/18 20:35	Dil Fac           1           1           1           1           Dil Fac           1           Dil Fac           1           1           1           1           1           1           1           1           1           1

Lab Sample ID: 580-82564-15

Matrix: Water

#### Client Sample ID: FW-13 Date Collected: 12/11/18 14:00

Date Received: 12/12/18 12:40

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.40	0.093	ug/L			12/17/18 20:05	1
Ethylbenzene	ND		1.0	0.20	ug/L			12/17/18 20:05	1
m,p-Xylene	ND		2.0	0.28	ug/L			12/17/18 20:05	1
o-Xylene	ND		1.0	0.16	ug/L			12/17/18 20:05	1
Toluene	ND		1.0	0.31	ug/L			12/17/18 20:05	1
Xylenes, Total	ND		3.0	0.44	ug/L			12/17/18 20:05	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	101		70 - 125					12/17/18 20:05	1
4-Bromofluorobenzene (Surr)	102		69 - 120					12/17/18 20:05	1
Dibromofluoromethane (Surr)	106		80 - 120					12/17/18 20:05	1
Dibromoliuoromethane (Sun)	100		00 - 120						
Toluene-d8 (Surr)	99		80 - 120					12/17/18 20:05	1
Toluene-d8 (Surr) Method: NWTPH-Gx - Northv Analyte	99 vest - Volatile	e Petroleu Qualifier	80 - 120		Unit	D	Prepared	12/17/18 20:05 Analyzed	1 Dil Fac
Toluene-d8 (Surr) Method: NWTPH-Gx - Northv	99 vest - Volatile		80 - 120 <b>m Products (</b>	MDĹ	Unit	D	Prepared		1 Dil Fac
Toluene-d8 (Surr) Method: NWTPH-Gx - Northv Analyte	99 vest - Volatile Result ND %Recovery	Qualifier	80 - 120 Im Products ( RL 150 Limits	MDĹ	Unit	<u>D</u>	Prepared	Analyzed 12/17/18 20:05 Analyzed	1 Dil Fac 1 Dil Fac
Toluene-d8 (Surr) Method: NWTPH-Gx - Northv Analyte Gasoline Surrogate	99 vest - Volatile Result ND	Qualifier	80 - 120 Im Products ( RL 150	MDĹ	Unit	<u>D</u>		Analyzed 12/17/18 20:05	1
Toluene-d8 (Surr) Method: NWTPH-Gx - Northv Analyte Gasoline	99 vest - Volatile Result ND %Recovery 102	Qualifier Qualifier	80 - 120 m Products ( RL 150 Limits 68.7 - 141	<b>MDL</b> 70	Unit ug/L	<u>D</u>		Analyzed 12/17/18 20:05 Analyzed	1
Toluene-d8 (Surr) Method: NWTPH-Gx - Northy Analyte Gasoline Surrogate 4-Bromofluorobenzene (Surr)	99 vest - Volatile Result ND %Recovery 102 vest - Semi-V	Qualifier Qualifier	80 - 120 m Products ( RL 150 Limits 68.7 - 141	<u>MDL</u> 70	Unit ug/L	<u>D</u>		Analyzed 12/17/18 20:05 Analyzed	1
Toluene-d8 (Surr) Method: NWTPH-Gx - Northv Analyte Gasoline Surrogate 4-Bromofluorobenzene (Surr) Method: NWTPH-Dx - Northv	99 vest - Volatile Result ND %Recovery 102 vest - Semi-V	Qualifier Qualifier	80 - 120 m Products ( RL 150 Limits 68.7 - 141 troleum Prod	MDL 70 ucts (GC MDL	Unit ug/L		Prepared	Analyzed 12/17/18 20:05 Analyzed 12/17/18 20:05	Dil Fa

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	101		50 - 150	12/14/18 11:07	12/14/18 20:54	1
n-Triacontane-d62	100		50 - 150	12/14/18 11:07	12/14/18 20:54	1

Lab Sample ID: 580-82564-16

Matrix: Water

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Client Sample ID: DMW-2	
Date Collected: 12/11/18 14:20	

Date Received: 12/12/18 12:40

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.40	0.093	ug/L			12/17/18 20:27	1
Ethylbenzene	ND		1.0	0.20	ug/L			12/17/18 20:27	1
n,p-Xylene	ND		2.0	0.28	ug/L			12/17/18 20:27	1
p-Xylene	ND		1.0	0.16	ug/L			12/17/18 20:27	1
Toluene	ND		1.0	0.31	ug/L			12/17/18 20:27	1
Xylenes, Total	ND		3.0	0.44	ug/L			12/17/18 20:27	
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	103		70 - 125					12/17/18 20:27	1
4-Bromofluorobenzene (Surr)	104		69 - 120					12/17/18 20:27	1
Dibromofluoromethane (Surr)	102		80 - 120					12/17/18 20:27	1
Toluene-d8 (Surr)	105		80 - 120					12/17/18 20:27	
Analyte	Result	Qualifier	RL	MDĹ	Unit	D	Prepared	Analyzed	
Analyte Gasoline		Qualifier	•	MDĹ		D	Prepared	Analyzed 12/17/18 20:27 Analyzed	Dil Fac
Method: NWTPH-Gx - Northw Analyte Gasoline Surrogate 4-Bromofluorobenzene (Surr)	Result ND	Qualifier	<b>RL</b> 150	MDĹ	Unit	<u>D</u>		12/17/18 20:27	Dil Fa
Analyte Gasoline Surrogate 4-Bromofluorobenzene (Surr) Method: NWTPH-Dx - Northw Analyte	Result ND %Recovery 104 est - Semi-V Result	Qualifier Qualifier	RL 150 68.7 - 141 troleum Prod RL	MDĽ 70 ucts (GC MDL	Unit ug/L C) Unit	D	Prepared Prepared	12/17/18 20:27 Analyzed 12/17/18 20:27 Analyzed	<i>Dil Fa</i>
Analyte Gasoline Surrogate 4-Bromofluorobenzene (Surr) Method: NWTPH-Dx - Northw Analyte Diesel Range Organics (DRO) (C10-C25)	Result ND %Recovery 104 est - Semi-V Result 1.7	Qualifier Qualifier	RL       150       Limits       68.7 - 141       troleum Prod       RL       0.23	MDL 70 ucts (G0 MDL 0.10	Unit ug/L C) Unit mg/L		Prepared Prepared 12/14/18 11:07	12/17/18 20:27 Analyzed 12/17/18 20:27 Analyzed 12/14/18 21:14	Dil Fa
Analyte Gasoline Surrogate 4-Bromofluorobenzene (Surr) Method: NWTPH-Dx - Northw Analyte Diesel Range Organics (DRO) (C10-C25) Residual Range Organics (RRO)	Result ND %Recovery 104 est - Semi-V Result	Qualifier Qualifier	RL 150 68.7 - 141 troleum Prod RL	MDL 70 ucts (G0 MDL 0.10	Unit ug/L C) Unit		Prepared Prepared 12/14/18 11:07	12/17/18 20:27 Analyzed 12/17/18 20:27 Analyzed	Dil Fa
Analyte Gasoline Surrogate 4-Bromofluorobenzene (Surr) Method: NWTPH-Dx - Northw Analyte Diesel Range Organics (DRO) (C10-C25) Residual Range Organics (RRO) (C25-C36) Surrogate	Result ND %Recovery 104 est - Semi-V Result 1.7 0.70 %Recovery	Qualifier Qualifier Olatile Pe Qualifier	RL           150           Limits           68.7 - 141           troleum Prod           RL           0.23           0.38           Limits	MDL 70 ucts (G0 MDL 0.10	Unit ug/L C) Unit mg/L		Prepared Prepared 12/14/18 11:07 12/14/18 11:07 Prepared	12/17/18 20:27 Analyzed 12/17/18 20:27 Analyzed 12/14/18 21:14 12/14/18 21:14 Analyzed	Dil Fa
Analyte Gasoline Surrogate	Result ND %Recovery 104 est - Semi-V Result 1.7 0.70	Qualifier Qualifier Olatile Pe Qualifier	RL         150         Limits         68.7 - 141         troleum Prod         RL         0.23         0.38	MDL 70 ucts (G0 MDL 0.10	Unit ug/L C) Unit mg/L		Prepared Prepared 12/14/18 11:07 12/14/18 11:07	12/17/18 20:27 Analyzed 12/17/18 20:27 Analyzed 12/14/18 21:14 12/14/18 21:14 Analyzed	1

#### Client Sample ID: RR-1 Date Collected: 12/11/18 14:47

Date Received: 12/12/18 12:40

Lab Sample ID:	580-82564-17
	Matrix: Water

Method: 8260C - Volatile O Analyte	-	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.40	0.093	ug/L			12/17/18 21:11	1
Ethylbenzene	ND		1.0	0.20	ug/L			12/17/18 21:11	1
m,p-Xylene	ND		2.0	0.28	ug/L			12/17/18 21:11	1
o-Xylene	ND		1.0	0.16	ug/L			12/17/18 21:11	1
Toluene	ND		1.0	0.31	ug/L			12/17/18 21:11	1
Xylenes, Total	ND		3.0	0.44	ug/L			12/17/18 21:11	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	105		70 - 125					12/17/18 21:11	1
4-Bromofluorobenzene (Surr)	105		69 - 120					12/17/18 21:11	1
Dibromofluoromethane (Surr)	104		80 - 120					12/17/18 21:11	1
Toluene-d8 (Surr)	101		80 - 120					12/17/18 21:11	1
_ Method: NWTPH-Gx - Nort	hwest - Volatile	e Petroleu	m Products (	GC/MS)					
Analyte		Qualifier	RL	MDĹ		D	Prepared	Analyzed	Dil Fac
Gasoline	ND		150	70	ug/L			12/17/18 21:11	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	105		68.7 - 141					12/17/18 21:11	1
_ Method: NWTPH-Dx - Nortl	nwest - Semi-V	olatile Pe	troleum Prod	ucts (G0	C)				
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO)	0.27		0.27		mg/L		12/14/18 11:07	12/14/18 21:34	

