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TERRA ASSOCIATES, Inc.
Consultants in Geotechnical Engineering, Geology
and
Environmental Earth Sciences

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State of Washington
Hydrogeologist
613
Licensed Geologist
CHARLES R. LIE

To: Mr. Brett Cowman, HALCO Properties, LLC
Ms. Heather Vick, WDOE

From: Mr. Charles R. Lie, Terra Associates

Date: July 12, 2017

Subject: Groundwater Summary and Site Sampling Update
5232 Shilshole Avenue NW
Seattle, Washington
VCP NW 2496

This memo summarizes past and current groundwater conditions on and immediately adjacent to 5232 Shilshole Avenue NW. This letter is in response to a request for groundwater data collected subsequent to October of 2015 by Ms. Heather Vick of the Washington State Department of Ecology. Ms. Vick requested this information to assist her in the review of the materials submitted for 5221 Ballard Avenue NW in October of 2015.

The results of the groundwater monitoring that has been done to date show that the groundwater beneath the 5232 Shilshole Avenue NW site exceeds the current cleanup levels in local areas. No measurable free phase hydrocarbons, light non-aqueous phase liquids (LNPL) have been present during the period of time that Terra Associates has provided services. The data further indicates that no migration of contamination from the former UST cluster at 5232 Shilshole Avenue NW has impacted the 5221 Ballard Avenue site.

Attachments:

Tables

Figure

Appendices

ent 7/5/17

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Table 1
Groundwater Measurements

Monitoring Well	Surface Elev.	MP Elev.	4/29/2011		5/6/2011		5/10/2011		6/29/2011	
			Depth	Elev.	Depth	Elev.	Depth	Elev.	Depth	Elev.
MW-1	26.44	26.11	4.6	21.51	NM	NM	NM	NM	4.78	21.33
MW-2	25.98	25.98	NM	NM	NM	NM	NM	NM	5.75	20.23
MW-3	26.05	26.05	NM	NM	NM	NM	NM	NM	NM	NM
MW-4	26.21	25.90	4.89	21.01	NM	NM	NM	NM	5.26	20.64
MW-5	26.32	26.32	4.92	21.40	NM	NM	NM	NM	NM	NM
MW-6	26.8	26.34	4.63	21.71	NM	NM	NM	NM	4.71	21.63
MW-7	26.89	26.60	3.38	23.22	NM	NM	NM	NM	3.09	23.51
MW-8	27.97	27.51	3.52	23.99	NM	NM	NM	NM	3.72	23.79
MW-9	30.24	29.99	4.77	25.22	NM	NM	NM	NM	4.99	25.00
MW-10	26.48	26.16	5.8	20.36	NM	NM	NM	NM	6	20.16
MW-101	36.77	36.37	NM	NM	10.3	26.07	10.45	25.92	10.78	25.59
MW-102	36.35	35.93	NM	NM	10.25	25.68	9.81	26.12	10.08	25.85
MW-103	36.13	35.79	NM	NM	10.25	25.54	9.38	26.41	9.74	26.05
MW-104	28.23	27.98	NM	NM	NM	NM	NM	NM	2.76	25.22

Table 1 (continued)
Groundwater Measurements

Monitoring Well	Surface Elev.	MP Elev.	9/29/2011		10/17/2011		11/18/2011		11/29/2011	
			Depth	Elev.	Depth	Elev.	Depth	Elev.	Depth	Elev.
MW-1	26.44	26.11	NM	NM	NM	NM	NM	NM	NM	NM
MW-2	25.98	25.98	NM	NM	NM	NM	NM	NM	NM	NM
MW-3	26.05	26.05	NM	NM	NM	NM	NM	NM	NM	NM
MW-4	26.21	25.90	NM	NM	NM	NM	NM	NM	NM	NM
MW-5	26.32	26.32	NM	NM	NM	NM	NM	NM	NM	NM
MW-6	26.8	26.34	NM	NM	NM	NM	NM	NM	NM	NM
MW-7	26.89	26.60	NM	NM	NM	NM	NM	NM	NM	NM
MW-8	27.97	27.51	NM	NM	NM	NM	5.22	22.29	NM	NM
MW-9	30.24	29.99	NM	NM	NM	NM	7.39	22.60	NM	NM
MW-10	26.48	26.16	NM	NM	NM	NM	NM	NM	NM	NM
MW-101	36.77	36.37	11.63	24.74	11.50	24.87	15.68	20.69	17.19	19.18
MW-102	36.35	35.93	11	24.93	10.86	25.07	15.78	20.15	17.32	18.61
MW-103	36.13	35.79	10.86	24.93	10.54	25.25	16.83	18.96	18.54	17.25
MW-104	28.23	27.98	3.55	24.43	NM	NM	6.83	21.15	NM	NM

Table 1 (continued)
Groundwater Measurements

Monitoring Well	Surface Elev.	MP Elev.	5/2/2012		8/14/2012		7/11/2013		9/27/2013	
			Depth	Elev.	Depth	Elev.	Depth	Elev.	Depth	Elev.
MW-1	26.44	26.11	NM	NM	7.52	18.59	7.3	18.81		
MW-2	25.98	25.98	NM	NM	6.88	19.10			19.73	19.73
MW-3	26.05	26.05	NM	NM	7.07	18.98	6.89	19.16		
MW-4	26.21	25.90	NM	NM	NM	NM	6.95	18.95	18.12	18.12
MW-5	26.32	26.32	NM	NM	NM	NM				
MW-6	26.8	26.34	NM	NM	5.87	20.47	6.91	19.43	18.69	18.69
MW-7	26.89	26.60	NM	NM	>8	<18.60	>8	<18.60		
MW-8	27.97	27.51	>8	<18.60	NM	NM	NM	NM		
MW-9	30.24	29.99	>8	<19.51	NM	NM	NM	NM		
MW-10	26.48	26.16	NM	NM	NM	NM	7.7	18.46		
MW-101	36.77	36.37	>20	<16.37	NM	NM	NM	NM		
MW-102	36.35	35.93	>20	<15.93	NM	NM	NM	NM		
MW-103	36.13	35.79	>20	<15.79	NM	NM	NM	NM		
MW-104	28.23	27.98	>15	<12.98	NM	NM	>15	<12.98		
MW-107	26+/-	25.7+/-					7.53	18.17	18.08	18.08

Table 1 (continued)
Groundwater Measurements

Monitoring Well	Surface Elev.	MP Elev.	2/26/2014		9/24/2014		11/7/2014	
			Depth	Elev.				
MW-1	26.44	26.11	Dry		Closed		Closed	
MW-2	25.98	25.98	6.25	19.73	Closed		Closed	
MW-3	26.05	26.05	Dry		Closed		Closed	
MW-4	26.21	25.90	7.78	18.12	Closed		Closed	
MW-5	26.32	26.32	dry		Closed		Closed	
MW-6	26.8	26.34	7.65	18.69	NM		NM	
MW-7	26.89	26.60	Dry		Dry		NM	
MW-8	27.97	27.51	Dry		Dry		NM	
MW-9	30.24	29.99	Dry		Dry		NM	
MW-10	26.48	26.16	Dry		Closed		Closed	
MW-101	36.77	36.37	NM		Dry		Dry	
MW-102	36.35	35.93	NM		Dry		Dry	
MW-103	36.13	35.79	NM		Dry		Dry	
MW-104	28.23	27.98	NM		Dry		Dry	
MW-105			NM		Dry		Dry	
MW-106			NM		Dry		Dry	
MW-107	26+/-	25.7+/-	7.62	18.08	NM	NM	8.03	18.17
MW-201					15.36	12.52	13.29	14.59
MW-202					9.57	17.1	9.37	17.3
MW-203					8.62	17.55	8.93	17.24
MW-204					8.47	17.77	8.52	17.72
MW-205								

Table 1 (continued)
Groundwater Measurements

Monitoring Well	Surface Elev.	MP Elev.	2/20/2015		5/27/2015		6/17/2015	
			Depth	Elev.	Depth	Elev.	Depth	Elev.
MW-6	26.8	26.34	NM	NM	7.43	18.91	7.74	18.60
MW-7	26.89	26.60	Dry		Dry		Dry	< 18.41
MW-8	27.97	27.51	Dry		Dry		Dry	<20.56
MW-9	30.24	29.99	Dry		Dry		Dry	<21.74
MW-101	36.77	36.37	Dry		Dry		Dry	
MW-102	36.35	35.93	Dry		Dry		Dry	
MW-103	36.13	35.79	Dry		Dry		Dry	
MW-104	28.23	27.98	Dry		Dry		Dry	
MW-105			Dry		Dry		Dry	
MW-106			Dry		Dry		Dry	
MW-107	26+/-	25.7+/-	7.56	18.64	7.45	18.75		
MW-201		27.88+/-	13.24	14.64	12.7	15.18		
MW-202		26.67+/-	8.63	18.04	8.76	17.91		
MW-203		26.17+/-	8.19	17.98	8.6	17.57		
MW-204		26.24+/-	7.95	18.29	8.96	17.28		
MW-205		35.88+/-	22.77	13.11	22.9	12.98		

Table 1 (continued)
Groundwater Measurements

Monitoring Well	Surface Elev.	MP Elev.	7/14/2015		2/5/2016		8/29/2016	
			Depth	Depth	Depth	Elev.	Depth	Elev.
MW-6	26.8	26.34	8.2	17.98	5.84	20.34	8.1	18.08
MW-7	26.89	26.60	Dry	< 18.41	Dry	< 18.41	Dry	< 18.41
MW-8	27.97	27.51	Dry	<20.56	Dry	<20.56	Dry	<20.56
MW-9	30.24	29.99	Dry	<21.74	Dry	<21.74	Dry	<21.74
MW-101	36.77	36.37	Dry		Closed			
MW-102	36.35	35.93	Dry		Closed			
MW-103	36.13	35.79	Dry		Closed			
MW-104	28.23	27.98	Dry		Dry		Dry	
MW-105			Dry		Closed		Closed	
MW-106			Dry		Closed		Closed	
MW-107	25.96	25.66	8.2	17.46	6.65	19.01	8.35	17.31
MW-108	30.34	30.04			11.73	18.31	13.8	16.24
MW-109	26.79	26.49			8.32	18.17	9.79	16.7
MW-201	28	27.63	12.47	15.16	11.19	16.44	12.4	15.23
MW-202	26.85	26.52	9.39	17.13	7.8	18.72	9.48	17.04
MW-203	26.02	25.69	8.72	16.97	7.97	17.72	9	16.69
MW-204	26.15	25.89	8.73	17.16	7.62	18.27	9.15	16.74
MW-205	38.23	37.98	23.06	23.06			22.88	15.1

Notes: MP is the north side of the top of the PVC casing within the surface monument.
Ground surface elevations are from a survey by Jim Hart and Associates.
NM indicates that the well was not measured or was inaccessible on the day of the field work.
MW-105 and MW-106 were SVE wells that were 20 feet deep, never had water and were abandoned on January 8, 2016.
Closed indicates wells that have been permanently abandoned in accordance with state regulations.

