TECHNICAL MEMORANDUM

DATE: July 12, 2019

TO: Jim Cach – Coleman Oil – PLP Project Coordinator

FROM: Ken Nogeire – PBS: Consultant to Coleman Oil

Site Name: Coleman Oil Yakima Bulk Fuel
Site Address: 1 East I Street, Yakima
Ecology Site Cleanup ID: 13200
Facility/Site ID: 4233
Agreed Order: DE 15639
PBS Project No: 41392

RE: Remedial Investigation Update

PBS has prepared this technical memorandum to summarize remedial investigation (RI) tasks performed for the Coleman Oil Bulk Fuel Site at 1 East I Street in Yakima, Washington (Site) for the period between February 2019 and June 2019. This memorandum also presents the analytical data for samples collected during field activities.

NAPL and Groundwater Sampling

PBS completed a non-aqueous phase liquid (NAPL or product) and groundwater sampling event on March 19, 2019. Prior to sample collection, depth to product (if present) and depth to water were measured in each well. Product samples were collected via disposable polyethylene bailer (bailer) from wells RW1, MW2, MW3, MW4, MW5, and MW8. Groundwater samples were collected via low-flow methodology using a peristaltic pump from wells MW9 and MW10.

The product and groundwater samples were submitted to Friedman & Bruya, Inc. of Seattle, Washington (F&B) and analyzed for select chemical and physical properties. Product sample chromatograms were reviewed by a F&B chemist to determine the approximate percentages of gasoline and diesel fuels present in the sample and describe the degree of weathering of each fuel type present in the sample.

The locations of the wells are shown on attached Figure 2, the groundwater elevation and product thickness measurements are presented in attached Table 2, and the groundwater and product analytical results are presented in attached Tables 3 and 4. Laboratory reports are attached.

NAPL/product Transmissivity Testing

PBS conducted a product baildown test to estimate product transmissivity (T: ft^2/day) on March 26, 2019. Prior to beginning the baildown test, the depth to water and depth to product were gauged in order to calculate the initial thickness of product (0.50 ft) in well RW-1. Following gauging, product was rapidly removed from the well with a bailer. Following removal of product (<0.01 ft of product in well), the well was gauged periodically for approximately 4 hours. During this period, the product thickness recovered to 0.03 ft (<1 minute after ceasing extraction). This recovered volume is likely from draining of product from the filter pack into the well. The total NAPL recovery was 0.04 ft over the monitored recovery period (3.8 hours). RW1 was gauged approximately 46 hours later and recovery was 0.14 feet. Based on slow recovery and site history of fluctuating product thickness, a accurate transmissivity value could not be calculated for product at RW-1.

Based on the data from the baildown test, the transmissivity of the product at the site is low (less than the 0.1 to 0.8 ft^2/day), which is considered by ITRC as the practical cutoff for active recoverability of product) and there is likely little risk of significant product migration at the Site. PBS and Coleman do not plan to implement a dual phase extraction system (separately pumping product and groundwater) at this time.

Soil Investigation

For the purpose of continued source investigation, five borings (designated BH8 through BH13) were completed by a direct push drilling rig operated by Holt Services, Inc. on June 4, 2019. PBS oversaw the advancement of the borings and collected soil samples for laboratory analysis from each boring. Refusal was generally encountered at approximately 10-feet below ground surface (bgs) across the site. The soil samples were submitted to F&B under chain-of-custody protocols for analysis of total petroleum hydrocarbons (TPH) as gasoline range (Gx), diesel range (Dx), and oil range (oil) and benzene, toluene, ethylbenzene, and total xylenes (BTEX). There were no detections of analyzed compounds at or above the laboratory reporting limits in any of the samples. The boring locations are shown on attached Figure 2 and the analytical results are presented in attached Table 1.

Soil Vapor Probe Installation

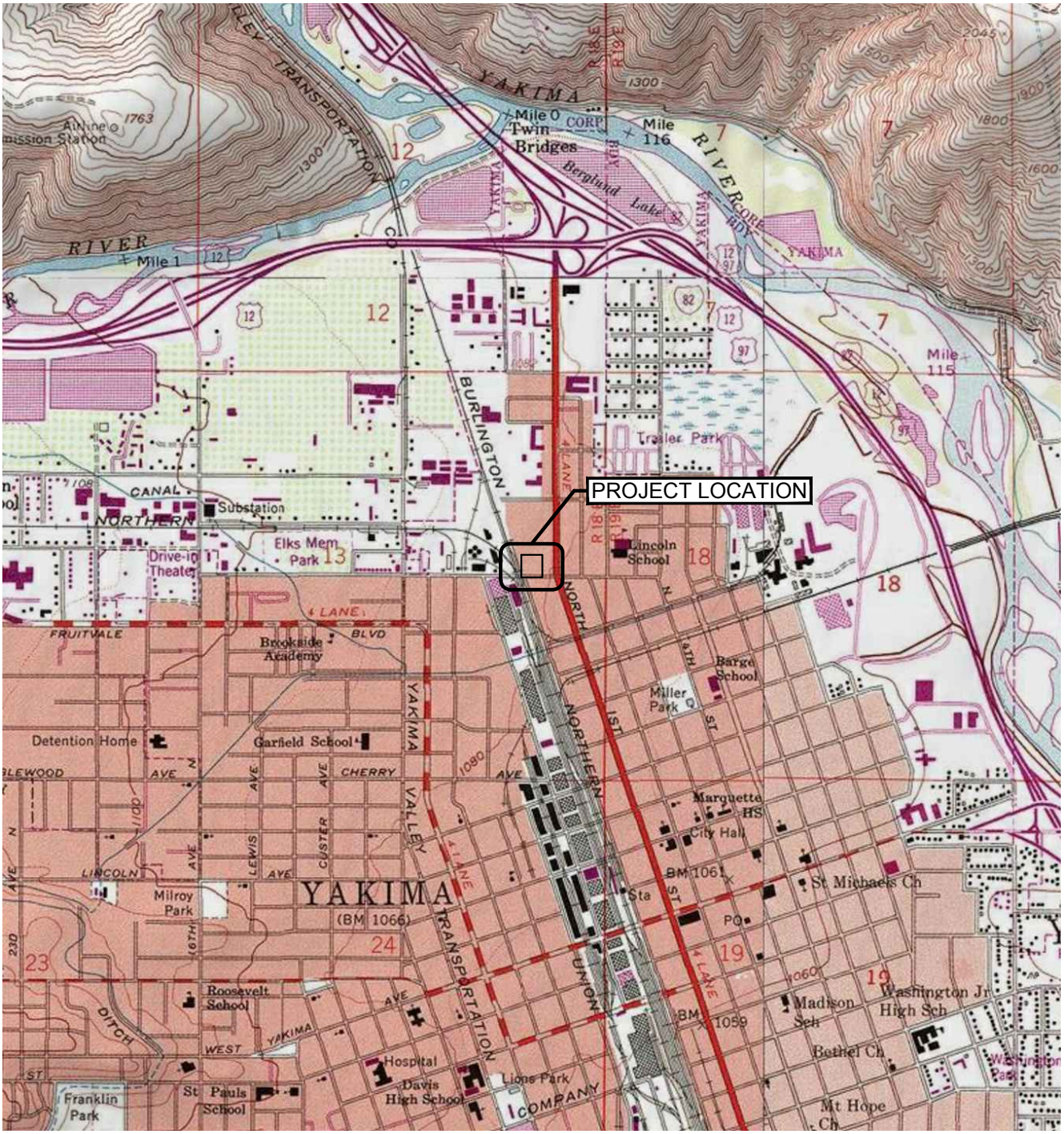
One soil vapor probe (designated VB1) was installed between the diesel point of release and the eastern extent of the Site office building. The boring was completed to a total depth of 8-feet bgs and the stainless-steel soil vapor probe is set from 6.0 to 6.5 ft bgs and the sand interval 5 to 8 ft bgs is considered to be the sample interval (see vapor probe construction log provided as an attachment). A soil vapor sample will be collected when the next round of remedial investigation work is completed at the site.

The remaining remedial investigation tasks (two soil borings and three well installations) will be completed following receipt of the fully executed access agreement between PBS, Coleman Oil, and BNSF.

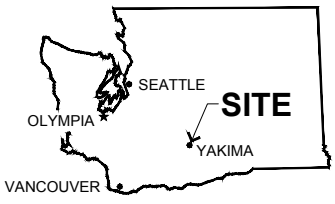
Thank you.
PBS Engineering and Environmental

Attachments:
Figures
Tables
Groundwater and Product Elevation Charts
Vapor Probe Construction Log
Soil Bore and Well Construction Logs
Laboratory Reports

Cc:
Frank Winslow – Ecology Project Coordinator
John Shultz – Wondrack Lead
Shane DeGross – BNSF Lead
Erik Hetrick – Chevron Lead



SOURCE: USGS YAKIMA WEST, WA QUADRANGLE 1985



WASHINGTON

Scale 1" = 2,000'

0' 1,000' 2,000' 4,000'

PREPARED FOR: COLEMAN OIL

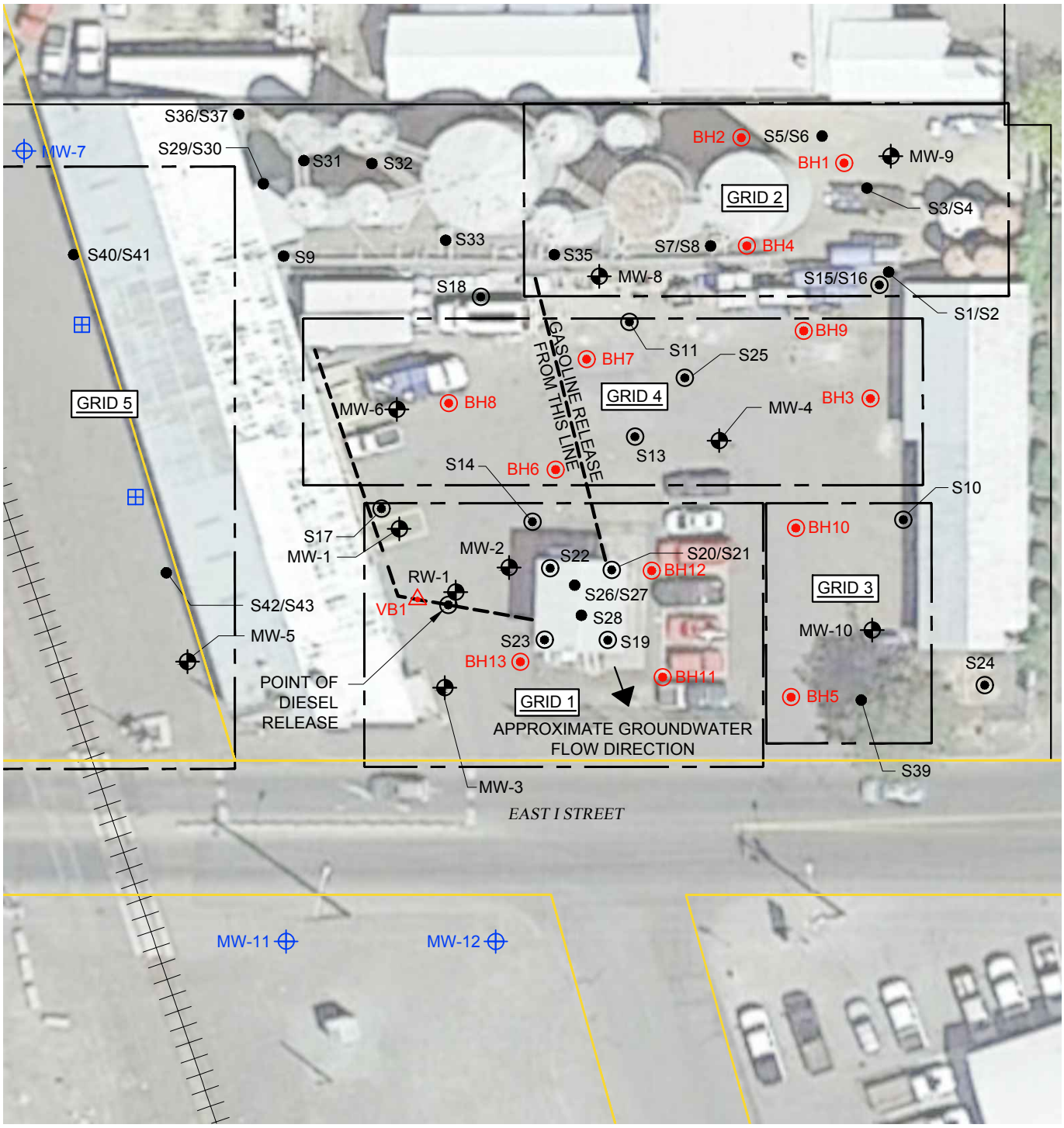
PBS

VICINITY MAP

1 EAST I STREET
YAKIMA, WASHINGTON

JUL 2019
41392.000

FIGURE
1



SOURCE: © 2017 GOOGLE EARTH PRO

LEGEND

- APPROXIMATE PARCEL BOUNDARIES FROM YAKIMA COUNTY GIS, ACCESSED ON 06/05/19
- MW-1 — EXISTING WELL NUMBER AND LOCATION (RW-1, MW-1 - MW-6, MW-8 - MW-10)
- BH1 — SOIL BORING NUMBER AND APPROXIMATE LOCATION (DEC. 2018 AND JUNE 2019)
- MW-7 — PROPOSED WELL NUMBER AND LOCATION (MW-7, MW-11, MW-12)
- S1 — NEAR SURFACE SOIL SAMPLE NUMBER AND APPROXIMATE LOCATION (APRIL 2015)
- S11 — SOIL BORING NUMBER AND APPROXIMATE LOCATION (APRIL 2015)
- PROPOSED BORING APPROXIMATE LOCATION
- VB1 — VAPOR BORE NUMBER AND LOCATION
- FORMER SUBSURFACE FUEL LINES

Scale 1" = 30'

0' 15' 30' 60'

PREPARED FOR: COLEMAN OIL

SITE PLAN: SAMPLE LOCATIONS (REVISED)

1 EAST I STREET
YAKIMA, WASHINGTON

JUL 2019
41392.000
FIGURE
2

TABLE 1
REMEDIAL INVESTIGATION SOIL ANALYTICAL RESULTS

Coleman Oil: 1 East I St., Yakima, WA

PBS Project No. 41392.000

Results in mg/Kg

Location - Depth	Sample Date	TPHs			BTEX[c]			
		Gx[a]	Dx[b]	Oil[b]	Benzene	Toluene	Ethyl-benzene	Xylenes
BH1-2	12.19.18	27	630	<250	<0.02	0.12	0.053	0.44
BH1-12	12.19.18	<5	<50	<250	<0.02	<0.02	<0.02	<0.06
BH2-2	12.19.18	<5	<50	<250	<0.02	<0.02	<0.02	<0.06
BH2-14	12.19.18	<5	<50	<250	<0.02	<0.02	<0.02	<0.06
BH3-2	12.20.18	<5	<50	<250	<0.02	<0.02	<0.02	<0.06
BH3-14	12.20.18	<5	<50	<250	<0.02	<0.02	<0.02	<0.06
BH4-2	12.19.18	<5	<50	<250	<0.02	<0.02	<0.02	<0.06
BH4-12	12.19.18	<5	<50	<250	<0.02	<0.02	<0.02	<0.06
BH5-2	12.20.18	<5	<50	<250	<0.02	<0.02	<0.02	<0.06
BH5-13	12.20.18	<5	<50	<250	<0.02	<0.02	<0.02	<0.06
BH6-2	12.20.18	<5	<50	<250	<0.02	<0.02	<0.02	0.074
BH6-14	12.20.18	<5	<50	<250	<0.02	<0.02	<0.02	<0.06
BH7-2	12.20.18	<5	<50	<250	<0.02	<0.02	<0.02	<0.06
BH7-13	12.20.18	<5	<50	<250	<0.02	<0.02	<0.02	<0.06
MW8-3	12.18.18	<5	<50	<250	<0.02	<0.02	<0.02	<0.06
MW8-11	12.18.18	<5	<50	<250	<0.02	<0.02	<0.02	<0.06
MW9-2.5	12.18.18	<5	<50	<250	<0.02	<0.02	<0.02	<0.06
MW9-15	12.18.18	<5	<50	<250	<0.02	<0.02	<0.02	<0.06
MW10-2	12.19.18	<5	<50	<250	<0.02	<0.02	<0.02	<0.06
MW10-14	12.19.18	<5	<50	<250	<0.02	<0.02	<0.02	<0.06
BH8-4	6.6.19	<5	<50	<250	<0.02	<0.02	<0.02	<0.06
BH8-12	6.6.19	<5	<50	<250	<0.02	<0.02	<0.02	<0.06
BH9-4	6.6.19	<5	<50	<250	<0.02	<0.02	<0.02	<0.06
BH9-8	6.6.19	<5	<50	<250	<0.02	<0.02	<0.02	<0.06
BH10-4	6.6.19	<5	<50	<250	<0.02	<0.02	<0.02	<0.06
BH10-6	6.6.19	<5	<50	<250	<0.02	<0.02	<0.02	<0.06
BH11-4	6.6.19	<5	<50	<250	<0.02	<0.02	<0.02	<0.06
BH11-8	6.6.19	<5	<50	<250	<0.02	<0.02	<0.02	<0.06
BH12-3	6.6.19	<5	<50	<250	<0.02	<0.02	<0.02	<0.06
BH12-8	6.6.19	<5	<50	<250	<0.02	<0.02	<0.02	<0.06
BH13-4	6.6.19	<5	<50	<250	<0.02	<0.02	<0.02	<0.06
BH-13-9	6.6.19	<5	<50	<250	<0.02	<0.02	<0.02	<0.06
Screening Levels[d]	**MTCA Method A Cleanup Levels For Soil**	**100 30**	**2,000**	**2,000**	**0.03**	**7**	**6**	**9**