Diesel Range Organics (DRO)	0.27	0.27	0.12 mg/L	12/14/18 11:07	12/14/18 21:34	1
(C10-C25) Residual Range Organics (RRO) (C25-C36)	ND	0.45	0.14 mg/L	12/14/18 11:07	12/14/18 21:34	1
Surrogate	%Recovery Qualifier	Limits		Prepared	Analyzed	Dil Fac
o-Terphenyl	101	50 - 150		12/14/18 11:07	12/14/18 21:34	1

Sunoyate	/Minecovery	Quanner	Linits	riepaieu	Analyzeu
o-Terphenyl	101		50 - 150	12/14/18 11:07	12/14/18 21:34
n-Triacontane-d62	101		50 - 150	12/14/18 11:07	12/14/18 21:34

12/20/2018

1

RL

0.40

1.0

2.0

1.0

1.0

3.0

Limits

70 - 125

69 - 120

80 - 120

80 - 120

MDL Unit

0.093 ug/L

0.20 ug/L

0.28 ug/L

0.16 ug/L

0.31 ug/L

0.44 ug/L

D

Prepared

Prepared

Method: 8260C - Volatile Organic Compounds by GC/MS

**Client Sample ID: RR-5** 

Analyte

Benzene

Ethylbenzene

Xylenes, Total

Toluene-d8 (Surr)

1,2-Dichloroethane-d4 (Surr)

4-Bromofluorobenzene (Surr)

Dibromofluoromethane (Surr)

m,p-Xylene

o-Xylene

**Toluene** 

Surrogate

Date Collected: 12/11/18 15:40

Date Received: 12/12/18 12:40

#### Lab Sample ID: 580-82564-18 Matrix: Water

Analyzed

12/17/18 21:32

12/17/18 21:32

12/17/18 21:32

12/17/18 21:32

12/17/18 21:32

12/17/18 21:32

Analyzed

12/17/18 21:32

12/17/18 21:32

12/17/18 21:32

12/17/18 21:32

5

Dil Fac

1

1

1

1

1

1

9

Dil Fac	Q
1	
1	
1	
1	

	No. all sold	M. 1. (11)	BALLER IN THE	Barris and		
Method: NWTPH-Gx ·	· Northwest -	volatile	Petroleum	Products	(GC/MS)	

%Recovery

Result Qualifier

ND

ND

ND

ND

18

ND

106

106

96

93

Qualifier

Analyte Gasoline	Result 130	Qualifier J	RL 150	<b>MDL</b> 70	Unit ug/L	<u>D</u>	Prepared	Analyzed 12/17/18 21:32	Dil Fac
Surrogate 4-Bromofluorobenzene (Surr)	%Recovery 106	Qualifier	Limits 68.7 - 141				Prepared	Analyzed 12/17/18 21:32	Dil Fac

#### Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Únit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO) (C10-C25)	0.75		0.25	0.11	mg/L		12/14/18 11:07	12/14/18 22:13	1
Residual Range Organics (RRO) (C25-C36)	0.65		0.41	0.12	mg/L		12/14/18 11:07	12/14/18 22:13	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
o-Terphenyl	100		50 - 150				12/14/18 11:07	12/14/18 22:13	1
n-Triacontane-d62	101		50 - 150				12/14/18 11:07	12/14/18 22:13	1

Lab Sample ID: 580-82564-19

Matrix: Water

#### Client Sample ID: DMW-4

Date Collected: 12/12/18 08:55 Date Received: 12/12/18 12:40

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.40	0.093	ug/L			12/17/18 21:54	1
Ethylbenzene	ND		1.0	0.20	ug/L			12/17/18 21:54	1
m,p-Xylene	ND		2.0	0.28	ug/L			12/17/18 21:54	1
o-Xylene	ND		1.0	0.16	ug/L			12/17/18 21:54	1
Toluene	ND		1.0	0.31	ug/L			12/17/18 21:54	1
Xylenes, Total	ND		3.0	0.44	ug/L			12/17/18 21:54	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	107		70 - 125					12/17/18 21:54	1
4-Bromofluorobenzene (Surr)	107		69 - 120					12/17/18 21:54	1
Dibromofluoromethane (Surr)	99		80 - 120					12/17/18 21:54	1
Toluene-d8 (Surr)	101		80 - 120					12/17/18 21:54	1
Method: NWTPH-Gx - Nortl	nwest - Volatile	e Petroleu	m Products (	GC/MS)					
Analyte		Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	370		150	70	ug/L			12/17/18 21:54	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	107		68.7 - 141					12/17/18 21:54	1

#### Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Únit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO) (C10-C25)	0.44		0.24	0.11	mg/L		12/14/18 11:07	12/14/18 22:32	1
Residual Range Organics (RRO) (C25-C36)	0.27	J	0.41	0.12	mg/L		12/14/18 11:07	12/14/18 22:32	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
o-Terphenyl	104		50 - 150				12/14/18 11:07	12/14/18 22:32	1
n-Triacontane-d62	98		50 - 150				12/14/18 11:07	12/14/18 22:32	1

Client: AECOM Project/Site: Tacoma D St Terminal-Phillips 66

#### **Client Sample ID: TRIP BLANK**

Date Collected: 12/10/18 08:00 Date Received: 12/12/18 12:40

#### Lab Sample ID: 580-82564-20 Matrix: Water

5

Method: 8260C - Volatile O	rganic Compo	unds by G	C/MS							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac	
Benzene	ND		0.40	0.093	ug/L			12/17/18 22:16	1	
Ethylbenzene	ND		1.0	0.20	ug/L			12/17/18 22:16	1	
m,p-Xylene	ND		2.0	0.28	ug/L			12/17/18 22:16	1	
o-Xylene	ND		1.0	0.16	ug/L			12/17/18 22:16	1	
Toluene	ND		1.0	0.31	ug/L			12/17/18 22:16	1	
Xylenes, Total	ND		3.0	0.44	ug/L			12/17/18 22:16	1	8
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac	C
1,2-Dichloroethane-d4 (Surr)	107		70 - 125					12/17/18 22:16	1	
4-Bromofluorobenzene (Surr)	102		69 - 120					12/17/18 22:16	1	
Dibromofluoromethane (Surr)	98		80 - 120					12/17/18 22:16	1	
Toluene-d8 (Surr)	100		80 - 120					12/17/18 22:16	1	

Lab Sample ID: MB 590-20299/5

Matrix: Water

**Client Sample ID: Method Blank** 

Prep Type: Total/NA

# 2 3 4 5

#### Method: 8260C - Volatile Organic Compounds by GC/MS

Analysis Batch: 20299									
	MB	MB							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.40	0.093	ug/L			12/17/18 11:33	1
Ethylbenzene	ND		1.0	0.20	ug/L			12/17/18 11:33	1
m,p-Xylene	ND		2.0	0.28	ug/L			12/17/18 11:33	1
o-Xylene	ND		1.0	0.16	ug/L			12/17/18 11:33	1
Toluene	ND		1.0	0.31	ug/L			12/17/18 11:33	1
Xylenes, Total	ND		3.0	0.44	ug/L			12/17/18 11:33	1
	МВ	MB							
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	107		70 - 125					12/17/18 11:33	1
4-Bromofluorobenzene (Surr)	103		69 - 120					12/17/18 11:33	1
Dibromofluoromethane (Surr)	107		80 - 120					12/17/18 11:33	1
Toluene-d8 (Surr)	100		80 - 120					12/17/18 11:33	1

#### Lab Sample ID: LCS 590-20299/1003 Matrix: Water Analysis Batch: 20299

	Spike	LCS	LCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Benzene	10.0	10.6		ug/L		106	80 - 120	
Ethylbenzene	10.0	9.65		ug/L		97	80 - 120	
m,p-Xylene	10.0	9.80		ug/L		98	80 - 120	
o-Xylene	10.0	9.32		ug/L		93	80 - 120	
Toluene	10.0	9.60		ug/L		96	80 - 123	

	LCS	LCS	
Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	103		70 - 125
4-Bromofluorobenzene (Surr)	95		69 - 120
Dibromofluoromethane (Surr)	97		80 - 120
Toluene-d8 (Surr)	94		80 - 120

#### Lab Sample ID: LCSD 590-20299/6 Matrix: Water Analysis Batch: 20299

	Spike	LCSD	LCSD				%Rec.		RPD
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Benzene	10.0	10.3		ug/L		103	80 - 120	2	25
Ethylbenzene	10.0	10.5		ug/L		105	80 - 120	8	25
m,p-Xylene	10.0	10.3		ug/L		103	80 - 120	5	25
o-Xylene	10.0	9.73		ug/L		97	80 - 120	4	25
Toluene	10.0	10.0		ug/L		100	80 - 123	4	25

	LCJD	LUGD	
Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	108		70 - 125
4-Bromofluorobenzene (Surr)	95		69 - 120
Dibromofluoromethane (Surr)	105		80 - 120
Toluene-d8 (Surr)	97		80 - 120

#### Client Sample ID: Lab Control Sample Prep Type: Total/NA

# .....

#### Client Sample ID: Lab Control Sample Dup Prep Type: Total/NA

DU DU

86.0

4.73

0.918 J

0.741 J

1.66 JF5

4.79

Result Qualifier

Unit

ug/L

ug/L

ug/L

ug/L

ug/L

ug/L

D

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Sample Sample

88

4.6

1.1

ND

5.1

1.1 J

%Recovery Qualifier

103

101

98

97

DU DU

**Result Qualifier** 

J

Lab Sample ID: 580-82564-4 DU

**Matrix: Water** 

Analyte

Benzene

Ethylbenzene

Xylenes, Total

Surrogate

Toluene-d8 (Surr)

m,p-Xylene

o-Xylene

Toluene

Analysis Batch: 20299

1,2-Dichloroethane-d4 (Surr)

4-Bromofluorobenzene (Surr)

Dibromofluoromethane (Surr)

**Client Sample ID: Method Blank** 

**Client Sample ID: Lab Control Sample** 

Prep Type: Total/NA

Client Sample ID: B-34

Prep Type: Total/NA

RPD

2

3

16

NC

6

42

# 6

RPD

Limit

20

20

20

20

20

20

#### Lab Sample ID: MB 590-20330/5 **Matrix: Water** Analysis Batch: 20330

	MB	MB							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.40	0.093	ug/L			12/18/18 12:08	1
Ethylbenzene	ND		1.0	0.20	ug/L			12/18/18 12:08	1
m,p-Xylene	ND		2.0	0.28	ug/L			12/18/18 12:08	1
o-Xylene	ND		1.0	0.16	ug/L			12/18/18 12:08	1
Toluene	ND		1.0	0.31	ug/L			12/18/18 12:08	1
Xylenes, Total	ND		3.0	0.44	ug/L			12/18/18 12:08	1
	MB	MB							