Table 1 (continued)
Groundwater Measurements

Monitoring Well	Surface Elev.	MP Elev.	11/17/2016	
			Depth	Depth
MW-6	26.8	26.34	5.79	20.39
MW-7	26.89	26.60	Dry	
MW-8	27.97	27.51	Dry	
MW-9	30.24	29.99	Dry	
MW-104	28.23	27.98	Dry	
MW-107	25.96	25.66	nm	
MW-108	30.34	30.04	11.73	18.31
MW-109	26.79	26.49	8.75	17.74
MW-201	28	27.63	11.19	16.44
MW-202	26.85	26.52	7.8	18.72
MW-203	26.02	25.69	8.12	17.57
MW-204	26.15	25.89	8	17.89
MW-205	38.23	37.98	22.61	15.37

Notes: MP is the north side of the top of the PVC casing within the surface monument.
Ground surface elevations are from a survey by Jim Hart and Associates.
NM indicates that the well was not measured or was inaccessible on the day of the field work.
Closed indicates wells that have been permanently abandoned in accordance with state regulations.

Table 2
Total Petroleum Hydrocarbons
Groundwater

Well Number	Date	TPH Diesel Range	TPH Oil Range	TPH Gas Range	Benzene	Ethyl Benzene	Toluene	m,p Xylene	o Xylene
Units		mg/liter	mg/liter	mg/liter	µg/liter	µg/liter	µg/liter	µg/liter	µg/liter
MW-1	11/27/95	NT	NT	24,000	930	550	41,000	855,000	
	6/20/96	NT	NT	210	8.5	14,000	300	14,000	
	9/11/96	NT	NT	190	ND	13,000	ND	58,000	
	12/10/96	NT	NT	190	7.0	14,000	270	64,000	
	4/3/97	NT	NT	190	7.6	13,000	260	51,000	NT
	1/31/98	NT	NT	310	ND	15,000	230	70,000	
	10/10/00	1.1	0.95	410	1.0U	16,000	120	70,100	
	9/25/02	0.91	0.5U	34	10U	11,000	26	19,000	3,900
MW-1	11/14/03	11		18	5.0U	1,700	80	5,500	
	6/21/06	0.5U	0.5U	NR	ND	240	1	280	
	12/15/06	ND	ND	ND	ND	2,900	29	11,000	
	1/18/07	ND	ND	ND	ND	150	ND	440	
	6/12/07	ND	ND	5.8	10U	800	10U	2,500	
	10/22/07	NR	ND	2.4	10U	825	10U	2,700	
	3/19/08	ND	ND	2.7	10U	700	10U	1,900	
	6/20/08	NT	NT	0.5U	1.0U	40	1.0U	130	
	12/30/08	NT	NT	312	0.56	27	2.0U	47	2.6
	6/09	NT	NT	8.7	1.0U	460	1.0U	1,800	120
	10/09	NT	NT	11.3	10U	825	10U	2,700	
	2/2010	NT	NT	10.0	10U	700	10U	1,900	
	7/27/10	0.5U	0.5U	1.2	1.0U	40	1.0U	130	
	4/29/11	0.3U	0.41U	1.1	0.56	27	2.0U	47	2.6
	8/14/12	0.38U	0.41U	4.9	1.0U	460	1.0U	1,800	120
	7/11/13	1.4	0.41U	2.3	0.53	32	1.0U	210	1.3
	MW-1 abandoned due to lower groundwater levels September 2014, see replacement MW-204								

Table 2 (continued)
Total Petroleum Hydrocarbons
Groundwater

Well Number	Date	TPH Diesel Range	TPH Oil Range	TPH Gas Range	Benzene	Ethyl Benzene	Toluene	m,p Xylene	o Xylene
	Units	mg/liter	mg/liter	mg/liter	µg/liter	µg/liter	µg/liter	µg/liter	
MW-2	11/27/95	NT	NT	ND	ND	6.6	ND	27	
	6/20/96	NT	NT	1.1	NT	NT	NT	NT	NT
	9/11/96	NT	NT	0.9	ND	79	23	379	
	12/10/96	NT	NT	0.9	ND	1.1	ND	2.3	
	4/3/97	NT	NT	0.1U	ND	ND	3.2	ND	
	1/31/98	NT	NT	ND	ND	ND	ND	ND	
	10/10/00	NT	NT	0.13	1.0U	1.0U	36	1.0U	NT
	9/25/02	NT	NT	0.5U	5.0U	5.0U	5.0U	5.0U	
	11/14/03	NT	NT	0.25U	5.0U	5.0U	5.0U	15U	
	6/21/06	0.5U	X	0.25U	NT	NT	NT	NT	NT
	12/15/06	ND	ND	ND	NT	NT	NT	NT	NT
	1/18/07	ND	NR	ND	NT	NT	NT	NT	NT
	6/12/07	ND	NR	ND	NT	NT	NT	NT	NT
	10/22/07	NR	NR	ND	NT	NT	NT	NT	NT
	3/19/08	ND	ND	ND	NT	NT	NT	NT	NT
	6/20/08	NT	NT	0.05U	NT	NT	NT	NT	NT
	12/30/08	NT	NT	ND	ND	ND	ND	ND	
	7/27/10	0.47	1.2	0.2U	NT	NT	NT	NT	NT
	2/26/14	5.1U	16	0.1U	1.0U	1.0U	1.0U	1.0U	1.0U
	MW-2 abandoned due to lower groundwater levels September 2014-see replacement well MW-203								

Table 2 (continued)
Total Petroleum Hydrocarbons
Groundwater

Well Number	Date	TPH Diesel Range	TPH Oil Range	TPH Gas Range	Benzene	Ethyl Benzene	Toluene	m,p Xylene	o Xylene
MW-3	Units	mg/liter	mg/liter	mg/liter	µg/liter	µg/liter	µg/liter	µg/liter	µg/liter
	11/27/95	NT	NT	ND	ND	ND	ND	ND	ND
	1/31/98	NT	NT	ND	ND	ND	ND	ND	ND
	10/10/00	NT	NT	ND	1.0U	1.0U	1.0U	1.0U	1.6
	9/25/02	NT	NT	0.05U	1.0U	1.0U	1.0U	1.0U	1.0U
	11/14/03	NT	NT	0.05U	1.0U	1.0U	1.0U	1.0U	3.0U
	6/26/06	0.5U	0.5U	0.25U	NT	NT	NT	NT	NT
	12/15/06	0.65	ND	ND	NT	NT	NT	NT	NT
	1/18/07	ND	NR	ND	NT	NT	NT	NT	NT
	6/12/07	ND	ND	ND	NT	NT	NT	NT	NT
	10/22/07	ND	ND	ND	NT	NT	NT	NT	NT
	3/19/08	ND	ND	ND	NT	NT	NT	NT	NT
	6/20/08	NT	NT	0.052	NT	NT	NT	NT	NT
	12/30/08	NT	NT	ND	NT	NT	NT	NT	NT
	7/27/10	0.5U	0.5U	0.2U	NT	NT	NT	NT	NT
	8/14/12	0.26U	0.41U	0.1U	1.0U	1.0U	1.0U	3.2	1.0U
	7/11/13			0.1U	0.5U	1.0U	1.0U	1.0U	1.0U
	MW-3 abandoned due to lower groundwater levels September 2014								

Table 2 (continued)
Total Petroleum Hydrocarbons
Groundwater

Well Number	Date	TPH Diesel Range	TPH Oil Range	TPH Gas Range	Benzene	Ethyl Benzene	Toluene	m,p Xylene	o Xylene
MW-4	Units	mg/liter	mg/liter	mg/liter	µg/liter	µg/liter	µg/liter	µg/liter	
	11/27/95	NT	NT	78	4.0	**4,600**	40	**20,800**	
	1/31/98	NT	NT	14	ND	**1,300**	3.0	**3,075**	
	10/10/00	NT	NT	0.68	1.0U	37	1.0U	30	NT
	9/25/02	NT	NT	0.11	1.0U	3.0	1.0U	16	
	11/14/03	NT	NT	0.05U	1.0U	1.0U	1.0U	3.0U	
	6/21/06	0.5U	0.5U	0.25U	NT	NT	NT	NT	NT
	12/15/06	ND	ND	ND	NT	NT	NT	NT	NT
	1/18/07	ND	ND	ND	NT	NT	NT	NT	NT
	6/12/07	ND	ND	0.11	ND	1.0	ND	6	
	10/22/07	NR	ND	ND	NT	NT	NT	NT	NT
	3/19/08	ND	ND	ND	NT	NT	NT	NT	NT
	6/20/08	NT	NT	1.57	NT	NT	NT	NT	NT
	12/30/08	NT	NT	ND	NT	NT	NT	NT	NT
	7/27/10	0.5U	0.5U	0.2U	NT	NT	NT	NT	NT
	7/11/13	0.38	0.41U	0.19	0.5U	1.3	1.0	12	1.0U
	9/27/13	0.32	0.41U	0.16	0.5U	1.0U	1.0U	1.1	1.0U
	MW-4 abandoned due to lower groundwater levels September 2014								

Table 2 (continued)
Total Petroleum Hydrocarbons
Groundwater

Well Number	Date	TPH Diesel Range	TPH Oil Range	TPH Gas Range	Benzene	Ethyl Benzene	Toluene	m,p Xylene	o Xylene
	Units	mg/liter	mg/liter	mg/liter	µg/liter	µg/liter	µg/liter	µg/liter	
MW-5	11/27/95	NT	NT	28	4.0	**1,500**	11	**7,400**	
	1/31/98	NT	NT	1.1	ND	38	5.1	211	
	10/10/00	NT	NT	0.2	1.1	1	1.0U	4.9	NT
	9/25/02	NT	NT	0.25U	5.0U	5.0U	5.0U	7.0	
	11/14/03	NT	NT	0.05U	1.0U	1.0U	1.0U	3.0U	
	12/15/06	ND	ND	ND	NT	NT	NT	NT	NT
	1/18/07	ND	ND	ND	NT	NT	NT	NT	NT
	6/12/07	ND	ND	ND	NT	NT	NT	NT	NT
	10/22/07	NR	NR	ND	NT	NT	NT	NT	NT
	3/19/08	ND	ND	ND	NT	NT	NT	NT	NT
	6/20/08	NT	NT	0.05U	NT	NT	NT	NT	NT
	12/30/08	NT	NT	ND	NT	NT	NT	NT	NT
	7/27/10	0.5U	0.5U	0.2U	NT	NT	NT	NT	NT
	MW-5 abandoned due to lower groundwater levels September 2014								