TABLE 1
REMEDIAL INVESTIGATION SOIL ANALYTICAL RESULTS
Coleman Oil: 1 East I St., Yakima, WA
PBS Project No. 41392.000

Notes:
<## - not detected at or above the given laboratory reporting limit

Abbreviations & Acronyms:
TPH - total petroleum hydrocarbons
Gx - gasoline range hydrocarbons
Dx - diesel range hydrocarbons
mg/kg - miligrams per kilogram

Footnotes:
[a] Analyzed by Northwest Total Petroleum Hydrocarbon Method - Volatile Petroleum Products (Extended) (NWTPH-Gx) with silica gel treatment
[b] Analyzed by Northwest Total Petroleum Hydrocarbon Method - Semi-volatile Petroleum Products (Extended) (NWTPH-Dx)
[c] Analyzed by Environmental Protection Agency Method 8021B
[d] From Model Toxics Control Act Table 740-1 Soil Cleanup Levels for Unrestricted Land Use

TABLE 2
GROUNDWATER ELEVATION DATA
Coleman Oil: 1 East I St., Yakima, WA
PBS Project No. 41392.000

Well ID	Well Screen Interval (ft bgs)	Date	TOC Elevation (ft)	Depth to Product (ft btoc)	Depth to Water (ft btoc)	NAPL Thickness (ft)	Potentiometric Groundwater Elevation (ft amsl)
RW-1	15.05-30.05	5/10/2016	1089.54	19.38	23.64	4.26	1069.31
		10/5/2016	1089.54	17.48	23.69	6.21	1070.82
		10/20/2016	1089.54	17.83	20.99	3.16	1071.08
		11/2/2016	1089.54	18.06	20.86	2.80	1070.92
		12/13/2016	1089.54	19.58	19.83	0.25	1069.91
		1/20/2017	1089.54	20.75	23.83	3.08	1068.17
		2/2/2017	1089.54	21.26	23.75	2.49	1067.78
		3/21/2017	1089.54	20.09	23.90	3.81	1068.69
		4/4/2017	1089.54	20.16	22.78	2.62	1068.86
		4/20/2017	1089.54	19.82	21.09	1.27	1069.47
		5/8/2017	1089.54	19.10	20.55	1.45	1070.15
		5/25/2017	1089.54	18.70	19.41	0.71	1070.70
		6/9/2017	1089.54	18.55	20.03	1.48	1070.69
		4/12/2018	1089.54	23.75	25.15	1.40	1065.51
		6/21/2018	1089.54	21.89	22.96	1.07	1067.44
		7/26/2018	1089.54	20.56	20.65	0.09	1068.96
		8/23/2018	1089.54	18.92	18.98	0.06	1070.61
		9/25/2018	1089.54	16.56	16.74	0.18	1072.94
		10/29/2018	1089.54	17.62	18.09	0.47	1071.83
		11/30/2018	1089.54	19.12	19.91	0.79	1070.26
		12/20/2018	1089.54	19.72	20.33	0.61	1069.70
		1/30/2019	1089.54	21.01	23.04	2.03	1068.12
		2/28/2019	1089.54	21.80	23.94	2.14	1067.31
		3/19/2019	1089.54	22.18	24.30	2.12	1066.94
		4/25/2019	1089.54	22.38	23.32	0.94	1066.97
		5/29/2019	1089.54	21.10	22.09	0.99	1068.24
MW-1	9.9-25.9	5/10/2016	1089.54	--	19.13	--	1070.41
		10/5/2016	1089.54	16.75	22.02	5.27	1071.74
		10/20/2016	1089.54	17.15	19.94	2.79	1071.83
		11/2/2016	1089.54	17.56	18.75	1.19	1071.74
		12/13/2016	1089.54	18.99	20.13	1.14	1070.32
		1/20/2017	1089.54	19.42	24.32	4.90	1069.14
		2/2/2017	1089.54	20.42	21.51	1.09	1068.90
		3/21/2017	1089.54	18.83	22.39	3.56	1070.00
		4/4/2017	1089.54	19.35	19.59	0.24	1070.14
		4/20/2017	1089.54	18.7	19.07	0.37	1070.77
		5/8/2017	1089.54	17.9	18.29	0.39	1071.56
		5/25/2017	1089.54	17.75	17.96	0.21	1071.75
		6/9/2017	1089.54	17.68	17.84	0.16	1071.83
		4/12/2018	1089.54	22.6	23.20	0.60	1066.82
		6/21/2018	1089.54	21.4	21.82	0.42	1068.06
		7/26/2018	1089.54	19.88	20.28	0.40	1069.58
		8/23/2018	1089.54	--	17.88	--	1071.66
		9/25/2018	1089.54	--	15.50	--	1074.04
		10/29/2018	1089.54	--	16.52	--	1073.02
		11/30/2018	1089.54	--	17.73	--	1071.81
		12/20/2018	1089.54	--	18.22	--	1071.32
		1/30/2019	1089.54	--	19.89	--	1069.65
		2/28/2019	1089.54	--	20.97	--	1068.57
		3/19/2019	1089.54	21.19	21.37	0.18	1068.31
		4/25/2019	1089.54	21.39	21.54	0.15	1068.12
		5/29/2019	1089.54	20.45	20.46	0.01	1069.09

TABLE 2
GROUNDWATER ELEVATION DATA
Coleman Oil: 1 East I St., Yakima, WA
PBS Project No. 41392.000

Well ID	Well Screen Interval (ft bgs)	Date	TOC Elevation (ft)	Depth to Product (ft btoc)	Depth to Water (ft btoc)	NAPL Thickness (ft)	Potentiometric Groundwater Elevation (ft amsl)
MW-2	10.3-25.3	5/10/2016	1089.44	--	19.82	--	1069.62
		10/5/2016	1089.44	--	16.54	--	1072.90
		10/20/2016	1089.44	--	16.51	--	1072.93
		11/2/2016	1089.44	--	16.54	--	1072.90
		12/13/2016	1089.44	17.11	25.50	8.39	1063.94
		1/20/2017	1089.44	21.05	21.21	0.16	1068.23
		2/2/2017	1089.44	--	21.50	--	1067.94
		4/4/2017	1089.44	--	20.24	--	1069.20
		4/20/2017	1089.44	--	19.26	--	1070.19
		3/21/2017	1089.44	--	20.50	--	1068.94
		5/8/2017	1089.44	--	18.90	--	1070.54
		5/25/2017	1089.44	--	18.00	--	1071.44
		6/9/2017	1089.44	17.85	17.87	0.02	1071.57
		4/12/2018	1089.44	23.48	23.71	0.23	1065.73
		6/21/2018	1089.44	21.83	22.09	0.26	1067.35
		7/26/2018	1089.44	20.11	20.24	0.13	1069.20
		8/23/2018	1089.44	--	17.25	--	1072.19
		9/25/2018	1089.44	--	15.15	--	1074.29
		10/29/2018	1089.44	--	16.15	--	1073.29
		11/30/2018	1089.44	--	16.64	--	1072.80
		1/30/2019	1089.44	20.56	20.71	0.15	1068.73
		2/28/2019	1089.44	21.57	21.73	0.16	1067.71
		3/19/2019	1089.44	21.98	22.22	0.24	1067.22
		4/25/2019	1089.44	22.08	22.23	0.15	1067.21
		5/29/2019	1089.44	20.84	20.86	0.02	1068.58
MW-3	14-24	5/10/2016	1089.15	18.80	23.50	4.70	1069.41
		10/5/2016	1089.15	17.15	22.74	5.59	1070.88
		10/20/2016	1089.15	17.11	22.46	5.35	1070.97
		11/2/2016	1089.15	18.06	20.86	2.80	1070.53
		12/13/2016	1089.15	18.82	23.73	4.91	1069.35
		1/20/2017	1089.15	20.41	24.12	3.71	1068.00
		2/2/2017	1089.15	20.90	24.01	3.11	1067.63
		3/21/2017	1089.15	19.70	23.74	4.04	1068.64
		4/4/2017	1089.15	19.68	23.18	3.50	1068.77
		4/20/2017	1089.15	19.05	22.93	3.88	1069.32
		5/8/2017	1089.15	18.32	22.60	4.28	1069.97
		5/25/2017	1089.15	17.89	22.25	4.36	1070.39
		6/9/2017	1089.15	17.94	20.81	2.87	1070.64
		4/12/2018	1089.15	23.56	24.30	0.74	1065.44
		6/21/2018	1089.15	21.57	22.88	1.31	1067.32
		7/26/2018	1089.15	20.22	20.35	0.13	1068.90
		8/23/2018	1089.15	--	18.63	--	1070.52
		9/25/2018	1089.15	15.98	16.03	0.05	1073.16
		10/29/2018	1089.15	17.05	17.30	0.25	1072.05
		11/30/2018	1089.15	18.57	18.99	0.42	1070.50
		12/20/2018	1089.15	19.18	20.03	0.85	1069.80
		1/30/2019	1089.15	20.73	22.02	1.29	1068.16
		2/28/2019	1089.15	21.69	22.25	0.56	1067.35
		3/19/2019	1089.15	22.14	22.53	0.39	1066.93
		4/25/2019	1089.15	22.21	22.51	0.30	1066.88
		5/29/2019	1089.15	20.73	21.94	1.21	1068.18

TABLE 2
GROUNDWATER ELEVATION DATA
Coleman Oil: 1 East I St., Yakima, WA
PBS Project No. 41392.000

Well ID	Well Screen Interval (ft bgs)	Date	TOC Elevation (ft)	Depth to Product (ft btoc)	Depth to Water (ft btoc)	NAPL Thickness (ft)	Potentiometric Groundwater Elevation (ft amsl)
MW-4	15-25	12/13/2016	1088.85	--	18.09	--	1070.76
		2/2/2017	1088.85	20.00	20.31	0.31	1068.79
		3/21/2017	1088.85	19.28	19.31	0.03	1069.57
		4/4/2017	1088.85	19.14	19.20	0.06	1069.70
		4/20/2017	1088.85	18.55	18.62	0.07	1070.29
		5/8/2017	1088.85	--	17.62	--	1071.23
		5/25/2017	1088.85	--	17.22	--	1071.63
		6/9/2017	1088.85	--	17.19	--	1071.66
		4/12/2018	1088.85	22.43	22.73	0.30	1066.36
		6/21/2018	1088.85	--	21.27	--	1067.58
		7/26/2018	1088.85	--	19.68	--	1069.17
		8/23/2018	1088.85	--	18.23	--	1070.62
		9/25/2018	1088.85	14.54	14.56	0.02	1074.31
		10/29/2018	1088.85	--	16.15	--	1072.70
		11/30/2018	1088.85	17.18	17.23	0.05	1071.66
		1/30/2019	1088.85	19.71	19.90	0.19	1069.10
		2/28/2019	1088.85	20.63	20.87	0.24	1068.17
		3/19/2019	1088.85	21.03	21.28	0.25	1067.77
		4/25/2019	1088.85	21.22	21.34	0.12	1067.61
		5/29/2019	1088.85	20.18	20.20	0.02	1068.67
MW-5	15-25	12/13/2016	1090.01	19.73	20.30	0.57	1070.17
		3/21/2017	1090.01	20.31	21.05	0.74	1069.56
		4/4/2017	1090.01	20.36	21.22	0.86	1069.48
		4/20/2017	1090.01	20.02	20.20	0.18	1069.95
		5/8/2017	1090.01	19.33	19.80	0.47	1070.59
		5/25/2017	1090.01	18.85	19.60	0.75	1071.01
		6/9/2017	1090.01	18.88	19.54	0.66	1071.00
		4/12/2018	1090.01	23.62	24.13	0.51	1066.29
		6/21/2018	1090.01	22.86	23.38	0.52	1067.05
		7/26/2018	1090.01	--	23.34	--	1066.67
		8/23/2018	1090.01	--	18.94	--	1071.07
		9/25/2018	1090.01	16.32	16.39	0.07	1073.68
		10/28/2018	1090.01	17.34	17.59	0.25	1072.62
		11/30/2018	1090.01	18.76	19.02	0.26	1071.20
		1/30/2019	1090.01	20.96	21.30	0.34	1068.98
		2/28/2019	1090.01	Unable to locate well due to deep snow drift			
		3/19/2019	1090.01	22.09	22.36	0.27	1067.87
		4/25/2019	1090.01	22.33	22.59	0.26	1067.628
		5/29/2019	1090.01	--	21.76	--	1068.25

TABLE 2
GROUNDWATER ELEVATION DATA
Coleman Oil: 1 East I St., Yakima, WA
PBS Project No. 41392.000

Well ID	Well Screen Interval (ft bgs)	Date	TOC Elevation (ft)	Depth to Product (ft btoc)	Depth to Water (ft btoc)	NAPL Thickness (ft)	Potentiometric Groundwater Elevation (ft amsl)
MW-6	15-25	12/13/2016	1089.21	--	17.40	--	1071.81
		3/21/2017	1089.21	--	18.25	--	1070.97
		4/4/2017	1089.21	--	18.00	--	1071.21
		4/20/2017	1089.21	--	17.39	--	1071.82
		5/8/2017	1089.21	--	16.82	--	1072.39
		5/25/2017	1089.21	--	16.59	--	1072.62
		6/9/2017	1089.21	--	16.61	--	1072.60
		4/12/2018	NA*	21.50	21.55	0.05	NA*
		6/21/2018	NA*	20.27	20.39	0.12	NA*
		7/26/2018	NA*	--	18.98	--	NA*
		8/23/2018	NA*	--	16.86	--	NA*
		9/25/2018	NA*	--	14.81	--	NA*
		10/29/2018	NA*	--	15.73	--	NA*
		11/30/2019	NA*	--	16.74	--	NA*
		1/30/2019	NA*	--	18.77	--	NA*
		2/28/2019	NA*	--	19.69	--	NA*
		3/19/2019	NA*	19.97	20.00	0.03	NA*
		4/25/2019	NA*	20.20	20.25	0.05	NA*
		5/29/2019	NA*	--	19.39	--	NA*
MW-8	15-30	1/30/2019	NA*	20.25	20.86	0.61	NA*
		2/28/2019	NA*	21.06	21.89	0.83	NA*
		3/19/2019	NA*	21.39	22.44	1.05	NA*
		4/25/2019	NA*	21.50	22.25	0.75	NA*
		5/29/2019	NA*	20.33	21.19	0.86	NA*
MW-9	15-30	1/30/2019	NA*	--	21.08	--	NA*
		2/28/2019	NA*	--	22.03	--	NA*
		3/19/2019	NA*	--	22.45	--	NA*
		4/25/2019	NA*	--	22.44	--	NA*
		5/29/2019	NA*	--	20.85	--	NA*
MW-10	15-30	1/30/2019	NA*	--	19.21	--	NA*
		2/28/2019	NA*	--	20.07	--	NA*
		3/19/2019	NA*	--	20.45	--	NA*
		4/25/2019	NA*	--	20.48	--	NA*
		5/29/2019	NA*	--	19.20	--	NA*

Notes:
-- = no product measured in the well
NA* = TOC and/or groundwater elevation not known due to broken well casing or not surveyed

Abbreviations & Acronyms:
ft = feet
btoc = below top of casing
amsl = above mean sea level
napl = non-aqueous phase liquid

[a] POT_ELEV = TOC_ELEV - [DTW - (PTH * PD)] where:
POT_ELEV = potentiometric surface elevation
TOC_ELEV = top of casing elevation
DTW = depth to water
PTH = product thickness
PD = product density (0.8)

TABLE 3
GROUNDWATER ANALYTICAL RESULTS
Coleman Oil: 1 East I St., Yakima, WA
PBS Project No. 41392.000

