Groundwater Monitoring and Site Activites Report

Former Union Oil Facility
Phillips 66 Site 0980
920 North 6th Avenue
Yakima, Washington
Facility Site ID: 53365837
VCP Site ID: CE0468

Phillips 66 Company

Table of Contents

Figure Index

Table Index

Appendix Index

1. Introduction

GHD Services Inc. (GHD) prepared this Site Activities Report on behalf of Phillips 66 Company (P66). This report summarizes all groundwater activities first through fourth quarter 2019 and first and second quarter 2020. Also summarized are the LNAPL discovery, sampling, and removal activities.

1.1 Site Information

Site Address	920 North 6th Avenue, Yakima, Washington
Site Use	Active bulk fuel terminal
GHD Project Manager	Matthew Davis
Lead Agency	Washington Department of Ecology Voluntary Cleanup Program (VCP)
VCP No.	CE0468

2. Site Activities and Findings

2.1 Groundwater Monitoring Activities

Groundwater monitoring and sampling was completed by Blaine Tech Services, Inc. (BTS) of Auburn, WA according to the established monitoring program during the reporting period with the exception of second quarter 2020, when GHD completed monitoring activities. Groundwater monitoring and sampling consisted of measuring depth to water in each well from the surveyed top of casing elevation and collecting a groundwater sample using low-flow sampling procedures. Groundwater samples were collected from wells MW-7, MW-8, and MW-15 through MW-19. On September 4, 2019, Ecology approved a reduction in the monitoring scope of work, discontinuing sampling of wells MW-7, MW-8, MW-16, and MW-18 following a minimum of 4 quarters of non-detect results. Groundwater samples were immediately placed on ice and transported under chain of custody to an approved laboratory for analysis of Site COCs.

GHD prepared a vicinity map (Figure 1) and groundwater elevation and chemical concentration maps for each quarter of groundwater monitoring (Figures 2-5). GHD prepared Table 1 summarizing groundwater monitoring data and laboratory analytical results. Field forms and the laboratory analytical reports are included as Appendices A and B, respectively.

2.2 Well Monitoring Findings

Quarter/Date	**1st/March 18, 2019**
Groundwater Flow Direction	Southeast
Hydraulic Gradient	0.02 foot/foot

Depth to Water	22.65 to 25.18 feet below top of well casing
Quarter/Date	**2nd/June 17, 2019**
Groundwater Flow Direction	Southeast
Hydraulic Gradient	0.03
Depth to Water	16.6 to 19.06 feet below top of well casing
Quarter/Date	**3rd/September 16, 2019**
Groundwater Flow Direction	Southeast
Hydraulic Gradient	0.02 foot/foot
Depth to Water	13.74 to 16.9 feet below top of well casing
Quarter/Date	**4th/December 26, 2019**
Groundwater Flow Direction	Southeast
Hydraulic Gradient	0.01 foot/foot
Depth to Water	19.63 to 21.82 feet below top of well casing
Quarter/Date	**1st/March 9, 2020**
Groundwater Flow Direction	Southeast
Hydraulic Gradient	0.01 foot/foot
Depth to Water	23.48 to 26.04 feet below top of well casing
Quarter/Date	**2nd/June 17, 2020**
Groundwater Flow Direction	Southeast
Hydraulic Gradient	0.01 foot/foot
Depth to Water	17.46 to 19.76 feet below top of well casing

2.3 LNAPL Discovery

During fourth quarter 2019 groundwater monitoring activities, BTS measured 0.6 feet of Light Non-Aqueous Phase Liquid (LNAPL) in monitoring well MW-15. Measurable LNAPL had not been reported in any of the Site wells since monitoring began in 1989. On January 8, 2020, GHD visited the Site to confirm the LNAPL presence and collect a sample for forensics analysis. The LNAPL sample was collected and placed on Ice and transported to Pace Analytical Energy Services for the following analysis:

- (C8-C40) Semi-Quantitative Molecular Characterization by GC/MS - full scan mode.
- (C3-C12) Quantitative Molecular Characterization by GC/MS - full scan mode (PIANO analysis + Oxygenates)

- Organic Lead Speciation by GC/ECD

Laboratory forensics analysis identified that the sample consisted of a middle distillate fuel/gasoline admixture with the middle distillate being the dominant component. The gasoline component was leaded indicating the release occurred prior to 1996. The middle distillate was a significantly degraded, high sulfur fuel with an estimated age of 16 to 24 years. The results were subsequently reported to the Ecology Site Manager, Mr. Frank Winslow. The laboratory forensics results and interpretation are included in Appendix C.

On April 28, 2020, GHD subcontracted DH Environmental Inc. (DH Environmental) of Seattle, Washington to complete an enhanced fluid recovery (EFR) event utilizing a vacuum truck to remove LNAPL from well MW-15. Prior to the EFR event, the well was gaged and no measureable LNAPL was detected in the well, however, a heavy sheen was present. The EFR event utilized a stinger situated just below the water table and a 2-inch fitting connected to the wellhead. This allowed for extraction of water/LNAPL as well as soil vapor. The EFR event lasted approximately 4.5 hours and removed approximately 220 gallons of water from the well. At the end of the EFR event, measureable product was not observed in the vacuum truck holding tank. Air flow and photo-ionization detector (PID) measurements were collected throughout the EFR event to evaluate soil vapor mass removal. Based on the field measurements, an estimated 7.18 pounds of petroleum mass was removed from the subsurface. GHD returned to the Site to gauge well MW-15 on May 12, 2020 and June 17, 2020. During both gauging events, measurable LNAPL was not detected.

Soil vapor mass removal data is presented on Table 2. DH Environmental transported the waste to Chemical Waste Management, Inc. of Arlington, Oregon. Waste disposal documentation is included as Appendix D.

2.4 Groundwater Analytical Results

Groundwater analytical results for the reporting period indicate the following:

- Concentrations of Total Petroleum Hydrocarbon (TPH) as gasoline (TPHg) and diesel (TPHd) and benzene exceeding the Washington State Department of Ecology's (Ecology) Model Toxics Control Act (MTCA) Method A cleanup levels were detected in well MW-15 each quarter samples were collected.
- Monitoring well MW-15 was not sampled during the 4th quarter 2019 and 1st quarter 2020 events due to the presence of LNAPL.
- Concentrations of TPHd and/or benzene exceeding MTCA method A cleanup levels were detected in well MW-17 during the 2nd quarter 2019 and 3rd quarter 2019 events. Subsequent sampling events did not indicate MTCA method A cleanup level exceedances in well MW-17.
- Monitoring well MW-17 was not sampled during the 1st quarter 2020 event due to the presence of bio-growth in the well obstructing the sampling tubing from being placed into the well. During the April EFR event, GHD removed the obstruction from the well.
- Concentrations of TPHd exceeding MTCA Method A cleanup levels were detected in well MW-19 during the 3rd quarter 2019 event.

- Monitoring well MW-19 was not sampled during the 4th quarter 2019 and 1st quarter 2020 events due to bentonite obstructing the well. During the April EFR event, GHD cleared the bentonite from the well and noticed the well casing was cracked at about 1.5 feet below grade, likely due to semi-truck traffic driving over the well. GHD recommends repairing the well in the near future.
- Monitoring wells MW-7, MW-8, MW-16, and MW-18 did not have any detections of Site contaminants during the reporting period and have since been removed from the monitoring program.

2.5 Anticipated Future Activities

GHD will continue to monitor wells MW-15, MW-17, and MW-19 on a quarterly basis. GHD intends to proceed with injections of Petrofix in the vicinity of monitoring well MW-15, assuming no LNAPL recurrence following the 3rd quarter 2020 monitoring event. Subsequent monitoring will then be completed to measure the performance of the interim remedial action.

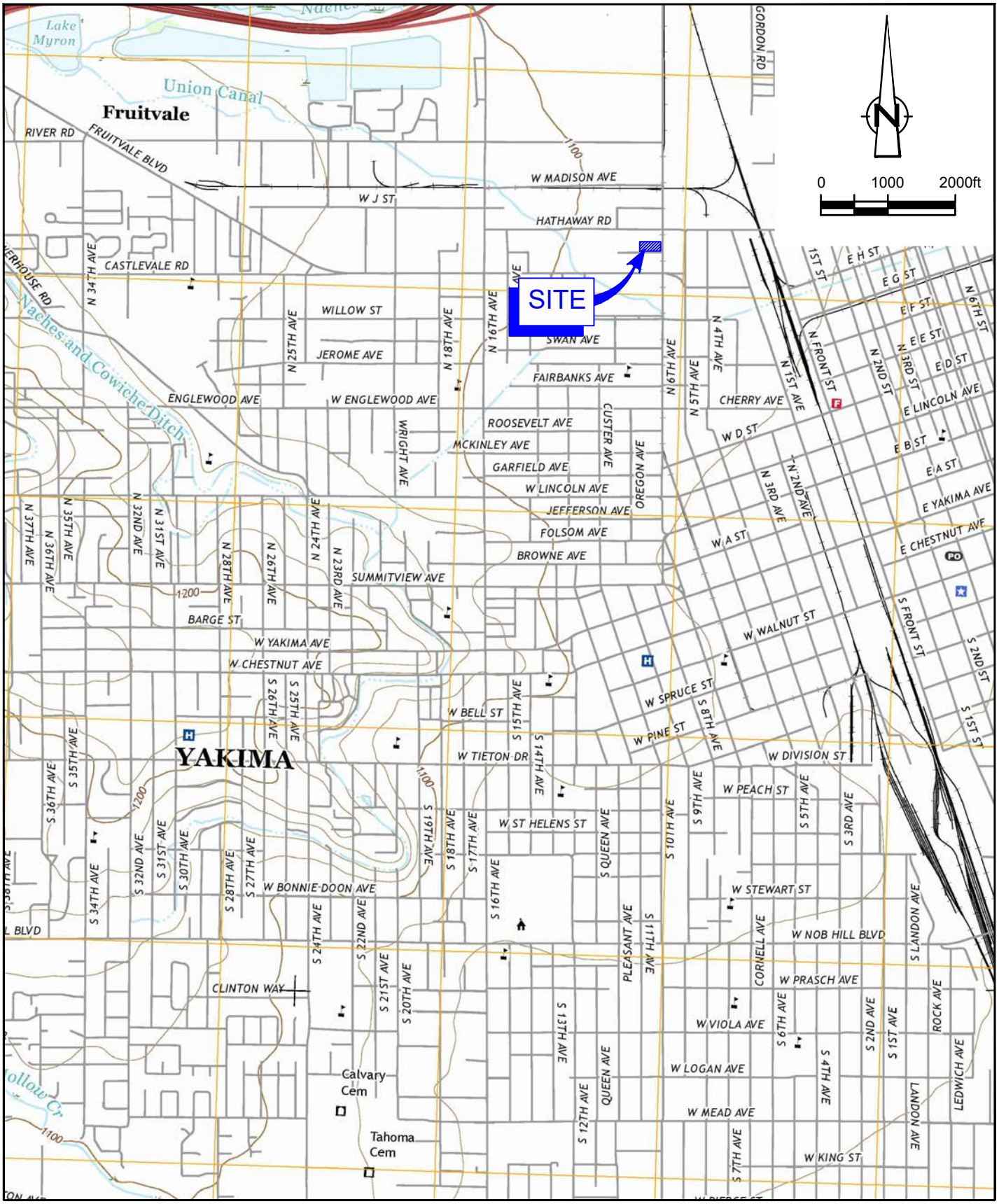
All of Which is Respectfully Submitted,

GHD

Matthew Davis, LG

Heather Gadwa, LG

Figures



Source: USGS QUADRANGLE MAP: YAKIMA WEST, WA. (2017).

PHILLIPS 66
920 NORTH 6TH AVENUE
YAKIMA, WASHINGTON

11145929-5RM00

Jan 22, 2020

SITE LOCATION MAP

FIGURE 1

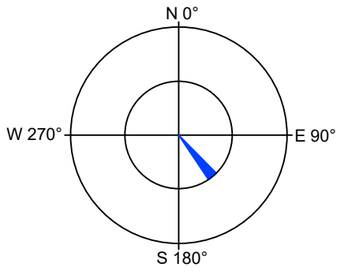
CAD File: N:\US\Santa Rosa\Projects\Sonoma Legacy\Sonoma.Public\CAD\drawings\11140000s\11145929\11145929-REPORTS\11145929-5RM00(004)GN\11145929-5RM00(004)GN-SO001.DWG

LEGEND

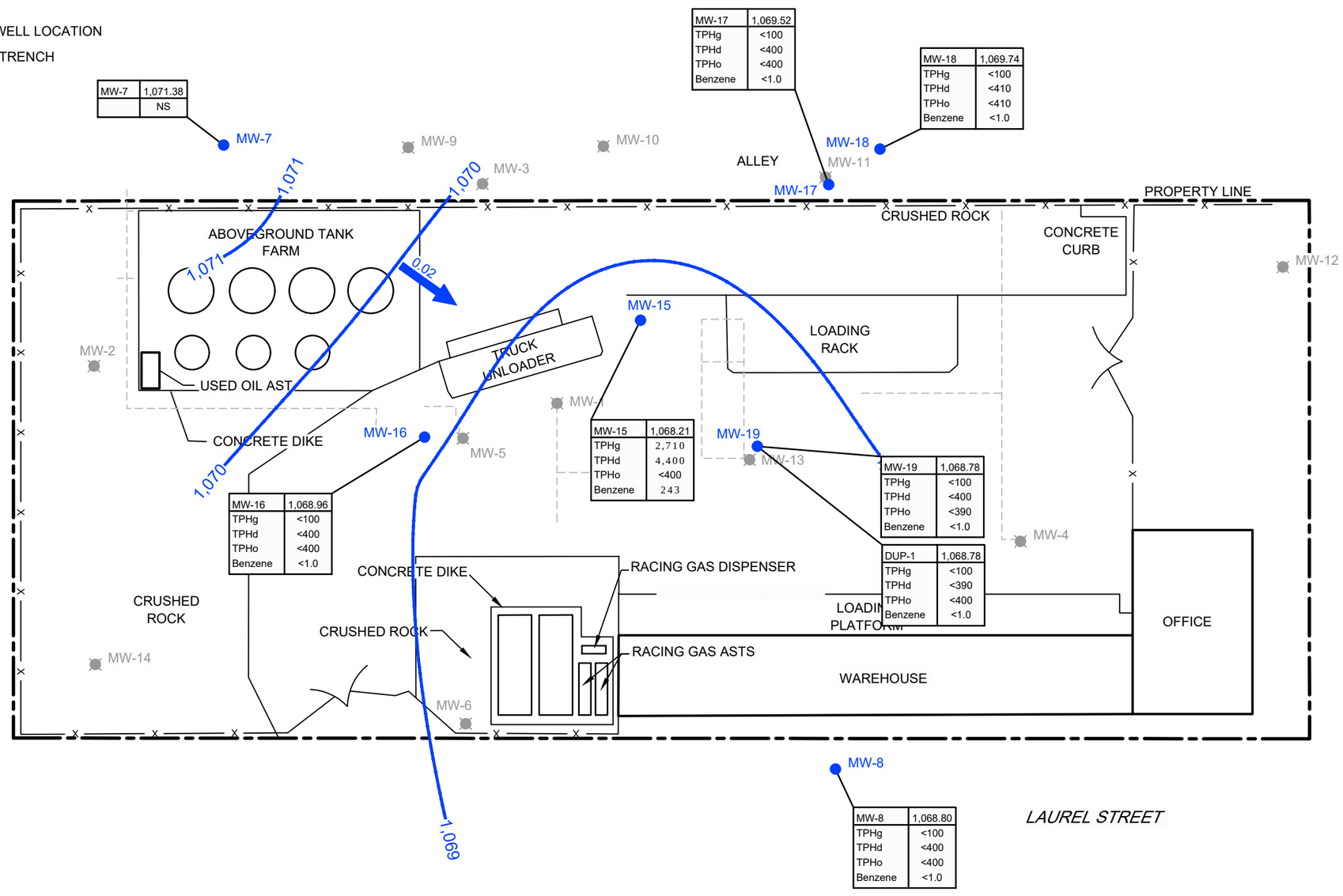
- APPROXIMATE PROPERTY LINE
- MW-1 — MONITORING WELL LOCATION
- MW-6 — DECOMMISSIONED/ABANDONED MONITORING WELL LOCATION
- ABANDONED IN PLACE UNDERGROUND PIPING TRENCH
- 1,071 — GROUNDWATER ELEVATION CONTOUR DASHED WHERE INFERRED (FEET AMSL)
- 0.02 — GROUNDWATER FLOW DIRECTION AND GRADIENT
- SAMPLE LOCATION
- GROUNDWATER ELEVATION (MSL)
- RESULT
- PARAMETER

MW-16	1,068.96
TPHg	<100
TPHd	<400
TPHo	<400
Benzene	<1.0

NOTES:
1. TPH-G = TOTAL PETROLEUM HYDROCARBONS AS GASOLINE
2. TPH-D = TOTAL PETROLEUM HYDROCARBONS AS DISIEL
3. TPH-O = TOTAL PETROLEUM PYDROCARBONS AS OIL
4. B = BENZENE



GROUNDWATER FLOW DIRECTION



Source: STANTEC, FIGURE 2, SITE MAP WITH ANALYTICAL RESULTS (JUNE 14 & 15, 2010), DATED 7/12/10. STATEWIDE LAND SURVEYING, INC. 6/5/18.

0 15 30ft

PHILLIPS 66 SITE 0980
920 NORTH 6TH AVENUE
YAKIMA, WASHINGTON

GROUNDWATER CONTOUR AND CHEMICAL CONCENTRATION MAP - MARCH 18, 2019

11145929-5RM00

Jan 22, 2020

FIGURE 2

CAD File: N:\US\Santa Rosa\Projects\Sonoma Legacy\Sonoma.Public\CAD\drawings\11140000s\11145929\11145929-REPORTS\11145929-5RM00(004)GN\11145929-5RM00(004)GN-SO003.DWG

LEGEND

- APPROXIMATE PROPERTY LINE
- MW-1 — MONITORING WELL LOCATION
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- ABANDONED IN PLACE UNDERGROUND PIPING TRENCH
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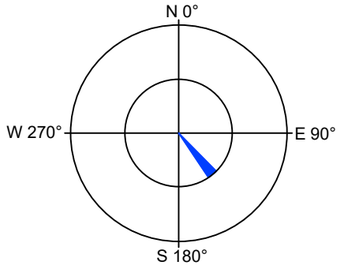
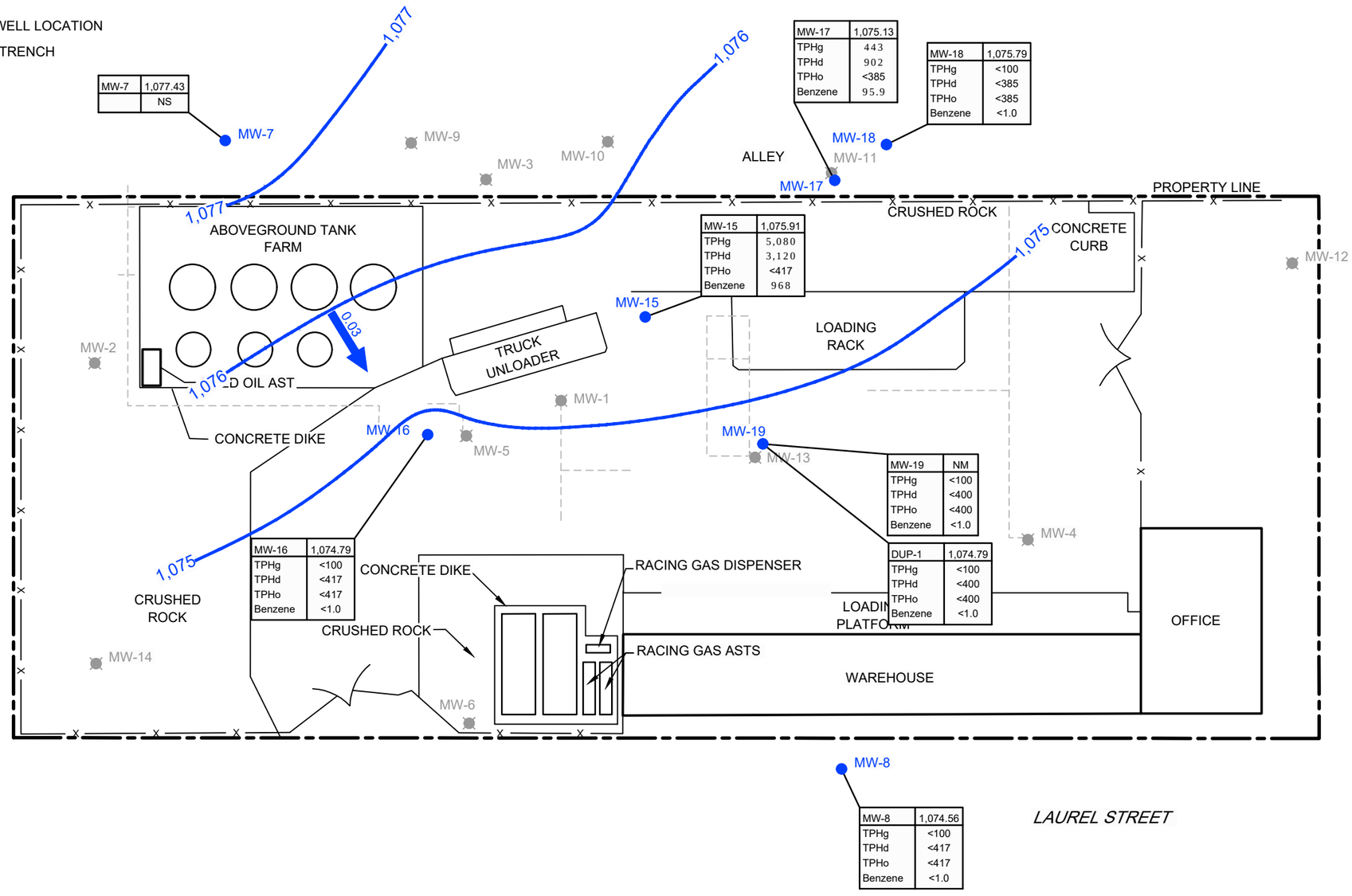
- SAMPLE LOCATION
- GROUNDWATER ELEVATION (MSL)
- RESULT
- PARAMETER

MW-16	1,068.96
TPHg	<100
TPHd	<400
TPHo	<400
Benzene	<1.0

NOTES:
1. ALL CONCENTRATIONS REPORTED IN MICROGRAMS PER LITER (µg/L)
1. TPH-G = TOTAL PETROLEUM HYDROCARBONS AS GASOLINE
2. TPH-D = TOTAL PETROLEUM HYDROCARBONS AS DISIEL
3. TPH-O = TOTAL PETROLEUM PYDROCARBONS AS OIL
4. B = BENZENE
5. NS = NOT SAMPLED





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0 15 30ft

PHILLIPS 66 SITE 0980
920 NORTH 6TH AVENUE
YAKIMA, WASHINGTON

GROUNDWATER CONTOUR AND CHEMICAL CONCENTRATION MAP - JUNE 17, 2019

11145929-5RM00

Jan 22, 2020

FIGURE 3

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LEGEND

- APPROXIMATE PROPERTY LINE
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- 0.02 — GROUNDWATER FLOW DIRECTION AND GRADIENT
- SAMPLE LOCATION
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- RESULT
- PARAMETER

MW-16	1,068.96
TPHg	<100
TPHd	<400
TPHo	<400
Benzene	<1.0

NOTES:
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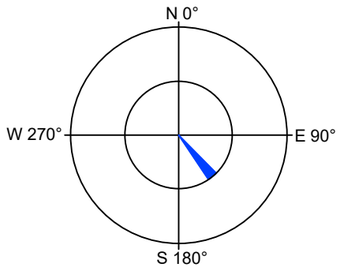
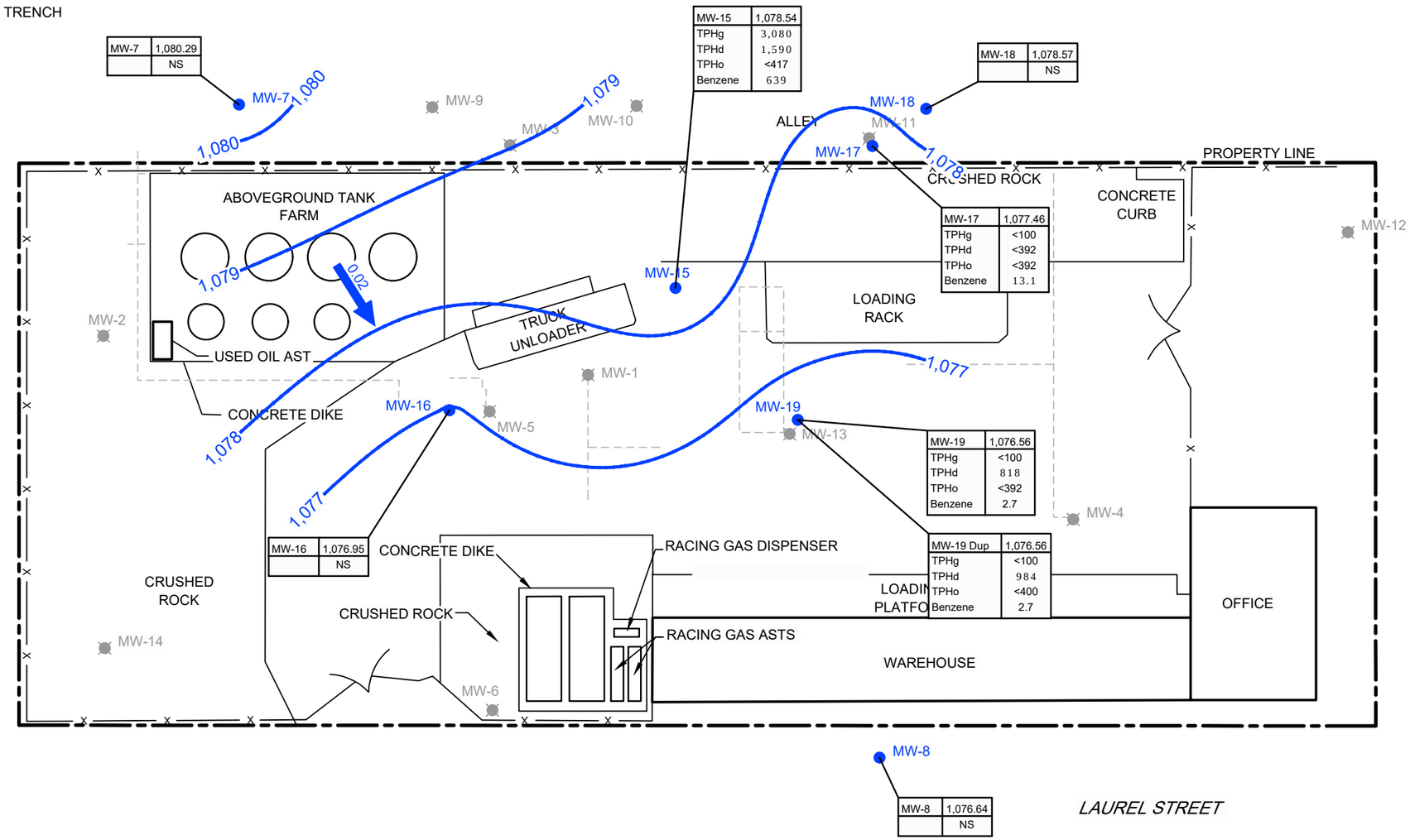
2. TPH-D = TOTAL PETROLEUM HYDROCARBONS AS DIESEL
3. TPH-O = TOTAL PETROLEUM HYDROCARBONS AS MOTOR OIL
4. B = BENZENE
5. <X = NOT DETECTED AT OR ABOVE LABORATORY REPORTING LIMIT
6. NS = NOT SAMPLED



GROUNDWATER FLOW DIRECTION



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0 15 30ft

PHILLIPS 66 SITE 0980
920 NORTH 6TH AVENUE
YAKIMA, WASHINGTON

GROUNDWATER CONTOUR AND CHEMICAL CONCENTRATION MAP - SEPTEMBER 16, 2019

11145929-5RM00
Jan 22, 2020

FIGURE 4

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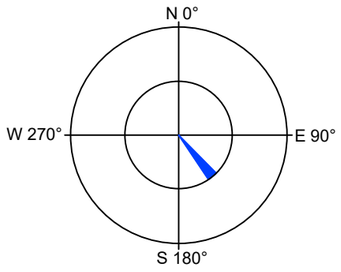
LEGEND

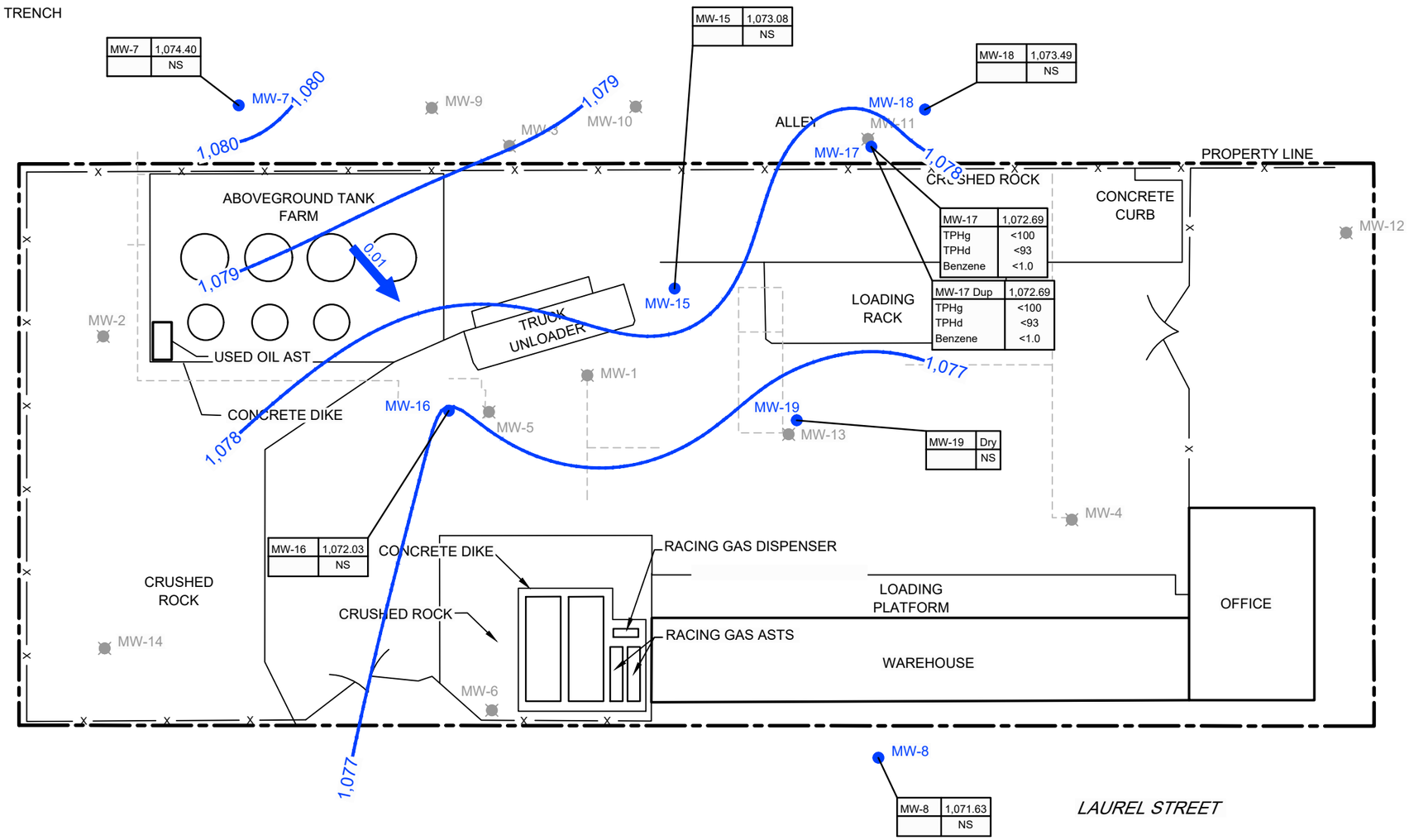
- APPROXIMATE PROPERTY LINE
- MW-1 — MONITORING WELL LOCATION
- MW-6 — DECOMMISSIONED/ABANDONED MONITORING WELL LOCATION
- ABANDONED IN PLACE UNDERGROUND PIPING TRENCH
- 1,071 — GROUNDWATER ELEVATION CONTOUR DASHED WHERE INFERRED (FEET AMSL)
- 0.01 — GROUNDWATER FLOW DIRECTION AND GRADIENT
- SAMPLE LOCATION
- GROUNDWATER ELEVATION (MSL)
- RESULT
- PARAMETER

MW-17	1,072.69
TPHg	<100
TPHd	<93
Benzene	<1.0

NOTES:
1. ALL CONCENTRATIONS REPORTED IN MICROGRAMS PER LITER (µg/L)
1. TPH-G = TOTAL PETROLEUM HYDROCARBONS AS GASOLINE
2. TPH-D = TOTAL PETROLEUM HYDROCARBONS AS DIESEL
3. TPH-O = TOTAL PETROLEUM HYDROCARBONS AS MOTOR OIL
4. B = BENZENE
5. <X = NOT DETECTED AT OR ABOVE LABORATORY REPORTING LIMIT
6. NS = NOT SAMPLED
7. DUPLICATED SAMPLE COLLECTED MW-17



GROUNDWATER FLOW DIRECTION



Source: STANTEC, FIGURE 2, SITE MAP WITH ANALYTICAL RESULTS (JUNE 14 & 15, 2010), DATED 7/12/10. STATEWIDE LAND SURVEYING, INC. 6/5/18.

0 15 30ft

PHILLIPS 66 SITE 0980
920 NORTH 6TH AVENUE
YAKIMA, WASHINGTON

GROUNDWATER CONTOUR AND CHEMICAL CONCENTRATION MAP - DECEMBER 26, 2019

11145929-5RM00

Jan 24, 2020

FIGURE 5

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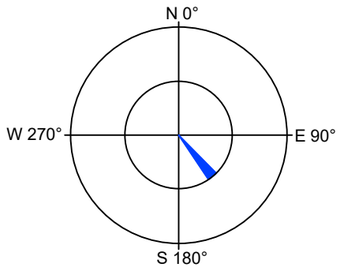
LEGEND

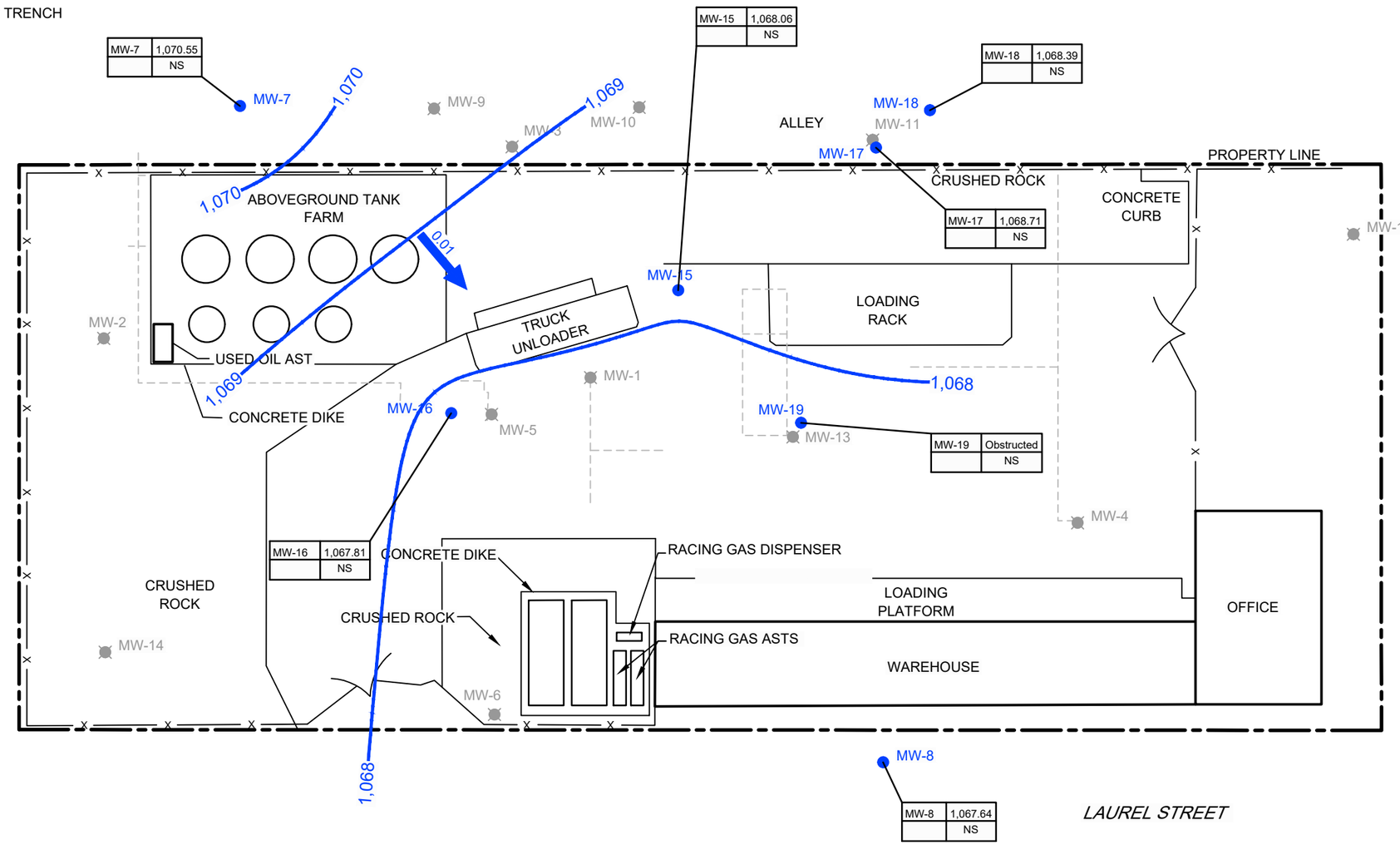
- APPROXIMATE PROPERTY LINE
- MW-1 — MONITORING WELL LOCATION
- MW-6 — DECOMMISSIONED/ABANDONED MONITORING WELL LOCATION
- ABANDONED IN PLACE UNDERGROUND PIPING TRENCH
- 1,071 — GROUNDWATER ELEVATION CONTOUR DASHED WHERE INFERRED (FEET AMSL)
- 0.01 — GROUNDWATER FLOW DIRECTION AND GRADIENT
- SAMPLE LOCATION
- GROUNDWATER ELEVATION (MSL)
- RESULT
- PARAMETER

MW-16	1,068.96
TPHg	<100
TPHd	<400
TPHo	<400
Benzene	<1.0

NOTES:
1. ALL CONCENTRATIONS REPORTED IN MICROGRAMS PER LITER (µg/L)
1. TPH-G = TOTAL PETROLEUM HYDROCARBONS AS GASOLINE
2. TPH-D = TOTAL PETROLEUM HYDROCARBONS AS DIESEL
3. TPH-O = TOTAL PETROLEUM HYDROCARBONS AS MOTOR OIL
4. B = BENZENE
5. <X = NOT DETECTED AT OR ABOVE LABORATORY REPORTING LIMIT
6. NS = NOT SAMPLED



GROUNDWATER FLOW DIRECTION



Source: STANTEC, FIGURE 2, SITE MAP WITH ANALYTICAL RESULTS (JUNE 14 & 15, 2010), DATED 7/12/10. STATEWIDE LAND SURVEYING, INC. 6/5/18.

0 15 30ft

PHILLIPS 66 SITE 0980
920 NORTH 6TH AVENUE
YAKIMA, WASHINGTON

GROUNDWATER CONTOUR AND CHEMICAL CONCENTRATION MAP - MARCH 9, 2020

11145929-5RM00

Jul 16, 2020

FIGURE 6

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LEGEND

- APPROXIMATE PROPERTY LINE
- MW-1 — MONITORING WELL LOCATION
- MW-6 — DECOMMISSIONED/ABANDONED MONITORING WELL LOCATION
- ABANDONED IN PLACE UNDERGROUND PIPING TRENCH
- 1,071 — GROUNDWATER ELEVATION CONTOUR DASHED WHERE INFERRED (FEET AMSL)
- 0.01 — GROUNDWATER FLOW DIRECTION AND GRADIENT
- SAMPLE LOCATION
- GROUNDWATER ELEVATION (MSL)
- RESULT
- PARAMETER

MW-17	1,072.69
TPHg	<100
TPHd	<93
Benzene	<1.0

NOTES:

1. ALL CONCENTRATIONS REPORTED IN MICROGRAMS PER LITER (µg/L)
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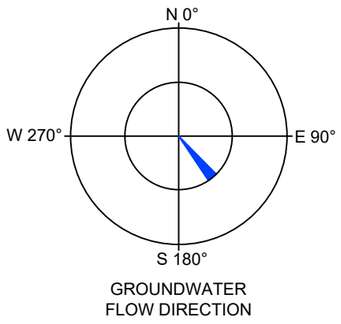
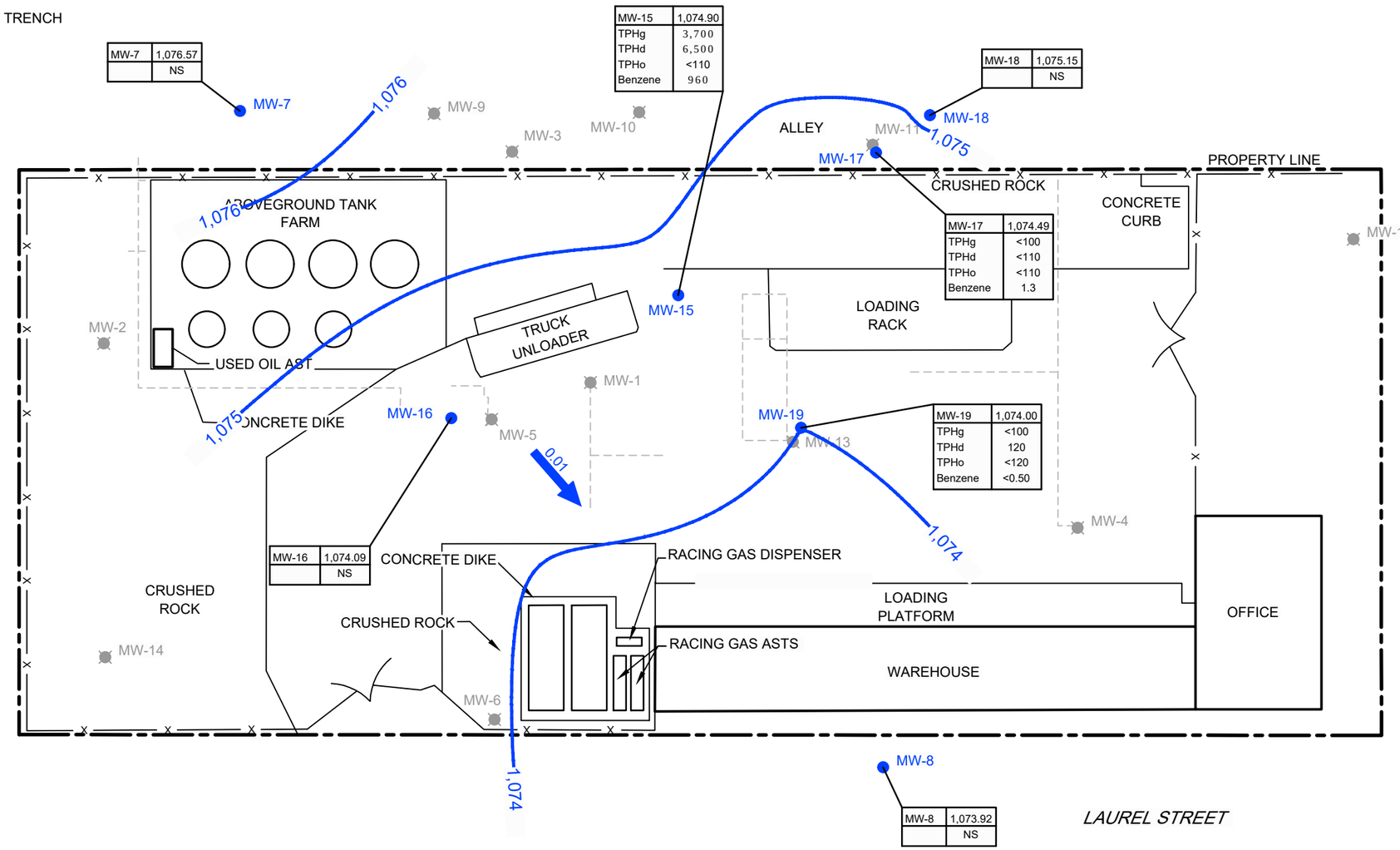
2. TPH-D = TOTAL PETROLEUM HYDROCARBONS AS DIESEL
3. TPH-O = TOTAL PETROLEUM HYDROCARBONS AS MOTOR OIL
4. B = BENZENE
5. <X = NOT DETECTED AT OR ABOVE LABORATORY REPORTING LIMIT
6. NS = NOT SAMPLED
7. BOLD = EXCEEDANCE ABOVE MODEL TOXICS CONTROL ACT (MTCA) METHOD A CLEANUP LEVEL



GROUNDWATER FLOW DIRECTION



Source: STANTEC, FIGURE 2, SITE MAP WITH ANALYTICAL RESULTS (JUNE 14 & 15, 2010), DATED 7/12/10. STATEWIDE LAND SURVEYING, INC. 6/5/18.

0 15 30ft

PHILLIPS 66 SITE 0980
920 NORTH 6TH AVENUE
YAKIMA, WASHINGTON

GROUNDWATER CONTOUR AND CHEMICAL CONCENTRATION MAP - JUNE 17, 2020

11145929-5RM00
Jul 16, 2020

FIGURE 7

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Tables

Table 1

Groundwater Monitoring Data and Analytical Results
Former Union Oil Facility
Phillips 66 Site 980
920 North 6th Avenue
Yakima, Washington

Well ID	Sample Date	TOC Elevation (feet)	Depth to Water (feet)	LPH (feet)	GW Elevation (feet)	TPH-G (µg/L)	TPH-D (µg/L)	TPH-O (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	EDC (µg/L)	EDB (µg/L)	Total Lead (µg/L)	Dissolved Lead (µg/L)	Ethanol (µg/L)	Naphthalene (µg/L)
MTCA Method A Cleanup Levels:						800	500	500	5	1,000	700	1,000	20	5	0.01	15	15	NE	160
MW-1	7/14/1989	104.44	--		--	--	--	**38,000**	<0.5	<0.5	1.4	5.5	--	--	--	--	--	--	--
MW-1	5/23/1991	103.8	14.04	--	90.40	<1,000	<1000	--	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--
MW-1	9/25/1991	103.8	18.57	--	85.87	<1,000	<1000	<1,000	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--
MW-1	9/28/1998	103.8	14.10		90.34	<50	**638**	<500	<0.5	<0.5	<0.5	<1.0	--	--	--	--	--	--	--
MW-1	3/24/1999	103.8	21.96	--	83.21	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-1	4/28/1999	103.8	18.21	--	83.21	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-1	3/22/2000	103.8	20.73	--	83.71	84.1	**1,800**	<500	**12.9**	<0.500	<0.500	<1.00	<5.00	--	--	--	--	--	--
MW-1	9/14/2000	103.8	14.01	--	90.43	<50.0	**730**	<500	<0.5	<0.500	<0.500	<1.00	--	--	--	--	--	--	--
MW-1	4/12/2001	103.8	20.08	--	84.36	118	**60,100**	<20,500	**8.31**	<0.500	<0.500	<1.00	--	--	--	--	--	--	--
MW-1	9/12/2001	103.8	14.05	--	90.39	<50.0	261	<500	<0.5	<0.500	<0.500	<1.00	--	--	--	--	--	--	--
MW-1	3/20/2002	103.8	18.98		85.46	245	**71,600**	**1,050**	<0.5	<2.00	<1.00	<1.50	<5.00	--	--	--	--	--	--
MW-1	9/25/2002	103.8	14.13	--	90.31	<100	383	<500	1.70	2.99	<1.00	1.55	--	--	--	--	--	--	--
MW-1	3/11/2003	103.8	17.51	--	86.93	639	**10,200**	<500	**158**	2.97	17.7	23.8	--	--	--	--	--	--	--
MW-1	7/31/2003	103.8	13.96	--	90.48	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-1	9/23/2003	103.8	14.26	--	90.18	<50	**974**	<500	<0.5	<0.500	<0.500	<1.00	--	--	--	--	--	--	--
MW-1	3/9/2004	103.8	20.43	--	84.01	**1,220**	**573**	<237	**673**	<10	99.9	144.4	--	--	--	--	--	--	--
MW-1	9/13/2004	103.8	14.10	--	90.34	588	**8,470**	<498	<1.0	<1	<1	<2	--	--	--	--	--	--	--
MW-1	4/7/2005	103.8	23.05	--	81.39	**19,200**	**620,000**	**8,890**	**78.5**	<50	<50	64.6	--	--	--	--	--	--	--
MW-1	6/16/2005	103.8	16.02	--	88.42	**1,090**	**191,000**	<10,200	<1.0	<1	1.67	8.37	--	--	--	--	--	--	--
MW-1	9/27/2005	103.8	14.33	--	90.11	<48	**2,100**	180	<0.2	<0.2	<0.2	<0.6	--	--	--	--	--	--	--
MW-1	12/6/2005	103.8	17.11	--	87.33	110	**13,000**	<2,000	2.0	<0.7	<0.8	<0.8	--	--	--	--	--	--	--
MW-1	2/3/2006	103.8	18.53	--	85.91	200	**1,600**	<98	**95**	2	9	29	--	--	--	--	--	--	--
MW-1	4/26/2006	103.8	15.30	--	89.14	380	**9,000**	<500	**30**	2.0	28	83	--	--	--	--	--	--	--
MW-1	7/26/2006	103.8	13.96	--	90.48	<48	130	<100	<0.5	<0.7	<0.8	<0.8	--	--	--	--	--	--	--
MW-1	10/18/2006	103.8	14.51	--	89.93	<48	310	<98	<0.5	<0.7	<0.8	<0.8	--	--	--	--	--	--	--
MW-1	1/23/2007	103.8	19.01	--	85.43	<48	**3,800**	<500	<0.5	<0.7	<0.8	<0.8	--	--	--	--	--	--	--
MW-1	4/19/2007	103.8	18.75	--	85.69	62	**2,410**	<490	1.50	<0.7	<0.8	<0.8	--	--	--	--	--	--	--
MW-1	7/17/2007	103.8	14.12	--	89.68	<50	400	<96	<0.5	<0.7	<0.8	<0.8	--	--	--	--	--	--	--
MW-1	10/15/2007	103.8								Unable to open									
MW-1	1/16/2008	103.8								Unable to open									
MW-1	4/17/2008	103.8	19.78	--	84.02	<50	290	<96	<0.5	<0.7	<0.8	<0.8	--	--	--	--	--	--	--
MW-1	10/15/2008	103.8	Unable to gauge			<50	<78	<98	<0.5	<0.7	<0.8	<0.8	--	--	--	--	--	--	--
MW-1	4/8/2009	103.8	21.20	--	82.60	439	400	<410	1.4	<1.0	1.6	8.2	<1.0	<1.0	<0.010	8.02	6.26	--	--
MW-1	6/24/2009	103.8	14.35	--	89.45						Gauge only this quarter.								
MW-1	9/21/2009	103.8	13.75	--	90.05						Gauge only this quarter.								
MW-1	11/30/2009	103.8	16.54	--	87.26						Gauge only this quarter.								
MW-1	3/2/2010	103.8	19.83	--	83.97	299	228	98.5 J	**80.9**	1.1	7.5	13.0	--	--	--	--	--	--	--
MW-1	6/14/2010	103.8	14.87	--	88.93	<50.0	<77.7	<388	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	--	--
MW-1	8/30/2010	103.8	13.13	--	90.67	<50.0	<79.2	<396	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	--	--
MW-1	12/14/2010	103.8	16.54	--	87.26	<50.0	256	<396	**76.3**	<1.0	3.9	9.3	--	--	--	--	--	--	--
MW-1	3/21/2011	103.8	20.37	--	83.43	<50.0	78.5	<392	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	--	--
MW-1	5/19/2011	103.8	15.93	--	87.87	<50.0	<78.4	<392	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	--	--
MW-1	9/8/2011	103.8	13.35	--	90.45	<50	<29	<67	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	<50	--
MW-1	12/28/11[b]	103.8	18.22	--	85.58	<50	<30	<70	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	<50	--
MW-1	3/8/2012	103.8	21.09	--	82.71	<50	<29	<67	0.5	<0.5	<0.5	<0.5	--	--	--	--	--	<50	--
MW-1	6/27/2012	103.8	13.78	--	90.02	<50	<28	<66	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	<50	--
MW-1	9/4/2012	103.8	12.90	--	90.90	<50	<29	<68	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	<50	--
MW-1	11/27/2012	103.8	15.80	--	88.00	130	**1,100**	<70	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	<50	--
MW-1	3/25/2013	103.8	22.10	--	81.70	<50	<32	<74	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	<50	--
MW-1	6/13/2013	103.8	16.10	--	87.70	<50	<29	<67	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	<50	--
MW-1	9/23/2013	103.8	14.00	--	89.80	<50	<30	<69	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	<50	--
MW-1	12/12/2013	103.8	17.30	--	86.50	<50	<30	<70	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	<50	--
MW-1	4/9/2014	103.8								Well was dry									
MW-1	6/25/2014	103.8								Well was dry									
MW-1	9/24/2014	103.8								Well was dry									
MW-1	12/28/2015	103.8								Unable to locate									
MW-2	7/14/1989	105.98	--	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--
MW-2	5/23/1991	105.76	14.12		91.86	<1,000	<1,000	--	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--
MW-2	9/25/1991	105.76	18.91	--	87.07	<1,000	<1,000	<1,000	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--
MW-2	9/28/1998	105.76	14.52	--	91.46	<50	<250	<500	<0.5	<0.5	<0.5	<1.0	--	--	--	--	--	--	--
MW-2	3/24/1999	105.76	22.45	--	83.53	<50	<250	<500	<0.5	<0.5	<0.5	<1.0	<5.00	--	--	--	--	--	--

Table 1

Groundwater Monitoring Data and Analytical Results
Former Union Oil Facility
Phillips 66 Site 980
920 North 6th Avenue
Yakima, Washington

Well ID	Sample Date	TOC Elevation (feet)	Depth to Water (feet)	LPH (feet)	GW Elevation (feet)	TPH-G (µg/L)	TPH-D (µg/L)	TPH-O (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	EDC (µg/L)	EDB (µg/L)	Total Lead (µg/L)	Dissolved Lead (µg/L)	Ethanol (µg/L)	Naphthalene (µg/L)
MTCA Method A Cleanup Levels:						800	500	500	5	1,000	700	1,000	20	5	0.01	15	15	NE	160
MW-2	3/22/2000	105.76	22.25	--	83.73	<50.0	**5,660**	<500	<0.500	<0.500	<0.500	<1.00	<5.00	--	--	--	--	--	--
MW-2	9/14/2000	105.76	14.43	--	91.55	<50.0	<250	<500	<0.500	<0.500	<0.500	<1.00	--	--	--	--	--	--	--
MW-2	4/12/2001	105.76	21.01	--	84.97	<50.0	<250	<500	<0.500	<0.500	<0.500	<1.00	--	--	--	--	--	--	--
MW-2	9/12/2001	105.76	14.44	--	91.54	<50.0	<250	<500	<0.500	<0.500	<0.500	<1.00	--	--	--	--	--	--	--
MW-2	3/20/2002	105.76	19.80	--	86.18	<100	<250	<500	<0.500	<2.00	<1.00	<1.50	<5.00	--	--	--	--	--	--
MW-2	9/25/2002	105.76	14.63	--	91.35	<100	<250	<500	<0.500	<2.00	<1.00	<1.50	--	--	--	--	--	--	--
MW-2	3/11/2003	105.76	18.20	--	87.78	<50.0	<250	<500	<0.500	<0.500	<0.500	<1.00	--	--	--	--	--	--	--
MW-2	7/31/2003	105.76	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-2	9/23/2003	105.76	14.79	--	91.19	<50	<250	<500	<0.500	<0.500	<0.500	<1.00	--	--	--	--	--	--	--
MW-2	3/9/2004	105.76	21.73	--	84.25	<100	<119	<238	<1.00	<1.00	<1.00	<2.00	--	--	--	--	--	--	--
MW-2	8/24/2004	105.76	14.48	--	91.50	<100	<247	<494	<1	<1	<1	<2	--	--	--	--	--	--	--
MW-2	4/7/2005	105.76								Well covered by drums									
MW-2	6/16/2005	105.76	16.75	--	89.23	<100	<271	<542	<1	<1	<1	<2	--	--	--	--	--	--	--
MW-2	9/27/2005	105.76	14.70	--	91.28	<48	<82	<100	<0.2	<0.2	<0.2	<0.6	--	--	--	--	--	--	--
MW-2	12/6/2005	105.76	18.01	--	87.97	<48	93	180	<0.5	<0.7	<0.8	<0.8	--	--	--	--	--	--	--
MW-2	2/3/2006	105.76	19.68	--	86.30	<48	<82	<100	<0.5	<0.7	<0.8	<0.8	--	--	--	--	--	--	--
MW-2	4/26/2006	105.76	15.62	--	90.36	<48	<77	<96	<0.5	<0.7	<0.8	<0.8	--	--	--	--	--	--	--
MW-2	7/26/2006	105.76	14.25	--	91.73	<48	190	<100	<0.5	<0.7	<0.8	<0.8	--	--	--	--	--	--	--
MW-2	10/18/2006	105.76	14.95	--	91.03	<48	<79	<99	<0.5	<0.7	<0.8	<0.8	--	--	--	--	--	--	--
MW-2	1/23/2007	105.76	19.97	--	86.01	<48	<79	<99	<0.5	<0.7	<0.8	<0.8	--	--	--	--	--	--	--
MW-2	4/19/2007	105.76								Not sampled									
MW-2	7/17/2007	105.76	14.35	--	91.41	<50	<77	<96	<0.5	<0.7	<0.8	<0.8	--	--	--	--	--	--	--
MW-2	10/16/2007	105.76	14.47	--	91.29	<50	<76	<95	<0.5	<0.7	<0.8	<0.8	--	--	--	--	--	--	--
MW-2	1/16/2008	105.76								Unable to locate									
MW-2	4/17/2008	105.76	19.74	--	86.02	<50	<76	<95	<0.5	<0.7	<0.8	<0.8	--	--	--	--	--	--	--
MW-2	10/15/2008	105.76	14.25	--	91.51	<50	<77	<97	<0.5	<0.7	<0.8	<0.8	--	--	--	--	--	--	--
MW-2	4/8/2009	105.76	23.29	--	82.47							Insufficient water to sample							
MW-2	6/24/2009	105.76	14.95	--	90.81							Gauge only this quarter.							
MW-2	9/21/2009	105.76	14.25	Trace	91.51							Gauge only this quarter.							
MW-2	11/30/2009	105.76	17.36	--	88.40							Gauge only this quarter.							
MW-2	3/2/2010	105.76	21.10	--	84.66	16.4 J	38.3 J	<59.2	<0.12	<0.21	<0.20	2.3 J	--	--	--	--	--	--	--
MW-2	6/14/2010	105.76	15.28	--	90.48	<50.0	<77.7	<388	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	--	--
MW-2	8/30/2010	105.76	13.83	--	91.93	<50.0	<77.7	<388	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	--	--
MW-2	12/14/2010	105.76									Inaccessible								
MW-2	3/27/2011	105.76									Inaccessible								
MW-2	5/19/2011	105.76									Inaccessible								
MW-2	9/8/2011	105.76	13.90	--	91.86	<50	<28	<66	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	<50	--
MW-2	12/28/11[b]	105.76	19.20	--	86.56	<50	<30	<69	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	<50	--
MW-2	3/8/2012	105.76	22.36	--	83.40	<50	<28	<66	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	<50	--
MW-2	6/27/2012	105.76	14.16	--	91.60	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-2	07/12/12[c]	105.76	13.86	--	91.90	<50	<29	<68	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	<50	--
MW-2	9/4/2012	105.76	13.49	--	92.27	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-2	11/27/2012	105.76	16.42	--	89.34	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-2	3/25/2013	105.76								Well was dry									
MW-2	6/13/2013	105.76	16.83	--	88.93	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-2	9/23/2013	105.76	14.60	--	91.16	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-2	12/12/2013	105.76	18.04		87.72	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-2	4/9/2014	105.76									Well was dry								
MW-2	6/25/2014	105.76									Well was dry								
MW-2	9/24/2014	105.76									Well was dry								
MW-2	12/28/2015	105.76									Well was dry								
MW-3	7/14/1989	104.66	--	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--
MW-3	5/23/1991	104.32	13.37	--	91.29	<1,000	<1,000	--	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--
MW-3	9/25/1991	104.32	17.98	--	86.68	<1,000	<1,000	<1,000	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--
MW-3	9/28/1998	104.32	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-3	3/24/1999	104.32	21.20	--	83.46	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-3	4/28/1999	104.32	18.30	--	86.36	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-3	3/22/2000	104.32	20.50	--	84.16	**6,300**	<250	<500	**392**	**1,160**	206	930	<50.0	--	--	--	--	--	--
MW-3	9/14/2000	104.32	13.22	--	91.44	**3,660**	**728**	<500	**158**	339	150	526	--	--	--	--	--	--	--
MW-3	4/12/2001	104.32	19.6	--	85.06	**10,400**	**3,400**	<500	**281**	**1,090**	278	**1,190**	--	--	--	--	--	--	--
MW-3	9/12/2001	104.32	13.21	--	91.45	**1,180**	**552**	<500	**48.4**	13.5	31.7	50.3	--	--	--	--	--	--	--