Table 2 (continued)
Total Petroleum Hydrocarbons
Groundwater

Well Number	Date	TPH Diesel Range	TPH Oil Range	TPH Gas Range	Benzene	Ethyl Benzene	Toluene	m,p Xylene	o Xylene
MW-6	Units	mg/liter	mg/liter	mg/liter	µg/liter	µg/liter	µg/liter	µg/liter	
	1/29/96	NT	NT	0.68	3.5	2.5	ND	112	
	1/31/98	NT	NT	NT	3.7	ND	ND	1.7	
	10/10/00	NT	NT	0.84	1.9	1.0U	1.0U	1.7	NT
	9/25/02	NT	NT	0.25U	5.0U	5.0U	5.0U	8.0	
	11/14/03	NT	NT	0.05U	1.0U	1.0U	1.0U	3.0U	
	6/26/06	0.5U	0.5U	0.25U	NT	NT	NT	NT	NT
	12/15/06	ND	ND	ND	NT	NT	NT	NT	NT
	1/18/07	ND	ND	0.29	16	ND	69	16	
	6/12/07	NR	ND	0.32	ND	ND	ND	ND	
	10/22/07	NR	NR	ND	NT	NT	NT	NT	NT
	3/19/08	ND	ND	ND	NT	NT	NT	NT	NT
	6/20/08	NT	NT	0.147	NT	NT	NT	NT	NT
	12/30/08	NT	NT	0.12	NT	NT	NT	NT	NT
	7/27/10	0.5U	0.5U	0.11	1.0U	1.0U	1.0U	3.0U	
	4/28/11	0.26U	0.41U	0.16	0.2U	0.2U	1.0U	0.4U	0.2U
	8/14/12	0.26U	0.41U	0.1U	1.0U	1.0U	1.0U	1.0U	1.0U
	7/11/13	0.37	0.41U	0.16	0.5U	2.3	1.0U	21	1.0U
	9/27/13	0.29	0.41U	0.1U	0.5U	1.0U	1.0U	1.0U	1.0U
	2/26/14	0.26U	0.41U	0.1U	1.0U	1.0U	1.0U	1.0U	1.0U
	5/27/15	0.27	0.41U	0.1U	0.5U	1.0U	1.0U	1.0U	1.0U

Table 2 (continued)
Total Petroleum Hydrocarbons
Groundwater

Well Number	Date	TPH Diesel Range	TPH Oil Range	TPH Gas Range	Benzene	Ethyl Benzene	Toluene	m,p Xylene	o Xylene
	Units	mg/liter	mg/liter	mg/liter	µg/liter	µg/liter	µg/liter	µg/liter	
MW-7	1/29/96	NT	NT	61	2.0	**3,500**	340	**3,200**	
	6/20/96	NT	NT	16	NT	NT	NT	NT	NT
	9/11/96	NT	NT	9.0	NT	NT	NT	NT	NT
	12/10/96	NT	NT	15	NT	NT	NT	NT	NT
	4/3/97	NT	NT	17	NT	NT	NT	NT	NT
	1/31/98	NT	NT	31	**1,600**	1.6	486	**1,600**	
	10/10/00	NT	NT	4.3	190	1.0U	360	190	
	9/25/02	NT	NT	0.89	140	5.0U	130	140	
	11/14/03	NT	NT	0.72	130	5.0U	210		130
	6/21/06	0.5U	0.5U	0.25U	NT	NT	NT	NT	NT
	1/18/07	ND	ND	0.077	ND	4.0	ND	69	
	6/12/07	ND	ND	ND	ND	ND	ND	ND	
	10/22/07	NR	ND	2.4	NT	NT	NT	NT	NT
	3/19/08	ND	ND	0.3	ND	ND	ND	ND	
	6/20/08	NT	NT	0.13	NT	NT	NT	NT	NT
	12/30/08	NT	NT	ND	NT	NT	NT	NT	NT
	7/27/10	0.5U	0.5U	0.2U	NT	NT	NT	NT	NT
	4/28/11	0.26U	0.41U	0.1U	0.2U	0.32	1.0U	0.4U	0.2U

Table 2 (continued)
Total Petroleum Hydrocarbons
Groundwater

Well Number	Date	TPH Diesel Range	TPH Oil Range	TPH Gas Range	Benzene	Ethyl Benzene	Toluene	m,p Xylene	o Xylene
Units		mg/liter	mg/liter	mg/liter	µg/liter	µg/liter	µg/liter	µg/liter	µg/liter
MW-8	1/29/96	NT	NT	ND	ND	ND	ND	1.0	
	6/20/96	NT	NT	0.1U	NT	NT	NT	NT	NT
	9/11/96	NT	NT	0.1U	ND	ND	ND	ND	
	12/10/96	NT	NT	0.1U	NT	NT	NT	NT	NT
	4/3/97	NT	NT	0.1U	NT	NT	NT	NT	NT
	1/31/98	NT	NT	ND	ND	ND	ND	ND	
	10/10/00	NT	NT	0.1U	1.0U	1.0U	1.0U	1.0U	NT
	9/25/02	NT	NT	0.05U	1.0U	1.0U	1.0U	3.0	
	11/14/03	NT	NT	0.05U	1.0U	1.0U	1.0U	3.0U	
	6/21/06	0.5U	0.5U	0.25U	NT	NT	NT	NT	NT
	12/15/06	ND	ND	ND	NT	NT	NT	NT	NT
	1/18/07	ND	ND	ND	NT	NT	NT	NT	NT
	6/12/07	ND	ND	ND	ND	ND	ND	ND	
	10/22/07	ND	ND	ND	NT	NT	NT	NT	NT
	3/19/08	ND	ND	ND	NT	NT	NT	NT	NT
	6/20/08	NT	NT	0.05U	NT	NT	NT	NT	NT
	12/30/08	NT	NT	ND	NT	NT	NT	NT	NT
	7/27/10	0.5U	0.5U	0.2U	NT	NT	NT	NT	NT

Table 2 (continued)
Total Petroleum Hydrocarbons
Groundwater

Well Number	Date	TPH Diesel Range	TPH Oil Range	TPH Gas Range	Benzene	Ethyl Benzene	Toluene	m,p Xylene	o Xylene
MW-9	Units	mg/liter	mg/liter	mg/liter	µg/liter	µg/liter	µg/liter	µg/liter	
	1/29/96	NT	NT	ND	ND	ND	ND	1.0	
	6/20/96	NT	NT	0.1U	NT	NT	NT	NT	NT
	9/11/96	NT	NT	0.1U	ND	ND	ND	ND	
	12/10/96	NT	NT	0.1U	NT	NT	NT	NT	NT
	4/3/97	NT	NT	0.1U	ND	ND	ND	ND	ND
	1/31/98	NT	NT	ND	ND	ND	ND	ND	ND
	10/10/00	NT	NT	0.1U	1.0U	1.0U	1.0U	1.0U	1.0U
	9/25/02	NT	NT	0.05U	1.0U	1.0U	1.0U	2.0	
	11/14/03	NT	NT	0.05U	1.0U	1.0U	1.0U	3.0U	
	1/18/07	ND	ND	ND	NT	NT	NT	NT	NT
	6/12/07	ND	ND	ND	NT	NT	NT	NT	NT
	10/22/07	ND	ND	ND	NT	NT	NT	NT	NT
	3/19/08	ND	ND	ND	NT	NT	NT	NT	NT
	6/20/08	NT	NT	0.05	NT	NT	NT	NT	NT
	12/30/08	NT	NT	ND	NT	NT	NT	NT	NT
	7/27/10	0.5U	0.5U	0.2U	NT	NT	NT	NT	NT

Table 2 (continued)
Total Petroleum Hydrocarbons
Groundwater

Well Number	Date	TPH Diesel Range	TPH Oil Range	TPH Gas Range	Benzene	Ethyl Benzene	Toluene	m,p Xylene	o Xylene
	Units	mg/liter	mg/liter	mg/liter	µg/liter	µg/liter	µg/liter	µg/liter	
MW-10	1/29/96	NT	NT	0.93	ND	62	ND	39.7	
	6/20/96	NT	NT	1.1	NT	NT	NT	NT	NT
	9/11/96	NT	NT	0.58	ND	43	ND	171	
	12/10/96	NT	NT	0.1U	ND	ND	ND	1.2	
	4/3/97	NT	NT	0.1U	ND	2.1	ND	5.2	
	1/31/98	NT	NT	ND	ND	ND	ND	ND	
	10/10/00	NT	NT	ND	1.0U	1.0U	1.0U	1.0U	NT
	9/25/02	NT	NT	0.05U	1.0U	1.0U	1.0U	2.0	
	11/14/03	NT	NT	0.05U	1.0U	1.0U	1.0U	3.0U	
	12/15/06	ND	ND	ND	NT	NT	NT	NT	NT
	6/12/07	ND	ND	ND	NT	NT	NT	NT	NT
	10/22/07	ND	ND	ND	NT	NT	NT	NT	NT
	3/19/08	ND	ND	ND	NT	NT	NT	NT	NT
	6/20/08	NT	NT	0.05U	NT	NT	NT	NT	NT
	12/30/08	NT	NT	ND	NT	NT	NT	NT	NT
	7/27/10	0.5U	0.5U	0.2U	NT	NT	NT	NT	NT
	7/11/13	NT	NT	0.1U	0.5U	1.8	1.0U	16	1.0U
MW-10 abandoned due to lower groundwater levels September 2014									
MW-101	5/10/11	0.26U	0.41U	0.16	1.3	0.95	1.0U	1.5	0.2U
	9/29/11	0.26U	0.42U	0.29	2.8	1.2	1.0U	0.4U	0.2U
MW-102	5/10/11	0.27U	0.41U	0.5U	0.2U	0.2U	1.0U	0.4U	0.2U
	9/29/11	0.26U	0.41U	0.59	0.2U	0.2U	1.0U	0.4U	0.2U
MW-103	5/10/11	0.7U	0.42U	0.94	0.2U	0.2U	1.0U	0.4U	0.2U
	9/29/11	0.26U	0.41U	0.27	0.2U	0.2U	1.0U	0.4U	0.2U
MW-104	6/29/11	0.41U	0.26U	0.1U	0.27	0.2U	1.0U	0.4U	0.2U
	9/29/11	0.26U	0.41U	0.1U	0.21	0.2U	1.0U	0.4U	0.2U
MW-107	4/12/13	0.59U	6.900	6.9	1.0U	1,100	4.5	4,000	1,100
	7/11/13	0.27	0.1U	0.1U	0.5U	1.0U	1.0U	3.4	1.0U
	10/1/13	0.69	6.8	6.8	0.5U	1500	4.3	5300	6800
	2/28/14	0.28U	0.84	0.32	1.0U	84	1.0U	150	39
	2/20/15	0.35	0.46U	0.1U	1.0U	1.0U	1.0U	1.0U	1.0U
	5/27/15	0.31	0.41U	0.1U	0.5U	1.0U	1.0U	1.0U	1.0U
	2/5/16	0.31	0.41U	0.73	0.5U	2.3	1.0U	130	1.0U
	11/16/16	0.26	0.41U	0.1U	0.5U	1.0U	1.0U	1.0U	1.0U