Results in ug/L

Location/ Depth	Sample Date	TPHs			VOCs[c]								SVOCs[d]			Metals[e]
		Gx[a]	Dx[b]	Oil[b]	Benzene	Toluene	Ethyl Benzene	Xylenes	MTBE	EDC	EDB	Hexane	B(a)P	Naph	cPAHs[f]	Lead
RW1	May 9, 2016	**Not sampled due to the presence of LNAPL: 4.26 feet thickness**														
	December 13, 2016	**Not sampled due to the presence of LNAPL: 0.25 feet thickness**														
	June 9, 2017	**Not sampled due to the presence of LNAPL: 1.48 feet thickness**														
	03/19/19	**Not sampled due to the presence of LNAPL: 2.12 feet thickness**														
MW1	May 9, 2016	**4,300**	**12,000**	**1,100**	**49**	78	89	440	-	-	-	-	<1.2*	56	<1.2*	<1.2*
	December 13, 2016	**Not sampled due to the presence of LNAPL: 1.14 feet thickness**														
	June 9, 2017	**Not sampled due to the presence of LNAPL: 0.16 feet thickness**														
	03/19/19	**Not sampled due to the presence of LNAPL: 0.18 feet thickness**														
MW2	May 9, 2016	420	**1,300**	250	<1	<1	1.1	<3	-	-	-	-	-	-	-	-
	December 13, 2016	**Not sampled due to the presence of LNAPL - 8.39 feet thickness**														
	June 9, 2017	**83,000**	-	-	**2,900**	**9,900**	**1,000**	**5,900**	<1	<1	<1	140	-	-	-	-
	03/19/19	**Not sampled due to the presence of LNAPL: 0.24 feet thickness**														
MW3	May 9, 2016	**Not sampled due to the presence of LNAPL: 4.7 feet thickness**														
	December 13, 2016	**Not sampled due to the presence of LNAPL: 4.91 feet thickness**														
	June 9, 2017	**Not sampled due to the presence of LNAPL: 2.87 feet thickness**														
	03/19/19	**Not sampled due to the presence of LNAPL: 0.39 feet thickness**														
MW4	December 13, 2016	**12,000**	**3,200**	460	**500**	<100	130	<300	-	-	-	-	<0.06	160	<0.06	<0.06
	June 9, 2017	**7,600**	**4,300**	**870**	**240**	12	120	<30	<1	<1	<1	12	<0.06	160	<0.06	<1
	03/19/19	**Not sampled due to the presence of LNAPL: 0.25 feet thickness**														
MW5	December 13, 2016	**Not sampled due to the presence of LNAPL: 0.57 feet thickness**														
	June 9, 2017	**Not sampled due to the presence of LNAPL: 0.66 feet thickness**														
	03/19/19	**Not sampled due to the presence of LNAPL: 0.27 feet thickness**														
MW6	December 13, 2016	**13,000**	**3,100**	<250	**110**	<100	130	<300	-	-	-	-	<0.06	**310**	<0.06	<0.06
	June 9, 2017	**7,600**	**3,700**	<400	**140**	100	110	69	<1	<1	<1*	49	<0.06	**250**	<0.06	<1
	03/19/19	**Not sampled due to the presence of LNAPL: 0.03 feet thickness**														
MW8	03/19/19	**Not sampled due to the presence of LNAPL: 0.86 feet thickness**														
MW9	03/19/19	<100	<50	<250	<1	<1	<1	<3	--	--	--	--	--	--	--	--
MW10	03/19/19	<100	<50	<250	<1	<1	<1	<3	--	--	--	--	--	--	--	--
"Grab" groundwater samples from temporary well screen in soil borings																
BH1-W	12.19.18	**7,300**	**87,000**	<2,500	**18**	18	54	97	<1	<1	<1*	--	--	--	--	--
BH2-W	12.19.18	**8,600**	**3,200**	<400	**240**	<20	160	170	<1	<1	<1*	--	--	--	--	--
BH3-W	12.20.18	**8,900**	**100,000**	**2,800**	**89**	47	180	130	<1	<1	<1*	--	--	--	--	--
BH4-W	12.19.18	**3,900**	**3,700**	<400	**200**	<20	<20	<60	<1	<1	<1*	--	--	--	--	--
BH5-W	12.20.18	**27,000**	**4,200**	<320	**1,300**	730	**1,200**	**4,400**	<1	<1	<1*	--	--	--	--	--
BH6-W	12.20.18	**5,100**	**19,000**	390	<5	10	58	78	<1	<1	<1*	--	--	--	--	--
BH7-W	12.20.18	**4,300**	**34,000**	**1,400**	**38**	17	95	81	<1	<1	<1*	--	--	--	--	--
Screening Levels[g]	**MTCA Method A Cleanup Levels For Groundwater**	**800 1,000**	**500**	**500**	**5**	**1,000**	**700**	**1,000**	**20**	**5**	**0.01**	**-**	**0.1**	**160**	**0.1**	**15**

TABLE 3
GROUNDWATER ANALYTICAL RESULTS
Coleman Oil: 1 East I St., Yakima, WA
PBS Project No. 41392.000

Notes:
BOLD indicates concentration exceeding MTCA Method A Cleanup Levels for Groundwater
<## - not detected at or above given laboratory reporting limit
* - Detection limit exceeded the MTCA Method A value

Abbreviations & Acronyms:
TPH - total petroleum hydrocarbons
Gx - gasoline range hydrocarbons
Dx - diesel range hydrocarbons
VOCs - volatile organic compounds
MTBE - methyl tert-butyl ether
EDC - 1,2 dichloroethane
EDB - ethylene dibromide
SVOCs - semi-volatile organic compounds
B(a)P - benzo(a)pyrene
Naph - total naphthalenes (naphthalene+ 1-methyl naphthalene + 2-methyl naphthalene)
cPAHs - carcinogenic polycyclic aromatic hydrocarbons
LNAPL - light, non-aqueous phase liquid

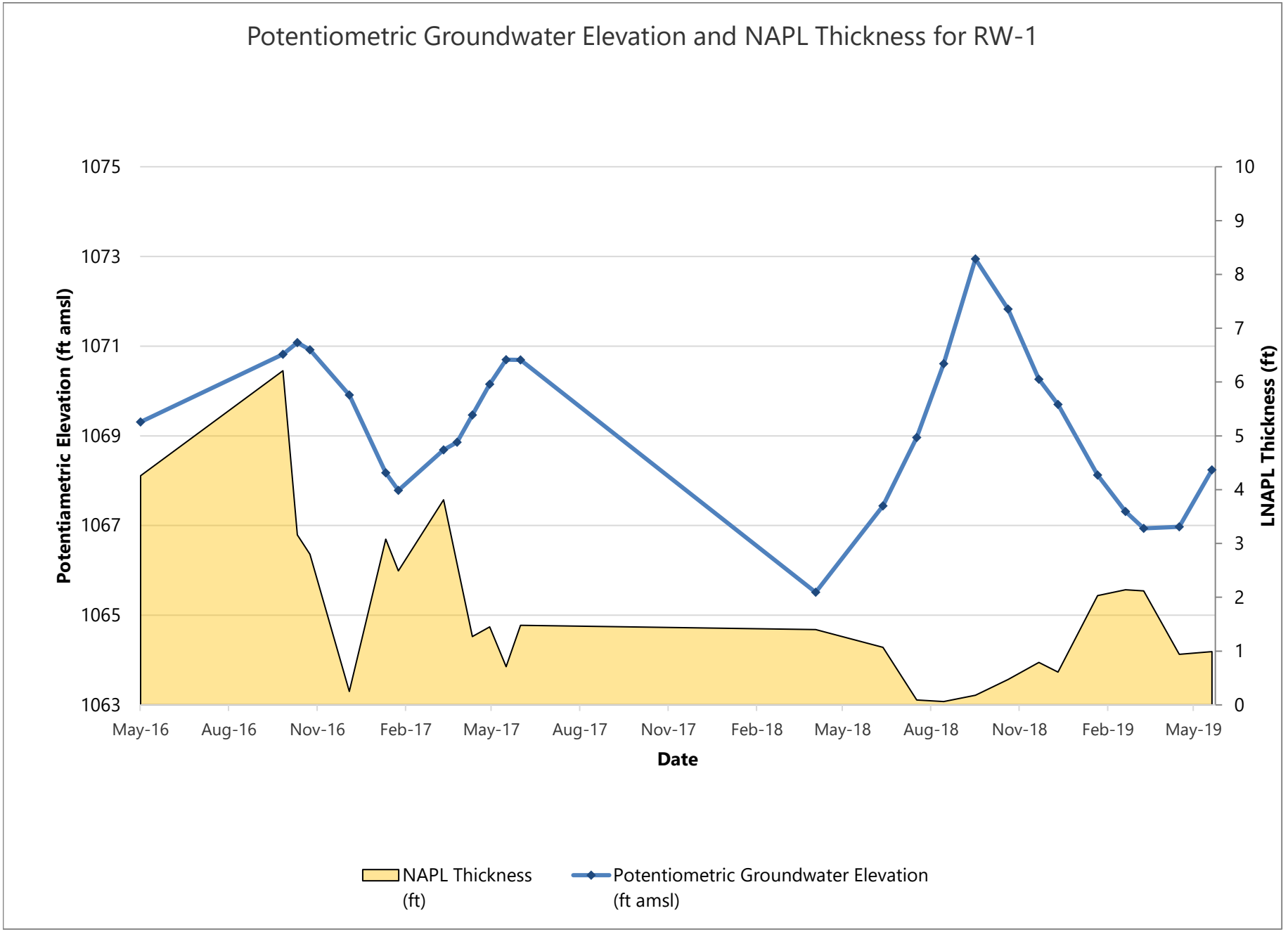
Footnotes:
[a] Analyzed by Northwest Total Petroleum Hydrocarbon Method - Volatile Petroleum Products (Extended) (NWTPH-Gx)
[b] Analyzed by Northwest Total Petroleum Hydrocarbon Method - Semi-volatile Petroleum Products (Extended) (NWTPH-Dx) with silica gel treatment
[c] Analyzed by Environmental Protection Agency Method 8021B (BTEX only) and 8260C
[d] Analyzed by Environmental Protection Agency Method 8270D SIM
[e] Analyzed by Environmental Protection Agency Method 6020A
[f] Value for total cPAHs by toxicity equivalency methodology in WAC 173-340-708(8) and table 708.2
[g] From Model Toxics Control Act Table 720-1 Soil Cleanup Levels for Unrestricted Land Use

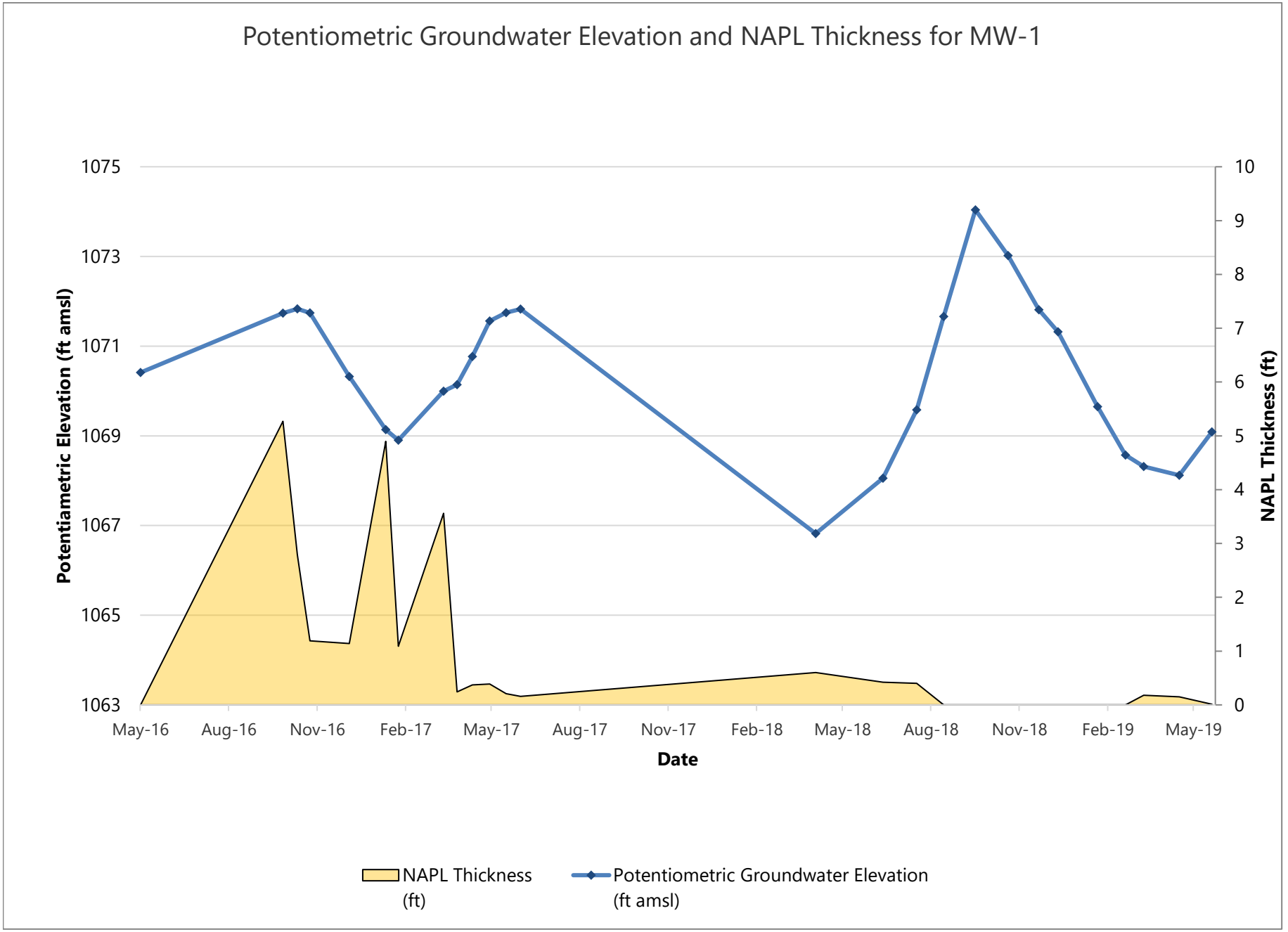
TABLE 4
NAPL CHARACTERISTICS
Coleman Oil: 1 East I St., Yakima, WA
PBS Project No. 41392.000

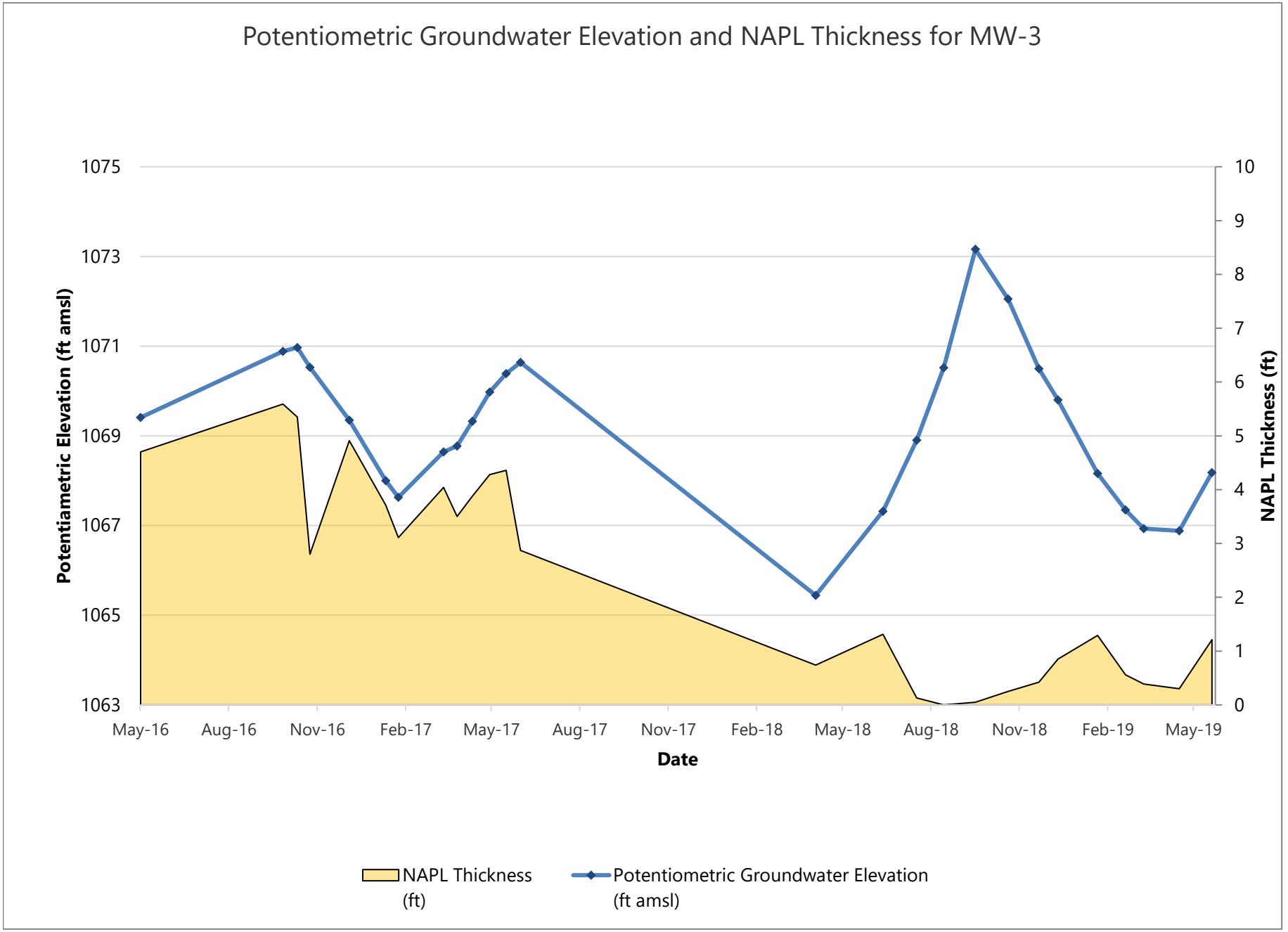
Sample	Location Description	Sample Color	Approximate % Gasoline	Approximate % Diesel	Gasoline Degree of Weathering	Diesel Degree of Weathering	Specific Gravity	Viscosity[b] (cSt)
Product Sampling: March 19, 2019[a]								
RW1	Adjacent to point of diesel release	Amber	50	50	Weathered	Mixed	0.817	2.28
MW2	Between point of diesel release and line of gasoline release	Amber	20	80	Weathered	Fresh	0.786	--
MW3	Approximately 15 feet downgradient of point of diesel release	Amber	10	90	Weathered	Mixed	0.810	2.21
MW4	Approximately 25 feet east of line of gasoline release	Black	<10	100	NA	Weathered	0.830	--
MW5	West of the release between the office building and the railroad	Black	50	50	Weathered	Weathered	0.828	--
MW8	Approximately 15 feet east of northernmost extent of line of gasoline release	Black	<10	100	NA	Weathered	0.841	3.82