Table 1

Groundwater Monitoring Data and Analytical Results
Former Union Oil Facility
Phillips 66 Site 980
920 North 6th Avenue
Yakima, Washington

Well ID	Sample Date	TOC Elevation (feet)	Depth to Water (feet)	LPH (feet)	GW Elevation (feet)	TPH-G (µg/L)	TPH-D (µg/L)	TPH-O (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	EDC (µg/L)	EDB (µg/L)	Total Lead (µg/L)	Dissolved Lead (µg/L)	Ethanol (µg/L)	Naphthalene (µg/L)
MTCA Method A Cleanup Levels:						800	500	500	5	1,000	700	1,000	20	5	0.01	15	15	NE	160
MW-3	3/20/2002	104.32	18.35	--	86.31	**45,600**	491	<500	**1,060**	**6,150**	**1,460**	**6,720**	<2.00	--	--	--	--	--	--
MW-3	9/25/2002	104.32	13.32	--	91.34	**1,070**	<250	<500	**50.9**	20.4	37.6	89.5	--	--	--	--	--	--	--
MW-3	3/11/2003	104.32	16.44	--	88.22	**1,660**	**509**	<500	**21.8**	76.9	50.4	206	--	--	--	--	--	--	--
MW-3	7/31/2003	104.32	13.21	--	91.45	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-3	9/23/2003	104.32	13.44	--	91.22	617	**1,060**	<500	**17.9**	8.47	16.1	17.5	--	--	--	--	--	--	--
MW-3	3/9/2004	104.32	20.22	--	84.44	**54,800**	**1,300**	<256	**1,180**	**11,000**	**1,010**	**5,340**	--	--	--	--	--	--	--
MW-3	8/24/2004	104.32	13.35	--	91.31	**16,600**	**5,760**	<499	**56**	122	152	**1,309**	--	--	--	--	--	--	--
MW-3	4/7/2005	104.32	22.38	--	82.28	**54,500**	<244	<487	**517**	**8,650**	**1,010**	**7,910**	--	--	--	--	--	--	--
MW-3	6/16/2005	104.32	15.50	--	89.16	**48,000**	**85,800**	<5,140	**81.1**	976	**1,250**	**7,760**	--	--	--	--	--	--	--
MW-3	9/27/2005	104.32	13.44	--	91.22	**6,200**	**9,200**	<2,000	**30**	64	110	360	--	--	--	--	--	--	--
MW-3	12/6/2005	104.32	16.49	--	88.17	**2,800**	**4,900**	<970	**19**	25	40	150	--	--	--	--	--	--	--
MW-3	2/3/2006	104.32	18.28	--	86.38	**42,000**	**3,900**	<540	**460**	**2,400**	**1,800**	**7,900**	--	--	--	--	--	--	--
MW-3	4/26/2006	104.32	14.09	--	90.57	470	**570**	380	<0.5	<0.7	4.0	26	--	--	--	--	--	--	--
MW-3	7/26/2006	104.32	13.08	--	91.58	**5,400**	180	100	**60**	290	190	660	--	--	--	--	--	--	--
MW-3	10/18/2006	104.32	13.77	--	90.39	**1,000**	140	<98	**5**	26	25	86	--	--	--	--	--	--	--
MW-3	1/23/2007	104.32	18.45	--	86.21	**10,000**	**2,400**	<490	**180**	250	260	**1,400**	--	--	--	--	--	--	--
MW-3	4/19/2007	104.32	18.27	--	86.39	**3,850**	400	<98	**11.8**	131	158	864	--	--	--	--	--	--	--
MW-3	7/17/2007	104.32	13.21	--	91.11	**6,300**	**860**	<99	**13.0**	24	140	710	--	--	--	--	--	--	--
MW-3	10/16/2007	104.32	13.27	--	91.05	**2,300**	220	<95	3	2	43	32	--	--	--	--	--	--	--
MW-3	1/16/2008	104.32									Unable to open								
MW-3	4/17/2008	104.32	19.30	--	85.02	470	<76	<95	**6**	8	2	52	--	--	--	--	--	--	--
MW-3	10/15/2008	104.32	13.11	--	91.21	320	<78	<97	0.6	<0.7	8	4	--	--	--	--	--	--	--
MW-3	4/8/2009	104.32	21.85	--	82.47							Insufficient water to sample							
MW-3	6/24/2009	104.32	13.70	--	90.62	251 [cd]	66 J	<39	<1.0	1.5	3.1	51.8	--	--	--	--	--	--	--
MW-3	9/21/2009	104.32	13.24	--	91.08	<50.0	<78	100 J	<1.0	<1.0	<1.0	0.15 J	--	--	--	--	--	--	--
MW-3	11/30/2009	104.32	16.06	--	88.26	<50.0 [ab]	41J	<380	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	--	--
MW-3	3/2/2010	104.32	19.70	--	84.62	**20,700**	**945**	255 J	**150**	**1,470**	654	**6,710**	--	--	--	--	--	--	--
MW-3	6/15/2010	104.32	13.91	--	90.41	171	283	<392	<1.0	<1.0	1.8	25.0	--	--	--	--	--	--	--
MW-3	8/31/2010	104.32	12.91	--	91.41	<50.0	<78.4	<392	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	--	--
MW-3	12/15/2010	104.32	16.18	--	88.14	<50.0	<77.7	<388	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	--	--
MW-3	3/21/2011	104.32	20.38	--	83.94	**7,790**	**810**	<392	**28.9**	344	275	**1,940**	--	--	--	--	--	--	--
MW-3	5/20/2011	104.32	15.45	--	88.87	56.4	<78.4	<392	<1.0	<1.0	1.2	9.5	--	--	--	--	--	--	--
MW-3	9/8/2011	104.32	13.02	--	91.30	<50	<29	<67	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	<50	--
MW-3	12/28/11 [b]	104.32	17.86	--	86.46	**870**	**530**	<140	3	<0.5	<0.5	55	--	--	--	--	--	<50	--
MW-3	3/9/2012	104.32	20.75	--	83.57	**3,300**	290	<67	<1	<1	<1	<1	--	--	--	--	--	<100	--
MW-3	6/27/2012	104.32	13.19	--	91.13	<50	<28	<66	<0.5	<0.5	<0.5	1	--	--	--	--	--	<50	--
MW-3	9/4/2012	104.32	12.71	--	91.61	<50	<30	<70	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	<50	--
MW-3	11/27/2012	104.32	15.22	--	89.10	<50	<35	<82	<0.5	0.6	<0.5	2	--	--	--	--	--	<50	--
MW-3	3/25/2013	104.32	21.78	--	82.54	580	32	<67	<0.5	1	5	140	--	--	--	--	--	<50	--
MW-3	6/13/2013	104.32	15.65	--	88.67	<50	<29	<68	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	<50	--
MW-3	9/23/2013	104.32	13.50	--	90.82	<50	40	<73	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	<50	--
MW-3	12/12/2013	104.32	16.61	--	87.71	110	<30	<70	<0.5	2	3	27	--	--	--	--	--	<50	--
MW-3	4/9/2014	104.32									Well was dry								
MW-3	6/25/2014	104.32									Well was dry								
MW-3	9/24/2014	104.32									Well was dry								
MW-3	12/28/2015	104.32									Well was dry								
MW-4	7/14/1989	104.12	--	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--
MW-4	5/23/1991	103.83	16.25	--	87.87	<1,000	<1,000	--	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--
MW-4	9/25/1991	103.83	19.86	--	84.26	<1,000	<1,000	<1,000	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--
MW-4	9/28/1998	103.83	15.79	--	88.33	<50	<250	<500	1	<0.5	<0.5	<1.0	--	--	--	--	--	--	--
MW-4	3/24/1999	103.83	22.82	--	81.30	<50	<250	<500	<0.5	<0.5	<0.5	<1.0	<5.00	--	--	--	--	--	--
MW-4	3/22/2000	103.83	22.45	--	81.67	<50.0	<250	<500	<0.500	<0.500	<0.500	<1.00	<5.00	--	--	--	--	--	--
MW-4	9/14/2000	103.83	15.50	--	88.62	<50.0	<250	<500	<0.500	<0.500	<0.500	<1.00	--	--	--	--	--	--	--
MW-4	4/12/2001	103.83	21.68	--	82.44	<50.0	<250	<500	<0.500	<0.500	<0.500	<1.00	--	--	--	--	--	--	--
MW-4	9/12/2001	103.83	15.55	--	88.57	<50.0	<250	<500	<0.500	<0.500	<0.500	<1.00	--	--	--	--	--	--	--
MW-4	3/20/2002	103.83	20.78	--	83.34	<100	<250	<500	<0.500	<2.00	<1.00	<1.50	<5.00	--	--	--	--	--	--
MW-4	9/25/2002	103.83	15.58	--	88.54	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-4	3/11/2003	103.83	19.55	--	84.57	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-4	7/31/2003	103.83	15.45	--	88.67	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-4	9/23/2003	103.83	15.80	--	88.32	<50	<250	<500	<0.500	<0.500	<0.500	<1.00	--	--	--	--	--	--	--
MW-4	3/9/2004	103.83	21.80	--	82.32	<100	<118	<236	<1.00	<1.00	<1.00	<2.00	--	--	--	--	--	--	--

Table 1

Groundwater Monitoring Data and Analytical Results
Former Union Oil Facility
Phillips 66 Site 980
920 North 6th Avenue
Yakima, Washington

Well ID	Sample Date	TOC Elevation (feet)	Depth to Water (feet)	LPH (feet)	GW Elevation (feet)	TPH-G (µg/L)	TPH-D (µg/L)	TPH-O (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	EDC (µg/L)	EDB (µg/L)	Total Lead (µg/L)	Dissolved Lead (µg/L)	Ethanol (µg/L)	Naphthalene (µg/L)
MTCA Method A Cleanup Levels:						800	500	500	5	1,000	700	1,000	20	5	0.01	15	15	NE	160
MW-4	8/24/2004	103.83	15.60	--	88.52	<100	<248	<497	<1	<1	<1	<2	--	--	--	--	--	--	--
MW-4	4/7/2005	103.83	23.56	--	80.56	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-4	6/16/2005	103.83	17.78	--	86.34	<100	<253	<506	<1	<1	<1	<2	--	--	--	--	--	--	--
MW-4	9/27/2005	103.83	16.05	--	88.07	<48	170	<100	<0.2	<0.2	<0.2	<0.6	--	--	--	--	--	--	--
MW-4	12/6/2005	103.83							Well not located under ice and snow.										
MW-4	2/3/2006	103.83	20.35	--	83.77	<48	<79	<99	<0.5	<0.7	<0.8	<0.8	--	--	--	--	--	--	--
MW-4	4/26/2006	103.83	18.41	--	85.71	<48	<79	100	<0.5	<0.7	<0.8	<0.8	--	--	--	--	--	--	--
MW-4	7/26/2006	103.83	15.98	--	88.14	<48	<80	<100	<0.5	<0.7	<0.8	<0.8	--	--	--	--	--	--	--
MW-4	10/18/2006	103.83	16.40	--	87.72	<48	<79	190	<0.5	<0.7	<0.8	<0.8	--	--	--	--	--	--	--
MW-4	1/23/2007	103.83	20.93	--	83.19	<48	<81	<100	<0.5	<0.7	<0.8	<0.8	--	--	--	--	--	--	--
MW-4	4/19/2007	103.83								Not Sampled									
MW-4	7/17/2007	103.83	15.60	--	88.23	<50	110	<96	<0.5	<0.7	<0.8	<0.8	--	--	--	--	--	--	--
MW-4	10/16/2007	103.83	15.40	--	88.43	<50	<78	<97	<0.5	<0.7	<0.8	<0.8	--	--	--	--	--	--	--
MW-4	1/16/2008	103.83	20.16	--	83.67	<50	<76	<95	<0.5	<0.7	<0.8	<0.8	--	--	--	--	--	--	--
MW-4	4/17/2008	103.83	19.44	--	84.39	<50	<76	<95	<0.5	<0.7	<0.8	<0.8	--	--	--	--	--	--	--
MW-4	10/15/2008	103.83	15.52	--	88.31	<50	<76	<95	<0.5	<0.7	<0.8	<0.8	--	--	--	--	--	--	--
MW-4	4/8/2009	103.83	22.97	--	80.86							Insufficient water to sample							
MW-4	6/24/2009	103.83	16.08	--	87.75							Gauge only this quarter.							
MW-4	9/21/2009	103.83	15.36	--	88.47							Gauge only this quarter.							
MW-4	11/30/2009	103.83	18.13	--	85.70							Gauge only this quarter.							
MW-4	3/1/2010	103.83	21.15	--	82.68	14.8 J	71.8 J	179 J	<0.12	0.21 J	0.56 J	1.4 J	--	--	--	--	--	--	--
MW-4	6/14/2010	103.83	17.00	--	86.83	<50.0	<77.7	<388	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	--	--
MW-4	8/30/2010	103.83	14.89	--	88.94	<50.0	<78.4	<392	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	--	--
MW-4	12/14/2010	103.83	17.98	--	85.85	<50.0	<77.7	<388	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	--	--
MW-4	3/21/2011	103.83	21.60	--	82.23	<50.0	<77.7	<388	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	--	--
MW-4	5/19/2011	103.83	17.45	--	86.38	<50.0	<78.4	<392	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	--	--
MW-4	9/8/2011	103.83	14.99	--	88.84	<50	<29	<67	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	<50	--
MW-4	12/28/11[b]	103.83	19.60	--	84.23	<50	<29	<68	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	<50	--
MW-4	3/8/2012	103.83	22.34	--	81.49	<50	<29	<67	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	<50	--
MW-4	6/27/2012	103.83	15.97	--	87.86	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-4	07/12/12[c]	103.83	15.31	--	88.52	<50	30	<69	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	<50	--
MW-4	9/4/2012	103.83	14.31	--	89.52	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-4	11/27/2012	103.83	18.07	--	85.76	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-4	3/25/2013	103.83	23.13	--	80.70							Insufficient water to sample							
MW-4	6/13/2013	103.83	17.90	--	85.93	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-4	9/23/2013	103.83	16.00	--	87.83	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-4	12/12/2013	103.83	19.74	--	84.09	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-4	4/9/2014	103.83								Well was dry									
MW-4	6/25/2014	103.83								Well was dry									
MW-4	9/24/2014	103.83								Well was dry									
MW-4	12/28/2015	103.83								Unable to locate									
MW-5	3/24/1999	104.69	22.63	--	82.06	<50	<250	<500	<0.5	<0.5	<0.5	<1.0	<5.00	--	--	--	--	--	--
MW-5	3/22/2000	104.69	22.33	--	82.36	<50.0	<250	<500	<0.500	<0.500	<0.500	<1.00	<5.00	--	--	--	--	--	--
MW-5	9/14/2000	104.69	14.28	--	90.41	184	417	<500	**36.2**	<0.500	7.81	1.48	--	--	--	--	--	--	--
MW-5	4/12/2001	104.69	21.68	--	83.01	<50.0	310	<500	<0.500	<0.500	<0.500	<1.00	--	--	--	--	--	--	--
MW-5	9/12/2001	104.69	14.75	--	89.94	52.2	<250	<500	**12.1**	<0.500	<0.500	<1.00	--	--	--	--	--	--	--
MW-5	3/20/2002	104.69	21.09	--	83.60	<100	<250	<500	<0.500	<2.00	<1.00	<1.50	<2.00	--	--	--	--	--	--
MW-5	9/25/2002	104.69	15.42	--	89.27	<100	<250	<500	0.888	<2.00	<1.00	<1.50	--	--	--	--	--	--	--
MW-5	3/11/2003	104.69	19.85	--	84.84	<50.0	<250	<500	<0.500	<0.500	<0.500	<1.00	--	--	--	--	--	--	--
MW-5	7/31/2003	104.69	15.37	--	89.32	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-5	9/23/2003	104.69	15.58	--	89.11	<50	<250	<500	**5.08**	<0.500	<0.500	<1.00	--	--	--	--	--	--	--
MW-5	3/9/2004	104.69	21.85	--	82.84	<100	<118	<236	<1	<1.00	<1.00	<2.00	--	--	--	--	--	--	--
MW-5	8/24/2004	104.69	15.48	--	89.21	<100	<246	<492	4.63	<1	<1	<2	--	--	--	--	--	--	--
MW-5	4/7/2005	104.69	23.82	--	80.87	515	**629**	<505	<1	<1	<1	<2	--	--	--	--	--	--	--
MW-5	6/16/2005	104.69	19.80	--	84.39	<100	<251	<501	<1.0	<1	<1	<2	--	--	--	--	--	--	--
MW-5	9/27/2005	104.69	15.89	--	88.80	<48	290	<98	**9.1**	<0.2	<0.2	<0.6	--	--	--	--	--	--	--
MW-5	12/6/2005	104.69	19.20	--	85.49	57	95	160	<0.5	<0.7	<0.8	<0.8	--	--	--	--	--	--	--
MW-5	2/3/2006	104.69	20.58	--	84.11	<48	<160	<200	<0.5	<0.7	<0.8	<0.8	--	--	--	--	--	--	--
MW-5	4/26/2006	104.69	18.35	--	86.34	<48	**760**	150	<0.5	<0.7	<0.8	<0.8	--	--	--	--	--	--	--
MW-5	7/26/2006	104.69	15.87	--	88.82	<48	**670**	260	<0.5	<0.7	<0.8	<0.8	--	--	--	--	--	--	--
MW-5	10/18/2006	104.69	16.23	--	88.46	<48	180	390	0.5	<0.7	<0.8	<0.8	--	--	--	--	--	--	--

Table 1

Groundwater Monitoring Data and Analytical Results
Former Union Oil Facility
Phillips 66 Site 980
920 North 6th Avenue
Yakima, Washington

Well ID	Sample Date	TOC Elevation (feet)	Depth to Water (feet)	LPH (feet)	GW Elevation (feet)	TPH-G (µg/L)	TPH-D (µg/L)	TPH-O (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	EDC (µg/L)	EDB (µg/L)	Total Lead (µg/L)	Dissolved Lead (µg/L)	Ethanol (µg/L)	Naphthalene (µg/L)
MTCA Method A Cleanup Levels:						800	500	500	5	1,000	700	1,000	20	5	0.01	15	15	NE	160
MW-5	1/23/2007	104.69	21.08	--	83.61	<48	110	190	<0.5	<0.7	<0.8	<0.8	--	--	--	--	--	--	--
MW-5	4/19/2007	104.69	21.55	--	83.14	<50	<81	<100	<0.5	<0.7	<0.8	<0.8	--	--	--	--	--	--	--
MW-5	7/17/2007	104.3	15.76	--	88.54	<50	**780**	290	<0.5	<0.7	<0.8	<0.8	--	--	--	--	--	--	--
MW-5	10/16/2007	104.3	15.56	--	88.74	320	200	<95	**24**	0.7	15	35	--	--	--	--	--	--	--
MW-5	1/16/2008	104.3	20.75	--	83.55	<50	<75	<94	<0.5	<0.7	<0.8	<0.8	--	--	--	--	--	--	--
MW-5	4/17/2008	104.3	22.58	--	81.72	81	<76	<95	<0.5	<0.7	<0.8	<0.8	--	--	--	--	--	--	--
MW-5	10/15/2008	104.3	15.60	--	88.70	190	160	<96	**10**	<0.7	4	24	--	--	--	--	--	--	--
MW-5	4/8/2009	104.3	23.19	--	81.11	<50.0	<83	<420	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<0.010	<1.00	<1.00	--	--
MW-5	6/24/2009	104.3	15.20	--	89.10	42.9 J	<79	<400	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	--	--
MW-5	9/21/2009	104.3	15.16	--	89.14	43.3 J	<78	<390	<1.0	<1.0	<1.0	1.6 J	--	--	--	--	--	--	--
MW-5	11/30/2009	104.3	18.50	--	85.80	<50.0 [ab]	56J	<380	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	--	--
MW-5	3/2/2010	104.3	21.60	--	82.70	<13.4	41.6J	<58.4	<0.12	<0.21	<0.20	4.9	--	--	--	--	--	--	--
MW-5	6/15/2010	104.3	17.10	--	87.20	<50.0	160	<396	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	--	--
MW-5	8/31/2010	104.3	13.80	--	90.50	<50.0	<78.4	<392	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	--	--
MW-5	12/15/2010	104.3	18.62	--	85.68	<50.0	<77.7	<388	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	--	--
MW-5	3/21/2011	104.3	22.09	--	82.21	<50.0	<77.7	<388	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	--	--
MW-5	5/20/2011	104.3	17.92	--	86.38	<50.0	83.0	<396	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	--	--
MW-5	9/8/2011	104.3	14.89	--	89.41	<50	<29	<67	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	<50	--
MW-5	12/28/11 [b]	104.3	20.16	--	84.14	<50	<30	<69	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	<50	--
MW-5	3/8/2012	104.3	22.78	--	81.52	<50	<29	<67	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	<50	--
MW-5	6/27/2012	104.3	15.62	--	88.68	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-5	07/12/12 [c]	104.3	15.28	--	89.02	<50	100	<70	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	<50	--
MW-5	9/4/2012	104.3	13.90	--	90.40	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-5	11/27/2012	104.3	17.11	--	87.19	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-5	3/25/2013	104.3	23.88	--	80.42	Insufficient water to sample													
MW-5	6/13/2013	104.3	18.50	--	85.80	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-5	9/23/2013	104.3	16.20	--	88.10	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-5	12/12/2013	104.3	19.90	--	84.40	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-5	4/9/2014	104.3	Well was dry																
MW-5	6/25/2014	104.3	Well was dry																
MW-5	9/24/2014	104.3	Well was dry																
MW-5	12/28/2015	104.3	Unable to locate																
MW-6	3/24/1999	105.03	23.72	--	81.31	<50	<250	<500	<0.5	<0.5	<0.5	<1.0	<5.00	--	--	--	--	--	--
MW-6	3/22/2000	105.03	23.50	--	81.53	<50.0	<250	<500	<0.500	<0.500	<0.500	<1.00	<5.00	--	--	--	--	--	--
MW-6	9/14/2000	105.03	16.13	--	88.90	<50.0	<250	<500	<0.500	<0.500	<0.500	<1.00	--	--	--	--	--	--	--
MW-6	4/12/2001	105.03	22.76	--	82.27	<50.0	<250	<500	<0.500	<0.500	<0.500	<1.00	--	--	--	--	--	--	--
MW-6	9/12/2001	105.03	16.24	--	88.79	<50.0	<250	<500	<0.500	<0.500	<0.500	<1.00	--	--	--	--	--	--	--
MW-6	3/20/2002	105.03	22.09	--	82.94	<100	<250	<500	<0.500	<2.00	<1.00	<1.50	<5.00	--	--	--	--	--	--
MW-6	9/25/2002	105.03	16.28	--	88.75	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-6	3/11/2003	105.03	20.79	--	84.24	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-6	7/31/2003	105.03	16.26	--	88.77	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-6	9/23/2003	105.03	16.53	--	88.50	<50	<250	<500	<0.500	<0.500	<0.500	<1.00	--	--	--	--	--	--	--
MW-6	3/9/2004	105.03	22.90	--	82.16	<100	<136	<272	<1.00	<1.00	<1.00	<2.00	--	--	--	--	--	--	--
MW-6	8/24/2004	105.03	16.25	--	88.78	<100	<249	<499	<1	<1	<1	<2	--	--	--	--	--	--	--
MW-6	4/7/2005	105.03	24.70	--	80.33	<100	<250	<499	<1	<1	<1	<2	--	--	--	--	--	--	--
MW-6	6/16/2005	105.03	18.60	--	86.43	<100	<258	<515	<1	<1	<1	<2	--	--	--	--	--	--	--
MW-6	9/27/2005	105.03	16.69	--	88.34	<48	14	<100	<0.2	<0.2	<0.2	<0.6	--	--	--	--	--	--	--
MW-6	12/6/2005	105.03	20.05	--	84.98	<48	<160	<200	<0.5	<0.7	<0.8	<0.8	--	--	--	--	--	--	--
MW-6	2/3/2006	105.03	21.32	--	83.71	<48	<79	<99	<0.5	<0.7	<0.8	<0.8	--	--	--	--	--	--	--
MW-6	4/26/2006	105.03	19.42	--	85.61	<48	--	--	<0.5	<0.7	<0.8	<0.8	--	--	--	--	--	--	--
MW-6	7/26/2006	105.03	16.80	--	88.23	<48	140	100	<0.5	<0.7	<0.8	<0.8	--	--	--	--	--	--	--
MW-6	10/18/2006	105.03	17.25	--	87.78	<48	<79	<98	<0.5	<0.7	<0.8	<0.8	--	--	--	--	--	--	--
MW-6	1/23/2007	105	21.94	--	83.09	<48	<81	<100	<0.5	<0.7	<0.8	<0.8	--	--	--	--	--	--	--
MW-6	4/19/2007	105	22.77	--	82.26	<50	<84	<110	<0.5	<0.7	<0.8	<0.8	--	--	--	--	--	--	--
MW-6	7/17/2007	105	16.57	--	88.43	<50	130	<96	<0.5	<0.7	<0.8	<0.8	--	--	--	--	--	--	--
MW-6	10/15/2007	105	17.87	--	87.13	<50	<78	<97	<0.5	<0.7	<0.8	<0.8	--	--	--	--	--	--	--
MW-6	1/16/2008	105	Unable to locate																
MW-6	10/15/2008	105	16.93	--	88.07	<50	<76	<94	<0.5	<0.7	<0.8	<0.8	--	--	--	--	--	--	--
MW-6	4/8/2009	105	24.25	--	80.75	<50.0	<82	<410	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<0.010	<1.00	<1.00	--	--
MW-6	6/24/2009	105	18.03	--	86.97	Gauge only this quarter.													
MW-6	9/21/2009	105	16.62	--	88.38	Gauge only this quarter.													

Table 1

Groundwater Monitoring Data and Analytical Results
Former Union Oil Facility
Phillips 66 Site 980
920 North 6th Avenue
Yakima, Washington

Well ID	Sample Date	TOC Elevation (feet)	Depth to Water (feet)	LPH (feet)	GW Elevation (feet)	TPH-G (µg/L)	TPH-D (µg/L)	TPH-O (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	EDC (µg/L)	EDB (µg/L)	Total Lead (µg/L)	Dissolved Lead (µg/L)	Ethanol (µg/L)	Naphthalene (µg/L)
MTCA Method A Cleanup Levels:						800	500	500	5	1,000	700	1,000	20	5	0.01	15	15	NE	160
MW-6	11/30/2009	105	19.65	--	85.35							Gauge only this quarter.							
MW-6	3/1/2010	105	22.55	--	82.45	<13.4	43.6 J	<58.7	<0.12	<0.21	<0.20	1.6 J	--	--	--	--	--	--	--
MW-6	6/14/2010	105	18.45	--	86.55	<50.0	<77.7	<388	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	--	--
MW-6	8/30/2010	105	15.79	--	89.21	<50.0	<77.7	<388	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	--	--
MW-6	12/14/2010	105	19.68	--	85.32	<50.0	151	<400	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	--	--
MW-6	3/21/2011	105	23.04	--	81.96	<50.0	<77.7	<388	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	--	--
MW-6	5/19/2011	105	18.98	--	86.02	<50.0	<78.4	<392	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	--	--
MW-6	9/8/2011	105	16.21	--	88.79	<50	<29	<67	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	<50	--
MW-6	12/28/11[b]	105	21.11	--	83.89	<50	30	<69	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	<50	--
MW-6	3/8/2012	105	23.77	--	81.23	<50	<29	<67	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	<50	--
MW-6	6/27/2012	105	17.57	--	87.43	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-6	07/12/12[c]	105	16.72	--	88.28	<50	140	72	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	<50	--
MW-6	9/4/2012	105	15.30	--	89.70	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-6	11/27/2012	105	19.21	--	85.79	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-6	3/25/2013	105	24.95	--	80.05	<50	<32	<74	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	<50	--
MW-6	6/13/2013	105	19.60	--	85.40	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-6	9/23/2013	105	17.40	--	87.60	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-6	12/12/2013	105	20.15	--	84.85	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-6	4/9/2014	105									Well was dry								
MW-6	6/25/2014	105									Well was dry								
MW-6	9/24/2014	105									Well was dry								
MW-6	12/28/2015	105									Unable to locate								
MW-7	7/31/2003	105.41	13.51	--	91.90	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-7	9/23/2003	104.73	13.72	--	91.69	<50	<250	<500	<0.500	<0.500	<0.500	<1.00	--	--	--	--	--	--	--
MW-7	3/9/2004	104.73	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-7	8/24/2004	104.73	13.60	--	91.81	<100	<277	<555	<1	<1	<1	<2	--	--	--	--	--	--	--
MW-7	4/7/2005	104.73	22.93	--	82.48	<100	**2,910**	<561	<1	<1	<1	<2	--	--	--	--	--	--	--
MW-7	6/16/2005	104.73	15.95	--	89.46	<100	<253	<507	<1	<1	<1	<2	--	--	--	--	--	--	--
MW-7	9/27/2005	104.73	13.76	--	91.65	<48	<79	<99	<0.2	<0.2	<0.2	<0.6	--	--	--	--	--	--	--
MW-7	12/6/2005	104.73	17.10	--	88.31	<48	<160	<200	<0.5	<0.7	<0.8	<0.8	--	--	--	--	--	--	--
MW-7	2/3/2006	104.73	18.89	--	86.52	<48	<82	<100	<0.5	<0.7	<0.8	<0.8	--	--	--	--	--	--	--
MW-7	4/26/2006	104.73	14.68	--	90.73	<48	<78	160	<0.5	<0.7	<0.8	<0.8	--	--	--	--	--	--	--
MW-7	7/26/2006	104.73	14.29	--	91.12	<48	<79	<98	<0.5	<0.7	<0.8	<0.8	--	--	--	--	--	--	--
MW-7	10/18/2006	104.73	14.05	--	91.36	<48	<78	220	<0.5	<0.7	<0.8	<0.8	--	--	--	--	--	--	--
MW-7	1/23/2007	104.73	19.15	--	86.26	<48	<80	<100	<0.5	<0.7	<0.8	<0.8	--	--	--	--	--	--	--
MW-7	4/19/2007	104.73									Not sampled								
MW-7	7/17/2007	104.73	13.50	--	91.23	<50	<78	<97	<0.5	<0.7	<0.8	<0.8	--	--	--	--	--	--	--
MW-7	10/15/2007	104.73									Unable to open								
MW-7	1/16/2008	104.73									Unable to open								
MW-7	4/17/2008	104.73									Well was dry								
MW-7	10/15/2008	104.73									Well was dry								
MW-7	4/8/2009	104.73									Well was dry								
MW-7	6/24/2009	104.73									Well was dry								
MW-7	9/21/2009	104.73	13.15	--	91.58							Gauge only this quarter.							
MW-7	11/30/2009	104.73	16.35	--	88.38							Gauge only this quarter.							
MW-7	3/2/2010	104.73	20.05	--	84.68	14.6 J	39.6 J	<58.7	<0.12	<0.21	<0.20	4.9	--	--	--	--	--	--	--
MW-7	6/14/2010	104.73	14.12	--	90.61	<50.0	<77.7	<388	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	--	--
MW-7	8/31/2010	104.73	12.65	--	92.08	<50.0	<77.7	<388	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	--	--
MW-7	12/15/2010	104.73	16.50	--	88.23	<50.0	158	<392	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	--	--
MW-7	3/21/2011	104.73	20.73	--	84.00	<50.0	<77.7	<388	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	--	--
MW-7	5/19/2011	104.73	15.69	--	89.04	<50.0	<78.4	<392	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	--	--
MW-7	9/8/2011	104.73	12.79	--	91.94	<50	<28	<66	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	<50	--
MW-7	12/28/11[b]	104.73	18.20	--	86.53	<50	<30	<70	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	<50	--
MW-7	3/8/2012	104.73	21.12	--	83.61	<50	<29	<67	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	<50	--
MW-7	6/27/2012	104.73	13.02	--	91.71	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-7	07/12/12[c]	104.73	12.71	--	92.02	<50	<29	<68	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	<50	--
MW-7	9/4/2012	104.73	12.35	--	92.38	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-7	11/27/2012	104.73	15.43	--	89.30	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-7	3/25/2013	104.73	22.11	--	82.62	<50	<31	<72	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	<50	--
MW-7	6/13/2013	104.73	15.80	--	88.93	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-7	9/23/2013	104.73	13.70	--	91.03	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Table 1

Groundwater Monitoring Data and Analytical Results
Former Union Oil Facility
Phillips 66 Site 980
920 North 6th Avenue
Yakima, Washington

Well ID	Sample Date	TOC Elevation (feet)	Depth to Water (feet)	LPH (feet)	GW Elevation (feet)	TPH-G (µg/L)	TPH-D (µg/L)	TPH-O (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	EDC (µg/L)	EDB (µg/L)	Total Lead (µg/L)	Dissolved Lead (µg/L)	Ethanol (µg/L)	Naphthalene (µg/L)
MTCA Method A Cleanup Levels:						800	500	500	5	1,000	700	1,000	20	5	0.01	15	15	NE	160
MW-7	12/12/2013	104.73	17.00	--	87.73	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-7	4/9/2014	104.73								Well was dry									
MW-7	6/25/2014	104.73								Well was dry									
MW-7	9/24/2014	104.73								Well was dry									
MW-7	12/28/2015	104.73								Well was dry									
MW-7	6/8/2018	1094.03	23.26	--	1070.77						Insufficient water to sample								
MW-7	9/19/2018	1094.03	12.47	--	1081.56	<100	<400	<400	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	--	--
MW-7	12/13/2018	1094.03	17.76	--	1076.27	<100	<400	<400	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	--	--
MW-7	3/18/2019	1094.03	22.65	--	1071.38	Insufficient water to sample		--	--	--	--	--	--	--	--	--	--	--	--
MW-7	6/17/2019	1094.03	16.60	--	1077.43	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-7	9/16/2019	1094.03	13.74	--	1080.29	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-7	12/26/2019	1094.03	19.63	--	1074.40	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-7	3/9/2020	1094.03	23.48	--	1070.55	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-7	6/17/2020	1094.03	17.46	--	1076.57	--	--	--	--	--	--	--	--	--	--	--	--	--	--
				--															
MW-8	7/31/2003	104.21	15.38	--	88.83	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-8	9/23/2003	104.21	15.64	--	88.57	<50	<250	<500	<0.500	<0.500	<0.500	<1.00	--	--	--	--	--	--	--
MW-8	3/9/2004	104.21	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-8	8/24/2004	104.21							Not accessible due to asphalt paving in street.										
MW-8	4/7/2005	104.21							Not accessible due to asphalt paving in street.										
MW-8	6/16/2005	104.21							Not accessible due to asphalt paving in street.										
MW-8	9/27/2005	104.21							Not accessible due to asphalt paving in street.										
MW-8	12/6/2005	104.21							Not accessible due to asphalt paving in street.										
MW-8	2/3/2006	104.21							Not accessible due to asphalt paving in street.										
MW-8	4/26/2006	104.21	18.65	--	85.56	<48	150	120	<0.5	<0.7	<0.8	<0.8	--	--	--	--	--	--	--
MW-8	7/26/2006	104.21	15.94	--	88.27	<48	110	<100	<0.5	<0.7	<0.8	<0.8	--	--	--	--	--	--	--
MW-8	10/18/2006	104.21	16.36	--	87.85	<48	<78	180	<0.5	<0.7	<0.8	<0.8	--	--	--	--	--	--	--
MW-8	1/23/2007	104.21	21.16	--	83.05	<48	<79	190	<0.5	<0.7	<0.8	<0.8	--	--	--	--	--	--	--
MW-8	4/19/2007	104.21	22.03	--	82.18	<50	<75	<94	<0.5	<0.7	<0.8	<0.8	--	--	--	--	--	--	--
MW-8	7/17/2007	104.21	15.70	--	88.51	<50	130	<97	<0.5	<0.7	<0.8	<0.8	--	--	--	--	--	--	--
MW-8	10/15/2007	104.21	16.00	--	88.21	<50	<75	<94	<0.5	<0.7	<0.8	<0.8	--	--	--	--	--	--	--
MW-8	1/16/2008	104.21	20.92	--	83.29	<50	<76	<95	<0.5	<0.7	<0.8	<0.8	--	--	--	--	--	--	--
MW-8	4/17/2008	104.21	23.06	--	81.15	<50	<76	<95	<0.5	<0.7	<0.8	<0.8	--	--	--	--	--	--	--
MW-8	10/15/2008	104.21							Unable to open --- well appeared damaged by traffic.										
MW-8	4/8/2009	104.21							Unable to open --- well appeared damaged by traffic.										
MW-8	6/24/2009	104.21							Unable to open --- well appeared damaged by traffic.										
MW-8	9/21/2009	104.21							Unable to open --- well appeared damaged by traffic.										
MW-8	11/30/2009	104.21							Unable to open --- well appeared damaged by traffic.										
MW-8	3/1/2010	104.21							Unable to open --- well appeared damaged by traffic.										
MW-8	6/14/2010	104.21							Unable to open --- well appeared damaged by traffic.										
MW-8	8/30/2010	104.21							Unable to open --- well appeared damaged by traffic.										
MW-8	12/14/2010	104.21							Unable to open --- well appeared damaged by traffic.										
MW-8	3/21/2011	104.21							Unable to open --- well appeared damaged by traffic.										
MW-8	5/19/2011	104.21							Unable to open --- well appeared damaged by traffic.										
MW-8	9/8/2011	104.21	15.35	--	88.86	<50	<29	<67	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	<50	--
MW-8	12/28/11[b]	104.21	20.30	--	83.72	<50	<30	<70	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	<50	--
MW-8	3/9/2012	104.21	23.07	--	81.14	<50	<29	<67	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	<50	--
MW-8	6/27/2012	104.21	16.78	--	87.43	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-8	07/12/12[c]	104.21	15.83	--	88.38	<50	170	80	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	<50	--
MW-8	9/4/2012	104.21	14.38	--	89.83	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-8	11/27/2012	104.21	17.83	--	86.38	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-8	3/25/2013	104.21	24.07	--	80.14	<50	<30	<71	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	<50	--
MW-8	6/13/2013	104.21	18.72	--	85.49	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-8	9/23/2013	104.21	16.50	--	87.71	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-8	12/12/2013	104.21	20.20	--	84.01	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-8	4/9/2014	104.21	27.12	--	77.09						Insufficient water to sample								
MW-8	6/25/2014	104.21	27.21	--	77.00						Insufficient water to sample								
MW-8	9/24/2014	104.21								Well was dry									
MW-8	12/28/2015	104.21	27.10	--	77.11						Insufficient water to sample								
MW-8	6/5/2018	1093.34	20.32	--	1073.02	<100	<390	<390	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	--	--
MW-8	9/19/2018	1093.34	14.60	--	1078.74	<100	<400	<400	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	--	--
MW-8	12/13/2018	1093.34	20.13	--	1073.21	<100	<400	<400	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	--	--

Table 1

Groundwater Monitoring Data and Analytical Results
Former Union Oil Facility
Phillips 66 Site 980
920 North 6th Avenue
Yakima, Washington

Well ID	Sample Date	TOC Elevation (feet)	Depth to Water (feet)	LPH (feet)	GW Elevation (feet)	TPH-G (µg/L)	TPH-D (µg/L)	TPH-O (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	EDC (µg/L)	EDB (µg/L)	Total Lead (µg/L)	Dissolved Lead (µg/L)	Ethanol (µg/L)	Naphthalene (µg/L)
MTCA Method A Cleanup Levels:						800	500	500	5	1,000	700	1,000	20	5	0.01	15	15	NE	160
MW-8	3/18/2019	1093.34	24.54	--	1068.80	<100	<400	<400	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	--	--
MW-8	6/17/2019	1093.34	18.78	--	1074.56	<100	<417	<417	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	--	--
MW-8	9/16/2019	1093.34	16.70	--	1076.64	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-8	12/26/2019	1093.34	21.71	--	1071.63	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-8	3/9/2020	1093.34	25.70	--	1067.64	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-8	6/17/2020	1093.34	19.42	--	1073.92	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-9	7/17/2007	104.9	13.44	--	91.46	<50	<77	<96	<0.5	<0.7	<0.8	<0.8	--	--	--	--	--	--	--
MW-9	10/15/2007	104.9	13.60	--	91.30	<50	<77	<96	<0.5	<0.7	<0.8	<0.8	--	--	--	--	--	--	--
MW-9	1/16/2008	104.9								Unable to locate									
MW-9	4/17/2008	104.9	17.93	--	86.97	**860**	<76	<95	3	110	12	330	--	--	--	--	--	--	--
MW-9	10/15/2008	104.9	13.58	--	91.32	<50	<77	<96	<0.5	<0.7	<0.8	2	--	--	--	--	--	--	--
MW-9	4/8/2009	104.9	21.97	--	82.93	68.2	<83	<420	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<0.010	<1.00	<1.00	--	--
MW-9	6/24/2009	104.9	14.15	--	90.75						Gauge only this quarter.								
MW-9	9/21/2009	104.9	13.62	--	91.28						Gauge only this quarter.								
MW-9	11/30/2009	104.9	16.61	--	88.29						Gauge only this quarter.								
MW-9	3/2/2010	104.9	20.26	--	84.64	52.8	43 J	<58.1	<0.12	0.25 J	0.26 J	8.6	--	--	--	--	--	--	--
MW-9	6/14/2010	104.9	14.50	--	90.40	<50.0	<80.0	<400	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	--	--
MW-9	8/31/2010	104.9	13.20	--	91.70	<50.0	<77.7	<388	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	--	--
MW-9	12/15/2010	104.9	16.72	--	88.18	<50.0	<77.7	<388	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	--	--
MW-9	3/21/2011	104.9	20.91	--	83.99	<50.0	<77.7	<388	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	--	--
MW-9	5/19/2011	104.9	15.97	--	88.93	<50.0	<78.4	<392	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	--	--
MW-9	9/8/2011	104.9	13.32	--	91.58	<50	<28	<66	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	<50	--
MW-9	12/28/11[b]	104.9	18.44	--	86.46	<50	<30	<69	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	<50	--
MW-9	3/8/2012	104.9	21.27	--	83.63	<50	<28	<66	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	<50	--
MW-9	6/27/2012	104.9	13.55	--	91.35	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-9	07/12/12[c]	104.9	13.30	--	91.60	<50	<30	<71	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	<50	--
MW-9	9/4/2012	104.9	12.98	--	91.92	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-9	11/27/2012	104.9	15.78	--	89.12	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-9	3/25/2013	104.9	22.29	--	82.61	<50	<31	<72	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	<50	--
MW-9	6/13/2013	104.9	16.00	--	88.90	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-9	9/23/2013	104.9	14.11	--	90.79	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-9	12/12/2013	104.9	17.30	--	87.60	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-9	4/9/2014	104.9	24.78	--	80.12							Insufficient water to sample							
MW-9	6/25/2014	104.9									Well was dry								
MW-9	9/24/2014	104.9									Well was dry								
MW-9	12/28/2015	104.9									Well was dry								
MW-10	7/17/2007	104.77	13.60	--	91.17	<50	<78	<97	<0.5	<0.7	<0.8	<0.8	--	--	--	--	--	--	--
MW-10	10/15/2007	104.77	13.74	--	91.03	<50	<76	<96	<0.5	<0.7	<0.8	<0.8	--	--	--	--	--	--	--
MW-10	1/16/2008	104.77								Unable to locate									
MW-10	4/17/2008	104.77	17.86	--	86.91	<50	<76	<95	1	5	2	7	--	--	--	--	--	--	--
MW-10	10/15/2008	104.77	13.70	--	91.07	<50	<80	<100	<0.5	<0.7	<0.8	<0.8	--	--	--	--	--	--	--
MW-10	4/8/2009	104.77	21.57	--	83.20	55.4	<84	<420	<1.0	2.8	<1.0	5.0	<1.0	<1.0	<0.010	<1.00	<1.00	--	--
MW-10	6/24/2009	104.77	14.12	--	90.65							Gauge only this quarter.							
MW-10	9/21/2009	104.77	13.77	--	91.00							Gauge only this quarter.							
MW-10	11/30/2009	104.77	16.59	--	88.18							Gauge only this quarter.							
MW-10	3/1/2010	104.77	20.28	--	84.49	19.8 J	45.7 J	<58.1	<0.12	0.38 J	0.50 J	3.7	--	--	--	--	--	--	--
MW-10	6/14/2010	104.77	14.48	--	90.29	<50.0	<78.4	<392	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	--	--
MW-10	8/30/2010	104.77	13.44	--	91.33	<50.0	<78.4	<392	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	--	--
MW-10	12/14/2010	104.77	16.69	--	88.08	<50.0	<77.7	<388	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	--	--
MW-10	3/21/2011	104.77	20.85	--	83.92	<50.0	<77.7	<388	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	--	--
MW-10	5/19/2011	104.77	16.06	--	88.71	<50.0	<78.4	<392	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	--	--
MW-10	9/8/2011	104.77	13.53	--	91.24	<50	<28	<66	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	<50	--
MW-10	12/28/11[b]	104.77	18.45	--	86.32	<50	<30	<69	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	<50	--
MW-10	3/8/2012	104.77	21.21	--	83.56	<50	<28	<66	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	<50	--
MW-10	6/27/2012	104.77	13.71	--	91.06	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-10	07/12/12[c]	104.77	13.50	--	91.27	<50	<30	<71	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	<50	--
MW-10	9/4/2012	104.77	13.20	--	91.57	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-10	11/27/2012	104.77	15.70	--	89.07	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-10	3/25/2013	104.77	22.35	--	82.42	<50	<31	<73	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	<50	--
MW-10	6/13/2013	104.77	16.10	--	88.67	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Table 1

Groundwater Monitoring Data and Analytical Results
Former Union Oil Facility
Phillips 66 Site 980
920 North 6th Avenue
Yakima, Washington

Well ID	Sample Date	TOC Elevation (feet)	Depth to Water (feet)	LPH (feet)	GW Elevation (feet)	TPH-G (µg/L)	TPH-D (µg/L)	TPH-O (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	EDC (µg/L)	EDB (µg/L)	Total Lead (µg/L)	Dissolved Lead (µg/L)	Ethanol (µg/L)	Naphthalene (µg/L)
MTCA Method A Cleanup Levels:						800	500	500	5	1,000	700	1,000	20	5	0.01	15	15	NE	160
MW-10	9/23/2013	104.77	13.97	--	90.80	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-10	12/12/2013	104.77	17.20	--	87.57	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-10	4/9/2014	104.77	23.38	--	81.39	Insufficient water to sample													
MW-10	6/25/2014	104.77				Well was dry													
MW-10	9/24/2014	104.77				Well was dry													
MW-10	12/28/2015	104.77				Well was dry													
MW-11	7/17/2007	104.33	14.10	--	90.23	<50	96	<96	<0.5	<0.7	<0.8	<0.8	--	--	--	--	--	--	--
MW-11	10/16/2007	104.33	14.45	--	89.88	<50	<77	<96	<0.5	<0.7	<0.8	<0.8	--	--	--	--	--	--	--
MW-11	1/16/2008	104.33				Unable to locate													
MW-11	4/17/2008	104.33	18.67	--	85.66	56	230	<95	<0.5	<0.7	<0.8	<0.8	--	--	--	--	--	--	--
MW-11	10/15/2008	104.33	14.00	--	90.33	53	<78	<97	<0.5	<0.7	<0.8	<0.8	--	--	--	--	--	--	--
MW-11	4/8/2009	104.33	21.14	--	83.19	Insufficient water to sample													
MW-11	6/24/2009	104.33	14.52	--	89.81	Gauge only this quarter.													
MW-11	9/21/2009	104.33	13.99	--	90.34	Gauge only this quarter.													
MW-11	11/30/2009	104.33	16.65	--	87.68	Gauge only this quarter.													
MW-11	3/1/2010	104.33	20.26	--	84.07	<13.4	**2,960**	233 J	<0.12	<0.21	<0.20	<0.42	--	--	--	--	--	--	--
MW-11	6/14/2010	104.33	14.96	--	89.37	<50.0	248	<392	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	--	--
MW-11	8/30/2010	104.33	13.51	--	90.82	<50.0	317	<392	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	--	--
MW-11	12/14/2010	104.33	16.48		87.85	<50.0	230	<392	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	--	--
MW-11	3/21/2011	104.33	21.00	--	83.33	<50.0	**1,010**	<392	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	--	--
MW-11	5/19/2011	104.33	16.13	--	88.20	65.2	**847**	<396	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	--	--
MW-11	9/8/2011	104.33	13.70	--	90.63	<50	<29	<67	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	<50	--
MW-11	12/28/11[b]	104.33	18.49	--	85.84	<50	350	<69	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	<50	--
MW-11	3/8/2012	104.33	22.36	--	81.97	Insufficient water to sample													
MW-11	6/27/2012	104.33	13.87	--	90.46	<50	35	<67	<0.5	<0.5	<0.5	2	--	--	--	--	--	<50	--
MW-11	9/4/2012	104.33	13.28	--	91.05	<50	**1,600**	<70	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	<50	--
MW-11	11/27/2012	104.33	15.80	--	88.53	<50	310	<70	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	140	--
MW-11	3/25/2013	104.33	22.90	--	81.43	Insufficient water to sample													
MW-11	6/13/2013	104.33	16.33	--	88.00	<50	**7,600**	**600**	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	<50	--
MW-11	9/23/2013	104.33	14.30	--	90.03	<50	37	<69	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	<50	--
MW-11	12/12/2013	104.33	17.30	--	87.03	<50	**1,300**	390	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	<50	--
MW-11	4/9/2014	104.33				Well was dry													
MW-11	6/25/2014	104.33				Well was dry													
MW-11	9/24/2014	104.33				Well was dry													
MW-11	12/28/2015	104.33				Well was dry													
MW-12	7/17/2007	102.99	14.64	--	88.35	<50	<78	<98	<0.5	<0.7	<0.8	<0.8	--	--	--	--	--	--	--
MW-12	10/15/2007	102.99	14.90	--	88.09	<50	<75	<94	<0.5	<0.7	<0.8	<0.8	--	--	--	--	--	--	--
MW-12	1/16/2008	102.99				Unable to locate													
MW-12	4/17/2008	102.99	19.17	--	83.82	<50	<76	<95	<0.5	<0.7	<0.8	<0.8	--	--	--	--	--	--	--
MW-12	10/15/2008	102.99	14.98	--	88.01	<50	<76	<95	<0.5	<0.7	<0.8	<0.8	--	--	--	--	--	--	--
MW-12	4/9/2009	102.99	21.85	--	81.14	<50.0	<82	<410	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<0.010	<1.00	<1.00	--	--
MW-12	6/24/2009	102.99	15.20	--	87.79	Gauge only this quarter.													
MW-12	9/21/2009	102.99	14.89	--	88.10	Gauge only this quarter.													
MW-12	11/30/2009	102.99	17.78	--	85.21	Gauge only this quarter.													
MW-12	3/1/2010	102.99	20.39	--	82.60	14.2 J	56.3 J	66.2 J	<0.12	<0.21	<0.20	1.6 J	--	--	--	--	--	--	--
MW-12	6/15/2010	102.99	16.46	--	86.53	<50.0	<77.7	<388	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	--	--
MW-12	8/31/2010	102.99	14.23	--	88.76	<50.0	<78.4	<392	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	--	--
MW-12	12/14/2010	102.99	17.44	--	85.55	<50.0	<78.4	<392	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	--	--
MW-12	3/21/2011	102.99	20.88	--	82.11	<50.0	<78.4	<392	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	--	--
MW-12	5/19/2011	102.99	17.10	--	85.89	<50.0	<79.2	<396	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	--	--
MW-12	9/8/2011	102.99	14.61	--	88.38	<50	<140	**1,200**	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	<50	--
MW-12	12/28/11[b]	102.99	19.20	--	83.79	<50	<32	<74	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	<50	--
MW-12	3/8/2012	102.99	21.65	--	81.34	<50	<28	<66	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	<50	--
MW-12	6/27/2012	102.99	15.72	--	87.27	<50	47	<66	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	<50	--
MW-12	9/4/2012	102.99	14.05	--	88.94	<50	65	<70	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	<50	--
MW-12	11/27/2012	102.99	17.30	--	85.69	<50	<30	<70	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	<50	--
MW-12	3/25/2013	102.99	22.87	--	80.12	Insufficient water to sample													
MW-12	6/13/2013	102.99	17.73	--	85.26	<50	--[d]	--[d]	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	<50	--
MW-12	9/23/2013	102.99	15.70	--	87.29	<50	57	<73	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	<50	--
MW-12	12/12/2013	102.99	19.00	--	83.99	<50	<30	<69	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	<50	--

Table 1

Groundwater Monitoring Data and Analytical Results
Former Union Oil Facility
Phillips 66 Site 980
920 North 6th Avenue
Yakima, Washington

Well ID	Sample Date	TOC Elevation (feet)	Depth to Water (feet)	LPH (feet)	GW Elevation (feet)	TPH-G (µg/L)	TPH-D (µg/L)	TPH-O (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	EDC (µg/L)	EDB (µg/L)	Total Lead (µg/L)	Dissolved Lead (µg/L)	Ethanol (µg/L)	Naphthalene (µg/L)
MTCA Method A Cleanup Levels:						800	500	500	5	1,000	700	1,000	20	5	0.01	15	15	NE	160
MW-12	4/9/2014	102.99	22.98	--	80.01							Insufficient water to sample							
MW-12	6/25/2014	102.99									Well was dry								
MW-12	9/24/2014	102.99									Well was dry								
MW-12	12/28/2015	102.99									Well was dry								
MW-13	7/17/2007	104.17	14.63	--	89.54	240	**2,300**	<97	**6**	<0.7	<0.8	<0.8	--	--	--	--	--	--	--
MW-13	10/15/2007	104.17	14.91	--	89.26	**1,400**	**730**	<94	**47**	2	97	76	--	--	--	--	--	--	--
MW-13	1/16/2008	104.17									Unable to locate								
MW-13	4/17/2008	104.17	Unable to	--	--	**1,200**	370	<94	**91**	13	48	120	--	--	--	--	--	--	--
MW-13	10/15/2008	104.17	14.88	--	88.29	**1,300**	450	<96	**38**	1	83	27	--	--	--	--	--	--	--
MW-13	4/8/2009	104.17	23.29	--	80.88							Insufficient water to sample							
MW-13	6/24/2009	104.17	15.43	--	88.74	571	**570**	<400	**7.5**	5.0	1.2	61.9	--	--	--	--	--	--	--
MW-13	9/21/2009	104.17	14.73	--	89.44	654	230	<390	**5.6**	<1.0	<1.0	15.2	--	--	--	--	--	--	--
MW-13	11/30/2009	104.17	17.36	--	86.81	318	230	<390	**15.0**	2.0	<1.0	11.2	--	--	--	--	--	--	--
MW-13	3/2/2010	104.17	21.28	--	82.89	82.1	215	72.0J	0.91 J	<0.21	0.31 J	5.4	--	--	--	--	--	--	--
MW-13	6/15/2010	104.17	15.98	--	88.19	130	**558**	<392	**7.4**	<1.0	<1.0	3.0	--	--	--	--	--	--	--
MW-13	8/31/2010	104.17	14.10	--	90.07	<50.0	<77.7	<388	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	--	--
MW-13	12/15/2010	104.17	17.50	--	86.67	204	226	<392	**10.4**	<1.0	<1.0	<3.0	--	--	--	--	--	--	--
MW-13	3/21/2011	104.17	21.90	--	82.27	132	297	<392	**19.3**	<1.0	3.1	<3.0	--	--	--	--	--		--
MW-13	5/20/2011	104.17	16.84	--	87.33	117	490	<392	4.6	<1.0	<1.0	<3.0	--	--	--	--	--	--	--
MW-13	9/8/2011	104.17	14.40	--	89.77	51	36	<67	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	<50	--
MW-13	12/28/11[b]	104.17	19.81	--	84.36	180	**530**	<71	2	<0.5	1	0.7	--	--	--	--	--	<50	--
MW-13	3/9/2012	104.17	22.81	--	81.36	140	**850**	<66	**8**	<0.5	<0.5	<0.5	--	--	--	--	--	<50	--
MW-13	6/27/2012	104.17	14.89	--	89.28	<50	**670**	<67	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	<50	--
MW-13	9/4/2012	104.17	13.63	--	90.54	<50	240	<70	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	<50	--
MW-13	11/27/2012	104.17	16.80	--	87.37	<50	490	<69	0.7	<0.5	<0.5	0.5	--	--	--	--	--	<50	--
MW-13	3/25/2013	104.17	23.56	--	80.61							Insufficient water to sample							
MW-13	6/13/2013	104.17	17.00	--	87.17	57	**3,600**	**590**	5	<0.5	<0.5	0.5	--	--	--	--	--	<50	--
MW-13	9/23/2013	104.17	15.16	--	89.01	<50	420	<69	0.8	<0.5	<0.5	<0.5	--	--	--	--	--	<50	--
MW-13	12/12/2013	104.17	18.85	--	85.32	78	**1,400**	250	4	<0.5	<0.5	<0.5	--	--	--	--	--	<50	--
MW-13	4/9/2014	104.17	23.49	--	80.68							Insufficient water to sample							
MW-13	6/25/2014	104.17	23.58	--	80.59							Insufficient water to sample							
MW-13	9/24/2014	104.17									Well was dry								
MW-13	12/28/2015	104.17									Unable to locate								
MW-14	7/17/2007	105.32	16.43	--	88.89	<50	<79	<99	<0.5	<0.7	<0.8	<0.8	--	--	--	--	--	--	--
MW-14	10/15/2007	105.32	16.64	--	88.68	<50	<75	<94	<0.5	<0.7	<0.8	<0.8	--	--	--	--	--	--	--
MW-14	1/16/2008	105.32								Unable to locate									
MW-14	4/17/2008	105.32	20.96	--	84.36	<50	<76	<95	<0.5	<0.7	<0.8	<0.8	--	--	--	--	--	--	--
MW-14	10/15/2008	105.32	16.65	--	88.67	<50	<78	<97	<0.5	<0.7	<0.8	<0.8	--	--	--	--	--	--	--
MW-14	4/8/2009	105.32	23.92	--	81.40							Insufficient water to sample							
MW-14	6/24/2009	105.32	17.64	--	87.68							Gauge only this quarter.							
MW-14	9/21/2009	105.32	16.52	--	88.80							Gauge only this quarter.							
MW-14	11/30/2009	105.32	19.58	--	85.74							Gauge only this quarter.							
MW-14	3/2/2010	105.32	22.70	--	82.62	17.7 J	59 J	<58.7	<0.12	<0.21	<0.20	2.3 J	--	--	--	--	--	--	--
MW-14	6/14/2010	105.32	18.30	--	87.02	<50.0	<77.7	<388	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	--	--
MW-14	8/30/2010	105.32	15.88	--	89.44	<50.0	<79.2	<396	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	--	--
MW-14	12/14/2010	105.32	19.60	--	85.72	<50.0	<78.4	<392	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	--	--
MW-14	3/21/2011	105.32	23.27	--	82.05	<50.0	<78.4	<392	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	--	--
MW-14	5/19/2011	105.32	18.99	--	86.33	<50.0	<80.0	<400	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	--	--
MW-14	9/8/2011	105.32	16.22	--	89.10	<50	<29	<67	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	<50	--
MW-14	12/28/11[b]	105.32	21.13	--	84.19	<50	<30	<70	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	<50	--
MW-14	3/8/2012	105.32	23.98	--	81.34							Insufficient water to sample							
MW-14	6/27/2012	105.32	16.94	--	88.38	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-14	07/12/12[c]	105.32	16.42	--	88.90	<50	<29	<68	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	<50	--
MW-14	9/4/2012	105.32	15.34	--	89.98	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-14	11/27/2012	105.32	18.95	--	86.37	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-14	3/25/2013	105.32	23.91	--	81.41							Insufficient water to sample							
MW-14	6/13/2013	105.32	19.60	--	85.72	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-14	9/23/2013	105.32	17.00	--	88.32	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-14	12/12/2013	105.32	20.43	--	84.89	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-14	4/9/2014	105.32	23.87	--	81.45							Insufficient water to sample							

Table 1

Groundwater Monitoring Data and Analytical Results
Former Union Oil Facility
Phillips 66 Site 980
920 North 6th Avenue
Yakima, Washington