Limits

70 - 125

69 - 120 80 - 120

80 - 120

	IVID I	WD					
Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac	
1,2-Dichloroethane-d4 (Surr)	115		70 - 125		12/18/18 12:08	1	
4-Bromofluorobenzene (Surr)	102		69 - 120		12/18/18 12:08	1	
Dibromofluoromethane (Surr)	111		80 - 120		12/18/18 12:08	1	
Toluene-d8 (Surr)	99		80 - 120		12/18/18 12:08	1	

#### Lab Sample ID: LCS 590-20330/1003 **Matrix: Water** Analysis Batch: 20330

	Spike	LCS	LCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Benzene	10.0	10.2		ug/L		102	80 - 120	
Ethylbenzene	10.0	9.38		ug/L		94	80 - 120	
m,p-Xylene	10.0	9.37		ug/L		94	80 - 120	
o-Xylene	10.0	9.51		ug/L		95	80 - 120	
Toluene	10.0	9.17		ug/L		92	80 - 123	

	LCS	LCS	
Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	103		70 - 125
4-Bromofluorobenzene (Surr)	95		69 - 120
Dibromofluoromethane (Surr)	91		80 - 120
Toluene-d8 (Surr)	93		80 - 120

#### **TestAmerica Seattle**

Prep Type: Total/NA

#### **QC Sample Results**

#### Client: AECOM Project/Site: Tacoma D St Terminal-Phillips 66

Lab Sample ID: LCSD 590-20330/6

RPD Limit 25 25

> 25 25 25

6

#### Client Sample ID: Lab Control Sample Dup Prep Type: Total/NA

Matrix: Water Analysis Batch: 20330									Prep Ty	pe: Tot
Analysis Batch. 20330			Spike	LCSD	LCSD				%Rec.	
Analyte			Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD
Benzene			10.0	9.41		ug/L		94	80 - 120	8
Ethylbenzene			10.0	9.11		ug/L		91	80 - 120	3
m,p-Xylene			10.0	9.49		ug/L		95	80 - 120	1
o-Xylene			10.0	9.41		ug/L		94	80 - 120	1
Toluene			10.0	9.22		ug/L		92	80 - 123	0
	LCSD	LCSD								
Surrogate	%Recovery	Qualifier	Limits							
1,2-Dichloroethane-d4 (Surr)	103		70 - 125							
4-Bromofluorobenzene (Surr)	97		69 - 120							
Dibromofluoromethane (Surr)	98		80 - 120							
Toluene-d8 (Surr)	93		80 - 120							

#### Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC/MS)

Lab Sample ID: MB 590-2	0298/5								Cli	ent Sam	ple ID: Met		
Matrix: Water Analysis Batch: 20298											Prep Type	: 10	al/NA
Analysis Batch. 20290	N	ИВ МВ											
Analyte	Res	ult Qual	lifier	RL		MDL	Unit	D	P	repared	Analyzed	I	Dil Fac
Gasoline	1	ND		150		70	ug/L			•	12/17/18 11	:33	1
	л	MB MB											
Surrogate	%Recove	ery Qual	lifier	Limits					F	Prepared	Analyzed	1	Dil Fac
4-Bromofluorobenzene (Surr)	1	03		68.7 - 141							12/17/18 11	:33	1
Lab Sample ID: LCS 590-	20298/1004							Clion	t Sa	mnlo ID	: Lab Contr	01 5:	mnlo
Matrix: Water	20230/1004							Oller	n Ga		Prep Type		
Analysis Batch: 20298													
· · · · · <b>,</b> · · · · · · · · · · · · · · · · · · ·				Spike	LCS	LCS	5				%Rec.		
Analyte				Added	Result	Qua	lifier	Unit	D	%Rec	Limits		
Gasoline				1000	1080			ug/L		108	80 - 120		
	LCS I	LCS											
Surrogate	%Recovery (	Qualifier		Limits									
4-Bromofluorobenzene (Surr)	99		68	8.7 - 141									
Lab Sample ID: LCSD 590	0-20298/1015							liont Sa	mnlo	ID: Lab	Control Sa	mnl	
Matrix: Water	20200/1010								inpic	ID. Luc	Prep Type		
Analysis Batch: 20298													
				Spike	LCSD	LCS	D				%Rec.		RPD
Analyte				Added	Result	Qua	lifier	Unit	D	%Rec	Limits	RPD	Limit
Gasoline				1000	983			ug/L		98	80 - 120	9	20
	LCSD I	LCSD											
Surrogate	%Recovery			Limits									
4-Bromofluorobenzene (Surr)	107		68	8.7 - 141									

#### Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC/MS) (Continued)

Matrix: Water											Prep Ty	pe. 101	al/INA
Analysis Batch: 20298	Sample	Sam	nlo			ווח	DU						RPD
Analyte	Result				Re		Qualifier	Unit	D			RPD	Limi
Gasoline	2500	Qua				2370	Quaimer	ug/L		<u> </u>		4	35
Cusome					-	_0/0		ug/L				-	00
		DU											
Surrogate	%Recovery	Qua	lifier	Limits									
4-Bromofluorobenzene (Surr)	101			68.7 - 141									
Lab Sample ID: MB 590-2	20329/5								Cli	ent Sam	nple ID: M	ethod	Blanl
Matrix: Water											Prep Ty		
Analysis Batch: 20329													
		MB	MB										
Analyte	Re		Qualifie		RL	I	MDL Unit		DF	Prepared	Analyz		Dil Fac
Gasoline		ND		1	150		70 ug/L				12/18/18	12:08	
		MВ	МВ										
Surrogate	%Reco	very	Qualifie	r Limits	5				F	Prepared	Analyz	zed	Dil Fac
4-Bromofluorobenzene (Surr)		102		68.7 - 14	41						12/18/18	12:08	1
Lab Sample ID: LCS 590	20220/4004							Clie	nt Co		: Lab Cor	trol Sc	male
Matrix: Water	-20329/1004							Cile	in Sa	inple in	Prep Ty		
Analysis Batch: 20329											Fieb i M	pe. 101	.al/11/-
Analysis Baton: 20020				Spike		LCS	LCS				%Rec.		
Analyte				Added	Re	sult	Qualifier	Unit	D	%Rec	Limits		
Gasoline				1000	1	1090		ug/L		109	80 - 120		
	LCS	100											
Surrogate	%Recovery			Limits									
4-Bromofluorobenzene (Surr)		Quu		68.7 - 141									
Lab Sample ID: LCSD 59	0-20329/1015	5					C	lient Sa	ample	ID: Lat	o Control		
Matrix: Water											Prep Ty	pe: Tot	tal/NA
Analysis Batch: 20329					_								
Analista				Spike		-	LCSD	11	~	0/ <b>D</b> = c	%Rec.		RP
Analyte Gasoline				Added	Re	997	Qualifier		D	%Rec 100	Limits	<b>RPD</b>	Limi
Gasuille				1000		991		ug/L		100	00 - 120	9	20
	LCSD	LCS	SD										
Surrogate	%Recovery	Qua	lifier	Limits									

#### —

105

4-Bromofluorobenzene (Surr)

#### Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Lab Sample ID: MB 590-20283/1-A Matrix: Water Analysis Batch: 20278	мв	мв						le ID: Methoo Prep Type: To Prep Batch:	otal/NA
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		0.090	0.053	ug/L		12/14/18 13:13	12/14/18 21:33	1
2-Methylnaphthalene	ND		0.090	0.044	ug/L		12/14/18 13:13	12/14/18 21:33	1
1-Methylnaphthalene	ND		0.090	0.023	ug/L		12/14/18 13:13	12/14/18 21:33	1

68.7 - 141

6

#### Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Lab Sample ID: MB 590-2 Matrix: Water	0283/1-A						Clie	ent Sam	ple ID: M Prep Ty	pe: Tot	al/NA
Analysis Batch: 20278									Prep E	Batch: 2	20283
	٨	NB MB									
Surrogate		ery Qualifier						repared	Analyz		Dil Fac
Nitrobenzene-d5		70	45 - 126	-			12/1	4/18 13:1	3 12/14/18	21:33	1
Lab Sample ID: LCS 590-	20283/2-A					Clie	ent Sar	nple ID	: Lab Cor	ntrol Sa	mple
Matrix: Water									Prep Ty		
Analysis Batch: 20278										Batch: 2	
-			Spike	LCS	LCS				%Rec.		
Analyte			Added	Result	Qualifier	Unit	D	%Rec	Limits		
Naphthalene			1.60	1.02		ug/L		64	52 - 121		
2-Methylnaphthalene			1.60	1.01		ug/L		63	44 - 134		
1-Methylnaphthalene			1.60	1.02		ug/L		64	56 - 123		
	LCS L	.cs									
Surrogate	%Recovery C	Qualifier	Limits								
Nitrobenzene-d5	82		45 - 126								
Lab Sample ID: LCSD 590	)-20283/3-A				C	Client S	ample	ID: Lab	Control	Sample	e Dup
Matrix: Water									Prep Ty	pe: Tot	al/NA
Analysis Batch: 20278									Prep E	Batch: 2	20283
-			Spike	LCSD	LCSD				%Rec.		RPD
Analyte			Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Naphthalene			1.60	1.14		ug/L		71	52 - 121	11	30
2-Methylnaphthalene			1.60	1.17		ug/L		73	44 - 134	15	30
1-Methylnaphthalene			1.60	1.18		ug/L		74	56 - 123	15	30
		000									
	LCSD L										
Surrogate	LCSD L %Recovery 0		Limits								

#### Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Lab Sample ID: MB 590-202 Matrix: Water Analysis Batch: 20263		МВ						le ID: Method Prep Type: To Prep Batch:	otal/NA
Analyte		Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO) (C10-C25)	ND		0.24	0.11	mg/L		12/14/18 11:07	12/14/18 14:53	1
Residual Range Organics (RRO) (C25-C36)	ND		0.40	0.12	mg/L		12/14/18 11:07	12/14/18 14:53	1
	MB	МВ							
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
o-Terphenyl	85		50 - 150				12/14/18 11:07	12/14/18 14:53	1
n-Triacontane-d62	80		50 - 150				12/14/18 11:07	12/14/18 14:53	1