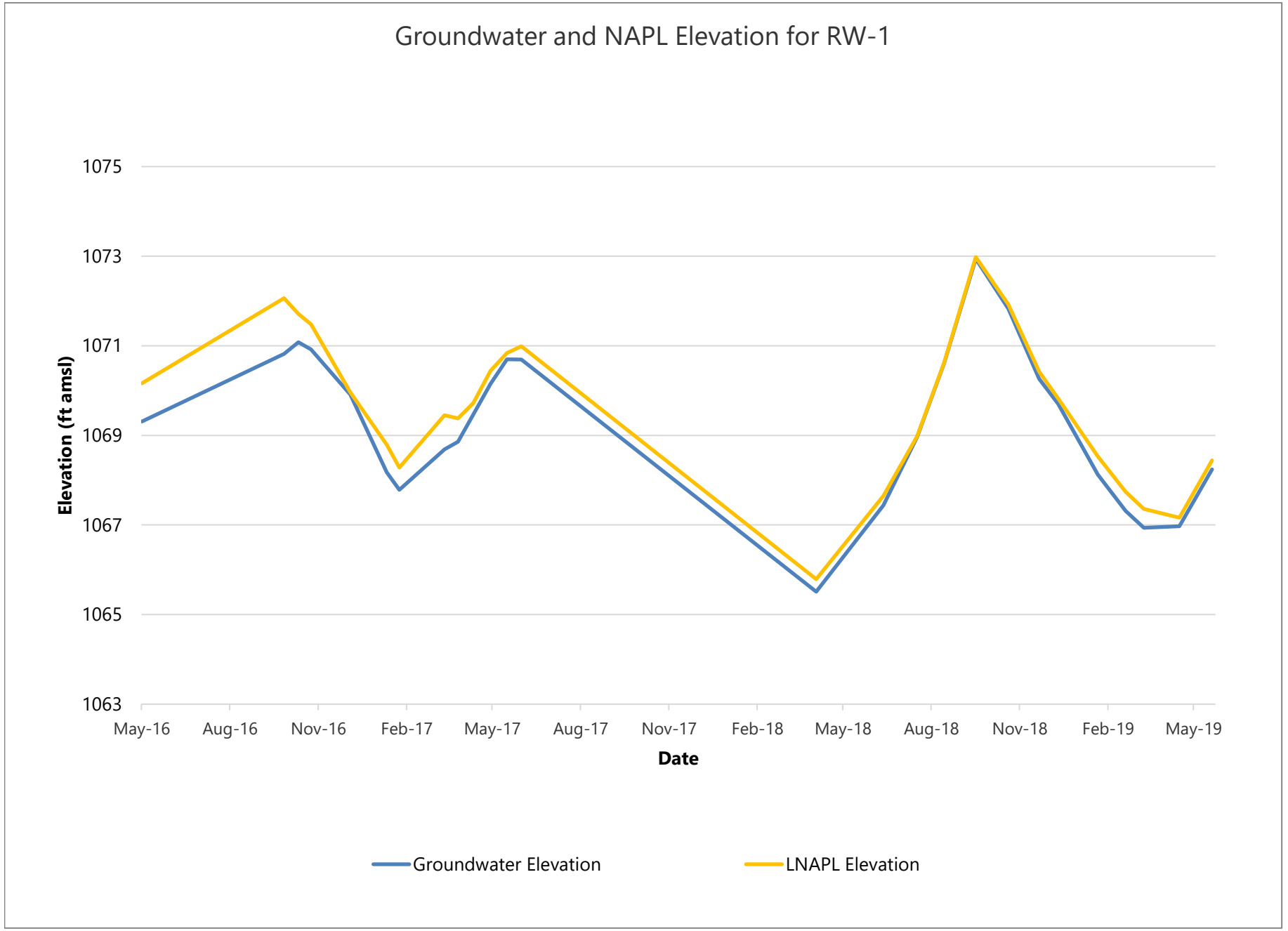
Abbreviations & Acronyms:
cSt - centistokes

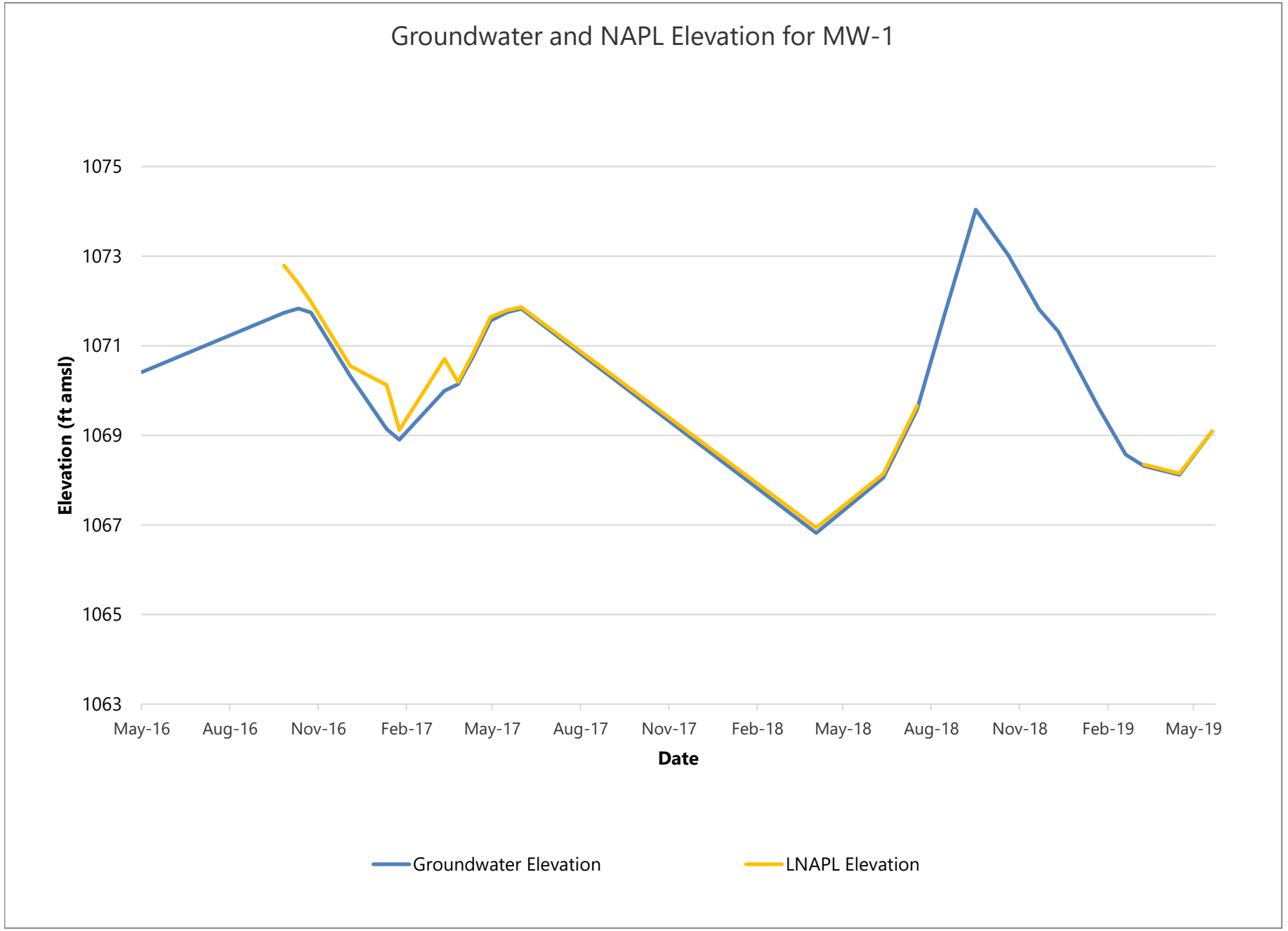
Footnotes:
[a] Analyzed by Northwest Total Petroleum Hydrocarbon Method - Semi-volatile Petroleum Products (Extended) (NWTPH-Dx). Chromatograms interpreted by analytical laboratory (Friedman & Bruya, Inc.) for component percentages and weathering.

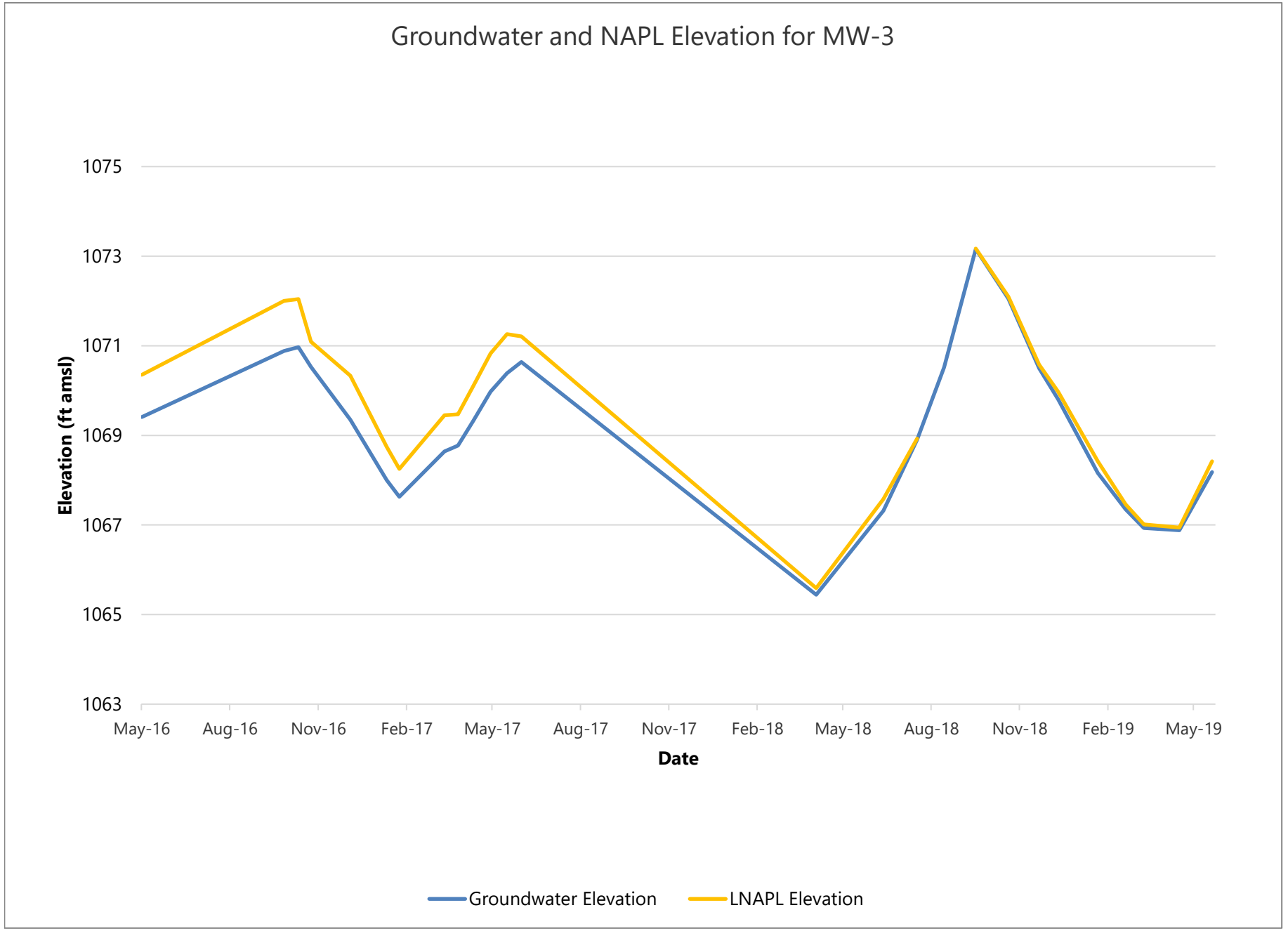

Potentiometric Groundwater Elevation and NAPL Thickness for RW-1
Potentiametric Elevation (ft amsl)
LNAPL Thickness (ft)
1075
1073
1071
1069
1067
1065
1063
10
9
8
7
6
5
4
3
2
1
0
May-16
Aug-16
Nov-16
Feb-17
May-17
Aug-17
Nov-17
Feb-18
May-18
Aug-18
Nov-18
Feb-19
May-19
Date
NAPL Thickness (ft)
Potentiometric Groundwater Elevation (ft amsl)


Potentiometric Groundwater Elevation and NAPL Thickness for MW-1
Potentiametric Elevation (ft amsl)
NAPL Thickness (ft)
1075
1073
1071
1069
1067
1065
1063
10
9
8
7
6
5
4
3
2
1
0
May-16
Aug-16
Nov-16
Feb-17
May-17
Aug-17
Nov-17
Feb-18
May-18
Aug-18
Nov-18
Feb-19
May-19
Date
NAPL Thickness (ft)
Potentiometric Groundwater Elevation (ft amsl)


Potentiometric Groundwater Elevation and NAPL Thickness for MW-3
Potentiametric Elevation (ft amsl)
1075
1073
1071
1069
1067
1065
1063
NAPL Thickness (ft)
10
9
8
7
6
5
4
3
2
1
0
May-16
Aug-16
Nov-16
Feb-17
May-17
Aug-17
Nov-17
Feb-18
May-18
Aug-18
Nov-18
Feb-19
May-19
Date
NAPL Thickness (ft)
Potentiometric Groundwater Elevation (ft amsl)


Groundwater and NAPL Elevation for RW-1
1075
1073
1071
1069
1067
1065
1063
Elevation (ft amsl)
May-16
Aug-16
Nov-16
Feb-17
May-17
Aug-17
Nov-17
Feb-18
May-18
Aug-18
Nov-18
Feb-19
May-19
Date
Groundwater Elevation
LNAPL Elevation


Groundwater and NAPL Elevation for MW-1
1075
1073
1071
1069
1067
1065
1063
Elevation (ft amsl)
May-16
Aug-16
Nov-16
Feb-17
May-17
Aug-17
Nov-17
Feb-18
May-18
Aug-18
Nov-18
Feb-19
May-19
Date
Groundwater Elevation
LNAPL Elevation


Groundwater and NAPL Elevation for MW-3
1075
1073
1071
1069
1067
1065
1063
Elevation (ft amsl)
May-16
Aug-16
Nov-16
Feb-17
May-17
Aug-17
Nov-17
Feb-18
May-18
Aug-18
Nov-18
Feb-19
May-19
Date
Groundwater Elevation
LNAPL Elevation

PBS

COLEMAN OIL
1 E. I STREET
YAKIMA, WASHINGTON

PBS PROJECT NUMBER:
41392.000

BORING VB-1

BORING VB-1 LOCATION:
(See Figure 2)

DEPTH FEET	GRAPHIC LOG	MATERIAL DESCRIPTION	GROUND-WATER	PID (PPM)	SAMPLE NUMBER	SAMPLE/ TEMPORARY WELL(S)	RECOVERY (%)	COMMENTS/ WELL INSTALLATION
0.0		GRAVEL with sand (GP); dark gray; fine to coarse sand; subangular fine gravel; moist; [Fill].						5 inch diameter flush mount well box
1.0								
2.0								
							20	
3.0								hydrated bentonite seal 1/4 inch polyethylene tubing 1.5 - 6 feet
4.0								
				0.0				
5.0								
6.0								expendable vapor tip screened 6 - 6.5 feet
							33	
7.0				0.0				sand filter pack 5 - 8 feet
				2.6				
8.0				0.0				
9.0								
10.0								

BORING METHOD: Direct Push
DRILLED BY: Holt Services
BORING BIT DIAMETER: 2¼-inch

LOGGED BY: P. Brice
COMPLETED: 12/19/18

BORING LOG-ENV CORE 41392.000 VB-1.GPJ DATATMPL.GDT PRINT DATE: 6/14/19 JW

COLEMAN OIL
1 E. I STREET
YAKIMA, WASHINGTON

PBS PROJECT NUMBER:
41392.000

BORING BH01

BORING BH01 LOCATION:
(See Figure 2)

DEPTH FEET	MATERIAL DESCRIPTION	PID (PPM)	SAMPLE NUMBER	RECOVERY (%)	COMMENTS/ WELL INSTALLATION
0.0	Coarse rock chips				
	Sandy SILT with gravel (ML); reddish brown; no plasticity; fine sand; fine gravel; damp.	2.2			
2.0		8.0	BH1-2		
4.0		1.7		100	
6.0	Well graded SAND with gravel and trace cobbles (SW); light gray; fine to coarse sand; fine to coarse subrounded gravel; damp.	1.8			
8.0		0.5			
10.0	Silty SAND with gravel (SM); tan brown; fine to coarse sand; fine to coarse subrounded gravel; damp; fining upwards sequence.	0.6			
12.0		1.0	BH1-12		
	Poorly graded SAND with gravel (SP); Red brown; coarse sand; coarse subrounded gravel; damp.	0.9		100	
14.0					
16.0		0.4			
	color change to gray; transition from damp to moist	262			Petroleum odor
18.0		2.0			
20.0					
	transition moist to wet	403			weathered petroleum odor
22.0				100	
	weathered fuel odor 21-25 feet	177			petroleum odor
24.0		1.6			weatered petroleum odor; sheen observed on groundwater sample
26.0					
28.0					
30.0					

BORING METHOD: Sonic Drilling
DRILLED BY: Holt Services
BORING BIT DIAMETER: 4-inch

LOGGED BY: P. Brice
COMPLETED: 12/19/18

BORING LOG-ENV CORE 41392.000 BH1-BH13.GPJ DATATMPL.GDT PRINT DATE: 6/14/19 JW

PBS

COLEMAN OIL
1 E. I STREET
YAKIMA, WASHINGTON

PBS PROJECT NUMBER:
41392.000

BORING BH02

BORING BH02 LOCATION:
(See Figure 2)