Table 2 (continued)
Total Petroleum Hydrocarbons
Groundwater

Well Number	Date	TPH Diesel Range	TPH Oil Range	TPH Gas Range	Benzene	Ethyl Benzene	Toluene	m,p Xylene	o Xylene
Units		mg/liter	mg/liter	mg/liter	µg/liter	µg/liter	µg/liter	µg/liter	Units
MW-108	2/5/16	0.25U	0.41U	0.1U	0.5U	2.4	1.0U	64	1.0U
	11/16/16	0.26U	0.41U	0.1U	0.5U	1.5	1.0U	1.0U	1.0U
MW-109	2/5/16	0.26U	0.41U	0.1U	0.5U	1.0U	1.0U	1.0U	1.0U
	11/16/16	0.26U	0.41U	0.1U	0.5U	2.3	1.0U	6.7	1.0U
MW-201	9/24/14	NT	NT	0.1U	0.5U	1.0U	1.0U	1.0U	1.0U
	2/20/15	0.26U	0.41U	0.1U	0.5U	1.0U	1.0U	1.0U	1.0U
	5/27/15	NT	NT	0.1U	0.5U	1.0U	1.0U	1.0U	1.0U
	11/16/16	0.26U	0.41U	0.1U	0.5U	1.0U	1.0U	1.0U	1.0U
MW-202	9/24/14	NT	NT	0.38	0.05U	51	6.3	46	44
	2/20/15	0.7	0.44U	42	4.6	3,900	31	9,200	1,900
	5/27/15	0.39	0.41U	7.8	1.4	1,600	3.8	3,400	570
	2/5/16	0.57	0.41	31	3.4	3,100	7.0	8,200	900
	11/16/16	0.6	0.41U	30	3.0	3,200	9.7	8,200	870
MW-203	9/24/14	0.26U	0.42U	0.1U	0.5U	3.8	1.0U	1.7	1.0
	2/20/15	0.29U	0.47U	0.15	0.5U	18	1.0U	20	1.4
	5/27/15	0.26U	0.41U	0.1U	0.5U	21	1.0U	1.0U	1.0U
	2/5/16	0.26U	0.41U	0.1U	0.5U	2.3	1.0U	1.0U	1.0U
	11/16/16	0.27	0.41U	0.1U	0.5U	1.0U	1.0U	1.0U	1.0U
MW-204	9/24/14	0.47	0.41U	0.16	0.5U	1.0U	1.0U	1.0U	1.0U
	2/20/15	0.43	0.45U	0.17	0.5U	3.2	1.0U	8.5	1.5
	5/27/15	0.26U	0.41U	0.1U	0.5U	1.0U	1.0U	1.0U	1.0U
	2/15/16	0.44	0.41U	0.16	0.5U	1.0U	1.0U	1.1	1.0U
	11/16/16	0.39	0.41U	0.1U	0.5U	1.0U	1.0U	1.0U	1.0U
MW-205	11/25/14	NT	NT	0.1U	0.5U	1.0U	1.0U	1.0U	1.0U
	2/20/15	0.28U	0.44U	0.1U	0.5U	1.0U	1.0U	1.0U	1.0U
	5/27/15	NT	NT	0.1U	0.5U	1.0U	1.0U	1.0U	1.0U
	11/23/16	NT	NT	0.1U	0.5U	1.0U	1.0U	1.0U	1.0U
MTCA Method A		0.5	0.5	0.8 (1.0)	5.0	700	1,000	1,000	

Notes: TPH values are reported in mg/liter, BETX values are reported in µg/liter.
U modifier indicates that the analyte was not present at the stated practical quantitation limit (PQL).
NT indicates that the sample was not tested for the individual analyte.

Table 3
Volatile Organic Compounds
Groundwater

Well Number	Date	Vinyl Chloride	1,1-Dichlroethane	(cis) 1,2-Dichloroehtene	Trichloroethylene	Tetrachloroethylene
MW-1	9/23/02	10U	10U	10U	10U	10U
	4/29/11	0.4U	0.4U	0.4U	0.4U	0.4U
MW-6	4/29/11	0.2U	0.20	0.2U	0.2U	0.22
MW-7	4/29/11	0.2U	0.2U	0.39	0.22	0.27
MW-101	5/10/11	0.2U	0.49	0.39	0.2U	0.2U
MW-102	5/10/11	0.2U	0.2U	0.2U	0.2U	0.2U
MW-103	5/10/11	0.2U	0.2U	0.2U	0.2U	0.2U
MW-104	6/29/11	0.2U	0.23	0.2U	0.2U	0.2U
MTCA		0.2			5.0	5.0

Notes: All units are µg/liter.

Table 4
PAHs-MW-205

Well Number	Date	Benzo[a]pyrene	Benzo[a]anthracene	Benzo[b]fluoranthene	Benzo[k]fluoranthene	Chrysene	Dibenz[a,h]anthracene	Indeno[1,2,3-cd]pyrene	Total cPAHs
MW-205	1/12/15	0.094U	0.094U	0.094U	0.094U	0.094U	0.094U	0.094U	0.066U
	11/23/16	0.097U	0.097U	0.097U	0.097U	0.097U	0.097U	0.097U	
MTCA	0.1 for sum of cPAHs								

Notes: All units are µg/liter.
Note total cPAHs shown does not take 708-2 TEF into account and is a conservative number.
Non-carcinogenic PAHs are not shown for brevity, all PAHs in the analysis were below the PQL.

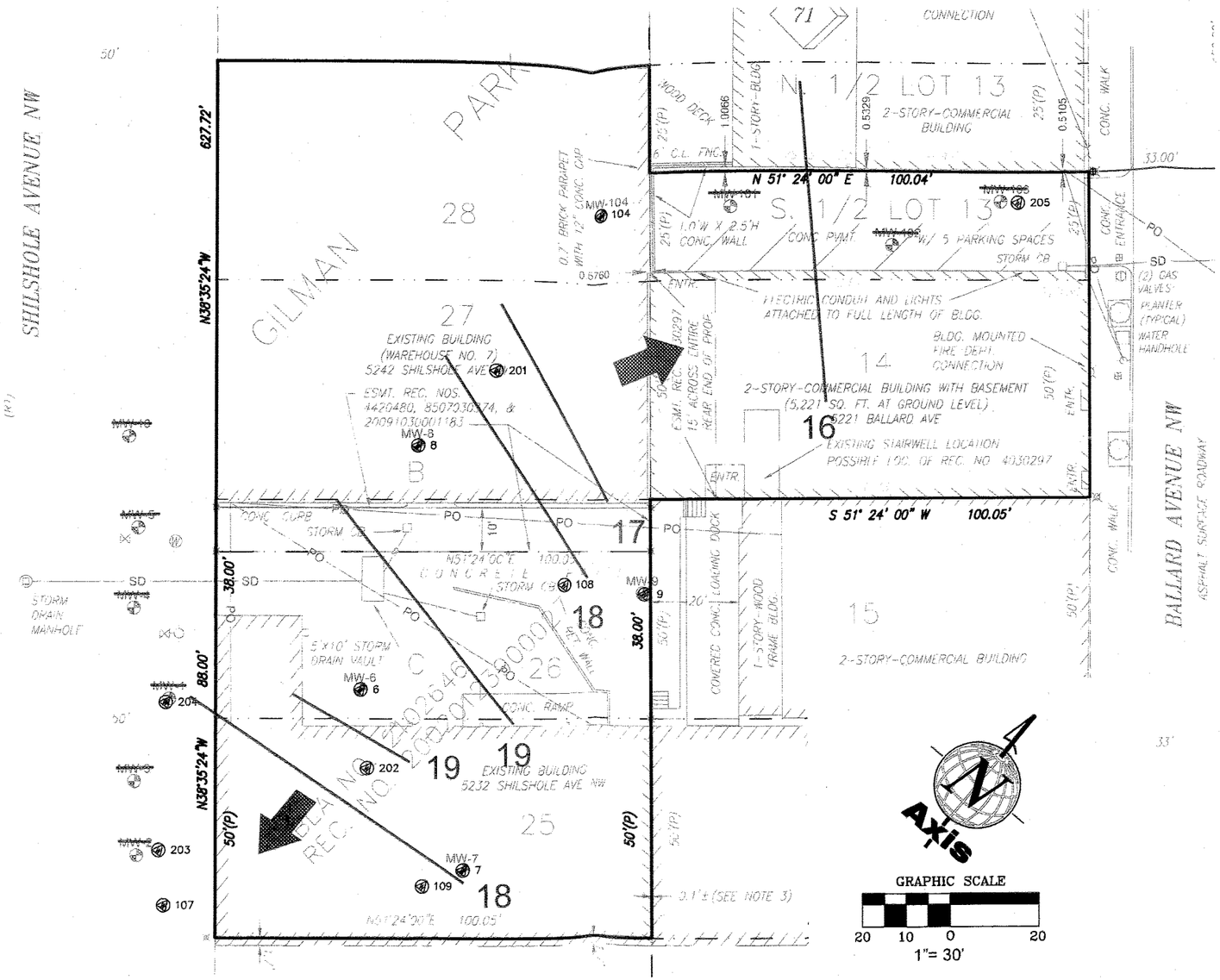
Table 5
Lead

Well ID	Date	Total lead	Dissolved Lead
MW-107	2/20/15	13	1.0U
MW-201	2/20/15	1.1U	1.0U
MW-202	2/20/15	2.5	1.0U
MW-203	2/20/15	1.1U	1.0U
MW-204	2/20/15	1.1U	1.0U
MTCA Method A		15	15

Notes: All units are µg/liter.
Samples for dissolved lead analysis were field filtered through a 0.45 micron filter.

Table 6
Ethylene Glycol

Well ID	Date	Ethylene Glycol
MW-107	2/20/15	10U
MW-201	2/20/15	10U
MW-202	2/20/15	10U
MW-203	2/20/15	10U
MTCA Method B		16



Wells with red strike through have been lawfully closed

Groundwater contours are our interpretation of static water levels measured on November 17, 2016

TERRA ASSOCIATES
Geotechnical Consultants

Monitoring Well Location Plan
5221 Ballard Ave NW
Seattle, Washington

Proj. No. T-6552	Date July 2017	Figure 1

Appendix A
Groundwater Sampling
5221 Ballard Avenue NW
Seattle, Washington

Groundwater samples have been taken with a peristaltic pump using dedicated tubing and low flow purge methodology. For MW-205, a submersible stainless steel pump is used to purge the well. During groundwater sampling, some basic parameters were monitored. All parameter monitoring by Terra Associates has been done with a flow through cell. The recent and archived groundwater parameters are summarized below in Table A-2.