6

#### Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC) (Continued)

Lab Sample ID: LCS 590-2 Matrix: Water Analysis Batch: 20263	0273/2-A					Clie	nt Sa	mple ID			al/NA
			Spike	LCS	LCS				%Rec.		
Analyte			Added	Result	Qualifier	Unit	D	%Rec	Limits		
Diesel Range Organics (DRO) (C10-C25)			1.60	1.28		mg/L		80	50 - 150		
Residual Range Organics (RRO) (C25-C36)			1.60	1.57		mg/L		98	50 - 150		
	LCS	LCS									
Surrogate	%Recovery	Qualifier	Limits								
o-Terphenyl	93		50 - 150								
n-Triacontane-d62	95		50 - 150								
-											_
- Lab Sample ID: LCSD 590 Matrix: Water Analysis Batch: 20263	-20273/3-A				C	Client Sa	ample	ID: Lat	Control Prep Ty Prep E		al/NA
Matrix: Water	-20273/3-A		Spike	LCSD	LCSD	Client Sa	ample	ID: Lai	Prep Ty	pe: Tot	al/NA
Matrix: Water	-20273/3-A		Spike Added	-		Client Sa	ample D		Prep Ty Prep E	pe: Tot	al/NA 20273
Matrix: Water Analysis Batch: 20263 Analyte Diesel Range Organics (DRO)	-20273/3-A		•	-	LCSD		Ì		Prep Ty Prep E %Rec.	pe: Tot Batch: 2	al/NA 20273 RPD
Matrix: Water Analysis Batch: 20263 Analyte	-20273/3-A		Added	Result	LCSD	Unit	Ì	%Rec	Prep Ty Prep E %Rec. Limits	pe: Tot Batch: 2 RPD	al/NA 20273 RPD Limit
Matrix: Water Analysis Batch: 20263 Analyte Diesel Range Organics (DRO) (C10-C25) Residual Range Organics (RRO)		LCSD	Added	Result 1.11	LCSD	Unit mg/L	Ì	<b>%Rec</b>	Prep Ty Prep E %Rec. Limits 50 - 150	pe: Tot Batch: 2 RPD 15	al/NA 20273 RPD Limit 25
Matrix: Water Analysis Batch: 20263 Analyte Diesel Range Organics (DRO) (C10-C25) Residual Range Organics (RRO)			Added	Result 1.11	LCSD	Unit mg/L	Ì	<b>%Rec</b>	Prep Ty Prep E %Rec. Limits 50 - 150	pe: Tot Batch: 2 RPD 15	al/NA 20273 RPD Limit 25
Matrix: Water Analysis Batch: 20263 Analyte Diesel Range Organics (DRO) (C10-C25) Residual Range Organics (RRO) (C25-C36)	LCSD		Added 1.60 1.60	Result 1.11	LCSD	Unit mg/L	Ì	<b>%Rec</b>	Prep Ty Prep E %Rec. Limits 50 - 150	pe: Tot Batch: 2 RPD 15	al/NA 20273 RPD Limit 25

**Client: AECOM** Project/Site: Tacoma D St Terminal-Phillips 66

TAL SPK

TAL SPK

TAL SPK

Lab Sample ID: 580-82564-3

Lab Sample ID: 580-82564-4

Lab Sample ID: 580-82564-5

Matrix: Water

Matrix: Water

Matrix: Water

<b>Client Sam</b>	ple ID: HC-	·11					Lab S	Sample ID	: 580-82564-1
	d: 12/10/18 1 d: 12/12/18 1							-	Matrix: Water
-	Batch	Batch		Dilution	Batch	Prepared			
Prep Туре	Туре	Method	Run	Factor	Number	or Analyzed	Analyst	Lab	
Total/NA	Analysis	8260C		1	20299	12/17/18 13:49	MRS	TAL SPK	
Total/NA	Analysis	NWTPH-Gx		1	20298	12/17/18 13:49	MRS	TAL SPK	
Total/NA	Prep	3510C			20273	12/14/18 11:07	МО	TAL SPK	
Total/NA	Analysis	NWTPH-Dx		1	20263	12/14/18 15:56	NMI	TAL SPK	
lient Sam	ple ID: RW	-8					Lab S	Sample ID:	: 580-82564-2
ate Collecte	d: 12/10/18 1 d: 12/12/18 1	1:30						•	Matrix: Wate
-	Batch	Batch		Dilution	Batch	Prepared			
Prep Type	Туре	Method	Run	Factor	Number	or Analyzed	Analyst	Lab	
Total/NA	Analysis	8260C		1	20299	12/17/18 14:11	MRS	TAL SPK	

1

1

20298 12/17/18 14:11 MRS

20273 12/14/18 11:07 MO

20263 12/14/18 16:17 NMI

#### **Client Sample ID: RW-8 DUP** Date Collected: 12/10/18 11:30 Date Received: 12/12/18 12:40

Analysis

Analysis

Prep

NWTPH-Gx

NWTPH-Dx

3510C

Total/NA

Total/NA

Total/NA

_	Batch	Batch		Dilution	Batch	Prepared		
Prep Туре	Туре	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	20299	12/17/18 14:33	MRS	TAL SPK
Total/NA	Analysis	NWTPH-Gx		1	20298	12/17/18 14:33	MRS	TAL SPK
Total/NA	Prep	3510C			20273	12/14/18 11:07	MO	TAL SPK
Total/NA	Analysis	NWTPH-Dx		1	20263	12/14/18 16:38	NMI	TAL SPK

#### **Client Sample ID: B-34** Date Collected: 12/10/18 12:08 Date Received: 12/12/18 12:40

_	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	20299	12/17/18 14:56	MRS	TAL SPK
Total/NA	Analysis	NWTPH-Gx		1	20298	12/17/18 14:56	MRS	TAL SPK
Total/NA	Prep	3510C			20273	12/14/18 11:07	МО	TAL SPK
Total/NA	Analysis	NWTPH-Dx		1	20263	12/14/18 16:59	NMI	TAL SPK

#### **Client Sample ID: RW-5R** Date Collected: 12/10/18 13:00 Date Received: 12/12/18 12:40

		Batch	Batch		Dilution	Batch	Prepared		
Pi	ер Туре	Туре	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
To	otal/NA	Analysis	8260C		1	20299	12/17/18 16:03	MRS	TAL SPK
Тс	otal/NA	Analysis	NWTPH-Gx		1	20298	12/17/18 16:03	MRS	TAL SPK

**TestAmerica Seattle** 

7

#### Lab Chronicle

TestAmerica Job ID: 580-82564-1

Lab Sample ID: 580-82564-6

Matrix: Water

#### Client: AECOM Project/Site: Tacoma D St Terminal-Phillips 66

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			20273	12/14/18 11:07	МО	TAL SPK
Total/NA	Analysis	NWTPH-Dx		1	20263	12/14/18 17:19	NMI	TAL SPK

#### **Client Sample ID: RR-2** Date Collected: 12/10/18 13:36 Date Received: 12/12/18 12:40

_	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	20299	12/17/18 16:25	MRS	TAL SPK
Total/NA	Analysis	NWTPH-Gx		1	20298	12/17/18 16:25	MRS	TAL SPK
Total/NA	Prep	3510C			20283	12/14/18 13:13	МО	TAL SPK
Total/NA	Analysis	8270D SIM		1	20278	12/14/18 22:53	NMI	TAL SPK
Total/NA	Prep	3510C			20273	12/14/18 11:07	МО	TAL SPK
Total/NA	Analysis	NWTPH-Dx		1	20263	12/14/18 17:39	NMI	TAL SPK

#### **Client Sample ID: RR-4** Date Collected: 12/10/18 14:00 Date Received: 12/12/18 12:40

_	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	20299	12/17/18 17:09	MRS	TAL SPK
Total/NA	Analysis	NWTPH-Gx		1	20298	12/17/18 17:09	MRS	TAL SPK
Total/NA	Prep	3510C			20273	12/14/18 11:07	МО	TAL SPK
Total/NA	Analysis	NWTPH-Dx		1	20263	12/14/18 17:58	NMI	TAL SPK

#### **Client Sample ID: FW-5R** Date Collected: 12/10/18 14:59 Date Received: 12/12/18 12:40

#### Lab Sample ID: 580-82564-8 Matrix: Water

Lab Sample ID: 580-82564-9

Lab Sample ID: 580-82564-7

Matrix: Water

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	20299	12/17/18 17:31	MRS	TAL SPK
Total/NA	Analysis	NWTPH-Gx		1	20298	12/17/18 17:31	MRS	TAL SPK
Total/NA	Prep	3510C			20283	12/14/18 13:13	MO	TAL SPK
Total/NA	Analysis	8270D SIM		1	20278	12/14/18 23:19	NMI	TAL SPK
Total/NA	Prep	3510C			20283	12/14/18 13:13	MO	TAL SPK
Total/NA	Analysis	8270D SIM		100	20306	12/17/18 14:35	NMI	TAL SPK
Total/NA	Prep	3510C			20273	12/14/18 11:07	MO	TAL SPK
Total/NA	Analysis	NWTPH-Dx		1	20263	12/14/18 18:38	NMI	TAL SPK

#### **Client Sample ID: T-2** Date Collected: 12/10/18 15:50 Date Received: 12/12/18 12:40

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	20299	12/17/18 17:53	MRS	TAL SPK
Total/NA	Analysis	NWTPH-Gx		1	20298	12/17/18 17:53	MRS	TAL SPK

**TestAmerica Seattle** 

Matrix: Water

7

**Client: AECOM** Project/Site: Tacoma D St Terminal-Phillips 66

Lab Sample ID: 580-82564-9

Lab Sample ID: 580-82564-10

Matrix: Water

Matrix: Water

7

# Lab Sample ID: 580-82564-11

Lab Sample ID: 580-82564-12

Lab Sample ID: 580-82564-13

Matrix: Water

Matrix: Water

Matrix: Water

Client Sample ID: T-2
Date Collected: 12/10/18 15:50
Date Received: 12/12/18 12:40

Dran Turne	Batch	Batch	Dur	Dilution	Batch	Prepared	Amelyot	l ah
Prep Type	Туре	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			20273	12/14/18 11:07	МО	TAL SPK
Total/NA	Analysis	NWTPH-Dx		1	20263	12/14/18 18:57	NMI	TAL SPK