DEPTH FEET	MATERIAL DESCRIPTION	GROUND-WATER	PID (PPM)	SAMPLE NUMBER	SAMPLE/ TEMPORARY WELL(S)	RECOVERY (%)	COMMENTS/ WELL INSTALLATION
0.0	SAND with gravel (SP); tan; coarse sand; fine subrounded gravel; moist; [Fill].						
	Sandy SILT with gravel (ML); reddish brown; no plasticity; fine sand; fine gravel; damp.		1.0	BH2-2	■		
2.0			0.4				
4.0						100	
6.0	Well graded SAND with gravel and trace cobbles (SW); light gray; fine to coarse sand; fine to coarse subrounded gravel; damp.		0.6				
8.0			0.4				
10.0	Silty SAND with gravel (SM); tan gray; trace cobbles; fine to coarse sand; coarse subrounded gravel; damp; fining upwards sequence.		10.4			—	
12.0			0.7				
	Poorly graded SAND with gravel (SP); tan gray; medium to coarse sand; coarse subrounded gravel, moist.			BH2-14	■		
14.0						100	
16.0	petroleum odor at 16 feet		758				Petroleum odor
18.0	transition from moist to wet						
	strong petroleum odor at 19 feet						Strong petroleum odor
20.0			493			—	
			1.5				
22.0						100	
	weathered petroleum odor 21-25 feet						weathered petroleum odor 20 - 25 feet
24.0			1.5				
			1.4			—	
26.0							
28.0							
30.0							

BORING METHOD: Sonic Drilling
DRILLED BY: Holt Services
BORING BIT DIAMETER: 4-inch

LOGGED BY: P. Brice
COMPLETED: 12/19/18

BORING LOG-ENV CORE 41392.000 BH1-BH13.GPJ DATATMPL.GDT PRINT DATE: 6/14/19 JW

COLEMAN OIL
1 E. I STREET
YAKIMA, WASHINGTON

PBS PROJECT NUMBER:
41392.000

BORING BH03

BORING BH03 LOCATION:
(See Figure 2)

DEPTH FEET	MATERIAL DESCRIPTION	PID (PPM)	SAMPLE NUMBER	RECOVERY (%)	COMMENTS/ WELL INSTALLATION
0.0	Asphalt and road base				
	Sandy SILT with gravel (ML); medium stiff; reddish brown; no plasticity; fine sand; fine subrounded gravel; moist.	0.5			
2.0		0.3	BH3-2		
4.0				100	
	Well graded SAND with gravel (SW); brown/tan; fine to coarse sand; coarse subangular gravel; moist.	0.5			
6.0	color change to reddish brown; transition from subangular to subrounded gravel.				
8.0		0.3			
	transition from moist to dry				
10.0	Silty SAND with gravel and cobbles (SM); light gray; medium to coarse sand; coarse subrounded gravel; damp; fining upwards sequence.	0.3			
12.0		0.6			
	Poorly graded SAND with gravel and trace cobbles (SP); gray; medium to coarse sand; coarse subrounded gravel; moist.	0.3	BH3-14		
14.0				100	
16.0	transition from moist to wet	0.7			
18.0		236			petroleum odor
20.0		506			strong petroleum odor
22.0		1668		100	
		59			
24.0	increased percentage cobbles				sheen observed on groundwater sample
26.0					
28.0					
30.0					

BORING METHOD: Sonic Drilling
DRILLED BY: Holt Services
BORING BIT DIAMETER: 4-inch

LOGGED BY: P. Brice
COMPLETED: 12/20/18

BORING LOG-ENV CORE 41392.000 BH1-BH13.GPJ DATATMPL.GDT PRINT DATE: 6/14/19 JW

PBS

COLEMAN OIL
1 E. I STREET
YAKIMA, WASHINGTON

PBS PROJECT NUMBER:
41392.000

BORING BH04

BORING BH04 LOCATION:
(See Figure 2)

DEPTH FEET	MATERIAL DESCRIPTION	PID (PPM)	SAMPLE NUMBER	RECOVERY (%)	COMMENTS/ WELL INSTALLATION
0.0	Coarse rock chips. [Fill]				
2.0	Sandy SILT with gravel (ML); reddish brown; no plasticity; medium stiff; fine sand; fine subrounded gravel; damp.		BH4-2		
4.0		0.1		100	
6.0	Well graded SAND with gravel and cobbles (SW); reddish brown; fine to coarse sand; fine to coarse subrounded gravel; moist.	0.5			
8.0		0.2			
10.0	Silty SAND with gravel (SM); tan gray; fine to coarse sand; coarse subrounded gravel; trace cobbles; damp; fining upwards sequence.	0.1			
12.0		1.6	BH4-12		
14.0	Poorly graded SAND with gravel and cobbles (SP); reddish brown; fine to coarse sand; coarse subrounded gravel; moist.	1.0		100	
16.0		451			strong petroleum odor
18.0		498			strong petroleum odor
20.0	strong petroleum odor 16 to 23 feet	520			
22.0	transitions from moist to wet at 22 feet	287		100	strong petroleum odor
24.0		56			
		1.6			sheen observed on groundwater sample
26.0					
28.0					
30.0					

BORING METHOD: Sonic Drilling
DRILLED BY: Holt Services
BORING BIT DIAMETER: 4-inch

LOGGED BY: P. Brice
COMPLETED: 12/19/18

BORING LOG-ENV CORE 41392.000 BH1-BH13.GPJ DATATMPL.GDT PRINT DATE: 6/14/19 JW

PBS

COLEMAN OIL
1 E. I STREET
YAKIMA, WASHINGTON

PBS PROJECT NUMBER:
41392.000

BORING BH05

BORING BH05 LOCATION:
(See Figure 2)

DEPTH FEET	MATERIAL DESCRIPTION	PID (PPM)	SAMPLE NUMBER	RECOVERY (%)	COMMENTS/ WELL INSTALLATION
0.0	Asphalt and road base				
	Sandy SILT with gravel (ML); medium stiff; reddish brown; no plasticity; fine sand; fine subrounded gravel; damp.	0.3	BH5-2		
4.0	Well graded SAND with gravel (SW); brown/tan; fine to coarse sand;fine to coarse subrounded gravel; dry.	0.2		100	
6.0	Silty SAND with gravel and cobbles (SM); brown/tan; fine to coarse sand; fine to coarse subrounded gravel; damp.	0.4			
8.0	Well graded SAND with gravel and cobbles (SW); brown gray; fine to coarse sand; fine to coarse subrounded gravel; dry.	0.3			
		0.4			
10.0	Poorly graded SAND with gravel and cobbles (SP); gray tan; medium to coase sand; coarse subangular gravel; damp.				
12.0		0.5	BH5-13		
14.0		0.2		100	
16.0	petroleum odor	4.8			
18.0		148			
		36			
20.0					petroleum odor
	transition from moist to wet at 21 feet	88			
22.0				100	slight petroleum odor
24.0		3.1			
					sheen observed on groundwater sample
26.0					
28.0					
30.0					

BORING METHOD: Sonic Drilling
DRILLED BY: Holt Services
BORING BIT DIAMETER: 4-inch

LOGGED BY: P. Brice
COMPLETED: 12/20/18

BORING LOG-ENV CORE 41392.000 BH1-BH13.GPJ DATATMPL.GDT PRINT DATE: 6/14/19 JW

PBS

COLEMAN OIL
1 E. I STREET
YAKIMA, WASHINGTON

PBS PROJECT NUMBER:
41392.000

BORING BH06

BORING BH06 LOCATION:
(See Figure 2)

DEPTH FEET	GRAPHIC LOG	MATERIAL DESCRIPTION	GROUND-WATER	PID (PPM)	SAMPLE NUMBER	SAMPLE/ TEMPORARY WELL(S)	RECOVERY (%)	COMMENTS/ WELL INSTALLATION
0.0		Asphalt and road base						
		Sandy SILT with gravel (ML); stiff; reddish brown; no plasticity; fine sand; fine to coarse subrounded gravel; moist.		0.2	BH6-2	■		
2.0				0.3				
4.0							100	
6.0				0.2				
		Well graded SAND with gravel and cobbles (SW); gray; fine to coarse sand; fine to coarse subrounded gravel; damp.		0.8				
8.0								
10.0		Silty SAND with gravel and cobbles (SM); brown; fine to coase sand; coarse subrounded gravel; damp; fining upwards sequence.		0.2			—	
12.0								
		Poorly graded SAND with gravel and cobbles (SP); gray brown; medium to coarse sand; coarse subrounded gravel; moist.		0.2	BH6-14	■		
14.0							100	
16.0				1.3				
18.0				0.6				
20.0		transition from moist to wet at 20 feet		2.2			—	strong petroleum odor
22.0							100	
				122				
24.0		petroleum odor		1.4				petroleum odor
							—	
26.0								
28.0								
30.0								

BORING METHOD: Sonic Drilling
DRILLED BY: Holt Services
BORING BIT DIAMETER: 4-inch

LOGGED BY: P. Brice
COMPLETED: 12/20/18

BORING LOG-ENV CORE 41392.000 BH1-BH13.GPJ DATATMPL.GDT PRINT DATE: 6/14/19 JW

PBS

COLEMAN OIL
1 E. I STREET
YAKIMA, WASHINGTON

PBS PROJECT NUMBER:
41392.000

BORING BH07

BORING BH07 LOCATION:
(See Figure 2)

DEPTH FEET	MATERIAL DESCRIPTION	PID (PPM)	SAMPLE NUMBER	RECOVERY (%)	COMMENTS/ WELL INSTALLATION
0.0	Asphalt and road base				
	Sandy SILT with gravel (ML); medium stiff; reddish brown; no plasticity; fine sand; fine subrounded gravel; moist.	0.4	BH7-2		
2.0					
4.0		0.2			
	fine to coarse gravel from 3 to 8 feet	0.2		100	
6.0		0.2			
		0.4			
8.0	Well graded Sand with gravel (SW); brown gray; fine to coarse sand; fine to coarse subrounded gravel; moist.	0.2			
		0.2			
10.0	Silty SAND with gravel and cobbles (SM); brown gray; fine to coarse sand; coarse subrounded gravel; moist; fining upwards sequence.				
12.0		0.4			
	cobbles from 10 to 15 feet		BH7-13		
	Poorly graded SAND with gravel and cobbles (SP); reddish brown; medium to coarse sand; coarse subrounded gravel; moist.	1.2			
14.0				100	
16.0		2.3			
					weathered petroleum odor
18.0	transition from moist to wet at 18 feet	383			strong petroleum odor
20.0		927			
22.0		225		100	
24.0		2.3			
					thick sheen and strong petroleum odor observed on groundwater sample
26.0					
28.0					
30.0					

BORING METHOD: Sonic Drilling
DRILLED BY: Holt Services
BORING BIT DIAMETER: 4-inch

LOGGED BY: P. Brice
COMPLETED: 12/20/18

BORING LOG-ENV CORE 41392.000 BH1-BH13.GPJ DATATMPL.GDT PRINT DATE: 6/14/19 JW

COLEMAN OIL
1 E. I STREET
YAKIMA, WASHINGTON

PBS PROJECT NUMBER:
41392.000

BORING BH08

BORING BH08 LOCATION:
(See Figure 2)

DEPTH FEET	GRAPHIC LOG	MATERIAL DESCRIPTION	GROUND-WATER	PID (PPM)	SAMPLE NUMBER	SAMPLE/ TEMPORARY WELL(S)	RECOVERY (%)	COMMENTS/ WELL INSTALLATION
0.0		Asphalt.						
		Gravel fill.						
2.0							60	
		Sandy SILT with gravel (ML); brown; fine sand; fine subangular gravel; moist.						
4.0				0.0	BH8-4			
		Well sorted SAND with gravel (SW); brown gray; fine to coarse sand; coarse subrounded gravel; damp.						
6.0				0.0				
							100	
8.0				0.0				
10.0		Silty SAND with gravel and cobbles (SM); brown gray; fine to coarse sand; coarse subrounded gravel; damp; fining upwards sequence.						
12.0				0.1	BH8-12		100	
		Poorly sorted SAND with gravel (SP); brown gray; coarse sand; coarse subrounded gravel; damp.						
14.0								
16.0								
18.0								
20.0								

BORING METHOD: Direct Push
DRILLED BY: Holt Services
BORING BIT DIAMETER: 2¼-inch OD

LOGGED BY: P. Brice
COMPLETED: 6/04/19

PBS

COLEMAN OIL
1 E. I STREET
YAKIMA, WASHINGTON

PBS PROJECT NUMBER:
41392.000

BORING BH09

BORING BH09 LOCATION:
(See Figure 2)

DEPTH FEET	GRAPHIC LOG	MATERIAL DESCRIPTION	GROUND-WATER	PID (PPM)	SAMPLE NUMBER	SAMPLE/ TEMPORARY WELL(S)	RECOVERY (%)	COMMENTS/ WELL INSTALLATION
0.0		Asphalt and road base						
		Sandy SILT with gravel (ML); stiff; no plasticity; fine sand; fine subrounded gravel; moist.		0.0			60	
2.0								
4.0		Well graded SAND with gravel (SW); gray brown; fine to coarse sand; fine to coarse subrounded gravel; damp.		0.0	BH9-4			
6.0		transition from fine to coarse subrounded gravel to coarse subangular gravel		0.0			100	
8.0				0.0	BH9-8			
10.0				0.0				
12.0								
14.0								

BORING METHOD: Direct Push
DRILLED BY: Holt Services
BORING BIT DIAMETER: 2¼-inch OD

LOGGED BY: P. Brice
COMPLETED: 6/04/19

BORING LOG-ENV CORE 41392.000 BH1-BH13.GPJ DATATMPL.GDT PRINT DATE: 6/14/19 JW

COLEMAN OIL
1 E. I STREET
YAKIMA, WASHINGTON

PBS PROJECT NUMBER:
41392.000

BORING BH10

BORING BH10 LOCATION:
(See Figure 2)

DEPTH FEET	GRAPHIC LOG	MATERIAL DESCRIPTION	GROUND-WATER	PID (PPM)	SAMPLE NUMBER	SAMPLE/ TEMPORARY WELL(S)	RECOVERY (%)	COMMENTS/ WELL INSTALLATION
0.0		Asphalt and road base						
1.0		Sandy SILT with gravel (ML); stiff; no plasticity; brown; fine sand; coarse subrounded gravel; moist.		0.0				
2.0							60	
3.0								
4.0		Well graded SAND with gravel (SW); gray brown; fine to coarse sand; fine to coarse subangular to subrounded gravel; damp.		0.0	BH10-4			
5.0				0.0				
6.0					BH10-6		100	
7.0								
8.0								
9.0								
10.0								

BORING METHOD: Direct Push
DRILLED BY: Holt Services
BORING BIT DIAMETER: 2¼-inch OD

LOGGED BY: P. Brice
COMPLETED: 6/04/19

BORING LOG-ENV CORE 41392.000 BH1-BH13.GPJ DATATMPL.GDT PRINT DATE: 6/14/19 JW

PBS

COLEMAN OIL
1 E. I STREET
YAKIMA, WASHINGTON

PBS PROJECT NUMBER:
41392.000

BORING BH11

BORING BH11 LOCATION:
(See Figure 2)

DEPTH FEET	GRAPHIC LOG	MATERIAL DESCRIPTION	GROUND-WATER	PID (PPM)	SAMPLE NUMBER	SAMPLE/ TEMPORARY WELL(S)	RECOVERY (%)	COMMENTS/ WELL INSTALLATION
0.0		Asphalt and road base						
		Sandy SILT with gravel (ML); stiff; no plasticity; brown; fine sand; fine subangular gravel; moist.						
2.0				0.0			60	
4.0				0.0	BH11-4			
		Well graded SAND with gravel (SW); gray brown; fine to coarse sand; coarse subangular to subrounded gravel; damp.						
6.0				0.0				
							100	
8.0				0.0	BH11-8			
10.0				0.0				
12.0								
14.0								

BORING METHOD: Direct Push
DRILLED BY: Holt Services
BORING BIT DIAMETER: 2¼-inch OD

LOGGED BY: P. Brice
COMPLETED: 6/04/19

BORING LOG-ENV CORE 41392.000 BH1-BH13.GPJ DATATMPL.GDT PRINT DATE: 6/14/19 JW

COLEMAN OIL
1 E. I STREET
YAKIMA, WASHINGTON

PBS PROJECT NUMBER:
41392.000

BORING BH12

BORING BH12 LOCATION:
(See Figure 2)

DEPTH FEET	GRAPHIC LOG	MATERIAL DESCRIPTION	GROUND-WATER	PID (PPM)	SAMPLE NUMBER	SAMPLE/ TEMPORARY WELL(S)	RECOVERY (%)	COMMENTS/ WELL INSTALLATION
0.0		Asphalt.						
		Sandy SILT with gravel (ML); stiff; no plasticity; brown; fine sand; fine subrounded gravel; moist.			BH12-3		60	
2.0								
4.0				0.0				
6.0				0.0			100	
8.0		Well graded SAND with gravel (SW); brown; fine to coarse sand; coarse subangular to subrounded gravel; damp.			BH12-8			
10.0				0.0				
12.0							100	
14.0								

BORING METHOD: Direct Push
DRILLED BY: Holt Services
BORING BIT DIAMETER: 2¼-inch OD

LOGGED BY: P. Brice
COMPLETED: 6/04/19

BORING LOG-ENV CORE 41392.000 BH1-BH13.GPJ DATATMPL.GDT PRINT DATE: 6/14/19 JW

PBS

COLEMAN OIL
1 E. I STREET
YAKIMA, WASHINGTON

PBS PROJECT NUMBER:
41392.000

BORING BH13

BORING BH13 LOCATION:
(See Figure 2)

DEPTH FEET	GRAPHIC LOG	MATERIAL DESCRIPTION	GROUND-WATER	PID (PPM)	SAMPLE NUMBER	SAMPLE/ TEMPORARY WELL(S)	RECOVERY (%)	COMMENTS/ WELL INSTALLATION
0.0		Asphalt/road base						
		Sandy SILT with gravel (ML); brown; fine sand; fine subangular gravel; moist.		0.0			60	
2.0								
4.0				0.0	BH13-4			
		Well graded SAND with gravel (SW); brown gray; fine to coarse sand; coarse subangular to subrounded gravel; damp.						
6.0				0.0			100	
8.0				0.0	BH13-9			
10.0				0.0				
12.0							100	
14.0								