Table A-2
Groundwater Parameters

Well Number	Date	pH	Conductivity	DO	ORP	Temp.
MW-1	6/21/06	6.19	600	NM	NM	NM
	12/15/06	6.97	NM	NM	NM	NM
	4/29/11	NM	NM	NM	NM	15.8
MW-2	6/21/06	6.97	249	NM	NM	NM
	12/15/06	6.9	NM	NM	NM	NM
MW-3	12/15/06	6.35	NM	NM	NM	NM
MW-4	6/21/06	6.3	484	NM	NM	NM
	12/15/06	6.9	NM	NM	NM	NM
	9/27/13	6.5	654	0.57	-75	20.1
MW-5	6/21/06	6.05	430	NM	NM	NM
	12/15/06	6.85	NM	NM	NM	NM
MW-6	6/21/06	6.67	521	NM	NM	NM
	12/15/06	6.9	NM	NM	NM	NM
	4/29/11	NM	NM	NM	NM	12.6
	9/27/13	6.16	379	0	-2	19.24
	5/27/15	6.27	316	1.82	-19.2	14.51
	2/5/16	6.16	468	0.32	1.7	13.0
	11/17/16	6.86	256	0.73	-37.2	15.31
MW-7	6/21/06	6.7	511	NM	NM	NM
	4/29/11	NM	NM	NM	NM	14.4
MW-8	6/21/06	6.6	579	NM	NM	NM
	12/15/06	7.0	NM	NM	NM	NM
MW-10	12/15/06	6.9	NM	NM	NM	NM
MW-101	5/10/11	NM	NM	NM	NM	15.3
	7/6/11	6.55	148	0.32	-10	16.0
MW-102	5/10/11	NM	NM	NM	NM	15.2
MW-103	5/10/11	NM	NM	NM	NM	16.1
	7/6/11	6.49	113	0.3	-45	16.6
MW-107	7/11/13	6.53	855	0.6	-69	17.03
	9/27/13	7.06	968	0	-94	20.09
	2/20/15	6.91	NM	0.67	-92.2	14.32
	2/5/16	6.61	530	0.41	-59.2	12.91
	11/17/16	6.92	492	1.67	-68.8	15.31
MW-108	2/5/16	7.21	313	4.28	1.3	13.67
	11/17/16	7.16	656	0.85	-60.4	15.74
MW-109	2/5/16	7.04	775	3.44	36.5	15.34
	11/17/16	7.54	238	0.42	-67.5	16.15

Table A-2 (continued)
Groundwater Parameters

Well Number	Date	pH	Conductivity	DO	ORP	Temp.
MW-201	2/20/15	7.27	NM	0.89	-9	15.23
	5/27/15	7.01	444	1.94	-50.2	15.16
	2/5/16	6.98	549	0.32	6.37	15.72
	11/17/16	7.46	405	2.98	-49.5	15.69
MW-202	2/20/15	6.82	NM	0.71	-82.3	14.61
	5/27/15	6.62	638	0.68	-58.1	14.88
	2/5/16	6.63	867	0.35	-80.8	14.89
	11/17/16	6.91	682	0.76	-65.3	15.54
MW-203	2/20/15	6.95	NM	0.56	-116.7	14.67
	5/27/15	6.52	526	1.01	-57.1	15.83
	2/5/16	6.48	635	0.56	-27.9	13.64
	11/17/16	6.85	422	0.46	-102.9	15.63
MW-204	2/20/15	6.7	NM	0.84	-98.4	14.4
	5/27/15	6.55	489	0.7	-83.5	15.87
	2/5/16	6.57	510	0.43	-79.8	13.89
	11/17/16	6.95	422	0.46	-102.9	15.44
MW-205	2/20/15	7.02	NM	0.88	46.2	16.24
	5/27/15	6.73	297	1.22	136.1	15.38
	11/23/16	8.01	331	1.22	102.6	15.16

Notes:
Data prior to 2011 was collected by others.
DO is measured in ppm.
ORP is measured in milli volts.
Conductivity is measured in micro Siemens.
pH is in standard units.
Temperature is in degrees Celsius.

APPENDIX B
ANALYTICAL TESTING
GROUNDWATER

5221 Ballard Avenue NW
Seattle, Washington

All groundwater samples were placed into laboratory-prepared glassware. Each sample was given unique sample identification. All samples were kept refrigerated pending delivery to OnSite Environmental Inc. in Redmond, Washington. Chain of custody protocols were followed for all samples. OnSite Environmental Inc. has accreditation from Ecology for all of the testing performed during this project.

All testing was performed within the designated holding times. At the laboratory, standard quality control procedures were followed. The procedures consisted of sample blanks, duplicates, and matrix spikes. All testing was within normal standards.

Based on our review of the laboratory data, it is our opinion that the results are acceptable for current use. Only analytical test reports that have not been included in prior reports are included in this appendix.

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

November 29, 2016

Chuck Lie
Terra Associates, Inc.
12220 113th Avenue NE, Suite 130
Kirkland, WA 98034

Re: Analytical Data for Project 6552-1
Laboratory Reference No. 1611-186

Dear Chuck:

Enclosed are the analytical results and associated quality control data for samples submitted on November 17, 2016.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: November 29, 2016
Samples Submitted: November 17, 2016
Laboratory Reference: 1611-186
Project: 6552-1

Case Narrative

Samples were collected on November 17, 2016 and received by the laboratory on November 17, 2016. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

NWTPH Gx/BTEX Analysis

The chromatogram for sample MW-202 does not resemble a typical gasoline.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: November 29, 2016
Samples Submitted: November 17, 2016
Laboratory Reference: 1611-186
Project: 6552-1

NWTPH-Gx/BTEX

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW-107**					
Laboratory ID:	11-186-01					
Benzene	**ND**	0.50	EPA 8021B	11-22-16	11-22-16	
Toluene	**ND**	1.0	EPA 8021B	11-22-16	11-22-16	
Ethyl Benzene	**ND**	1.0	EPA 8021B	11-22-16	11-22-16	
m,p-Xylene	**ND**	1.0	EPA 8021B	11-22-16	11-22-16	
o-Xylene	**ND**	1.0	EPA 8021B	11-22-16	11-22-16	
Gasoline	**ND**	100	NWTPH-Gx	11-22-16	11-22-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*99*	*61-118*				
Client ID:	**MW-203**					
Laboratory ID:	11-186-02					
Benzene	**ND**	0.50	EPA 8021B	11-21-16	11-21-16	
Toluene	**ND**	1.0	EPA 8021B	11-21-16	11-21-16	
Ethyl Benzene	**ND**	1.0	EPA 8021B	11-21-16	11-21-16	
m,p-Xylene	**ND**	1.0	EPA 8021B	11-21-16	11-21-16	
o-Xylene	**ND**	1.0	EPA 8021B	11-21-16	11-21-16	
Gasoline	**ND**	100	NWTPH-Gx	11-21-16	11-21-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*100*	*61-118*				
Client ID:	**MW-204**					
Laboratory ID:	11-186-03					
Benzene	**ND**	0.50	EPA 8021B	11-21-16	11-21-16	
Toluene	**ND**	1.0	EPA 8021B	11-21-16	11-21-16	
Ethyl Benzene	**ND**	1.0	EPA 8021B	11-21-16	11-21-16	
m,p-Xylene	**ND**	1.0	EPA 8021B	11-21-16	11-21-16	
o-Xylene	**ND**	1.0	EPA 8021B	11-21-16	11-21-16	
Gasoline	**ND**	100	NWTPH-Gx	11-21-16	11-21-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*99*	*61-118*				

Date of Report: November 29, 2016
Samples Submitted: November 17, 2016
Laboratory Reference: 1611-186
Project: 6552-1

NWTPH-Gx/BTEX

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW-6**					
Laboratory ID:	11-186-04					
Benzene	**ND**	0.50	EPA 8021B	11-21-16	11-21-16	
Toluene	**ND**	1.0	EPA 8021B	11-21-16	11-21-16	
Ethyl Benzene	**ND**	1.0	EPA 8021B	11-21-16	11-21-16	
m,p-Xylene	**ND**	1.0	EPA 8021B	11-21-16	11-21-16	
o-Xylene	**ND**	1.0	EPA 8021B	11-21-16	11-21-16	
Gasoline	**ND**	100	NWTPH-Gx	11-21-16	11-21-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*100*	*61-118*				
Client ID:	**MW-108**					
Laboratory ID:	11-186-05					
Benzene	**ND**	0.50	EPA 8021B	11-21-16	11-21-16	
Toluene	**ND**	1.0	EPA 8021B	11-21-16	11-21-16	
Ethyl Benzene	**1.5**	1.0	EPA 8021B	11-21-16	11-21-16	
m,p-Xylene	**ND**	1.0	EPA 8021B	11-21-16	11-21-16	
o-Xylene	**ND**	1.0	EPA 8021B	11-21-16	11-21-16	
Gasoline	**ND**	100	NWTPH-Gx	11-21-16	11-21-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*100*	*61-118*				
Client ID:	**MW-202**					
Laboratory ID:	11-186-06					
Benzene	**3.0**	0.50	EPA 8021B	11-21-16	11-21-16	
Toluene	**9.7**	1.0	EPA 8021B	11-21-16	11-21-16	
Ethyl Benzene	**3200**	100	EPA 8021B	11-22-16	11-22-16	
m,p-Xylene	**8200**	100	EPA 8021B	11-22-16	11-22-16	
o-Xylene	**870**	100	EPA 8021B	11-22-16	11-22-16	
Gasoline	**30000**	10000	NWTPH-Gx	11-22-16	11-22-16	T
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*100*	*61-118*				

Date of Report: November 29, 2016
Samples Submitted: November 17, 2016
Laboratory Reference: 1611-186
Project: 6552-1

NWTPH-Gx/BTEX

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW-109**					
Laboratory ID:	11-186-07					
Benzene	**ND**	0.50	EPA 8021B	11-21-16	11-21-16	
Toluene	**ND**	1.0	EPA 8021B	11-21-16	11-21-16	
Ethyl Benzene	**2.3**	1.0	EPA 8021B	11-21-16	11-21-16	
m,p-Xylene	**6.7**	1.0	EPA 8021B	11-21-16	11-21-16	
o-Xylene	**ND**	1.0	EPA 8021B	11-21-16	11-21-16	
Gasoline	**ND**	100	NWTPH-Gx	11-21-16	11-21-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*99*	*61-118*				
Client ID:	**MW-201**					
Laboratory ID:	11-186-08					
Benzene	**ND**	0.50	EPA 8021B	11-21-16	11-21-16	
Toluene	**ND**	1.0	EPA 8021B	11-21-16	11-21-16	
Ethyl Benzene	**ND**	1.0	EPA 8021B	11-21-16	11-21-16	
m,p-Xylene	**ND**	1.0	EPA 8021B	11-21-16	11-21-16	
o-Xylene	**ND**	1.0	EPA 8021B	11-21-16	11-21-16	
Gasoline	**ND**	100	NWTPH-Gx	11-21-16	11-21-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*98*	*61-118*				

Date of Report: November 29, 2016
Samples Submitted: November 17, 2016
Laboratory Reference: 1611-186
Project: 6552-1

NWTPH-Gx/BTEX
METHOD BLANK QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB1121W2					
Benzene	**ND**	0.50	EPA 8021B	11-21-16	11-21-16	
Toluene	**ND**	1.0	EPA 8021B	11-21-16	11-21-16	
Ethyl Benzene	**ND**	1.0	EPA 8021B	11-21-16	11-21-16	
m,p-Xylene	**ND**	1.0	EPA 8021B	11-21-16	11-21-16	
o-Xylene	**ND**	1.0	EPA 8021B	11-21-16	11-21-16	
Gasoline	**ND**	100	NWTPH-Gx	11-21-16	11-21-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*106*	*61-118*				
Laboratory ID:	MB1122W1					
Benzene	**ND**	0.50	EPA 8021B	11-22-16	11-22-16	
Toluene	**ND**	1.0	EPA 8021B	11-22-16	11-22-16	
Ethyl Benzene	**ND**	1.0	EPA 8021B	11-22-16	11-22-16	
m,p-Xylene	**ND**	1.0	EPA 8021B	11-22-16	11-22-16	
o-Xylene	**ND**	1.0	EPA 8021B	11-22-16	11-22-16	
Gasoline	**ND**	100	NWTPH-Gx	11-22-16	11-22-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*99*	*61-118*				