#### **Client Sample ID: E-22** Date Collected: 12/11/18 10:10 Date Received: 12/12/18 12:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	20299	12/17/18 18:15	MRS	TAL SPK
Total/NA	Analysis	NWTPH-Gx		1	20298	12/17/18 18:15	MRS	TAL SPK
Total/NA	Prep	3510C			20273	12/14/18 11:07	MO	TAL SPK
Total/NA	Analysis	NWTPH-Dx		1	20263	12/14/18 19:17	NMI	TAL SPK

#### **Client Sample ID: B-25** Date Collected: 12/11/18 10:56 Date Received: 12/12/18 12:40

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	20330	12/18/18 13:10	MRS	TAL SPK
Total/NA	Analysis	8260C		100	20330	12/18/18 21:14	MRS	TAL SPK
Total/NA	Analysis	NWTPH-Gx		1	20329	12/18/18 13:10	MRS	TAL SPK
Total/NA	Prep	3510C			20273	12/14/18 11:07	MO	TAL SPK
Total/NA	Analysis	NWTPH-Dx		1	20263	12/14/18 19:36	NMI	TAL SPK

#### **Client Sample ID: B-31** Date Collected: 12/11/18 11:35 Date Received: 12/12/18 12:40

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	20299	12/17/18 18:59	MRS	TAL SPK
Total/NA	Analysis	NWTPH-Gx		1	20298	12/17/18 18:59	MRS	TAL SPK
Total/NA	Prep	3510C			20273	12/14/18 11:07	MO	TAL SPK
Total/NA	Analysis	NWTPH-Dx		1	20263	12/14/18 19:56	NMI	TAL SPK

#### **Client Sample ID: B-31-DUP** Date Collected: 12/11/18 11:35 Date Received: 12/12/18 12:40

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	20299	12/17/18 19:21	MRS	TAL SPK
Total/NA	Analysis	NWTPH-Gx		1	20298	12/17/18 19:21	MRS	TAL SPK
Total/NA	Prep	3510C			20273	12/14/18 11:07	МО	TAL SPK

Lab Sample ID: 580-82564-13

Lab Sample ID: 580-82564-14

Lab Sample ID: 580-82564-15

Lab Sample ID: 580-82564-16

Lab Sample ID: 580-82564-17

Matrix: Water

Matrix: Water

Matrix: Water

Matrix: Water

Matrix: Water

#### Client Sample ID: B-31-DUP

Date Collected: 12/11/18 11:35 Date Received: 12/12/18 12:40

Batch	Batch		Dilution	Batch	Prepared		
Туре	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Analysis	NWTPH-Dx		1	20263	12/14/18 20:15	NMI	TAL SPK
	Batch Type	Type Method	Batch Batch Type Method Run	Batch Batch Dilution Type Method Run Factor	BatchDilutionBatchTypeMethodRunFactorNumber	BatchDilutionBatchPreparedTypeMethodRunFactorNumberor Analyzed	BatchDilutionBatchPreparedTypeMethodRunFactorNumberor AnalyzedAnalyst

#### Client Sample ID: FW-14 Date Collected: 12/11/18 13:10 Date Received: 12/12/18 12:40

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1 _	20299	12/17/18 19:43	MRS	TAL SPK
Total/NA	Analysis	NWTPH-Gx		1	20298	12/17/18 19:43	MRS	TAL SPK
Total/NA	Prep	3510C			20283	12/14/18 13:13	MO	TAL SPK
Total/NA	Analysis	8270D SIM		1	20278	12/14/18 23:46	NMI	TAL SPK
Total/NA	Prep	3510C			20273	12/14/18 11:07	MO	TAL SPK
Total/NA	Analysis	NWTPH-Dx		1	20263	12/14/18 20:35	NMI	TAL SPK

#### Client Sample ID: FW-13 Date Collected: 12/11/18 14:00 Date Received: 12/12/18 12:40

Prep Type Total/NA	Batch Type Analysis	Batch Method 8260C	Run	Dilution Factor 1	Batch Number 20299	Prepared or Analyzed 12/17/18 20:05	Analyst MRS	Lab TAL SPK
Total/NA	Analysis	NWTPH-Gx		1	20298	12/17/18 20:05	MRS	TAL SPK
Total/NA Total/NA	Prep Analysis	3510C NWTPH-Dx		1	20273 20263	12/14/18 11:07 12/14/18 20:54	MO NMI	TAL SPK TAL SPK

#### Client Sample ID: DMW-2 Date Collected: 12/11/18 14:20 Date Received: 12/12/18 12:40

#### Batch Batch Dilution Batch Prepared Prep Type Method Factor Number or Analyzed Туре Run Analyst Lab Total/NA Analysis 8260C 20299 12/17/18 20:27 MRS TAL SPK 1 Total/NA Analysis NWTPH-Gx 20298 12/17/18 20:27 MRS TAL SPK 1 Total/NA Prep 3510C 20273 12/14/18 11:07 MO TAL SPK Total/NA NWTPH-Dx 20263 12/14/18 21:14 NMI TAL SPK Analysis 1

#### Client Sample ID: RR-1 Date Collected: 12/11/18 14:47 Date Received: 12/12/18 12:40

	Batch	Batch		Dilution	Batch	Prepared		
Prep Туре	Туре	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	20299	12/17/18 21:11	MRS	TAL SPK
Total/NA	Analysis	NWTPH-Gx		1	20298	12/17/18 21:11	MRS	TAL SPK
Total/NA	Prep	3510C			20273	12/14/18 11:07	МО	TAL SPK

#### Client: AECOM Project/Site: Tacoma D St Terminal-Phillips 66

Lab Sample ID: 580-82564-17

Lab Sample ID: 580-82564-18

Lab Sample ID: 580-82564-19

Matrix: Water

Matrix: Water

Matrix: Water

# Client Sample ID: RR-1

Date Collected: 12/11/18 14:47 Date Received: 12/12/18 12:40

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor			Analyst	Lab
Total/NA	Analysis	NWTPH-Dx		1	20263	12/14/18 21:34	NMI	TAL SPK

#### Client Sample ID: RR-5 Date Collected: 12/11/18 15:40 Date Received: 12/12/18 12:40

_	Batch	Batch		Dilution	Batch	Prepared		
Prep Туре	Туре	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	20299	12/17/18 21:32	MRS	TAL SPK
Total/NA	Analysis	NWTPH-Gx		1	20298	12/17/18 21:32	MRS	TAL SPK
Total/NA	Prep	3510C			20273	12/14/18 11:07	МО	TAL SPK
Total/NA	Analysis	NWTPH-Dx		1	20263	12/14/18 22:13	NMI	TAL SPK

#### Client Sample ID: DMW-4 Date Collected: 12/12/18 08:55 Date Received: 12/12/18 12:40

_	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	20299	12/17/18 21:54	MRS	TAL SPK
Total/NA	Analysis	NWTPH-Gx		1	20298	12/17/18 21:54	MRS	TAL SPK
Total/NA	Prep	3510C			20273	12/14/18 11:07	MO	TAL SPK
Total/NA	Analysis	NWTPH-Dx		1	20263	12/14/18 22:32	NMI	TAL SPK

#### Client Sample ID: TRIP BLANK Date Collected: 12/10/18 08:00 Date Received: 12/12/18 12:40

#### Lab Sample ID: 580-82564-20 Matrix: Water

_	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	20299	12/17/18 22:16	MRS	TAL SPK

#### Laboratory References:

TAL SPK = TestAmerica Spokane, 11922 East 1st Ave, Spokane, WA 99206, TEL (509)924-9200

# Accreditation/Certification Summary

#### Client: AECOM Project/Site: Tacoma D St Terminal-Phillips 66

TestAmerica Job ID: 580-82564-1

Laboratory: TestAmerica Seattle
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All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date	
Alaska (UST)	State Program	10	17-024	01-19-19	
ANAB	DoD ELAP		L2236	01-19-19	5
ANAB	ISO/IEC 17025		L2236	01-19-19	
California	State Program	9	2901	11-05-19	
Montana (UST)	State Program	8	N/A	04-30-20	
Nevada	State Program	9	WA000502019-1	07-31-19	
Oregon	NELAP	10	WA100007	11-05-19	
US Fish & Wildlife	Federal		LE058448-0	07-31-19	8
USDA	Federal		P330-14-00126	02-10-20	0
Washington	State Program	10	C553	02-17-19	0

#### Laboratory: TestAmerica Spokane

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	EPA Region	Identification Number	Expiration Date
Washington	State Program	10	C569	01-06-19

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method Prep Method Matrix Analyte

#### **Sample Summary**

Matrix

Water

#### **Client: AECOM** Project/Site: Tacoma D St Terminal-Phillips 66

**Client Sample ID** 

HC-11

RW-8

B-34

RR-2

RR-4

T-2

E-22

B-25

B-31

FW-14

FW-13

DMW-2

RR-1

RR-5

DMW-4

TRIP BLANK

B-31-DUP

FW-5R

RW-5R

RW-8 DUP

Lab Sample ID

580-82564-1

580-82564-2

580-82564-3

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580-82564-5

580-82564-6

580-82564-7

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TestAmerica Job ID: 580-82564-1

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TestAmerica Spokane

#### 11922 E. 1st Ave.

# **Chain of Custody Record**

# **TestAmerica**

THE LEADER IN ENVIRONMENTAL TESTING

10

Spokane, WA 99206 phone 509.924.9200 fax

Client Contact		Manager: G									he-	r		107	<u>a</u> 1-	10.11			OC No:		aborator
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Sample Identification	Date	Time	G=Grab)	Matrix		Ē	82 Fe	ŽŽ	30	30(	3(	09	ž		<u></u>				Samp	lle up	and note
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-31		11:35	1	8	3	NN	$\left  \right _{X}$	XX										ł			
ervation Used: 1= Ice, 2= HCI; 3= H2SO4; 4=HNO:	; 5=NaOH; 6=	Other			<b></b>										50 <b>2</b> 596	8026 KG		1990 - 1990 1990 - 1990			
ible Hazard Identification: ny samples from a listed EPA Hazardous Waste? Ple nents Section if the lab is to dispose of the sample.	ase List any EP	A Waste C	odes for th	e sampl	e in the	S	amp	e Disp	osal	(Afe	e ma	y be	asse	ssed i	f sam	ples a	re reta	ained	longer tha	in 1 m	onth)
Non-Hazard 🗌 Flammable 🗌 Skin Irritant	🗌 Poison		🗌 Unkno				🗍 R	eturn to	Client		Ī	) Disp	osal by	Lab		🗋 Arc	hive for		Month	s	
stody Seals Intact: Comments: Pla		der Hem		ns					oler T	emp.	/°C\·	Obe	d.		Cori	24.					
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h a lead a la companya de la company	/	AECOP		Date/Tir	295 2		Tu	ed Øy:	Yla .	10				Comp Comp	<u>Þe</u>	2		_12	te/Time:	8	040
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t Seel: Vos Vo - Pack	ing: <b>Vvb</b> Seal: YesN		UPS:											L					-002, Rev.		
			Lab Cour:																		1986 A 04/0