Well ID	Sample Date	TOC Elevation (feet)	Depth to Water (feet)	LPH (feet)	GW Elevation (feet)	TPH-G (µg/L)	TPH-D (µg/L)	TPH-O (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	EDC (µg/L)	EDB (µg/L)	Total Lead (µg/L)	Dissolved Lead (µg/L)	Ethanol (µg/L)	Naphthalene (µg/L)
MTCA Method A Cleanup Levels:						800	500	500	5	1,000	700	1,000	20	5	0.01	15	15	NE	160
MW-14	6/25/2014	105.32									Well was dry								
MW-14	9/24/2014	105.32									Well was dry								
MW-14	12/28/2015	105.32									Well was dry								
MW-15	6/8/2018	1093.39	19.33	--	1074.06	**6,800**	**1,500**	<400	**575**	**1,210**	226	214	<1.0	<1.0	<1.0	<10	--	--	<4.0
MW-15	9/19/2018	1093.39	14.91	--	1078.48	**3,920**	**1,200**	<390	**378**	142	386	198	--	--	--	--	--	--	--
MW-15	12/13/2018	1093.39	18.49	--	1074.9	**6,100**	**1,600**	<400	**1,150**	268	515	543	--	--	--	--	--	--	--
MW-15	3/18/2019	1093.39	25.18	--	1068.21	**2,710**	**4,400**	<400	**243**	12.9	175	81.8	--	--	--	--	--	--	--
MW-15	6/17/2019	1093.39	17.48	--	1075.91	**5,080**	**3,120**	<417	**968**	26.3	262	222	--	--	--	--	--	--	--
MW-15	9/16/2019	1093.39	14.85	--	1078.54	**3,080**	**1,590**	<417	**639**	10.0	147	115	--	<5.0	--	<5.0	--	--	--
MW-15	12/26/2019	1093.39	20.79	0.60	1073.08	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-15	3/9/2020	1093.39	25.75	0.53	1068.06	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-15	6/17/2020	1093.39	18.49	--	1074.90	**3,700**	**6,500**	<110	**960**	32	260	110	--	<2.0	--	<4.0	--	--	--
MW-15 Dup	6/17/2020	1093.39	18.49	--	1074.90	**3,600**	**7,300**	<110	**1,000**	33	260	110	--	<2.0	--	<4.0	--	--	--
MW-16	6/8/2018	1093.85	20.62	--	1073.23	<100	<390	<390	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	--	--
MW-16	9/19/2018	1093.85	14.99	--	1078.86	<100	<400	<400	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	--	--
MW-16	11/13/2018	1093.85	20.30	--	1073.55	<100	<400	<400	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	--	--
MW-16	12/13/2018	1093.85	20.30	--	1073.55	<100	<400	<400	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	--	--
MW-16	3/18/2019	1093.85	24.89	--	1068.96	<100	<400	<400	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	--	--
MW-16	6/17/2019	1093.85	19.06	--	1074.79	<100	<417	<417	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	--	--
MW-16	6/17/2019	1093.85	19.06	--	1074.79	<100	<417	<417	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	--	--
MW-16	9/16/2019	1093.85	16.90	--	1076.95	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-16	12/26/2019	1093.85	21.82	--	1072.03	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-16	3/9/2020	1093.85	26.04	--	1067.81	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-16	6/17/2020	1093.85	19.76	--	1074.09	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-17	6/8/2018	1093.91	20.50	--	1073.41	**858**	<400	<400	**141**	36	2.4	173	--	--	--	--	--	--	--
MW-17	9/19/2018	1093.91	14.90	--	1079.01	338	<390	<390	**44.4**	8.1	45.4	35.6	--	--	--	--	--	--	--
MW-17	12/13/2018	1093.91	19.61	--	1074.30	<100	<390	<390	1.9	<1.0	<1.0	<3.0	--	--	--	--	--	--	--
MW-17	3/18/2019	1093.91	24.39	--	1069.52	<100	<400	<400	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	--	--
MW-17	6/17/2019	1093.91	18.78	--	1075.13	443	**902**	<385	**95.9**	1.3	11.0	88.1	--	--	--	--	--	--	--
MW-17	9/16/2019	1093.91	16.45	--	1077.46	<100	<392	<392	**13.1**	<1.0	5.5	3.0	--	<1.0	--	<1.0	--	--	--
MW-17	12/26/2019	1093.91	21.22	--	1072.69	<100	<93	--	<1.0	<1.0	<1.0	<3.0	--	<0.50	--	<1.0	--	--	--
MW-17 Dup	12/26/2019	1093.91	21.22	--	1072.69	<100	<93	--	<1.0	<1.0	<1.0	<3.0	--	<0.50	--	<1.0	--	--	--
MW-17	3/9/2020	1093.91	25.20	--	1068.71	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-17	6/17/2020	1093.91	19.42	--	1074.49	<100	<110	<110	1.3	<1.0	<1.0	<3.0	--	<0.50	--	<1.0	--	--	--
MW-18	6/8/2018	1093.93	20.35	--	1073.58	<100	<400	<400	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<1.0	<10	--	--	<4.0
MW-18	9/19/2018	1093.93	14.52	--	1079.41	<100	<400	<400	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	--	--
MW-18	12/13/2018	1093.93	19.20	--	1074.73	<100	<400	<400	<1.0	<1.0	<1.0	<3.1	--	--	--	--	--	--	--
MW-18	3/18/2019	1093.93	24.19	--	1069.74	<100	<410	<410	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	--	--
MW-18	6/17/2019	1093.93	18.14	--	1075.79	<100	<385	<385	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	--	--
MW-18	9/16/2019	1093.93	15.36	--	1078.57	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-18	12/26/2019	1093.93	20.44	--	1073.49	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-18	3/9/2020	1093.93	25.54	--	1068.39	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-18	6/17/2020	1093.93	18.78	--	1075.15	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-19	6/8/2018	1093.74	20.70	--	1073.04	<100	<400	<400	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	--	--
MW-19	9/19/2018	1093.74	13.37	--	1080.37	<100	**500**	<410	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	--	--
MW-19	12/13/2018	1093.74	20.02	--	1073.72	<100	**570**	<390	<1.0	<1.0	<1.0	<3.1	--	--	--	--	--	--	--
MW-19	3/18/2019	1093.74	24.96	--	1068.78	<100	<400	<400	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	--	--
MW-19	3/18/2019	1093.74	24.96	--	1068.78	<100	<400	<400	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	--	--
MW-19	6/17/2019	1093.74	--	--	--	<100	<400	<400	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	--	--
MW-19	9/16/2019	1093.74	17.18	--	1076.56	<100	**818**	<392	2.7	<1.0	<1.0	<3.0	--	<1.0	--	<1.0	--	--	--
MW-19 Dup	9/16/2019	1093.74	17.18	--	1076.56	<100	**984**	<400	2.7	<1.0	<1.0	<3.0	--	<1.0	--	<1.0	--	--	--
MW-19	12/26/2019	1093.74	Obstructed	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-19	3/9/2020	1093.74	Obstructed	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-19	6/17/2020	1093.74	19.74	--	1074.00	<100	120	<120	<0.50	<1.0	<1.0	<3.0	--	<0.50	--	<1.0	--	--	--

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Former Union Oil Facility
Phillips 66 Site 980
920 North 6th Avenue
Yakima, Washington

Well ID	Sample Date	TOC Elevation (feet)	Depth to Water (feet)	LPH (feet)	GW Elevation (feet)	TPH-G (µg/L)	TPH-D (µg/L)	TPH-O (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	EDC (µg/L)	EDB (µg/L)	Total Lead (µg/L)	Dissolved Lead (µg/L)	Ethanol (µg/L)	Naphthalene (µg/L)
MTCA Method A Cleanup Levels:						800	500	500	5	1,000	700	1,000	20	5	0.01	15	15	NE	160

NOTES:
Bold values equal or exceed Department of Ecology Model Toxics Control Act (MTCA) Method A Cleanup Level, per Cleanup Level and Risk Calculation (CLARC) data tables published in August 2015.
Groundwater monitoring data, top of casing elevations, and laboratory analytical results prior to September 8, 2011 provided by STANTEC Consulting Corporation.
ft = feet
MTCA = Model Toxics Control Act
LPH = Liquid Phase Hydrocarbons
NM = Not Measured
USEPA = United States Environmental Protection Agency
µg/L = Micrograms per liter
-- = Not Analyzed or Sampled
<x = Reported concentration below laboratory method detection limit.
Top of Casing (TOC) elevation data prior to 2018 is referenced to an arbitrary datum. TOC elevations reported in 2018 were surveyed in reference to North American Vertical Datum of 88 (NAV88).
TPH as Gasoline-range organics (TPHg) analyzed by Northwest Method NWTPH-Gx.
TPH as Diesel-range organics (TPHd) analyzed by Northwest Method NWTPH-Dx.
TPH as Heavy Oil-range organics (TPHo) analyzed by Northwest Method NWTPH-Dx.
Benzene, toluene, ethylbenzene, total xylenes (BTEX) analyzed by USEPA Method 8260B or 8021B
Methyl tert-butyl ether (MTBE) analyzed by EPA Method 8260B.
1,2 Dichloroethane (EDC) analyzed by EPA Method 8260B
1,2 Dibromoethane (EDB) analyzed by EPA Method 8260B
Lead analyzed by EPA Method 7421/6020 (Total Lead).
a = Sample was evaluated to the MDL
b = Analyte present in the associated method blank above the detection limit
c = Analyte was detected in the associated method blank as well as in the sample
d = Result confirmed by second analysis

Table 2

Soil Vapor Mass Removal Data
Former Union Oil Facility
Phillips 66 Site 980
920 North 6th Avenue
Yakima, Washington

Date / Time	Air Velocity (fpm)	Air Flow Rate (scfm)	Vacuum (in. Hg)	Well PID Conc. (ppmV)	VOC Removal Rate (lbs/day)	Cumulative VOCs Recovered (lbs)
4/28/2020 9:30	--	--	--	--	--	0
4/28/2020 9:45	1500	54.4	-20	289	5.86	0.06
4/28/2020 9:55	2000	68.1	-17	375	9.53	0.13
4/28/2020 10:05	2000	68.1	-17	845	21.47	0.28
4/28/2020 10:15	2000	68.1	-17	1025	26.05	0.46
4/28/2020 10:25	2000	68.1	-17	1067	27.11	0.65
4/28/2020 10:45	2000	68.1	-17	1360	34.56	1.13
4/28/2020 11:15	1800	60.0	-16	1320	29.54	1.74
4/28/2020 11:30	2400	78.3	-15	1037	30.27	2.06
4/28/2020 12:00	2500	83.3	-16	1210	37.61	2.84
4/28/2020 12:30	2800	91.3	-15	1520	51.77	3.92
4/28/2020 13:00	3000	100.0	-16	1376	51.33	4.99
4/28/2020 13:30	3100	105.6	-17	1387	54.63	6.13
4/28/2020 14:00	3100	105.6	-17	1280	50.42	7.18

Notes:
-- = not measured.
fpm = feet per minute.
scfm = standard cubic feet per minute.
lbs/day = pounds per day.
lbs = pounds.
in Hg = inches of mercury.
in WC = inches of water column.
ppmv = parts per million by volume.
Atmospheric pressure = 406.86 in WC.
Absolute = atmospheric pressure - gauge vacuum (in WC).
scfm= acfm*(406.9 in WC+gauge pressure)/406.9 in WC)*(528°R/well temp),
where gauge pressure = well vacuum (in WC), and well temp = 70 F
Removal/Emission Rate = C (ppmv) x Q (cfm) x (1lb-mole/386ft^3) x MW (lb/lb-mole) x 60 min/hr x 24 hr/day x 10^6,
where C = concentration, Q = flow, MW= molecular weight (100 lb/lb-mole for TPHg)
Cumulative removal = removal rate multiplied by the hour-interval of operation plus the previous total.
Hydrocarbons removal rate and cumulative removal calculated using well vapor readings.

Appendices

Appendix A
Field Forms

WELL GAUGING DATA

Project # 190617-HP1 Date 6/17/19 Client GHD

Site 920 N 6th Ave, Yakima, WA

Well ID	Time	Well Size (in.)	Sheen / Odor	Depth to Immiscible Liquid (ft.)	Thickness of Immiscible Liquid (ft.)	Volume of Immiscibles Removed (ml)	Depth to water (ft.)	Depth to well bottom (ft.)	Survey Point: TOB or TOC	Notes
MW-7	1159	2					16.60	23.66		tubing
MW-8	1151	2					18.78	27.55		tubing
MW-15	1120	2					17.48	33.46		tubing
MW-16	1127	2					19.06	33.13		tubing
MW-17	1206	2					18.78	28.68		tubing
MW-18	1218	2					18.14	32.82		tubing
MW-19	1135	2	—	Unable to gauge/obstruction ~2' down						—

LOW FLOW WELL MONITORING DATA SHEET

Project #: 190617-HP1	Client: GHD
Sampler: HP	Gauging Date: 6/17/19
Well I.D.: MW-8	Well Diameter (in.): (2) 3 4 6 8 ____
Total Well Depth (ft.): 27.55	Depth to Water (ft.): 18.78
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	Flow Cell Type: YSI 556

Purge Method: 2" Grundfos Pump (Peristaltic Pump) Bladder Pump
Sampling Method: (Dedicated Tubing) New Tubing Other ____

Start Purge Time: 1451 Flow Rate: 200 mL/min Pump Depth: 22'

Time	Temp. (°C or °F)	pH	Cond. (mS/cm or (µS/cm))	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or (mL))	Depth to Water (ft.)
1454	15.48	6.25	279	11	2.36	2.0	600	18.84
1457	14.80	6.00	247	8	2.42	28.8	1200	18.84
1500	14.61	6.06	241	8	2.34	30.7	1800	18.84
1503	13.91	5.96	238	8	2.33	33.3	2400	18.84
1506	13.85	5.95	233	7	2.31	36.5	3000	18.84
1509	13.80	5.92	231	7	2.30	39.5	3600	18.84

Did well dewater? Yes (No)	Amount actually evacuated: 3.6 L
Sampling Time: 1510	Sampling Date: 6/17/19
Sample I.D.: MW-8	Laboratory: Pace
Analyzed for: (TPH-G) (BTEX) MTBE (TPH-D)	Other:
Equipment Blank I.D.: @ Time	Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 190617-HP1	Client: GHD
Sampler: HP	Gauging Date: 6/17/19
Well I.D.: MW-15	Well Diameter (in.): (2) 3 4 6 8 ____
Total Well Depth (ft.): 33.46	Depth to Water (ft.): 17.48
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	Flow Cell Type: YSI 556

Purge Method: 2" Grundfos Pump (Peristaltic Pump) Bladder Pump
Sampling Method: (Dedicated Tubing) New Tubing Other ____

Start Purge Time: 1423 Flow Rate: 200 mL/min Pump Depth: 28'

Time	Temp. (°C or °F)	pH	Cond. (mS/cm or (µS/cm))	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or (mL))	Depth to Water (ft.)
1426	16.34	5.90	487	31	0.86	-33.6	600	17.49
1429	15.98	6.00	487	22	0.77	-40.2	1200	17.49
1432	15.82	6.06	487	18	0.76	-45.6	1800	17.49
1435	15.78	6.09	487	18	0.76	-40.7	2400	17.49
1438	16.00	6.12	489	17	0.71	-48.4	3000	17.49

Did well dewater? Yes (No)	Amount actually evacuated: 3000 mL
Sampling Time: 1439	Sampling Date: 6/17/19
Sample I.D.: MW-15	Laboratory: Pace
Analyzed for: (TPH-G) (BTEX) MTBE (TPH-D)	Other:
Equipment Blank I.D.: @ Time	Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 190617-HP1	Client: GHD
Sampler: HP	Gauging Date: 6/17/19
Well I.D.: MW-16	Well Diameter (in.): (2) 3 4 6 8 ____
Total Well Depth (ft.): 33.13	Depth to Water (ft.): 19.06
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	Flow Cell Type: YSI 556

Purge Method: 2" Grundfos Pump ~~Peristaltic Pump~~ Bladder Pump
Sampling Method: ~~Dedicated Tubing~~ New Tubing Other____

Start Purge Time: 1351 Flow Rate: 200 mL/min Pump Depth: 28'

Time	Temp. (°C or °F)	pH	Cond. (mS/cm or (µS/cm))	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or (mL))	Depth to Water (ft.)
1354	15.63	5.95	240	16	2.10	1.0	600	19.11
1357	15.64	5.82	233	10	2.24	11.5	1200	19.11
1400	15.55	5.92	231	10	2.14	10.1	1800	19.11
1403	15.53	6.05	229	9	2.11	8.0	2400	19.11
1406	15.49	6.08	227	9	2.09	6.9	3000	19.11
1409	15.59	6.04	227	9	2.08	8.8	3600	19.11

Did well dewater? Yes (No)	Amount actually evacuated: 3600 mL
Sampling Time: 1410	Sampling Date: 6/17/19
Sample I.D.: MW-16	Laboratory: Pace
Analyzed for: ~~TPH-G~~ ~~BTEX~~ MTBE ~~TPH-D~~	Other:
Equipment Blank I.D.: @ Time	Duplicate I.D.: DUP-1 @ 1200

LOW FLOW WELL MONITORING DATA SHEET

Project #: 190617-HP1	Client: GHD
Sampler: HP	Gauging Date: 6/17/19
Well I.D.: MW-17	Well Diameter (in.): (2) 3 4 6 8 ____
Total Well Depth (ft.): 28.68	Depth to Water (ft.): 18.78
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	Flow Cell Type: YSI 556

Purge Method: 2" Grundfos Pump (Peristaltic Pump) Bladder Pump
Sampling Method: (Dedicated Tubing) New Tubing Other____

Start Purge Time: 1251 Flow Rate: 200 ml/min Pump Depth: 24'

Time	Temp. (°C or °F)	pH	Cond. (mS/cm or µS/cm)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or mL)	Depth to Water (ft.)
1254	15.88	5.96	318	67	1.80	31.4	600	18.81
1257	16.79	6.30	324	19	1.61	-45.4	1200	18.81
1300	16.88	6.33	326	12	1.60	-47.6	1800	18.81
1303	16.98	6.40	331	11	1.52	-52.8	2400	18.81
1306	16.93	6.38	331	11	1.51	-48.7	3000	18.81
1309	16.95	6.35	330	10	1.53	-47.9	3600	18.81

Did well dewater? Yes (No)	Amount actually evacuated: 3.6 L
Sampling Time: 1310	Sampling Date: 6/17/19
Sample I.D.: MW-17	Laboratory: Pace
Analyzed for: (TPH-G) (BTEX) MTBE (TPH-D)	Other:
Equipment Blank I.D.: @ Time	Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 190617-HPi	Client: GHD
Sampler: HP	Gauging Date: 6/17/19
Well I.D.: MW-18	Well Diameter (in.): (2) 3 4 6 8 ____
Total Well Depth (ft.): 32.82	Depth to Water (ft.): 18.14
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	Flow Cell Type: YSI 556

Purge Method: 2" Grundfos Pump (Peristaltic Pump) Bladder Pump
Sampling Method: (Dedicated Tubing) New Tubing Other____

Start Purge Time: 1220 Flow Rate: 200 ml/min Pump Depth: 27'

Time	Temp. (°C or °F)	pH	Cond. (mS/cm or µS/cm)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or (ml))	Depth to Water (ft.)
1223	16.45	6.63	290	20	2.34	-54.0	600	18.16
1226	16.70	6.66	290	14	2.30	-56.6	1200	18.16
1229	16.71	6.68	292	10	2.31	-57.7	1800	18.16
1232	16.71	6.69	294	9	2.33	-58.9	2400	18.16
1235	16.73	6.70	295	8	2.34	-63.0	3000	18.16
1238	16.70	6.69	294	8	2.34	-60.6	3600	18.16

Did well dewater? Yes (No)	Amount actually evacuated: 3.6 L
Sampling Time: 1239	Sampling Date: 6/17/19
Sample I.D.: MW-18	Laboratory: Pace
Analyzed for: ~~TPH-G~~ ~~BTEX~~ MTBE (TPH-D)	Other:
Equipment Blank I.D.: @ Time	Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 190617-HP1	Client: GHD
Sampler: HP	Gauging Date: 6/19/19
Well I.D.: MW-19	Well Diameter (in.): (2) 3 4 6 8 ____
Total Well Depth (ft.): —	Depth to Water (ft.): —
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	Flow Cell Type: YSI 556

Purge Method: 2" Grundfos Pump ~~Peristaltic Pump~~ Bladder Pump
Sampling Method: Dedicated Tubing New Tubing Other____

Start Purge Time: 1325 Flow Rate: 200 mL/min Pump Depth: ~ 28'

Time	Temp. (°C or °F)	pH	Cond. (mS/cm or µS/cm)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or mL)	Depth to Water (ft.)
1328	17.24	5.94	317	12	1.61	7.1	600	—
1331	17.26	5.94	318	12	0.85	-25.7	1200	—
1334	17.24	6.11	318	11	0.78	-34.3	1800	—
1337	17.26	6.14	318	12	0.73	-39.7	2400	—
1340	17.13	6.17	317	12	0.73	-40.1	3000	—

Did well dewater? Yes (No) Amount actually evacuated: 3 L

Sampling Time: 1341 Sampling Date: 6/17/19

Sample I.D.: MW-19 Laboratory: Pace

Analyzed for: ~~TPH-G~~ ~~BTEX~~ MTBE ~~TPH-D~~ Other:

Equipment Blank I.D.: @ Time Duplicate I.D.:

WELLHEAD INSPECTION FORM

Client: GHD Site: 920 N. 6th Ave, Yakima, WA Date: 6/17/19

Job # : 190617-HP1 Technician: HP Page 1 of 1

Well ID	Well Inspected - No Corrective Action Required	Check indicates deficiency: Cap non-functional	Lock non-functional	Lock missing	Bolts missing (list qty)	Tabs stripped (list qty)	Tabs broken (list qty)	Annular seal incomplete	Apron damaged	Rim / Lid broken	Trip Hazard	Below Grade	Other (explain in notes)	Well Not Inspected (explain in notes)	Notes (list if cap or lick replaced, if there are access issues associated with repairs, if traffic control is required, if stand pipe damaged, or any specific details not covered by checklist)
MW-7	X														
MW-8	X			X											
MW-15	X			X											
MW-16	X			X											
MW-17	X			X											
MW-18	X			X											
MW-19	X			X											

NOTES:

PHILLIPS 66-WASHINGTON/OREGON TYPE **A** BILL OF LADING

SOURCE RECORD **BILL OF LADING** FOR PURGEWATER RECOVERED FROM GROUNDWATER WELLS AT PHILLIPS 66 FACILITIES IN THE STATE OF WASHINGTON AND OREGON. THE PURGE- WATER WHICH HAS BEEN RECOVERED FROM GROUND- WATER WELLS IS COLLECTED BY THE CONTRACTOR AND HAULED TO THEIR FACILITY IN KENT, WASHINGTON FOR TEMPORARILY HOLDING PENDING TRANSPORT BY OTHERS TO FINAL DESTINATION.

The contractor performing this work is BLAINE TECH SERVICES, INC. (BLAINE TECH), 22727 72ND Ave South, Suite D – 102, Kent, WA 98032. BLAINE TECH. is authorized by PHILLIPS 66 to recover, collect, apportion into loads, and haul the purgewater that is drawn from wells at the PHILLIPS 66 facility indicated below and to deliver that purgewater to BLAINE TECH for temporarily holding. Transport routing of the purgewater may be direct from one PHILLIPS 66 facility to BLAINE TECH; from one PHILLIPS 66 facility to BLAINE TECH via another PHILLIPS 66 facility; or any combination thereof. The well purgewater is and remains the property of PHILLIPS 66.

This **Source Record BILL OF LADING** was initiated to cover the recovery of Non-Hazardous Well Purgewater from wells at the PHILLIPS 66 facility described below:

11145929	Matt Davis
PHILLIPS 66 #	PHILLIPS 66 Project Manager

920	N 6th Ave	Yakima	WA
Street number	street name	city	state

WELL I.D.	GALS.	WELL I.D.	GALS.
mw-8	1.0		
mw-15	0.9		
mw-16	1.0		
mw-17	1.0		
mw-18	1.0		
mw-19	0.9		

added equip. rinse water 1.0

any other adjustments

TOTAL GALS. RECOVERED 5.8

loaded onto BTS vehicle # 88

BTS event # ~~190617-HP1~~ 190617-HP9

time 1600

date 6/18/19

signature

TEST EQUIPMENT CALIBRATION LOG

PROJECT NAME 920 N. 6th Ave, Yakima, WA				PROJECT NUMBER 190617-HP1			
EQUIPMENT NAME	EQUIPMENT NUMBER	DATE/TIME OF TEST	STANDARDS USED	EQUIPMENT READING	CALIBRATED TO: OR WITHIN 10%:	TEMP.	INITIALS
YSI 556	BTS #4	6/17/19 0700	pH- 4 7 10	4.04 7.02 9.96	✓ ✓ ✓	61°F	HP
			Cond-3900	3876	✓		HP
			ORP-240	239	✓		HP
			DO-100	102	✓		HP

WELL GAUGING DATA

Project # 200309-FK1 Date 3/9/20 Client GHD

Site 920 N 6th Ave Yakima, WA

Well ID	Time	Well Size (in.)	Sheen / Odor	Depth to Immiscible Liquid (ft.)	Thickness of Immiscible Liquid (ft.)	Volume of Immiscibles Removed (ml)	Depth to water (ft.)	Depth to well bottom (ft.)	Survey Point: TOB ~~or~~ TOC	Notes
MW-7	1025	2	—	—	—	—	23.48	23.62		Tubing
MW-8	1005	2	—	—	—	—	25.70	27.57		Tubing
MW-15	1042	2	sheen/ odor	25.22	0.53	—	25.75	—		Tubing
MW-16	1032	2	—	—	—	—	26.04	33.02		Tubing
MW-17	1020	2	—	—	—	—	25.20	~~26.55~~ 5/9/20	25.53	Tubing
MW-18	1015	2	—	—	—	—	25.54	32.52		Tubing
MW-19	1035	2	—	—	—	—	Dry	1.00	↓	obstruction in well

LOW FLOW WELL MONITORING DATA SHEET

Project #: 200309-FK1	Client: GHD
Sampler: FK	Gauging Date: 3/9/20
Well I.D.: MW-15	Well Diameter (in.): (2) 3 4 6 8 ____
Total Well Depth (ft.): ____	Depth to Water (ft.): 25.75
Depth to Free Product: 25.22	Thickness of Free Product (feet): 0.53
Referenced to: (PVC) Grade	Flow Cell Type: YSI 556

Purge Method: 2" Grundfos Pump | Peristaltic Pump | Bladder Pump
Sampling Method: Dedicated Tubing | New Tubing | Other ____

Start Purge Time: ____ Flow Rate: ____ Pump Depth: ____

Time	Temp. (°C or °F)	pH	Cond. (mS/cm or µS/cm)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or mL)	Depth to Water (ft.)
— 0.53' of SPH detected in well —								
		No sample taken						

Did well dewater? Yes No — Amount actually evacuated:

Sampling Time: — Sampling Date:

Sample I.D.: — Laboratory:

Analyzed for: TPH-G BTEX MTBE TPH-D — Other:

Equipment Blank I.D.: @ Time — Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 200309 - FK1	Client: GHD
Sampler: FK	Gauging Date: 3/9/20
Well I.D.: MW-17	Well Diameter (in.): (2) 3 4 6 8 ___
Total Well Depth (ft.): 25.53	Depth to Water (ft.): 25.20
Depth to Free Product: ———	Thickness of Free Product (feet): ———
Referenced to: (PVC) Grade	Flow Cell Type: ___

Purge Method: (2" Grundfos Pump) Peristaltic Pump ~~Bladder Pump~~
Sampling Method: (Dedicated Tubing) New Tubing Other ___

Start Purge Time: ___ Flow Rate: ___ Pump Depth: ___

Time	Temp. (°C or °F)	pH	Cond. (mS/cm or µS/cm)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or mL)	Depth to Water (ft.)
———	insufficient water level to sample. No sample taken							———

Did well dewater? Yes No	Amount actually evacuated:
Sampling Time:	Sampling Date:
Sample I.D.:	Laboratory:
Analyzed for: TPH-G BTEX MTBE TPH-D	Other:
Equipment Blank I.D.: @ Time	Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 200309-FK1	Client: GHD
Sampler: FK	Gauging Date: 3/9/20
Well I.D.: MW-19	Well Diameter (in.): (2) 3 4 6 8 ___
Total Well Depth (ft.): 1.00	Depth to Water (ft.): DRY
Depth to Free Product: ———	Thickness of Free Product (feet): ———
Referenced to: (PVC) Grade	Flow Cell Type: YSI 556

Purge Method: 2" Grundfos Pump | Peristaltic Pump | Bladder Pump
Sampling Method: Dedicated Tubing | New Tubing | Other_____

Start Purge Time:_____ Flow Rate: _____ Pump Depth:_____

Time	Temp. (°C or °F)	pH	Cond. (mS/cm or µS/cm)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or mL)	Depth to Water (ft.)
———		well is dry, obstruction in well at 1.00' No sample taken						———

Did well dewater? Yes No	Amount actually evacuated:
Sampling Time:	Sampling Date:
Sample I.D.:	Laboratory:
Analyzed for: TPH-G BTEX MTBE TPH-D	Other:
Equipment Blank I.D.: @ Time	Duplicate I.D.:

WELLHEAD INSPECTION FORM

Client: GHD Site: 920 N 6th Ave Yakima WA Date: 3/9/20

Job #: 200309-FK1 Technician: Foster K Page 1 of 1

Well ID	Well Inspected - No Corrective Action Required	Check indicates deficiency: Cap non-functional	Lock non-functional	Lock missing	Bolts missing (list qty)	Tabs stripped (list qty)	Tabs broken (list qty)	Annular seal incomplete	Apron damaged	Rim / Lid broken	Trip Hazard	Below Grade	Other (explain in notes)	Well Not Inspected (explain in notes)	Notes (list if cap or lick replaced, if there are access issues associated with repairs, if traffic control is required, if stand pipe damaged, or any specific details not covered by checklist)
MW-7	X			X		2/2									
MW-8	X			X	2/2										
MW-15	X			X											
MW-16	X			X											
MW-17	X			X											
MW-18	X			X											
MW-19	X			X											*obstruction in well at 1ft

NOTES:

WELL GAUGING DATA

Project # 190318-HP1 Date 3/18/19 Client GHD

Site 920 N. 6th Ave, Yakima, WA

Well ID	Time	Well Size (in.)	Sheen / Odor	Depth to Immiscible Liquid (ft.)	Thickness of Immiscible Liquid (ft.)	Volume of Immiscibles Removed (ml)	Depth to water (ft.)	Depth to well bottom (ft.)	Survey Point: TOB or TOC	Notes
MW-7	~~1042~~ 1042	2					22.65	23.66		
MW-8	1002	2					24.54	27.53		
MW-15	1014	2					25.18	33.42		
MW-16	1020	2					24.89	33.03		
MW-17	1105	2					24.39	29.40		
MW-18	1050	2					24.19	32.60		
MW-19	1029	2					24.96	34.90	↓	

LOW FLOW WELL MONITORING DATA SHEET

Project #: 70318- HP1	Client: GHD
Sampler: HP	Gauging Date: 3/18/11
Well I.D.: MW-7	Well Diameter (in.): (2) 3 4 6 8 ____
Total Well Depth (ft.): 23.66	Depth to Water (ft.): 22.65
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: PVC Grade	Flow Cell Type:

Purge Method: 2" Grundfos Pump Peristaltic Pump Bladder Pump
Sampling Method: Dedicated Tubing New Tubing Other

Start Purge Time: Flow Rate: Pump Depth:

Time	Temp. (°C or °F)	pH	Cond. (mS/cm or µS/cm)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or mL)	Depth to Water (ft.)
		INSUFFICIENT	WATER TO PURGE OR	SAMPLE				
			NO SAMPLE TAKEN					

Did well dewater? Yes No Amount actually evacuated:

Sampling Time: Sampling Date:

Sample I.D.: Laboratory:

Analyzed for: TPH-G BTEX MTBE TPH-D Other:

Equipment Blank I.D.: @ Time Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 190318 - HP-1	Client: GHD
Sampler: HP	Gauging Date: 3/18/19
Well I.D.: mw-8	Well Diameter (in.): (2) 3 4 6 8 ____
Total Well Depth (ft.): 27.53	Depth to Water (ft.): 24.54
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	Flow Cell Type: YSI 556

Purge Method: 2" Grundfos Pump (Peristaltic Pump) Bladder Pump
Sampling Method: (Dedicated Tubing) New Tubing Other____

Start Purge Time: 1203 Flow Rate: 200 mL/min Pump Depth: 26'

Time	Temp. (°C or °F)	pH	Cond. (mS/cm or µS/cm)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or mL)	Depth to Water (ft.)
1206	12.90	7.20	735	90	1.80	-40	600	24.63
1209	12.92	7.18	739	86	1.74	-42	1200	24.63
1212	13.11	6.80	750	56	1.50	-45	1800	24.63
1215	13.39	6.77	754	54	1.49	-47	2400	24.63
1218	13.50	6.75	758	55	1.44	-49	3000	24.63

Did well dewater? Yes (No)	Amount actually evacuated: 3 L
Sampling Time: 1220	Sampling Date: 3/18/19
Sample I.D.: mw-8	Laboratory: Pace
Analyzed for: (TPH-G) (BTEX) MTBE (TPH-D)	Other:
Equipment Blank I.D.: @ Time	Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 190318- HP1	Client: GHD
Sampler: HP	Gauging Date: 3/18/19
Well I.D.: MW-15	Well Diameter (in.): (2) 3 4 6 8 ____
Total Well Depth (ft.): 33.92	Depth to Water (ft.): 25.18
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	Flow Cell Type: 451 556

Purge Method: 2" Grundfos Pump ~~Peristaltic Pump~~ Bladder Pump
Sampling Method: ~~Dedicated Tubing~~ New Tubing Other____

Start Purge Time: 1259 Flow Rate: 200 mL/min Pump Depth: 29'

Time	Temp. (°C or °F)	pH	Cond. (mS/cm or µS/cm)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or mL)	Depth to Water (ft.)
1302	11.80	6.64	869	258	1.97	-57	600	25.27
1305	11.77	6.60	612	96	1.76	-52	1200	25.32
1308	11.72	6.04	599	35	1.56	-40	1800	25.34
1311	11.71	6.02	596	36	1.55	-35	2400	25.35
1314	11.70	6.01	592	36	1.50	-35	3000	25.35

Did well dewater? Yes (No)	Amount actually evacuated: 3.0 L
Sampling Time: 1316	Sampling Date: 3/18/19
Sample I.D.: MW-15	Laboratory: Pace
Analyzed for: (TPH-G) (BTEX) MTBE (TPH-D)	Other:
Equipment Blank I.D.: @ Time	Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 190318-HP1	Client: GHO
Sampler: HP	Gauging Date: 3/18/19
Well I.D.: MW-16	Well Diameter (in.): (2) 3 4 6 8 ____
Total Well Depth (ft.): 33.03	Depth to Water (ft.): 24.89
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	Flow Cell Type: YSI 556

Purge Method: 2" Grundfos Pump ~~Peristaltic Pump~~ Bladder Pump
Sampling Method: ~~Dedicated Tubing~~ New Tubing Other____

Start Purge Time: 1324 Flow Rate: 200 ml/min Pump Depth: 28.5'

Time	Temp. (°C or °F)	pH	Cond. (mS/cm or µS/cm)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or mL)	Depth to Water (ft.)
1327	11.17	6.56	640	512	1.81	-39	600	25.02
1330	11.38	6.57	630	419	1.75	-46	1200	25.05
1333	11.57	6.59	622	384	1.73	-47	1800	25.05
1336	11.77	6.59	618	366	1.65	-53	2400	25.05
1339	11.95	6.63	614	376	1.61	-54	3000	25.05
1342	12.02	6.63	612	363	1.60	-53	3600	25.05

Did well dewater? Yes (No) Amount actually evacuated: 3.6 L

Sampling Time: 1344 Sampling Date: 3/18/19

Sample I.D.: MW-16 Laboratory: Pace

Analyzed for: (TPH-G) (BTEX) MTBE (TPH-D) Other:

Equipment Blank I.D.: @ Time Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 190318-HP1	Client: GHD
Sampler: HP	Gauging Date: 3/18/19
Well I.D.: MW-17	Well Diameter (in.): (2) 3 4 6 8 ____
Total Well Depth (ft.): 29.90	Depth to Water (ft.): 24.39
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	Flow Cell Type: YSI 556

Purge Method: 2" Grundfos Pump (Peristaltic Pump) Bladder Pump
Sampling Method: (Dedicated Tubing) New Tubing Other ____

Start Purge Time: 1109 Flow Rate: 200 mL/min Pump Depth: 27'

Time	Temp. (°C or °F)	pH	Cond. (mS/cm or µS/cm)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or mL)	Depth to Water (ft.)
1112	10.09	8.60	820	715	1.69	-90	600	24.53
1115	10.82	8.53	828	413	1.64	-86	1200	24.53
1118	11.18	8.46	818	255	1.51	-85	1800	24.53
1121	11.34	7.19	800	130	1.46	-85	2400	24.53
1124	11.27	7.22	799	121	1.43	-85	3000	24.53
1127	11.31	7.20	798	126	1.41	-85	3600	24.53

Did well dewater? Yes (No)	Amount actually evacuated: 3.6 L
Sampling Time: 1129	Sampling Date: 3/18/19
Sample I.D.: MW-17	Laboratory: Pace
Analyzed for: (TPH-G) (BTEX) MTBE (TPH-D)	Other:
Equipment Blank I.D.: @ Time	Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 190318- HP1	Client: GHD
Sampler: HP	Gauging Date: 3/18/19
Well I.D.: MW-18	Well Diameter (in.): (2) 3 4 6 8 ____
Total Well Depth (ft.): 32.60	Depth to Water (ft.): 24.19
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	Flow Cell Type: YSI 556

Purge Method: 2" Grundfos Pump (Peristaltic Pump) Bladder Pump
Sampling Method: (Dedicated Tubing) New Tubing Other____

Start Purge Time: 1137 Flow Rate: 200 mL/min Pump Depth: 28'

Time	Temp. (°C or °F)	pH	Cond. (mS/cm or µS/cm)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or mL)	Depth to Water (ft.)
1140	10.79	7.32	659	258	2.05	-30	600	24.27
1143	11.39	7.11	662	201	1.92	-33	1200	24.27
1146	11.70	7.05	666	189	1.67	-57	1800	24.32
1149	11.76	7.06	667	185	1.68	-57	2400	24.33
1152	11.79	7.05	666	188	1.68	-60	3000	24.35

Did well dewater? Yes (No)	Amount actually evacuated: 3 L
Sampling Time: 1154	Sampling Date: 3/18/19
Sample I.D.: MW-18	Laboratory: Pace
Analyzed for: (TPH-G) (BTEX) MTBE (TPH-D)	Other:
Equipment Blank I.D.: @ Time	Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 190318-HH01	Client: GHD
Sampler: HP	Gauging Date: 3/18/19
Well I.D.: MW-19	Well Diameter (in.): (2) 3 4 6 8 ____
Total Well Depth (ft.): 39.90	Depth to Water (ft.): 24.96
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	Flow Cell Type: YSI 556

Purge Method: 2" Grundfos Pump (Peristaltic Pump) Bladder Pump
Sampling Method: (Dedicated Tubing) New Tubing Other ____

Start Purge Time: 1229 Flow Rate: 200 mL/min Pump Depth: 30'

Time	Temp. (°C or °F)	pH	Cond. (mS/cm or µS/cm)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or mL)	Depth to Water (ft.)
1232	12.21	6.92	923	20	1.06	-48	600	25.01
1235	12.58	6.76	890	17	0.83	-54	1200	25.01
1238	12.61	6.50	890	11	0.76	-69	1800	25.01
1241	12.66	6.45	889	11	0.73	-70	2400	25.01
1244	12.79	6.44	889	10	0.73	-71	3000	25.01

Did well dewater? Yes (No)	Amount actually evacuated: 3.6 L
Sampling Time: 1246	Sampling Date: 3/18/19
Sample I.D.: MW-19	Laboratory: Pace
Analyzed for: (TPH-G) (BTEX) MTBE (TPH-D)	Other:
Equipment Blank I.D.: @ Time	Duplicate I.D.: DUP-1 @ 1200

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www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: 1 of 1

2302423

Section A Required Client Information:

Company: GHD Services
Address: 732 Broadway Ste 301
Tacoma, WA 98402
Email To: MATTHEW.DAVIS@GHD.COM
Phone: 253-507-6217 Fax:
Requested Due Date/TAT: Standard

Section B Required Project Information:

Report To: MATTHEW.DAVIS@GHD.COM
Copy To: JEFFERY.CLOUD@GHD.COM
Purchase Order No.:
Project Name: P66 Yakima
Project Number: 11145929

Section C Invoice Information:

Attention:
Company Name: GHD Services
Address:
Pace Quote Reference:
Pace Project Manager: JENNIFER GROSS
Pace Profile #:

REGULATORY AGENCY
☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE: YAKIMA WA

Section D Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Matrix Codes (MATRIX / CODE): Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Tissue TS; Other OT

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	TPH-G	BTEX	TPH-D	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	TB-1	WT	G	3/18	0600			—	2				X						X	X			
2	MW-8	WT	G	3/18	1220			13C	8				X						X	X	X		
3	MW-15	WT	G	3/18	1316			12C	8				X						X	X	X		
4	MW-16	WT	G	3/18	1344			12C	8				X						X	X	X		
5	MW-17	WT	G	3/18	1329			12C	8				X						X	X	X		
6	MW-18	WT	G	3/18	1154			12C	8				X						X	X	X		
7	MW-19	WT	G	3/18	1246			13C	8				X						X	X	X		
8	DUP-1	WT	G	3/18	1200			—	8				X						X	X	X		
9																							
10																							
11																							
12																							

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
	Patrick Ho BlaineTech	3/20/19	1600				

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: Patrick Ho
SIGNATURE of SAMPLER:
DATE Signed (MM/DD/YY): 03/20/2019

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

ORIGINAL

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

WELLHEAD INSPECTION FORM

Client: GHD Site: 920 N. 6th Ave, Yakima, WA Date: 3/18/19

Job #: 190318-HP1 Technician: HP Page 1 of 1

Well ID	Well Inspected - No Corrective Action Required	Check indicates deficiency: Cap non-functional	Lock non-functional	Lock missing	Bolts missing (list qty)	Tabs stripped (list qty)	Tabs broken (list qty)	Annular seal incomplete	Apron damaged	Rim / Lid broken	Trip Hazard	Below Grade	Other (explain in notes)	Well Not Inspected (explain in notes)	Notes (list if cap or lick replaced, if there are access issues associated with repairs, if traffic control is required, if stand pipe damaged, or any specific details not covered by checklist)
MW-7	X			X											
MW-8	X				2										
MW-15	X			X											
MW-16	X			X											
MW-17	X			X											
MW-18	X			X											
MW-19	X			X											

NOTES:

PHILLIPS 66-WASHINGTON/OREGON TYPE **A** BILL OF LADING

SOURCE RECORD **BILL OF LADING** FOR PURGEWATER RECOVERED FROM GROUNDWATER WELLS AT PHILLIPS 66 FACILITIES IN THE STATE OF WASHINGTON AND OREGON. THE PURGE- WATER WHICH HAS BEEN RECOVERED FROM GROUND- WATER WELLS IS COLLECTED BY THE CONTRACTOR AND HAULED TO THEIR FACILITY IN KENT, WASHINGTON FOR TEMPORARILY HOLDING PENDING TRANSPORT BY OTHERS TO FINAL DESTINATION.

The contractor performing this work is BLAINE TECH SERVICES, INC. (BLAINE TECH), 22727 72ND Ave South, Suite D – 102, Kent, WA 98032. BLAINE TECH. is authorized by PHILLIPS 66 to recover, collect, apportion into loads, and haul the purgewater that is drawn from wells at the PHILLIPS 66 facility indicated below and to deliver that purgewater to BLAINE TECH for temporarily holding. Transport routing of the purgewater may be direct from one PHILLIPS 66 facility to BLAINE TECH; from one PHILLIPS 66 facility to BLAINE TECH via another PHILLIPS 66 facility; or any combination thereof. The well purgewater is and remains the property of PHILLIPS 66.

This **Source Record BILL OF LADING** was initiated to cover the recovery of Non-Hazardous Well Purgewater from wells at the PHILLIPS 66 facility described below:

P66 Yakima — Matt Davis

PHILLIPS 66 # — PHILLIPS 66 Project Manager

920 — N. 6th Ave — Yakima — WA

Street number — street name — city — state

WELL I.D.	GALS.	WELL I.D.	GALS.
MW-7	—		
MW-8	0.9		
MW-15	0.9		
MW-16	1.0		
MW-17	1.0		
MW-18	0.9		
MW-19	1.0		

added equip. rinse water / 0.5

any other adjustments /

TOTAL GALS. RECOVERED 6.2

loaded onto BTS vehicle # 88

BTS event # 190318-HP1 — time 1600 — date 3/22/19

signature

TEST EQUIPMENT CALIBRATION LOG

PROJECT NAME 920 N. 6th Ave, Yakima, WA				PROJECT NUMBER 190318-HA1			
EQUIPMENT NAME	EQUIPMENT NUMBER	DATE/TIME OF TEST	STANDARDS USED	EQUIPMENT READING	CALIBRATED TO: OR WITHIN 10%:	TEMP.	INITIALS
YSI 556	BTS #1	3-18-19 0950	pH- 4 7 10	4.01 7.02 10.06	✓	40°F	
			Cond- 3900	3900	✓		
			ORP- 246	246	✓		
			DO - 100%.	102%.	✓		

WELL GAUGING DATA

Project # 190916-181 Date 9/16/19 Client GHD

Site 920 N. 6th Ave, Yakima, WA

Well ID	Time	Well Size (in.)	Sheen / Odor	Depth to Immiscible Liquid (ft.)	Thickness of Immiscible Liquid (ft.)	Volume of Immiscibles Removed (ml)	Depth to water (ft.)	Depth to well bottom (ft.)	Survey Point: TOB or TOC	Notes
MW-7	1121	2					13.74	23.74		tubing
MW-8	1053	2					16.70	27.60		tubing
MW-15	1101	2					~~16.90~~ 14.65	33.50		tubing
MW-16	1106	2					16.90	33.08		tubing
MW-17	1128	2					16.45	26.71		tubing
MW-18	1116	2					15.36	32.75		tubing
MW-19	1112	2					17.18	34.95	↓	tubing

LOW FLOW WELL MONITORING DATA SHEET

Project #: 190916-HP1	Client: GHD
Sampler: HP	Gauging Date: 9/16/19
Well I.D.: MW-15	Well Diameter (in.): (2) 3 4 6 8 ____
Total Well Depth (ft.): 33.50	Depth to Water (ft.): 14.85
Depth to Free Product: —	Thickness of Free Product (feet): —
Referenced to: (PVC) Grade	Flow Cell Type: YSI 556

Purge Method: 2" Grundfos Pump | Peristaltic Pump | Bladder Pump

Sampling Method: Dedicated Tubing | New Tubing | Other ____

Start Purge Time: 1241 Flow Rate: 200 mL/min Pump Depth: 25'

Time	Temp. (°C or °F)	pH	Cond. (mS/cm or µS/cm)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or mL)	Depth to Water (ft.)
1244	~~18.02~~ 18.02	6.70	452	40	1.11	-62.7	600	14.85
1247	17.94	6.62	446	17	0.49	-77.9	1200	14.85
1250	17.92	6.64	443	16	0.54	-76.9	1800	14.85
1256	17.78	6.68	442	16	0.49	-78.8	2400	14.85
1259	17.73	6.70	440	15	0.43	-82.5	3000	14.85

Did well dewater? Yes (No)	Amount actually evacuated: 3.0 L
Sampling Time: 1300	Sampling Date: 9/16/19
Sample I.D.: MW-15	Laboratory: Pace
Analyzed for: TPH-G BTEX MTBE TPH-D	(Other): See C.O.C.
Equipment Blank I.D.: @ Time	Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 190916 - HP1	Client: GHD
Sampler: HP	Gauging Date: 9/16/19
Well I.D.: MW-17	Well Diameter (in.): (2) 3 4 6 8 ___
Total Well Depth (ft.): 26.71	Depth to Water (ft.): 16.95
Depth to Free Product: —	Thickness of Free Product (feet): —
Referenced to: (PVC) Grade	Flow Cell Type: YSI 556

Purge Method: 2" Grundfos Pump | (Peristaltic) Pump | Bladder Pump
Sampling Method: Dedicated Tubing | New Tubing | Other ___

Start Purge Time: 1130 Flow Rate: 200 mL/min Pump Depth: 22'

Time	Temp. (°C or °F)	pH	Cond. (mS/cm or µS/cm)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or mL)	Depth to Water (ft.)
1133	16.97	7.29	335	26	8.37	119.7	600	16.29
1136	16.91	6.69	336	19	3.34	86.5	1200	16.29
1139	16.84	6.60	334	18	3.28	88.5	1800	16.29
1142	16.92	6.58	334	13	3.15	86.1	2400	16.29
1145	16.90	6.58	333	12	3.14	86.7	3000	16.29
1148	17.02	6.58	329	13	3.11	83.2	3600	16.29

Did well dewater? Yes (No)	Amount actually evacuated: 3.6 L
Sampling Time: 1150	Sampling Date: 9/16/19
Sample I.D.: MW-8	Laboratory: Pace
Analyzed for: TPH-G BTEX MTBE TPH-D	(Other): See C.O.C.
Equipment Blank I.D.: @ Time	Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 190916-HP1	Client: GHD
Sampler: HP	Gauging Date: 9/16/19
Well I.D.: MW-19	Well Diameter (in.): (2) 3 4 6 8 ____
Total Well Depth (ft.): 34.95	Depth to Water (ft.): 17.18
Depth to Free Product: —	Thickness of Free Product (feet): —
Referenced to: (PVC) Grade	Flow Cell Type: YSI 556

Purge Method: 2" Grundfos Pump | (Peristaltic Pump) | Bladder Pump
Sampling Method: Dedicated Tubing | (New Tubing) | Other ____

Start Purge Time: 1206 Flow Rate: 200 mL/min Pump Depth: 29'

Time	Temp. ((°C) or °F)	pH	Cond. (mS/cm or (µS/cm))	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or (mL))	Depth to Water (ft.)
1209	18.03	6.48	408	83	3.56	79.6	600	17.12
1212	17.83	6.29	420	70	1.28	78.2	1200	17.14
1215	17.91	6.28	422	56	1.12	76.4	1800	17.14
1218	17.74	6.30	425	60	1.11	75.6	2400	17.14
1221	17.66	6.30	426	57	1.09	72.6	3000	17.14
1224	17.59	6.31	427	56	0.90	68.1	3600	17.15

Did well dewater? Yes (No) Amount actually evacuated: 3.6 L

Sampling Time: 1226 Sampling Date: 9/16/19

Sample I.D.: MW-19 Laboratory: Pace

Analyzed for: TPH-G BTEX MTBE TPH-D (Other): See C.O.C.

Equipment Blank I.D.: @ Time Duplicate I.D.: Dup-1 taken @ 1200

WELLHEAD INSPECTION FORM

Client: GHD Site: 920 N. 6th Ave, Yakima, WA Date: 9/16/19

Job # : 190916-HP1 Technician: HP Page 1 of 1

Well ID	Well Inspected - No Corrective Action Required	Check indicates deficiency: Cap non-functional	Lock non-functional	Lock missing	Bolts missing (list qty)	Tabs stripped (list qty)	Tabs broken (list qty)	Annular seal incomplete	Apron damaged	Rim / Lid broken	Trip Hazard	Below Grade	Other (explain in notes)	Well Not Inspected (explain in notes)	Notes (list if cap or lick replaced, if there are access issues associated with repairs, if traffic control is required, if stand pipe damaged, or any specific details not covered by checklist)
mw-7	X														—
mw-8				X		2									—
mw-15	X			X											—
mw-16	X			X											—
mw-17	X			X											—
mw-18	X			X											—
mw-19	X			X											—

NOTES:

PHILLIPS 66-WASHINGTON/OREGON TYPE **A** BILL OF LADING

SOURCE RECORD **BILL OF LADING** FOR PURGEWATER RECOVERED FROM GROUNDWATER WELLS AT PHILLIPS 66 FACILITIES IN THE STATE OF WASHINGTON AND OREGON. THE PURGE- WATER WHICH HAS BEEN RECOVERED FROM GROUND- WATER WELLS IS COLLECTED BY THE CONTRACTOR AND HAULED TO THEIR FACILITY IN KENT, WASHINGTON FOR TEMPORARILY HOLDING PENDING TRANSPORT BY OTHERS TO FINAL DESTINATION.

The contractor performing this work is BLAINE TECH SERVICES, INC. (BLAINE TECH), 22727 72ND Ave South, Suite D – 102, Kent, WA 98032. BLAINE TECH. is authorized by PHILLIPS 66 to recover, collect, apportion into loads, and haul the purgewater that is drawn from wells at the PHILLIPS 66 facility indicated below and to deliver that purgewater to BLAINE TECH for temporarily holding. Transport routing of the purgewater may be direct from one PHILLIPS 66 facility to BLAINE TECH; from one PHILLIPS 66 facility to BLAINE TECH via another PHILLIPS 66 facility; or any combination thereof. The well purgewater is and remains the property of PHILLIPS 66.

This **Source Record BILL OF LADING** was initiated to cover the recovery of Non-Hazardous Well Purgewater from wells at the PHILLIPS 66 facility described below:

1145929
PHILLIPS 66 # PHILLIPS 66 Project Manager

920 N. 6th Ave Yakima WA
Street number street name city state

WELL I.D.	GALS.	WELL I.D.	GALS.
MW-16	0.9		
MW-17	1.0		
MW-19	1.0		

added equip. rinse water / 1.0

any other adjustments /

TOTAL GALS. RECOVERED 4.0

loaded onto BTS vehicle # 88

BTS event # 190916-HP1 time 1600 date 9/16/19

signature

TEST EQUIPMENT CALIBRATION LOG

PROJECT NAME 920 N. 6th Ave, Yakima, WA				PROJECT NUMBER 190916-1191			
EQUIPMENT NAME	EQUIPMENT NUMBER	DATE/TIME OF TEST	STANDARDS USED	EQUIPMENT READING	CALIBRATED TO: OR WITHIN 10%:	TEMP.	INITIALS
YSI 556	BT3#5	9/16/19 0700	pH-4 7 10	4.00 7.02 9.97	✓ ✓ ✓	20.7 22.3 21.9	HP HP HP
↓	↓	↓	Cond-3900	3864	✓	23.1	HP
↓	↓	↓	ORP-240	240.9	✓	22.4	HP
↓	↓	↓	DO-100	100	✓	25.7	HP

WELL GAUGING DATA

Project # 191226-Fk1 Date 12/26/19 Client GHD

Site 920 N 6th Ave Yakima, WA

Well ID	Time	Well Size (in.)	Sheen / Odor	Depth to Immiscible Liquid (ft.)	Thickness of Immiscible Liquid (ft.)	Volume of Immiscibles Removed (ml)	Depth to water (ft.)	Depth to well bottom (ft.)	Survey Point: TOB or TOC	Notes
MW-7	1030	2	—	—	—	—	19.63	23.74		Tubing
MW-8	0955	2	—	—	—	—	21.71	27.58		Tubing
MW-15	1005	2	odor	20.9	0.60	—	20.79	33.46		Tubing
MW-16	1010	2	odor	—	—	—	21.82	33.14		Tubing
MW-17	1020	2	—	—	—	—	21.22	27.59		Tubing
MW-18	1018	2	—	—	—	—	20.44	32.53		Tubing
MW-19	1000	2	—	—	—	—	Dry	1.43	↓	obstruction in well

LOW FLOW WELL MONITORING DATA SHEET

Project #: A1226-FK1	Client: GHD
Sampler: FK	Gauging Date: 12/26/19
Well I.D.: MW-15	Well Diameter (in.): (2) 3 4 6 8 ____
Total Well Depth (ft.): ———	Depth to Water (ft.): 20.79
Depth to Free Product: 20.19	Thickness of Free Product (feet): 0.60
Referenced to: (PVC) Grade	Flow Cell Type: ———

Purge Method: 2" Grundfos Pump | Peristaltic Pump | Bladder Pump
Sampling Method: Dedicated Tubing | New Tubing | Other ____

Start Purge Time: ____ Flow Rate: ____ Pump Depth: ____

Time	Temp. (°C or °F)	pH	Cond. (mS/cm or µS/cm)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or mL)	Depth to Water (ft.)
— Product in well. 0.60' of SPH detected —								
NO sample taken								

Did well dewater? Yes No Amount actually evacuated:

Sampling Time: Sampling Date:

Sample I.D.: Laboratory:

Analyzed for: TPH-G BTEX MTBE TPH-D Other:

Equipment Blank I.D.: @ Time Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 191226-TK1	Client: GHD
Sampler: FK	Gauging Date: 12/26/19
Well I.D.: MW-17	Well Diameter (in.): (2) 3 4 6 8 ____
Total Well Depth (ft.): 27.59	Depth to Water (ft.): 21.22
Depth to Free Product: ———	Thickness of Free Product (feet): ———
Referenced to: (PVC) Grade	Flow Cell Type: YSI 556

Purge Method: 2" Grundfos Pump (Peristaltic Pump) Bladder Pump
Sampling Method: (Dedicated Tubing) New Tubing Other ____

Start Purge Time: 1116 Flow Rate: 200 mL/min Pump Depth: 24

Time	Temp. (°C or °F)	pH	Cond. (mS/cm or µS/cm)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or mL)	Depth to Water (ft.)
1119	11.83	9.35	316	80	5.68	-54.4	600	21.35
1122	11.87	9.33	314	48	4.95	-56.5	1200	21.35
1125	11.89	9.25	315	57	4.47	-48.8	1800	21.35
1128	11.91	9.20	312	59	4.41	-47.9	2400	21.35
1131	11.93	9.17	310	57	#3 4.39 12/26	-43.8	3000	21.35

Did well dewater? Yes (No) Amount actually evacuated: 3000 mL

Sampling Time: 1134 Sampling Date: 12/26/19

Sample I.D.: MW-17 Laboratory: cal science

Analyzed for: (TPH-G) (BTEX) MTBE (TPH-D) Other: ———

Equipment Blank I.D.: @ Time Duplicate I.D.: DUP-1

LOW FLOW WELL MONITORING DATA SHEET

Project #: 192126-FK1	Client: GHD
Sampler: FK	Gauging Date: 12/26/19
Well I.D.: MW-19	Well Diameter (in.): (2) 3 4 6 8 ___
Total Well Depth (ft.): 1.43	Depth to Water (ft.): Dry
Depth to Free Product: ___	Thickness of Free Product (feet): ___
Referenced to: (PVC) Grade	Flow Cell Type: ___

Purge Method: 2" Grundfos Pump | Peristaltic Pump | Bladder Pump
Sampling Method: Dedicated Tubing | New Tubing | Other ___

Start Purge Time: ___ Flow Rate: ___ Pump Depth: ___

Time	Temp. (°C or °F)	pH	Cond. (mS/cm or µS/cm)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or mL)	Depth to Water (ft.)
—	obstruction in well at 1.43 ft obstruction —							
	white/gray color that is thick and goo like							
	NO sample taken							

Did well dewater? Yes No — Amount actually evacuated:

Sampling Time: — Sampling Date:

Sample I.D.: — Laboratory:

Analyzed for: TPH-G BTEX MTBE TPH-D — Other:

Equipment Blank I.D.: @ Time — Duplicate I.D.:

eurofins | Calscience

CHAIN OF CUSTODY RECORD

DATE: 12/26/19

PAGE: 1 OF 1

7440 Lincoln Way, Garden Grove, CA 92841-1427 • (714) 895-5494
For courier service / sample drop off information, contact us26_sales@eurofinsus.com or call us.

LABORATORY CLIENT: GHD Services

ADDRESS: 732 Broadway suite 301

CITY: Tacoma STATE: WA ZIP: 98402

TEL: 253-507-6217 E-MAIL: matthew.davis@ghd.com

CLIENT PROJECT NAME / NUMBER: 920 N 6th Ave Yakima WA

P.O. NO.:

PROJECT CONTACT: Matthew Davis

SAMPLER(S): (PRINT) Foster Koetzel

TURNAROUND TIME (Rush surcharges may apply to any TAT not "STANDARD"):

☐ SAME DAY ☐ 24 HR ☐ 48 HR ☐ 72 HR ☐ 5 DAYS ☒ STANDARD

☐ COELT EDF GLOBAL ID: LOG CODE:

SPECIAL INSTRUCTIONS:

REQUESTED ANALYSES

Please check box or fill in blank as needed.