Date of Report: November 29, 2016
Samples Submitted: November 17, 2016
Laboratory Reference: 1611-186
Project: 6552-1

NWTPH-Gx/BTEX
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	11-178-03										
	ORIG	DUP									
Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Toluene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Ethyl Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
m,p-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
o-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Gasoline	**300**	**275**	NA	NA		NA		NA	9	30	
Surrogate:											
Fluorobenzene						*106*	*105*	*61-118*			
Laboratory ID:	11-185-02										
	ORIG	DUP									
Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Toluene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Ethyl Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
m,p-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
o-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Gasoline	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Surrogate:											
Fluorobenzene						*97*	*97*	*61-118*			
MATRIX SPIKES											
Laboratory ID:	11-178-01										
	MS	MSD	MS	MSD		MS	MSD				
Benzene	**50.5**	**49.9**	50.0	50.0	ND	**101**	**100**	80-120	1	13	
Toluene	**50.1**	**49.6**	50.0	50.0	ND	**100**	**99**	81-115	1	14	
Ethyl Benzene	**50.5**	**50.0**	50.0	50.0	ND	**101**	**100**	81-114	1	12	
m,p-Xylene	**50.0**	**49.5**	50.0	50.0	ND	**100**	**99**	81-114	1	13	
o-Xylene	**50.9**	**50.1**	50.0	50.0	ND	**102**	**100**	81-113	2	11	
Surrogate:											
Fluorobenzene						*97*	*101*	*61-118*			

Date of Report: November 29, 2016
Samples Submitted: November 17, 2016
Laboratory Reference: 1611-186
Project: 6552-1

NWTPH-Dx

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW-107**					
Laboratory ID:	11-186-01					
Diesel Range Organics	**0.26**	0.26	NWTPH-Dx	11-23-16	11-23-16	
Lube Oil Range Organics	**ND**	0.41	NWTPH-Dx	11-23-16	11-23-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*92*	*50-150*				
Client ID:	**MW-203**					
Laboratory ID:	11-186-02					
Diesel Range Organics	**0.27**	0.26	NWTPH-Dx	11-23-16	11-23-16	
Lube Oil Range Organics	**ND**	0.41	NWTPH-Dx	11-23-16	11-23-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*90*	*50-150*				
Client ID:	**MW-204**					
Laboratory ID:	11-186-03					
Diesel Range Organics	**0.39**	0.25	NWTPH-Dx	11-23-16	11-23-16	
Lube Oil Range Organics	**ND**	0.41	NWTPH-Dx	11-23-16	11-23-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*92*	*50-150*				
Client ID:	**MW-6**					
Laboratory ID:	11-186-04					
Diesel Range Organics	**0.34**	0.26	NWTPH-Dx	11-23-16	11-23-16	
Lube Oil Range Organics	**ND**	0.41	NWTPH-Dx	11-23-16	11-23-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*90*	*50-150*				
Client ID:	**MW-108**					
Laboratory ID:	11-186-05					
Diesel Range Organics	**ND**	0.26	NWTPH-Dx	11-23-16	11-23-16	
Lube Oil Range Organics	**ND**	0.41	NWTPH-Dx	11-23-16	11-23-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*80*	*50-150*				
Client ID:	**MW-202**					
Laboratory ID:	11-186-06					
Diesel Range Organics	**0.60**	0.26	NWTPH-Dx	11-23-16	11-23-16	
Lube Oil Range Organics	**ND**	0.41	NWTPH-Dx	11-23-16	11-23-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*82*	*50-150*				

Date of Report: November 29, 2016
Samples Submitted: November 17, 2016
Laboratory Reference: 1611-186
Project: 6552-1

NWTPH-Dx

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW-109**					
Laboratory ID:	11-186-07					
Diesel Range Organics	**ND**	0.26	NWTPH-Dx	11-23-16	11-23-16	
Lube Oil Range Organics	**ND**	0.41	NWTPH-Dx	11-23-16	11-23-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*83*	*50-150*				
Client ID:	**MW-201**					
Laboratory ID:	11-186-08					
Diesel Range Organics	**ND**	0.26	NWTPH-Dx	11-23-16	11-23-16	
Lube Oil Range Organics	**ND**	0.41	NWTPH-Dx	11-23-16	11-23-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*87*	*50-150*				

Date of Report: November 29, 2016
Samples Submitted: November 17, 2016
Laboratory Reference: 1611-186
Project: 6552-1

NWTPH-Dx
QUALITY CONTROL

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1123W1					
Diesel Range Organics	**ND**	0.25	NWTPH-Dx	11-23-16	11-23-16	
Lube Oil Range Organics	**ND**	0.40	NWTPH-Dx	11-23-16	11-23-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*89*	*50-150*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	11-186-01										
	ORIG	DUP									
Diesel Range Organics	**0.264**	**ND**	NA	NA		NA		NA	NA	NA	
Lube Oil Range	**ND**	**ND**	NA	NA		NA		NA	NA	NA	
Surrogate:											
o-Terphenyl						*92*	*89*	*50-150*			

Date of Report: November 29, 2016
Samples Submitted: November 17, 2016
Laboratory Reference: 1611-186
Project: 6552-1

DISSOLVED LEAD
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	11-186-01					
Client ID:	**MW-107**					
Lead	**ND**	1.0	200.8		11-21-16	
Lab ID:	11-186-02					
Client ID:	**MW-203**					
Lead	**ND**	1.0	200.8		11-21-16	
Lab ID:	11-186-03					
Client ID:	**MW-204**					
Lead	**ND**	1.0	200.8		11-21-16	
Lab ID:	11-186-04					
Client ID:	**MW-6**					
Lead	**ND**	1.0	200.8		11-21-16	
Lab ID:	11-186-05					
Client ID:	**MW-108**					
Lead	**ND**	1.0	200.8		11-21-16	
Lab ID:	11-186-06					
Client ID:	**MW-202**					
Lead	**ND**	1.0	200.8		11-21-16	
Lab ID:	11-186-07					
Client ID:	**MW-109**					
Lead	**ND**	1.0	200.8		11-21-16	

Date of Report: November 29, 2016
Samples Submitted: November 17, 2016
Laboratory Reference: 1611-186
Project: 6552-1

DISSOLVED LEAD
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Analyzed: 11-21-16

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB1117F1

Analyte	Method	Result	PQL
Lead	200.8	**ND**	1.0

Date of Report: November 29, 2016
Samples Submitted: November 17, 2016
Laboratory Reference: 1611-186
Project: 6552-1

DISSOLVED LEAD
EPA 200.8
MS/MSD QUALITY CONTROL

Date Analyzed: 11-21-16

Matrix: Water
Units: ug/L (ppb)

Lab ID: 11-185-02

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Lead	200	**185**	92	**181**	91	2	

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical gas.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

Chain of Custody

Page 1 of 1

OnSite Environmental Inc.
Analytical Laboratory Testing Services
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Company: Terra Associates Inc.
Project Number: 6552-1
Project Name:
Project Manager: Chuck Lie
Sampled by: Nicolas R. Hoffman

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days) (TPH analysis 5 Days)
☐ _____ (other)

Laboratory Number: 11-186

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx (☐ Acid / SG Clean-up)	Volatiles 8260C	Halogenated Volatiles 8260C	EDB EPA 8011 (Waters Only)	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664A	Dissolved Lead					% Moisture
1	MW-107	11/17/16	6:30	water	6		X		X														X					
2	MW-203		7:30				X		X														X					
3	MW-204		8:30				X		X														X					
4	MW-6		9:30				X		X														X					
5	MW-108		10:30				X		X														X					
6	MW-202		11:30				X		X														X					
7	MW-109		12:30				X		X														X					
8	MW-201		13:30		5		X		X														X	NO				

	Signature	Company	Date	Time
Relinquished		TAI	11/17/16	14:20
Received		OSE	11/17/16	1420
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions
- 1 poly field filtered for each sample.

Data Package: Standard ☐ Level III ☐ Level IV ☐

Chromatograms with final report ☐ Electronic Data Deliverables (EDDs) ☐

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

February 12, 2016

Chuck Lie
Terra Associates, Inc.
12220 113th Avenue NE, Suite 130
Kirkland, WA 98034

Re: Analytical Data for Project 6552-1
Laboratory Reference No. 1602-043

Dear Chuck:

Enclosed are the analytical results and associated quality control data for samples submitted on February 5, 2016.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: February 12, 2016
Samples Submitted: February 5, 2016
Laboratory Reference: 1602-043
Project: 6552-1

Case Narrative

Samples were collected on February 5, 2016 and received by the laboratory on February 5, 2016. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

NWTPH Gx/BTEX Analysis

The chromatogram for sample MW-202 is not similar to that of a typical gas.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: February 12, 2016
Samples Submitted: February 5, 2016
Laboratory Reference: 1602-043
Project: 6552-1

NWTPH-Gx/BTEX

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW-107**					
Laboratory ID:	02-043-01					
Benzene	**ND**	0.50	EPA 8021B	2-9-16	2-9-16	
Toluene	**ND**	1.0	EPA 8021B	2-9-16	2-9-16	
Ethyl Benzene	**1.2**	1.0	EPA 8021B	2-9-16	2-9-16	
m,p-Xylene	**130**	10	EPA 8021B	2-10-16	2-10-16	
o-Xylene	**ND**	1.0	EPA 8021B	2-9-16	2-9-16	
Gasoline	**730**	100	NWTPH-Gx	2-9-16	2-9-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*101*	*71-111*				
Client ID:	**MW-203**					
Laboratory ID:	02-043-02					
Benzene	**ND**	0.50	EPA 8021B	2-11-16	2-11-16	
Toluene	**ND**	1.0	EPA 8021B	2-11-16	2-11-16	
Ethyl Benzene	**2.3**	1.0	EPA 8021B	2-11-16	2-11-16	
m,p-Xylene	**ND**	1.0	EPA 8021B	2-11-16	2-11-16	
o-Xylene	**ND**	1.0	EPA 8021B	2-11-16	2-11-16	
Gasoline	**ND**	100	NWTPH-Gx	2-11-16	2-11-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*95*	*71-111*				
Client ID:	**MW-109**					
Laboratory ID:	02-043-03					
Benzene	**ND**	0.50	EPA 8021B	2-9-16	2-9-16	
Toluene	**ND**	1.0	EPA 8021B	2-9-16	2-9-16	
Ethyl Benzene	**ND**	1.0	EPA 8021B	2-9-16	2-9-16	
m,p-Xylene	**ND**	1.0	EPA 8021B	2-9-16	2-9-16	
o-Xylene	**ND**	1.0	EPA 8021B	2-9-16	2-9-16	
Gasoline	**ND**	100	NWTPH-Gx	2-9-16	2-9-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*102*	*71-111*				

Date of Report: February 12, 2016
Samples Submitted: February 5, 2016
Laboratory Reference: 1602-043
Project: 6552-1