TestAmerica Spokane

11922 E. 1st Ave.

# **Chain of Custody Record**

# <u>TestAmerica</u>

THE LEADER IN ENVIRONMENTAL TESTING

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Spokane, WA 99206 phone 509 924 9200 fax

hone 509.924.9200 fax	Regu	latory Pro	ogram: [	] DW [	NPDE	s I	🗍 RCF	RA	[] C	)ther:												TestAmerica Laboratories, li
Client Contact	Project N	lanager: C	<del>raig:Rile</del> y	Tyler	Hemay	Site	e Con	ntac	t: Ma	rk Ta	auscl	her	1	Date	:\2	112	120	ďχ				COC No:
NECOM		503-478-27			1	Lab	Соп	tact	t: Rai	ndee	Arri	ngto	n	Carr	ier:	······						of COCs
11 SW Columbia, Suite 1500	1	Analysis T			·····	Т		1		1	e) b Fi											Sampler:
Portland, Oregon 97201	CALEN			RKING DA	rs	-	-				- noid filme and Mn-Lab											For Lab Use Only:
03-222-7200 Phone		T if different fi			-					3				2								Walk-in Client:
mail: craig.riley@aecom.com			weeks			2	-1			1	E pue			H								Lab Sampling:
Project Name: D Street Terminal Tacoma, WA			week				2			1	E o Deo			SIMPAH8270								
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			Sample	1		Sar	ΪĤ	ğ	Ă	ulfat trat	solv	kali	al	sue								
Sample Identification	Sample Date	Sample Time	<b>Type</b> (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered S	8260B BTEX	HATWN	XQ-H4TWN	300.0 Sulfate	6020 Dis	310.1 Alkalinity	6020 Total Lead	Naphalenes								Sample Specific Notes:
B-31-DVP	12/11/18	11:35	G	W	3	N	MΧ	k )	ХĪ													
FW-14	1	13:10			5	N/	X	X	X					<	-	Τ						
FW-B		14:00			3	Nr	$\langle \rangle$	x	X													
DMW-2		14:20			3	N	X	χ	X													
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RR-5	1	15:40			3	NI	人	X	X													
DMW-4	12/12/13	09:55	J.		3	N,	ľΧ	X	KT													
TRip blank		-	-	V	Ì	NN	ľΧ															
reservation Used: 1= Ice, 2= HCI; 3= H2SO4; 4=HNO3;	5=NaOH; 6=	Other		_				MCS/K														
ossible Hazard Identification: re any samples from a listed EPA Hazardous Waste? Please omments Section if the lab is to dispose of the sample.	e List any EP	A Waste C	odes for th	ie samp	le in th	e	ampl	le D	ispo	sal (	A fee	e ma	y be	assi	esse(	d if s	amp	oles	are	reta	aine	ed longer than 1 month)
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Non-Hazard     I Flammable     Skin Irritant	🗋 Paison		🗋 Unkno				LIR	eun	ពលបា				- 1		,							
🖸 Non-Hazard 🔲 Flammable 🗌 Skin Irritant	se Contact Gr		ith question												,							·····
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5755 8th Street East Tacoma, WA 98424 Debog /9530 002 2310 Eax /9530 002 5047	0	Chain of Custody Record	of Cust	tody R	eco	rd														2	IESTAMERICO	St		C IN	NIN N	P P	ゴ	5	
Client Information (Sub Contract Lab)	Sampler:			Lab PM: Arringt	Lab PM: Arrington, Randee	lande	m					0	Carrier Tracking No(s):	Trac	ding h	lo(s):				580	COC No: 580-62089.1	680	-						
	Phone:			E-Mail: rande	e.arrir	Igton	@tes	tame	ricai	hc.com	а	- 10	State of Origin: Washington	ingt	on a					Pag	Page: Page 1 of 3	of 3	1220						
Company: TestAmerica Laboratories, Inc					Accreditations Required (See note): State Program - Washington	Progr	Requi	red (S Was	ee not hingt	e)										58	Job #: 580-82564-1	564-	-						
Address: 11922 East 1st Ave,	Due Date Requested: 12/18/2018	94							A	Analysis		Requested	lest	ed						Pre	Preservation Codes:	ratio	n Co	des	-				
City: Spokane	TAT Requested (days):	iys):			100					_		_		_						0.003	B - NaOH C - Zn Ace	H	1.0	OZ3	N - None O - AsNaO2	ne 1aO2			
State, Zip: WA, 99206																				n m o	D - Nitric Acid E - NaHSO4	SO4		σOt	- Na	204S			
Phone: 509-924-9200(Tel) 509-924-9290(Fax)	PO #:				)			d RRO	5		_									I O T	G - Amchlor H - Ascontic Acid	hlor	55		K - NaZSZUS S - H2SO4 T - TSP Dodecabydrate	504	orah	write	5
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Project Name Tacoma D St Terminal-Phillips 66/Ouarter	Project #: 59000882				and a strength of	EX onl	Gx by	14d D	Naphth	_									ainer	100000000000000000000000000000000000000	K - EDTA L - EDA	A		NS	W - pH 4-5 Z - other (specify)	er (sp	ecify	9	
Site:	SSOW#:					IOD) BT	5030C	OC_LVI	OC_LVI										of con	100000	Other:								
Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (Wewater, Sesolid, Cowastefoll, BT=Tissue, AuAr)	Field Filtered S Perform MS/M	8260C/5030C (M	NWTPH_Gx_MS	NWTPH_Dx/351	8270D_SIM/3510										Total Number		10	Special Instructions/Note:	iall	nstr	ucti	ons	Not	e:	
	X	X	Preservat	Preservation Code:	X											3			X	A			V	V	1				1
HC-11 (580-82564-1)	12/10/18	11:03 Pacific		Water		×	×	×											3	and see									
RW-8 (580-82564-2)	12/10/18	11:30 Pacific		Water		×	×	×					_						ω										
RW-8 DUP (580-82564-3)	12/10/18	11:30 Pacific		Water	-	×	×	×				_							ω										
B-34 (580-82564-4)	12/10/18	12:08 Pacific		Water	-	×	×	×										-	9	-									
RW-5R (580-82564-5)	12/10/18	13:00 Pacific		Water	_	×	×	×											ω										
RR-2 (580-82564-6)	12/10/18	13:36 Pacific		Water		×	×	×	×										Ch										1
RR-4 (580-82564-7)	12/10/18	14:00 Pacific		Water	_	×	×	×											ω	-									
FW-5R (580-82564-8)	12/10/18	14:59 Pacific		Water		×	×	×	×										Ch	-									
T-2 (580-82564-9)	12/10/18	15:50 Pacific		Water	$\square$	×	×	×											ω	-									
Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyze & accreditation compliance upon out subcontract currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica Laboratory or other in Laboratories. Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratoratory or other in	oratories, Inc. places the /tests/matrix being analy; arrent to date, return the s	ownership of m zed, the sample signed Chain of	ethod, analyte s must be ship Custody attest	& accreditation ped back to the ing to said com	TestAn plicance	ance u nerica i to Tee	aborat stAme	it subo tory or rica La	other	t laborate instructio mes, Inc.	laboratories. structions wi es, Inc.	WIII b	e prov	nple :	Any	ent is chang	forw jes to	ardeo	edita	er chu tion s	laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not istructions will be provided. Any changes to accreditation status should be brought to TestAmerica ies, Inc.	shou	ody. Id be	If the brou	labor ght to	Test	Ame	s not	
Possible Hazard Identification					Sa	Sample Disposal ( A fe	le Disposal ( A f	Dosa	I(A	0	may I	be assessed if samples	assessed if san	sed	fsa	Idu y	es a	Iren	etain	hine	are retained longer than 1 month)	ler ti	han	1 m	onti	nth)			
Deliverable Requested: I, II, III, IV, Other (specify)	Primary Deliverable Rank: 2	able Rank: 2			Sp	Special Instructions/QC	Instru	uctio	ns/Q		Requirements:	men	S		1														
Empty Kit Relinquished by:		Date:			Time:			•					5	Method of Shipment:	od of	Shipp	nent	-											
Relinguisted by Wary Hild	Date/Time 12.13.16			Company		Reco	ived b	* Cr	S	8	D	21	A	2		Date/Tim Date/Tim	Date/Time	E		1		P	8	010	Company	pany	R	K	R
Relinquished by:	Date/Time:			Company		Rece	Received by:									Date	Date/Time:	9:						0	Company	Aue			
A Yes A No Custody Seal No.: 4693	14					Cool	Cooler Temperature(s)	nperat	ure(s)	°C an	and Other Remarks	er Ren	narks	h	),5C	CI	0	H)	RÓ	R	R	P'I			Ver: 09/20/2016	99/20	)/20	16	
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Client Information (Sub Contract Lab)	Sampler																			- ユガ たかくじがる 12 かなべき () スタカマースに、かいてきく	
	and the second se			Lab PM: Arringt	Lab PM: Arrington, Randee	andee	m				Carrier Tracking No(s):	Tracking	No(s):		-	COC No: 580-62089.1	)89.1				
Shipping/Receiving	Phone:			E-Mail:	E-Mail: randee.arrington@testamericainc	aton@	testar	nericai	nc.com	з	State of Origin: Washington	Origin:				Page: Page 1 of 3	of 3				
Company: TestAmerica Laboratories, Inc					Accreditations Required (See note) State Program - Washington	tions Re	quired	(See no	te):		ſ					Job #: 580-82564-1	64-1				
Address: 11922 East 1st Ave,	Due Date Requested: 12/18/2018	đ						Ana	alysis		Requested	ă			_	Preservation Codes:	ation C	odes:			
City: Spokane	TAT Requested (days):	iys):				_	-		-			-		_		A - HCL B - NaOH C - Zn Acetate	tetate	0 Z 3	N - None O - AsNaO2		
State, Zip: WA, 99206					ST		,	_		-				_		D - Nitric Acid E - NaHSO4	Acid 104	0 D	Na2O4S Na2SO3		
Phone: 509-924-9200(Tel) 509-924-9290(Fax)	PO #:				)			_	_							G - Amchlor H - Ascorbic Acid	thin Anid		H2SO4	K - NAZSZUS S - H2SO4 T - TSP Dodecahydrate	
Email	WO#:				100											1 - Ice J - DI Water	ater		U - Acetone V - MCAA		-
Project Name: Tacoma D St Terminal-Phillips 66/Quarter	Project #: 59000882								_		_				taine	L-EDA	4	2.	W - pH 4-5 Z - other (specify)	scify)	
Sile	SSOW#:				-	in the second									1949-1446-1	Other:					
		Sample	Sample Type (C=comp,	Matrix (w-water, S=solid, O-wasta/oil,	eld Filtered arform MS/I	60C/5030C (I	WTPH_Gx_M	70D_SIM/351							otal Number						
	V Participation of the second	X	Preserva	Preservation Code:		-		-							X		peorei		openal managementer	Hote.	
HC-11 (580-82564-1)	12/10/18	11:03 Pacific		Water	_	×	×								ω						
RW-8 (580-82564-2)	12/10/18	11:30 Pacific		Water		×	×			_		-			ω						
RW-8 DUP (580-82564-3)	12/10/18	11:30 Pacific		Water		×	×			-		_			ω						
B-34 (580-82564-4)	12/10/18	12:08 Pacific		Water		×	××			_		_			9						
RW-5R (580-82564-5)	12/10/18	13:00 Pacific		Water		×	×								ω						
RR-2 (580-82564-6)	12/10/18	13:36 Pacific		Water		×	×	×				_			cn						
RR-4 (580-82564-7)	12/10/18	14:00 Pacific		Water		×	×			_				_	ω						
FW-5R (580-82564-8)	12/10/18	14:59 Pacific		Water		×	××	×				_			5						
T-2 (580-82564-9)	12/10/18	15:50 Pacific		Water		×	××			-					ω						
Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, inc. places the ownership of method, analyze & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.	boratories, Inc. places the /tests/matrix being analyz urrent to date, return the s	ownership of r ted, the sample igned Chain of	nethod, analyte as must be ship Custody attes	<ul> <li>&amp; accreditation</li> <li>ped back to the ting to said com</li> </ul>	TestAme plicance	nce upor prica lab o TestA	1 out st oratory merica	or other Laborat	ct labora instruct ories, In	atories. tions will	This san be provi	ple ship ded. An	ment is y chang	forwarde es to acc	d under reditatio	n status	custody.	e brough	aboratory at to Test/	does not America	
Possible Hazard Identification					Sar	Ret	ispos urn To	le Disposal ( A fi Return To Client	fee m	ay be	assessed if san Disposal By Lab	ed if s	ample	s are i	Arch	Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month) Return To Client Disposal By Lab Archive For Mon	er that	1 1 mo	mth) Months		
Deliverable Requested: I, II, III, IV, Other (specify)	Primary Deliverable Rank:		2		Spe	icial In	struct	Special Instructions/QC		Requirements:	ents:										
Empty Kit Relinquished by:		Date:			Time:		.				2	Aethod o	Method of Shipment	ent:							
Relinquished by Ung Hill	Date/Time 3-18			TAGEJ		RECO	L - 1	210	la	R	B	10	Date/Time	2/H	18	10	23	V VS	Company TA G	XAR	0
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Relinquished by:	Date/Time:			Company		Received by:	ed by:						Date/	Date/Time:				Co	Company		
A Yes A No Custody Seal No.: 4693	148				1.3	Cooler	Tempe	Cooler Temperature(s) °C	°C and	and Other Remarks:	emarks:	0	),5c	N	R	R	[	Ve	Ver: 09/20/2016	2016	