LAB USE ONLY	SAMPLE ID	SAMPLING DATE	SAMPLING TIME	MATRIX	NO. OF CONT.	Unpreserved	Preserved	Field Filtered	TPH(g) ☐ GRO	TPH(d) ☐ DRO	TPH ☐ C6-C36 ☐ C6-C44	TPH ____	BTEX / MTBE ☒8260 ☐ ____	VOCs (8260)	Oxygenates (8260)	Prep (5035): ☐ En Core ☐ Terra Core	SVOCs (8270)	Pesticides (8081)	PCBs (8082)	PAHs: ☐ 8270 ☐ 8270 SIM	T22 Metals: ☐ 6010/747X ☐ 6020/747X	Cr(VI): ☐ 7196 ☐ 7199 ☐ 218.6				
	MW-17	12/26/19	1134	GW	8	2	6		X	X			X												
	DUP-1	12/26/19	1200	GW	8	2	6		X	X			X												
	TB-1	12/26/19	1200	GW	3 2 FR 12/26 FR		2		X				X												

Relinquished by: (Signature)	Received by: (Signature/Affiliation) Shipped via Fed Ex	Date: 12/26/19	Time: 1400
Relinquished by: (Signature)	Received by: (Signature/Affiliation)	Date:	Time:
Relinquished by: (Signature)	Received by: (Signature/Affiliation)	Date:	Time:

WELLHEAD INSPECTION FORM

Client: GHD Site: 920 N 6th Ave Yakima, WA Date: 12/26/19

Job #: 191226-FK1 Technician: Foster K Page 1 of 1

Well ID	Well Inspected - No Corrective Action Required	Check indicates deficiency: Cap non-functional	Lock non-functional	Lock missing	Bolts missing (list qty)	Tabs stripped (list qty)	Tabs broken (list qty)	Annular seal incomplete	Apron damaged	Rim / Lid broken	Trip Hazard	Below Grade	Other (explain in notes)	Well Not Inspected (explain in notes)	Notes (list if cap or lick replaced, if there are access issues associated with repairs, if traffic control is required, if stand pipe damaged, or any specific details not covered by checklist)
MW-7	X			X		2/2									
MW-8	X			X	2/2										
MW-15	X			X											
MW-16	X			X											
MW-17	X			X											
MW-18	X			X											
MW-19	X			X											Obstruction in well

NOTES:

PHILLIPS 66-WASHINGTON/OREGON TYPE **A** BILL OF LADING

SOURCE RECORD **BILL OF LADING** FOR PURGEWATER RECOVERED FROM GROUNDWATER WELLS AT PHILLIPS 66 FACILITIES IN THE STATE OF WASHINGTON AND OREGON. THE PURGE- WATER WHICH HAS BEEN RECOVERED FROM GROUND- WATER WELLS IS COLLECTED BY THE CONTRACTOR AND HAULED TO THEIR FACILITY IN KENT, WASHINGTON FOR TEMPORARILY HOLDING PENDING TRANSPORT BY OTHERS TO FINAL DESTINATION.

The contractor performing this work is BLAINE TECH SERVICES, INC. (BLAINE TECH), 22727 72ND Ave South, Suite D – 102, Kent, WA 98032. BLAINE TECH. is authorized by PHILLIPS 66 to recover, collect, apportion into loads, and haul the purgewater that is drawn from wells at the PHILLIPS 66 facility indicated below and to deliver that purgewater to BLAINE TECH for temporarily holding. Transport routing of the purgewater may be direct from one PHILLIPS 66 facility to BLAINE TECH; from one PHILLIPS 66 facility to BLAINE TECH via another PHILLIPS 66 facility; or any combination thereof. The well purgewater is and remains the property of PHILLIPS 66.

This **Source Record BILL OF LADING** was initiated to cover the recovery of Non-Hazardous Well Purgewater from wells at the PHILLIPS 66 facility described below:

PHILLIPS 66 # | PHILLIPS 66 Project Manager

920	N 6th	Ave	Yakima	WA
Street number	street name		city	state

WELL I.D.	GALS.	WELL I.D.	GALS.
MW-17	1		

added equip. rinse water / 1

any other adjustments /

TOTAL GALS. RECOVERED 2

loaded onto BTS vehicle # 90

BTS event # 191276-FK1 | time 1200 | date 12/26/19

signature

TEST EQUIPMENT CALIBRATION LOG

PROJECT NAME 920 N 6th Ave Yakima WA				PROJECT NUMBER 191226-FK1			
EQUIPMENT NAME	EQUIPMENT NUMBER	DATE/TIME OF TEST	STANDARDS USED	EQUIPMENT READING	CALIBRATED TO: OR WITHIN 10%:	TEMP.	INITIALS
YSI 556	BTS #6	12/26/19 0600	pH 4 7 10	4.03 7.05 10.01	√ √ √	11.10°C 11.04°C 11.07°C	FK FK FK
			Cond 3900 µS/cm	3961 µS/cm	√	11.16°C	FK
			DO 100 %	96.2%	√	10.08°C	FK
			ORP 250.5mV	250.0 mV	√	11.01°C	FK

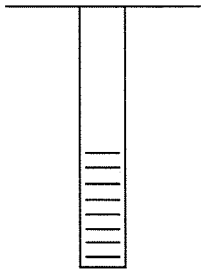
Monitoring Well Record for Low-Flow Purging
(Form SP-09)

Project Data:

Project Name: Pac Yakima
Ref. No.:
Date: 06-17-20
Personnel: JRL

Monitoring Well Data:

Well No.: MW-17
Vapour PID (ppm): —
Measurement Point: TOC
Constructed Well Depth (m/ft):
Measured Well Depth (m/ft): 29.03
Depth of Sediment (m/ft):
Saturated Screen Length (m/ft):
Depth to Pump Intake (m/ft)[1]: 25
Well Diameter, D (cm/in): 2"
Well Screen Volume, V_s (L)[2]:
Initial Depth to Water (m/ft): 19.42



Time	Pumping Rate (mL/min)	Depth to Water (m/ft)	Drawdown from Initial Water Level[3] (m/ft)	Temperature °C	Conductivity (mS/cm)	Turbidity NTU	DO (mg/L)	pH	ORP (mV)	Volume Purged, Vp (L)	No. of Well Screen Volumes Purged[4]
Precision Required[5]:				±3 %	±0.005 or 0.01[6]	±10 %	±10 %	±0.1 Units	±10 mV		
0955	120 mL	—	START	Pumping	—	—	—	—	—	—	—
1005	100mL	19.50	.08	15.8	0.382	11.6	3.17	7.66	27.6		
1010	100mL	19.48	.06	16.0	0.352	10.3	2.60	7.09	38.2		
1015	100mL	19.47	.05	16.2	0.384	8.1	2.58	7.06	38.5		
1020	100mL	19.47	.05	16.4	0.385	6.2	2.57	7.06	38.3		

Sample ID: GW-061720-JRL-MW17
Sample Time: 1025

Notes:

(1) The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.

(2) The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s=\pi*(r^2)*L$ in mL, where r (r=D/2) and L are in cm.
For Imperial units, $V_s=\pi*(r^2)*L*(2.54)^3$, where r and L are in inches

(3) The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 500 mL/min.

(4) Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing), No. of Well Screen Volumes Purged= Vp/Vs.

(5) For conductivity, the average value of three readings <1 mS/cm ±0.005 mS/cm or where conductivity >1 mS/cm ±0.01 mS/cm.

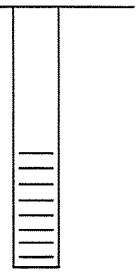
Monitoring Well Record for Low-Flow Purging
(Form SP-09)

Project Data:

Project Name: P66 YAKIMA
Ref. No.:
Date: 6-17-20
Personnel: JRL

Monitoring Well Data:

Well No.: MW-15
Vapour PID (ppm): —
Measurement Point: TOC
Constructed Well Depth (m/ft):
Measured Well Depth (m/ft):
Depth of Sediment (m/ft):
Saturated Screen Length (m/ft):
Depth to Pump Intake (m/ft)[1]: 25'
Well Diameter, D (cm/in): 2"
Well Screen Volume, V_s (L)[2]:
Initial Depth to Water (m/ft): 18.49



Time	Pumping Rate (mL/min)	Depth to Water (m/ft)	Drawdown from Initial Water Level[3] (m/ft)	Temperature °C	Conductivity (mS/cm)	Turbidity NTU	DO (mg/L)	pH	ORP (mV)	Volume Purged, Vp (L)	No. of Well Screen Volumes Purged[4]
Precision Required[5]:				±3 %	±0.005 or 0.01[6]	±10 %	±10 %	±0.1 Units	±10 mV		
1035	100	—	START	PUMPING	—	—	—	—	—		
1045	100	18.51	0.02	17.4	0.69	3.8	0.68	6.80	-108.4		
1050	100	18.50	0.01	17.4	0.69	3.2	0.65	6.79	-109.0		
1055	100	18.50	0.01	17.5	0.69	2.7	0.59	6.78	-109.7		
1100	100	18.50	0.01	17.6	0.69	2.3	0.57	6.78	-110.0		

Sample ID: GW-061720-JRL-MW15 DUP TAKEN HERE
Sample Time: 1105

Notes:

(1) The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.

(2) The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s=\pi*(r^2)*L$ in mL, where r (r=D/2) and L are in cm.
For Imperial units, $V_s=\pi*(r^2)*L*(2.54)^3$, where r and L are in inches

(3) The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 500 mL/min.

(4) Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing), No. of Well Screen Volumes Purged= Vp/Vs.

(5) For conductivity, the average value of three readings <1 mS/cm ±0.005 mS/cm or where conductivity >1 mS/cm ±0.01 mS/cm.

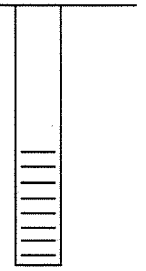
Monitoring Well Record for Low-Flow Purging
(Form SP-09)

Project Data:

Project Name: P66 Yakima
Ref. No.:
Date: 06-17-20
Personnel: JBL

Monitoring Well Data:

Well No.: MW-19
Vapour PID (ppm):
Measurement Point: TOC
Constructed Well Depth (m/ft):
Measured Well Depth (m/ft): 34.91
Depth of Sediment (m/ft):
Saturated Screen Length (m/ft):
Depth to Pump Intake (m/ft)[1]: 27'
Well Diameter, D (cm/in): 2"
Well Screen Volume, V_s (L)[2]:
Initial Depth to Water (m/ft): 19.74



Time	Pumping Rate (mL/min)	Depth to Water (m/ft)	Drawdown from Initial Water Level[3] (m/ft)	Temperature °C	Conductivity (mS/cm)	Turbidity NTU	DO (mg/L)	pH	ORP (mV)	Volume Purged, Vp (L)	No. of Well Screen Volumes Purged[4]
Precision Required[5]:				±3 %	±0.005 or 0.01[6]	±10 %	±10 %	±0.1 Units	±10 mV		
1125	100		START	PUMPING							
1135	100	19.78	0.04	17.7	0.350	8.3	0.52	6.71	10.2		
1140	100	19.76	0.02	17.7	0.353	12.0	0.51	6.70	10.9		
1145	100	19.76	0.02	17.9	0.354	16.6	0.50	6.71	11.9		
1150	100	SAMPLES									

Sample ID: GW-061720-JBL-MW19
Sample Time: 1150

Notes:

(1) The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.

(2) The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s=\pi*(r^2)*L$ in mL, where r (r=D/2) and L are in cm. For Imperial units, $V_s=\pi*(r^2)*L*(2.54)^3$, where r and L are in inches

(3) The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 500 mL/min.

(4) Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing), No. of Well Screen Volumes Purged= Vp/Vs.

(5) For conductivity, the average value of three readings <1 mS/cm ±0.005 mS/cm or where conductivity >1 mS/cm ±0.01 mS/cm.

ALS Environmental
8620 Holly Drive, Suite 100
Everett, WA 98208
Phone (425) 356-2600
Fax (425) 356-2626
http://www.alsglobal.com

Chain Of Custody/ Laboratory Analysis Request

ALS Job# (Laboratory Use Only)

Date 6-17-20 Page 1 Of 1

PROJECT ID:	P106 YAKIMA 11145 929
REPORT TO COMPANY:	GHD
PROJECT MANAGER:	MATT DAVIS
ADDRESS:	20818 44TH AVE W, STE 190
	LYNNWOOD, WA
PHONE:	P.O. #:
E-MAIL:	
INVOICE TO COMPANY:	GHD
ATTENTION:	HEATHER GADWA
ADDRESS:	~~SSOW: 11145 929 2020 MT~~ TBD

SAMPLE I.D.	DATE	TIME	TYPE	LAB#	NWTPH-HCID	NWTPH-DX	NWTPH-GX	BTEX by EPA 8021 ☐ BTEX by EPA 8260 ☐	MTBE by EPA 8021 ☐ MTBE by EPA 8260 ☐	Halogenated Volatiles by EPA 8260	Volatile Organic Compounds by EPA 8260	EDB / EDC by EPA 8260 SIM (water)	EDB / EDC by EPA 8260 (soil)	Semivolatile Organic Compounds by EPA 8270	Polycyclic Aromatic Hydrocarbons (PAH) by EPA 8270 SIM	PCB by EPA 8082 ☐ Pesticides by EPA 8081 ☐	Metals-MTCA-5 ☐ RCRA-8 ☐ Pri Pol ☐ TAL ☐	Metals Other (Specify)	TCLP-Metals ☐ VOA ☐ Semi-Vol ☐ Pest ☐ Herbs ☐	OTHER (Specify) EDB, EDC, MTBE, NAPHTHALENE	NUMBER OF CONTAINERS	RECEIVED IN GOOD CONDITION?
1. GW-061720-JRL-MW15	6/18/20	1105	W			X	X	X												X	6	
2. GW-061720-JRL-MW17	"	1025	W			X	X	X												X	6	
3. GW-061720-JRL-MW19	↓	1150	W			X	X	X												X	6	
4. DUP	—	—	W			X	X	X												X	6	
5.																						
6.																						
7.																						
8.																						
9.																						
10.																						

SPECIAL INSTRUCTIONS JH

SIGNATURES (Name, Company, Date, Time):

1. Relinquished By: _____
   Received By: _____
2. Relinquished By: _____
   Received By: _____

TURNAROUND REQUESTED in Business Days*

Organic, Metals & Inorganic Analysis: 10 (Standard) 5 3 2 1 SAME DAY

Fuels & Hydrocarbon Analysis: 5 (Standard) 3 1 SAME DAY

OTHER:
Specify: _____

*Turnaround request less than standard may incur Rush Charges

Appendix B
Laboratory Analytical Reports

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

March 29, 2019

Matthew Davis
GHD Services Inc.
3600 Port of Tacoma Road
Suite 302
Tacoma, WA 98424

RE: Project: 11145929 P66 Yakima
Pace Project No.: 10467851

Dear Matthew Davis:
Enclosed are the analytical results for sample(s) received by the laboratory on March 22, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jennifer Anderson for
Jennifer Gross
jennifer.gross@pacelabs.com
(206)957-2426
Project Manager

Enclosures

cc: Jeffrey Cloud, GHD Services Inc.
Heather Gadwa, GHD
Eric Maise, GHD Services Inc.

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

CERTIFICATIONS

Project: 11145929 P66 Yakima
Pace Project No.: 10467851

Minnesota Certification IDs

1700 Elm Street SE, Minneapolis, MN 55414-2485
A2LA Certification #: 2926.01
Alabama Certification #: 40770
Alaska Contaminated Sites Certification #: 17-009
Alaska DW Certification #: MN00064
Arizona Certification #: AZ0014
Arkansas DW Certification #: MN00064
Arkansas WW Certification #: 88-0680
California Certification #: 2929
CNMI Saipan Certification #: MP0003
Colorado Certification #: MN00064
Connecticut Certification #: PH-0256
EPA Region 8+Wyoming DW Certification #: via MN 027-053-137
Florida Certification #: E87605
Georgia Certification #: 959
Guam EPA Certification #: MN00064
Hawaii Certification #: MN00064
Idaho Certification #: MN00064
Illinois Certification #: 200011
Indiana Certification #: C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky DW Certification #: 90062
Kentucky WW Certification #: 90062
Louisiana DEQ Certification #: 03086
Louisiana DW Certification #: MN00064
Maine Certification #: MN00064
Maryland Certification #: 322
Massachusetts Certification #: M-MN064
Michigan Certification #: 9909
Minnesota Certification #: 027-053-137
Minnesota Dept of Ag Certifcation #: via MN 027-053-137
Minnesota Petrofund Certification #: 1240
Mississippi Certification #: MN00064
Missouri Certification #: 10100
Montana Certification #: CERT0092
Nebraska Certification #: NE-OS-18-06
Nevada Certification #: MN00064
New Hampshire Certification #: 2081
New Jersey Certification #: MN002
New York Certification #: 11647
North Carolina DW Certification #: 27700
North Carolina WW Certification #: 530
North Dakota Certification #: R-036
Ohio DW Certification #: 41244
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon Primary Certification #: MN300001
Oregon Secondary Certification #: MN200001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification #: MN00064
South Carolina Certification #:74003001
Tennessee Certification #: TN02818
Texas Certification #: T104704192
Utah Certification #: MN00064
Virginia Certification #: 460163
Washington Certification #: C486
West Virginia DEP Certification #: 382
West Virginia DW Certification #: 9952 C
Wisconsin Certification #: 999407970
Wyoming UST Certification #: via A2LA 2926.01

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SAMPLE SUMMARY

Project: 11145929 P66 Yakima
Pace Project No.: 10467851

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10467851001	**TB-1**	Water	03/18/19 06:00	03/22/19 08:30
10467851002	**MW-8**	Water	03/18/19 12:20	03/22/19 08:30
10467851003	**MW-15**	Water	03/18/19 13:16	03/22/19 08:30
10467851004	**MW-16**	Water	03/18/19 13:44	03/22/19 08:30
10467851005	**MW-17**	Water	03/18/19 11:29	03/22/19 08:30
10467851006	**MW-18**	Water	03/18/19 11:54	03/22/19 08:30
10467851007	**MW-19**	Water	03/18/19 12:46	03/22/19 08:30
10467851008	**DUP-1**	Water	03/18/19 12:00	03/22/19 08:30

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SAMPLE ANALYTE COUNT

Project: 11145929 P66 Yakima
Pace Project No.: 10467851

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10467851001	**TB-1**	EPA 8260B	MJD	7	PASI-M
10467851002	**MW-8**	NWTPH-Dx	ST1	4	PASI-M
		NWTPH-Gx	MJD	2	PASI-M
		EPA 8260B	MJD	7	PASI-M
10467851003	**MW-15**	NWTPH-Dx	ST1	4	PASI-M
		NWTPH-Gx	MJD	2	PASI-M
		EPA 8260B	DS2	7	PASI-M
10467851004	**MW-16**	NWTPH-Dx	ST1	4	PASI-M
		NWTPH-Gx	MJD	2	PASI-M
		EPA 8260B	MJD	7	PASI-M
10467851005	**MW-17**	NWTPH-Dx	ST1	4	PASI-M
		NWTPH-Gx	MJD	2	PASI-M
		EPA 8260B	MJD	7	PASI-M
10467851006	**MW-18**	NWTPH-Dx	ST1	4	PASI-M
		NWTPH-Gx	MJD	2	PASI-M
		EPA 8260B	MJD	7	PASI-M
10467851007	**MW-19**	NWTPH-Dx	ST1	4	PASI-M
		NWTPH-Gx	MJD	2	PASI-M
		EPA 8260B	MJD	7	PASI-M
10467851008	**DUP-1**	NWTPH-Dx	ST1	4	PASI-M
		NWTPH-Gx	MJD	2	PASI-M
		EPA 8260B	MJD	7	PASI-M

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PROJECT NARRATIVE

Project: 11145929 P66 Yakima
Pace Project No.: 10467851

Method: **NWTPH-Dx**
Description: NWTPH-Dx GCS LV
Client: GHD Services Inc
Date: March 29, 2019

General Information:
7 samples were analyzed for NWTPH-Dx. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA Mod. 3510C with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Surrogates:
All surrogates were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

QC Batch: 595251

R1: RPD value was outside control limits.

- LCSD (Lab ID: 3217941)
  - Diesel Fuel Range
  - Motor Oil Range

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: 11145929 P66 Yakima
Pace Project No.: 10467851

Method: **NWTPH-Gx**
Description: NWTPH-Gx GCV
Client: GHD Services Inc
Date: March 29, 2019

General Information:
7 samples were analyzed for NWTPH-Gx. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Surrogates:
All surrogates were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: 11145929 P66 Yakima
Pace Project No.: 10467851

Method: **EPA 8260B**
Description: 8260B MSV UST
Client: GHD Services Inc
Date: March 29, 2019

General Information:
8 samples were analyzed for EPA 8260B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Surrogates:
All surrogates were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

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ANALYTICAL RESULTS

Project: 11145929 P66 Yakima
Pace Project No.: 10467851

Sample: TB-1 **Lab ID: 10467851001** Collected: 03/18/19 06:00 Received: 03/22/19 08:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV UST	Analytical Method: EPA 8260B							
Benzene	ND	ug/L	1.0	1		03/23/19 14:22	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		03/23/19 14:22	100-41-4	
Toluene	ND	ug/L	1.0	1		03/23/19 14:22	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		03/23/19 14:22	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	102	%.	75-125	1		03/23/19 14:22	17060-07-0	
Toluene-d8 (S)	97	%.	75-125	1		03/23/19 14:22	2037-26-5	
4-Bromofluorobenzene (S)	100	%.	75-125	1		03/23/19 14:22	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 11145929 P66 Yakima
Pace Project No.: 10467851

Sample: MW-8 **Lab ID: 10467851002** Collected: 03/18/19 12:20 Received: 03/22/19 08:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
NWTPH-Dx GCS LV	Analytical Method: NWTPH-Dx Preparation Method: EPA Mod. 3510C							
Diesel Fuel Range	ND	mg/L	0.40	1	03/22/19 15:05	03/24/19 10:29	68334-30-5	
Motor Oil Range	ND	mg/L	0.40	1	03/22/19 15:05	03/24/19 10:29		
Surrogates								
o-Terphenyl (S)	89	%.	50-150	1	03/22/19 15:05	03/24/19 10:29	84-15-1	
n-Triacontane (S)	89	%.	50-150	1	03/22/19 15:05	03/24/19 10:29	638-68-6	
NWTPH-Gx GCV	Analytical Method: NWTPH-Gx							
TPH as Gas	ND	ug/L	100	1		03/27/19 19:44		
Surrogates								
a,a,a-Trifluorotoluene (S)	84	%.	50-150	1		03/27/19 19:44	98-08-8	
8260B MSV UST	Analytical Method: EPA 8260B							
Benzene	ND	ug/L	1.0	1		03/23/19 15:13	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		03/23/19 15:13	100-41-4	
Toluene	ND	ug/L	1.0	1		03/23/19 15:13	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		03/23/19 15:13	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	102	%.	75-125	1		03/23/19 15:13	17060-07-0	
Toluene-d8 (S)	97	%.	75-125	1		03/23/19 15:13	2037-26-5	
4-Bromofluorobenzene (S)	103	%.	75-125	1		03/23/19 15:13	460-00-4	

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ANALYTICAL RESULTS

Project: 11145929 P66 Yakima
Pace Project No.: 10467851

Sample: MW-15 **Lab ID: 10467851003** Collected: 03/18/19 13:16 Received: 03/22/19 08:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
NWTPH-Dx GCS LV	Analytical Method: NWTPH-Dx Preparation Method: EPA Mod. 3510C							
Diesel Fuel Range	**4.4**	mg/L	0.40	1	03/22/19 15:05	03/24/19 10:50	68334-30-5	
Motor Oil Range	ND	mg/L	0.40	1	03/22/19 15:05	03/24/19 10:50		
Surrogates								
o-Terphenyl (S)	117	%.	50-150	1	03/22/19 15:05	03/24/19 10:50	84-15-1	
n-Triacontane (S)	91	%.	50-150	1	03/22/19 15:05	03/24/19 10:50	638-68-6	
NWTPH-Gx GCV	Analytical Method: NWTPH-Gx							
TPH as Gas	**2710**	ug/L	200	2		03/28/19 02:14		
Surrogates								
a,a,a-Trifluorotoluene (S)	82	%.	50-150	2		03/28/19 02:14	98-08-8	
8260B MSV UST	Analytical Method: EPA 8260B							
Benzene	**243**	ug/L	10.0	10		03/23/19 19:09	71-43-2	
Ethylbenzene	**175**	ug/L	1.0	1		03/26/19 02:02	100-41-4	
Toluene	**12.9**	ug/L	1.0	1		03/26/19 02:02	108-88-3	
Xylene (Total)	**81.8**	ug/L	3.0	1		03/26/19 02:02	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	97	%.	75-125	1		03/26/19 02:02	17060-07-0	
Toluene-d8 (S)	99	%.	75-125	1		03/26/19 02:02	2037-26-5	
4-Bromofluorobenzene (S)	101	%.	75-125	1		03/26/19 02:02	460-00-4	

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ANALYTICAL RESULTS

Project: 11145929 P66 Yakima
Pace Project No.: 10467851

Sample: MW-16 **Lab ID: 10467851004** Collected: 03/18/19 13:44 Received: 03/22/19 08:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
NWTPH-Dx GCS LV	Analytical Method: NWTPH-Dx Preparation Method: EPA Mod. 3510C							
Diesel Fuel Range	ND	mg/L	0.40	1	03/22/19 15:05	03/24/19 11:01	68334-30-5	
Motor Oil Range	ND	mg/L	0.40	1	03/22/19 15:05	03/24/19 11:01		
Surrogates								
o-Terphenyl (S)	82	%.	50-150	1	03/22/19 15:05	03/24/19 11:01	84-15-1	
n-Triacontane (S)	84	%.	50-150	1	03/22/19 15:05	03/24/19 11:01	638-68-6	
NWTPH-Gx GCV	Analytical Method: NWTPH-Gx							
TPH as Gas	ND	ug/L	100	1		03/27/19 20:19		
Surrogates								
a,a,a-Trifluorotoluene (S)	82	%.	50-150	1		03/27/19 20:19	98-08-8	
8260B MSV UST	Analytical Method: EPA 8260B							
Benzene	ND	ug/L	1.0	1		03/23/19 16:54	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		03/23/19 16:54	100-41-4	
Toluene	ND	ug/L	1.0	1		03/23/19 16:54	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		03/23/19 16:54	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	104	%.	75-125	1		03/23/19 16:54	17060-07-0	
Toluene-d8 (S)	96	%.	75-125	1		03/23/19 16:54	2037-26-5	
4-Bromofluorobenzene (S)	99	%.	75-125	1		03/23/19 16:54	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 11145929 P66 Yakima
Pace Project No.: 10467851

Sample: MW-17 **Lab ID: 10467851005** Collected: 03/18/19 11:29 Received: 03/22/19 08:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
NWTPH-Dx GCS LV	Analytical Method: NWTPH-Dx Preparation Method: EPA Mod. 3510C							
Diesel Fuel Range	ND	mg/L	0.40	1	03/22/19 15:05	03/24/19 11:12	68334-30-5	
Motor Oil Range	ND	mg/L	0.40	1	03/22/19 15:05	03/24/19 11:12		
Surrogates								
o-Terphenyl (S)	89	%.	50-150	1	03/22/19 15:05	03/24/19 11:12	84-15-1	
n-Triacontane (S)	98	%.	50-150	1	03/22/19 15:05	03/24/19 11:12	638-68-6	
NWTPH-Gx GCV	Analytical Method: NWTPH-Gx							
TPH as Gas	ND	ug/L	100	1		03/27/19 20:53		
Surrogates								
a,a,a-Trifluorotoluene (S)	81	%.	50-150	1		03/27/19 20:53	98-08-8	
8260B MSV UST	Analytical Method: EPA 8260B							
Benzene	ND	ug/L	1.0	1		03/23/19 17:11	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		03/23/19 17:11	100-41-4	
Toluene	ND	ug/L	1.0	1		03/23/19 17:11	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		03/23/19 17:11	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	103	%.	75-125	1		03/23/19 17:11	17060-07-0	
Toluene-d8 (S)	96	%.	75-125	1		03/23/19 17:11	2037-26-5	
4-Bromofluorobenzene (S)	100	%.	75-125	1		03/23/19 17:11	460-00-4	

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ANALYTICAL RESULTS

Project: 11145929 P66 Yakima
Pace Project No.: 10467851

Sample: MW-18 **Lab ID: 10467851006** Collected: 03/18/19 11:54 Received: 03/22/19 08:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
NWTPH-Dx GCS LV	Analytical Method: NWTPH-Dx Preparation Method: EPA Mod. 3510C							
Diesel Fuel Range	ND	mg/L	0.41	1	03/22/19 15:05	03/24/19 11:22	68334-30-5	
Motor Oil Range	ND	mg/L	0.41	1	03/22/19 15:05	03/24/19 11:22		
Surrogates								
o-Terphenyl (S)	97	%.	50-150	1	03/22/19 15:05	03/24/19 11:22	84-15-1	
n-Triacontane (S)	99	%.	50-150	1	03/22/19 15:05	03/24/19 11:22	638-68-6	
NWTPH-Gx GCV	Analytical Method: NWTPH-Gx							
TPH as Gas	ND	ug/L	100	1		03/27/19 18:35		
Surrogates								
a,a,a-Trifluorotoluene (S)	84	%.	50-150	1		03/27/19 18:35	98-08-8	
8260B MSV UST	Analytical Method: EPA 8260B							
Benzene	ND	ug/L	1.0	1		03/23/19 17:28	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		03/23/19 17:28	100-41-4	
Toluene	ND	ug/L	1.0	1		03/23/19 17:28	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		03/23/19 17:28	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	103	%.	75-125	1		03/23/19 17:28	17060-07-0	
Toluene-d8 (S)	96	%.	75-125	1		03/23/19 17:28	2037-26-5	
4-Bromofluorobenzene (S)	101	%.	75-125	1		03/23/19 17:28	460-00-4	

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ANALYTICAL RESULTS

Project: 11145929 P66 Yakima
Pace Project No.: 10467851

Sample: MW-19 **Lab ID: 10467851007** Collected: 03/18/19 12:46 Received: 03/22/19 08:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
NWTPH-Dx GCS LV	Analytical Method: NWTPH-Dx Preparation Method: EPA Mod. 3510C							
Diesel Fuel Range	ND	mg/L	0.40	1	03/22/19 15:05	03/24/19 11:33	68334-30-5	
Motor Oil Range	ND	mg/L	0.40	1	03/22/19 15:05	03/24/19 11:33		
Surrogates								
o-Terphenyl (S)	84	%.	50-150	1	03/22/19 15:05	03/24/19 11:33	84-15-1	
n-Triacontane (S)	95	%.	50-150	1	03/22/19 15:05	03/24/19 11:33	638-68-6	
NWTPH-Gx GCV	Analytical Method: NWTPH-Gx							
TPH as Gas	ND	ug/L	100	1		03/27/19 21:10		
Surrogates								
a,a,a-Trifluorotoluene (S)	83	%.	50-150	1		03/27/19 21:10	98-08-8	
8260B MSV UST	Analytical Method: EPA 8260B							
Benzene	ND	ug/L	1.0	1		03/23/19 17:45	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		03/23/19 17:45	100-41-4	
Toluene	ND	ug/L	1.0	1		03/23/19 17:45	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		03/23/19 17:45	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	101	%.	75-125	1		03/23/19 17:45	17060-07-0	
Toluene-d8 (S)	96	%.	75-125	1		03/23/19 17:45	2037-26-5	
4-Bromofluorobenzene (S)	102	%.	75-125	1		03/23/19 17:45	460-00-4	

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ANALYTICAL RESULTS

Project: 11145929 P66 Yakima
Pace Project No.: 10467851

Sample: DUP-1 **Lab ID: 10467851008** Collected: 03/18/19 12:00 Received: 03/22/19 08:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
NWTPH-Dx GCS LV	Analytical Method: NWTPH-Dx Preparation Method: EPA Mod. 3510C							
Diesel Fuel Range	ND	mg/L	0.39	1	03/22/19 15:05	03/24/19 11:44	68334-30-5	
Motor Oil Range	ND	mg/L	0.39	1	03/22/19 15:05	03/24/19 11:44		
Surrogates								
o-Terphenyl (S)	90	%.	50-150	1	03/22/19 15:05	03/24/19 11:44	84-15-1	
n-Triacontane (S)	94	%.	50-150	1	03/22/19 15:05	03/24/19 11:44	638-68-6	
NWTPH-Gx GCV	Analytical Method: NWTPH-Gx							
TPH as Gas	ND	ug/L	100	1		03/27/19 21:27		
Surrogates								
a,a,a-Trifluorotoluene (S)	84	%.	50-150	1		03/27/19 21:27	98-08-8	
8260B MSV UST	Analytical Method: EPA 8260B							
Benzene	ND	ug/L	1.0	1		03/23/19 18:01	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		03/23/19 18:01	100-41-4	
Toluene	ND	ug/L	1.0	1		03/23/19 18:01	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		03/23/19 18:01	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	104	%.	75-125	1		03/23/19 18:01	17060-07-0	
Toluene-d8 (S)	97	%.	75-125	1		03/23/19 18:01	2037-26-5	
4-Bromofluorobenzene (S)	99	%.	75-125	1		03/23/19 18:01	460-00-4	

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QUALITY CONTROL DATA

Project: 11145929 P66 Yakima
Pace Project No.: 10467851

QC Batch: 596096 Analysis Method: NWTPH-Gx
QC Batch Method: NWTPH-Gx Analysis Description: NWTPH-Gx Water
Associated Lab Samples: 10467851002, 10467851003, 10467851004, 10467851005, 10467851006, 10467851007, 10467851008

METHOD BLANK: 3222724 Matrix: Water
Associated Lab Samples: 10467851002, 10467851003, 10467851004, 10467851005, 10467851006, 10467851007, 10467851008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
TPH as Gas	ug/L	ND	100	03/27/19 18:00	
a,a,a-Trifluorotoluene (S)	%.	86	50-150	03/27/19 18:00	

METHOD BLANK: 3222725 Matrix: Water
Associated Lab Samples: 10467851002, 10467851003, 10467851004, 10467851005, 10467851006, 10467851007, 10467851008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
TPH as Gas	ug/L	ND	100	03/27/19 18:18	
a,a,a-Trifluorotoluene (S)	%.	88	50-150	03/27/19 18:18	

LABORATORY CONTROL SAMPLE & LCSD: 3222726 3222727

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
TPH as Gas	ug/L	1000	958	859	96	86	75-125	11	20	
a,a,a-Trifluorotoluene (S)	%.				88	88	50-150			

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3223000 3223001

Parameter	Units	10467851006 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
TPH as Gas	ug/L	ND	1000	1000	965	1000	97	100	75-125	3	30	
a,a,a-Trifluorotoluene (S)	%.						92	92	50-150			

SAMPLE DUPLICATE: 3222998

Parameter	Units	10467851002 Result	Dup Result	RPD	Max RPD	Qualifiers
TPH as Gas	ug/L	ND	ND		30	
a,a,a-Trifluorotoluene (S)	%.	84	84			

SAMPLE DUPLICATE: 3222999

Parameter	Units	10467851004 Result	Dup Result	RPD	Max RPD	Qualifiers
TPH as Gas	ug/L	ND	ND		30	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 11145929 P66 Yakima
Pace Project No.: 10467851

SAMPLE DUPLICATE: 3222999

Parameter	Units	10467851004 Result	Dup Result	RPD	Max RPD	Qualifiers
a,a,a-Trifluorotoluene (S)	%.	82	84			

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 11145929 P66 Yakima
Pace Project No.: 10467851

QC Batch: 595364 Analysis Method: EPA 8260B
QC Batch Method: EPA 8260B Analysis Description: 8260B MSV UST-WATER
Associated Lab Samples: 10467851001, 10467851002, 10467851004, 10467851005, 10467851006, 10467851007, 10467851008

METHOD BLANK: 3218950 Matrix: Water
Associated Lab Samples: 10467851001, 10467851002, 10467851004, 10467851005, 10467851006, 10467851007, 10467851008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Benzene	ug/L	ND	1.0	03/23/19 13:31	
Ethylbenzene	ug/L	ND	1.0	03/23/19 13:31	
Toluene	ug/L	ND	1.0	03/23/19 13:31	
Xylene (Total)	ug/L	ND	3.0	03/23/19 13:31	
1,2-Dichloroethane-d4 (S)	%.	103	75-125	03/23/19 13:31	
4-Bromofluorobenzene (S)	%.	102	75-125	03/23/19 13:31	
Toluene-d8 (S)	%.	96	75-125	03/23/19 13:31	

LABORATORY CONTROL SAMPLE: 3218951

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	20	20.7	104	75-125	
Ethylbenzene	ug/L	20	20.2	101	75-125	
Toluene	ug/L	20	19.9	100	75-125	
Xylene (Total)	ug/L	60	62.9	105	75-125	
1,2-Dichloroethane-d4 (S)	%.			99	75-125	
4-Bromofluorobenzene (S)	%.			100	75-125	
Toluene-d8 (S)	%.			98	75-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3218952 3218953

Parameter	Units	10467851002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Benzene	ug/L	ND	20	20	19.9	19.9	99	99	30-150	0	30	
Ethylbenzene	ug/L	ND	20	20	19.2	19.9	96	99	30-150	3	30	
Toluene	ug/L	ND	20	20	19.3	19.4	96	97	30-150	0	30	
Xylene (Total)	ug/L	ND	60	60	60.1	61.6	100	103	30-150	2	30	
1,2-Dichloroethane-d4 (S)	%.						100	100	75-125			
4-Bromofluorobenzene (S)	%.						102	101	75-125			
Toluene-d8 (S)	%.						99	98	75-125			

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 11145929 P66 Yakima
Pace Project No.: 10467851

QC Batch: 595610 Analysis Method: EPA 8260B
QC Batch Method: EPA 8260B Analysis Description: 8260B MSV UST-WATER
Associated Lab Samples: 10467851003

METHOD BLANK: 3220072 Matrix: Water
Associated Lab Samples: 10467851003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Benzene	ug/L	ND	1.0	03/25/19 21:15	
Ethylbenzene	ug/L	ND	1.0	03/25/19 21:15	
Toluene	ug/L	ND	1.0	03/25/19 21:15	
Xylene (Total)	ug/L	ND	3.0	03/25/19 21:15	
1,2-Dichloroethane-d4 (S)	%.	103	75-125	03/25/19 21:15	
4-Bromofluorobenzene (S)	%.	103	75-125	03/25/19 21:15	
Toluene-d8 (S)	%.	99	75-125	03/25/19 21:15	

LABORATORY CONTROL SAMPLE: 3220073

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	10	9.3	93	75-125	
Ethylbenzene	ug/L	10	9.5	95	75-125	
Toluene	ug/L	10	9.3	93	75-125	
Xylene (Total)	ug/L	30	28.7	96	75-125	
1,2-Dichloroethane-d4 (S)	%.			103	75-125	
4-Bromofluorobenzene (S)	%.			99	75-125	
Toluene-d8 (S)	%.			101	75-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3222271 3222270

Parameter	Units	10468054010 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Benzene	ug/L	ND	20	20	23.2	22.3	116	111	30-150	4	30	
Ethylbenzene	ug/L	ND	20	20	23.2	23.2	116	116	30-150	0	30	
Toluene	ug/L	ND	20	20	22.6	22.1	113	110	30-150	2	30	
Xylene (Total)	ug/L	ND	60	60	71.2	70.6	119	118	30-150	1	30	
1,2-Dichloroethane-d4 (S)	%.						104	101	75-125			
4-Bromofluorobenzene (S)	%.						100	101	75-125			
Toluene-d8 (S)	%.						101	101	75-125			

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 11145929 P66 Yakima
Pace Project No.: 10467851

QC Batch: 595251 Analysis Method: NWTPH-Dx
QC Batch Method: EPA Mod. 3510C Analysis Description: NWTPH-Dx GCS LV
Associated Lab Samples: 10467851002, 10467851003, 10467851004, 10467851005, 10467851006, 10467851007, 10467851008

METHOD BLANK: 3217939 Matrix: Water
Associated Lab Samples: 10467851002, 10467851003, 10467851004, 10467851005, 10467851006, 10467851007, 10467851008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Diesel Fuel Range	mg/L	ND	0.40	03/24/19 09:56	
Motor Oil Range	mg/L	ND	0.40	03/24/19 09:56	
n-Triacontane (S)	%.	89	50-150	03/24/19 09:56	
o-Terphenyl (S)	%.	85	50-150	03/24/19 09:56	

LABORATORY CONTROL SAMPLE & LCSD: 3217940 3217941

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Diesel Fuel Range	mg/L	2	1.8	1.4	89	72	50-150	21	20	R1
Motor Oil Range	mg/L	2	1.7	1.4	85	68	50-150	22	20	R1
n-Triacontane (S)	%.				89	68	50-150			
o-Terphenyl (S)	%.				84	67	50-150			

SAMPLE DUPLICATE: 3217942

Parameter	Units	10467851002 Result	Dup Result	RPD	Max RPD	Qualifiers
Diesel Fuel Range	mg/L	ND	.098J		30	
Motor Oil Range	mg/L	ND	ND		30	
n-Triacontane (S)	%.	89	88			
o-Terphenyl (S)	%.	89	89			

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALIFIERS

Project: 11145929 P66 Yakima
Pace Project No.: 10467851

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-M	Pace Analytical Services - Minneapolis

ANALYTE QUALIFIERS

R1	RPD value was outside control limits.

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

METHOD CROSS REFERENCE TABLE

Project: 11145929 P66 Yakima
Pace Project No.: 10467851

Parameter	Matrix	Analytical Method	Preparation Method
8260B MSV UST	Water	SW-846 8260B/5030B	N/A

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 11145929 P66 Yakima
Pace Project No.: 10467851

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10467851002	**MW-8**	EPA Mod. 3510C	595251	NWTPH-Dx	595373
10467851003	**MW-15**	EPA Mod. 3510C	595251	NWTPH-Dx	595373
10467851004	**MW-16**	EPA Mod. 3510C	595251	NWTPH-Dx	595373
10467851005	**MW-17**	EPA Mod. 3510C	595251	NWTPH-Dx	595373
10467851006	**MW-18**	EPA Mod. 3510C	595251	NWTPH-Dx	595373
10467851007	**MW-19**	EPA Mod. 3510C	595251	NWTPH-Dx	595373
10467851008	**DUP-1**	EPA Mod. 3510C	595251	NWTPH-Dx	595373
10467851002	**MW-8**	NWTPH-Gx	596096		
10467851003	**MW-15**	NWTPH-Gx	596096		
10467851004	**MW-16**	NWTPH-Gx	596096		
10467851005	**MW-17**	NWTPH-Gx	596096		
10467851006	**MW-18**	NWTPH-Gx	596096		
10467851007	**MW-19**	NWTPH-Gx	596096		
10467851008	**DUP-1**	NWTPH-Gx	596096		
10467851001	**TB-1**	EPA 8260B	595364		
10467851002	**MW-8**	EPA 8260B	595364		
10467851003	**MW-15**	EPA 8260B	595610		
10467851004	**MW-16**	EPA 8260B	595364		
10467851005	**MW-17**	EPA 8260B	595364		
10467851006	**MW-18**	EPA 8260B	595364		
10467851007	**MW-19**	EPA 8260B	595364		
10467851008	**DUP-1**	EPA 8260B	595364		

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Pace Analytical®
www.pacelabs.com

Page: 1 of 1

2302423

Section A Required Client Information:

Company:	GHD Services
Address:	732 Broadway Ste 301 Tacoma, WA 98402
Email To:	MATTHEW.DAVIS@GHD.COM
Phone: 253-507-6217	Fax:
Requested Due Date/TAT:	Standard

Section B Required Project Information:

Report To:	MATTHEW.DAVIS@GHD.COM
Copy To:	JEFFERY.CLOUD@GHD.COM
Purchase Order No.:	
Project Name:	P66 Yakima
Project Number:	11145929

Section C Invoice Information:

Attention:	
Company Name:	GHD Services
Address:	
Pace Quote Reference:	
Pace Project Manager:	JENNIFER GROSS
Pace Profile #:	

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: YAKIMA WA

Section D Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Matrix Codes MATRIX / CODE

Drinking Water	DW
Water	WT
Waste Water	WW
Product	P
Soil/Solid	SL
Oil	OL
Wipe	WP
Air	AR
Tissue	TS
Other	OT

Requested Analysis Filtered (Y/N)

WO#: 10467851

10467851

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N: TPH-G	BTEX	TPH-D	Residual Chlo	Pace Project No./ Lab I.D.
1	TB-1	WT	G	3/18	0600			–	2				X					X	X			001
2	MW-8	WT	G	3/18	1220			13C	8				X					X	X	X		002
3	MW-15	WT	G	3/18	1316			12C	8				X					X	X	X		003
4	MW-16	WT	G	3/18	1344			12C	8				X					X	X	X		004
5	MW-17	WT	G	3/18	1129			12C	8				X					X	X	X		005
6	MW-18	WT	G	3/18	1154			12C	8				X					X	X	X		006
7	MW-19	WT	G	3/18	1246			13C	8				X					X	X	X		007
8	DUP-1	WT	G	3/18	1200			–	8				X					X	X	X		008
9																						
10																						
11																						
12																						

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
	Patrick Ho BlaineTech	3/20/19	1600		3-21	1400	
		3-21	1760	Jennifer Johnson Pace	3/22/19	8:30	1.0 Y Y N

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Patrick Ho

SIGNATURE of SAMPLER:

DATE Signed (MM/DD/YY): 03/20/2019

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
1.0	Y	Y	N

ORIGINAL

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

Pace Analytical	Document Name: **Sample Condition Upon Receipt Form**	Document Revised: 06Feb2019 Page 1 of 1
	Document No.: **F-MN-L-213-rev.25**	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: GHD Services

Project #: **WO#: 10467851**

PM: JMG **Due Date: 03/29/19**

CLIENT: GHD_WA

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Pace ☐ SpeeDee ☐ Commercial **See Exception** ☐

Tracking Number: 7475 9397 0032

Custody Seal on Cooler/Box Present? ☑ Yes ☐ No **Seals Intact?** ☑ Yes ☐ No **Biological Tissue Frozen?** ☐ Yes ☐ No ☑ N/A

Packing Material: ☐ Bubble Wrap ☑ Bubble Bags ☐ None ☐ Other:_____ **Temp Blank?** ☑ Yes ☐ No

Thermometer: ☐ G87A9155100842 ☑ G87A9170600254 **Type of Ice:** ☑ Wet ☐ Blue ☐ None ☐ Dry ☐ Melted

Note: Each West Virginia Sample must have temp taken (no temp blanks)

Temp should be above freezing to 6°C **Cooler Temp Read w/temp blank:**_____ °C

Correction Factor: True **Cooler Temp Corrected w/temp blank :**_____ °C

Average Corrected Temp (no temp blank only): 1.0 °C **See Exceptions** ☑

USDA Regulated Soil: (☑ N/A, water sample/Other:_____)

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA. MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐ Yes ☐ No

Date/Initials of Person Examining Contents: JJ 3/22/19

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☐ No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

				COMMENTS:
Chain of Custody Present and Filled Out?	☑ Yes	☐ No		1.
Chain of Custody Relinquished?	☑ Yes	☐ No		2.
Sampler Name and/or Signature on COC?	☑ Yes	☐ No	☐ N/A	3.
Samples Arrived within Hold Time?	☑ Yes	☐ No		4.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☑ No		5. ☐ Fecal Coliform ☐ HPC ☐ Total Coliform/E coli ☐ BOD/cBOD ☐ Hex Chrome ☐ Turbidity ☐ Nitrate ☐ Nitrite ☐ Orthophos ☐ Other_____
Rush Turn Around Time Requested?	☐ Yes	☑ No		6.
Sufficient Volume?	☑ Yes	☐ No		7.
Correct Containers Used?	☑ Yes	☐ No		8.
-Pace Containers Used?	☑ Yes	☐ No		
Containers Intact?	☐ Yes	☑ No		9. One VG9H Trip Blank received broken
Field Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☑ N/A	10. Is sediment visible in the dissolved container? ☐ Yes ☐ No
Is sufficient information available to reconcile the samples to the COC? Matrix: ☑ Water ☐ Soil ☐ Oil ☐ Other_____	☑ Yes	☐ No		11. **If no, write ID/ Date/Time on Container Below:** **See Exception** ☐
All containers needing acid/base preservation have been checked?	☐ Yes	☐ No	☑ N/A	12. Sample # ☐ NaOH ☐ HNO_3 ☐ H_2SO_4 ☐ Zinc Acetate
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, <2pH, NaOH >9 Sulfide, NaOH>12 Cyanide) Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin/PFAS	☐ Yes ☑ Yes	☐ No ☐ No	☑ N/A ☐ N/A	Positive for Res. ☐ Yes Chlorine? ☐ No **See Exception** ☐
Headspace in VOA Vials (greater than 6mm)?	☐ Yes	☑ No	☐ N/A	13. **See Exception** ☑
Trip Blank Present?	☑ Yes	☐ No	☐ N/A	14.
Trip Blank Custody Seals Present?	☑ Yes	☐ No	☐ N/A	Pace Trip Blank Lot # (if purchased):_____

CLIENT NOTIFICATION/RESOLUTION

Person Contacted: Matt Davis Date/Time: 03/22/19 **Field Data Required?** ☐ Yes ☐ No

Comments/Resolution: Notified client of broken trip blank vial, analyze for BTEX only.

Project Manager Review: _____ JENNI GROSS _____ Date: 03/22/19

Note: Whenever there is a discrepancy affecting North (samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers).

Labeled by: _____

Pace Analytical	Document Name: **Headspace Exception**	Document Revised: 17Dec2018 Page 1 of 1
	Document No.: **F-MN-C-276-Rev.01**	Issuing Authority: Pace Minnesota Quality Office

Sample ID	Headspace greater than 6mm	Headspace less than 6mm	No Headspace	Total Vials	Sediment Present?
TB-1	0	1	0	1	N

During sample triage, this form is to be placed in each cooler that arrives above 6.0 degrees Celsius

SCUR Exceptions: **Workorder #:** 10467851

Out of Temp Sample IDs	Container Type	# of Containers	PM Notified? ☐Yes ☐No
			If yes, indicate who was contacted/date/time. If no, indicate reason why.
			Multiple Cooler Project? ☐Yes ☐No If you answered yes, fill out information to the left.

No Temp Blank		
Read Temp	Corrected Temp	Average Temp
0.9	0.9	1.0
0.4	0.4	
1.0	1.0	
1.8	1.8	

Other Issues

Issue Type: Sample ID	Container Type	# of Containers	Tracking Number

pH Adjustment Log for Preserved Samples

Sample ID	Type of Preserv.	pH Upon Receipt	Date Adjusted	Time Adjusted	Amount Added (mL)	Lot # Added	pH After	In Compliance after addition?	Initials
								☐Yes ☐No	
								☐Yes ☐No	
								☐Yes ☐No	
								☐Yes ☐No	

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

July 01, 2019

Matthew Davis
GHD Services Inc.
1117 Tacoma Avenue South
Tacoma, WA 98402

RE: Project: 11145929 P66 Yakima
Pace Project No.: 10479722

Dear Matthew Davis:
Enclosed are the analytical results for sample(s) received by the laboratory on June 18, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jennifer Gross
jennifer.gross@pacelabs.com
(206)957-2426
Project Manager

Enclosures

cc: Rose Borths, GHD Services, Inc.
Jeffrey Cloud, GHD Services Inc.
Heather Gadwa, GHD

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

CERTIFICATIONS

Project: 11145929 P66 Yakima
Pace Project No.: 10479722

Minnesota Certification IDs

1700 Elm Street SE, Minneapolis, MN 55414-2485
A2LA Certification #: 2926.01
Alabama Certification #: 40770
Alaska Contaminated Sites Certification #: 17-009
Alaska DW Certification #: MN00064
Arizona Certification #: AZ0014
Arkansas DW Certification #: MN00064
Arkansas WW Certification #: 88-0680
California Certification #: 2929
CNMI Saipan Certification #: MP0003
Colorado Certification #: MN00064
Connecticut Certification #: PH-0256
EPA Region 8+Wyoming DW Certification #: via MN 027-053-137
Florida Certification #: E87605
Georgia Certification #: 959
Guam EPA Certification #: MN00064
Hawaii Certification #: MN00064
Idaho Certification #: MN00064
Illinois Certification #: 200011
Indiana Certification #: C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky DW Certification #: 90062
Kentucky WW Certification #: 90062
Louisiana DEQ Certification #: 03086
Louisiana DW Certification #: MN00064
Maine Certification #: MN00064
Maryland Certification #: 322
Massachusetts Certification #: M-MN064
Michigan Certification #: 9909
Minnesota Certification #: 027-053-137
Minnesota Dept of Ag Certifcation #: via MN 027-053-137
Minnesota Petrofund Certification #: 1240
Mississippi Certification #: MN00064
Missouri Certification #: 10100
Montana Certification #: CERT0092
Nebraska Certification #: NE-OS-18-06
Nevada Certification #: MN00064
New Hampshire Certification #: 2081
New Jersey Certification #: MN002
New York Certification #: 11647
North Carolina DW Certification #: 27700
North Carolina WW Certification #: 530
North Dakota Certification #: R-036
Ohio DW Certification #: 41244
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon Primary Certification #: MN300001
Oregon Secondary Certification #: MN200001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification #: MN00064
South Carolina Certification #:74003001
Tennessee Certification #: TN02818
Texas Certification #: T104704192
Utah Certification #: MN00064
Vermont Certification #: VT-027053137
Virginia Certification #: 460163
Washington Certification #: C486
West Virginia DEP Certification #: 382
West Virginia DW Certification #: 9952 C
Wisconsin Certification #: 999407970
Wyoming UST Certification #: via A2LA 2926.01

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SAMPLE SUMMARY

Project: 11145929 P66 Yakima
Pace Project No.: 10479722

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10479722001	**MW-8**	Water	06/17/19 15:10	06/18/19 08:45
10479722002	**MW-15**	Water	06/17/19 14:39	06/18/19 08:45
10479722003	**MW-16**	Water	06/17/19 14:10	06/18/19 08:45
10479722004	**MW-17**	Water	06/17/19 13:10	06/18/19 08:45
10479722005	**MW-18**	Water	06/17/19 12:39	06/18/19 08:45
10479722006	**MW-19**	Water	06/17/19 13:41	06/18/19 08:45
10479722007	**Dup-1**	Water	06/17/19 12:00	06/18/19 08:45
10479722008	**TB**	Water	06/17/19 07:00	06/18/19 08:45

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SAMPLE ANALYTE COUNT

Project: 11145929 P66 Yakima
Pace Project No.: 10479722

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10479722001	**MW-8**	NWTPH-Dx	EC2	4	PASI-M
		NWTPH-Gx	AJR	2	PASI-M
		EPA 8260B	ML4	7	PASI-M
10479722002	**MW-15**	NWTPH-Dx	EC2	4	PASI-M
		NWTPH-Gx	AJR	2	PASI-M
		EPA 8260B	MJD, ML4	7	PASI-M
10479722003	**MW-16**	NWTPH-Dx	EC2	4	PASI-M
		NWTPH-Gx	AJR	2	PASI-M
		EPA 8260B	ML4	7	PASI-M
10479722004	**MW-17**	NWTPH-Dx	EC2	4	PASI-M
		NWTPH-Gx	AJR	2	PASI-M
		EPA 8260B	ML4	7	PASI-M
10479722005	**MW-18**	NWTPH-Dx	EC2	4	PASI-M
		NWTPH-Gx	AJR	2	PASI-M
		EPA 8260B	ML4	7	PASI-M
10479722006	**MW-19**	NWTPH-Dx	EC2	4	PASI-M
		NWTPH-Gx	AJR	2	PASI-M
		EPA 8260B	ML4	7	PASI-M
10479722007	**Dup-1**	NWTPH-Dx	EC2	4	PASI-M
		NWTPH-Gx	AJR	2	PASI-M
		EPA 8260B	ML4	7	PASI-M
10479722008	**TB**	NWTPH-Gx	AJR	2	PASI-M
		EPA 8260B	MJD	7	PASI-M

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PROJECT NARRATIVE

Project: 11145929 P66 Yakima
Pace Project No.: 10479722

Method: **NWTPH-Dx**
Description: NWTPH-Dx GCS LV
Client: GHD Services Inc
Date: July 01, 2019

General Information:
7 samples were analyzed for NWTPH-Dx. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA Mod. 3510C with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Surrogates:
All surrogates were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: 11145929 P66 Yakima
Pace Project No.: 10479722

Method: **NWTPH-Gx**
Description: NWTPH-Gx GCV
Client: GHD Services Inc
Date: July 01, 2019

General Information:
8 samples were analyzed for NWTPH-Gx. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Surrogates:
All surrogates were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: 11145929 P66 Yakima
Pace Project No.: 10479722

Method: **EPA 8260B**
Description: 8260B MSV UST
Client: GHD Services Inc
Date: July 01, 2019

General Information:
8 samples were analyzed for EPA 8260B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Surrogates:
All surrogates were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

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ANALYTICAL RESULTS

Project: 11145929 P66 Yakima
Pace Project No.: 10479722

Sample: MW-8 **Lab ID: 10479722001** Collected: 06/17/19 15:10 Received: 06/18/19 08:45 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
NWTPH-Dx GCS LV	Analytical Method: NWTPH-Dx Preparation Method: EPA Mod. 3510C							
Diesel Fuel Range	ND	ug/L	417	1	06/20/19 16:05	06/28/19 18:06	68334-30-5	
Motor Oil Range	ND	ug/L	417	1	06/20/19 16:05	06/28/19 18:06		
Surrogates								
o-Terphenyl (S)	72	%.	50-150	1	06/20/19 16:05	06/28/19 18:06	84-15-1	
n-Triacontane (S)	68	%.	50-150	1	06/20/19 16:05	06/28/19 18:06	638-68-6	
NWTPH-Gx GCV	Analytical Method: NWTPH-Gx							
TPH as Gas	ND	ug/L	100	1		06/27/19 07:55		
Surrogates								
a,a,a-Trifluorotoluene (S)	91	%.	50-150	1		06/27/19 07:55	98-08-8	
8260B MSV UST	Analytical Method: EPA 8260B							
Benzene	ND	ug/L	1.0	1		06/29/19 01:17	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		06/29/19 01:17	100-41-4	
Toluene	ND	ug/L	1.0	1		06/29/19 01:17	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		06/29/19 01:17	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	95	%.	75-125	1		06/29/19 01:17	17060-07-0	
Toluene-d8 (S)	101	%.	75-125	1		06/29/19 01:17	2037-26-5	
4-Bromofluorobenzene (S)	100	%.	75-125	1		06/29/19 01:17	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 11145929 P66 Yakima
Pace Project No.: 10479722

Sample: MW-15 **Lab ID: 10479722002** Collected: 06/17/19 14:39 Received: 06/18/19 08:45 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
NWTPH-Dx GCS LV	Analytical Method: NWTPH-Dx Preparation Method: EPA Mod. 3510C							
Diesel Fuel Range	**3120**	ug/L	417	1	06/20/19 16:05	06/28/19 18:18	68334-30-5	
Motor Oil Range	ND	ug/L	417	1	06/20/19 16:05	06/28/19 18:18		
Surrogates								
o-Terphenyl (S)	94	%.	50-150	1	06/20/19 16:05	06/28/19 18:18	84-15-1	
n-Triacontane (S)	90	%.	50-150	1	06/20/19 16:05	06/28/19 18:18	638-68-6	
NWTPH-Gx GCV	Analytical Method: NWTPH-Gx							
TPH as Gas	**5080**	ug/L	500	5		06/27/19 09:37		G+,G-
Surrogates								
a,a,a-Trifluorotoluene (S)	90	%.	50-150	5		06/27/19 09:37	98-08-8	
8260B MSV UST	Analytical Method: EPA 8260B							
Benzene	**968**	ug/L	5.0	5		06/30/19 05:01	71-43-2	
Ethylbenzene	**262**	ug/L	2.0	2		06/29/19 05:45	100-41-4	
Toluene	**26.3**	ug/L	2.0	2		06/29/19 05:45	108-88-3	
Xylene (Total)	**222**	ug/L	6.0	2		06/29/19 05:45	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	93	%.	75-125	2		06/29/19 05:45	17060-07-0	
Toluene-d8 (S)	101	%.	75-125	2		06/29/19 05:45	2037-26-5	
4-Bromofluorobenzene (S)	101	%.	75-125	2		06/29/19 05:45	460-00-4	

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ANALYTICAL RESULTS

Project: 11145929 P66 Yakima
Pace Project No.: 10479722

Sample: MW-16 **Lab ID: 10479722003** Collected: 06/17/19 14:10 Received: 06/18/19 08:45 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
NWTPH-Dx GCS LV	Analytical Method: NWTPH-Dx Preparation Method: EPA Mod. 3510C							
Diesel Fuel Range	ND	ug/L	417	1	06/20/19 16:05	06/28/19 18:29	68334-30-5	
Motor Oil Range	ND	ug/L	417	1	06/20/19 16:05	06/28/19 18:29		
Surrogates								
o-Terphenyl (S)	86	%.	50-150	1	06/20/19 16:05	06/28/19 18:29	84-15-1	
n-Triacontane (S)	83	%.	50-150	1	06/20/19 16:05	06/28/19 18:29	638-68-6	
NWTPH-Gx GCV	Analytical Method: NWTPH-Gx							
TPH as Gas	ND	ug/L	100	1		06/27/19 08:12		
Surrogates								
a,a,a-Trifluorotoluene (S)	98	%.	50-150	1		06/27/19 08:12	98-08-8	
8260B MSV UST	Analytical Method: EPA 8260B							
Benzene	ND	ug/L	1.0	1		06/29/19 02:41	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		06/29/19 02:41	100-41-4	
Toluene	ND	ug/L	1.0	1		06/29/19 02:41	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		06/29/19 02:41	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	94	%.	75-125	1		06/29/19 02:41	17060-07-0	
Toluene-d8 (S)	102	%.	75-125	1		06/29/19 02:41	2037-26-5	
4-Bromofluorobenzene (S)	101	%.	75-125	1		06/29/19 02:41	460-00-4	