BORING METHOD: Direct Push
DRILLED BY: Holt Services
BORING BIT DIAMETER: 2¼-inch OD

LOGGED BY: P. Brice
COMPLETED: 6/04/19

BORING LOG-ENV CORE 41392.000 BH1-BH13.GPJ DATATMPL.GDT PRINT DATE: 6/14/19 JW

PBS

COLEMAN OIL - YAKIMA
1 EAST I STREET
YAKIMA, WASHINGTON

PBS PROJECT NUMBER:
41392.000

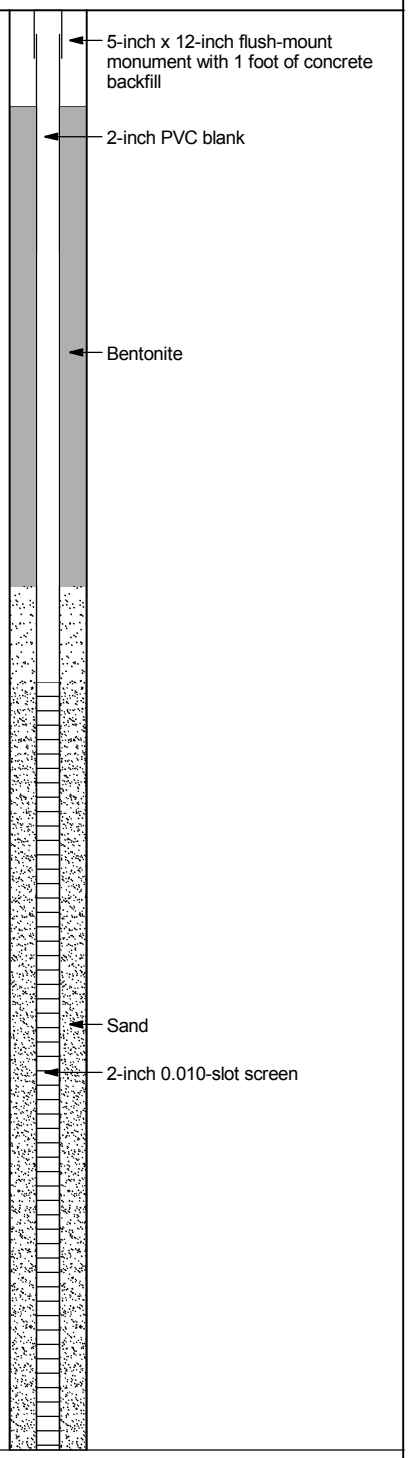
BORING MW8

BORING MW8 LOCATION:
(See Site Plan)

DEPTH FEET	MATERIAL DESCRIPTION	PID (PPM)	SAMPLE NUMBER
0.0	Gray rock chips; FILL		
	Medium dense, brown silty SAND (SM); non-plastic; fine sand; fine, subrounded gravel; moist; FILL		
	Medium dense, tan/red-brown sandy SILT (ML); non-plastic; fine sand; fine gravel; moist	0.1	
5.0		0.1	
	Tan-brown silty SAND (SM) with gravel and one large cobble; non-plastic; fine sand; coarse, subrounded gravel; moist	0.1	
	Dense, tan-brown SAND (SW) with gravel and large cobbles; non-plastic; fine sand; coarse, subangular gravel; moist	0.1	
10.0	Dense, tan/brown-gray sandy GRAVEL (GW) with large cobbles; non-plastic; medium sand; coarse, subrounded gravel; dry	0.1 0.4	MW8-11
		2.8	
15.0	Dense, gray-brown gravelly SAND (SW); non-plastic; medium sand; coarse, subangular gravel; moist	2.2	
	Tan-brown sandy GRAVEL (GW) with large cobbles; non-plastic; medium sand; coarse, subrounded gravel; very moist	478	
	Gray gravelly SAND (SP); non-plastic; medium sand; coarse, subrounded gravel; strong petroleum odor; very moist - Grades to medium to coarse sand	809	
20.0	- Becomes brown, oily liquid; very strong petroleum odor; heavy sheen; wet	701	
	Dense, gray SAND (SP) with gravel and cobbles; non-plastic; fine to coarse sand; coarse, subrounded gravel; wet	80	
	Dense, gray sandy GRAVEL (GW) with large cobbles; non-plastic; fine to coarse sand; coarse, subrounded gravel; strong fuel odor; wet	1.7	
25.0		0.9	
	- Grades to very dense cobbles and boulders	1.9	
30.0	Final depth: 30 ft bgs		

GROUND-WATER | SAMPLE/TEMPORARY WELL(S) | RECOVERY (%)

COMMENTS/ WELL INSTALLATION



BORING METHOD: Sonic Drilling
DRILLED BY: Holt Services
BORING BIT DIAMETER: 8-inch

LOGGED BY: P. Brice
COMPLETED: 12/18/18

BORING LOG-ENV CORE 41392.000 MW8-MW10_RS.GPJ DATATMPL.GDT PRINT DATE: 1/9/19 RS

COLEMAN OIL - YAKIMA
1 EAST I STREET
YAKIMA, WASHINGTON

PBS PROJECT NUMBER:
41392.000

BORING MW9

BORING MW9 LOCATION:
(See Site Plan)

DEPTH FEET	MATERIAL DESCRIPTION	PID (PPM)	SAMPLE NUMBER	RECOVERY (%)
0.0	Medium dense, brown sandy SILT (ML); non-plastic; fine sand; fine gravel; dry	0.0		
5.0				
10.0	Dense, gray-brown gravelly SAND (SP) with cobbles to 4"; non-plastic; fine sand; coarse, subrounded gravel; dry	0.0 0.1 1.6		
15.0	- Becomes very moist; slight petroleum odor	0.1		
20.0	- Grades to medium to coarse sand and becomes wet	0.1 0.2		
25.0	Dense, gray sandy GRAVEL (GP) with cobbles to 2"; non-plastic; medium sand; coarse, subrounded gravel; slight fuel odor; wet	0.0 0.1 0.1		
30.0	- Becomes light-brown and moist Final depth: 30 ft bgs	0.1		

COMMENTS/ WELL INSTALLATION

- 5-inch x 12-inch flush-mount monument with 1 foot of concrete backfill
- 2-inch PVC blank
- Bentonite
- Sand
- 2-inch 0.010-slot screen

BORING METHOD: Sonic Drilling
DRILLED BY: Holt Services
BORING BIT DIAMETER: 8-inch

LOGGED BY: P. Brice
COMPLETED: 12/18/18

BORING LOG-ENV CORE 41392.000 MW8-MW10_RS.GPJ DATATMPL.GDT PRINT DATE: 1/9/19 RS

COLEMAN OIL - YAKIMA
1 EAST I STREET
YAKIMA, WASHINGTON

BORING MW10

PBS PROJECT NUMBER:
41392.000

BORING MW10 LOCATION:
(See Site Plan)

DEPTH FEET	MATERIAL DESCRIPTION	PID (PPM)	SAMPLE NUMBER	SAMPLE/ TEMPORARY WELL(S)	RECOVERY (%)
0.0	ASPHALT; FILL				
	Medium dense, dark red-brown sandy SILT (ML); non-plastic; fine sand; fine gravel; moist	0.7			
		0.3	MW10-2		
	- Grades to dense with coarse, subrounded gravel				
5.0	Gray-brown gravelly SAND (SP) with large cobbles; non-plastic; fine to coarse sand; coarse, subangular gravel; dry	0.2			
		0.2			
	- Becomes surounded gravel	0.3			
10.0					
	- Encountered light fuel odor	0.6			
		0.5			
			MW10-14		
15.0	- Grades to brown	0.5			
	Dark brown gravelly SAND (SP) with cobbles; medium plasticity; fine to coarse sand; fine to coarse, subangular gravel; moist	0.5			
	Brown-gray gravelly SAND (SP); non-plastic; coarse sand; coarse, subrounded gravel; slight fuel odor; very moist				
20.0	Dense, red/gray-brown SAND (SP-SM) with silt, gravel, and cobbles; non-plastic; coarse sand; coarse, subrounded gravel; wet	0.3			
		0.3			
25.0		0.3			
	- Encountered light fuel odor	0.3			
		0.4			
30.0					

COMMENTS/ WELL INSTALLATION

- 5-inch x 12-inch flush-mount monument with 1 foot of concrete backfill
- 2-inch PVC blank
- Bentonite
- Sand
- 2-inch 0.010-slot screen

BORING METHOD: Sonic Drilling
DRILLED BY: Holt Services
BORING BIT DIAMETER: 8-inch

LOGGED BY: P. Brice
COMPLETED: 12/19/18

BORING LOG-ENV CORE 41392.000 MW8-MW10_RS.GPJ DATATMPL.GDT PRINT DATE: 1/9/19 RS

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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April 26, 2019

Ken Nogeire, Project Manager
PBS Engineering and Environmental, Inc.
214 E. Galer St, Suite 300
Seattle, WA 98102

Dear Mr Nogeire:

Included are the additional results from the testing of material submitted on March 21, 2019 from the Coleman Oil Yakima 41392.000.12.2, F&BI 903392 project. There are 14 pages included in this report.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
PBS0426R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on March 21, 2019 by Friedman & Bruya, Inc. from the PBS Engineering and Environmental Coleman Oil Yakima 41392.000.12.2, F&BI 903392 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	PBS
903392 -01	MW-10
903392 -02	MW-9
903392 -03	Dup 1
903392 -04	RW-1P
903392 -05	MW-8P
903392 -06	MW-4P
903392 -07	MW-2P
903392 -08	MW-3P
903392 -09	MW-5P
903392 -10	Trip Blank

All quality control requirements were acceptable.

The NWTPH-Dx chromatograms from samples MW-8P, MW-4P, MW-2P, MW-3P and MW-5P were reviewed to determine the approximate ratio of products present, as well the approximate degree of weathering. The findings are provided in Table 1.

Table 1

Sample ID	Approximate % Gas	Approximate % Diesel	Sample Color	Gas Degree of Weathering	Diesel Degree of Weathering
RW-1P	50	50	Amber	Weathered	Mixed
MW-8P	<10	100	Black	NA	Weathered
MW-4P	<10	100	Black	NA	Weathered
MW-2P	20	80	Amber	Weathered	Fresh
MW-3P	10	90	Amber	Weathered	Mixed
MW-5P	50	50	Black	Weathered	Weathered

Date of Report: 04/26/19
Date Received: 03/21/19
Project: Coleman Oil Yakima 41392.000.12.2, F&BI 903392
Date Extracted: 03/22/19
Date Analyzed: 04/08/19

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx
Sample Extracts Passed Through a Silica Gel Column Prior to Analysis
Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Diesel Range (C_{10}-C_{25})	Motor Oil Range (C_{25}-C_{36})	Surrogate (% Recovery) (Limit 51-134)
MW-10 903392-01	<50	<250	89
MW-9 903392-02	<50	<250	93
Method Blank 09-645 MB	<50	<250	126

Analysis For Total Metals By EPA Method 6020B

Client ID:	RW-1P	Client:	PBS Engineering and Environmental
Date Received:	03/21/19	Project:	Coleman Oil Yakima 41392.000.12.2
Date Extracted:	04/08/19	Lab ID:	903392-04
Date Analyzed:	04/08/19	Data File:	903392-04.136
Matrix:	Soil/Product	Instrument:	ICPMS2
Units:	mg/kg (ppm)	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Lead	<1

Analysis For Total Metals By EPA Method 6020B

Client ID:	MW-2P	Client:	PBS Engineering and Environmental
Date Received:	03/21/19	Project:	Coleman Oil Yakima 41392.000.12.2
Date Extracted:	04/08/19	Lab ID:	903392-07
Date Analyzed:	04/08/19	Data File:	903392-07.137
Matrix:	Soil/Product	Instrument:	ICPMS2
Units:	mg/kg (ppm)	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Lead	<1

Analysis For Total Metals By EPA Method 6020B

Client ID:	MW-5P	Client:	PBS Engineering and Environmental
Date Received:	03/21/19	Project:	Coleman Oil Yakima 41392.000.12.2
Date Extracted:	04/08/19	Lab ID:	903392-09
Date Analyzed:	04/08/19	Data File:	903392-09.138
Matrix:	Soil/Product	Instrument:	ICPMS2
Units:	mg/kg (ppm)	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Lead	<1

Analysis For Total Metals By EPA Method 6020B

Client ID:	Method Blank	Client:	PBS Engineering and Environmental
Date Received:	NA	Project:	Coleman Oil Yakima 41392.000.12.2
Date Extracted:	04/08/19	Lab ID:	I9-234 mb
Date Analyzed:	04/08/19	Data File:	I9-234 mb.109
Matrix:	Soil/Product	Instrument:	ICPMS2
Units:	mg/kg (ppm)	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Lead	<1

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	RW-1P	Client:	PBS Engineering and Environmental
Date Received:	03/21/19	Project:	Coleman Oil Yakima 41392.000.12.2
Date Extracted:	04/08/19	Lab ID:	903392-04 1/2000
Date Analyzed:	04/09/19	Data File:	040849.D
Matrix:	Soil/Product	Instrument:	GCMS9
Units:	mg/kg (ppm)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	50	150
Toluene-d8	102	50	150
4-Bromofluorobenzene	104	50	150

Compounds:	Concentration mg/kg (ppm)
Methyl t-butyl ether (MTBE)	<100
1,2-Dichloroethane (EDC)	<100
1,2-Dibromoethane (EDB)	<100
Benzene	<60

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-2P	Client:	PBS Engineering and Environmental
Date Received:	03/21/19	Project:	Coleman Oil Yakima 41392.000.12.2
Date Extracted:	04/08/19	Lab ID:	903392-07 1/2000
Date Analyzed:	04/09/19	Data File:	040850.D
Matrix:	Soil/Product	Instrument:	GCMS9
Units:	mg/kg (ppm)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	50	150
Toluene-d8	101	50	150
4-Bromofluorobenzene	104	50	150

Compounds:	Concentration mg/kg (ppm)
Methyl t-butyl ether (MTBE)	<100
1,2-Dichloroethane (EDC)	<100
1,2-Dibromoethane (EDB)	<100
Benzene	460

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-5P	Client:	PBS Engineering and Environmental
Date Received:	03/21/19	Project:	Coleman Oil Yakima 41392.000.12.2
Date Extracted:	04/08/19	Lab ID:	903392-09 1/2000
Date Analyzed:	04/09/19	Data File:	040851.D
Matrix:	Soil/Product	Instrument:	GCMS9
Units:	mg/kg (ppm)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	98	50	150
Toluene-d8	103	50	150
4-Bromofluorobenzene	109	50	150

Compounds:	Concentration mg/kg (ppm)
Methyl t-butyl ether (MTBE)	<100
1,2-Dichloroethane (EDC)	<100
1,2-Dibromoethane (EDB)	<100
Benzene	<60

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	Method Blank	Client:	PBS Engineering and Environmental
Date Received:	Not Applicable	Project:	Coleman Oil Yakima 41392.000.12.2
Date Extracted:	04/08/19	Lab ID:	09-734 mb
Date Analyzed:	04/08/19	Data File:	040824.D
Matrix:	Soil/Product	Instrument:	GCMS9
Units:	mg/kg (ppm)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	104	50	150
Toluene-d8	102	50	150
4-Bromofluorobenzene	101	50	150

Compounds:	Concentration mg/kg (ppm)
Methyl t-butyl ether (MTBE)	<0.05
1,2-Dichloroethane (EDC)	<0.05
1,2-Dibromoethane (EDB)	<0.05
Benzene	<0.03

Date of Report: 04/26/19
Date Received: 03/21/19
Project: Coleman Oil Yakima 41392.000.12.2, F&BI 903392

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: Laboratory Control Sample Silica Gel

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	ug/L (ppb)	2,500	96	113	63-142	16

Date of Report: 04/26/19
Date Received: 03/21/19
Project: Coleman Oil Yakima 41392.000.12.2, F&BI 903392

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL/PRODUCT SAMPLES FOR TOTAL METALS USING EPA METHOD 6020B

Laboratory Code: 904104-20 x5 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Lead	mg/kg (ppm)	50	27.5	102	100	75-125	2

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Lead	mg/kg (ppm)	50	102	80-120

Date of Report: 04/26/19
Date Received: 03/21/19
Project: Coleman Oil Yakima 41392.000.12.2, F&BI 903392

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL/PRODUCT SAMPLES FOR VOLATILES BY EPA METHOD 8260C

Laboratory Code: 904047-08 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Methyl t-butyl ether (MTBE)	mg/kg (ppm)	2.5	<0.05	82	90	17-134	9
1,2-Dichloroethane (EDC)	mg/kg (ppm)	2.5	<0.05	86	90	22-124	5
Benzene	mg/kg (ppm)	2.5	<0.03	80	84	26-114	5
1,2-Dibromoethane (EDB)	mg/kg (ppm)	2.5	<0.05	89	91	32-126	2

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Methyl t-butyl ether (MTBE)	mg/kg (ppm)	2.5	96	72-122
1,2-Dichloroethane (EDC)	mg/kg (ppm)	2.5	103	73-111
Benzene	mg/kg (ppm)	2.5	97	72-106
1,2-Dibromoethane (EDB)	mg/kg (ppm)	2.5	103	77-117

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The analyte is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits due to sample matrix effects.