NWTPH-Gx/BTEX

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW-202**					
Laboratory ID:	02-043-04					
Benzene	**3.4**	0.50	EPA 8021B	2-9-16	2-9-16	
Toluene	**7.0**	1.0	EPA 8021B	2-9-16	2-9-16	
Ethyl Benzene	**3100**	50	EPA 8021B	2-10-16	2-10-16	
m,p-Xylene	**8200**	100	EPA 8021B	2-11-16	2-11-16	
o-Xylene	**900**	50	EPA 8021B	2-10-16	2-10-16	
Gasoline	**31000**	5000	NWTPH-Gx	2-10-16	2-10-16	T
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*100*	*71-111*				
Client ID:	**MW-108**					
Laboratory ID:	02-043-05					
Benzene	**ND**	0.50	EPA 8021B	2-10-16	2-10-16	
Toluene	**ND**	1.0	EPA 8021B	2-10-16	2-10-16	
Ethyl Benzene	**2.4**	1.0	EPA 8021B	2-10-16	2-10-16	
m,p-Xylene	**6.4**	1.0	EPA 8021B	2-10-16	2-10-16	
o-Xylene	**ND**	1.0	EPA 8021B	2-10-16	2-10-16	
Gasoline	**ND**	100	NWTPH-Gx	2-10-16	2-10-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*100*	*71-111*				
Client ID:	**MW-204**					
Laboratory ID:	02-043-06					
Benzene	**ND**	0.50	EPA 8021B	2-10-16	2-10-16	
Toluene	**ND**	1.0	EPA 8021B	2-10-16	2-10-16	
Ethyl Benzene	**ND**	1.0	EPA 8021B	2-10-16	2-10-16	
m,p-Xylene	**1.1**	1.0	EPA 8021B	2-10-16	2-10-16	
o-Xylene	**ND**	1.0	EPA 8021B	2-10-16	2-10-16	
Gasoline	**160**	100	NWTPH-Gx	2-10-16	2-10-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*100*	*71-111*				

Date of Report: February 12, 2016
Samples Submitted: February 5, 2016
Laboratory Reference: 1602-043
Project: 6552-1

NWTPH-Gx/BTEX

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW-6**					
Laboratory ID:	02-043-07					
Benzene	**ND**	0.50	EPA 8021B	2-10-16	2-10-16	
Toluene	**ND**	1.0	EPA 8021B	2-10-16	2-10-16	
Ethyl Benzene	**ND**	1.0	EPA 8021B	2-10-16	2-10-16	
m,p-Xylene	**ND**	1.0	EPA 8021B	2-10-16	2-10-16	
o-Xylene	**ND**	1.0	EPA 8021B	2-10-16	2-10-16	
Gasoline	**ND**	100	NWTPH-Gx	2-10-16	2-10-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*100*	*71-111*				
Client ID:	**MW-201**					
Laboratory ID:	02-043-08					
Benzene	**ND**	0.50	EPA 8021B	2-10-16	2-10-16	
Toluene	**ND**	1.0	EPA 8021B	2-10-16	2-10-16	
Ethyl Benzene	**ND**	1.0	EPA 8021B	2-10-16	2-10-16	
m,p-Xylene	**ND**	1.0	EPA 8021B	2-10-16	2-10-16	
o-Xylene	**ND**	1.0	EPA 8021B	2-10-16	2-10-16	
Gasoline	**ND**	100	NWTPH-Gx	2-10-16	2-10-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*100*	*71-111*				

Date of Report: February 12, 2016
Samples Submitted: February 5, 2016
Laboratory Reference: 1602-043
Project: 6552-1

NWTPH-Gx/BTEX
METHOD BLANK QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0209W3					
Benzene	**ND**	0.50	EPA 8021B	2-9-16	2-9-16	
Toluene	**ND**	1.0	EPA 8021B	2-9-16	2-9-16	
Ethyl Benzene	**ND**	1.0	EPA 8021B	2-9-16	2-9-16	
m,p-Xylene	**ND**	1.0	EPA 8021B	2-9-16	2-9-16	
o-Xylene	**ND**	1.0	EPA 8021B	2-9-16	2-9-16	
Gasoline	**ND**	100	NWTPH-Gx	2-9-16	2-9-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*104*	*71-111*				
Laboratory ID:	MB0210W2					
Benzene	**ND**	0.50	EPA 8021B	2-10-16	2-10-16	
Toluene	**ND**	1.0	EPA 8021B	2-10-16	2-10-16	
Ethyl Benzene	**ND**	1.0	EPA 8021B	2-10-16	2-10-16	
m,p-Xylene	**ND**	1.0	EPA 8021B	2-10-16	2-10-16	
o-Xylene	**ND**	1.0	EPA 8021B	2-10-16	2-10-16	
Gasoline	**ND**	100	NWTPH-Gx	2-10-16	2-10-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*97*	*71-111*				
Laboratory ID:	MB0211W2					
Benzene	**ND**	0.50	EPA 8021B	2-11-16	2-11-16	
Toluene	**ND**	1.0	EPA 8021B	2-11-16	2-11-16	
Ethyl Benzene	**ND**	1.0	EPA 8021B	2-11-16	2-11-16	
m,p-Xylene	**ND**	1.0	EPA 8021B	2-11-16	2-11-16	
o-Xylene	**ND**	1.0	EPA 8021B	2-11-16	2-11-16	
Gasoline	**ND**	100	NWTPH-Gx	2-11-16	2-11-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*93*	*71-111*				

Date of Report: February 12, 2016
Samples Submitted: February 5, 2016
Laboratory Reference: 1602-043
Project: 6552-1

NWTPH-Gx/BTEX
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	02-043-03										
	ORIG	DUP									
Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Toluene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Ethyl Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
m,p-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
o-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Gasoline	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Surrogate:											
Fluorobenzene						*102*	*100*	*71-111*			
MATRIX SPIKES											
Laboratory ID:	02-043-03										
	MS	MSD	MS	MSD		MS	MSD				
Benzene	**54.1**	**52.0**	50.0	50.0	ND	**108**	**104**	83-123	4	15	
Toluene	**52.4**	**50.6**	50.0	50.0	ND	**105**	**101**	83-124	3	16	
Ethyl Benzene	**54.5**	**52.7**	50.0	50.0	ND	**109**	**105**	82-123	3	15	
m,p-Xylene	**54.7**	**53.0**	50.0	50.0	ND	**109**	**106**	81-125	3	17	
o-Xylene	**54.4**	**52.5**	50.0	50.0	ND	**109**	**105**	82-123	4	15	
Surrogate:											
Fluorobenzene						*104*	*103*	*71-111*			

Date of Report: February 12, 2016
Samples Submitted: February 5, 2016
Laboratory Reference: 1602-043
Project: 6552-1

NWTPH-Dx

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW-107**					
Laboratory ID:	02-043-01					
Diesel Range Organics	**0.31**	0.25	NWTPH-Dx	2-10-16	2-10-16	
Lube Oil Range Organics	**ND**	0.41	NWTPH-Dx	2-10-16	2-10-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*91*	*50-150*				
Client ID:	**MW-203**					
Laboratory ID:	02-043-02					
Diesel Range Organics	**ND**	0.26	NWTPH-Dx	2-10-16	2-10-16	
Lube Oil Range Organics	**ND**	0.41	NWTPH-Dx	2-10-16	2-10-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*104*	*50-150*				
Client ID:	**MW-109**					
Laboratory ID:	02-043-03					
Diesel Range Organics	**ND**	0.26	NWTPH-Dx	2-10-16	2-10-16	
Lube Oil Range Organics	**ND**	0.41	NWTPH-Dx	2-10-16	2-10-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*89*	*50-150*				
Client ID:	**MW-202**					
Laboratory ID:	02-043-04					
Diesel Range Organics	**0.57**	0.26	NWTPH-Dx	2-10-16	2-10-16	
Lube Oil Range Organics	**ND**	0.41	NWTPH-Dx	2-10-16	2-10-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*88*	*50-150*				
Client ID:	**MW-108**					
Laboratory ID:	02-043-05					
Diesel Range Organics	**ND**	0.25	NWTPH-Dx	2-10-16	2-10-16	
Lube Oil Range Organics	**ND**	0.41	NWTPH-Dx	2-10-16	2-10-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*86*	*50-150*				
Client ID:	**MW-204**					
Laboratory ID:	02-043-06					
Diesel Range Organics	**0.44**	0.25	NWTPH-Dx	2-10-16	2-10-16	
Lube Oil Range Organics	**ND**	0.41	NWTPH-Dx	2-10-16	2-10-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*88*	*50-150*				

Date of Report: February 12, 2016
Samples Submitted: February 5, 2016
Laboratory Reference: 1602-043
Project: 6552-1

NWTPH-Dx

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW-6**					
Laboratory ID:	02-043-07					
Diesel Range Organics	**0.29**	0.26	NWTPH-Dx	2-10-16	2-10-16	
Lube Oil Range Organics	**ND**	0.41	NWTPH-Dx	2-10-16	2-10-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*91*	*50-150*				
Client ID:	**MW-201**					
Laboratory ID:	02-043-08					
Diesel Range Organics	**ND**	0.25	NWTPH-Dx	2-10-16	2-10-16	
Lube Oil Range Organics	**ND**	0.41	NWTPH-Dx	2-10-16	2-10-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*91*	*50-150*				

Date of Report: February 12, 2016
Samples Submitted: February 5, 2016
Laboratory Reference: 1602-043
Project: 6552-1

NWTPH-Dx
QUALITY CONTROL

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0210W1					
Diesel Range Organics	**ND**	0.25	NWTPH-Dx	2-10-16	2-10-16	
Lube Oil Range Organics	**ND**	0.40	NWTPH-Dx	2-10-16	2-10-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*79*	*50-150*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	02-043-01										
	ORIG	DUP									
Diesel Range Organics	**0.313**	**0.292**	NA	NA		NA		NA	7	NA	
Lube Oil Range	**ND**	**ND**	NA	NA		NA		NA	NA	NA	
Surrogate:											
o-Terphenyl						*91*	*89*	*50-150*			

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical gas.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

Chain of Custody

Page 1 of 1

OnSite Environmental Inc.
Analytical Laboratory Testing Services
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Laboratory Number: 02-043

Company: Terra Associates Inc
Project Number: 6552-1
Project Name: ———
Project Manager: Chuck Lio
Sampled by: Nicolas R. Hoffman

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days) (TPH analysis 5 Days)
☐ _____ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx	Volatiles 8260C	Halogenated Volatiles 8260C	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664A	% Moisture
1	MW-107	2/5/16	6:30	Water	5		X		X													
2	MW-203		7:15				X		X													
3	MW-109		8:00				X		X													
4	MW-202		8:45				X		X													
5	MW-108		9:30				X		X													
6	MW-204		10:20				X		X													
7	MW-6		11:05				X		X													
8	MW-201	↓	12:00	↓	↓		X		X													

	Signature	Company	Date	Time	Comments/Special Instructions
Relinquished		TAI	2/5/16	13:02	
Received		ONSITE	2/5/16	1302	
Relinquished					
Received					
Relinquished					
Received					
Reviewed/Date		Reviewed/Date			Chromatograms with final report ☐