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ANALYTICAL RESULTS

Project: 11145929 P66 Yakima
Pace Project No.: 10479722

Sample: MW-17 **Lab ID: 10479722004** Collected: 06/17/19 13:10 Received: 06/18/19 08:45 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
NWTPH-Dx GCS LV	Analytical Method: NWTPH-Dx Preparation Method: EPA Mod. 3510C							
Diesel Fuel Range	**902**	ug/L	385	1	06/20/19 16:05	06/28/19 18:40	68334-30-5	
Motor Oil Range	ND	ug/L	385	1	06/20/19 16:05	06/28/19 18:40		
Surrogates								
o-Terphenyl (S)	88	%.	50-150	1	06/20/19 16:05	06/28/19 18:40	84-15-1	
n-Triacontane (S)	82	%.	50-150	1	06/20/19 16:05	06/28/19 18:40	638-68-6	
NWTPH-Gx GCV	Analytical Method: NWTPH-Gx							
TPH as Gas	**443**	ug/L	100	1		06/27/19 08:29		G-
Surrogates								
a,a,a-Trifluorotoluene (S)	90	%.	50-150	1		06/27/19 08:29	98-08-8	
8260B MSV UST	Analytical Method: EPA 8260B							
Benzene	**95.9**	ug/L	1.0	1		06/29/19 02:58	71-43-2	
Ethylbenzene	**11.0**	ug/L	1.0	1		06/29/19 02:58	100-41-4	
Toluene	**1.3**	ug/L	1.0	1		06/29/19 02:58	108-88-3	
Xylene (Total)	**88.1**	ug/L	3.0	1		06/29/19 02:58	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	93	%.	75-125	1		06/29/19 02:58	17060-07-0	
Toluene-d8 (S)	102	%.	75-125	1		06/29/19 02:58	2037-26-5	
4-Bromofluorobenzene (S)	100	%.	75-125	1		06/29/19 02:58	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 11145929 P66 Yakima
Pace Project No.: 10479722

Sample: MW-18 **Lab ID: 10479722005** Collected: 06/17/19 12:39 Received: 06/18/19 08:45 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
NWTPH-Dx GCS LV	Analytical Method: NWTPH-Dx Preparation Method: EPA Mod. 3510C							
Diesel Fuel Range	ND	ug/L	385	1	06/20/19 16:05	06/28/19 18:51	68334-30-5	
Motor Oil Range	ND	ug/L	385	1	06/20/19 16:05	06/28/19 18:51		
Surrogates								
o-Terphenyl (S)	87	%.	50-150	1	06/20/19 16:05	06/28/19 18:51	84-15-1	
n-Triacontane (S)	88	%.	50-150	1	06/20/19 16:05	06/28/19 18:51	638-68-6	
NWTPH-Gx GCV	Analytical Method: NWTPH-Gx							
TPH as Gas	ND	ug/L	100	1		06/27/19 08:46		
Surrogates								
a,a,a-Trifluorotoluene (S)	91	%.	50-150	1		06/27/19 08:46	98-08-8	
8260B MSV UST	Analytical Method: EPA 8260B							
Benzene	ND	ug/L	1.0	1		06/29/19 03:15	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		06/29/19 03:15	100-41-4	
Toluene	ND	ug/L	1.0	1		06/29/19 03:15	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		06/29/19 03:15	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	94	%.	75-125	1		06/29/19 03:15	17060-07-0	
Toluene-d8 (S)	99	%.	75-125	1		06/29/19 03:15	2037-26-5	
4-Bromofluorobenzene (S)	101	%.	75-125	1		06/29/19 03:15	460-00-4	

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ANALYTICAL RESULTS

Project: 11145929 P66 Yakima
Pace Project No.: 10479722

Sample: MW-19 **Lab ID: 10479722006** Collected: 06/17/19 13:41 Received: 06/18/19 08:45 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
NWTPH-Dx GCS LV	Analytical Method: NWTPH-Dx Preparation Method: EPA Mod. 3510C							
Diesel Fuel Range	ND	ug/L	400	1	06/20/19 16:05	06/28/19 19:03	68334-30-5	
Motor Oil Range	ND	ug/L	400	1	06/20/19 16:05	06/28/19 19:03		
Surrogates								
o-Terphenyl (S)	64	%.	50-150	1	06/20/19 16:05	06/28/19 19:03	84-15-1	
n-Triacontane (S)	62	%.	50-150	1	06/20/19 16:05	06/28/19 19:03	638-68-6	
NWTPH-Gx GCV	Analytical Method: NWTPH-Gx							
TPH as Gas	ND	ug/L	100	1		06/27/19 09:03		
Surrogates								
a,a,a-Trifluorotoluene (S)	91	%.	50-150	1		06/27/19 09:03	98-08-8	
8260B MSV UST	Analytical Method: EPA 8260B							
Benzene	ND	ug/L	1.0	1		06/29/19 03:31	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		06/29/19 03:31	100-41-4	
Toluene	ND	ug/L	1.0	1		06/29/19 03:31	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		06/29/19 03:31	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	91	%.	75-125	1		06/29/19 03:31	17060-07-0	
Toluene-d8 (S)	101	%.	75-125	1		06/29/19 03:31	2037-26-5	
4-Bromofluorobenzene (S)	99	%.	75-125	1		06/29/19 03:31	460-00-4	

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ANALYTICAL RESULTS

Project: 11145929 P66 Yakima
Pace Project No.: 10479722

Sample: Dup-1 **Lab ID: 10479722007** Collected: 06/17/19 12:00 Received: 06/18/19 08:45 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
NWTPH-Dx GCS LV	Analytical Method: NWTPH-Dx Preparation Method: EPA Mod. 3510C							
Diesel Fuel Range	ND	ug/L	400	1	06/20/19 16:05	06/28/19 19:25	68334-30-5	
Motor Oil Range	ND	ug/L	400	1	06/20/19 16:05	06/28/19 19:25		
Surrogates								
o-Terphenyl (S)	74	%.	50-150	1	06/20/19 16:05	06/28/19 19:25	84-15-1	
n-Triacontane (S)	68	%.	50-150	1	06/20/19 16:05	06/28/19 19:25	638-68-6	
NWTPH-Gx GCV	Analytical Method: NWTPH-Gx							
TPH as Gas	ND	ug/L	100	1		06/27/19 09:20		
Surrogates								
a,a,a-Trifluorotoluene (S)	93	%.	50-150	1		06/27/19 09:20	98-08-8	
8260B MSV UST	Analytical Method: EPA 8260B							
Benzene	ND	ug/L	1.0	1		06/29/19 03:48	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		06/29/19 03:48	100-41-4	
Toluene	ND	ug/L	1.0	1		06/29/19 03:48	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		06/29/19 03:48	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	93	%.	75-125	1		06/29/19 03:48	17060-07-0	
Toluene-d8 (S)	99	%.	75-125	1		06/29/19 03:48	2037-26-5	
4-Bromofluorobenzene (S)	97	%.	75-125	1		06/29/19 03:48	460-00-4	

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ANALYTICAL RESULTS

Project: 11145929 P66 Yakima
Pace Project No.: 10479722

Sample: TB **Lab ID: 10479722008** Collected: 06/17/19 07:00 Received: 06/18/19 08:45 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
NWTPH-Gx GCV	Analytical Method: NWTPH-Gx							
TPH as Gas	ND	ug/L	100	1		06/27/19 10:28		
Surrogates								
a,a,a-Trifluorotoluene (S)	91	%.	50-150	1		06/27/19 10:28	98-08-8	
8260B MSV UST	Analytical Method: EPA 8260B							
Benzene	ND	ug/L	1.0	1		06/29/19 12:31	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		06/29/19 12:31	100-41-4	
Toluene	ND	ug/L	1.0	1		06/29/19 12:31	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		06/29/19 12:31	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	94	%.	75-125	1		06/29/19 12:31	17060-07-0	
Toluene-d8 (S)	99	%.	75-125	1		06/29/19 12:31	2037-26-5	
4-Bromofluorobenzene (S)	100	%.	75-125	1		06/29/19 12:31	460-00-4	

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QUALITY CONTROL DATA

Project: 11145929 P66 Yakima
Pace Project No.: 10479722

QC Batch: 615638 Analysis Method: NWTPH-Gx
QC Batch Method: NWTPH-Gx Analysis Description: NWTPH-Gx Water
Associated Lab Samples: 10479722001, 10479722002, 10479722003, 10479722004, 10479722005, 10479722006, 10479722007, 10479722008

METHOD BLANK: 3325800 Matrix: Water
Associated Lab Samples: 10479722001, 10479722002, 10479722003, 10479722004, 10479722005, 10479722006, 10479722007, 10479722008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
TPH as Gas	ug/L	ND	100	06/27/19 02:16	
a,a,a-Trifluorotoluene (S)	%.	96	50-150	06/27/19 02:16	

METHOD BLANK: 3325801 Matrix: Water
Associated Lab Samples: 10479722001, 10479722002, 10479722003, 10479722004, 10479722005, 10479722006, 10479722007, 10479722008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
TPH as Gas	ug/L	ND	100	06/27/19 02:33	
a,a,a-Trifluorotoluene (S)	%.	100	50-150	06/27/19 02:33	

LABORATORY CONTROL SAMPLE & LCSD: 3325802 3325803

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
TPH as Gas	ug/L	1000	1100	951	110	95	75-125	15	20	
a,a,a-Trifluorotoluene (S)	%.				95	98	50-150			

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3327016 3327017

Parameter	Units	10480470004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
TPH as Gas	ug/L	ND	1000	1000	1090	1060	109	106	75-125	3	30	
a,a,a-Trifluorotoluene (S)	%.						96	102	50-150			

SAMPLE DUPLICATE: 3327018

Parameter	Units	10480470005 Result	Dup Result	RPD	Max RPD	Qualifiers
TPH as Gas	ug/L	ND	ND		30	G-
a,a,a-Trifluorotoluene (S)	%.	93	92			

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 11145929 P66 Yakima
Pace Project No.: 10479722

SAMPLE DUPLICATE: 3327019

Parameter	Units	10480470006 Result	Dup Result	RPD	Max RPD	Qualifiers
TPH as Gas	ug/L	ND	ND		30	
a,a,a-Trifluorotoluene (S)	%.	93	94			

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 11145929 P66 Yakima
Pace Project No.: 10479722

QC Batch: 616475 Analysis Method: EPA 8260B
QC Batch Method: EPA 8260B Analysis Description: 8260B MSV UST-WATER
Associated Lab Samples: 10479722001, 10479722002, 10479722003, 10479722004, 10479722005, 10479722006, 10479722007

METHOD BLANK: 3329992 Matrix: Water
Associated Lab Samples: 10479722001, 10479722002, 10479722003, 10479722004, 10479722005, 10479722006, 10479722007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Benzene	ug/L	ND	1.0	06/29/19 01:01	
Ethylbenzene	ug/L	ND	1.0	06/29/19 01:01	
Toluene	ug/L	ND	1.0	06/29/19 01:01	
Xylene (Total)	ug/L	ND	3.0	06/29/19 01:01	
1,2-Dichloroethane-d4 (S)	%.	93	75-125	06/29/19 01:01	
4-Bromofluorobenzene (S)	%.	99	75-125	06/29/19 01:01	
Toluene-d8 (S)	%.	99	75-125	06/29/19 01:01	

LABORATORY CONTROL SAMPLE: 3329993

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	20	23.6	118	75-125	
Ethylbenzene	ug/L	20	21.2	106	75-125	
Toluene	ug/L	20	22.1	110	75-125	
Xylene (Total)	ug/L	60	62.8	105	75-125	
1,2-Dichloroethane-d4 (S)	%.			97	75-125	
4-Bromofluorobenzene (S)	%.			101	75-125	
Toluene-d8 (S)	%.			103	75-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3330142 3330143

Parameter	Units	10479722001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Benzene	ug/L	ND	20	20	25.8	24.3	129	122	30-150	6	30	
Ethylbenzene	ug/L	ND	20	20	23.1	22.6	116	113	30-150	2	30	
Toluene	ug/L	ND	20	20	24.1	23.5	120	118	30-150	2	30	
Xylene (Total)	ug/L	ND	60	60	67.3	66.3	112	111	30-150	2	30	
1,2-Dichloroethane-d4 (S)	%.						92	94	75-125			
4-Bromofluorobenzene (S)	%.						101	103	75-125			
Toluene-d8 (S)	%.						104	103	75-125			

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 11145929 P66 Yakima
Pace Project No.: 10479722

QC Batch: 616546 Analysis Method: EPA 8260B
QC Batch Method: EPA 8260B Analysis Description: 8260B MSV UST-WATER
Associated Lab Samples: 10479722008

METHOD BLANK: 3330551 Matrix: Water
Associated Lab Samples: 10479722008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Benzene	ug/L	ND	1.0	06/29/19 11:41	
Ethylbenzene	ug/L	ND	1.0	06/29/19 11:41	
Toluene	ug/L	ND	1.0	06/29/19 11:41	
Xylene (Total)	ug/L	ND	3.0	06/29/19 11:41	
1,2-Dichloroethane-d4 (S)	%.	91	75-125	06/29/19 11:41	
4-Bromofluorobenzene (S)	%.	99	75-125	06/29/19 11:41	
Toluene-d8 (S)	%.	100	75-125	06/29/19 11:41	

LABORATORY CONTROL SAMPLE: 3330552

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	20	22.0	110	75-125	
Ethylbenzene	ug/L	20	20.3	102	75-125	
Toluene	ug/L	20	21.4	107	75-125	
Xylene (Total)	ug/L	60	59.2	99	75-125	
1,2-Dichloroethane-d4 (S)	%.			90	75-125	
4-Bromofluorobenzene (S)	%.			103	75-125	
Toluene-d8 (S)	%.			104	75-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3330553 3330554

Parameter	Units	10480541002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Benzene	ug/L	ND	20	20	23.8	25.7	119	129	30-150	8	30	
Ethylbenzene	ug/L	ND	20	20	21.5	23.8	107	119	30-150	10	30	
Toluene	ug/L	ND	20	20	22.5	25.0	113	125	30-150	10	30	
Xylene (Total)	ug/L	ND	60	60	63.4	69.1	106	115	30-150	9	30	
1,2-Dichloroethane-d4 (S)	%.						97	91	75-125			HS
4-Bromofluorobenzene (S)	%.						104	100	75-125			
Toluene-d8 (S)	%.						103	104	75-125			

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 11145929 P66 Yakima
Pace Project No.: 10479722

QC Batch: 614389 Analysis Method: NWTPH-Dx
QC Batch Method: EPA Mod. 3510C Analysis Description: NWTPH-Dx GCS LV
Associated Lab Samples: 10479722001, 10479722002, 10479722003, 10479722004, 10479722005, 10479722006, 10479722007

METHOD BLANK: 3319007 Matrix: Water
Associated Lab Samples: 10479722001, 10479722002, 10479722003, 10479722004, 10479722005, 10479722006, 10479722007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Diesel Fuel Range	ug/L	ND	400	06/28/19 16:25	
Motor Oil Range	ug/L	ND	400	06/28/19 16:25	
n-Triacontane (S)	%.	96	50-150	06/28/19 16:25	
o-Terphenyl (S)	%.	85	50-150	06/28/19 16:25	

LABORATORY CONTROL SAMPLE & LCSD: 3319008 3319009

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Diesel Fuel Range	ug/L	2000	1970	1950	99	97	50-150	1	20	
Motor Oil Range	ug/L	2000	1880	1860	94	93	50-150	1	20	
n-Triacontane (S)	%.				96	89	50-150			
o-Terphenyl (S)	%.				90	92	50-150			

SAMPLE DUPLICATE: 3319010

Parameter	Units	10479913002 Result	Dup Result	RPD	Max RPD	Qualifiers
Diesel Fuel Range	ug/L	ND	359J		30	
Motor Oil Range	ug/L	ND	ND		30	
n-Triacontane (S)	%.	88	81			
o-Terphenyl (S)	%.	89	82			

SAMPLE DUPLICATE: 3319011

Parameter	Units	10479722006 Result	Dup Result	RPD	Max RPD	Qualifiers
Diesel Fuel Range	ug/L	ND	443		30	
Motor Oil Range	ug/L	ND	ND		30	
n-Triacontane (S)	%.	62	86			
o-Terphenyl (S)	%.	64	89			

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REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: 11145929 P66 Yakima
Pace Project No.: 10479722

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-M	Pace Analytical Services - Minneapolis

ANALYTE QUALIFIERS

G+	Late peaks present outside the GRO window.
G-	Early peaks present outside the GRO window.
HS	Results are from sample aliquot taken from VOA vial with headspace (air bubble greater than 6 mm diameter).

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METHOD CROSS REFERENCE TABLE

Project: 11145929 P66 Yakima
Pace Project No.: 10479722

Parameter	Matrix	Analytical Method	Preparation Method
8260B MSV UST	Water	SW-846 8260B/5030B	N/A

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 11145929 P66 Yakima
Pace Project No.: 10479722

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10479722001	**MW-8**	EPA Mod. 3510C	614389	NWTPH-Dx	616346
10479722002	**MW-15**	EPA Mod. 3510C	614389	NWTPH-Dx	616346
10479722003	**MW-16**	EPA Mod. 3510C	614389	NWTPH-Dx	616346
10479722004	**MW-17**	EPA Mod. 3510C	614389	NWTPH-Dx	616346
10479722005	**MW-18**	EPA Mod. 3510C	614389	NWTPH-Dx	616346
10479722006	**MW-19**	EPA Mod. 3510C	614389	NWTPH-Dx	616346
10479722007	**Dup-1**	EPA Mod. 3510C	614389	NWTPH-Dx	616346
10479722001	**MW-8**	NWTPH-Gx	615638		
10479722002	**MW-15**	NWTPH-Gx	615638		
10479722003	**MW-16**	NWTPH-Gx	615638		
10479722004	**MW-17**	NWTPH-Gx	615638		
10479722005	**MW-18**	NWTPH-Gx	615638		
10479722006	**MW-19**	NWTPH-Gx	615638		
10479722007	**Dup-1**	NWTPH-Gx	615638		
10479722008	**TB**	NWTPH-Gx	615638		
10479722001	**MW-8**	EPA 8260B	616475		
10479722002	**MW-15**	EPA 8260B	616475		
10479722003	**MW-16**	EPA 8260B	616475		
10479722004	**MW-17**	EPA 8260B	616475		
10479722005	**MW-18**	EPA 8260B	616475		
10479722006	**MW-19**	EPA 8260B	616475		
10479722007	**Dup-1**	EPA 8260B	616475		
10479722008	**TB**	EPA 8260B	616546		

Pace Analytical

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A
Required Client Information:

Company:	GHD Services
Address:	732 Broadway Suite 301 Tacoma, WA 98402
Email To:	matthew.davis@ghd.com
Phone:	253-507-6217 Fax
Requested Due Date/TAT:	(Standard)

Section B
Required Project Information:

Report To:	Matthew.Davis@GHD.com
Copy To:	Jeffrey.Cloud@GHD.com heather.gadwa@ghd.com; rosemarie.borths@ghd.com
Purchase Order No.	
Client Project ID:	P66 Yakima
Project Number:	11145929

Section C
Invoice Information:

Attention:	GHD Services Inc. - 340
Company Name:	GHD Services Inc.
Address:	Apinvoices-340@ghd.com
Pace Quote Reference:	
Pace Project Manager:	Jennifer Gross
Pace Profile #:	38948 / 1

Regulatory Agency

State / Location: WA / Yakima

Requested Analysis Filtered (Y/N)

SAMPLE ID
One Character per box.
(A-Z, 0-9 / , -)
Sample Ids must be unique

MATRIX	CODE
Drinking Water	DW
Water	WT
Waste Water	WW
Product	P
Soil/Solid	SL
Oil	OL
Wipe	WP
Air	AR
Other	OT
Tissue	TS

WO# : 10479722

10479722

ITEM#	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test: 8260 BTEX, EDB, EDC, MTBE	8260 Naphthalene	NWTPHGx	NWTPHDx	Residual Chlorine (Y/N)	
1	MW-8	WT	G	6/17	1510				8				X					X		X	X		001
2	MW-15	WT	G	6/17	1439				8				X					X		X	X		002
3	MW-16	WT	G	6/17	1410				8				X					X		X	X		003
4	MW-17	WT	G	6/17	1310				8				X					X		X	X		004
5	MW-18	WT	G	6/17	1239				8				X					X		X	X		005
6	MW-19	WT	G	6/17	1341				8				X					X		X	X		006
7	DUP-1	WT	G	6/17	1200				8				X					X		X	X		007
8	TB	WT	G	6/17	0700				2				X					X					008
9																							
10																							
11																							
12																							

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
11145929-2019-02 / 11145929-PH-Yakima	Patricia Ho, BlaineTech	6/17/19	1800	Shipped Via FedEX			3.2
				Elizabeth R. Zabronsky PACE	6/18/19	845	Y
							Y
							Y

TEMP in C | Received on ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Patricia Ho

SIGNATURE of SAMPLER:

DATE Signed: 6/17/19

Pace Analytical	Document Name: **Sample Condition Upon Receipt Form**	Document Revised: 09May2019 Page 1 of 1
	Document No.: **F-MN-L-213-rev.28**	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: GHD Services

Project #: **WO#: 10479722**

PM: JMG **Due Date: 07/02/19**

CLIENT: GHD_WA

Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Pace ☐ SpeeDee ☐ Commercial

Tracking Number: 4934 3729 4186 **See Exception** ☐

Custody Seal on Cooler/Box Present? ☒ Yes ☐ No **Seals Intact?** ☒ Yes ☐ No

Packing Material: ☒ Bubble Wrap ☒ Bubble Bags ☐ None ☒ Other: PB

Biological Tissue Frozen? ☐ Yes ☐ No ☒ N/A

Thermometer: ☐ T1(0461) ☐ T2(1336) ☒ T3(0459) ☐ T4(0254) ☐ T5(0489)

Temp Blank? ☐ Yes ☒ No

Type of Ice: ☒ Wet ☐ Blue ☐ None ☐ Dry ☐ Melted

Note: Each West Virginia Sample must have temp taken (no temp blanks)

Temp should be above freezing to 6°C

Cooler Temp Read w/temp blank: _____ °C

Correction Factor: +0.1 **Cooler Temp Corrected w/temp blank :** _____ °C

Average Corrected Temp (no temp blank only): 3.2 °C **See Exceptions** ☒

USDA Regulated Soil: (☒ N/A, water sample/Other: _____)

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA. MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐ Yes ☐ No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☐ No

Date/Initials of Person Examining Contents: ERZ 6/18/19

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

Chain of Custody Present and Filled Out?	☒ Yes	☐ No		**COMMENTS:**
Chain of Custody Relinquished?	☒ Yes	☐ No		1.
Sampler Name and/or Signature on COC?	☒ Yes	☐ No		2.
Samples Arrived within Hold Time?	☒ Yes	☐ No	☐ N/A	3.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☒ No		4.
Rush Turn Around Time Requested?	☐ Yes	☒ No		5. ☐ Fecal Coliform ☐ HPC ☐ Total Coliform/E coli ☐ BOD/cBOD ☐ Hex Chrome ☐ Turbidity ☐ Nitrate ☐ Nitrite ☐ Orthophos ☐ Other
Sufficient Volume?	☒ Yes	☐ No		6.
Correct Containers Used?	☒ Yes	☐ No		7.
-Pace Containers Used?	☒ Yes	☐ No		8.
Containers Intact?	☒ Yes	☐ No		
Field Filtered Volume Received for Dissolved Tests?	☐ Yes	☒ No	☐ N/A	9.
Is sufficient information available to reconcile the samples to the COC?	☒ Yes	☐ No		10. Is sediment visible in the dissolved container? ☐ Yes ☐ No
Matrix: ☒ Water ☐ Soil ☐ Oil ☐ Other				11. **If no, write ID/ Date/Time on Container Below:** **See Exception** ☐
All containers needing acid/base preservation have been checked?	☐ Yes	☐ No	☒ N/A	12. Sample #
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, <2pH, NaOH >9 Sulfide, NaOH>12 Cyanide)	☐ Yes	☐ No	☒ N/A	☐ NaOH ☐ HNO_3 ☐ H_2SO_4 ☐ Zinc Acetate
Exceptions: VOA Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin/PFAS	☒ Yes	☐ No	☐ N/A	Positive for Res. Chlorine? ☐ Yes ☐ No **See Exception** ☐
JMG 061919				Res. Chlorine / 0-6 Roll / 0-6 Strip / 0-14 Strip / **pH Paper Lot#**
Headspace in VOA Vials (greater than 6mm)?	☒ Yes	☐ No	☐ N/A	13.
Trip Blank Present?	☒ Yes	☐ No	☐ N/A	**See Exception** ☐
Trip Blank Custody Seals Present?	☒ Yes	☐ No	☐ N/A	14. Pace Trip Blank Lot # (if purchased):

CLIENT NOTIFICATION/RESOLUTION

Person Contacted: Matt Davis

Comments/Resolution: Notified of headspace. Date/Time: 06/19/19 **Field Data Required?** ☐ Yes ☐ No

Project Manager Review: Jenni Gross **Date:** 06/19/19

Note: Whenever there is a discrepancy affecting N... hold, incorrect preservative, out of temp, incorrect containers). ...pliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of

Labeled by: F.F

During sample triage, this form is to be placed in each cooler that arrives above 6.0 degrees Celsius

SCUR Exceptions: No temp blank

Workorder #: 10479722

Out of Temp Sample IDs	Container Type	# of Containers

PM Notified? ☐ Yes ☒ No

If yes, indicate who was contacted/date/time.
If no, indicate reason why.

Multiple Cooler Project? ☐ Yes ☐ No
If you answered yes, fill out information to the left.

No Temp Blank

Read Temp	Corrected Temp	Average Temp
4.1	4.2	3.2
2.8	2.9	
0.9	1.0	
4.5	4.6	

Tracking Number/Temperature	

Other Issues

Issue Type: Sample ID	Container Type	# of Containers

pH Adjustment Log for Preserved Samples

Sample ID	Type of Preserv.	pH Upon Receipt	Date Adjusted	Time Adjusted	Amount Added (mL)	Lot # Added	pH After	In Compliance after addition?	Initials
								☐ Yes ☐ No	
								☐ Yes ☐ No	
								☐ Yes ☐ No	
								☐ Yes ☐ No	

Pace Analytical	Document Name: **Headspace Exception**	Document Revised: 17Dec2018 Page 1 of 1
	Document No.: **F-MN-C-276-Rev.01**	Issuing Authority: Pace Minnesota Quality Office

Sample ID	Headspace greater than 6mm	Headspace less than 6mm	No Headspace	Total Vials	Sediment Present?
MW-8	0	0	6	6	N
MW-15	0	4	2	6	N
MW-16	1	3	2	6	N
MW-17	0	5	1	6	N
MW-18	0	2	4	6	N
MW-19	0	1	5	6	N
Trip Blank	1	1	0	2	N

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September 26, 2019

Matthew Davis
GHD Services Inc.
3600 Port of Tacoma Road
Suite 302
Tacoma, WA 98424

RE: Project: 11145929 P66 Yakima
Pace Project No.: 10491782

Dear Matthew Davis:
Enclosed are the analytical results for sample(s) received by the laboratory on September 17, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jennifer Gross
jennifer.gross@pacelabs.com
(206)957-2426
Project Manager

Enclosures

cc: Rosemarie Borths, GHD Services Inc.
Jeffrey Cloud, GHD Services Inc.
Heather Gadwa, GHD

REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: 11145929 P66 Yakima
Pace Project No.: 10491782

Minnesota Certification IDs

1700 Elm Street SE, Minneapolis, MN 55414-2485
A2LA Certification #: 2926.01
Alabama Certification #: 40770
Alaska Contaminated Sites Certification #: 17-009
Alaska DW Certification #: MN00064
Arizona Certification #: AZ0014
Arkansas DW Certification #: MN00064
Arkansas WW Certification #: 88-0680
California Certification #: 2929
CNMI Saipan Certification #: MP0003
Colorado Certification #: MN00064
Connecticut Certification #: PH-0256
EPA Region 8+Wyoming DW Certification #: via MN 027-053-137
Florida Certification #: E87605
Georgia Certification #: 959
Guam EPA Certification #: MN00064
Hawaii Certification #: MN00064
Idaho Certification #: MN00064
Illinois Certification #: 200011
Indiana Certification #: C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky DW Certification #: 90062
Kentucky WW Certification #: 90062
Louisiana DEQ Certification #: 03086
Louisiana DW Certification #: MN00064
Maine Certification #: MN00064
Maryland Certification #: 322
Massachusetts Certification #: M-MN064
Michigan Certification #: 9909
Minnesota Certification #: 027-053-137
Minnesota Dept of Ag Certifcation #: via MN 027-053-137
Minnesota Petrofund Certification #: 1240
Mississippi Certification #: MN00064
Missouri Certification #: 10100
Montana Certification #: CERT0092
Nebraska Certification #: NE-OS-18-06
Nevada Certification #: MN00064
New Hampshire Certification #: 2081
New Jersey Certification #: MN002
New York Certification #: 11647
North Carolina DW Certification #: 27700
North Carolina WW Certification #: 530
North Dakota Certification #: R-036
Ohio DW Certification #: 41244
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon Primary Certification #: MN300001
Oregon Secondary Certification #: MN200001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification #: MN00064
South Carolina Certification #:74003001
Tennessee Certification #: TN02818
Texas Certification #: T104704192
Utah Certification #: MN00064
Vermont Certification #: VT-027053137
Virginia Certification #: 460163
Washington Certification #: C486
West Virginia DEP Certification #: 382
West Virginia DW Certification #: 9952 C
Wisconsin Certification #: 999407970
Wyoming UST Certification #: via A2LA 2926.01

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SAMPLE SUMMARY

Project: 11145929 P66 Yakima
Pace Project No.: 10491782

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10491782001	**MW-8**	Water	09/16/19 11:50	09/17/19 08:40
10491782002	**MW-15**	Water	09/16/19 13:00	09/17/19 08:40
10491782003	**MW-19**	Water	09/16/19 12:26	09/17/19 08:40
10491782004	**Dup-1**	Water	09/16/19 12:00	09/17/19 08:40
10491782005	**TB**	Water	09/16/19 06:00	09/17/19 08:40

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SAMPLE ANALYTE COUNT

Project: 11145929 P66 Yakima
Pace Project No.: 10491782

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10491782001	**MW-8**	NWTPH-Dx	EC2	4	PASI-M
		NWTPH-Gx	MJD	2	PASI-M
		EPA 8260B	DS2	11	PASI-M
10491782002	**MW-15**	NWTPH-Dx	JVM	4	PASI-M
		NWTPH-Gx	MJD	2	PASI-M
		EPA 8260B	DS2	11	PASI-M
10491782003	**MW-19**	NWTPH-Dx	JVM	4	PASI-M
		NWTPH-Gx	MJD	2	PASI-M
		EPA 8260B	DS2	11	PASI-M
10491782004	**Dup-1**	NWTPH-Dx	JVM	4	PASI-M
		NWTPH-Gx	MJD	2	PASI-M
		EPA 8260B	DS2	11	PASI-M
10491782005	**TB**	NWTPH-Gx	MJD	2	PASI-M
		EPA 8260B	DS2	11	PASI-M

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PROJECT NARRATIVE

Project: 11145929 P66 Yakima
Pace Project No.: 10491782

Method: **NWTPH-Dx**
Description: NWTPH-Dx GCS LV
Client: GHD Services Inc
Date: September 26, 2019

General Information:
4 samples were analyzed for NWTPH-Dx. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA Mod. 3510C with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Surrogates:
All surrogates were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: 632900

1M: Surrogate recovery outside laboratory control limits due to an emulsion forming during extraction.

- MW-19 (Lab ID: 10491782003)
  - n-Triacontane (S)

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PROJECT NARRATIVE

Project: 11145929 P66 Yakima
Pace Project No.: 10491782

Method: **NWTPH-Gx**
Description: NWTPH-Gx GCV
Client: GHD Services Inc
Date: September 26, 2019

General Information:
5 samples were analyzed for NWTPH-Gx. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Surrogates:
All surrogates were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: 11145929 P66 Yakima
Pace Project No.: 10491782

Method: **EPA 8260B**
Description: 8260B MSV UST
Client: GHD Services Inc
Date: September 26, 2019

General Information:
5 samples were analyzed for EPA 8260B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Surrogates:
All surrogates were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

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ANALYTICAL RESULTS

Project: 11145929 P66 Yakima
Pace Project No.: 10491782

Sample: MW-8 **Lab ID: 10491782001** Collected: 09/16/19 11:50 Received: 09/17/19 08:40 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
NWTPH-Dx GCS LV	Analytical Method: NWTPH-Dx Preparation Method: EPA Mod. 3510C							
Diesel Fuel Range	ND	ug/L	392	1	09/18/19 15:38	09/21/19 14:33	68334-30-5	
Motor Oil Range	ND	ug/L	392	1	09/18/19 15:38	09/21/19 14:33		
Surrogates								
o-Terphenyl (S)	59	%.	50-150	1	09/18/19 15:38	09/21/19 14:33	84-15-1	
n-Triacontane (S)	51	%.	50-150	1	09/18/19 15:38	09/21/19 14:33	638-68-6	
NWTPH-Gx GCV	Analytical Method: NWTPH-Gx							
TPH as Gas	ND	ug/L	100	1		09/21/19 09:53		G-
Surrogates								
a,a,a-Trifluorotoluene (S)	74	%.	50-150	1		09/21/19 09:53	98-08-8	
8260B MSV UST	Analytical Method: EPA 8260B							
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		09/21/19 14:56	106-93-4	
1,2-Dichloroethane	ND	ug/L	1.0	1		09/21/19 14:56	107-06-2	
Benzene	**13.1**	ug/L	1.0	1		09/21/19 14:56	71-43-2	
Ethylbenzene	**5.5**	ug/L	1.0	1		09/21/19 14:56	100-41-4	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		09/21/19 14:56	1634-04-4	
Naphthalene	ND	ug/L	4.0	1		09/21/19 14:56	91-20-3	
Toluene	ND	ug/L	1.0	1		09/21/19 14:56	108-88-3	
Xylene (Total)	**3.0**	ug/L	3.0	1		09/21/19 14:56	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	102	%.	75-125	1		09/21/19 14:56	17060-07-0	
Toluene-d8 (S)	100	%.	75-125	1		09/21/19 14:56	2037-26-5	
4-Bromofluorobenzene (S)	100	%.	75-125	1		09/21/19 14:56	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 11145929 P66 Yakima
Pace Project No.: 10491782

Sample: MW-15 **Lab ID: 10491782002** Collected: 09/16/19 13:00 Received: 09/17/19 08:40 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
NWTPH-Dx GCS LV	Analytical Method: NWTPH-Dx Preparation Method: EPA Mod. 3510C							
Diesel Fuel Range	**1590**	ug/L	417	1	09/18/19 15:38	09/19/19 23:08	68334-30-5	
Motor Oil Range	ND	ug/L	417	1	09/18/19 15:38	09/19/19 23:08		
Surrogates								
o-Terphenyl (S)	72	%.	50-150	1	09/18/19 15:38	09/19/19 23:08	84-15-1	
n-Triacontane (S)	67	%.	50-150	1	09/18/19 15:38	09/19/19 23:08	638-68-6	
NWTPH-Gx GCV	Analytical Method: NWTPH-Gx							
TPH as Gas	**3080**	ug/L	100	1		09/21/19 10:10		G+,G-
Surrogates								
a,a,a-Trifluorotoluene (S)	88	%.	50-150	1		09/21/19 10:10	98-08-8	
8260B MSV UST	Analytical Method: EPA 8260B							
1,2-Dibromoethane (EDB)	ND	ug/L	5.0	5		09/21/19 16:38	106-93-4	
1,2-Dichloroethane	ND	ug/L	5.0	5		09/21/19 16:38	107-06-2	
Benzene	**639**	ug/L	5.0	5		09/21/19 16:38	71-43-2	
Ethylbenzene	**147**	ug/L	5.0	5		09/21/19 16:38	100-41-4	
Methyl-tert-butyl ether	ND	ug/L	5.0	5		09/21/19 16:38	1634-04-4	
Naphthalene	ND	ug/L	20.0	5		09/21/19 16:38	91-20-3	
Toluene	**10.0**	ug/L	5.0	5		09/21/19 16:38	108-88-3	
Xylene (Total)	**115**	ug/L	15.0	5		09/21/19 16:38	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	101	%.	75-125	5		09/21/19 16:38	17060-07-0	
Toluene-d8 (S)	98	%.	75-125	5		09/21/19 16:38	2037-26-5	
4-Bromofluorobenzene (S)	101	%.	75-125	5		09/21/19 16:38	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 11145929 P66 Yakima
Pace Project No.: 10491782

Sample: MW-19 **Lab ID: 10491782003** Collected: 09/16/19 12:26 Received: 09/17/19 08:40 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
NWTPH-Dx GCS LV	Analytical Method: NWTPH-Dx Preparation Method: EPA Mod. 3510C							
Diesel Fuel Range	**818**	ug/L	392	1	09/18/19 15:38	09/19/19 23:19	68334-30-5	
Motor Oil Range	ND	ug/L	392	1	09/18/19 15:38	09/19/19 23:19		
Surrogates								
o-Terphenyl (S)	61	%.	50-150	1	09/18/19 15:38	09/19/19 23:19	84-15-1	
n-Triacontane (S)	47	%.	50-150	1	09/18/19 15:38	09/19/19 23:19	638-68-6	1M
NWTPH-Gx GCV	Analytical Method: NWTPH-Gx							
TPH as Gas	ND	ug/L	100	1		09/25/19 19:47		
Surrogates								
a,a,a-Trifluorotoluene (S)	76	%.	50-150	1		09/25/19 19:47	98-08-8	
8260B MSV UST	Analytical Method: EPA 8260B							
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		09/21/19 15:14	106-93-4	
1,2-Dichloroethane	ND	ug/L	1.0	1		09/21/19 15:14	107-06-2	
Benzene	**2.7**	ug/L	1.0	1		09/21/19 15:14	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		09/21/19 15:14	100-41-4	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		09/21/19 15:14	1634-04-4	
Naphthalene	ND	ug/L	4.0	1		09/21/19 15:14	91-20-3	
Toluene	ND	ug/L	1.0	1		09/21/19 15:14	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		09/21/19 15:14	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	102	%.	75-125	1		09/21/19 15:14	17060-07-0	
Toluene-d8 (S)	98	%.	75-125	1		09/21/19 15:14	2037-26-5	
4-Bromofluorobenzene (S)	102	%.	75-125	1		09/21/19 15:14	460-00-4	

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ANALYTICAL RESULTS

Project: 11145929 P66 Yakima
Pace Project No.: 10491782

Sample: Dup-1 **Lab ID: 10491782004** Collected: 09/16/19 12:00 Received: 09/17/19 08:40 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
NWTPH-Dx GCS LV	Analytical Method: NWTPH-Dx Preparation Method: EPA Mod. 3510C							
Diesel Fuel Range	**984**	ug/L	400	1	09/18/19 15:38	09/19/19 23:31	68334-30-5	
Motor Oil Range	ND	ug/L	400	1	09/18/19 15:38	09/19/19 23:31		
Surrogates								
o-Terphenyl (S)	65	%.	50-150	1	09/18/19 15:38	09/19/19 23:31	84-15-1	
n-Triacontane (S)	61	%.	50-150	1	09/18/19 15:38	09/19/19 23:31	638-68-6	
NWTPH-Gx GCV	Analytical Method: NWTPH-Gx							
TPH as Gas	ND	ug/L	100	1		09/21/19 10:44		
Surrogates								
a,a,a-Trifluorotoluene (S)	76	%.	50-150	1		09/21/19 10:44	98-08-8	
8260B MSV UST	Analytical Method: EPA 8260B							
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		09/21/19 15:30	106-93-4	
1,2-Dichloroethane	ND	ug/L	1.0	1		09/21/19 15:30	107-06-2	
Benzene	**2.7**	ug/L	1.0	1		09/21/19 15:30	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		09/21/19 15:30	100-41-4	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		09/21/19 15:30	1634-04-4	
Naphthalene	ND	ug/L	4.0	1		09/21/19 15:30	91-20-3	
Toluene	ND	ug/L	1.0	1		09/21/19 15:30	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		09/21/19 15:30	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	101	%.	75-125	1		09/21/19 15:30	17060-07-0	
Toluene-d8 (S)	99	%.	75-125	1		09/21/19 15:30	2037-26-5	
4-Bromofluorobenzene (S)	101	%.	75-125	1		09/21/19 15:30	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 11145929 P66 Yakima
Pace Project No.: 10491782

Sample: TB **Lab ID: 10491782005** Collected: 09/16/19 06:00 Received: 09/17/19 08:40 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
NWTPH-Gx GCV	Analytical Method: NWTPH-Gx							
TPH as Gas	ND	ug/L	100	1		09/21/19 11:01		
Surrogates								
a,a,a-Trifluorotoluene (S)	76	%.	50-150	1		09/21/19 11:01	98-08-8	
8260B MSV UST	Analytical Method: EPA 8260B							
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		09/21/19 12:08	106-93-4	
1,2-Dichloroethane	ND	ug/L	1.0	1		09/21/19 12:08	107-06-2	
Benzene	ND	ug/L	1.0	1		09/21/19 12:08	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		09/21/19 12:08	100-41-4	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		09/21/19 12:08	1634-04-4	
Naphthalene	ND	ug/L	4.0	1		09/21/19 12:08	91-20-3	
Toluene	ND	ug/L	1.0	1		09/21/19 12:08	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		09/21/19 12:08	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	101	%.	75-125	1		09/21/19 12:08	17060-07-0	
Toluene-d8 (S)	99	%.	75-125	1		09/21/19 12:08	2037-26-5	
4-Bromofluorobenzene (S)	103	%.	75-125	1		09/21/19 12:08	460-00-4	

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QUALITY CONTROL DATA

Project: 11145929 P66 Yakima
Pace Project No.: 10491782

QC Batch: 633384 Analysis Method: NWTPH-Gx
QC Batch Method: NWTPH-Gx Analysis Description: NWTPH-Gx Water
Associated Lab Samples: 10491782001, 10491782002, 10491782004, 10491782005

METHOD BLANK: 3414663 Matrix: Water
Associated Lab Samples: 10491782001, 10491782002, 10491782004, 10491782005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
TPH as Gas	ug/L	ND	100	09/21/19 03:22	
a,a,a-Trifluorotoluene (S)	%.	79	50-150	09/21/19 03:22	

METHOD BLANK: 3414664 Matrix: Water
Associated Lab Samples: 10491782001, 10491782002, 10491782004, 10491782005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
TPH as Gas	ug/L	ND	100	09/21/19 06:29	
a,a,a-Trifluorotoluene (S)	%.	74	50-150	09/21/19 06:29	

LABORATORY CONTROL SAMPLE & LCSD: 3414665 3414666

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
TPH as Gas	ug/L	1000	1120	1090	112	109	75-125	3	20	
a,a,a-Trifluorotoluene (S)	%.				87	89	50-150			

SAMPLE DUPLICATE: 3414669

Parameter	Units	10491720001 Result	Dup Result	RPD	Max RPD	Qualifiers
TPH as Gas	ug/L	<38.3	ND		30	
a,a,a-Trifluorotoluene (S)	%.	75	73			

SAMPLE DUPLICATE: 3415417

Parameter	Units	10491720007 Result	Dup Result	RPD	Max RPD	Qualifiers
TPH as Gas	ug/L	987	1090	10	30	G-
a,a,a-Trifluorotoluene (S)	%.	74	77			

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 11145929 P66 Yakima
Pace Project No.: 10491782

QC Batch: 634292 Analysis Method: NWTPH-Gx
QC Batch Method: NWTPH-Gx Analysis Description: NWTPH-Gx Water
Associated Lab Samples: 10491782003

METHOD BLANK: 3418935 Matrix: Water
Associated Lab Samples: 10491782003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
TPH as Gas	ug/L	ND	100	09/25/19 19:30	
a,a,a-Trifluorotoluene (S)	%.	70	50-150	09/25/19 19:30	

METHOD BLANK: 3418936 Matrix: Water
Associated Lab Samples: 10491782003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
TPH as Gas	ug/L	ND	100	09/25/19 22:18	
a,a,a-Trifluorotoluene (S)	%.	73	50-150	09/25/19 22:18	

LABORATORY CONTROL SAMPLE & LCSD: 3418937 3418938

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
TPH as Gas	ug/L	1000	952	896	95	90	75-125	6	20	
a,a,a-Trifluorotoluene (S)	%.				90	86	50-150			

SAMPLE DUPLICATE: 3418939

Parameter	Units	10491720003 Result	Dup Result	RPD	Max RPD	Qualifiers
TPH as Gas	ug/L	5740	5050	13	30	G+
a,a,a-Trifluorotoluene (S)	%.	73	74			

SAMPLE DUPLICATE: 3418947

Parameter	Units	10491782003 Result	Dup Result	RPD	Max RPD	Qualifiers
TPH as Gas	ug/L	ND	45.2J		30	
a,a,a-Trifluorotoluene (S)	%.	76	72			

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 11145929 P66 Yakima
Pace Project No.: 10491782

QC Batch: 633740 Analysis Method: EPA 8260B
QC Batch Method: EPA 8260B Analysis Description: 8260B MSV UST-WATER
Associated Lab Samples: 10491782001, 10491782002, 10491782003, 10491782004, 10491782005

METHOD BLANK: 3416610 Matrix: Water
Associated Lab Samples: 10491782001, 10491782002, 10491782003, 10491782004, 10491782005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2-Dibromoethane (EDB)	ug/L	ND	1.0	09/21/19 11:51	
1,2-Dichloroethane	ug/L	ND	1.0	09/21/19 11:51	
Benzene	ug/L	ND	1.0	09/21/19 11:51	
Ethylbenzene	ug/L	ND	1.0	09/21/19 11:51	
Methyl-tert-butyl ether	ug/L	ND	1.0	09/21/19 11:51	
Naphthalene	ug/L	ND	4.0	09/21/19 11:51	
Toluene	ug/L	ND	1.0	09/21/19 11:51	
Xylene (Total)	ug/L	ND	3.0	09/21/19 11:51	
1,2-Dichloroethane-d4 (S)	%.	101	75-125	09/21/19 11:51	
4-Bromofluorobenzene (S)	%.	103	75-125	09/21/19 11:51	
Toluene-d8 (S)	%.	99	75-125	09/21/19 11:51	

LABORATORY CONTROL SAMPLE: 3416611

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dibromoethane (EDB)	ug/L	20	21.2	106	75-125	
1,2-Dichloroethane	ug/L	20	19.4	97	71-125	
Benzene	ug/L	20	17.7	88	75-125	
Ethylbenzene	ug/L	20	19.2	96	75-125	
Methyl-tert-butyl ether	ug/L	20	16.9	84	75-125	
Naphthalene	ug/L	20	20.5	103	63-125	
Toluene	ug/L	20	19.5	97	75-125	
Xylene (Total)	ug/L	60	58.7	98	75-125	
1,2-Dichloroethane-d4 (S)	%.			103	75-125	
4-Bromofluorobenzene (S)	%.			100	75-125	
Toluene-d8 (S)	%.			103	75-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3416633 3416634

Parameter	Units	10491640004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,2-Dibromoethane (EDB)	ug/L	ND	20	20	19.7	19.2	98	96	30-150	3	30	
1,2-Dichloroethane	ug/L	ND	20	20	18.3	17.7	91	88	30-150	4	30	
Benzene	ug/L	ND	20	20	18.3	17.9	89	86	30-150	3	30	
Ethylbenzene	ug/L	ND	20	20	19.4	19.0	97	95	30-150	2	30	
Methyl-tert-butyl ether	ug/L	ND	20	20	16.0	16.0	79	79	30-150	0	30	
Naphthalene	ug/L	ND	20	20	20.6	21.3	103	106	30-150	3	30	
Toluene	ug/L	ND	20	20	19.4	19.0	96	94	30-150	2	30	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 11145929 P66 Yakima
Pace Project No.: 10491782

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3416633 3416634

Parameter	Units	10491640004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Xylene (Total)	ug/L	ND	60	60	58.0	56.7	97	95	30-150	2	30	
1,2-Dichloroethane-d4 (S)	%.						101	102	75-125			
4-Bromofluorobenzene (S)	%.						102	101	75-125			
Toluene-d8 (S)	%.						102	102	75-125			

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 11145929 P66 Yakima
Pace Project No.: 10491782

QC Batch: 632900 Analysis Method: NWTPH-Dx
QC Batch Method: EPA Mod. 3510C Analysis Description: NWTPH-Dx GCS LV
Associated Lab Samples: 10491782001, 10491782002, 10491782003, 10491782004

METHOD BLANK: 3412312 Matrix: Water
Associated Lab Samples: 10491782001, 10491782002, 10491782003, 10491782004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Diesel Fuel Range	ug/L	ND	400	09/19/19 22:11	
Motor Oil Range	ug/L	ND	400	09/19/19 22:11	
n-Triacontane (S)	%.	67	50-150	09/19/19 22:11	
o-Terphenyl (S)	%.	72	50-150	09/19/19 22:11	

LABORATORY CONTROL SAMPLE & LCSD: 3412313 3412314

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Diesel Fuel Range	ug/L	2000	1600	1470	80	74	50-150	8	20	
Motor Oil Range	ug/L	2000	1700	1540	85	77	50-150	10	20	
n-Triacontane (S)	%.				74	64	50-150			
o-Terphenyl (S)	%.				79	72	50-150			

SAMPLE DUPLICATE: 3412315

Parameter	Units	10491782001 Result	Dup Result	RPD	Max RPD	Qualifiers
Diesel Fuel Range	ug/L	ND	107J		30	
Motor Oil Range	ug/L	ND	78.9J		30	
n-Triacontane (S)	%.	51	57			
o-Terphenyl (S)	%.	59	70			

SAMPLE DUPLICATE: 3412316

Parameter	Units	10491782004 Result	Dup Result	RPD	Max RPD	Qualifiers
Diesel Fuel Range	ug/L	984	1100	11	30	
Motor Oil Range	ug/L	ND	207J		30	
n-Triacontane (S)	%.	61	65			
o-Terphenyl (S)	%.	65	72			

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALIFIERS

Project: 11145929 P66 Yakima
Pace Project No.: 10491782

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-M	Pace Analytical Services - Minneapolis

ANALYTE QUALIFIERS

1M	Surrogate recovery outside laboratory control limits due to an emulsion forming during extraction.
G+	Late peaks present outside the GRO window.
G-	Early peaks present outside the GRO window.

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

METHOD CROSS REFERENCE TABLE

Project: 11145929 P66 Yakima
Pace Project No.: 10491782

Parameter	Matrix	Analytical Method	Preparation Method
8260B MSV UST	Water	SW-846 8260B/5030B	N/A

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 11145929 P66 Yakima
Pace Project No.: 10491782

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10491782001	**MW-8**	EPA Mod. 3510C	632900	NWTPH-Dx	633508
10491782002	**MW-15**	EPA Mod. 3510C	632900	NWTPH-Dx	633508
10491782003	**MW-19**	EPA Mod. 3510C	632900	NWTPH-Dx	633508
10491782004	**Dup-1**	EPA Mod. 3510C	632900	NWTPH-Dx	633508
10491782001	**MW-8**	NWTPH-Gx	633384		
10491782002	**MW-15**	NWTPH-Gx	633384		
10491782003	**MW-19**	NWTPH-Gx	634292		
10491782004	**Dup-1**	NWTPH-Gx	633384		
10491782005	**TB**	NWTPH-Gx	633384		
10491782001	**MW-8**	EPA 8260B	633740		
10491782002	**MW-15**	EPA 8260B	633740		
10491782003	**MW-19**	EPA 8260B	633740		
10491782004	**Dup-1**	EPA 8260B	633740		
10491782005	**TB**	EPA 8260B	633740		

Pace Analytical

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	GHD Services	Report To:	Matt Davis: heather.gadwa@ghd.com	Attention:	Jeffrey Cloud | Apinvoices-340@ghd.com
Address:	3600 Port of Tacoma Road, Suite 302	Copy To:	jeffrey.cloud@ghd.com	Company Name:	GHD Services Inc. - 340
	Tacoma, WA 98424		rosemarie.borths@ghd.com	Address:	2055 Niagara Falls Blvd., NY 14304
Email To:	matthew.davis@ghd.com	Purchase Order No.		Pace Quote Reference:	
Phone:	253-302-8281 Fax	Client Project ID:	P66 Yakima	Pace Project Manager:	Jennifer Gross
Requested Due Date/TAT:	*10 Day (Standard)*	Project Number:	11145929	Pace Profile #:	*38948 / 1*

Regulatory Agency	
State / Location	WA / Yakima

SAMPLE ID
One Character per box.
(A-Z, 0-9 / , -)
Sample Ids must be unique

MATRIX	CODE
Drinking Water	DW
Water	WT
Waste Water	WW
Product	P
Soil/Solid	SL
Oil	OL
Wipe	WP
Air	AR
Other	OT
Tissue	TS

WO# : 10491782

10491782

Requested Analysis Filtered (Y/N)

ITEM#	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test Y/N	NWTPHGx	NWTPHDx	8260 BTEX,EDB,EDC,MTBE,Naphthalene	Residual Chlorine (Y/N)	
1	MW-8	WT	G	9/16	1150				8				X						X	X	X		001
2	MW-15	WT	G	9/16	1300				8				X						X	X	X		002
3	MW-19	WT	G	9/16	1226				8				X						X	X	X		003
4	DUP-1	WT	G	9/16	1200				8				X						X	X	X		004
5	TB	WT	G	9/16	0600				3				X						X		X		005
6																							
7																							
8																							
9																							
10																							
11	—						—														—		
12																							

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
11145929-2019 03 | 11145929-PH-Yakima	Patrick Ho / BTS	9/16	1800	Shipped by FedEx			3.7	Y	Y	X
				IJ - PACE	9/17/19	8:40	3.7	Y	Y	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Patrick Ho

SIGNATURE of SAMPLER: [signature]

DATE Signed: 9/16/19

TEMP in C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

Pace Analytical	Document Name: **Sample Condition Upon Receipt Form**	Document Revised: 23Aug2019 Page 1 of 1
	Document No.: F-MN-L-213-rev.29	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt **Client Name:** GHD **Project #:** **WO#: 10491782**

PM: JMG **Due Date: 10/01/19**

CLIENT: GHD_WA

Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Pace ☐ SpeeDee ☐ Commercial **See Exceptions** ☐

Tracking Number: 4934 3732 7766

Custody Seal on Cooler/Box Present? ☒ Yes ☐ No **Seals Intact?** ☒ Yes ☐ No **Biological Tissue Frozen?** ☐ Yes ☐ No ☒ N/A

Packing Material: ☒ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other:_____ **Temp Blank?** ☒ Yes ☐ No

Thermometer: ☐ T1(0461) ☐ T2(1336) ☒ T3(0459) ☐ T4(0254) ☐ T5(0489) **Type of Ice:** ☒ Wet ☐ Blue ☐ None ☐ Dry ☐ Melted

Note: Each West Virginia Sample must have temp taken (no temp blanks)

Temp should be above freezing to 6°C **Cooler Temp Read w/temp blank:** 3.6 °C **Average Corrected Temp (no temp blank only):** ☐ See Exceptions

Correction Factor: +0.1 **Cooler Temp Corrected w/temp blank:** 3.7 °C _____ °C ☐ 1 Container

USDA Regulated Soil: (☒ N/A, water sample/Other:_____) **Date/Initials of Person Examining Contents:** 9/17/19 IJ

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐ Yes ☐ No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☐ No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

				COMMENTS:
Chain of Custody Present and Filled Out?	☒ Yes	☐ No		1.
Chain of Custody Relinquished?	☒ Yes	☐ No		2.
Sampler Name and/or Signature on COC?	☒ Yes	☐ No	☐ N/A	3.
Samples Arrived within Hold Time?	☒ Yes	☐ No		4.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☒ No		5. ☐ Fecal Coliform ☐ HPC ☐ Total Coliform/E coli ☐ BOD/cBOD ☐ Hex Chrome ☐ Turbidity ☐ Nitrate ☐ Nitrite ☐ Orthophos ☐ Other_____
Rush Turn Around Time Requested?	☐ Yes	☒ No		6.
Sufficient Volume?	☒ Yes	☐ No		7.
Correct Containers Used?	☒ Yes	☐ No		8.
-Pace Containers Used?	☒ Yes	☐ No		
Containers Intact?	☒ Yes	☐ No		9.
Field Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☒ N/A	10. Is sediment visible in the dissolved container? ☐ Yes ☐ No
Is sufficient information available to reconcile the samples to the COC?	☒ Yes	☐ No		11. **If no, write ID/ Date/Time on Container Below:** **See Exception** ☐
Matrix: ☒ Water ☐ Soil ☐ Oil ☐ Other_____				
All containers needing acid/base preservation have been checked?	☐ Yes	☐ No	☒ N/A	12. Sample #
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, <2pH, NaOH >9 Sulfide, NaOH>12 Cyanide)	☐ Yes	☐ No	☒ N/A	☐ NaOH ☐ HNO_3 ☐ H_2SO_4 ☐ Zinc Acetate
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin/PFAS	☒ Yes	☐ No	☐ N/A	Positive for Res. Chlorine? ☐ Yes ☐ No **pH Paper Lot#** **See Exception** ☐
				Res. Chlorine | 0-6 Roll | 0-6 Strip | 0-14 Strip
Headspace in VOA Vials (greater than 6mm)?	☐ Yes	☒ No	☐ N/A	13. **See Exception** ☐
Trip Blank Present?	☒ Yes	☐ No	☐ N/A	14. Pace Trip Blank Lot # (if purchased): 223607
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☐ N/A	

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

Project Manager Review: _____ JENNI GROSS Date: 09/17/19

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers).

Labeled by: IJ (2)

ANALYTICAL REPORT

Eurofins Calscience LLC
7440 Lincoln Way
Garden Grove, CA 92841
Tel: (714)895-5494

Laboratory Job ID: 570-16789-1
Client Project/Site: P66 Yakima / 11145929

For:
GHD Services Inc.
20818 44th Ave W
Suite 190
Lynnwood, Washington 98036

Attn: Heather Gadwa

Vik Patel

Authorized for release by:
1/13/2020 4:09:55 PM

Vikas Patel, Project Manager I
(714)895-5494
vikaspatel@eurofinsus.com

Table of Contents

Definitions/Glossary

Client: GHD Services Inc.
Project/Site: P66 Yakima / 11145929

Job ID: 570-16789-1

Qualifiers

GC Semi VOA

Qualifier	Qualifier Description
H	Sample was prepped or analyzed beyond the specified holding time

Glossary

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

Case Narrative

Client: GHD Services Inc.
Project/Site: P66 Yakima / 11145929

Job ID: 570-16789-1

Job ID: 570-16789-1

Laboratory: Eurofins Calscience LLC

Narrative

Job Narrative
570-16789-1

Comments
No additional comments.

Receipt
The samples were received on 12/28/2019 10:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 4.1° C.

GC/MS VOA
Method 8260B: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with analytical batch 570-43394.

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

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

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

Organic Prep
Method 3510C: The following samples were prepared outside of preparation holding time : MW-17 (570-16789-1) and DUP-1 (570-16789-2).

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

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

Detection Summary

Client: GHD Services Inc.
Project/Site: P66 Yakima / 11145929

Job ID: 570-16789-1

Client Sample ID: MW-17 — Lab Sample ID: 570-16789-1

No Detections.

Client Sample ID: DUP-1 — Lab Sample ID: 570-16789-2

No Detections.

Client Sample ID: TB-1 — Lab Sample ID: 570-16789-3

No Detections.

This Detection Summary does not include radiochemical test results.