j - The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

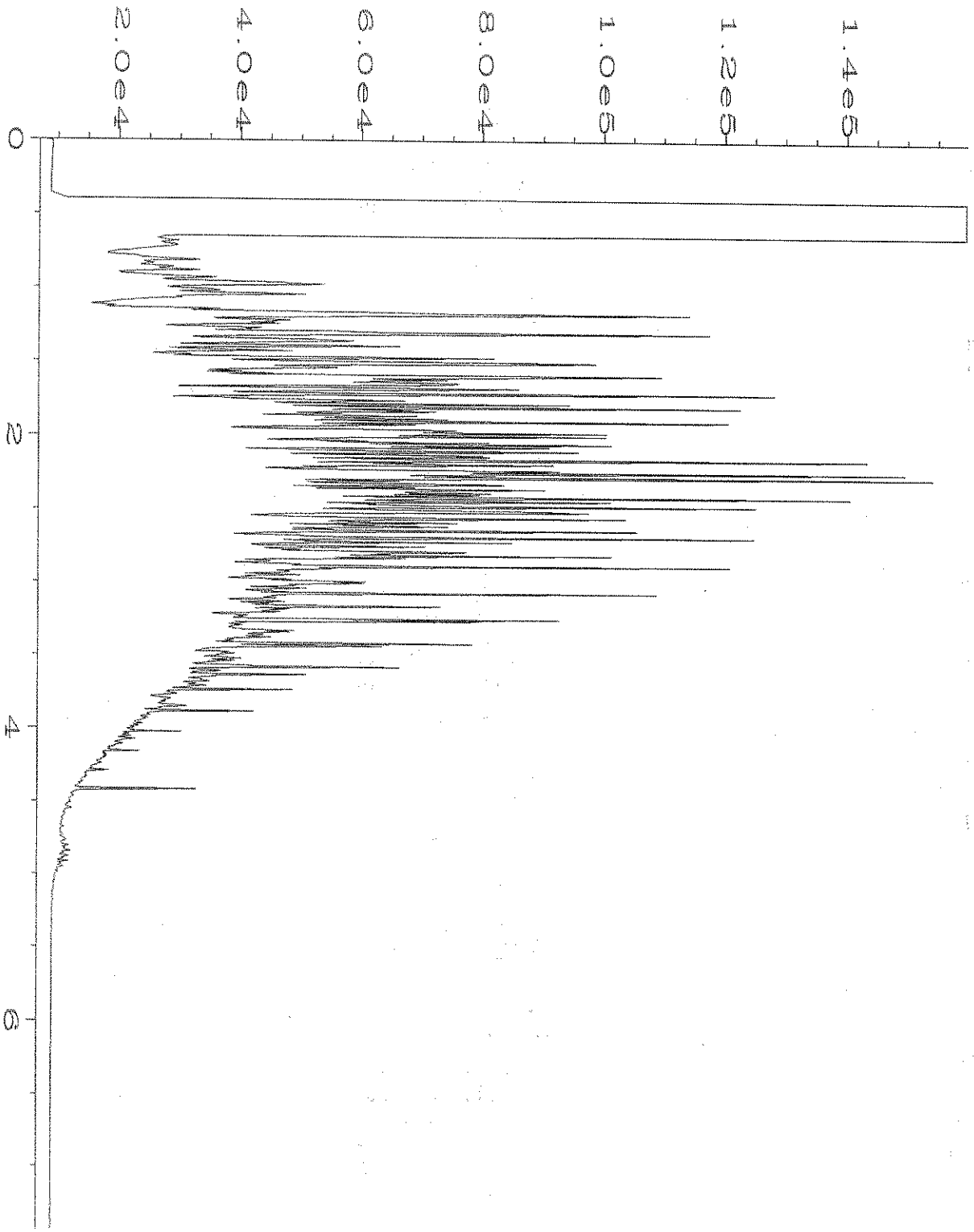
nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

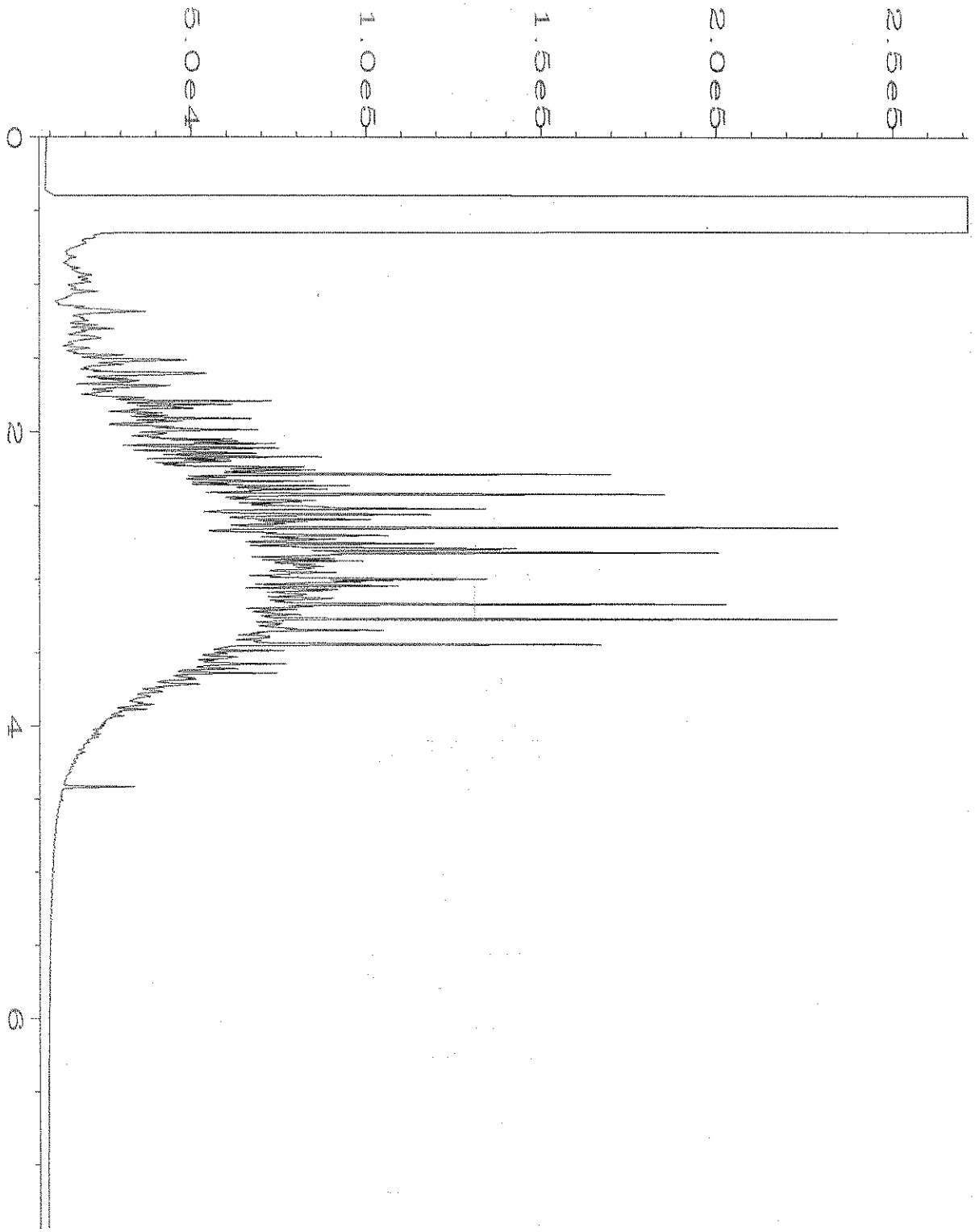
ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

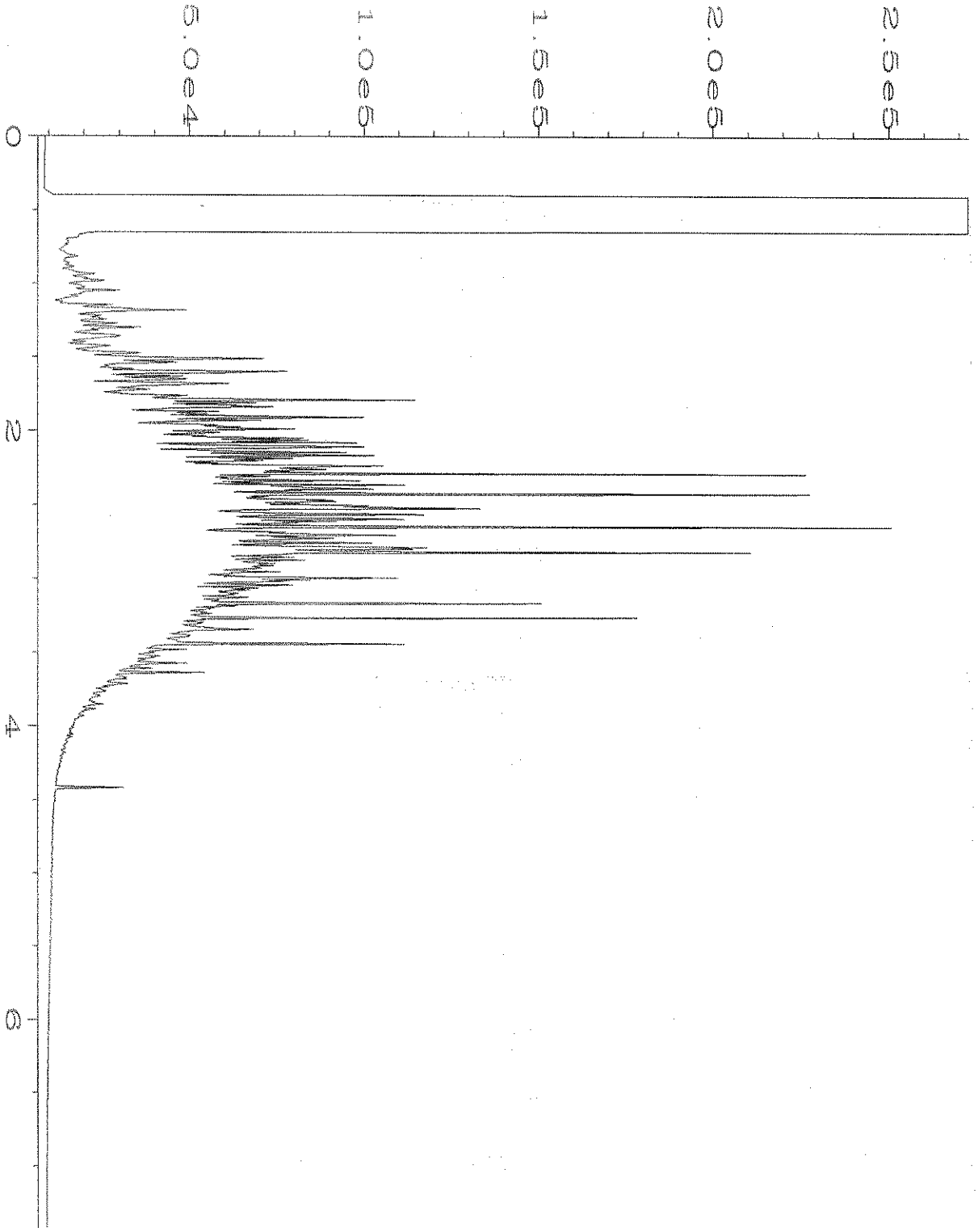
x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.



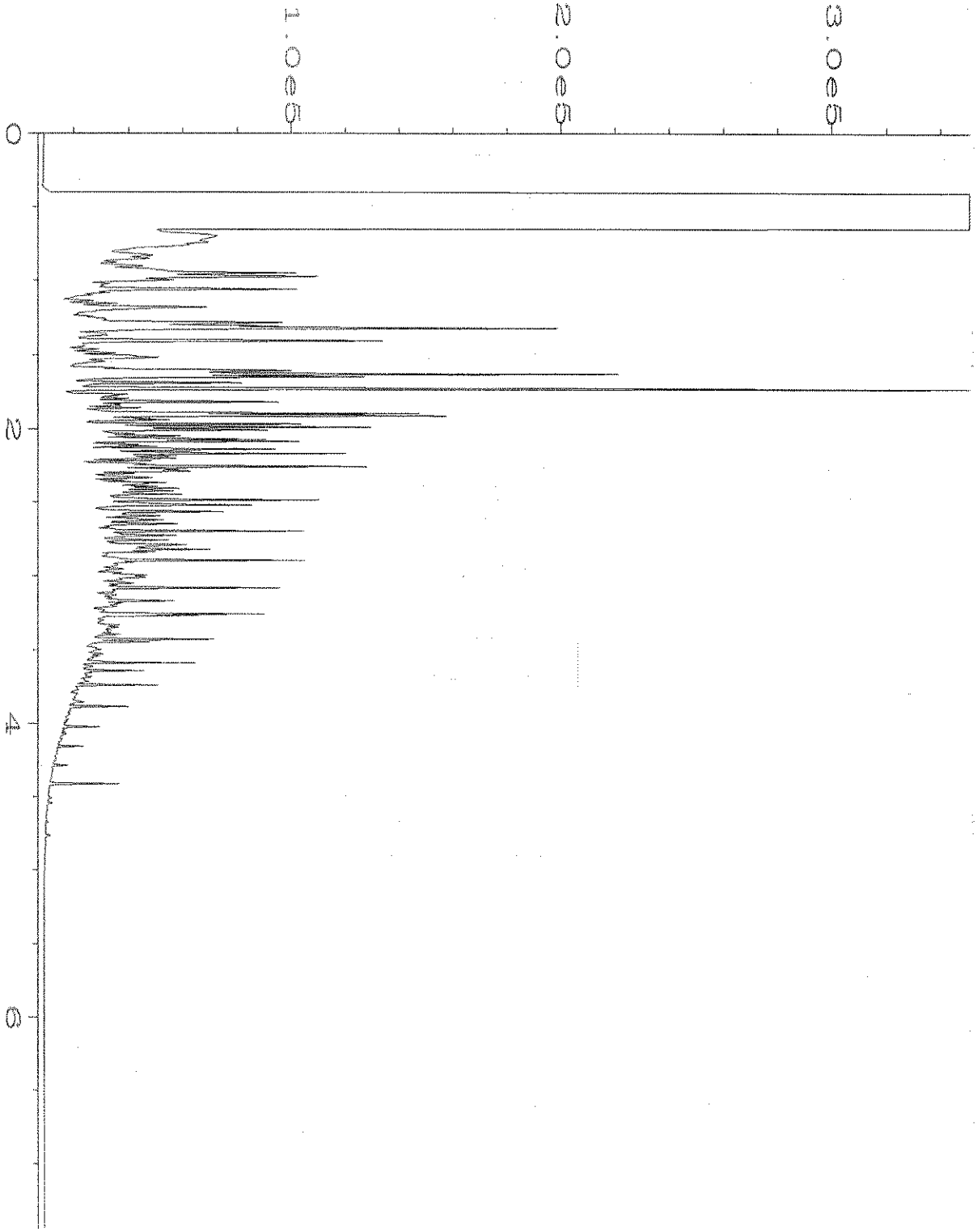
Data File Name	: C:\HPCHEM\1\DATA\03-22-19\033F0501.D		
Operator	: TL	Page Number	: 1
Instrument	: GC1	Vial Number	: 33
Sample Name	: 903392-04 1/10	Injection Number	: 1
Run Time Bar Code:		Sequence Line	: 5
Acquired on	: 22 Mar 19 03:55 PM	Instrument Method	: DX.MTH
Report Created on	: 25 Mar 19 08:09 AM	Analysis Method	: DX.MTH



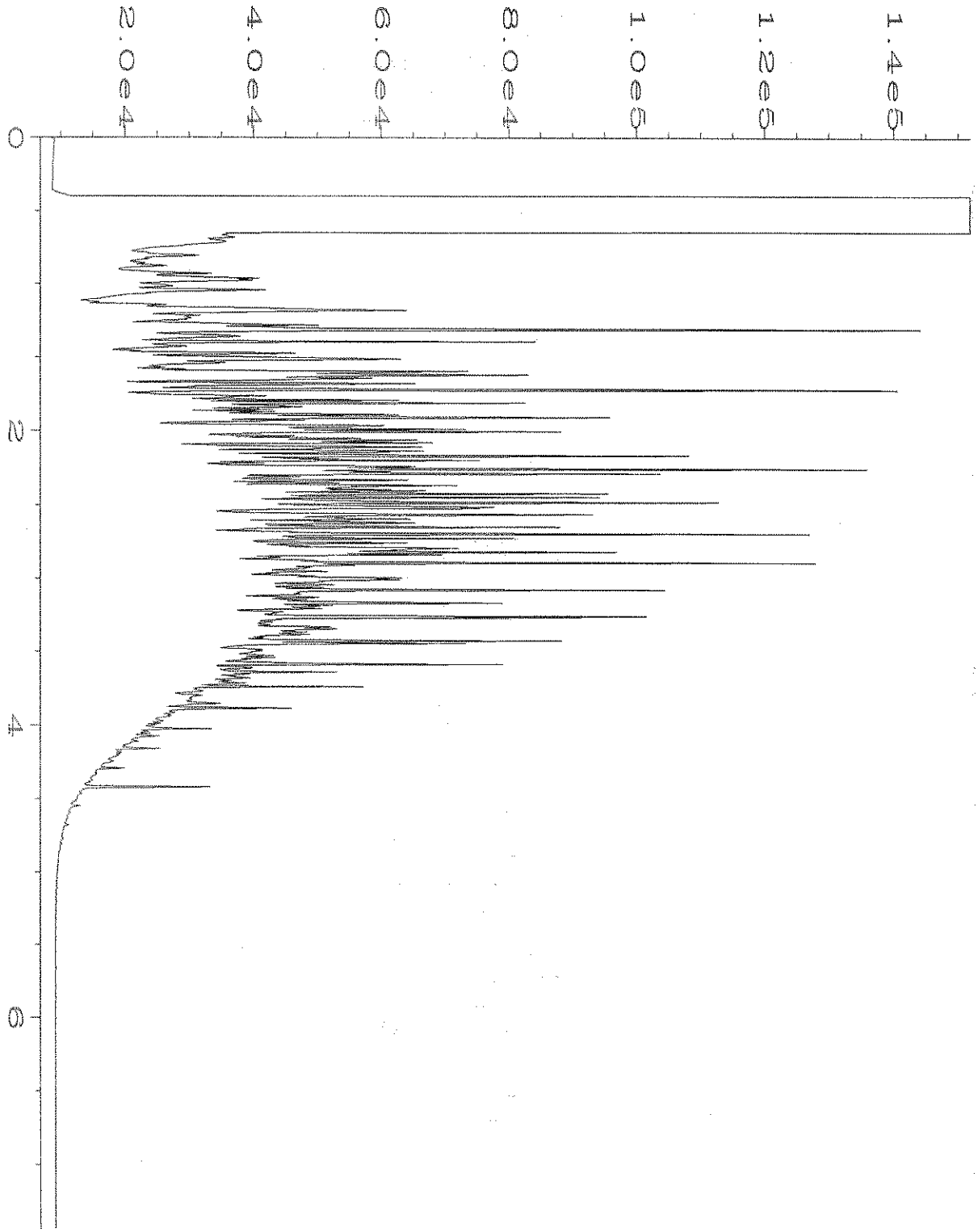
Data File Name	: C:\HPCHEM\1\DATA\03-22-19\034F0501.D		
Operator	: TL	Page Number	: 1
Instrument	: GC1	Vial Number	: 34
Sample Name	: 903392-05 1/10	Injection Number	: 1
Run Time Bar Code:		Sequence Line	: 5
Acquired on	: 22 Mar 19 04:07 PM	Instrument Method	: DX.MTH
Report Created on	: 25 Mar 19 08:09 AM	Analysis Method	: DX.MTH