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**TestAmerica Seattle** 5755 8th Street East Tacoma. WA 98424 Phone (253) 922-2310 Fax (253) 922-5047

Chain of Custody Record

# **TestAmerica** HE LEADER IN ENVIRONMENTAL TESTIN

Phone (253) 922-2310 Fax (253) 922-5047							i.							i				and the				
Client Information (Sub Contract Lab)	Sampler:			Lab PM: Arringt	Lab PM: Arrington, Randee E	Rand	ee E		. 3			Can	Carrier Tracking No(s):	cking h	l0(s):			580-62	COC No: 580-62089.2	2		
	Phone			E-Mail	E-Mail: randee.arrington@testamericainc.com	ringto	n@te	stame	ericali	IC.CO	3	Stat	State of Origin: Washington	gin:				Page: Page	Page: Page 2 of 3			
Company: TestAmerica Laboratories, Inc					Accred	Accreditations Required (See note): State Program - Washington	s Requ	Was	hingt	e): on								Job #:	Job #: 580-82564-1	-		
Address: 11922 East 1st Ave.	Due Date Requested: 12/18/2018	d;						. 1	A	Analysis		Requested	sted					Press	Preservation Codes	n Code	15:	
City: Spokane	TAT Requested (days):	ys):			124	-			_	_	-							B - NaOH C - Zn Ace	- NaOH - Zn Acetate		N - None O - AsNaO2	laO2
State, Zip: WA, 99206												-				_			D - Nitric Acid E - NaHSO4		P - Na204S Q - Na2SO3	SO3
Phone: 509-924-9200(Tel) 509-924-9290(Fax)	PO #				)			d RRC	s							-		H-A	r - meun G - Amchlor H - Ascorbic Acid	Acid	S - H2SO4 T - TSP Dode	T - TSP Dodecahydrate
	WO #:				1310 1	_	GCMS	RO an	alene	-		-			_	-	5	I - Ice J - DI V	- Ice J - DI Water		U - Acetone V - MCAA	tone
Project Name: Tacoma D St Terminal-Phillips 66/Quarter	Project #: 59000882				-		Gx by	_14d D	Naphti	_	_				_		tainer	K - EDTA	DA		W - pH 4-5 Z - other (si	W - pH 4-5 Z - other (specify)
Site	SSOW#				-		/5030C	C_LV	C_LVI								of cor	Other:				
		Sample	Sample Type (C=comp	Matrix (W-water, S-aolid,	d Filtered	0C/5030C (M	TPH_Gx_MS	TPH_Dx/351	0D_SIM/351						-		al Number					
	Variable Date		Preserva	Preservation Code:		-	N	N	8	-	-	-				-	XI	T	- por		100	operial from accounting to
E-22 (580-82564-10)	12/11/18	10:10 Pacific		Water		×	×	×		-	-	-			-	-	ω	Í				
8-25 (580-82564-11)	12/11/18	10:56 Pacific		Water		×	×	×		_	-	-					w					
B-31 (580-82564-12)	12/11/18	11:35 Pacific		Water	_	×	×	×		-	-						ω					
B-31-DUP (580-82564-13)	12/11/18	11:35 Pacific		Water		×	×	×		_		-				_	ω					
FW-14 (580-82564-14)	12/11/18	13:10 Pacific		Water		×	×	×	×	_		-	-		_		Ch					
FW-13 (580-82564-15)	12/11/18	14:00 Pacific		Water		×	×	×		_		_				_	G					
DMW-2 (580-82564-16)	12/11/18	14:20 Pacific		Water		×	×	×			-	_					ω					
RR-1 (580-82564-17)	12/11/18	14:47 Pacific		Water		×	×	×			_	_				_	ω					
RR-5 (580-82564-18)	12/11/18	15:40 Pacific		Water		×	×	×				-					ω					
Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories	aboratories, Inc. places the	ownership of I	method, analyte	e & accreditati	on comp	oliance	upon o	ut sub	contra	t labor	atories	This	sample	shipm	ent is f	orward	ed und	ar chain	This sample shipment is forwarded under chain-of-custody. I	ody, I		
Unconfirmed						Return To Clien	Return To Client	n To	Clien			Disc	Disposal By Lab	By La	b	П	Arc	Archive For	or	in the second	Disposal By Lab Archive For Mon	Months
Deliverable Requested: I, II, III, IV, Other (specify)	Primary Deliverable Rank:	able Rank:	2		60	Special Instructions/Q	I Inst	ructio		C Rec	Requirements	ents:										
Empty Kit Relinquished by:		Date:			Time:	φ.						5	Meth	hod of	Method of Shipment	int ,		`				
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Relinguistred by:	Date/Time:			Company		Re	Received by	by							Date/Time:	ime:					Company	any

A Yes ANO

Custody Seal No.: 4/6937

Cooler Temperature(s) <sup>n</sup>C and Other Remarks:

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Ver: 09/20/2016

A Yes No Custody Seal No.: 4/69371	Relinquished by: Dat	Relinquished by:	Henry Clubs	Empty Kit Relinquished by:	Deliverable Requested: I, II, III, IV, Other (specify) Pri		Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract						TRIP BLANK (580-82564-20)	DMW-4 (580-82564-19)		Sample Identification - Client ID (Lab ID) Sa	Site:	Project Name: Project Name: 590 Tacoma D St Terminal-Phillips 66/Quarter 590	×	24-9200(Tel) 509-924-9290(Fax)	6	Spokane TAT	Address: Due 11922 East 1st Ave,	vi nerica Laboratories, Inc	Client Contact: Phone: Shipping/Receiving	ormation (Sub Contract Lab)	Phone (253) 922-2310 Fax (253) 922-5047	
	Date/Time:	Date/Time:	7:13-18		Primary Deliverable Rank: 2		Inc. places the						12/10/18	12/12/18	X	Sample Date	SSOW#:	Project #: 59000882	#			TAT Requested (days):	Due Date Requested: 12/18/2018		le	pler:		0
				Date:	able Rank:		ownership of n						08:00 Pacific	08:55 Pacific	X	Sample Time						ys):	a					hain c
					2		rethod, analyte								Preservation Code:	Sample Type (C=comp, G=grab)												Chain of Custody Record
	Company	Company	TASea				& accreditatio						Water	Water	ion Code:	Matrix (Wewater, Sesolid, Oewaste/all, BT=Tissue, A=Air)									E-Mail	Arringt		ody R
			3	Time:	Spec	Sam	r complian			-					X	Field Filtered Perform MS/	MSD (	es or	No)	NO)	N.			Accreditations Required (See note): State Program - Washington	E-Mail: randee.arrington@testamericainc.com	Arrington, Randee		ecor
Cooler Temperature(s)	Received by:	Received	Received		Special Instructions/QC	Sample Disposal ( A fee Return To Client	ce upon o	$\vdash$	-	-			×	×		8260C/5030C	V			15				ogram -	ton@tes	ndee E		a
nperature	by:	oy:	Be		uctions	le Disposal ( A f Return To Client	ut subcor		-			_		×		NWTPH_Dx/3			-		0	_		Washir	tameric			
Ő		2	a	,		e			-		1					02100_00000	100_0	- Hup					Analysis	note): ngton	cainc.co			
and Other Remarks:		l.	A		Requirements:	nay be asse	laboratories This			-			-										is Requested			Can		
G		5	4	Method		assessed if san Disposal By Lab	sample shi			+											_		sted		Washington	Carner Tracking No(s):		
:50	Date/Time:	Date/T	DaterTime	Vethod of Shipment:		sample: Lab	pment is fo	E			_															g No(s):		
ZRC	ime:	fime: "	1/2/	1 and		s are retai	orwarded und		-			_				Total Numbe	ar of cr	ntain	ore									
2005			18-113	1		may be assessed if samples are retained longer than Disposal By Lab Archive For	This sample shipment is forwarded under chain-of-custody. I						2	3			Other		J - DI Water K - EDTA	G - Amchior H - Ascorbic Acid	E - NaHSO4 F - MeOH	B - NaOH C - Zn Acetate	A-HCL M	580-82564-1	Page 3 of 3	580-62089.3	THE LEADER IN I	
Ver: 09/20/2016	Company	Company	Company DACO			than 1 month) Months	-									Special Instructions/Note:		Z - other (specify)	V - MCAA W - pH 4-5	S - H2SO4 T - TSP Dodecahydrate	P - Na204S Q - Na2SO3 R - Na2S2O3	N - None O - AsNaO2	M - Hexane				IE LEADER IN ENVIRONMENTAL TESTING	

#### Login Sample Receipt Checklist

#### Client: AECOM

#### Login Number: 82564 List Number: 1 Creator: Hobbs, Kenneth F

Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>N/A</td> <td></td>	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Job Number: 580-82564-1

List Source: TestAmerica Seattle

#### Client: AECOM

#### Login Number: 82564 List Number: 2 Creator: Kratz, Sheila J

Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>N/A</td> <td>Lab does not accept radioactive samples.</td>	N/A	Lab does not accept radioactive samples.
The cooler's custody seal, if present, is intact.	True	# 469371
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	0.5 IR005
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	No analysis requiring residual chlorine check assigned.

List Source: TestAmerica Spokane

List Creation: 12/14/18 10:45 AM

#### Client: AECOM

#### Login Number: 82564 List Number: 3 Creator: Kratz, Sheila J

Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>N/A</td> <td>Lab does not accept radioactive samples.</td>	N/A	Lab does not accept radioactive samples.
The cooler's custody seal, if present, is intact.	True	# 469371
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	0.5 IR005
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	No analysis requiring residual chlorine check assigned.

11

List Source: TestAmerica Spokane

List Creation: 12/14/18 10:46 AM

# APPENDIX B Data Review



Memorandum

AECOM 1111 3rd Ave Suite 1600 Seattle, WA 98101 www.aecom.com 206 438 2700 tel 866 495 5288 fax

То	Rebecca Tortorello, Project Manager	Info	FINAL
	Summary Data Quality Review		
	Phillips 66 – D Street Terminal, Tacoma Washington		
Subject	2018 Fourth Quarter Groundwater Sampling		
	Lucy Panteleeff, Chemist		
From	Jennifer B. Garner, Chemist		
Date	March 15, 2019		

The summary data quality review of 19 groundwater samples and 1 trip blank collected between December 10 and December 12, 2018, has been completed. The samples were analyzed at TestAmerica Laboratories, Incorporated (TA) located in Spokane and Seattle, Washington for benzene, toluene, ethylbenzene, and total xylenes (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 heavy oil-range TPH); and/or naphthalenes by EPA Method 8270D modified by selected ion monitoring (SIM). The laboratory provided a summary report containing sample results and associated quality assurance (QA) and quality control (QC) data for all samples. The following samples are associated with TA laboratory group 580-82564-1:

	Laboratory	
Sample ID	ID	Requested Analyses
HC-111	580-82564-1	BTEX, TPH-Gx, TPH-Dx
RW-8	580-82564-2	BTEX, TPH-Gx, TPH-Dx
RW-8-Dup (Duplicate of RW-8)	580-82564-3	BTEX, TPH-Gx, TPH-Dx
B-34	580-82564-4	BTEX, TPH-Gx, TPH-Dx
RW-5R	580-82564-5	BTEX, TPH-Gx, TPH-Dx
RR-2	580-82564-6	BTEX, TPH-Gx, TPH-Dx, Naphthalenes
RR-4	580-82564-7	BTEX, TPH-Gx, TPH-Dx
FW-5R	580-82564-8	BTEX, TPH-Gx, TPH-Dx, Naphthalenes
T-2	580-82564-9	BTEX, TPH-Gx, TPH-Dx
E-22	580-82564-10	BTEX, TPH-Gx, TPH-Dx
B-25	580-82564-11	BTEX, TPH-Gx, TPH-Dx
B-31	580-82564-12	BTEX, TPH-Gx, TPH-Dx
B-31 Dup (Duplicate of B-31)	580-82564-13	BTEX, TPH-Gx, TPH-Dx
FW-14	580-82564-14	BTEX, TPH-Gx, TPH-Dx, Naphthalenes
FW-13	580-82564-15	BTEX, TPH-Gx, TPH-Dx
DMW-2	580-82564-16	BTEX, TPH-Gx, TPH-Dx
RR-1	580-82564-17	BTEX, TPH-Gx, TPH-Dx
RR-5	580-82564-18	BTEX, TPH-Gx, TPH-Dx
DMW-4	580-82564-19	BTEX, TPH-Gx, TPH-Dx
Trip Blank	580-82564-20	BTEX, TPH-Gx, TPH-Dx

Data were evaluated based on validation criteria established in the *National Functional Guidelines for Organic Superfund Methods Data Review*, dated January 2017, as applied to the reported methodology.

# AECOM

#### Summary Data Quality Review Phillips 66 - D Street Terminal, Tacoma, Washington 2018 Fourth Quarter Groundwater Sampling Laboratory Group: 580-82564-1

The following data components were reviewed during the limited data validation procedure for compliance with method specific or laboratory control charted criteria where appropriate: chain of custody forms, holding times, field/method/trip/instrument blanks, surrogate recoveries, matrix spike/matrix spike duplicate recoveries, laboratory and field duplicate results, laboratory control sample/laboratory control sample duplicate recoveries, reporting limits, and electronic data deliverables.

A summary of qualifiers that may be assigned to results in this laboratory group are included in Table 1. Qualifiers that may be assigned to results 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. Another result is available that is more reliable or appropriate.

#### Sample Receipt

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

Sample HC-111 was reported by the laboratory as HC-11. For the purposed of this report, the correct sample identification, HC-111, was used.

#### **Organic Analyses**

Samples were analyzed for BTEX, TPHs, and/or naphthalenes by the methods identified in the introduction of this report.

- 1. Holding Times Acceptable
- 2. Blanks Acceptable
- 3. Surrogates Acceptable except as noted below:

<u>Naphthalenes by EPA Method 8270D-SIM</u> – The percent recovery for nitrobenzene-d5 (142%) exceeded the control limits of 45-126% in the dilution (100x) performed for FW-5R.



#### Summary Data Quality Review Phillips 66 - D Street Terminal, Tacoma, Washington 2018 Fourth Quarter Groundwater Sampling Laboratory Group: 580-82564-1

The surrogate recovery in the undiluted analysis was acceptable; therefore, data were not qualified based on the surrogate result in the dilution.

- 4. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Acceptable
- 5. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Acceptable

<u>General</u> – MS/MSDs were not performed in association with these analyses. Precision and accuracy were assessed using the LCS/LCSD.

6. Laboratory Duplicate – Acceptable

Laboratory duplicates were performed for BTEX and TPH-Gx using B-34. The relative percent difference (RPD) for total xylenes (42%) exceeded the control limit of +/- 20%. The sample and duplicate results were less than five times the reporting limit; therefore, data were not qualified based on this duplicate RPD.

7. Field Duplicate (applicable to BTEX and TPH analyses only) – Acceptable

<u>General</u> – Field duplicates were submitted for RW-8 and B-31 and identified as RW-8 Dup and B-31 Dup, respectively. Results were comparable.

8. Reporting Limits – Acceptable except as noted below:

<u>General</u> – One or more results were flagged 'J' by the laboratory to indicate a concentration that was less than the reporting limit, but above the method detection limit (MDL). Laboratory 'J'-flagged results are considered estimated. As the result is between the MDL and the reporting limit, there is a greater level of uncertainty associated with the numerical result.

9. Other Items of Note:

<u>Diesel-range TPH by NWTPH-Dx</u> – The laboratory noted that the diesel-range TPH chromatographic patterns for all detected results appear to be due to gasoline overlap and/or weathered diesel, with the exception of RR-1. Detected hydrocarbons in RR-1 appear to be due to individual peaks that are not typical of a hydrocarbon pattern.

#### **Overall Assessment of Data**

The data reported in this laboratory group, as reported, are considered to be usable for meeting project objectives. The completeness for TestAmerica laboratory group 580-82564-1 is 100%.

Table 1 - Summary of Qua	lified Data
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O amarila ID	Laboratory ID	Amelia	Laboratory	11	Final	Bassan
Sample ID	Laboratory ID	Analyte	Result	Units	Result	Reason
No data qualifiers were assigned based on this data validation.						