Method: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: MW-17
Date Collected: 12/26/19 11:34
Date Received: 12/28/19 10:30

Lab Sample ID: 570-16789-1
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		1.0		ug/L			01/09/20 13:42	1
Ethylbenzene	ND		1.0		ug/L			01/09/20 13:42	1
o-Xylene	ND		1.0		ug/L			01/09/20 13:42	1
m,p-Xylene	ND		2.0		ug/L			01/09/20 13:42	1
Methyl-t-Butyl Ether (MTBE)	ND		1.0		ug/L			01/09/20 13:42	1
Toluene	ND		1.0		ug/L			01/09/20 13:42	1
Xylenes, Total	ND		3.0		ug/L			01/09/20 13:42	1
1,2-Dibromoethane	ND		1.0		ug/L			01/09/20 13:42	1
1,2-Dichloroethane	ND		0.50		ug/L			01/09/20 13:42	1
Dibromomethane	ND		1.0		ug/L			01/09/20 13:42	1
Naphthalene	ND		10		ug/L			01/09/20 13:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*80 - 129*		*01/09/20 13:42*	*1*
4-Bromofluorobenzene (Surr)	*91*		*77 - 120*		*01/09/20 13:42*	*1*
Dibromofluoromethane (Surr)	*106*		*80 - 128*		*01/09/20 13:42*	*1*
Toluene-d8 (Surr)	*99*		*80 - 120*		*01/09/20 13:42*	*1*

Client Sample ID: DUP-1
Date Collected: 12/26/19 12:00
Date Received: 12/28/19 10:30

Lab Sample ID: 570-16789-2
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		1.0		ug/L			01/09/20 14:12	1
Ethylbenzene	ND		1.0		ug/L			01/09/20 14:12	1
o-Xylene	ND		1.0		ug/L			01/09/20 14:12	1
m,p-Xylene	ND		2.0		ug/L			01/09/20 14:12	1
Methyl-t-Butyl Ether (MTBE)	ND		1.0		ug/L			01/09/20 14:12	1
Toluene	ND		1.0		ug/L			01/09/20 14:12	1
Xylenes, Total	ND		3.0		ug/L			01/09/20 14:12	1
1,2-Dibromoethane	ND		1.0		ug/L			01/09/20 14:12	1
1,2-Dichloroethane	ND		0.50		ug/L			01/09/20 14:12	1
Dibromomethane	ND		1.0		ug/L			01/09/20 14:12	1
Naphthalene	ND		10		ug/L			01/09/20 14:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*109*		*80 - 129*		*01/09/20 14:12*	*1*
4-Bromofluorobenzene (Surr)	*95*		*77 - 120*		*01/09/20 14:12*	*1*
Dibromofluoromethane (Surr)	*107*		*80 - 128*		*01/09/20 14:12*	*1*
Toluene-d8 (Surr)	*98*		*80 - 120*		*01/09/20 14:12*	*1*

Client Sample ID: TB-1
Date Collected: 12/26/19 12:00
Date Received: 12/28/19 10:30

Lab Sample ID: 570-16789-3
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		1.0		ug/L			01/09/20 13:12	1
Ethylbenzene	ND		1.0		ug/L			01/09/20 13:12	1
o-Xylene	ND		1.0		ug/L			01/09/20 13:12	1
m,p-Xylene	ND		2.0		ug/L			01/09/20 13:12	1
Methyl-t-Butyl Ether (MTBE)	ND		1.0		ug/L			01/09/20 13:12	1
Toluene	ND		1.0		ug/L			01/09/20 13:12	1

Client: GHD Services Inc.
Job ID: 570-16789-1
Project/Site: P66 Yakima / 11145929

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

Client Sample ID: TB-1
Lab Sample ID: 570-16789-3
Date Collected: 12/26/19 12:00
Matrix: Water
Date Received: 12/28/19 10:30

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Xylenes, Total	ND		3.0		ug/L			01/09/20 13:12	1
1,2-Dibromoethane	ND		1.0		ug/L			01/09/20 13:12	1
1,2-Dichloroethane	ND		0.50		ug/L			01/09/20 13:12	1
Dibromomethane	ND		1.0		ug/L			01/09/20 13:12	1
Naphthalene	ND		10		ug/L			01/09/20 13:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*109*		*80 - 129*		*01/09/20 13:12*	*1*
4-Bromofluorobenzene (Surr)	*92*		*77 - 120*		*01/09/20 13:12*	*1*
Dibromofluoromethane (Surr)	*106*		*80 - 128*		*01/09/20 13:12*	*1*
Toluene-d8 (Surr)	*99*		*80 - 120*		*01/09/20 13:12*	*1*

Client: GHD Services Inc.
Project/Site: P66 Yakima / 11145929

Job ID: 570-16789-1

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

Client Sample ID: MW-17
Date Collected: 12/26/19 11:34
Date Received: 12/28/19 10:30

Lab Sample ID: 570-16789-1
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
TPH as Gasoline (C4-C13)	ND		100		ug/L			01/09/20 14:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*87*		*38 - 134*		*01/09/20 14:59*	*1*

Client Sample ID: DUP-1
Date Collected: 12/26/19 12:00
Date Received: 12/28/19 10:30

Lab Sample ID: 570-16789-2
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
TPH as Gasoline (C4-C13)	ND		100		ug/L			01/09/20 16:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*85*		*38 - 134*		*01/09/20 16:36*	*1*

Client Sample ID: TB-1
Date Collected: 12/26/19 12:00
Date Received: 12/28/19 10:30

Lab Sample ID: 570-16789-3
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
TPH as Gasoline (C4-C13)	ND		100		ug/L			01/09/20 13:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*86*		*38 - 134*		*01/09/20 13:55*	*1*

Client: GHD Services Inc.
Job ID: 570-16789-1
Project/Site: P66 Yakima / 11145929

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

Client Sample ID: MW-17
Lab Sample ID: 570-16789-1
Date Collected: 12/26/19 11:34
Matrix: Water
Date Received: 12/28/19 10:30

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
TPH as Diesel Range	ND	H	0.093		mg/L		01/10/20 11:37	01/11/20 18:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
n-Octacosane (Surr)	*123*		*68 - 140*	*01/10/20 11:37*	*01/11/20 18:17*	*1*

Client Sample ID: DUP-1
Lab Sample ID: 570-16789-2
Date Collected: 12/26/19 12:00
Matrix: Water
Date Received: 12/28/19 10:30

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
TPH as Diesel Range	ND	H	0.093		mg/L		01/10/20 11:37	01/11/20 18:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
n-Octacosane (Surr)	*133*		*68 - 140*	*01/10/20 11:37*	*01/11/20 18:38*	*1*

Surrogate Summary

Client: GHD Services Inc.
Project/Site: P66 Yakima / 11145929

Job ID: 570-16789-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	DBFM	TOL
Lab Sample ID	Client Sample ID	(80-129)	(77-120)	(80-128)	(80-120)
570-16789-1	MW-17	108	91	106	99
570-16789-2	DUP-1	109	95	107	98
570-16789-3	TB-1	109	92	106	99
LCS 570-43394/3	Lab Control Sample	93	103	96	99
LCSD 570-43394/4	Lab Control Sample Dup	94	104	96	99
MB 570-43394/7	Method Blank	101	92	101	98

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)
TOL = Toluene-d8 (Surr)

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

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		BFB1
Lab Sample ID	Client Sample ID	(38-134)
570-16789-1	MW-17	87
570-16789-1 MS	MW-17	95
570-16789-1 MSD	MW-17	96
570-16789-2	DUP-1	85
570-16789-3	TB-1	86
LCS 570-43440/3	Lab Control Sample	93
LCSD 570-43440/4	Lab Control Sample Dup	96
MB 570-43440/5	Method Blank	85

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)

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

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		OTCSN
Lab Sample ID	Client Sample ID	(68-140)
570-16789-1	MW-17	123
570-16789-2	DUP-1	133
LCS 570-43685/2-A	Lab Control Sample	127
MB 570-43685/1-A	Method Blank	125

Surrogate Legend

OTCSN = n-Octacosane (Surr)

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 570-43394/7
Matrix: Water
Analysis Batch: 43394

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		1.0		ug/L			01/09/20 10:43	1
Ethylbenzene	ND		1.0		ug/L			01/09/20 10:43	1
o-Xylene	ND		1.0		ug/L			01/09/20 10:43	1
m,p-Xylene	ND		2.0		ug/L			01/09/20 10:43	1
Methyl-t-Butyl Ether (MTBE)	ND		1.0		ug/L			01/09/20 10:43	1
Toluene	ND		1.0		ug/L			01/09/20 10:43	1
Xylenes, Total	ND		3.0		ug/L			01/09/20 10:43	1
1,2-Dibromoethane	ND		1.0		ug/L			01/09/20 10:43	1
1,2-Dichloroethane	ND		0.50		ug/L			01/09/20 10:43	1
Dibromomethane	ND		1.0		ug/L			01/09/20 10:43	1
Naphthalene	ND		10		ug/L			01/09/20 10:43	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*80 - 129*		*01/09/20 10:43*	*1*
4-Bromofluorobenzene (Surr)	*92*		*77 - 120*		*01/09/20 10:43*	*1*
Dibromofluoromethane (Surr)	*101*		*80 - 128*		*01/09/20 10:43*	*1*
Toluene-d8 (Surr)	*98*		*80 - 120*		*01/09/20 10:43*	*1*

Lab Sample ID: LCS 570-43394/3
Matrix: Water
Analysis Batch: 43394

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Benzene			50.0	50.68		ug/L		101	78 - 120		
Ethylbenzene			50.0	56.29		ug/L		113	80 - 120		
o-Xylene			50.0	59.32		ug/L		119	80 - 125		
m,p-Xylene			100	117.6		ug/L		118	80 - 125		
Methyl-t-Butyl Ether (MTBE)			50.0	46.84		ug/L		94	77 - 120		
Toluene			50.0	53.15		ug/L		106	80 - 122		
1,2-Dibromoethane			50.0	50.90		ug/L		102	80 - 120		
1,2-Dichloroethane			50.0	51.20		ug/L		102	75 - 123		
Dibromomethane			50.0	53.34		ug/L		107	80 - 120		
Naphthalene			50.0	44.70		ug/L		89	64 - 136		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*93*		*80 - 129*
4-Bromofluorobenzene (Surr)	*103*		*77 - 120*
Dibromofluoromethane (Surr)	*96*		*80 - 128*
Toluene-d8 (Surr)	*99*		*80 - 120*

Lab Sample ID: LCSD 570-43394/4
Matrix: Water
Analysis Batch: 43394

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

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene			50.0	46.68		ug/L		93	78 - 120	8	21
Ethylbenzene			50.0	50.56		ug/L		101	80 - 120	11	20
o-Xylene			50.0	54.38		ug/L		109	80 - 125	9	20

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

Lab Sample ID: LCSD 570-43394/4
Matrix: Water
Analysis Batch: 43394

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

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
m,p-Xylene			100	105.9		ug/L		106	80 - 125	10	30
Methyl-t-Butyl Ether (MTBE)			50.0	46.99		ug/L		94	77 - 120	0	24
Toluene			50.0	48.34		ug/L		97	80 - 122	9	20
1,2-Dibromoethane			50.0	50.13		ug/L		100	80 - 120	2	30
1,2-Dichloroethane			50.0	49.05		ug/L		98	75 - 123	4	24
Dibromomethane			50.0	50.73		ug/L		101	80 - 120	5	20
Naphthalene			50.0	45.31		ug/L		91	64 - 136	1	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*94*		*80 - 129*
4-Bromofluorobenzene (Surr)	*104*		*77 - 120*
Dibromofluoromethane (Surr)	*96*		*80 - 128*
Toluene-d8 (Surr)	*99*		*80 - 120*

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

Lab Sample ID: MB 570-43440/5
Matrix: Water
Analysis Batch: 43440

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
TPH as Gasoline (C4-C13)	ND		100		ug/L			01/09/20 13:14	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*85*		*38 - 134*		*01/09/20 13:14*	*1*

Lab Sample ID: LCS 570-43440/3
Matrix: Water
Analysis Batch: 43440

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
TPH as Gasoline (C4-C13)			2000	1867		ug/L		94	78 - 120		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*93*		*38 - 134*

Lab Sample ID: LCSD 570-43440/4
Matrix: Water
Analysis Batch: 43440

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

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
TPH as Gasoline (C4-C13)			2000	1888		ug/L		95	78 - 120	1	10

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*96*		*38 - 134*

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

Lab Sample ID: 570-16789-1 MS
Matrix: Water
Analysis Batch: 43440

Client Sample ID: MW-17
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
TPH as Gasoline (C4-C13)	ND		2000	1909		ug/L		96	68 - 122		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*95*		*38 - 134*

Lab Sample ID: 570-16789-1 MSD
Matrix: Water
Analysis Batch: 43440

Client Sample ID: MW-17
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
TPH as Gasoline (C4-C13)	ND		2000	1895		ug/L		95	68 - 122	1	18

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*96*		*38 - 134*

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

Lab Sample ID: MB 570-43685/1-A
Matrix: Water
Analysis Batch: 43867

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 43685

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
TPH as Diesel Range	ND		0.10		mg/L		01/10/20 11:37	01/11/20 16:33	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
n-Octacosane (Surr)	*125*		*68 - 140*	*01/10/20 11:37*	*01/11/20 16:33*	*1*

Lab Sample ID: LCS 570-43685/2-A
Matrix: Water
Analysis Batch: 43867

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 43685

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
C10-C28			0.800	0.7088		mg/L		89	75 - 117		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
n-Octacosane (Surr)	*127*		*68 - 140*

QC Association Summary

Client: GHD Services Inc.
Project/Site: P66 Yakima / 11145929

Job ID: 570-16789-1

GC/MS VOA

Analysis Batch: 43394

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-16789-1	MW-17	Total/NA	Water	8260B	
570-16789-2	DUP-1	Total/NA	Water	8260B	
570-16789-3	TB-1	Total/NA	Water	8260B	
MB 570-43394/7	Method Blank	Total/NA	Water	8260B	
LCS 570-43394/3	Lab Control Sample	Total/NA	Water	8260B	
LCSD 570-43394/4	Lab Control Sample Dup	Total/NA	Water	8260B	

GC VOA

Analysis Batch: 43440

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-16789-1	MW-17	Total/NA	Water	NWTPH-Gx	
570-16789-2	DUP-1	Total/NA	Water	NWTPH-Gx	
570-16789-3	TB-1	Total/NA	Water	NWTPH-Gx	
MB 570-43440/5	Method Blank	Total/NA	Water	NWTPH-Gx	
LCS 570-43440/3	Lab Control Sample	Total/NA	Water	NWTPH-Gx	
LCSD 570-43440/4	Lab Control Sample Dup	Total/NA	Water	NWTPH-Gx	
570-16789-1 MS	MW-17	Total/NA	Water	NWTPH-Gx	
570-16789-1 MSD	MW-17	Total/NA	Water	NWTPH-Gx	

GC Semi VOA

Prep Batch: 43685

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-16789-1	MW-17	Total/NA	Water	3510C	
570-16789-2	DUP-1	Total/NA	Water	3510C	
MB 570-43685/1-A	Method Blank	Total/NA	Water	3510C	
LCS 570-43685/2-A	Lab Control Sample	Total/NA	Water	3510C	

Analysis Batch: 43867

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-16789-1	MW-17	Total/NA	Water	NWTPH-Dx	43685
570-16789-2	DUP-1	Total/NA	Water	NWTPH-Dx	43685
MB 570-43685/1-A	Method Blank	Total/NA	Water	NWTPH-Dx	43685
LCS 570-43685/2-A	Lab Control Sample	Total/NA	Water	NWTPH-Dx	43685

Lab Chronicle

Client: GHD Services Inc.
Project/Site: P66 Yakima / 11145929

Job ID: 570-16789-1

Client Sample ID: MW-17
Date Collected: 12/26/19 11:34
Date Received: 12/28/19 10:30

Lab Sample ID: 570-16789-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	5 mL	5 mL	43394	01/09/20 13:42	NET3	ECL 2
	Instrument ID: GCMSJJ									
Total/NA	Analysis	NWTPH-Gx		1	5 mL	5 mL	43440	01/09/20 14:59	W6MG	ECL 2
	Instrument ID: GC24									
Total/NA	Prep	3510C			540.2 mL	5 mL	43685	01/10/20 11:37	N5Y3	ECL 1
Total/NA	Analysis	NWTPH-Dx		1			43867	01/11/20 18:17	I9H5	ECL 1
	Instrument ID: GC48									

Client Sample ID: DUP-1
Date Collected: 12/26/19 12:00
Date Received: 12/28/19 10:30

Lab Sample ID: 570-16789-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	5 mL	5 mL	43394	01/09/20 14:12	NET3	ECL 2
	Instrument ID: GCMSJJ									
Total/NA	Analysis	NWTPH-Gx		1	5 mL	5 mL	43440	01/09/20 16:36	W6MG	ECL 2
	Instrument ID: GC24									
Total/NA	Prep	3510C			539.2 mL	5 mL	43685	01/10/20 11:37	N5Y3	ECL 1
Total/NA	Analysis	NWTPH-Dx		1			43867	01/11/20 18:38	I9H5	ECL 1
	Instrument ID: GC48									

Client Sample ID: TB-1
Date Collected: 12/26/19 12:00
Date Received: 12/28/19 10:30

Lab Sample ID: 570-16789-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	5 mL	5 mL	43394	01/09/20 13:12	NET3	ECL 2
	Instrument ID: GCMSJJ									
Total/NA	Analysis	NWTPH-Gx		1	5 mL	5 mL	43440	01/09/20 13:55	W6MG	ECL 2
	Instrument ID: GC24									

Laboratory References:

ECL 1 = Eurofins Calscience LLC Lincoln, 7440 Lincoln Way, Garden Grove, CA 92841, TEL (714)895-5494

ECL 2 = Eurofins Calscience LLC Lampson, 7445 Lampson Ave, Garden Grove, CA 92841, TEL (714)895-5494

Accreditation/Certification Summary

Client: GHD Services Inc.
Job ID: 570-16789-1
Project/Site: P66 Yakima / 11145929

Laboratory: Eurofins Calscience LLC

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

Authority	Program	Identification Number	Expiration Date
Arizona	State	AZ0781	03-13-20
California	Los Angeles County Sanitation Districts	10109	09-29-20
California	SCAQMD LAP	17LA0919	11-30-20
California	State	2944	09-29-20
Hawaii	State	<cert No.>	07-02-20
Nevada	State	CA00111	07-31-20
Oregon	NELAP	CA300001	01-29-20

Method Summary

Client: GHD Services Inc.
Project/Site: P66 Yakima / 11145929

Job ID: 570-16789-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	ECL 2
NWTPH-Gx	Northwest - Volatile Petroleum Products (GC)	NWTPH	ECL 2
NWTPH-Dx	Northwest - Semi-Volatile Petroleum Products (GC)	NWTPH	ECL 1
3510C	Liquid-Liquid Extraction (Separatory Funnel)	SW846	ECL 1
5030C	Purge and Trap	SW846	ECL 2

Protocol References:

NWTPH = Northwest Total Petroleum Hydrocarbon

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

ECL 1 = Eurofins Calscience LLC Lincoln, 7440 Lincoln Way, Garden Grove, CA 92841, TEL (714)895-5494

ECL 2 = Eurofins Calscience LLC Lampson, 7445 Lampson Ave, Garden Grove, CA 92841, TEL (714)895-5494

Sample Summary

Client: GHD Services Inc.
Project/Site: P66 Yakima / 11145929

Job ID: 570-16789-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
570-16789-1	MW-17	Water	12/26/19 11:34	12/28/19 10:30	
570-16789-2	DUP-1	Water	12/26/19 12:00	12/28/19 10:30	
570-16789-3	TB-1	Water	12/26/19 12:00	12/28/19 10:30	

16789

1/13/2020

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570-16789 Chain of Custody

CHAIN OF CUSTODY RECORD

DATE: 12/26/19

PAGE: 1 OF 1

7440 Lincoln Way, Garden Grove, CA 92841-1427 • (714) 895-5494
For courier service / sample drop off information, contact us26_sales@eurofinsus.com or call us.

LABORATORY CLIENT: GHD Services

ADDRESS: 732 Broadway suite 301

CITY: Tacoma STATE: WA ZIP: 98402

TEL: 253-507-6217 E-MAIL: matthew.davis@ghd.com

CLIENT PROJECT NAME / NUMBER: 920 N 6th Ave Yakima WA

P.O. NO.:

PROJECT CONTACT: Matthew Davis

SAMPLER(S): (PRINT) Foster Koetzel

TURNAROUND TIME (Rush surcharges may apply to any TAT not "STANDARD"):

☐ SAME DAY ☐ 24 HR ☐ 48 HR ☐ 72 HR ☐ 5 DAYS ☒ STANDARD

☐ COELT EDF GLOBAL ID: LOG CODE:

SPECIAL INSTRUCTIONS:

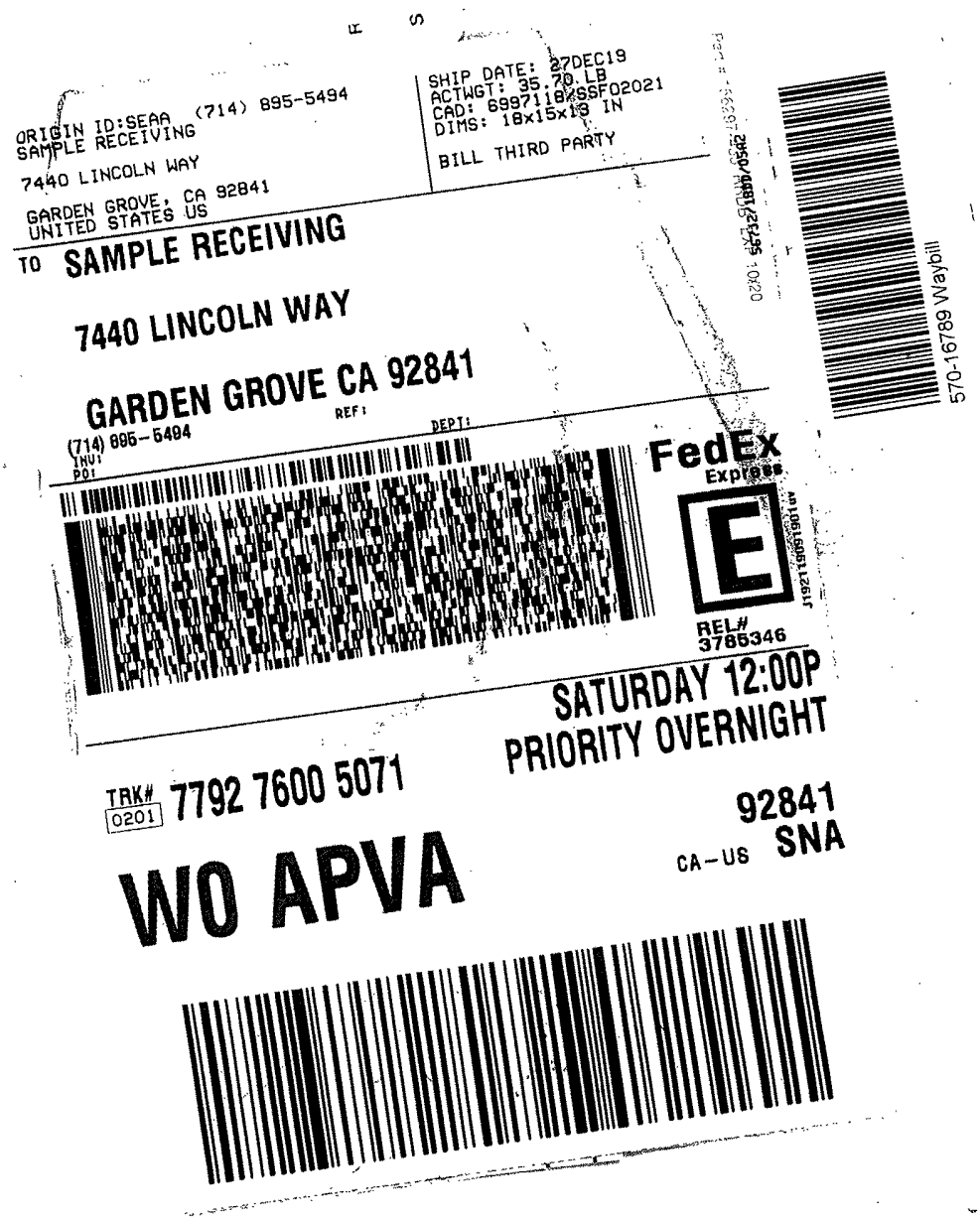
REQUESTED ANALYSES

Please check box or fill in blank as needed.

LAB USE ONLY	SAMPLE ID	SAMPLING DATE	SAMPLING TIME	MATRIX	NO. OF CONT.	Unpreserved	Preserved	Field Filtered	TPH(g) ☐ GRO	TPH(d) ☐ DRO	TPH ☐ C6-C36 ☐ C6-C44	TPH ____	BTEX / MTBE ☒ 8260 ☐ ____	VOCs (8260)	Oxygenates (8260)	Prep (5035): ☐ En Core ☐ Terra Core	SVOCs (8270)	Pesticides (8081)	PCBs (8082)	PAHs: ☐ 8270 ☐ 8270 SIM	T22 Metals: ☐ 6010/747X ☐ 6020/747X	Cr(VI): ☐ 7196 ☐ 7199 ☐ 218.6				
	MW-17	12/26/19	1134	GW	8	2	6		X	X			X												
	DUP-1	12/26/19	1200	GW	8	2	6		X	X			X												
	TB-1	12/26/19	1200	GW	3 2		2		X				X												

Relinquished by: (Signature)	Received by: (Signature/Affiliation) Shipped via Fed EX	Date: 12/26/19	Time: 1900
Relinquished by: (Signature) (fed ex)	Received by: (Signature/Affiliation) Maribel EC	Date: 12/28/19	Time: 10:30
Relinquished by: (Signature)	Received by: (Signature/Affiliation)	Date:	Time:

06/02/14 Revision


ORIGIN ID:SEAA (714) 895-5494
SAMPLE RECEIVING
7440 LINCOLN WAY
GARDEN GROVE, CA 92841
UNITED STATES US
SHIP DATE: 27DEC19
ACTWGT: 35.70 LB
CAD: 6997118/SSFO2021
DIMS: 18x15x18 IN
BILL THIRD PARTY
TO SAMPLE RECEIVING
7440 LINCOLN WAY
GARDEN GROVE CA 92841
(714) 895-5494
REF:
DEPT:
INV:
PO:
FedEx
Express
REL#
3785346
SATURDAY 12:00P
PRIORITY OVERNIGHT
TRK# 7792 7600 5071
0201
92841
CA-US SNA
WO APVA
570-16789 Waybill

Login Sample Receipt Checklist

Client: GHD Services Inc.

Job Number: 570-16789-1

Login Number: 16789
List Number: 1
Creator: Mindin, Phyo

List Source: Eurofins Calscience

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

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ANALYTICAL REPORT

Eurofins Calscience LLC
7440 Lincoln Way
Garden Grove, CA 92841
Tel: (714)895-5494

Laboratory Job ID: 570-31506-1
Client Project/Site: P66 Yakima / 11145929

For:
GHD Services Inc.
20818 44th Ave W
Suite 190
Lynnwood, Washington 98036

Attn: Heather Gadwa

Vik Patel

Authorized for release by:
6/25/2020 4:30:50 PM

Vikas Patel, Project Manager I
(714)895-5494
vikaspatel@eurofinsus.com

Table of Contents

Definitions/Glossary

Client: GHD Services Inc.
Project/Site: P66 Yakima / 11145929

Job ID: 570-31506-1

Qualifiers

GC VOA

Qualifier	Qualifier Description
Z	The chromatographic response does not resemble a typical fuel pattern.

GC Semi VOA

Qualifier	Qualifier Description
Z	The chromatographic response does not resemble a typical fuel pattern.

Glossary

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

Job ID: 570-31506-1

Laboratory: Eurofins Calscience LLC

Narrative

Job Narrative
570-31506-1

Comments
No additional comments.

Receipt
The samples were received on 6/20/2020 12:00 PM; the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 3.4º C.

Receipt Exceptions

A trip blank was submitted for analysis with these samples; however, it was not listed on the Chain of Custody (COC).

GC/MS VOA
Method 8260B: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with analytical batch 570-77149.

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

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

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

Organic Prep
Method 3510C: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 570-77494. LCS/LCSD was performed to meet QC requirement.

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

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

Detection Summary

Client: GHD Services Inc.
Project/Site: P66 Yakima / 11145929

Job ID: 570-31506-1

Client Sample ID: GW-061720-JRL-MW15 — Lab Sample ID: 570-31506-1

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Ethylbenzene	260		4.0		ug/L	4		8260B	Total/NA
o-Xylene	8.3		4.0		ug/L	4		8260B	Total/NA
m,p-Xylene	100		8.0		ug/L	4		8260B	Total/NA
Toluene	32		4.0		ug/L	4		8260B	Total/NA
Xylenes, Total	110		12		ug/L	4		8260B	Total/NA
Benzene - RA	960		25		ug/L	50		8260B	Total/NA
TPH as Gasoline (C4-C13)	3700	Z	100		ug/L	1		NWTPH-Gx	Total/NA
TPH as Diesel Range	6.5	Z	1.1		mg/L	10		NWTPH-Dx	Total/NA

Client Sample ID: GW-061720-JRL-MW17 — Lab Sample ID: 570-31506-2

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Benzene	1.3		0.50		ug/L	1		8260B	Total/NA

Client Sample ID: GW-061720-JRL-MW19 — Lab Sample ID: 570-31506-3

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
TPH as Diesel Range	0.12	Z	0.12		mg/L	1		NWTPH-Dx	Total/NA

Client Sample ID: DUP — Lab Sample ID: 570-31506-4

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Ethylbenzene	260		4.0		ug/L	4		8260B	Total/NA
o-Xylene	8.6		4.0		ug/L	4		8260B	Total/NA
m,p-Xylene	98		8.0		ug/L	4		8260B	Total/NA
Toluene	33		4.0		ug/L	4		8260B	Total/NA
Xylenes, Total	110		12		ug/L	4		8260B	Total/NA
Benzene - RA	1000		25		ug/L	50		8260B	Total/NA
TPH as Gasoline (C4-C13)	3600	Z	100		ug/L	1		NWTPH-Gx	Total/NA
TPH as Diesel Range	7.3	Z	1.1		mg/L	10		NWTPH-Dx	Total/NA

This Detection Summary does not include radiochemical test results.

Method: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: GW-061720-JRL-MW15
Date Collected: 06/18/20 11:05
Date Received: 06/20/20 12:00

Lab Sample ID: 570-31506-1
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Ethylbenzene	**260**		4.0		ug/L			06/23/20 18:24	4
o-Xylene	**8.3**		4.0		ug/L			06/23/20 18:24	4
m,p-Xylene	**100**		8.0		ug/L			06/23/20 18:24	4
Methyl-t-Butyl Ether (MTBE)	ND		4.0		ug/L			06/23/20 18:24	4
Toluene	**32**		4.0		ug/L			06/23/20 18:24	4
Xylenes, Total	**110**		12		ug/L			06/23/20 18:24	4
1,2-Dibromoethane	ND		4.0		ug/L			06/23/20 18:24	4
1,2-Dichloroethane	ND		2.0		ug/L			06/23/20 18:24	4
Naphthalene	ND		40		ug/L			06/23/20 18:24	4

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*80 - 129*		*06/23/20 18:24*	*4*
4-Bromofluorobenzene (Surr)	*97*		*77 - 120*		*06/23/20 18:24*	*4*
Dibromofluoromethane (Surr)	*105*		*80 - 128*		*06/23/20 18:24*	*4*
Toluene-d8 (Surr)	*91*		*80 - 120*		*06/23/20 18:24*	*4*

Client Sample ID: GW-061720-JRL-MW17
Date Collected: 06/18/20 10:25
Date Received: 06/20/20 12:00

Lab Sample ID: 570-31506-2
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	**1.3**		0.50		ug/L			06/24/20 03:29	1
Ethylbenzene	ND		1.0		ug/L			06/24/20 03:29	1
o-Xylene	ND		1.0		ug/L			06/24/20 03:29	1
m,p-Xylene	ND		2.0		ug/L			06/24/20 03:29	1
Methyl-t-Butyl Ether (MTBE)	ND		1.0		ug/L			06/24/20 03:29	1
Toluene	ND		1.0		ug/L			06/24/20 03:29	1
Xylenes, Total	ND		3.0		ug/L			06/24/20 03:29	1
1,2-Dibromoethane	ND		1.0		ug/L			06/24/20 03:29	1
1,2-Dichloroethane	ND		0.50		ug/L			06/24/20 03:29	1
Naphthalene	ND		10		ug/L			06/24/20 03:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*80 - 129*		*06/24/20 03:29*	*1*
4-Bromofluorobenzene (Surr)	*93*		*77 - 120*		*06/24/20 03:29*	*1*
Dibromofluoromethane (Surr)	*107*		*80 - 128*		*06/24/20 03:29*	*1*
Toluene-d8 (Surr)	*101*		*80 - 120*		*06/24/20 03:29*	*1*

Client Sample ID: GW-061720-JRL-MW19
Date Collected: 06/18/20 11:50
Date Received: 06/20/20 12:00

Lab Sample ID: 570-31506-3
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.50		ug/L			06/24/20 03:58	1
Ethylbenzene	ND		1.0		ug/L			06/24/20 03:58	1
o-Xylene	ND		1.0		ug/L			06/24/20 03:58	1
m,p-Xylene	ND		2.0		ug/L			06/24/20 03:58	1
Methyl-t-Butyl Ether (MTBE)	ND		1.0		ug/L			06/24/20 03:58	1
Toluene	ND		1.0		ug/L			06/24/20 03:58	1
Xylenes, Total	ND		3.0		ug/L			06/24/20 03:58	1
1,2-Dibromoethane	ND		1.0		ug/L			06/24/20 03:58	1
1,2-Dichloroethane	ND		0.50		ug/L			06/24/20 03:58	1

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

Client Sample ID: GW-061720-JRL-MW19
Date Collected: 06/18/20 11:50
Date Received: 06/20/20 12:00

Lab Sample ID: 570-31506-3
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		10		ug/L			06/24/20 03:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*80 - 129*		*06/24/20 03:58*	*1*
4-Bromofluorobenzene (Surr)	*94*		*77 - 120*		*06/24/20 03:58*	*1*
Dibromofluoromethane (Surr)	*106*		*80 - 128*		*06/24/20 03:58*	*1*
Toluene-d8 (Surr)	*101*		*80 - 120*		*06/24/20 03:58*	*1*

Client Sample ID: DUP
Date Collected: 06/18/20 00:00
Date Received: 06/20/20 12:00

Lab Sample ID: 570-31506-4
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Ethylbenzene	**260**		4.0		ug/L			06/23/20 18:52	4
o-Xylene	**8.6**		4.0		ug/L			06/23/20 18:52	4
m,p-Xylene	**98**		8.0		ug/L			06/23/20 18:52	4
Methyl-t-Butyl Ether (MTBE)	ND		4.0		ug/L			06/23/20 18:52	4
Toluene	**33**		4.0		ug/L			06/23/20 18:52	4
Xylenes, Total	**110**		12		ug/L			06/23/20 18:52	4
1,2-Dibromoethane	ND		4.0		ug/L			06/23/20 18:52	4
1,2-Dichloroethane	ND		2.0		ug/L			06/23/20 18:52	4
Naphthalene	ND		40		ug/L			06/23/20 18:52	4

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*80 - 129*		*06/23/20 18:52*	*4*
4-Bromofluorobenzene (Surr)	*98*		*77 - 120*		*06/23/20 18:52*	*4*
Dibromofluoromethane (Surr)	*107*		*80 - 128*		*06/23/20 18:52*	*4*
Toluene-d8 (Surr)	*99*		*80 - 120*		*06/23/20 18:52*	*4*

Method: 8260B - Volatile Organic Compounds (GC/MS) - RA

Client Sample ID: GW-061720-JRL-MW15
Date Collected: 06/18/20 11:05
Date Received: 06/20/20 12:00

Lab Sample ID: 570-31506-1
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	**960**		25		ug/L			06/24/20 16:31	50

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*80 - 129*		*06/24/20 16:31*	*50*
4-Bromofluorobenzene (Surr)	*91*		*77 - 120*		*06/24/20 16:31*	*50*
Dibromofluoromethane (Surr)	*100*		*80 - 128*		*06/24/20 16:31*	*50*
Toluene-d8 (Surr)	*99*		*80 - 120*		*06/24/20 16:31*	*50*

Client Sample ID: DUP
Date Collected: 06/18/20 00:00
Date Received: 06/20/20 12:00

Lab Sample ID: 570-31506-4
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	**1000**		25		ug/L			06/24/20 17:00	50

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*80 - 129*		*06/24/20 17:00*	*50*
4-Bromofluorobenzene (Surr)	*93*		*77 - 120*		*06/24/20 17:00*	*50*
Dibromofluoromethane (Surr)	*99*		*80 - 128*		*06/24/20 17:00*	*50*
Toluene-d8 (Surr)	*99*		*80 - 120*		*06/24/20 17:00*	*50*

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

Client Sample ID: GW-061720-JRL-MW15
Date Collected: 06/18/20 11:05
Date Received: 06/20/20 12:00

Lab Sample ID: 570-31506-1
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
TPH as Gasoline (C4-C13)	**3700**	**Z**	100		ug/L			06/22/20 23:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*119*		*38 - 134*		*06/22/20 23:09*	*1*

Client Sample ID: GW-061720-JRL-MW17
Date Collected: 06/18/20 10:25
Date Received: 06/20/20 12:00

Lab Sample ID: 570-31506-2
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
TPH as Gasoline (C4-C13)	ND		100		ug/L			06/23/20 00:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*84*		*38 - 134*		*06/23/20 00:20*	*1*

Client Sample ID: GW-061720-JRL-MW19
Date Collected: 06/18/20 11:50
Date Received: 06/20/20 12:00

Lab Sample ID: 570-31506-3
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
TPH as Gasoline (C4-C13)	ND		100		ug/L			06/23/20 00:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*84*		*38 - 134*		*06/23/20 00:44*	*1*

Client Sample ID: DUP
Date Collected: 06/18/20 00:00
Date Received: 06/20/20 12:00

Lab Sample ID: 570-31506-4
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
TPH as Gasoline (C4-C13)	**3600**	**Z**	100		ug/L			06/23/20 01:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*118*		*38 - 134*		*06/23/20 01:08*	*1*

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

Client Sample ID: GW-061720-JRL-MW15
Date Collected: 06/18/20 11:05
Date Received: 06/20/20 12:00

Lab Sample ID: 570-31506-1
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
TPH as Diesel Range	**6.5**	**Z**	1.1		mg/L		06/24/20 12:16	06/25/20 13:24	10
TPH as Motor Oil Range	ND		0.11		mg/L		06/24/20 12:16	06/25/20 11:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
n-Octacosane (Surr)	*123*		*68 - 140*	*06/24/20 12:16*	*06/25/20 11:59*	*1*
n-Octacosane (Surr)	*114*		*68 - 140*	*06/24/20 12:16*	*06/25/20 13:24*	*10*

Client Sample ID: GW-061720-JRL-MW17
Date Collected: 06/18/20 10:25
Date Received: 06/20/20 12:00

Lab Sample ID: 570-31506-2
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
TPH as Diesel Range	ND		0.11		mg/L		06/24/20 12:16	06/25/20 12:20	1
TPH as Motor Oil Range	ND		0.11		mg/L		06/24/20 12:16	06/25/20 12:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
n-Octacosane (Surr)	*129*		*68 - 140*	*06/24/20 12:16*	*06/25/20 12:20*	*1*

Client Sample ID: GW-061720-JRL-MW19
Date Collected: 06/18/20 11:50
Date Received: 06/20/20 12:00

Lab Sample ID: 570-31506-3
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
TPH as Diesel Range	**0.12**	**Z**	0.12		mg/L		06/24/20 12:16	06/25/20 12:42	1
TPH as Motor Oil Range	ND		0.12		mg/L		06/24/20 12:16	06/25/20 12:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
n-Octacosane (Surr)	*113*		*68 - 140*	*06/24/20 12:16*	*06/25/20 12:42*	*1*

Client Sample ID: DUP
Date Collected: 06/18/20 00:00
Date Received: 06/20/20 12:00

Lab Sample ID: 570-31506-4
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
TPH as Diesel Range	**7.3**	**Z**	1.1		mg/L		06/24/20 12:16	06/25/20 13:46	10
TPH as Motor Oil Range	ND		0.11		mg/L		06/24/20 12:16	06/25/20 13:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
n-Octacosane (Surr)	*126*		*68 - 140*	*06/24/20 12:16*	*06/25/20 13:03*	*1*
n-Octacosane (Surr)	*110*		*68 - 140*	*06/24/20 12:16*	*06/25/20 13:46*	*10*

Surrogate Summary

Client: GHD Services Inc.
Project/Site: P66 Yakima / 11145929

Job ID: 570-31506-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	DBFM	TOL
Lab Sample ID	Client Sample ID	(80-129)	(77-120)	(80-128)	(80-120)
570-31506-1	GW-061720-JRL-MW15	105	97	105	91
570-31506-1 - RA	GW-061720-JRL-MW15	95	91	100	99
570-31506-2	GW-061720-JRL-MW17	105	93	107	101
570-31506-3	GW-061720-JRL-MW19	106	94	106	101
570-31506-4	DUP	104	98	107	99
570-31506-4 - RA	DUP	95	93	99	99
570-31550-B-1 MS	Matrix Spike	92	100	95	98
570-31550-B-1 MSD	Matrix Spike Duplicate	91	98	95	98
LCS 570-77149/3	Lab Control Sample	102	96	106	102
LCS 570-77306/4	Lab Control Sample	98	100	101	100
LCS 570-77379/3	Lab Control Sample	90	97	95	97
LCSD 570-77149/4	Lab Control Sample Dup	107	98	107	96
LCSD 570-77306/5	Lab Control Sample Dup	96	99	99	101
LCSD 570-77379/4	Lab Control Sample Dup	89	98	95	97
MB 570-77149/7	Method Blank	103	99	103	101
MB 570-77306/10	Method Blank	99	96	99	101
MB 570-77379/7	Method Blank	94	91	99	99

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)
TOL = Toluene-d8 (Surr)

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: TCLP

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	DBFM	TOL
Lab Sample ID	Client Sample ID	(80-129)	(77-120)	(80-128)	(80-120)
570-31455-J-2-A MS	Matrix Spike	98	98	101	100
570-31455-J-2-A MSD	Matrix Spike Duplicate	98	99	100	101

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)
TOL = Toluene-d8 (Surr)

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

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		BFB1
Lab Sample ID	Client Sample ID	(38-134)
570-31506-1	GW-061720-JRL-MW15	119
570-31506-1 MS	GW-061720-JRL-MW15	124
570-31506-1 MSD	GW-061720-JRL-MW15	125
570-31506-2	GW-061720-JRL-MW17	84
570-31506-3	GW-061720-JRL-MW19	84
570-31506-4	DUP	118

Surrogate Summary

Client: GHD Services Inc. Job ID: 570-31506-1
Project/Site: P66 Yakima / 11145929

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

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
Lab Sample ID	Client Sample ID	BFB1 (38-134)
LCS 570-76920/6	Lab Control Sample	91
LCSD 570-76920/7	Lab Control Sample Dup	92
MB 570-76920/8	Method Blank	83

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)

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

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
Lab Sample ID	Client Sample ID	OTCSN (68-140)
570-31506-1	GW-061720-JRL-MW15	123
570-31506-1	GW-061720-JRL-MW15	114
570-31506-2	GW-061720-JRL-MW17	129
570-31506-3	GW-061720-JRL-MW19	113
570-31506-4	DUP	126
570-31506-4	DUP	110
LCS 570-77494/2-A	Lab Control Sample	116
LCSD 570-77494/3-A	Lab Control Sample Dup	114
MB 570-77494/1-A	Method Blank	100

Surrogate Legend

OTCSN = n-Octacosane (Surr)

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 570-77149/7
Matrix: Water
Analysis Batch: 77149

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.50		ug/L			06/23/20 11:00	1
Ethylbenzene	ND		1.0		ug/L			06/23/20 11:00	1
o-Xylene	ND		1.0		ug/L			06/23/20 11:00	1
m,p-Xylene	ND		2.0		ug/L			06/23/20 11:00	1
Methyl-t-Butyl Ether (MTBE)	ND		1.0		ug/L			06/23/20 11:00	1
Toluene	ND		1.0		ug/L			06/23/20 11:00	1
Xylenes, Total	ND		3.0		ug/L			06/23/20 11:00	1
1,2-Dibromoethane	ND		1.0		ug/L			06/23/20 11:00	1
1,2-Dichloroethane	ND		0.50		ug/L			06/23/20 11:00	1
Naphthalene	ND		10		ug/L			06/23/20 11:00	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*80 - 129*		*06/23/20 11:00*	*1*
4-Bromofluorobenzene (Surr)	*99*		*77 - 120*		*06/23/20 11:00*	*1*
Dibromofluoromethane (Surr)	*103*		*80 - 128*		*06/23/20 11:00*	*1*
Toluene-d8 (Surr)	*101*		*80 - 120*		*06/23/20 11:00*	*1*

Lab Sample ID: LCS 570-77149/3
Matrix: Water
Analysis Batch: 77149

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Benzene			50.0	55.05		ug/L		110	78 - 120		
Ethylbenzene			50.0	50.61		ug/L		101	80 - 120		
o-Xylene			50.0	49.34		ug/L		99	80 - 125		
m,p-Xylene			100	98.60		ug/L		99	80 - 125		
Methyl-t-Butyl Ether (MTBE)			50.0	43.59		ug/L		87	77 - 120		
Toluene			50.0	51.37		ug/L		103	80 - 122		
1,2-Dibromoethane			50.0	51.63		ug/L		103	80 - 120		
1,2-Dichloroethane			50.0	54.55		ug/L		109	75 - 123		
Naphthalene			50.0	55.33		ug/L		111	64 - 136		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*102*		*80 - 129*
4-Bromofluorobenzene (Surr)	*96*		*77 - 120*
Dibromofluoromethane (Surr)	*106*		*80 - 128*
Toluene-d8 (Surr)	*102*		*80 - 120*

Lab Sample ID: LCSD 570-77149/4
Matrix: Water
Analysis Batch: 77149

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

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene			50.0	49.19		ug/L		98	78 - 120	11	21
Ethylbenzene			50.0	48.58		ug/L		97	80 - 120	4	20
o-Xylene			50.0	47.82		ug/L		96	80 - 125	3	20
m,p-Xylene			100	96.59		ug/L		97	80 - 125	2	30
Methyl-t-Butyl Ether (MTBE)			50.0	42.61		ug/L		85	77 - 120	2	24

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

Lab Sample ID: LCSD 570-77149/4
Matrix: Water
Analysis Batch: 77149

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

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Toluene			50.0	45.97		ug/L		92	80 - 122	11	20
1,2-Dibromoethane			50.0	51.42		ug/L		103	80 - 120	0	30
1,2-Dichloroethane			50.0	49.32		ug/L		99	75 - 123	10	24
Naphthalene			50.0	53.73		ug/L		107	64 - 136	3	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*107*		*80 - 129*
4-Bromofluorobenzene (Surr)	*98*		*77 - 120*
Dibromofluoromethane (Surr)	*107*		*80 - 128*
Toluene-d8 (Surr)	*96*		*80 - 120*

Lab Sample ID: MB 570-77306/10
Matrix: Water
Analysis Batch: 77306

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.50		ug/L			06/23/20 23:08	1
Ethylbenzene	ND		1.0		ug/L			06/23/20 23:08	1
o-Xylene	ND		1.0		ug/L			06/23/20 23:08	1
m,p-Xylene	ND		2.0		ug/L			06/23/20 23:08	1
Methyl-t-Butyl Ether (MTBE)	ND		1.0		ug/L			06/23/20 23:08	1
Toluene	ND		1.0		ug/L			06/23/20 23:08	1
Xylenes, Total	ND		3.0		ug/L			06/23/20 23:08	1
1,2-Dibromoethane	ND		1.0		ug/L			06/23/20 23:08	1
1,2-Dichloroethane	ND		0.50		ug/L			06/23/20 23:08	1
Naphthalene	ND		10		ug/L			06/23/20 23:08	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*80 - 129*		*06/23/20 23:08*	*1*
4-Bromofluorobenzene (Surr)	*96*		*77 - 120*		*06/23/20 23:08*	*1*
Dibromofluoromethane (Surr)	*99*		*80 - 128*		*06/23/20 23:08*	*1*
Toluene-d8 (Surr)	*101*		*80 - 120*		*06/23/20 23:08*	*1*

Lab Sample ID: LCS 570-77306/4
Matrix: Water
Analysis Batch: 77306

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene			50.0	48.72		ug/L		97	78 - 120
Ethylbenzene			50.0	49.93		ug/L		100	80 - 120
o-Xylene			50.0	52.66		ug/L		105	80 - 125
m,p-Xylene			100	100.2		ug/L		100	80 - 125
Methyl-t-Butyl Ether (MTBE)			50.0	47.58		ug/L		95	77 - 120
Toluene			50.0	48.36		ug/L		97	80 - 122
1,2-Dibromoethane			50.0	53.09		ug/L		106	80 - 120
1,2-Dichloroethane			50.0	49.26		ug/L		99	75 - 123
Naphthalene			50.0	52.79		ug/L		106	64 - 136

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

Lab Sample ID: LCS 570-77306/4
Matrix: Water
Analysis Batch: 77306

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

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*98*		*80 - 129*
4-Bromofluorobenzene (Surr)	*100*		*77 - 120*
Dibromofluoromethane (Surr)	*101*		*80 - 128*
Toluene-d8 (Surr)	*100*		*80 - 120*

Lab Sample ID: LCSD 570-77306/5
Matrix: Water
Analysis Batch: 77306

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

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene			50.0	50.08		ug/L		100	78 - 120	3	21
Ethylbenzene			50.0	51.54		ug/L		103	80 - 120	3	20
o-Xylene			50.0	53.79		ug/L		108	80 - 125	2	20
m,p-Xylene			100	102.6		ug/L		103	80 - 125	2	30
Methyl-t-Butyl Ether (MTBE)			50.0	47.15		ug/L		94	77 - 120	1	24
Toluene			50.0	50.12		ug/L		100	80 - 122	4	20
1,2-Dibromoethane			50.0	53.67		ug/L		107	80 - 120	1	30
1,2-Dichloroethane			50.0	50.97		ug/L		102	75 - 123	3	24
Naphthalene			50.0	53.13		ug/L		106	64 - 136	1	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*80 - 129*
4-Bromofluorobenzene (Surr)	*99*		*77 - 120*
Dibromofluoromethane (Surr)	*99*		*80 - 128*
Toluene-d8 (Surr)	*101*		*80 - 120*

Lab Sample ID: MB 570-77379/7
Matrix: Water
Analysis Batch: 77379

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.50		ug/L			06/24/20 11:37	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*80 - 129*		*06/24/20 11:37*	*1*
4-Bromofluorobenzene (Surr)	*91*		*77 - 120*		*06/24/20 11:37*	*1*
Dibromofluoromethane (Surr)	*99*		*80 - 128*		*06/24/20 11:37*	*1*
Toluene-d8 (Surr)	*99*		*80 - 120*		*06/24/20 11:37*	*1*

Lab Sample ID: LCS 570-77379/3
Matrix: Water
Analysis Batch: 77379

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Benzene			50.0	48.78		ug/L		98	78 - 120		

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

Lab Sample ID: LCS 570-77379/3
Matrix: Water
Analysis Batch: 77379

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

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	90		80 - 129
4-Bromofluorobenzene (Surr)	97		77 - 120
Dibromofluoromethane (Surr)	95		80 - 128
Toluene-d8 (Surr)	97		80 - 120

Lab Sample ID: LCSD 570-77379/4
Matrix: Water
Analysis Batch: 77379

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

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene			50.0	44.67		ug/L		89	78 - 120	9	21

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	89		80 - 129
4-Bromofluorobenzene (Surr)	98		77 - 120
Dibromofluoromethane (Surr)	95		80 - 128
Toluene-d8 (Surr)	97		80 - 120

Lab Sample ID: 570-31550-B-1 MS
Matrix: Water
Analysis Batch: 77379

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Benzene	ND		100	103.0		ug/L		103	75 - 125		

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	92		80 - 129
4-Bromofluorobenzene (Surr)	100		77 - 120
Dibromofluoromethane (Surr)	95		80 - 128
Toluene-d8 (Surr)	98		80 - 120

Lab Sample ID: 570-31550-B-1 MSD
Matrix: Water
Analysis Batch: 77379

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	ND		100	101.2		ug/L		101	75 - 125	2	20

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	91		80 - 129
4-Bromofluorobenzene (Surr)	98		77 - 120
Dibromofluoromethane (Surr)	95		80 - 128
Toluene-d8 (Surr)	98		80 - 120

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

Lab Sample ID: 570-31455-J-2-A MS
Matrix: Water
Analysis Batch: 77306

Client Sample ID: Matrix Spike
Prep Type: TCLP

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	ND		5000	5276		ug/L		106	75 - 125
Ethylbenzene	ND		5000	5288		ug/L		106	75 - 125
o-Xylene	ND		5000	5544		ug/L		111	75 - 136
m,p-Xylene	ND		10000	10560		ug/L		106	75 - 133
Methyl-t-Butyl Ether (MTBE)	ND		5000	4679		ug/L		94	75 - 128
Toluene	ND		5000	5171		ug/L		103	75 - 125
1,2-Dibromoethane	ND		5000	5343		ug/L		107	75 - 125
1,2-Dichloroethane	ND		5000	5162		ug/L		103	75 - 125
Naphthalene	ND		5000	5037		ug/L		101	71 - 131

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*98*		*80 - 129*
4-Bromofluorobenzene (Surr)	*98*		*77 - 120*
Dibromofluoromethane (Surr)	*101*		*80 - 128*
Toluene-d8 (Surr)	*100*		*80 - 120*

Lab Sample ID: 570-31455-J-2-A MSD
Matrix: Water
Analysis Batch: 77306

Client Sample ID: Matrix Spike Duplicate
Prep Type: TCLP

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	ND		5000	5178		ug/L		104	75 - 125	2	20
Ethylbenzene	ND		5000	5248		ug/L		105	75 - 125	1	20
o-Xylene	ND		5000	5448		ug/L		109	75 - 136	2	20
m,p-Xylene	ND		10000	10450		ug/L		105	75 - 133	1	20
Methyl-t-Butyl Ether (MTBE)	ND		5000	4714		ug/L		94	75 - 128	1	20
Toluene	ND		5000	5044		ug/L		101	75 - 125	2	20
1,2-Dibromoethane	ND		5000	5391		ug/L		108	75 - 125	1	20
1,2-Dichloroethane	ND		5000	5111		ug/L		102	75 - 125	1	20
Naphthalene	ND		5000	5203		ug/L		104	71 - 131	3	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*98*		*80 - 129*
4-Bromofluorobenzene (Surr)	*99*		*77 - 120*
Dibromofluoromethane (Surr)	*100*		*80 - 128*
Toluene-d8 (Surr)	*101*		*80 - 120*

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

Lab Sample ID: MB 570-76920/8
Matrix: Water
Analysis Batch: 76920

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
TPH as Gasoline (C4-C13)	ND		100		ug/L			06/22/20 13:40	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*83*		*38 - 134*		*06/22/20 13:40*	*1*

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

Lab Sample ID: LCS 570-76920/6
Matrix: Water
Analysis Batch: 76920

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
TPH as Gasoline (C4-C13)			2000	2011		ug/L		101	78 - 120		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*91*		*38 - 134*

Lab Sample ID: LCSD 570-76920/7
Matrix: Water
Analysis Batch: 76920

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

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
TPH as Gasoline (C4-C13)			2000	2021		ug/L		101	78 - 120	0	10

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*92*		*38 - 134*

Lab Sample ID: 570-31506-1 MS
Matrix: Water
Analysis Batch: 76920

Client Sample ID: GW-061720-JRL-MW15
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
TPH as Gasoline (C4-C13)	3700	Z	2000	5259		ug/L		80	68 - 122		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*124*		*38 - 134*

Lab Sample ID: 570-31506-1 MSD
Matrix: Water
Analysis Batch: 76920

Client Sample ID: GW-061720-JRL-MW15
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
TPH as Gasoline (C4-C13)	3700	Z	2000	5391		ug/L		86	68 - 122	2	18

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*125*		*38 - 134*

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

Lab Sample ID: MB 570-77494/1-A
Matrix: Water
Analysis Batch: 77684

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 77494

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
TPH as Diesel Range	ND		0.10		mg/L		06/24/20 12:16	06/25/20 09:51	1
TPH as Motor Oil Range	ND		0.10		mg/L		06/24/20 12:16	06/25/20 09:51	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
n-Octacosane (Surr)	*100*		*68 - 140*	*06/24/20 12:16*	*06/25/20 09:51*	*1*

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

Lab Sample ID: LCS 570-77494/2-A
Matrix: Water
Analysis Batch: 77684

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 77494

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
C10-C28			0.800	0.7919		mg/L		99	75 - 117		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
n-Octacosane (Surr)	*116*		*68 - 140*

Lab Sample ID: LCSD 570-77494/3-A
Matrix: Water
Analysis Batch: 77684

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 77494

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
C10-C28			0.800	0.7936		mg/L		99	75 - 117	0	13

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
n-Octacosane (Surr)	*114*		*68 - 140*

Client: GHD Services Inc.
Project/Site: P66 Yakima / 11145929

Job ID: 570-31506-1

GC/MS VOA

Analysis Batch: 77149

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-31506-1	GW-061720-JRL-MW15	Total/NA	Water	8260B	
570-31506-4	DUP	Total/NA	Water	8260B	
MB 570-77149/7	Method Blank	Total/NA	Water	8260B	
LCS 570-77149/3	Lab Control Sample	Total/NA	Water	8260B	
LCSD 570-77149/4	Lab Control Sample Dup	Total/NA	Water	8260B	

Leach Batch: 77260

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-31455-J-2-A MS	Matrix Spike	TCLP	Water	1311	
570-31455-J-2-A MSD	Matrix Spike Duplicate	TCLP	Water	1311	

Analysis Batch: 77306

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-31506-2	GW-061720-JRL-MW17	Total/NA	Water	8260B	
570-31506-3	GW-061720-JRL-MW19	Total/NA	Water	8260B	
MB 570-77306/10	Method Blank	Total/NA	Water	8260B	
LCS 570-77306/4	Lab Control Sample	Total/NA	Water	8260B	
LCSD 570-77306/5	Lab Control Sample Dup	Total/NA	Water	8260B	
570-31455-J-2-A MS	Matrix Spike	TCLP	Water	8260B	77260
570-31455-J-2-A MSD	Matrix Spike Duplicate	TCLP	Water	8260B	77260

Analysis Batch: 77379

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-31506-1 - RA	GW-061720-JRL-MW15	Total/NA	Water	8260B	
570-31506-4 - RA	DUP	Total/NA	Water	8260B	
MB 570-77379/7	Method Blank	Total/NA	Water	8260B	
LCS 570-77379/3	Lab Control Sample	Total/NA	Water	8260B	
LCSD 570-77379/4	Lab Control Sample Dup	Total/NA	Water	8260B	
570-31550-B-1 MS	Matrix Spike	Total/NA	Water	8260B	
570-31550-B-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B	

GC VOA

Analysis Batch: 76920

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-31506-1	GW-061720-JRL-MW15	Total/NA	Water	NWTPH-Gx	
570-31506-2	GW-061720-JRL-MW17	Total/NA	Water	NWTPH-Gx	
570-31506-3	GW-061720-JRL-MW19	Total/NA	Water	NWTPH-Gx	
570-31506-4	DUP	Total/NA	Water	NWTPH-Gx	
MB 570-76920/8	Method Blank	Total/NA	Water	NWTPH-Gx	
LCS 570-76920/6	Lab Control Sample	Total/NA	Water	NWTPH-Gx	
LCSD 570-76920/7	Lab Control Sample Dup	Total/NA	Water	NWTPH-Gx	
570-31506-1 MS	GW-061720-JRL-MW15	Total/NA	Water	NWTPH-Gx	
570-31506-1 MSD	GW-061720-JRL-MW15	Total/NA	Water	NWTPH-Gx	

GC Semi VOA

Prep Batch: 77494

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-31506-1	GW-061720-JRL-MW15	Total/NA	Water	3510C	
570-31506-2	GW-061720-JRL-MW17	Total/NA	Water	3510C	
570-31506-3	GW-061720-JRL-MW19	Total/NA	Water	3510C	

GC Semi VOA (Continued)

Prep Batch: 77494 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-31506-4	DUP	Total/NA	Water	3510C	
MB 570-77494/1-A	Method Blank	Total/NA	Water	3510C	
LCS 570-77494/2-A	Lab Control Sample	Total/NA	Water	3510C	
LCSD 570-77494/3-A	Lab Control Sample Dup	Total/NA	Water	3510C	

Analysis Batch: 77684

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-31506-1	GW-061720-JRL-MW15	Total/NA	Water	NWTPH-Dx	77494
570-31506-1	GW-061720-JRL-MW15	Total/NA	Water	NWTPH-Dx	77494
570-31506-2	GW-061720-JRL-MW17	Total/NA	Water	NWTPH-Dx	77494
570-31506-3	GW-061720-JRL-MW19	Total/NA	Water	NWTPH-Dx	77494
570-31506-4	DUP	Total/NA	Water	NWTPH-Dx	77494
570-31506-4	DUP	Total/NA	Water	NWTPH-Dx	77494
MB 570-77494/1-A	Method Blank	Total/NA	Water	NWTPH-Dx	77494
LCS 570-77494/2-A	Lab Control Sample	Total/NA	Water	NWTPH-Dx	77494
LCSD 570-77494/3-A	Lab Control Sample Dup	Total/NA	Water	NWTPH-Dx	77494

Lab Chronicle

Client: GHD Services Inc.
Project/Site: P66 Yakima / 11145929

Job ID: 570-31506-1

Client Sample ID: GW-061720-JRL-MW15

Lab Sample ID: 570-31506-1

Date Collected: 06/18/20 11:05
Matrix: Water
Date Received: 06/20/20 12:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B	RA	50	5 mL	5 mL	77379	06/24/20 16:31	NET3	ECL 2
	Instrument ID: GCMSOO									
Total/NA	Analysis	8260B		4	5 mL	5 mL	77149	06/23/20 18:24	CVA6	ECL 2
	Instrument ID: GCMSW									
Total/NA	Analysis	NWTPH-Gx		1	5 mL	5 mL	76920	06/22/20 23:09	W6MG	ECL 2
	Instrument ID: GC1									
Total/NA	Prep	3510C			458.7 mL	5 mL	77494	06/24/20 12:16	UFLU	ECL 1
Total/NA	Analysis	NWTPH-Dx		1			77684	06/25/20 11:59	I9H5	ECL 1
	Instrument ID: GC48									
Total/NA	Prep	3510C			458.7 mL	5 mL	77494	06/24/20 12:16	UFLU	ECL 1
Total/NA	Analysis	NWTPH-Dx		10			77684	06/25/20 13:24	I9H5	ECL 1
	Instrument ID: GC48									

Client Sample ID: GW-061720-JRL-MW17

Lab Sample ID: 570-31506-2

Date Collected: 06/18/20 10:25
Matrix: Water
Date Received: 06/20/20 12:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	5 mL	5 mL	77306	06/24/20 03:29	NET3	ECL 2
	Instrument ID: GCMSJJ									
Total/NA	Analysis	NWTPH-Gx		1	5 mL	5 mL	76920	06/23/20 00:20	W6MG	ECL 2
	Instrument ID: GC1									
Total/NA	Prep	3510C			456.5 mL	5 mL	77494	06/24/20 12:16	UFLU	ECL 1
Total/NA	Analysis	NWTPH-Dx		1			77684	06/25/20 12:20	I9H5	ECL 1
	Instrument ID: GC48									

Client Sample ID: GW-061720-JRL-MW19

Lab Sample ID: 570-31506-3

Date Collected: 06/18/20 11:50
Matrix: Water
Date Received: 06/20/20 12:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	5 mL	5 mL	77306	06/24/20 03:58	NET3	ECL 2
	Instrument ID: GCMSJJ									
Total/NA	Analysis	NWTPH-Gx		1	5 mL	5 mL	76920	06/23/20 00:44	W6MG	ECL 2
	Instrument ID: GC1									
Total/NA	Prep	3510C			424.2 mL	5 mL	77494	06/24/20 12:16	UFLU	ECL 1
Total/NA	Analysis	NWTPH-Dx		1			77684	06/25/20 12:42	I9H5	ECL 1
	Instrument ID: GC48									

Client Sample ID: DUP

Lab Sample ID: 570-31506-4

Date Collected: 06/18/20 00:00
Matrix: Water
Date Received: 06/20/20 12:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B	RA	50	5 mL	5 mL	77379	06/24/20 17:00	NET3	ECL 2
	Instrument ID: GCMSOO									

Lab Chronicle

Client: GHD Services Inc.
Project/Site: P66 Yakima / 11145929

Job ID: 570-31506-1

Client Sample ID: DUP

Date Collected: 06/18/20 00:00
Date Received: 06/20/20 12:00

Lab Sample ID: 570-31506-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		4	5 mL	5 mL	77149	06/23/20 18:52	CVA6	ECL 2
Total/NA	Analysis	NWTPH-Gx		1	5 mL	5 mL	76920	06/23/20 01:08	W6MG	ECL 2
	Instrument ID: GC1									
Total/NA	Prep	3510C			462.9 mL	5 mL	77494	06/24/20 12:16	UFLU	ECL 1
Total/NA	Analysis	NWTPH-Dx		1			77684	06/25/20 13:03	I9H5	ECL 1
	Instrument ID: GC48									
Total/NA	Prep	3510C			462.9 mL	5 mL	77494	06/24/20 12:16	UFLU	ECL 1
Total/NA	Analysis	NWTPH-Dx		10			77684	06/25/20 13:46	I9H5	ECL 1
	Instrument ID: GC48									

Laboratory References:

ECL 1 = Eurofins Calscience LLC Lincoln, 7440 Lincoln Way, Garden Grove, CA 92841, TEL (714)895-5494

ECL 2 = Eurofins Calscience LLC Lampson, 7445 Lampson Ave, Garden Grove, CA 92841, TEL (714)895-5494

Accreditation/Certification Summary

Client: GHD Services Inc.
Project/Site: P66 Yakima / 11145929

Job ID: 570-31506-1

Laboratory: Eurofins Calscience LLC

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

Authority	Program	Identification Number	Expiration Date
California	Los Angeles County Sanitation Districts	10109	09-29-20
California	SCAQMD LAP	17LA0919	11-30-20
California	State	2944	09-29-20
Guam	State	20-003R	10-31-20
Nevada	State	CA00111	07-31-20
Oregon	NELAP	CA300001	01-29-21
USDA	US Federal Programs	P330-20-00034	02-10-23
Washington	State	C916-18	10-11-20

Method Summary

Client: GHD Services Inc.
Project/Site: P66 Yakima / 11145929

Job ID: 570-31506-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	ECL 2
NWTPH-Gx	Northwest - Volatile Petroleum Products (GC)	NWTPH	ECL 2
NWTPH-Dx	Northwest - Semi-Volatile Petroleum Products (GC)	NWTPH	ECL 1
3510C	Liquid-Liquid Extraction (Separatory Funnel)	SW846	ECL 1
5030C	Purge and Trap	SW846	ECL 2

Protocol References:

NWTPH = Northwest Total Petroleum Hydrocarbon

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

ECL 1 = Eurofins Calscience LLC Lincoln, 7440 Lincoln Way, Garden Grove, CA 92841, TEL (714)895-5494

ECL 2 = Eurofins Calscience LLC Lampson, 7445 Lampson Ave, Garden Grove, CA 92841, TEL (714)895-5494

Sample Summary

Client: GHD Services Inc.
Project/Site: P66 Yakima / 11145929

Job ID: 570-31506-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
570-31506-1	GW-061720-JRL-MW15	Water	06/18/20 11:05	06/20/20 12:00	
570-31506-2	GW-061720-JRL-MW17	Water	06/18/20 10:25	06/20/20 12:00	
570-31506-3	GW-061720-JRL-MW19	Water	06/18/20 11:50	06/20/20 12:00	
570-31506-4	DUP	Water	06/18/20 00:00	06/20/20 12:00	

ALS Environmental
8620 Holly Drive, Suite 100
~~Everett, WA 98208~~
Phone (425) 356-2600
Fax (425) 356-2626
http://www.alsglobal.com

CAL

Chain Of Custody/ Laboratory Analysis Request

ALS Job# (Labora 31506

Date 6-17-20 Page 1 Of 1

PROJECT ID: P166 YAKIMA 11145 929
REPORT TO COMPANY: GHD
PROJECT MANAGER: MATT DAVIS
ADDRESS: 20818 44TH AVE W, STE 190
LYNNWOOD, WA
PHONE: P.O. #:
E-MAIL:
INVOICE TO COMPANY: GHD
ATTENTION: HEATHER GADWA
ADDRESS:
~~SSOW: 11145 929 2020-01~~ TBD

ANALYSIS REQUESTED

SAMPLE I.D.	DATE	TIME	TYPE	LAB#	NWTPH-HCID	NWTPH-DX ~~8015~~ 8260	NWTPH-GX	BTEX by EPA 8021 ☐ BTEX by EPA 8260 ☐	MTBE by EPA 8021 ☐ MTBE by EPA 8260 ☐	Halogenated Volatiles by EPA 8260	Volatile Organic Compounds by EPA 8260	EDB / EDC by EPA 8260 SIM (water)	EDB / EDC by EPA 8260 (soil)	Semivolatile Organic Compounds by EPA 8270	Polycyclic Aromatic Hydrocarbons (PAH) by EPA 8270 SIM	PCB by EPA 8082 ☐ Pesticides by EPA 8081 ☐	Metals-MTCA-5 ☐ RCRA-8 ☐ Pri Pol ☐ TAL ☐	Metals Other (Specify)	TCLP-Metals ☐ VOA ☐ Semi-Vol ☐ Pest ☐ Herbs ☐	OTHER (Specify): EDB, EDC, MTBE, NAPHTHALENE	NUMBER OF CONTAINERS	RECEIVED IN GOOD CONDITION?
1. GW-061720-JRL-MW15	6/18/20	1105	W			X	X	X												X	6	
2. GW-061720-JRL-MW17	↓	1025	W			X	X	X												X	6	
3. GW-061720-JRL-MW19	↓	1150	W			X	X	X												X	6	
4. DUP	—	—	W			X	X	X												X	6	
5.																						
6.																						
7.																						
8.																						
9.																						
10.																						