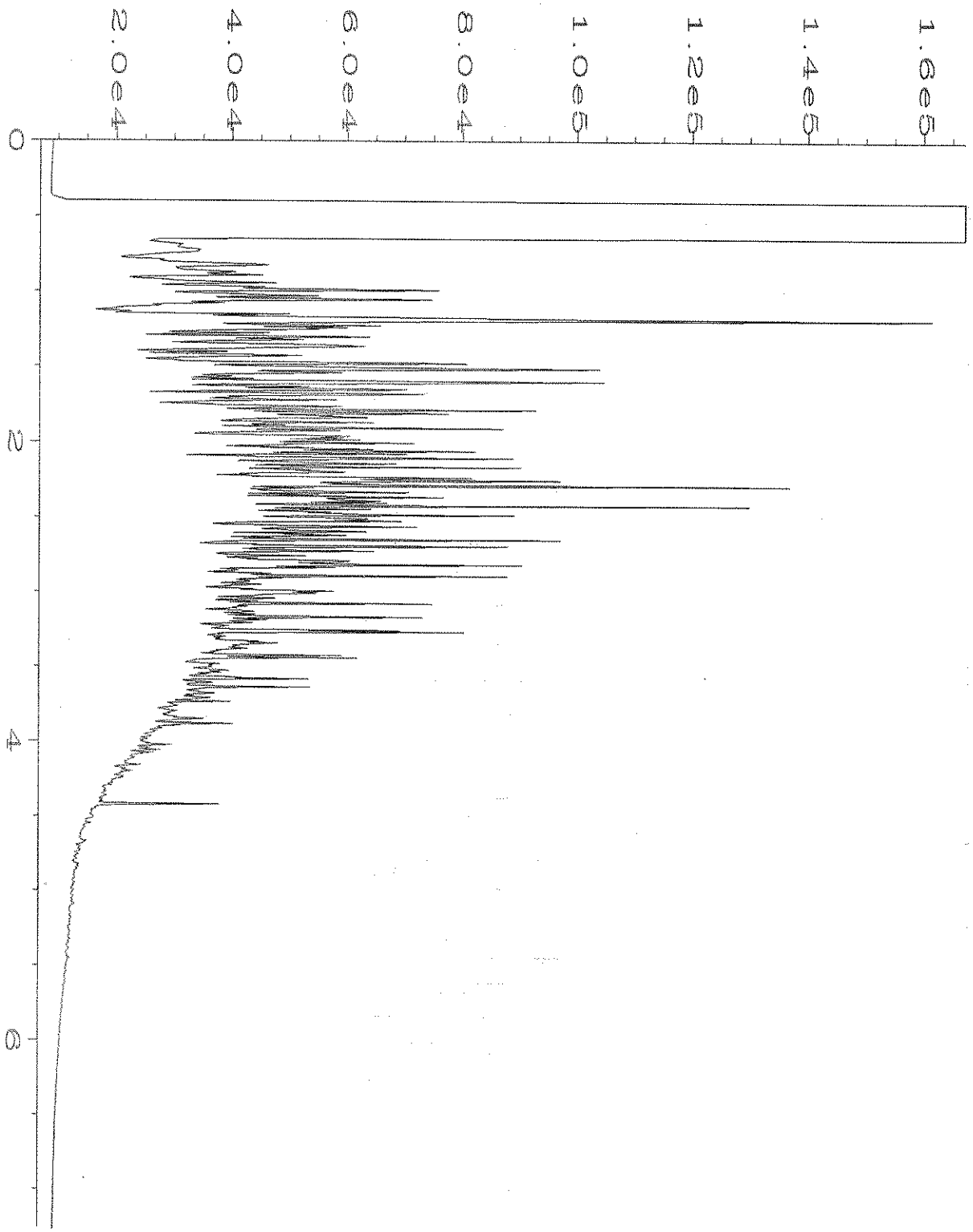
Data File Name	: C:\HPCHEM\1\DATA\03-22-19\035F0501.D		
Operator	: TL	Page Number	: 1
Instrument	: GC1	Vial Number	: 35
Sample Name	: 903392-06 1/10	Injection Number	: 1
Run Time Bar Code:		Sequence Line	: 5
Acquired on	: 22 Mar 19 04:18 PM	Instrument Method	: DX.MTH
Report Created on	: 25 Mar 19 08:10 AM	Analysis Method	: DX.MTH



Data File Name	: C:\HPCHEM\1\DATA\03-22-19\036F0501.D		
Operator	: TL	Page Number	: 1
Instrument	: GC1	Vial Number	: 36
Sample Name	: 903392-07 1/10	Injection Number	: 1
Run Time Bar Code:		Sequence Line	: 5
Acquired on	: 22 Mar 19 04:30 PM	Instrument Method	: DX.MTH
Report Created on	: 25 Mar 19 08:10 AM	Analysis Method	: DX.MTH



Data File Name	: C:\HPCHEM\1\DATA\03-22-19\037F0501.D		
Operator	: TL	Page Number	: 1
Instrument	: GC1	Vial Number	: 37
Sample Name	: 903392-08 1/10	Injection Number	: 1
Run Time Bar Code:		Sequence Line	: 5
Acquired on	: 22 Mar 19 04:41 PM	Instrument Method	: DX.MTH
Report Created on	: 25 Mar 19 08:11 AM	Analysis Method	: DX.MTH



Data File Name	: C:\HPCHEM\1\DATA\03-22-19\038F0501.D		
Operator	: TL	Page Number	: 1
Instrument	: GC1	Vial Number	: 38
Sample Name	: 903392-09 1/10	Injection Number	: 1
Run Time Bar Code:		Sequence Line	: 5
Acquired on	: 22 Mar 19 04:53 PM	Instrument Method	: DX.MTH
Report Created on:	25 Mar 19 08:11 AM	Analysis Method	: DX.MTH

~~903~~ 903392

SAMPLE CHAIN OF CUSTODY ME 03-21-19

A02/A13/VW2

Page # ____ of ____

Report To Ken Nogeire

Company PBS Engineering & Environmental

Address 214 E. Galer St Ste 300

City, State, ZIP Seattle, WA 98102

Phone 509-572-8163 Email Ken.Nogeire@PBSUSA.com

SAMPLERS (signature) Pat Brice

PROJECT NAME: Coleman Oil Yakima

PO # 41392.000.12.2

REMARKS

INVOICE TO

TURNAROUND TIME
- ☒ Standard Turnaround
- ☐ RUSH ____
- Rush charges authorized by: ____

SAMPLE DISPOSAL
- ☐ Dispose after 30 days
- ☐ Archive Samples
- ☐ Other ____

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	PAHs by SIM SVOCs by 8270D	Lead PAHs 8270D SIM	Pb	Density	Viscosity	MTBE EDB EDC	Notes
MW-10	01 A-E	3/19/19	1155	Water	5		X	X	X		⊗		X				Hold Pb samples
MW-9	02 T	3/19/19	1342	Water	5		X	X	X		⊗		X				pending analysis
Dup 1	03 A-D	3/19/19	1200	Water	4				X								(⊗-per KN
RW-1P	04 A-C	3/19/19	1235	Product	3	X						⊗		X	X	⊗	4/5/19
MW-8P	05 T	3/19/19	1500	Product	3	X								X	X		ME
MW-4P	06	3/19/19	1515	Product	1	X								X			
MW-2P	07	3/19/19	1540	Product	1	X						⊗		X		⊗	
MW-3P	08 A-C	3/19/19	1545	Product	3	X								X	X		
MW-5P	09 A-B	3/19/19	1620	Product	2	X						⊗		X		⊗	
Trip Blank	10	3/19/19	0800	Water	1				X								

ANALYSES REQUESTED

Samples received at 1 °C

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Patrick Brice	PBS Engineering	3/20/19	1600
Received by: Tracking #: 7747	5273 1705	FedEx	3/20/19	1600
Relinquished by:				
Received by:	HONG NGUYEN	FBI	3/21/19	10:10

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Arina Podnozova, B.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

June 12, 2019

Ken Nogeire, Project Manager
PBS Engineering and Environmental, Inc.
214 E. Galer St, Suite 300
Seattle, WA 98102

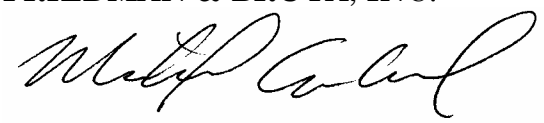
Dear Mr Nogeire:

Included are the results from the testing of material submitted on June 6, 2019 from the Coleman Oil Yakima 41392, F&BI 906083 project. There are 8 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl
Project Manager

Enclosures
PBS0612R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on June 6, 2019 by Friedman & Bruya, Inc. from the PBS Engineering and Environmental Coleman Oil Yakima 41392, F&BI 906083 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	PBS Engineering and Environmental
906083 -01	BH8-4
906083 -02	BH8-12
906083 -03	BH9-4
906083 -04	BH9-8
906083 -05	BH10-4
906083 -06	BH10-6
906083 -07	BH11-4
906083 -08	BH11-8
906083 -09	BH12-3
906083 -10	BH12-8
906083 -11	BH13-4
906083 -12	BH13-9

All quality control requirements were acceptable.

Date of Report: 06/12/19
Date Received: 06/06/19
Project: Coleman Oil Yakima 41392, F&BI 906083
Date Extracted: 06/06/19
Date Analyzed: 06/06/19 and 06/07/19

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING METHODS 8021B AND NWTPH-Gx

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 50-132)
BH8-4 906083-01	<0.02	<0.02	<0.02	<0.06	<5	89
BH8-12 906083-02	<0.02	<0.02	<0.02	<0.06	<5	90
BH9-4 906083-03	<0.02	<0.02	<0.02	<0.06	<5	89
BH9-8 906083-04	<0.02	<0.02	<0.02	<0.06	<5	88
BH10-4 906083-05	<0.02	<0.02	<0.02	<0.06	<5	88
BH10-6 906083-06	<0.02	<0.02	<0.02	<0.06	<5	89
BH11-4 906083-07	<0.02	<0.02	<0.02	<0.06	<5	88
BH11-8 906083-08	<0.02	<0.02	<0.02	<0.06	<5	88
BH12-3 906083-09	<0.02	<0.02	<0.02	<0.06	<5	88
BH12-8 906083-10	<0.02	<0.02	<0.02	<0.06	<5	88

Date of Report: 06/12/19
Date Received: 06/06/19
Project: Coleman Oil Yakima 41392, F&BI 906083
Date Extracted: 06/06/19
Date Analyzed: 06/06/19 and 06/07/19

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING METHODS 8021B AND NWTPH-Gx

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 50-132)
BH13-4 906083-11	<0.02	<0.02	<0.02	<0.06	<5	88
BH13-9 906083-12	<0.02	<0.02	<0.02	<0.06	<5	89
Method Blank 09-1283 MB	<0.02	<0.02	<0.02	<0.06	<5	90

Date of Report: 06/12/19
Date Received: 06/06/19
Project: Coleman Oil Yakima 41392, F&BI 906083
Date Extracted: 06/07/19
Date Analyzed: 06/07/19

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Diesel Range (C_{10}-C_{25})	Motor Oil Range (C_{25}-C_{36})	Surrogate (% Recovery) (Limit 48-168)
BH8-4 906083-01	<50	<250	93
BH8-12 906083-02	<50	<250	107
BH9-4 906083-03	<50	<250	93
BH9-8 906083-04	<50	<250	92
BH10-4 906083-05	<50	<250	94
BH10-6 906083-06	<50	<250	94
BH11-4 906083-07	<50	<250	92
BH11-8 906083-08	<50	<250	92
BH12-3 906083-09	<50	<250	92
BH12-8 906083-10	<50	<250	92

Date of Report: 06/12/19
Date Received: 06/06/19
Project: Coleman Oil Yakima 41392, F&BI 906083
Date Extracted: 06/07/19
Date Analyzed: 06/07/19

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Diesel Range (C_{10}-C_{25})	Motor Oil Range (C_{25}-C_{36})	Surrogate (% Recovery) (Limit 48-168)
BH13-4 906083-11	<50	<250	94
BH13-9 906083-12	<50	<250	106
Method Blank 09-1351 MB	<50	<250	94

Date of Report: 06/12/19
Date Received: 06/06/19
Project: Coleman Oil Yakima 41392, F&BI 906083

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 906083-01 (Duplicate)

Analyte	Reporting Units	Sample Result (Wet Wt)	Duplicate Result (Wet Wt)	RPD (Limit 20)
Benzene	mg/kg (ppm)	<0.02	<0.02	nm
Toluene	mg/kg (ppm)	<0.02	<0.02	nm
Ethylbenzene	mg/kg (ppm)	<0.02	<0.02	nm
Xylenes	mg/kg (ppm)	<0.06	<0.06	nm
Gasoline	mg/kg (ppm)	<5	<5	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	mg/kg (ppm)	0.5	95	66-121
Toluene	mg/kg (ppm)	0.5	107	72-128
Ethylbenzene	mg/kg (ppm)	0.5	105	69-132
Xylenes	mg/kg (ppm)	1.5	105	69-131
Gasoline	mg/kg (ppm)	20	100	61-153

Date of Report: 06/12/19
Date Received: 06/06/19
Project: Coleman Oil Yakima 41392, F&BI 906083

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 906083-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet Wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	<50	91	93	73-135	2

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Diesel Extended	mg/kg (ppm)	5,000	92	74-139

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The analyte is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits due to sample matrix effects.

j - The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

906083

SAMPLE CHAIN OF CUSTODY

ME 06/06/19

CI2/A03

Page # 1 of 2

Report To Ken Nogeire

Company PBS Engineering & Environmental

Address 214 E. Galer St., Suite 300

City, State, ZIP Seattle, WA 98102

Phone 509-572-9163 Email Ken.Nogeire@PBSUSA.com

SAMPLERS (*signature*)

PROJECT NAME: Coleman Oil Yakima

PO # 41392

REMARKS

INVOICE TO: Ken Nogeire

TURNAROUND TIME
- [x] Standard Turnaround
- [ ] RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- [x] Dispose after 30 days
- [ ] Archive Samples
- [ ] Other

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM					Notes
						ANALYSES REQUESTED											
BH8-4	01 AE	6/4/19	1138	Soil	5		X	X	X								
BH8-12	02		1150				X	X	X								
BH9-4	03		1210				X	X	X								
BH9-8	04		1220				X	X	X								
BH10-4	05		1235				X	X	X								
BH10-6	06		1248				X	X	X								
BH11-4	07		1312				X	X	X								
BH11-8	08		1325				X	X	X								
BH12-3	09		1340				X	X	X								
BH12-8	10	↓	1350	↓	↓		X	X	X								

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Patrick Brice	PBS Eng. & Env.	6/5/19	1600
Received by: FedEx Tracking #: 8015 6344 0137				
~~Relinquished by:~~ Rec:	Liz Mehrer-Bruya	FedEx	6/6/19	850
Received by:		Samples received at 3 °C		

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282

906083

SAMPLE CHAIN OF CUSTODY

ME 06/06/19

CT2/AC3

Page # 2 of 2

Report To Ken Nogeire

Company PBS Engineering & Environmental

Address 214 E. Galer St., Suite 300

City, State, ZIP Seattle, WA 98102

Phone 509-572-8163 Email Ken.Nogeire@PBSUSA.com

SAMPLERS (signature) [signature]

PROJECT NAME: Coleman Oil Yakima

PO # 41392

REMARKS

INVOICE TO: Ken Nogeire

TURNAROUND TIME
- [X] Standard Turnaround
- [ ] RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- [X] Dispose after 30 days
- [ ] Archive Samples
- [ ] Other

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM					Notes
						ANALYSES REQUESTED											
BH13-4	11 A-E	6/4/19	1405	Soil	5		X	X	X								
BH13-9	12	6/4/19	1420	Soil	5		X	X	X								

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: [signature]	Patrick Brice	PBS Eng. & Env.	6/5/19	1600
Received by: FedEx Tracking #:	8015 6344 0187			
Relinquished by: Rec'd [signature] D. M. K.	Liz Webber-Bruya	FTBI	6/6/19	850
Received by:				

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