Data Package: Standard ☐ Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ _____

Date of Report: December 1, 2016
Samples Submitted: November 23, 2016
Laboratory Reference: 1611-229
Project: 6552

Case Narrative

Samples were collected on November 23, 2016 and received by the laboratory on November 23, 2016. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

PAHs EPA 8270D/SIM Analysis

The Spike Blank/Spike Blank Duplicate had one analyte recovery slightly above control limits, due to a small upward bias in the instruments' calibration. The sample was non-detect for this analyte, no further action was taken.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: December 1, 2016
Samples Submitted: November 23, 2016
Laboratory Reference: 1611-229
Project: 6552

NWTPH-Gx/BTEX

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW-205**					
Laboratory ID:	11-229-01					
Benzene	**ND**	0.50	EPA 8021B	11-28-16	11-28-16	
Toluene	**ND**	1.0	EPA 8021B	11-28-16	11-28-16	
Ethyl Benzene	**ND**	1.0	EPA 8021B	11-28-16	11-28-16	
m,p-Xylene	**ND**	1.0	EPA 8021B	11-28-16	11-28-16	
o-Xylene	**ND**	1.0	EPA 8021B	11-28-16	11-28-16	
Gasoline	**ND**	100	NWTPH-Gx	11-28-16	11-28-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*92*	*61-118*				

Date of Report: December 1, 2016
Samples Submitted: November 23, 2016
Laboratory Reference: 1611-229
Project: 6552

NWTPH-Gx/BTEX
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1128W2					
Benzene	**ND**	0.50	EPA 8021B	11-28-16	11-28-16	
Toluene	**ND**	1.0	EPA 8021B	11-28-16	11-28-16	
Ethyl Benzene	**ND**	1.0	EPA 8021B	11-28-16	11-28-16	
m,p-Xylene	**ND**	1.0	EPA 8021B	11-28-16	11-28-16	
o-Xylene	**ND**	1.0	EPA 8021B	11-28-16	11-28-16	
Gasoline	**ND**	100	NWTPH-Gx	11-28-16	11-28-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*95*	*61-118*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	11-228-01										
	ORIG	DUP									
Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Toluene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Ethyl Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
m,p-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
o-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Gasoline	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Surrogate:											
Fluorobenzene						*93*	*92*	*61-118*			
SPIKE BLANKS											
Laboratory ID:	SB1128W1										
	SB	SBD	SB	SBD		SB	SBD				
Benzene	**49.5**	**49.1**	50.0	50.0		**99**	**98**	79-120	1	11	
Toluene	**49.7**	**49.5**	50.0	50.0		**99**	**99**	79-118	0	12	
Ethyl Benzene	**50.2**	**49.9**	50.0	50.0		**100**	**100**	80-117	1	12	
m,p-Xylene	**50.0**	**49.8**	50.0	50.0		**100**	**100**	80-117	0	12	
o-Xylene	**50.1**	**50.1**	50.0	50.0		**100**	**100**	80-116	0	11	
Surrogate:											
Fluorobenzene						*94*	*95*	*61-118*			

Date of Report: December 1, 2016
Samples Submitted: November 23, 2016
Laboratory Reference: 1611-229
Project: 6552

PAHs EPA 8270D/SIM

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW-205**					
Laboratory ID:	11-229-01					
Naphthalene	**ND**	0.097	EPA 8270D/SIM	11-29-16	11-30-16	
2-Methylnaphthalene	**ND**	0.097	EPA 8270D/SIM	11-29-16	11-30-16	
1-Methylnaphthalene	**ND**	0.097	EPA 8270D/SIM	11-29-16	11-30-16	
Acenaphthylene	**ND**	0.097	EPA 8270D/SIM	11-29-16	11-30-16	
Acenaphthene	**ND**	0.097	EPA 8270D/SIM	11-29-16	11-30-16	
Fluorene	**ND**	0.097	EPA 8270D/SIM	11-29-16	11-30-16	
Phenanthrene	**ND**	0.097	EPA 8270D/SIM	11-29-16	11-30-16	
Anthracene	**ND**	0.097	EPA 8270D/SIM	11-29-16	11-30-16	
Fluoranthene	**ND**	0.097	EPA 8270D/SIM	11-29-16	11-30-16	
Pyrene	**ND**	0.097	EPA 8270D/SIM	11-29-16	11-30-16	
Benzo[a]anthracene	**ND**	0.0097	EPA 8270D/SIM	11-29-16	11-30-16	
Chrysene	**ND**	0.0097	EPA 8270D/SIM	11-29-16	11-30-16	
Benzo[b]fluoranthene	**ND**	0.0097	EPA 8270D/SIM	11-29-16	11-30-16	
Benzo(j,k)fluoranthene	**ND**	0.0097	EPA 8270D/SIM	11-29-16	11-30-16	
Benzo[a]pyrene	**ND**	0.0097	EPA 8270D/SIM	11-29-16	11-30-16	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0097	EPA 8270D/SIM	11-29-16	11-30-16	
Dibenz[a,h]anthracene	**ND**	0.0097	EPA 8270D/SIM	11-29-16	11-30-16	
Benzo[g,h,i]perylene	**ND**	0.0097	EPA 8270D/SIM	11-29-16	11-30-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*50*	*30 - 124*				
Pyrene-d10	*48*	*40 - 143*				
Terphenyl-d14	*56*	*27 - 127*				

Date of Report: December 1, 2016
Samples Submitted: November 23, 2016
Laboratory Reference: 1611-229
Project: 6552

PAHs EPA 8270D/SIM
METHOD BLANK QUALITY CONTROL

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB1129W1					
Naphthalene	**ND**	0.10	EPA 8270D/SIM	11-29-16	11-30-16	
2-Methylnaphthalene	**ND**	0.10	EPA 8270D/SIM	11-29-16	11-30-16	
1-Methylnaphthalene	**ND**	0.10	EPA 8270D/SIM	11-29-16	11-30-16	
Acenaphthylene	**ND**	0.10	EPA 8270D/SIM	11-29-16	11-30-16	
Acenaphthene	**ND**	0.10	EPA 8270D/SIM	11-29-16	11-30-16	
Fluorene	**ND**	0.10	EPA 8270D/SIM	11-29-16	11-30-16	
Phenanthrene	**ND**	0.10	EPA 8270D/SIM	11-29-16	11-30-16	
Anthracene	**ND**	0.10	EPA 8270D/SIM	11-29-16	11-30-16	
Fluoranthene	**ND**	0.10	EPA 8270D/SIM	11-29-16	11-30-16	
Pyrene	**ND**	0.10	EPA 8270D/SIM	11-29-16	11-30-16	
Benzo[a]anthracene	**ND**	0.010	EPA 8270D/SIM	11-29-16	11-30-16	
Chrysene	**ND**	0.010	EPA 8270D/SIM	11-29-16	11-30-16	
Benzo[b]fluoranthene	**ND**	0.010	EPA 8270D/SIM	11-29-16	11-30-16	
Benzo(j,k)fluoranthene	**ND**	0.010	EPA 8270D/SIM	11-29-16	11-30-16	
Benzo[a]pyrene	**ND**	0.010	EPA 8270D/SIM	11-29-16	11-30-16	
Indeno(1,2,3-c,d)pyrene	**ND**	0.010	EPA 8270D/SIM	11-29-16	11-30-16	
Dibenz[a,h]anthracene	**ND**	0.010	EPA 8270D/SIM	11-29-16	11-30-16	
Benzo[g,h,i]perylene	**ND**	0.010	EPA 8270D/SIM	11-29-16	11-30-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*41*	*30 - 124*				
Pyrene-d10	*54*	*40 - 143*				
Terphenyl-d14	*60*	*27 - 127*				

Date of Report: December 1, 2016
Samples Submitted: November 23, 2016
Laboratory Reference: 1611-229
Project: 6552

PAHs EPA 8270D/SIM
SB/SBD QUALITY CONTROL

Matrix: Water
Units: ug/L

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB1129W1									
	SB	SBD	SB	SBD	SB	SBD				
Naphthalene	**0.491**	**0.441**	0.500	0.500	98	88	29 - 101	11	47	
Acenaphthylene	**0.470**	**0.452**	0.500	0.500	94	90	20 - 117	4	50	
Acenaphthene	**0.466**	**0.452**	0.500	0.500	93	90	37 - 109	3	43	
Fluorene	**0.492**	**0.467**	0.500	0.500	98	93	47 - 108	5	34	
Phenanthrene	**0.468**	**0.461**	0.500	0.500	94	92	49 - 109	2	28	
Anthracene	**0.778**	**0.739**	0.500	0.500	156	148	34 - 140	5	32	II
Fluoranthene	**0.492**	**0.473**	0.500	0.500	98	95	45 - 120	4	39	
Pyrene	**0.488**	**0.476**	0.500	0.500	98	95	42 - 133	2	39	
Benzo[a]anthracene	**0.535**	**0.519**	0.500	0.500	107	104	71 - 117	3	28	
Chrysene	**0.489**	**0.466**	0.500	0.500	98	93	53 - 110	5	25	
Benzo[b]fluoranthene	**0.511**	**0.506**	0.500	0.500	102	101	53 - 123	1	37	
Benzo(j,k)fluoranthene	**0.497**	**0.472**	0.500	0.500	99	94	52 - 119	5	41	
Benzo[a]pyrene	**0.503**	**0.494**	0.500	0.500	101	99	37 - 129	2	33	
Indeno(1,2,3-c,d)pyrene	**0.500**	**0.483**	0.500	0.500	100	97	45 - 128	3	31	
Dibenz[a,h]anthracene	**0.508**	**0.497**	0.500	0.500	102	99	54 - 120	2	30	
Benzo[g,h,i]perylene	**0.511**	**0.483**	0.500	0.500	102	97	49 - 117	6	29	
Surrogate:										
2-Fluorobiphenyl					*87*	*82*	*30 - 124*			
Pyrene-d10					*85*	*84*	*40 - 143*			
Terphenyl-d14					*101*	*90*	*27 - 127*			

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

Chain of Custody

Page 1 of 1

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Analytical Laboratory Testing Services
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Phone: (425) 883-3881 • www.onsite-env.com

Company: Tarra Associates Inc
Project Number: 6552
Project Name:
Project Manager: Chuck Lie
Sampled by: Nicolas R. Hoffman

Turnaround Request (in working days)

(Check One)

- ☐ Same Day
- ☐ 1 Day
- ☐ 2 Days
- ☐ 3 Days
- ☒ Standard (7 Days) (TPH analysis 5 Days)
- ☐ _____ (other)

Laboratory Number: 11-229

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx (☐ Acid / SG Clean-up)	Volatiles 8260C	Halogenated Volatiles 8260C	EDB EPA 8011 (Waters Only)	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664A					% Moisture
1	MW-205	11/23/16	9:45	Water	6		X							X													

	Signature	Company	Date	Time
Relinquished		TAI	11/23/16	11:10
Received		COSE	11/23/16	1110
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

Data Package: Standard ☐ Level III ☐ Level IV ☐

Chromatograms with final report ☐ Electronic Data Deliverables (EDDs) ☐