570-31506 Chain of Custody

SPECIAL INSTRUCTIONS HB JN

3.8/3.4 SW

SIGNATURES (Name, Company, Date, Time):

1. Relinquished By: GHD, 6/19/20 1200
Received By: Ei 6/20/2020 1200
2. Relinquished By:
Received By:

TURNAROUND REQUESTED in Business Days*

Organic, Metals & Inorganic Analysis: 10 Standard | 5 | 3 | 2 | 1 | SAME DAY

Fuels & Hydrocarbon Analysis: 5 Standard | 3 | 1 | SAME DAY

OTHER:
Specify:

*Turnaround request less than standard may incur Rush Charges

6/25/2020

Login Sample Receipt Checklist

Client: GHD Services Inc.

Job Number: 570-31506-1

Login Number: 31506
List Number: 1
Creator: Ramos, Maribel

List Source: Eurofins Calscience

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

Appendix C
LNAPL Forensics Analysis and Interpretation

January 28, 2020

Brian Peters
GHD
20818 44th Ave West
Suite 190
Lynnwood, WA 98036

RE: P66 Yakima

Pace Analytical received 1 sample on January 9, 2020 for analysis labeled OL-11145929-010820-EM. Per client request, the following analyses were performed:

1. (C8-C40) Semi-Quantitative Molecular Characterization by GC/MS - full scan mode.
2. (C3-C12) Quantitative Molecular Characterization by GC/MS - full scan mode
3. Organic Lead Speciation by GC/ECD

The sample analysis was performed under laboratory number **32628**.

Please call the lab at 412-826-5245, or you may email any questions or concerns to ruth.welsh@pacelabs.com regarding any analytical data reports.

Warm regards,

Ruth Welsh
Customer Service

[O] 412-826-5245
Ruth.Welsh@pacelabs
220 William Pitt Way, Pittsburgh, PA 15238

(C8-C40) Semi-Quantitative Molecular Characterization
by GC/MS - full scan mode
TIC, n-Alkanes, Iso-Alkanes, Isoprenoids, Alkylcyclohexanes,
C4-monoaromatics, Bicyclanes, Terpanes, Steranes

C8-C40 - Semi Quantitative Hydrocarbons Characterization
by GC/MS - full scan mode

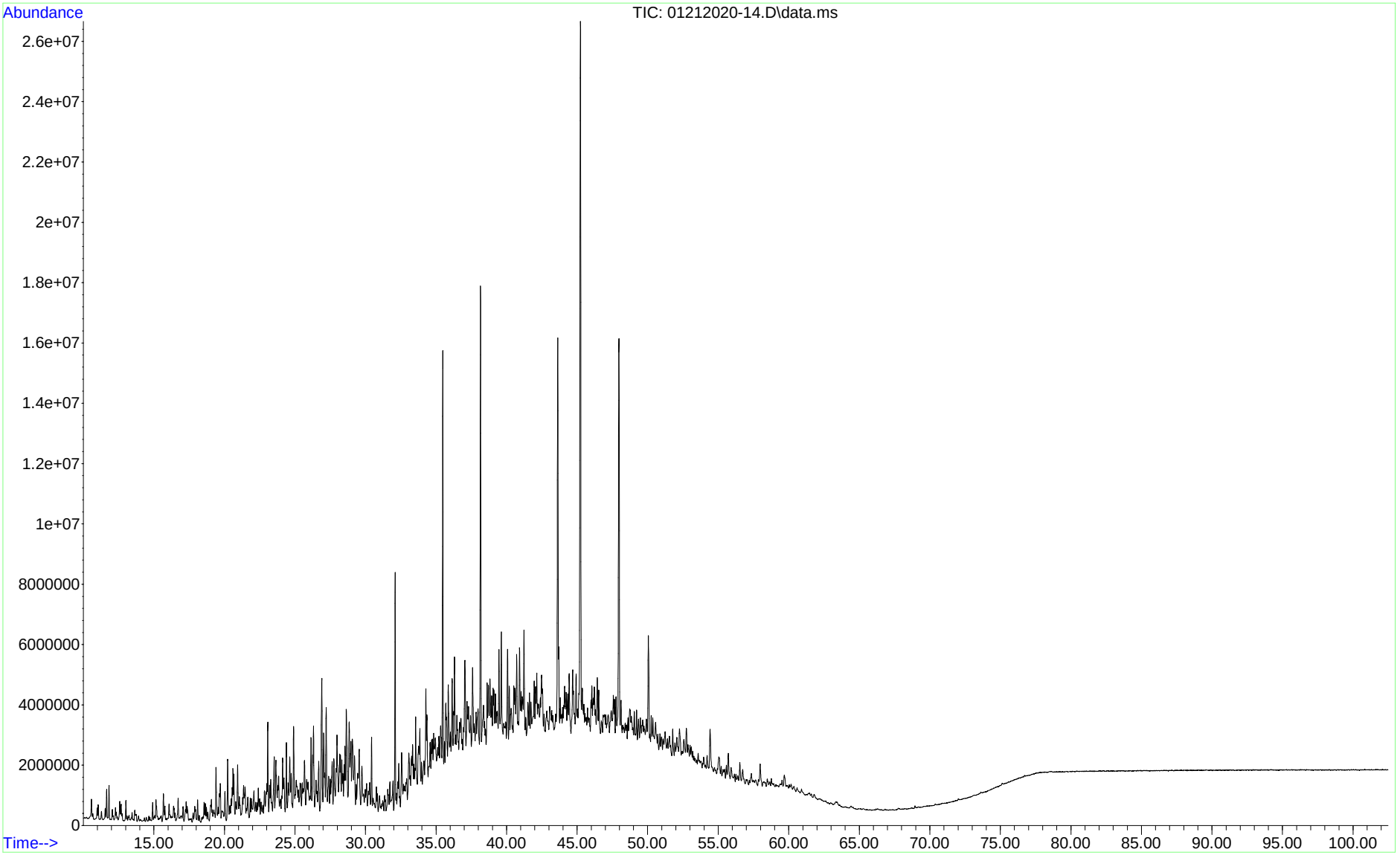
Mass Chromatograms

ION (m/z)	COMPOUND CLASS
TIC	All Compounds
85	n-Paraffins
113	Isoparaffins
83	Alkylcyclohexanes
134	C3-C4 Monoaromatics
123	Bicyclanes
191	Terpanes
217	Steranes
253	Monoaromatice Steranes
231	Triaromatic Steranes
Bar Diagram	Monoaromatic and Polyaromatic Hydrocarbon Distribution

note: Chromatograms and data follow this cover page.

Submitted by,
Pace Analytical Energy Services

Sample Name: 32628-1 [OL-11145929-010820-EM] 1/10
Misc Info : 0.4108g->10mL 318-20-3



Chromatogram Key & Numerical Results: 85 m/z n-Paraffins

Project Manager:	Heather Gadwa	Lab ID:	32628-1
Client:	GHD Services Inc.	Collected:	1/8/2020
Address:	20818 44th Ave W, Suite Lynnwood, WA 98036	Received: Matrix:	1/9/2020 Product
Project:	P66 Yakima	Client ID:	OL-11145929-010820-EM
Project #:	11145929	Analyzed:	1/22/2020
Collected by:	Eric Maise	Q Method:	FSRTL01232020A.M

Identity	Symbol	Ion (m/z)	Retention Time	Peak Height	Rel. Height % (85 m/z)
n-Octane	nC8	85	ND	ND	ND
n-Nonane	nC9	85	ND	ND	ND
n-Decane	nC10	85	ND	ND	ND
n-Undecane	nC11	85	ND	ND	ND
n-Dodecane	nC12	85	ND	ND	ND
n-Tridecane	nC13	85	ND	ND	ND
n-Tetradecane	nC14	85	ND	ND	ND
n-Pentadecane	nC15	85	ND	ND	ND
n-Hexadecane	nC16	85	ND	ND	ND
n-Heptadecane	nC17	85	ND	ND	ND
n-Octadecane	nC18	85	ND	ND	ND
n-Nonadecane	nC19	85	ND	ND	ND
n-icosane	nC20	85	ND	ND	ND
n-Henicosane	nC21	85	ND	ND	ND
n-Docosane	nC22	85	ND	ND	ND
n-Tricosane	nC23	85	ND	ND	ND
n-Tetracosane	nC24	85	ND	ND	ND
n-Pentacosane	nC25	85	ND	ND	ND
n-Hexacosane	nC26	85	ND	ND	ND
n-Heptacosane	nC27	85	ND	ND	ND
n-Octacosane	nC28	85	ND	ND	ND
n-Nonacosane	nC29	85	ND	ND	ND
n-Triacontane	nC30	85	ND	ND	ND
n-Hentriacontane	nC31	85	ND	ND	ND
n-Dotriacontane	nC32	85	ND	ND	ND
n-Tritriacontane	nC33	85	ND	ND	ND
n-Tetratriacontane	nC34	85	ND	ND	ND
n-Pentatriacontane	nC35	85	ND	ND	ND
n-Hexatriacontane	nC36	85	ND	ND	ND
n -Heptatriacontane	nC37	85	ND	ND	ND
n -Octatriacontane	nC38	85	ND	ND	ND
n -Nonatriacontane	nC39	85	ND	ND	ND
n-Tetracontane	nC40	85	ND	ND	ND

0.4108g->10mL 318-20-3
FOREN4LA_RTL.M

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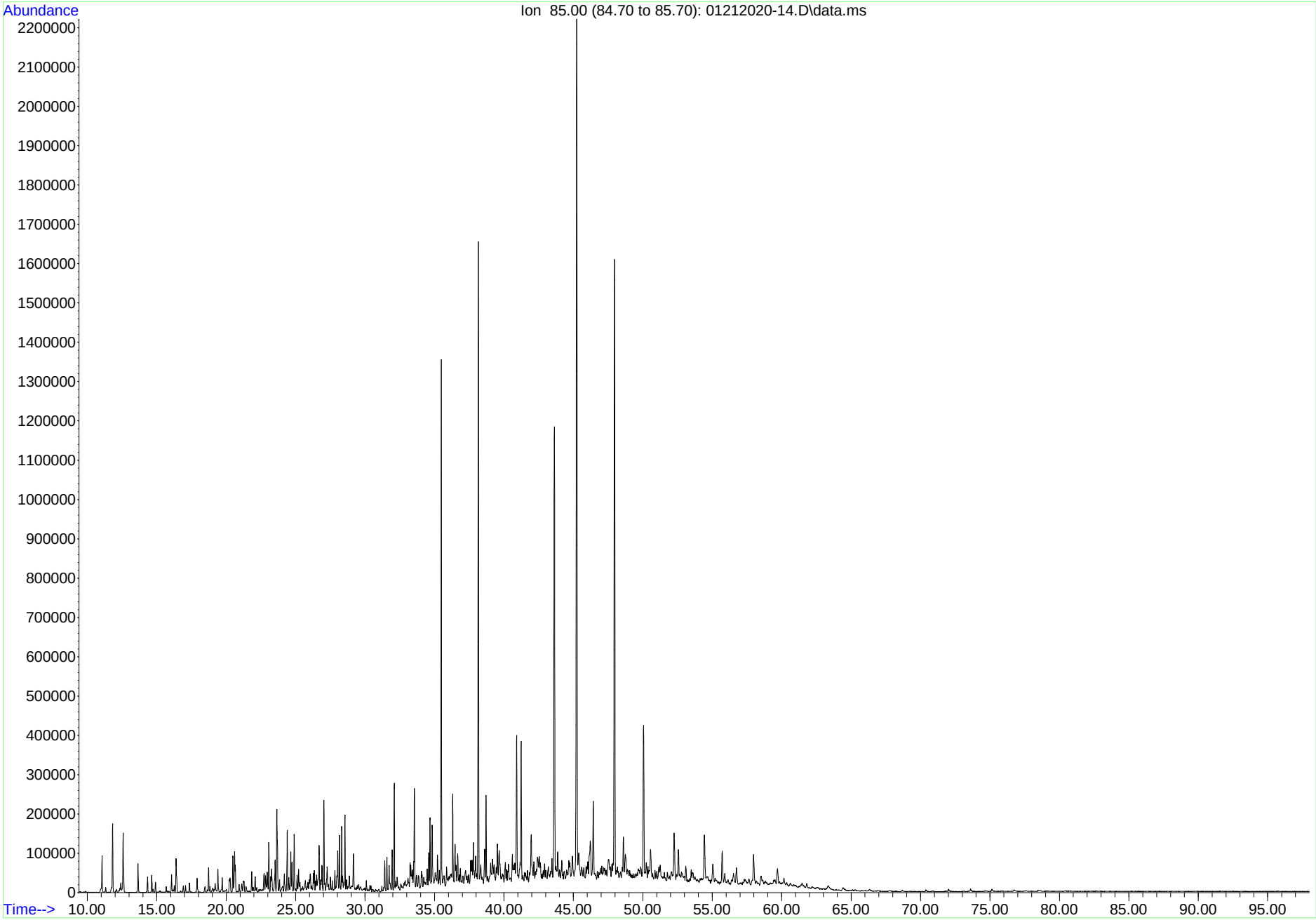
Pace Energy Services, LLC

32628-1 [OL-11145929-010820-EM] 1/10
0.4108g->10mL 318-20-3



Chromatogram Key & Numerical Results: 113 m/z Isoparaffins

Project Manager:	Heather Gadwa	Lab ID:	32628-1
Client:	GHD Services Inc.	Collected:	1/8/2020
Address:	20818 44th Ave W, Suite Lynnwood, WA 98036	Received: Matrix:	1/9/2020 Product
Project:	P66 Yakima	Client ID:	OL-11145929-010820-EM
Project #:	11145929	Analyzed:	1/22/2020
Collected by:	Eric Maise	Q Method:	FSRTL01232020A.M

Identity	Symbol	Ion (m/z)	Retention Time	Peak Height	Rel. Height % (113 m/z)
Iso-alkane w/ 9 Carbon Atoms	I-9	113	16.4	8273.0	0.3%
Iso-alkane w/ 10 Carbon Atoms	I-10	113	19.4	61314.0	2.6%
Iso-alkane w/ 11 Carbon Atoms	I-11	113	23.1	101038.0	4.2%
Iso-alkane w/ 12 Carbon Atoms	I-12	113	28.3	10576.0	0.4%
Iso-alkane w/ 13 Carbon Atoms	I-13	113	32.1	240360.0	10.1%
Iso-alkane w/ 14 Carbon Atoms	I-14	113	32.9	3350.0	0.1%
Farnesane (Isoprenoid - C15)	I-15	113	36.2	5968.0	0.2%
Iso-alkane w/ 16 Carbon Atoms	I-16	113	38.2	311621.0	13.0%
Iso-alkane w/ 18 Carbon Atoms	I-18	113	43.6	372168.0	15.6%
Pristane (Isoprenoid - C19)	Pr	113	45.2	896043.0	37.5%
Phytane (Isoprenoid - C20)	Ph	113	48.0	380456.0	15.9%

0.4108g->10mL 318-20-3
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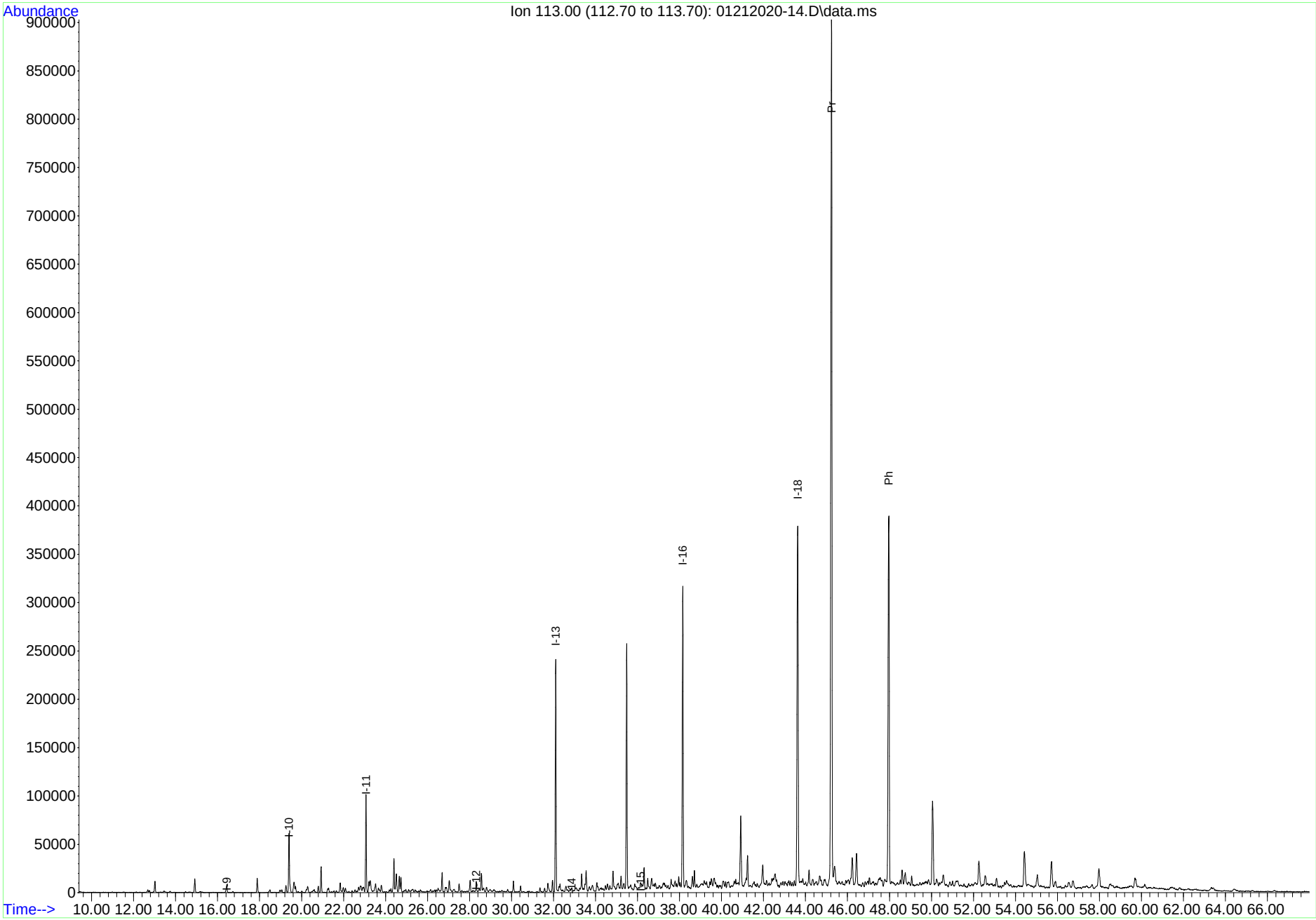
Pace Energy Services, LLC

32628-1 [OL-11145929-010820-EM] 1/10
0.4108g->10mL 318-20-3



Chromatogram Key & Numerical Results: 83 m/z Alkylcyclohexanes

Project Manager:	Heather Gadwa	Lab ID:	32628-1
Client:	GHD Services Inc.	Collected:	1/8/2020
Address:	20818 44th Ave W, Suite Lynnwood, WA 98036	Received:	1/9/2020
		Matrix:	Product
Project:	P66 Yakima	Client ID:	OL-11145929-010820-EM
Project #:	11145929	Analyzed:	1/22/2020
Collected by:	Eric Maise	Q Method:	FSRTL01232020A.M

Identity	Symbol	Ion (m/z)	Retention Time	Peak Height	Rel. Height % (83 m/z)
Methylcyclohexane	CH-1	83	10.6	186546.0	4.1%
Ethylcyclohexane	CH-2	83	14.9	101077.0	2.2%
Propylcyclohexane	CH-3	83	19.1	129621.0	2.9%
Butylcyclohexane	CH-4	83	23.3	219534.0	4.9%
Pentylcyclohexane	CH-5	83	27.2	418419.0	9.3%
Hexylcyclohexane	CH-6	83	30.8	109873.0	2.4%
Heptylcyclohexane	CH-7	83	34.3	572984.0	12.7%
Octylcyclohexane	CH-8	83	37.6	704800.0	15.7%
Nonylcyclohexane	CH-9	83	40.7	551022.0	12.2%
Decylcyclohexane	CH-10	83	43.7	494738.0	11.0%
Undecylcyclohexane	CH-11	83	46.5	393960.0	8.8%
Dodecylcyclohexane	CH-12	83	49.2	271872.0	6.0%
Tridecylcyclohexane	CH-13	83	51.8	193808.0	4.3%
Tetradecylcyclohexane	CH-14	83	54.2	153776.0	3.4%

0.4108g->10mL 318-20-3
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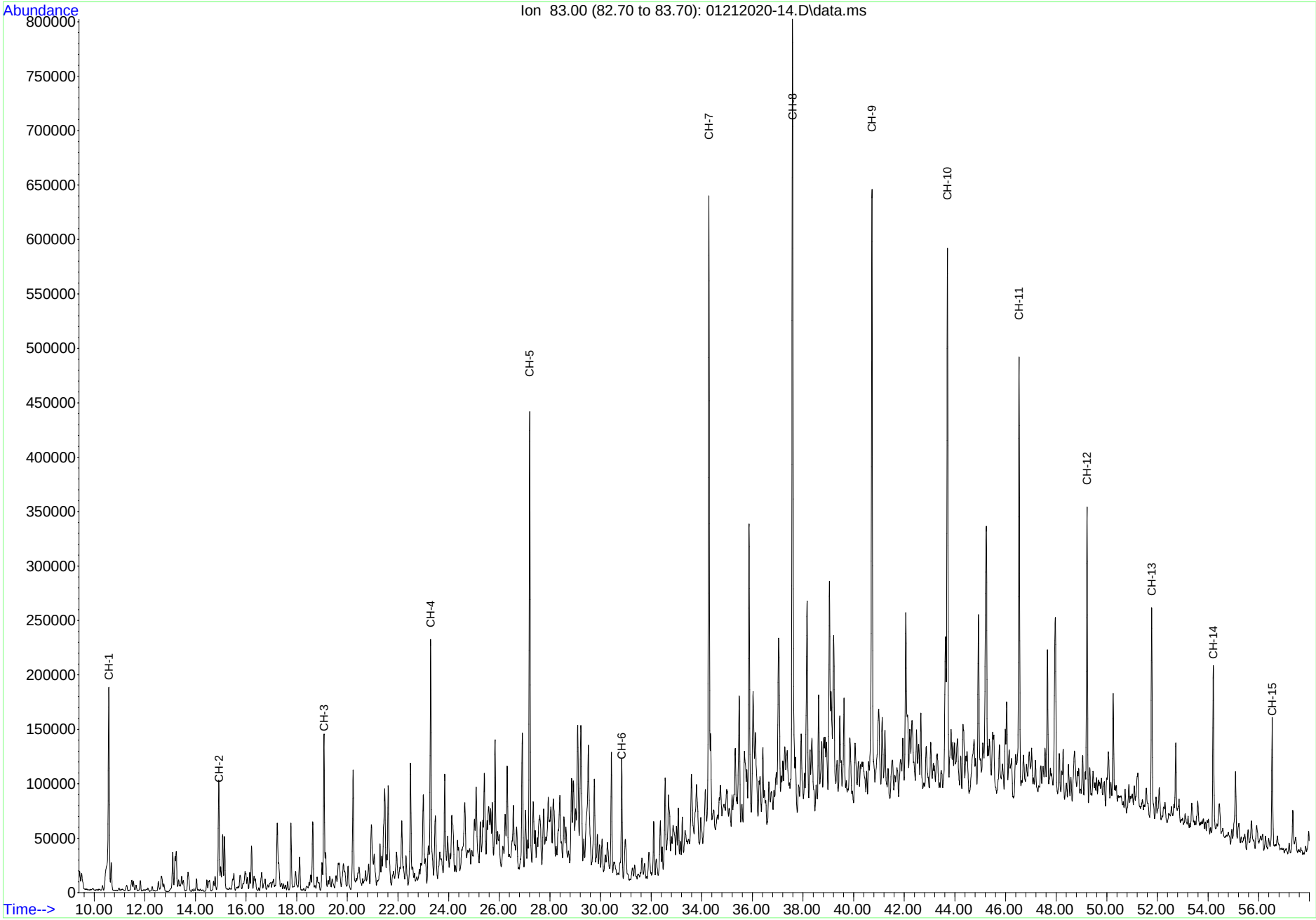
Submitted by,
Pace Energy Services, LLC

32628-1 [OL-11145929-010820-EM] 1/10
0.4108g->10mL 318-20-3



Chromatogram Key & Numerical Results: 134 m/z C3-C4 Monoaromatics

Project Manager:	Heather Gadwa	Lab ID:	32628-1
Client:	GHD Services Inc.	Collected:	1/8/2020
Address:	20818 44th Ave W, Suite Lynnwood, WA 98036	Received:	1/9/2020
		Matrix:	Product
Project:	P66 Yakima	Client ID:	OL-11145929-010820-EM
Project #:	11145929	Analyzed:	1/22/2020
Collected by:	Eric Maise	Q Method:	FSRTL01232020A.M

Identity	Symbol	Ion (m/z)	Retention Time	Peak Height	Rel. Height % (134 m/z)
Sec-Butylbenzene	16	134	21.9	7821.0	0.6%
1-Methyl-3-Isopropylbenzene	17	134	22.0	9140.0	0.7%
1-Methyl-4-Isopropylbenzene	18	134	22.5	5226.0	0.4%
1-Methyl-2-Isopropylbenzene	19	134	22.6	9543.0	0.7%
1,3-Diethylbenzene	20	134	23.5	112584.0	8.3%
1-Methyl-3-Propylbenzene	21	134	23.6	4060.0	0.3%
Butylbenzene	22	134	23.8	96617.0	7.1%
1,3-Diethyl-5-Ethylbenzene	23	134	23.9	2301.0	0.2%
1,2-Diethylbenzene	24	134	24.0	23439.0	1.7%
1-Methyl-2-Propylbenzene	25	134	24.2	86455.0	6.4%
1,4-Dimethyl-2-Ethylbenzene	26	134	24.6	92506.0	6.8%
1,3-Dimethyl-4-Ethylbenzene	27	134	24.7	23758.0	1.7%
1,2-Dimethyl-4-Ethylbenzene	28	134	24.9	167608.0	12.3%
1,3-Dimethyl-2-Ethylbenzene	29	134	25.2	31556.0	2.3%
1,2-Dimethyl-3-Ethylbenzene	30	134	25.7	41049.0	3.0%
1,2,4,5-Tetramethylbenzene	31a	134	26.1	254661.0	18.7%
1,2,3,5-Tetramethylbenzene	31	134	26.3	251705.0	18.5%
1,2,3,4-Tetramethylbenzene	32	134	27.4	139746.0	10.3%

0.4108g->10mL 318-20-3
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Submitted by,
Pace Energy Services, LLC

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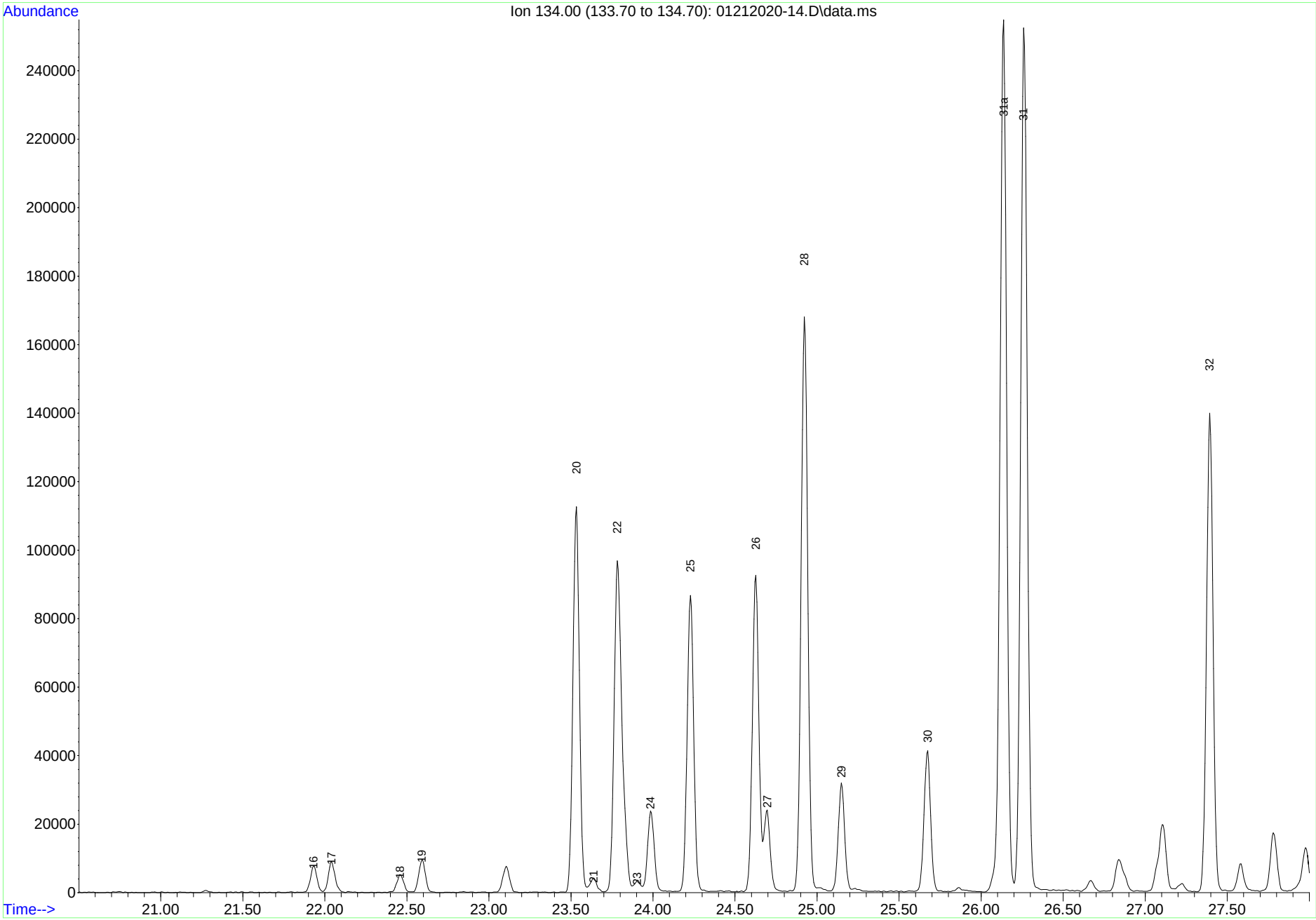
0.4108g->10mL 318-20-3



Chromatogram Key & Numerical Results: 123 m/z Bicyclanes

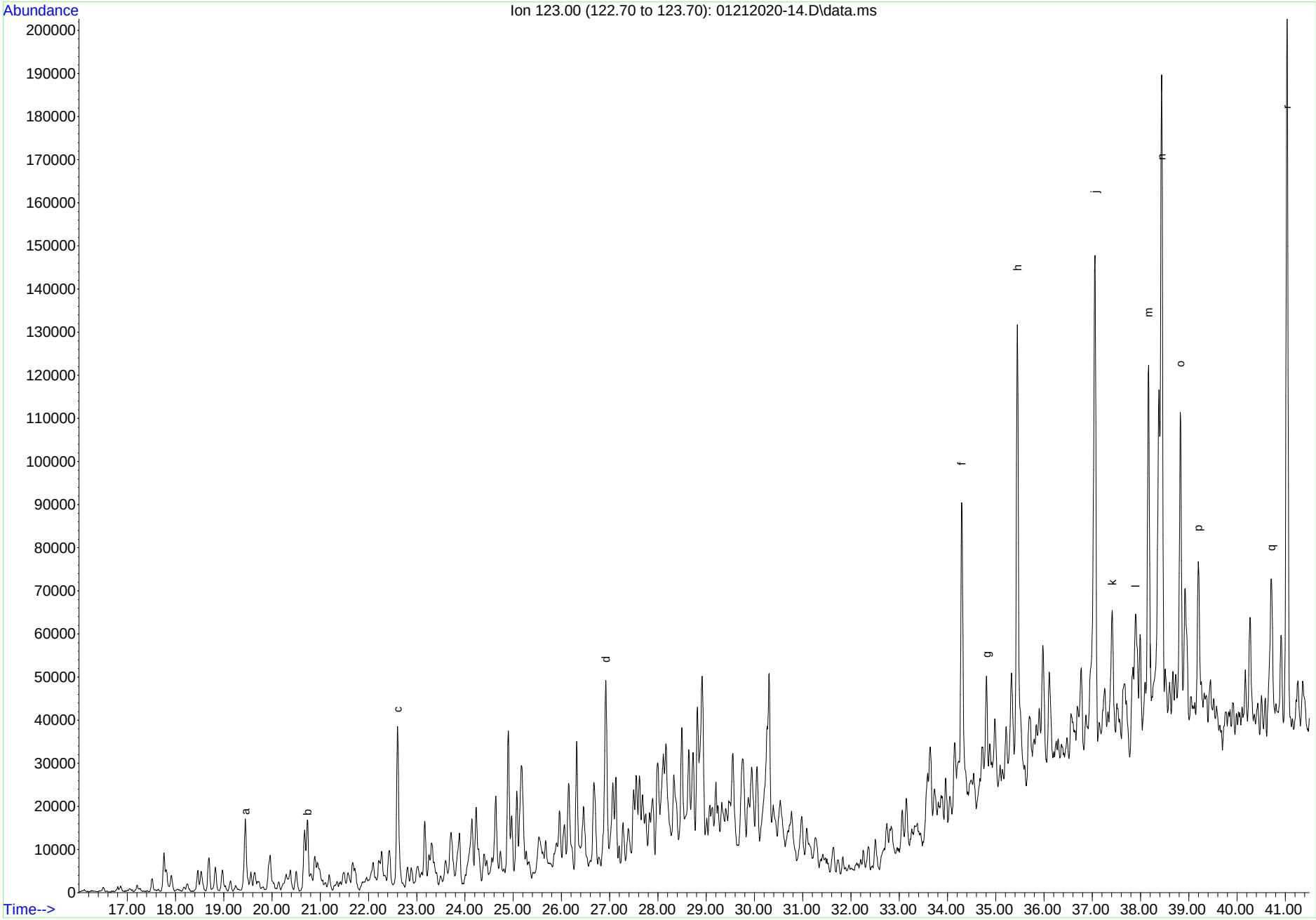
Project Manager:	Heather Gadwa	Lab ID:	32628-1
Client:	GHD Services Inc.	Collected:	1/8/2020
Address:	20818 44th Ave W, Suite Lynnwood, WA 98036	Received:	1/9/2020
		Matrix:	Product
Project:	P66 Yakima	Client ID:	OL-11145929-010820-EM
Project #:	11145929	Analyzed:	1/22/2020
Collected by:	Eric Maise	Q Method:	FSRTL01232020A.M

Identity	Symbol	Ion (m/z)	Retention Time	Peak Height	Rel. Height % (123 m/z)
2,2,3-Trimethylbicycloheptane	a	123	19.5	16478.0	1.7%
C_{10} bicycloalkane	b	123	20.7	13246.0	1.3%
3,3,7-Trimethylbicycloheptane	c	123	22.6	37326.0	3.8%
C_{11} Decalin	d	123	26.9	43054.0	4.4%
Nordrimane	f	123	34.3	68251.0	6.9%
Nordrimane	g	123	34.8	21798.0	2.2%
Rearranged drimane	h	123	35.5	103521.0	10.5%
Rearranged drimane	j	123	37.1	113284.0	11.4%
Isomer of Eudesmane	k	123	37.4	28568.0	2.9%
4β (H) Eudesmane	l	123	37.9	19785.0	2.0%
C_{15} Bicyclic Sesquiterpane	m	123	38.2	78726.0	8.0%
8β (H) Drimane	n	123	38.4	142790.0	14.4%
C_{15} Bicyclic Sesquiterpane	o	123	38.8	66673.0	6.7%
C_{16} Bicyclic Sesquiterpane	p	123	39.2	35480.0	3.6%
C_{16} Bicyclic Sesquiterpane	q	123	40.7	36512.0	3.7%
8β (H) Homodrimane	r	123	41.0	164120.0	16.6%

0.4108g->10mL 318-20-3
FOREN4LA_RTL.M

Submitted by,
Pace Energy Services, LLC

32628-1 [OL-11145929-010820-EM] 1/10
0.4108g->10mL 318-20-3



Chromatogram Key & Numerical Results: 191 m/z Terpanes

Pace Analytical® Energy Services™

Project Manager:	Heather Gadwa	Lab ID:	32628-1
Client:	GHD Services Inc.	Collected:	1/8/2020
Address:	20818 44th Ave W, Lynnwood, WA 98036	Received:	1/9/2020
		Matrix:	Product
Project:	P66 Yakima	Client ID:	OL-11145929-010820-EM
Project #:	11145929	Analyzed:	1/22/2020
Collected by:	Eric Maise	Q Method:	FSRTL01232020A.M

Identity	Symbol	Ion (m/z)	Retention Time	Peak Height	Rel. Height % (191 m/z)
C_{21}-Tricyclic Terpane	1	191	56.4	5387.0	12.8%
C_{22}-Tricyclic Terpane	2	191	ND	ND	ND
C_{23}-Tricyclic Terpane	3	191	59.4	28448.0	67.6%
C_{24}-Tricyclic Terpane	4	191	60.5	5820.0	13.8%
C_{25}-Tricyclic Terpane	5(S+R)	191	62.8	2439.0	5.8%
C_{24}-Tetracyclic Terpane	Z4	191	ND	ND	ND
C_{26}-Tricyclic Terpane	6a*	191	ND	ND	ND
C_{26}-Tricyclic Terpane	6b	191	ND	ND	ND
C_{28}-Tricyclic Terpane #1	A	191	ND	ND	ND
C_{28}-Tricyclic Terpane #2	B	191	ND	ND	ND
C_{29}-Tricyclic Terpane #1	C	191	ND	ND	ND
C_{29}-Tricyclic Terpane #2	D	191	ND	ND	ND
18 α-22,29,30-Trisnorneohopane (Ts)	E	191	ND	ND	ND
17 α-22,29,30-Trisnorhopane (Tm)	F	191	ND	ND	ND
C_{30}-Tricyclic Terpane #1	10a*	191	ND	ND	ND
C_{30}-Tricyclic Terpane #2	10b	191	ND	ND	ND
17 α-28,30 Bisnorhopane	I	191	ND	ND	ND
C_{31}-Tricyclic Terpane #1	11a*	191	ND	ND	ND
17α-25-Norhopane	J	191	ND	ND	ND
C_{31}-Tricyclic Terpane #2	11b	191	ND	ND	ND
17 α,21β-30-Norhopane	K	191	ND	ND	ND
18α-30-Norneohopane	C29Ts	191	ND	ND	ND
17α-Diahopane	C30*	191	ND	ND	ND
17β-21α-30-Normoretane	L	191	ND	ND	ND
18α+18β-Oleanane	Ma+Mb	191	ND	ND	ND
17α-21β-Hopane	N	191	ND	ND	ND
17β-21α-Moretane	O	191	ND	ND	ND
22S-17α,21β-30-Homohopane	P	191	ND	ND	ND
22R-17α,21β-30-Homohopane	Q	191	ND	ND	ND
Gammacerane	R	191	ND	ND	ND
22S-17α,21β-30-Bishomohopane	T	191	ND	ND	ND
22R-17α,21β-30-Bishomohopane	U	191	ND	ND	ND
22S-17α,21β-30-Bishomohopane	WS	191	ND	ND	ND
22R-17α,21β-Trishomohopane	WR	191	ND	ND	ND
22S-17α,21β-Tetrahomohopane	XS	191	ND	ND	ND
22R-17α,21β-Tetrahomohopane	XR	191	ND	ND	ND
22S-17α,21β-Pentahomohopane	YS	191	ND	ND	ND
22R-17α,21β-Pentahomohopane	YR	191	ND	ND	ND

0.4108g->10mL 318-20-3
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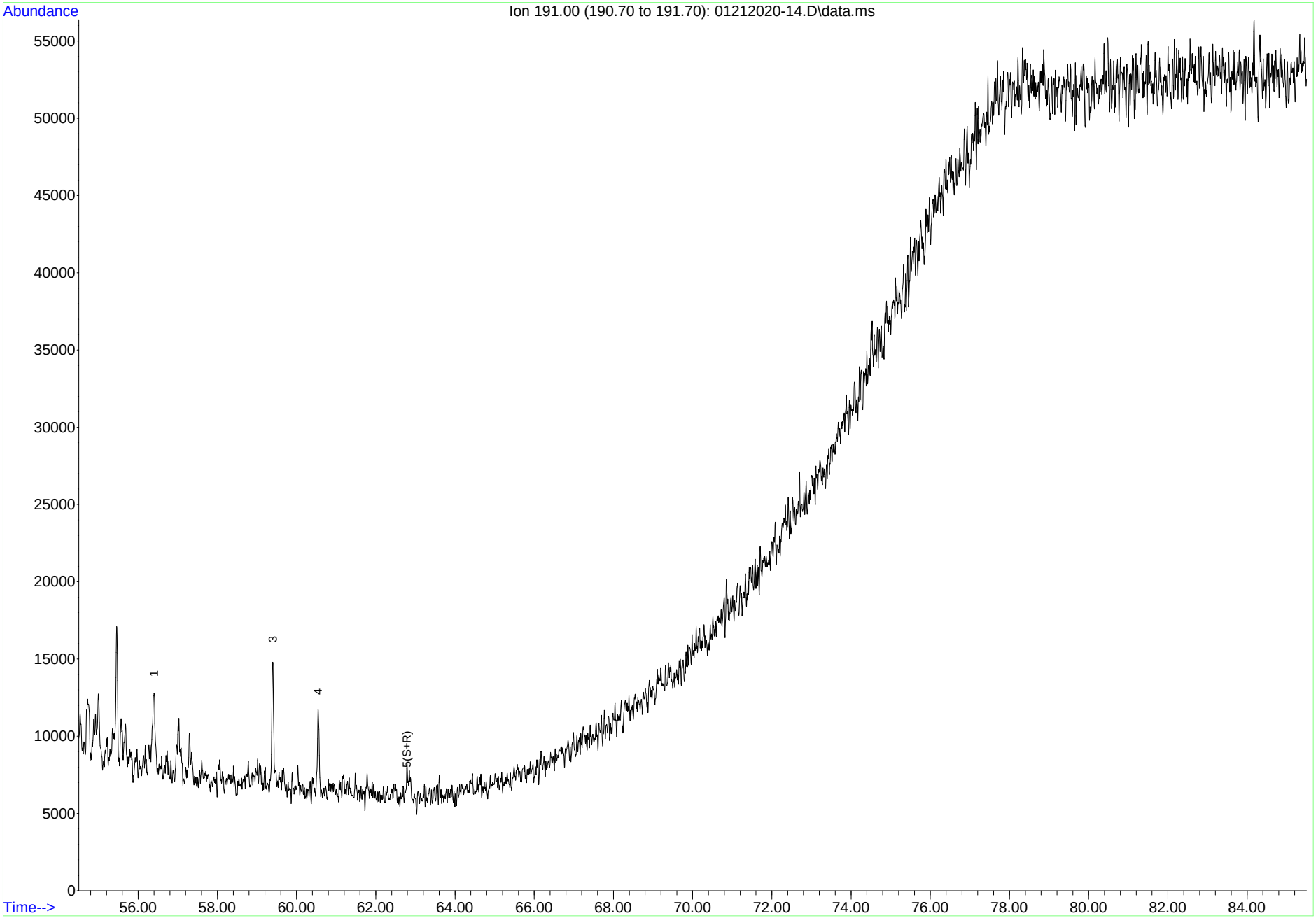
Pace Energy Services, LLC

32628-1 [OL-11145929-010820-EM] 1/10
0.4108g->10mL 318-20-3



Chromatogram Key & Numerical Results: 217 m/z Steranes

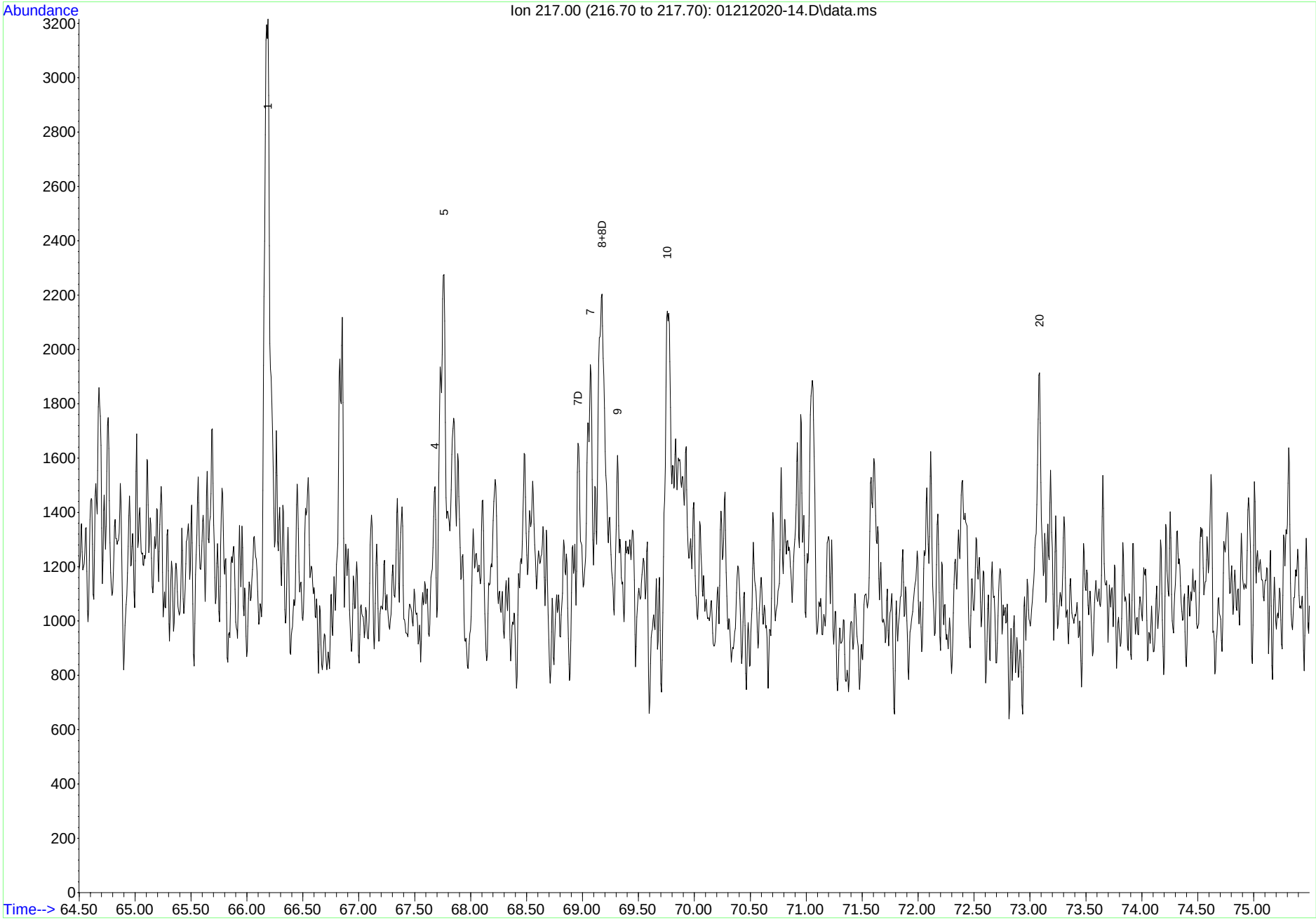
Project Manager:	Heather Gadwa	Lab ID:	32628-1
Client:	GHD Services Inc.	Collected:	1/8/2020
Address:	20818 44th Ave W, Suite Lynnwood, WA 98036	Received:	1/9/2020
		Matrix:	Product
Project:	P66 Yakima	Client ID:	OL-11145929-010820-EM
Project #:	11145929	Analyzed:	1/22/2020
Collected by:	Eric Maise	Q Method:	FSRTL01232020A.M

Identity	Symbol	Ion (m/z)	Retention Time	Peak Height	Rel. Height % (217 m/z)
13β, 17α-Diacholestane (20S)	1	217	66.2	2230.0	23.4%
13β, 17α-Diacholestane (20R)	2	217	ND	ND	ND
13α, 17β-Diacholestane (20S)	3	217	ND	ND	ND
13α, 17β-Diacholestane (20R)	4	217	67.7	565.0	5.9%
24-methyl-13β,17α-Diacholestane (20S)	5	217	67.8	1254.0	13.1%
24-methyl-13β,17α-Diacholestane (20S)	6	217	ND	ND	ND
24-methyl-13α,17β-Diacholestane (20S)	7D	217	69.0	768.0	8.0%
14α,17α-Cholestane (20S)	7	217	69.1	828.0	8.7%
24-ethyl-13β, 17α-Diacholestane (20S)+	8+8D	217			
14β,17β-Cholestane (20R)			69.2	946.0	9.9%
14β,17β-Cholestane (20S)	9	217	69.3	643.0	6.7%
24-methyl-13α,17β-Diacholestane (20R)	9D	217	ND	ND	ND
14α,17α-Cholestane (20R)	10	217	69.8	1403.0	14.7%
24-ethyl-13β, 17α-Diacholestane (20R)	11	217	ND	ND	ND
24-ethyl-13α, 17β-Diacholestane (20S)	12	217	ND	ND	ND
24-ethyl-13α, 17α-Diacholestane (20S)	13	217	ND	ND	ND
24-methyl-14β, 17β-Cholestane (20R)	14	217	ND	ND	ND
24-methyl-14β, 17β-Cholestane (20S)	15	217	ND	ND	ND
24-methyl-14α, 17α-Cholestane (20R)	16	217	ND	ND	ND
24-ethyl-14α-Cholestane (20S)	17	217	ND	ND	ND
24-ethyl-14β, 17β-Cholestane (20R)	18	217	ND	ND	ND
24-ethyl-14β, 17β-Cholestane (20S)	19	217	ND	ND	ND
24-ethyl-14α, 17α-Cholestane (20R)	20	217	73.1	905.0	9.5%

0.4108g->10mL 318-20-3
FOREN4LA_RTL.M

Submitted by,
Pace Energy Services, LLC

32628-1 [OL-11145929-010820-EM] 1/10
0.4108g->10mL 318-20-3



Chromatogram Key & Numerical Results: 253 m/z Monoaromatic Steranes

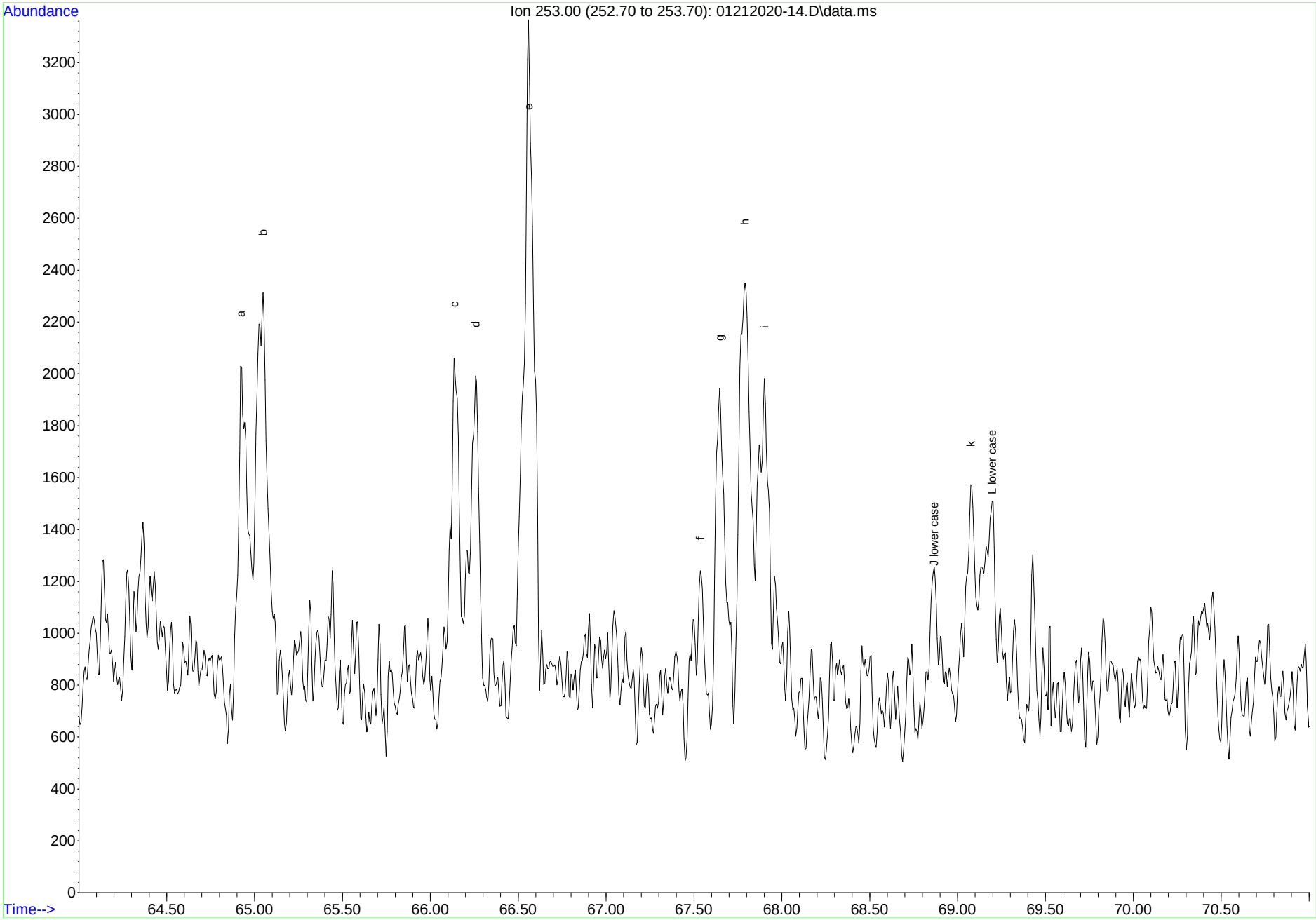
Project Manager:	Heather Gadwa	Lab ID:	32628-1
Client:	GHD Services Inc.	Collected:	1/8/2020
Address:	20818 44th Ave W, Suite Lynnwood, WA 98036	Received:	1/9/2020
		Matrix:	Product
Project:	P66 Yakima	Client ID:	OL-11145929-010820-EM
Project #:	11145929	Analyzed:	1/22/2020
Collected by:	Eric Maise	Q Method:	FSRTL01232020A.M

Identity	Symbol	Ion (m/z)	Retention Time	Peak Height	Rel. Height % (253 m/z)
20S, 5β C27-MAS	a	253	64.9	1357.0	9.3%
20S, dia C27-MAS	b	253	65.1	1576.0	10.8%
20R, 5β C27-MAS + 20R C27 dia MAS	c	253	66.1	1164.0	8.0%
20S, 5α C27-MAS	d	253	66.3	1229.0	8.4%
20R, 5β C28-MAS + 20S C28 dia MAS	e	253	66.6	2585.0	17.8%
20R, 5α C27-MAS	f	253	67.5	611.0	4.2%
20S, 5α C28-MAS	g	253	67.7	1315.0	9.0%
20R, 5β C28-MAS + 20R C28 dia MAS	h	253	67.8	1701.0	11.7%
20S, 5β C29-MAS + 20S C29 dia MAS	i	253	67.9	1076.0	7.4%
20S, 5α C29-MAS	J lower case	253	68.9	622.0	4.3%
20R, 5α C28-MAS	k	253	69.1	680.0	4.7%
20R, 5β C29-MAS + 20R C29 dia MAS	L lower case	253	69.2	642.0	4.4%
20R, 5α C29-MAS	m	253	ND	ND	ND

0.4108g->10mL 318-20-3
FOREN4LA_RTL.M

Submitted by,
Pace Energy Services, LLC

32628-1 [OL-11145929-010820-EM] 1/10
0.4108g->10mL 318-20-3



Chromatogram Key & Numerical Results: 231 m/z Triaromatic Steranes

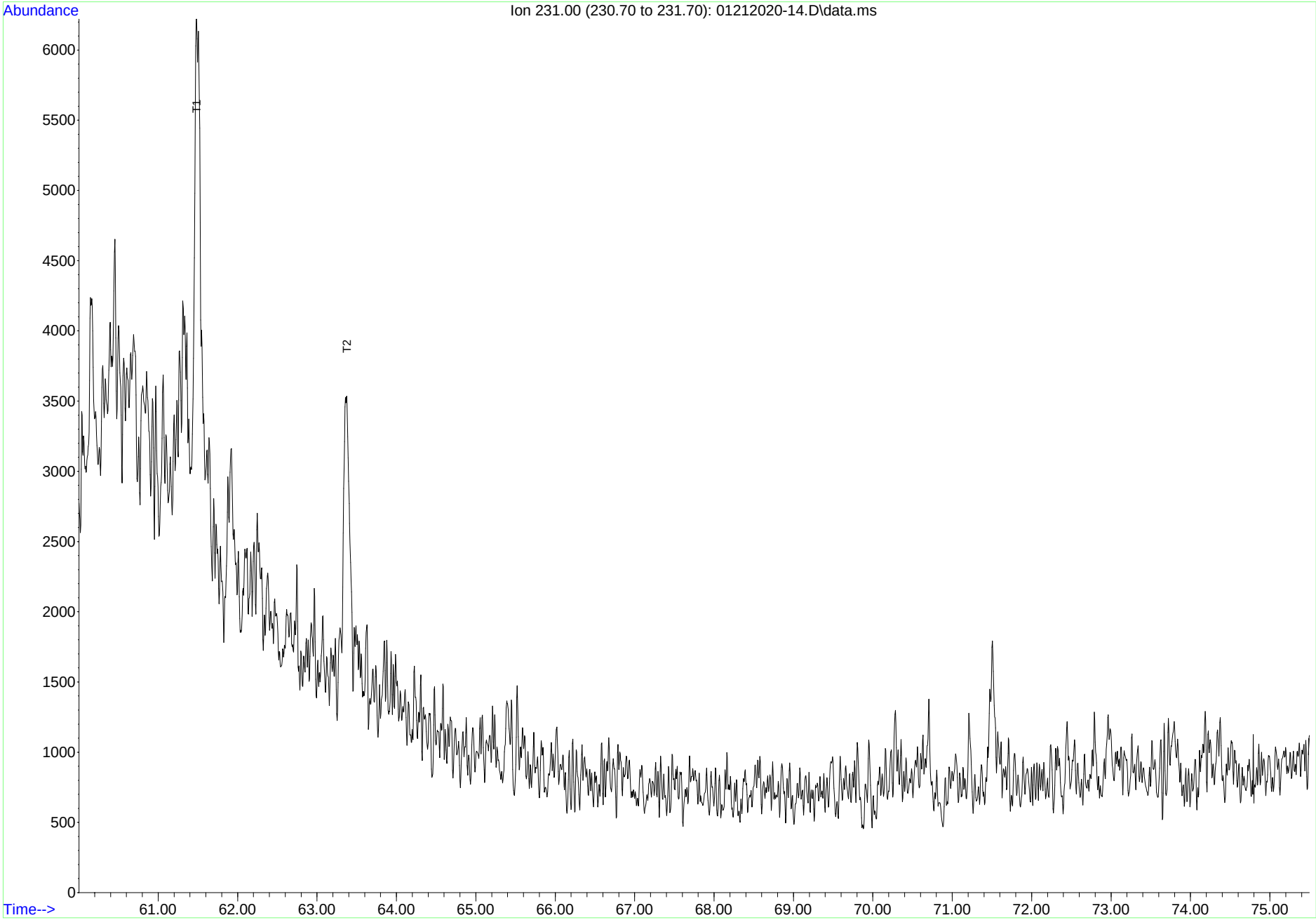
Project Manager:	Heather Gadwa	Lab ID:	32628-1
Client:	GHD Services Inc.	Collected:	1/8/2020
Address:	20818 44th Ave W, Suite Lynnwood, WA 98036	Received: Matrix:	1/9/2020 Product
Project:	P66 Yakima	Client ID:	OL-11145929-010820-EM
Project #:	11145929	Analyzed:	1/22/2020
Collected by:	Eric Maise	Q Method:	FSRTL01232020A.M

Identity	Symbol	Ion (m/z)	Retention Time	Peak Height	Rel. Height % (231 m/z)
C_{20} Triaromatic Sterane	T1	231	61.5	3206.0	60.4%
C_{21} Triaromatic Sterane	T2	231	63.4	2101.0	39.6%
20S C_{26} Triaromatic Sterane	T3	231	ND	ND	ND
20R C_{26} + 20S C_{27} Triaromatic Steranes	T4	231	ND	ND	ND
20S C_{28} Triaromatic Sterane	T5	231	ND	ND	ND
20R C_{27} Triaromatic Sterane	T6	231	ND	ND	ND
20R C_{28} Triaromatic Sterane	T7	231	ND	ND	ND

0.4108g->10mL 318-20-3
FOREN4LA_RTL.M

Submitted by,
Pace Energy Services, LLC

32628-1 [OL-11145929-010820-EM] 1/10
0.4108g->10mL 318-20-3



Pace Analytical® Energy Services™

Key for Identifying Aromatic Hydrocarbons

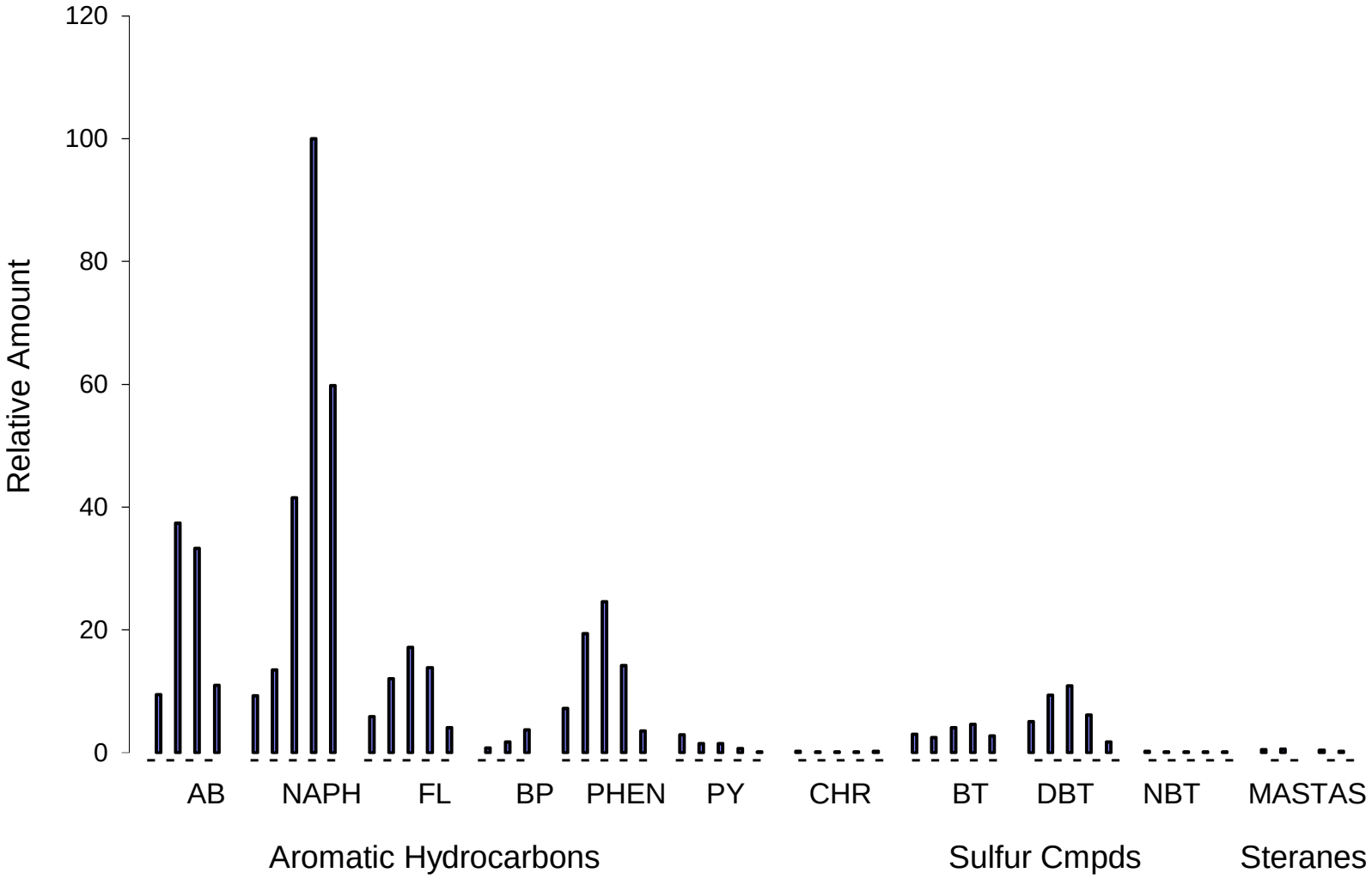
No	m/z	Abbreviation	Compound
1	120	AB	C_3-alkylbenzenes
2	134		C_4-alkylbenzenes
3	148		C_5-alkylbenzenes
4	162		C_6-alkylbenzenes
5	128	NAPH	C_0-naphthalene
6	142		C_1-naphthalenes
7	156		C_2-naphthalenes
8	170		C_3-naphthalenes
9	184		C_4-naphthalenes
10	166	FL	C_0-fluorene
11	180		C_1-fluorenes
12	194		C_2-fluorenes
13	208		C_3-fluorenes
14	222		C_4-fluorenes
15	154	BP	C_0-biphenyl
16	168		C_1-biphenyls + dibenzofuran
17	182		C_2-biphenyls + C1 Dibenzofuran
18	178	PHEN	C_0-phenanthrene
19	192		C_1-phenanthrenes
20	206		C_2-phenanthrenes
21	220		C_3-phenanthrenes
22	234		C_4-phenanthrenes
23	202	PY	C_0-pyrene/fluoranthene
24	216		C_1-pyrenes/fluoranthenes
25	230		C_2-pyrenes/fluoranthenes
26	244		C_3-pyrenes/fluoranthenes
27	258		C_4-pyrenes/fluoranthenes
28	228	CHR	C_0-chrysene
29	242		C_1-chrysenes
30	256		C_2-chrysenes
31	270		C_3-chrysenes
32	284		C_4-chrysenes
33	148	BT	C_1-benzothiophenes
34	162		C_2-benzothiophenes
35	176		C_3-benzothiophenes
36	190		C_4-benzothiophenes
37	204		C_5-benzothiophenes

Key for Identifying Aromatic Hydrocarbons – Cont.

No	m/z	Abbreviation	Compound
38	184	DBT	C_0-dibenzothiophene
39	198		C_1-dibenzothiophenes
40	212		C_2-dibenzothiophenes
41	226		C_3-dibenzothiophenes
42	240		C_4-dibenzothiophenes
43	234	NBT	C_0-naphthobenzthiophene
44	248		C_1-naphthobenzthiophenes
45	262		C_2-naphthobenzthiophenes
46	276		C_3-naphthobenzthiophenes
47	290		C_4-naphthobenzthiophenes
48	253	MAS	Monoaromatic steranes
49	267		Monoaromatic steranes
50	239		Monoaromatic steranes
51	231	TAS	Triaromatic steranes
52	245		Triaromatic steranes

Aromatic Hydrocarbon Distribution

32628-1 [OL-11145929-010820-EM] 1/10



(C3-C12) Quantitative Molecular Characterization by GC/MS - full scan mode

PIANO, Oxygenated Blending Agents, Lead Scavengers, MMT & Thiophenes

Heather Gadwa
GHD Services, Inc.
20818 44th Ave W Suite 190
Lynnwood, WA 98036

Lab ID: 32628-1
Collected: 1/8/2020
Received: 1/9/2020
Matrix: Product
Client ID: OL-11145929-010820-EM

Project: P66 Yakima (AOC 980)
Project #: 11145929
Collected by: Eric Maise

Analyzed: 1/17/2020
Q Method: 110719.M

CONSTITUENTS	CLASS	ABBR.	ssRL mg/kg	RESULT mg/kg	QUALIFIER
Isopentane (2-Methylbutane)	I	IP	78.2	204.5	
1-Pentene	O	1P	156.0	156.0	U
2-Methyl-1-butene	O	2M1B	156.0	156.0	U
Pentane (nC5)	P	C5	117.0	117.0	U
trans-2-pentene	O	T2P	78.2	78.2	U
cis-2-pentene	O	C2P	117.0	117.0	U
2-Methyl-2-butene	O	2M2B	156.0	156.0	U
2,2-Dimethylbutane	I	22DMB	39.0	39.0	U
Cyclopentane	N	CYP	39.1	39.1	U
2,3-Dimethylbutane	I	23DMB	39.0	70.5	
2-Methylpentane	I	2MP	77.9	146.4	
Methyl-tert-butyl ether (MTBE)	ADD	MTBE	38.8	38.8	U
3-Methylpentane	I	3MP	117.2	117.2	U
1-Hexene	O	1HX	116.4	116.4	U
Hexane (nC6)	P	C6	116.5	116.5	U
Di-isopropyl ether (DIPE)	ADD	DIPE	77.8	77.8	U
trans-2-hexene	O	T2HE	116.4	116.4	U
2-Methyl-2-pentene	O	2M2P	156.0	156.0	U
cis-2-hexene	O	C2HE	116.4	116.4	U
cis-3-Methyl-2-pentene	O	C3M2P	156.0	156.0	U
Ethyl-tert-butyl ether (ETBE)	ADD	ETBE	39.1	39.1	U
2,2-Dimethylpentane	I	22DMP	234.2	234.2	U
Methylcyclopentane	N	MCYP	77.6	140.0	
2,4-Dimethylpentane	I	24DMP	117.1	117.1	U
1,2-Dichloroethane (EDC)	ADD	EDC	116.8	116.8	U
Benzene	A	B	155.2	177.2	J
3,3-Dimethylpentane	I	33DMP	117.1	117.1	U
Thiophene	S	THIO	116.8	116.8	U
Cyclohexane	N	CYH	116.7	116.7	U
2-Methylhexane	I	2MH	116.9	316.9	
2,3-Dimethylpentane	I	23DMP	117.4	431.4	

Heather Gadwa
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Lynnwood, WA 98036

Lab ID: 32628-1
Collected: 1/8/2020
Received: 1/9/2020
Matrix: Product
Client ID: OL-11145929-010820-EM

Project: P66 Yakima (AOC 980)
Project #: 11145929
Collected by: Eric Maise

Analyzed: 1/17/2020
Q Method: 110719.M

CONSTITUENTS	CLASS	ABBR.	ssRL mg/kg	RESULT mg/kg	QUALIFIER
Tert-amyl methyl ether (TAME)	ADD	TAME	208.6	208.6	U
3-Methylhexane	I	3MH	116.0	389.5	
trans-1,3-Dimethylcyclopentane	N	T13DMCYP	117.0	117.0	U
cis-1,3-Dimethylcyclopentane	N	C13DMCYP	117.0	117.0	U
trans-1,2-Dimethylcyclopentane	N	T12DMCYP	117.0	139.5	J
2,2,4-Trimethylpentane (isooctane)	I	224TMP	233.5	1259.9	
1-Heptene	O	1HP	233.8	233.8	U
Heptane (nC7)	P	C7	32.3	498.6	
trans-2-heptene	O	T2HP	233.8	233.8	U
Methylcyclohexane	N	MCYH	117.0	360.3	
2,5-Dimethylhexane	I	25DMH	234.2	237.8	J
2,2,3-Trimethylpentane	I	233TMP	38.9	79.6	
2,4-Dimethylhexane	I	24DMH	116.9	239.9	
2,3,4-Trimethylpentane	I	234TMP	116.7	938.6	
2,3,3-Trimethylpentane	I	233TMP	117.1	951.9	
Toluene	A	T	39.0	39.0	U
2-Methylthiophene	S	2MTHIO	117.0	117.0	U
2,3-Dimethylhexane	I	23DMH	155.0	155.0	U
3-Methylthiophene	S	3MTHIO	116.6	116.6	U
2-Methylheptane	I	2MHP	155.9	298.4	
4-Methylheptane	I	4MHP	116.9	154.2	J
3-Methylheptane	I	3MHP	117.0	780.1	
3-Ethylhexane	I	3EHX	233.3	233.3	U
1,2-Dibromoethane (EDB)	ADD	EDB	233.5	233.5	U
1-Octene	O	1O	311.6	311.6	U
Octane (nC8)	P	C8	312.0	727.9	
2,4-Dimethylheptane	I	24DMHP	233.3	699.8	
2,5-Dimethylheptane	I	25DMHP	233.3	887.5	
Ethylbenzene	A	EB	51.9	298.5	
2-Ethylthiophene	S	2ETHIO	104.3	104.3	U
2,3-Dimethylheptane	I	23DMHP	233.3	964.5	

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GHD Services, Inc.
20818 44th Ave W Suite 190
Lynnwood, WA 98036

Lab ID: 32628-1
Collected: 1/8/2020
Received: 1/9/2020
Matrix: Product
Client ID: OL-11145929-010820-EM

Project: P66 Yakima (AOC 980)
Project #: 11145929
Collected by: Eric Maise

Analyzed: 1/17/2020
Q Method: 110719.M

CONSTITUENTS	CLASS	ABBR.	ssRL mg/kg	RESULT mg/kg	QUALIFIER
m-Xylene	A	MX	51.8	51.8	U
p-Xylene	A	PX	52.1	124.3	
4-Methyloctane	I	4MO	156.0	619.3	
2-Methyloctane	I	2MO	156.0	619.2	
3-Methyloctane	I	3MO	156.0	848.7	
Styrene	A	STRE	51.9	51.9	U
o-Xylene	A	OX	52.0	52.0	U
1-Nonene	O	1N	311.8	311.8	U
Nonane (nC9)	P	C9	311.6	639.7	
Isopropylbenzene (cumene)	A	IPROPB	52.1	100.4	
n-Propylbenzene	A	NPRPPB	51.8	225.0	
1-Methyl-3-ethylbenzene	A	1M3EB	51.9	51.9	U
1-Methyl-4-ethylbenzene	A	1M4EB	51.8	233.4	
1,3,5-Trimethylbenzene (mesitylene)	A	135TMB	51.7	51.7	U
1-Methyl-2-ethylbenzene	A	1M2EB	51.7	307.9	
1,2,4-Trimethylbenzene	A	124TMB	51.9	258.3	
1-Decene	O	1D	310.8	310.8	U
Decane (nC10)	P	C10	311.6	311.6	U
sec-Butylbenzene	A	SBUB	103.9	103.9	U
1-Methyl-3-isopropylbenzene (m-cymene)	A	1M3IPROPB	51.9	51.9	U
1-Methyl-4-isopropylbenzene (p-cymene)	A	1M4IPROPB	51.9	51.9	U
Indane	A	IA	51.8	246.6	
Indene	A	IE	103.9	103.9	U
1-Methyl-2-isopropybenzene (o-cymene)	A	1M2IPROPB	43.1	43.1	U
1-Methyl-3-propylbenzene	A	1M3PROPB	43.1	43.1	U
1-Methyl-4-propylbenzene	A	1M4PROPB	52.0	276.9	
n-Butylbenzene	A	NBB	51.8	113.9	
1,3-Dimethyl-5-ethylbenzene	A	13DM5EB	51.7	51.7	U
1,2,diethylbenzene	A	12DEB	51.9	114.6	
1-Methyl-2-propylbenzene	A	1M2PROPB	52.1	341.3	
1,4-Dimethyl-2-ethylbenzene	A	14DM2EB	51.9	327.6	

Heather Gadwa
GHD Services, Inc.
20818 44th Ave W Suite 190
Lynnwood, WA 98036

Lab ID: 32628-1
Collected: 1/8/2020
Received: 1/9/2020
Matrix: Product
Client ID: OL-11145929-010820-EM

Project: P66 Yakima (AOC 980)
Project #: 11145929
Collected by: Eric Maise

Analyzed: 1/17/2020
Q Method: 110719.M

CONSTITUENTS	CLASS	ABBR.	ssRL mg/kg	RESULT mg/kg	QUALIFIER
1,3-Dimethyl-4-ethylbenzene	A	13DM4EB	51.6	51.6	U
1,2-Dimethyl-4-ethylbenzene	A	12DM4EB	52.0	666.0	
1,2-Dimethyl-3-ethylbenzene	A	12DM3EB	52.2	118.7	
Undecane (nC11)	P	C11	104.0	104.0	U
1,2,4,5-Tetramethylbenzene	A	1245TMB	51.9	784.2	
1,2,3,5-Tetramethylbenzene	A	1235TMB	51.9	752.6	
n-Pentylbenzene	A	NPYB	130.1	130.1	U
Naphthalene	A	N	130.3	130.3	U
Benzothiophene	S	BTHIO	129.6	129.6	U
Dodecane (nC12)	P	C12	260.7	260.7	U
1,2,3,4-Tetramethylbenzene	A	1234TMB	129.8	408.2	
MMT	ADD	MMT	214.2	214.2	U
2-Methylnaphthalene	A	2MN	129.6	727.3	
1-Methylnaphthalene	A	1MN	130.0	551.8	

Benzene d-6 (RS)	106.42	%
Toluene-d8 (RS)	88.64	%
Ethylbenzene d10 (RS)	101.91	%

ssRL - Sample Specific Reporting Limit
Results listed as U would have been reported if present at or above the listed ssRL
J - Values greater than the ssRL but less than the PQL (3 x ssRL).
D - Secondary dilution perfomed
Q - Surrogate recovery limit exceedance
I - Matrix Interference
NC - Not calibrated
Note: Extracted by EPA 5030 (Purge and Trap).

US631

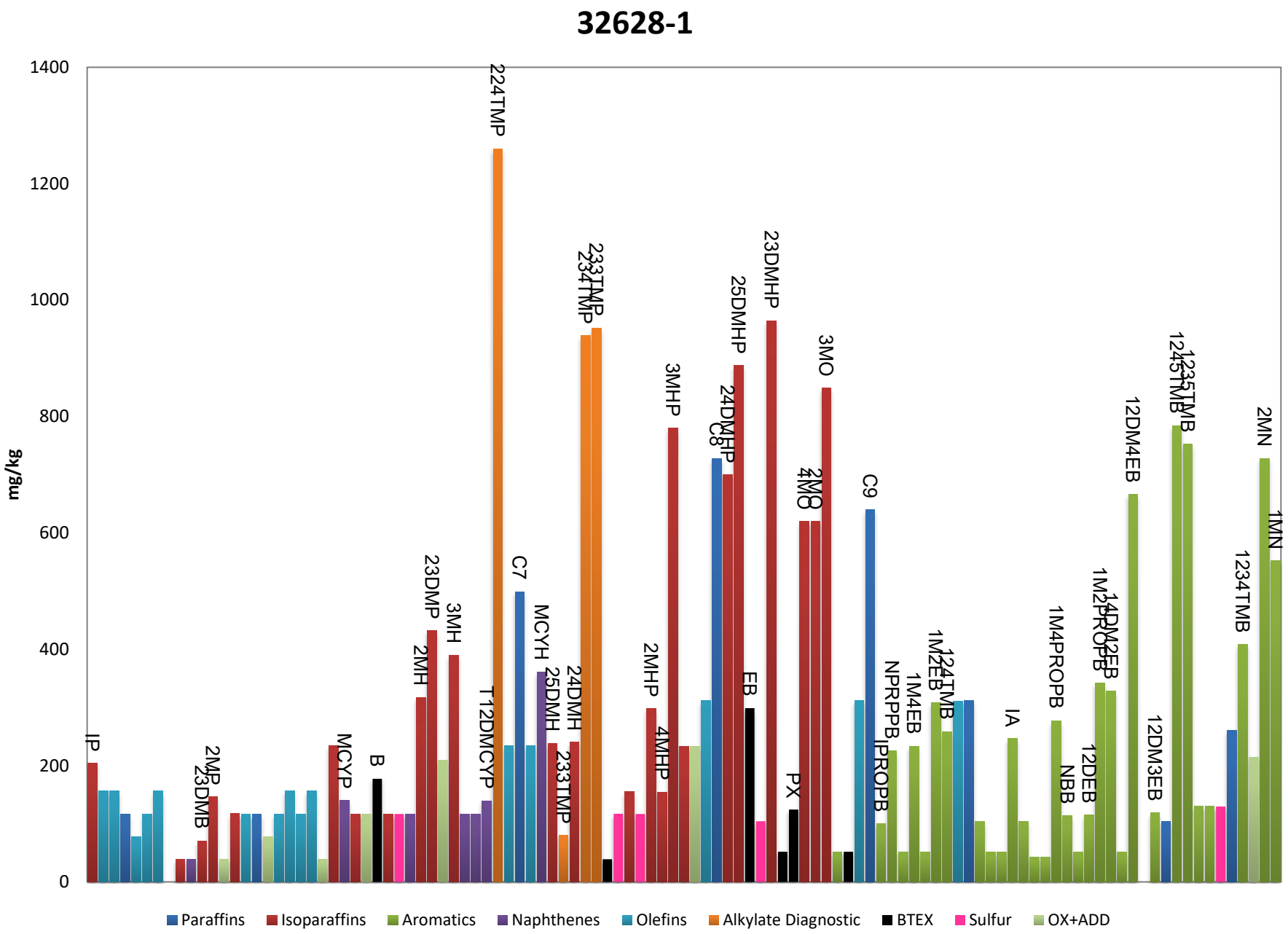
01162020-PROD3.D & dilution 01162020-PROD3.D

Submitted by,
Pace Energy Services, LLC

PAES ID	**32628-1**
Sample ID	**OL-11145929-010820-EM**
Evaporation	
n-Pentane / (n-Pentane+n-Heptane)	NR
2-Methylpentane / (2-Methylpentane+2-Methylheptane)	0.33
Waterwashing	
Benzene / (Benzene+Cyclohexane)	NR
Toluene / (Toluene+Methylcyclohexane)	NR
Aromatics / Total Paraffins (n+iso+cyc)	0.52
Aromatics / Naphthenes	11.18
wt% < o-xylene	65.41
Biodegradation	
(C4-C8 Para +Isopara) / C4-C8 Olefins	NR
3-Methylhexane / n-Heptane	0.78
Methylcyclohexane / n-Heptane	0.72
Isoparaffins + Naphthenes / Paraffins	6.31
Diagnostic Ratios (Refining Properties)	
2,2,4-Trimethylpentane / (2,2,4-Trimethylpentane+Methylcyclohexane)	0.8
2,2,4-Trimethylpentane / Total TMPs	0.39
nC9 / Isopropylbenzene	6.37
nC10 / 1-Methyl-2-ethylbenzene	NR
nC11 / 1,4-Dimethyl-2-ethylbenzene	NR
iC5 / (iC5+nC5)	NR
(2-methylhexane + 2,3dimethylpentane) / (3-methylhexane + 2,4 dimethylpentane)	NR
Naphthalene / (Naphthalene+nC12)	NR
Methylcyclohexane/(Methylcyclohexane+Toluene)	NR
Toluene/n-Octane	NR
Oxygenates & Other (mg/kg)	
Methyl-tert-butyl ether (MTBE)	U
Di-isopropyl ether (DIPE)	U
Ethyl-tert-butyl ether (ETBE)	U
Tert-amyl methyl ether (TAME)	U
MMT	U
Lead Scavengers (mg/kg)	
1,2-Dichloroethane (EDC)	U
1,2-Dibromoethane (EDB)	U
Sulfur containing HCs (mg/kg)	
Thiophene	U
2-Methylthiophene	U
3-Methylthiophene	U
2-Ethylthiophene	U
Benzothiophene	U
Relative Percentages	
% Paraffinic	9.0
% Isoparaffinic	53.6
% Aromatic	34.4
% Naphthenic	3.1
% Olefinic	0.0

Note: If field is "NR" a ratio was not calculable.

SAMPLE HISTOGRAM



Supporting Quality Control Results

Heather Gadwa
GHD Services, Inc.
20818 44th Ave W Suite 190
Lynnwood, WA 98036

Lab ID: **011682020-BLK.D**
Collected:
Received:
Matrix:

Project: **P66 Yakima (AOC 980)**
Project #: **11145929**
Collected by:

QC type: **Method Blank**
Analyzed: **1/16/2020**
Q Method: **110719.M**

CONSTITUENTS	ssRL ug/L	RESULT ug/L	QUAL
Isopentane (2-Methylbutane)	0.9	0.9	U
1-Pentene	1.8	1.8	U
2-Methyl-1-butene	1.8	1.8	U
Pentane (nC5)	1.4	1.4	U
trans-2-pentene	0.9	0.9	U
cis-2-pentene	1.4	1.4	U
2-Methyl-2-butene	1.8	1.8	U
2,2-Dimethylbutane	0.5	0.5	U
Cyclopentane	0.5	0.5	U
2,3-Dimethylbutane	0.5	0.5	U
2-Methylpentane	0.9	0.9	U
Methyl-tert-butyl ether (MTBE)	0.5	0.5	U
3-Methylpentane	1.4	1.4	U
1-Hexene	1.4	1.4	U
Hexane (nC6)	1.4	1.4	U
Di-isopropyl ether (DIPE)	0.9	0.9	U
trans-2-hexene	1.4	1.4	U
2-Methyl-2-pentene	1.8	1.8	U
cis-2-hexene	1.4	1.4	U
cis-3-Methyl-2-pentene	1.8	1.8	U
Ethyl-tert-butyl ether (ETBE)	0.5	0.5	U
2,2-Dimethylpentane	2.7	2.7	U
Methylcyclopentane	0.9	0.9	U
2,4-Dimethylpentane	1.4	1.4	U
1,2-Dichloroethane (EDC)	1.4	1.4	U
Benzene	1.8	1.8	U
3,3-Dimethylpentane	1.4	1.4	U
Thiophene	1.4	1.4	U
Cyclohexane	1.4	1.4	U
2-Methylhexane	1.4	1.4	U
2,3-Dimethylpentane	1.4	1.4	U

Heather Gadwa
GHD Services, Inc.
20818 44th Ave W Suite 190
Lynnwood, WA 98036

Lab ID: 011682020-BLK.D
Collected:
Received:
Matrix:

Project: P66 Yakima (AOC 980)
Project #: 11145929
Collected by:

QC type: Method Blank
Analyzed: 1/16/2020
Q Method: 110719.M

CONSTITUENTS	ssRL ug/L	RESULT ug/L	QUAL
Tert-amyl methyl ether (TAME)	2.4	2.4	U
3-Methylhexane	1.4	1.4	U
trans-1,3-Dimethylcyclopentane	1.4	1.4	U
cis-1,3-Dimethylcyclopentane	1.4	1.4	U
trans-1,2-Dimethylcyclopentane	1.4	1.4	U
2,2,4-Trimethylpentane (isooctane)	2.7	2.7	U
1-Heptene	2.7	2.7	U
Heptane (nC7)	0.4	0.4	U
trans-2-heptene	2.7	2.7	U
Methylcyclohexane	1.4	1.4	U
2,5-Dimethylhexane	2.7	2.7	U
2,2,3-Trimethylpentane	0.5	0.5	U
2,4-Dimethylhexane	1.4	1.4	U
2,3,4-Trimethylpentane	1.4	1.4	U
2,3,3-Trimethylpentane	1.4	1.4	U
Toluene	0.5	0.5	U
2-Methylthiophene	1.4	1.4	U
2,3-Dimethylhexane	1.8	1.8	U
3-Methylthiophene	1.4	1.4	U
2-Methylheptane	1.8	1.8	U
4-Methylheptane	1.4	1.4	U
3-Methylheptane	1.4	1.4	U
3-Ethylhexane	2.7	2.7	U
1,2-Dibromoethane (EDB)	2.7	2.7	U
1-Octene	3.6	3.6	U
Octane (nC8)	3.6	3.6	U
2,4-Dimethylheptane	2.7	2.7	U
2,5-Dimethylheptane	2.7	2.7	U
Ethylbenzene	0.6	0.6	U
2-Ethylthiophene	1.2	1.2	U
2,3-Dimethylheptane	2.7	2.7	U

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Lynnwood, WA 98036

Lab ID: 011682020-BLK.D
Collected:
Received:
Matrix:

Project: P66 Yakima (AOC 980)
Project #: 11145929
Collected by:

QC type: Method Blank
Analyzed: 1/16/2020
Q Method: 110719.M

CONSTITUENTS	ssRL ug/L	RESULT ug/L	QUAL
m-Xylene	0.6	0.6	U
p-Xylene	0.6	0.6	U
4-Methyloctane	1.8	1.8	U
2-Methyloctane	1.8	1.8	U
3-Methyloctane	1.8	1.8	U
Styrene	0.6	0.6	U
o-Xylene	0.6	0.6	U
1-Nonene	3.6	3.6	U
Nonane (nC9)	3.6	3.6	U
Isopropylbenzene (cumene)	0.6	0.6	U
n-Propylbenzene	0.6	0.6	U
1-Methyl-3-ethylbenzene	0.6	0.6	U
1-Methyl-4-ethylbenzene	0.6	0.6	U
1,3,5-Trimethylbenzene (mesitylene)	0.6	0.6	U
1-Methyl-2-ethylbenzene	0.6	0.6	U
1,2,4-Trimethylbenzene	0.6	0.6	U
1-Decene	3.6	3.6	U
Decane (nC10)	3.6	3.6	U
sec-Butylbenzene	1.2	1.2	U
1-Methyl-3-isopropylbenzene (m-cymene)	0.6	0.6	U
1-Methyl-4-isopropylbenzene (p-cymene)	0.6	0.6	U
Indane	0.6	0.6	U
Indene	1.2	1.2	U
1-Methyl-2-isopropybenzene (o-cymene)	0.5	0.5	U
1-Methyl-3-propylbenzene	0.5	0.5	U
1-Methyl-4-propylbenzene	0.6	0.6	U
n-Butylbenzene	0.6	0.6	U
1,3-Dimethyl-5-ethylbenzene	0.6	0.6	U
1,2,diethylbenzene	0.6	0.6	U
1-Methyl-2-propylbenzene	0.6	0.6	U
1,4-Dimethyl-2-ethylbenzene	0.6	0.6	U

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Lab ID: 011682020-BLK.D
Collected:
Received:
Matrix:

Project: P66 Yakima (AOC 980)
Project #: 11145929
Collected by:

QC type: Method Blank
Analyzed: 1/16/2020
Q Method: 110719.M

CONSTITUENTS	ssRL ug/L	RESULT ug/L	QUAL
1,3-Dimethyl-4-ethylbenzene	0.6	0.6	U
1,2-Dimethyl-4-ethylbenzene	0.6	0.6	U
1,2-Dimethyl-3-ethylbenzene	0.6	0.6	U
Undecane (nC11)	1.2	1.2	U
1,2,4,5-Tetramethylbenzene	0.6	0.6	U
1,2,3,5-Tetramethylbenzene	0.6	0.6	U
n-Pentylbenzene	1.5	1.5	U
Naphthalene	1.5	1.5	U
Benzothiophene	1.5	1.5	U
Dodecane (nC12)	3.0	3.0	U
1,2,3,4-Tetramethylbenzene	1.5	1.5	U
2-Methylnaphthalene	1.5	1.5	U
1-Methylnaphthalene	1.5	1.5	U
Benzene d-6 (RS)		95	
Toluene-d8 (RS)		99	
Ethylbenzene d10 (RS)		107	

ssRL - Sample Specific Reporting Limit
Results listed as U would have been reported if present at or above the listed ssRL
B - Exceeds PQL - 3 x ssRL
Q - Surrogate recovery limit exceedance
NC - Not calibrated
J - Values greater than the ssRL but less than the PQL.
Note: Extracted by EPA 5030 (Purge and Trap).

US631
011682020-BLK.D

Submitted by,
Pace Energy Services, LLC

Heather Gadwa
GHD Services, Inc.
20818 44th Ave W Suite 190
Lynnwood, WA 98036

Lab ID: 01162020-LCS.D
Collected:
Received:
Matrix:

Project: P66 Yakima (AOC 980)
Project #: 11145929
Collected by:

QC type: LCS
Analyzed: 1/16/2020
Q Method: 110719.M

CONSTITUENTS	RESULT ug/L	Recovery %	Spike Conc. ug/L	QUAL
1-Pentene	46.9	93.1	50.4	
Pentane (nC5)	57.4	113.7	50.5	
Cyclopentane	26.4	52.6	50.1	
1-Hexene	48.1	96.0	50.1	
Hexane (nC6)	50.4	100.6	50.1	
Di-isopropyl ether (DIPE)	40.6	161.5	25.1	LQ
Ethyl-tert-butyl ether (ETBE)	23.2	92.4	25.1	
2,4-Dimethylpentane	61.5	123.1	50.0	
Benzene	24.9	98.8	25.2	
Cyclohexane	42.8	85.2	50.3	
Tert-amyl methyl ether (TAME)	24.7	97.9	25.2	
2,2,4-Trimethylpentane (isooctane)	58.5	116.6	50.1	
Heptane (nC7)	66.8	132.6	50.4	
Toluene	36.6	146.8	25.0	
Octane (nC8)	56.5	112.6	50.1	
Ethylbenzene	36.1	144.1	25.1	
m-Xylene	35.4	140.3	25.2	
p-Xylene	38.2	151.7	25.2	
o-Xylene	32.5	129.6	25.1	
Nonane (nC9)	82.8	110.5	75.0	
n-Propylbenzene	33.5	133.6	25.1	
1,3,5-Trimethylbenzene (mesitylene)	32.3	128.0	25.3	
1-Decene	91.6	122.2	75.0	
Decane (nC10)	75.1	99.8	75.3	
n-Butylbenzene	22.1	88.4	25.0	
n-Pentylbenzene	20.1	79.8	25.2	
Dodecane (nC12)	61.7	122.4	50.4	
Benzene d-6 (RS)		96		
Toluene-d8 (RS)		96		
Ethylbenzene d10 (RS)		112		

ssRL - Sample Specific Reporting Limit
Q - Surrogate recovery limit exceedance
I - Matrix Interference
NC - Not calibrated
LQ - Percent difference exceedance (50 - 160)
Note: Extracted by EPA 5030 (Purge and Trap).

US631
01162020-LCS.D

Submitted by,
Pace Energy Services, LLC

Heather Gadwa
GHD Services, Inc.
20818 44th Ave W Suite 190
Lynnwood, WA 98036

Lab ID: **01162020-LCSD.D**
Collected:
Received:
Matrix:

Project: **P66 Yakima (AOC 980)**
Project #: **11145929**
Collected by:

QC type: **LCSD**
Analyzed: **1/16/2020**
Q Method: **110719.M**

CONSTITUENTS	RESULT ug/L	Recovery %	Spike Conc. ug/L	RPD %	QUAL
1-Pentene	48.9	97.1	50.4	4.1	
Pentane (nC5)	60.1	119.0	50.5	4.5	
Cyclopentane	27.4	54.7	50.1	3.9	
1-Hexene	48.9	97.7	50.1	1.8	
Hexane (nC6)	50.3	100.3	50.1	0.3	
Di-isopropyl ether (DIPE)	42.6	169.6	25.1	4.9	
Ethyl-tert-butyl ether (ETBE)	24.0	95.7	25.1	3.6	
2,4-Dimethylpentane	61.6	123.3	50.0	0.1	
Benzene	25.4	100.9	25.2	2.1	
Cyclohexane	43.8	87.2	50.3	2.3	
Tert-amyl methyl ether (TAME)	24.5	97.3	25.2	0.6	
2,2,4-Trimethylpentane (isooctane)	56.1	112.0	50.1	4.0	
Heptane (nC7)	62.9	124.9	50.4	6.0	
Toluene	35.4	141.9	25.0	3.4	
Octane (nC8)	52.3	104.3	50.1	7.7	
Ethylbenzene	35.0	139.5	25.1	3.2	
m-Xylene	34.2	135.8	25.2	3.2	
p-Xylene	38.3	151.8	25.2	0.1	
o-Xylene	31.0	123.5	25.1	4.8	
Nonane (nC9)	77.3	103.1	75.0	6.9	
n-Propylbenzene	31.9	127.4	25.1	4.7	
1,3,5-Trimethylbenzene (mesitylene)	31.0	122.9	25.3	4.0	
1-Decene	86.8	115.7	75.0	5.4	
Decane (nC10)	72.4	96.3	75.3	3.6	
n-Butylbenzene	21.3	85.5	25.0	3.3	
n-Pentylbenzene	19.0	75.3	25.2	5.8	
Dodecane (nC12)	58.0	115.1	50.4	6.2	
Benzene d-6 (RS)		101			
Toluene-d8 (RS)		97			
Ethylbenzene d10 (RS)		111			

ssRL - Sample Specific Reporting Limit
Q - Surrogate recovery limit exceedance
I - Matrix Interference

NC - Not calibrated
RQ - Percent difference exceeded (15)
LQ - Percent difference exceedance (50 - 160)
Note: Extracted by EPA 5030 (Purge and Trap).

US631
01162020-LCSD.D

Submitted by,
Pace Energy Services, LLC

Heather Gadwa
GHD Services, Inc.
20818 44th Ave W Suite 190
Lynnwood, WA 98036

Lab ID: **01162020-SRM.D**
Collected:
Received:
Matrix: **Product/Soil**

Project: **P66 Yakima (AOC 980)**
Project #: **11145929**
Collected by:

QC type: **NIST SRM 2295**
Q Method: **110719.M**

CONSTITUENTS	RESULT mg/kg	ssRL mg/kg	D Flag	NIST Result mg/kg	Passing Diff. %	Actual Diff. %	QUAL
1-Pentene	5342.5	4854.4	D	7400.0	45	32.3	
Pentane (nC5)	26739.8	606.8		35700.0	45	28.7	
Methyl-tert-butyl ether (MTBE)	108905.5	4854.4	D	145400.0	45	28.7	
Hexane (nC6)	31920.5	606.8		37000.0	45	14.7	
2,4-Dimethylpentane	67425.1	606.8		79000.0	45	15.8	
Benzene	9164.7	606.8		9900.0	45	7.7	
Thiophene	201.4	606.8		260.0	45	25.4	
Cyclohexane	62345.9	606.8		88400.0	45	34.6	
2,2,4-Trimethylpentane (isooctane)	117035.3	606.8		118000.0	45	0.8	
1-Heptene	21097.3	606.8		15000.0	45	33.8	
Heptane (nC7)	95003.5	606.8		77700.0	45	20.0	
Toluene	123850.3	4854.4	D	78900.0	45	44.3	
3-Methylthiophene	176.5	606.8		300.0	45	51.9	SQ
Octane (nC8)	84825.6	606.8		79800.0	45	6.1	
Ethylbenzene	21500.7	4854.4	D	19600.0	45	9.2	
m,p-Xylenes	51262.6	4854.4	D	58700.0	45	13.5	
o-Xylene	13661.5	4854.4	D	19700.0	45	36.2	
1,3,5-Trimethylbenzene (mesitylene)	28374.4	606.8		19700.0	45	36.1	
1,2,4-Trimethylbenzene	29161.6	606.8		20010.0	45	37.2	
Decane (nC10)	44076.6	606.8		41400.0	45	6.3	
1,2,4,5-Tetramethylbenzene	8613.2	606.8		9600.0	45	10.8	
Naphthalene	10069.6	4854.4	D	11500.0	45	13.3	
Benzothiophene	1228.1	606.8		440.0	45	94.5	SQ
Benzene d-6 (RS)	90						
Toluene-d8 (RS)	94						
Ethylbenzene d10 (RS)	109						

ssRL - Sample Specific Reporting Limit
D - Secondary dilution perfomed
Q - Surrogate recovery limit exceedance
SQ - SRM percent difference exceeded
I - Matrix Interference
NC - Not calibrated
Note: Extracted by EPA 5030 (Purge and Trap).

US631
01162020-SRM.D

Submitted by,
Pace Energy Services, LLC

Heather Gadwa
GHD Services, Inc.
20818 44th Ave W Suite 190
Lynnwood, WA 98036

Lab ID: **10PPB CCV**
Collected:
Received:
Matrix: **Water**

Project: **P66 Yakima (AOC 980)**
Project #: **11145929**
Collected by:

QC type: **CCV**
Q Method: **110719.M**

CONSTITUENTS	AMOUNT ng/ml	Calc. ng/ml	Dev. %	RRF Q
Isopentane (2-Methylbutane)	24.2	17.9	35.7	
1-Pentene	24.1	21.6	11.6	
2-Methyl-1-butene	24.1	23.2	3.8	
Pentane (nC5)	36.2	36.7	1.4	
trans-2-pentene	24.2	24.4	0.8	
cis-2-pentene	36.3	35.6	2.1	
Cyclopentane	12.1	10.1	19.6	
2,3-Dimethylbutane	12.0	10.3	17.4	
2-Methylpentane	24.1	21.8	10.3	
Methyl-tert-butyl ether (MTBE)	12.0	8.7	37.6	
3-Methylpentane	36.3	34.0	6.8	
1-Hexene	36.0	35.5	1.5	
Hexane (nC6)	36.0	37.9	5.0	
Di-isopropyl ether (DIPE)	24.1	18.0	33.8	
Ethyl-tert-butyl ether (ETBE)	12.1	11.4	6.5	
Methylcyclopentane	24.0	20.0	20.2	
2,4-Dimethylpentane	36.2	45.3	20.0	
1,2-Dichloroethane (EDC)	36.2	35.0	3.4	
Benzene	24.0	24.2	0.7	
Thiophene	36.1	34.0	6.4	
Cyclohexane	36.1	31.2	15.7	
2-Methylhexane	36.2	46.2	21.7	
2,3-Dimethylpentane	36.3	38.4	5.5	
Tert-amyl methyl ether (TAME)	24.2	19.8	22.0	
3-Methylhexane	35.9	46.2	22.3	
2,2,4-Trimethylpentane (isooctane)	36.1	39.9	9.4	
1-Heptene	36.2	48.4	25.3	
Heptane (nC7)	36.1	47.1	23.3	
Methylcyclohexane	36.2	46.0	21.2	
2,5-Dimethylhexane	36.2	54.9	34.0	
2,2,3-Trimethylpentane	12.0	14.7	18.2	
2,4-Dimethylhexane	36.2	46.6	22.5	
2,3,4-Trimethylpentane	36.1	39.8	9.3	

Heather Gadwa
GHD Services, Inc.
20818 44th Ave W Suite 190
Lynnwood, WA 98036

Lab ID:	**10PPB CCV**		
Collected:			
Received:			
Matrix:	**Water**		
Project:	**P66 Yakima (AOC 980)**	**QC type:**	**CCV**
Project #:	**11145929**		
Collected by:		**Q Method:**	**110719.M**

CONSTITUENTS	AMOUNT ng/ml	Calc. ng/ml	Dev. %	RRF Q
2,3,3-Trimethylpentane	36.2	44.5	18.6	
Toluene	12.1	15.3	21.3	
2-Methylthiophene	36.2	49.3	26.6	
2,3-Dimethylhexane	37.0	49.5	25.3	
3-Methylthiophene	36.1	52.2	30.9	
2-Methylheptane	36.2	54.9	34.2	
3-Methylheptane	36.2	46.5	22.1	
3-Ethylhexane	36.1	42.2	14.5	
1,2-Dibromoethane (EDB)	36.1	41.1	12.1	
1-Octene	36.1	53.2	32.0	
Octane (nC8)	36.2	46.1	21.5	
Ethylbenzene	12.0	14.7	17.9	
2-Ethylthiophene	24.2	34.4	29.7	
m-Xylene	12.0	14.8	18.5	
p-Xylene	12.1	17.7	31.7	
Styrene	12.0	10.7	12.4	
o-Xylene	12.1	15.7	22.9	
1-Nonene	36.2	47.7	24.2	
Nonane (nC9)	36.1	41.3	12.5	
Isopropylbenzene (cumene)	12.1	14.6	17.2	
n-Propylbenzene	12.0	13.3	9.9	
1-Methyl-3-ethylbenzene	12.0	14.5	16.6	
1-Methyl-4-ethylbenzene	12.0	16.4	26.8	
1,3,5-Trimethylbenzene (mesitylene)	12.0	14.7	18.6	
1-Methyl-2-ethylbenzene	12.0	14.2	15.6	
1,2,4-Trimethylbenzene	12.0	13.3	9.6	
1-Decene	36.1	48.8	26.2	
Decane (nC10)	36.1	32.9	9.8	
sec-Butylbenzene	12.0	15.1	20.4	
1-Methyl-3-isopropylbenzene (m-cymene)	12.0	12.7	4.8	
1-Methyl-4-isopropylbenzene (p-cymene)	12.0	14.0	14.1	

Heather Gadwa
GHD Services, Inc.
20818 44th Ave W Suite 190
Lynnwood, WA 98036

Lab ID: **10PPB CCV**
Collected:
Received:
Matrix: **Water**

Project: **P66 Yakima (AOC 980)**
Project #: **11145929**
Collected by:

QC type: **CCV**
Q Method: **110719.M**

CONSTITUENTS	AMOUNT ng/ml	Calc. ng/ml	Dev. %	RRF Q
Indane	12.0	12.4	3.3	
Indene	12.0	11.4	5.4	
1-Methyl-2-isopropybenzene (o-cymene)	12.0	13.3	9.8	
1-Methyl-3-propylbenzene	12.0	12.7	5.4	
1-Methyl-4-propylbenzene	12.1	14.5	16.8	
n-Butylbenzene	12.0	14.5	17.1	
1,3-Dimethyl-5-ethylbenzene	12.0	14.2	15.7	
1,2,diethylbenzene	12.0	13.9	13.3	
1-Methyl-2-propylbenzene	12.1	13.8	12.6	
1,4-Dimethyl-2-ethylbenzene	12.1	12.7	5.1	
1,3-Dimethyl-4-ethylbenzene	12.0	14.1	15.2	
1,2-Dimethyl-4-ethylbenzene	12.1	13.5	10.8	
1,2-Dimethyl-3-ethylbenzene	12.1	13.8	12.0	
Undecane (nC11)	24.1	29.1	17.0	
1,2,4,5-Tetramethylbenzene	12.0	12.6	4.4	
n-Pentylbenzene	12.1	11.3	7.0	
Naphthalene	12.1	8.1	49.5	
Benzothiophene	12.0	8.4	42.6	
Dodecane (nC12)	24.2	34.7	30.3	
2-Methylnaphthalene	12.0	6.7	80.5	CQ
1-Methylnaphthalene	12.1	7.6	59.4	CQ
Benzene d-6 (RS)	10.0	11.1	10.2	
Toluene-d8 (RS)	10.0	12.6	20.3	
Ethylbenzene d10 (RS)	10.0	9.8	2.5	

CQ - Continuing calibration % difference exceeded
Note: Extracted by EPA 5030 (Purge and Trap).

US631
01162020-CCV.D

Submitted by,
Pace Energy Services, LLC

Organic Lead Speciation
by GC/ECD

EDB, TML, TMEL, DMDEL, MTEL, TEL

Heather Gadwa
GHD Services Inc.
20818 44th Ave W, Suite 190
Lynnwood, WA 98036

Lab ID: **32628-1**
Collected: **1/8/20**
Received: **1/9/20**
Matrix: **Product**

Project: **P66 Yakima**
Client ID: **OL-11145929-010820-EM**

Project #: **11145929.00**
Collected by: **Eric Maise**
Analyzed: **1/22/2020**
Q Method: **GC/ECD**

Constituents	ssRL mg/kg	PQL mg/kg	Result mg/kg	Blank mg/L
Ethylene Dibromide	0.6	1.7	U	<0.1
Tetramethyl Lead	5.6	16.9	U	<1.0
Trimethylethyl Lead	5.6	16.9	U	<1.0
Dimethyldiethyl Lead	5.6	16.9	7.3 J	<1.0
Methyltriethyl Lead	5.6	16.9	31.9	<1.0
Tetraethyl Lead	5.6	16.9	123.2	<1.0
Methylcyclopentadienyl Manganese Tricarbonyl	0.6	1.7	< 0.6	<1.0

ssRL - Sample Specific Reporting Limit
U: Not detected
J: value greater than the ssRL but less than the PQL (3xssRL)
Trace detection: If analyte detected below ssRL then < ssRL will be shown

32628-1e
PSB

QUALITY ASSURANCE REPORT

Heather Gadwa
GHD Services Inc.
20818 44th Ave W, Suite 190
Lynnwood, WA 98036

Project # **11145929**
Analyzed: **1/22/2020**
Method: **GC/ECD**

QA DATA FOR EDB, TEL and MMT

ANALYTES	RRF	RRF_D	RPD	ACCEPTANCE LIMIT %
Ethylene Dibromide	0.469	0.501	6.54	±15
Tetraethyl Lead	0.012	0.013	6.03	±15
MMT	0.056	0.060	7.20	±15

RRF = Mean relative response factor from 6 point calibration
RRF_D= Daily calibration standard relative response factor
RPD = Relative Percent Difference
QPB01222020PSB.M

32628-1e
PSB

CHAIN-OF-CUSTODY Analytical Request Document

Pace Analytical®

Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevent fields

LAB USE ONLY- Affix Workorder/Login Label Here or List Pace Workorder Number or MTJL Log-in Number Here

32628

ALL SHADED AREAS are for LAB USE ONLY SRJ 1/9/2020

Company: GHD Services Inc.	Billing Information:
Address: 20818 44th Ave W Suite 190	Lynnwood, WA 98036
Report To: Heather Ladwa	Email To: Heather.Ladwa@ghd.com
Copy To: matthew.davis@ghd.com	Site Collection Info/Address:
Customer Project Name/Number: 11145929	State: WA / County/City: / Time Zone Collected: [X] PT [ ] MT [ ] CT [ ] ET
Phone: 425-563-3200 Email:	Site/Facility ID #: / Compliance Monitoring? [ ] Yes [X] No
Collected By (print): Eric Maise	Purchase Order #: / Quote #: / DW PWS ID #: / DW Location Code:
Collected By (signature):	Turnaround Date Required: / Immediately Packed on Ice: [ ] Yes [ ] No
Sample Disposal: [X] Dispose as appropriate [ ] Return [ ] Archive: [ ] Hold:	Rush: [ ] Same Day [ ] Next Day [ ] 2 Day [ ] 3 Day [ ] 4 Day [ ] 5 Day (Expedite Charges Apply) / Field Filtered (if applicable): [ ] Yes [ ] No / Analysis:

Container Preservative Type **: U

Lab Project Manager:

** Preservative Types: (1) nitric acid, (2) sulfuric acid, (3) hydrochloric acid, (4) sodium hydroxide, (5) zinc acetate, (6) methanol, (7) sodium bisulfate, (8) sodium thiosulfate, (9) hexane, (A) ascorbic acid, (B) ammonium sulfate, (C) ammonium hydroxide, (D) TSP, (U) Unpreserved, (O) Other _____

* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Wastewater (WW), Product (P), Soil/Solid (SL), Oil (OL), Wipe (WP), Air (AR), Tissue (TS), Bioassay (B), Vapor (V), Other (OT)

Customer Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start) Date	Collected (or Composite Start) Time	Composite End Date	Composite End Time	Res Cl	# of Ctns	Analyses: Full Scan	Analyses: PIANO	Analyses: Organic lead
OL-11145929-010820-EM OL	OL	G	1/8/20	1100				2	X	X	X

Lab Profile/Line:

Lab Sample Receipt Checklist:

Custody Seals Present/Intact	Y	N	NA
Custody Signatures Present	Y	N	NA
Collector Signature Present	Y	N	NA
Bottles Intact	Y	N	NA
Correct Bottles	Y	N	NA
Sufficient Volume	Y	N	NA
Samples Received on Ice	Y	N	NA
VOA - Headspace Acceptable	Y	N	NA
USDA Regulated Soils	Y	N	NA
Samples in Holding Time	Y	N	NA
Residual Chlorine Present	Y	N	NA
Cl Strips: _____			
Sample pH Acceptable	Y	N	NA
pH Strips: _____			
Sulfide Present	Y	N	NA
Lead Acetate Strips: _____			

LAB USE ONLY:
Lab Sample # / Comments:

Customer Remarks / Special Conditions / Possible Hazards:

Type of Ice Used: (Wet) Blue Dry None

Packing Material Used:

Radchem sample(s) screened (<500 cpm): Y N NA

SHORT HOLDS PRESENT (<72 hours): Y N N/A

Lab Tracking #: 779529282B3AB78

Samples received via: FEDEX UPS Client Courier Pace Courier

Lab Sample Temperature Info:
Temp Blank Received: (Y) N NA
Therm ID#: _____
Cooler 1 Temp Upon Receipt: 1 oC
Cooler 1 Therm Corr. Factor: _____ oC
Cooler 1 Corrected Temp: _____ oC
Comments:

Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time:
GHD	1/8/20 1340	PHS	1.9.2020 1030

MTJL LAB USE ONLY
Table #:
Acctnum:
Template:
Prelogin:
PM:
PB:

Trip Blank Received: Y N (NA)
HCL MeOH TSP Other

Non Conformance(s): YES / (NO)

Page: _____ of: _____

P66 Yakima

Report Prepared for:

GHD
20818 44th Avenue West
Suite 190
Lynnwood, WA 98036

Report Prepared By:

Mark Jonathan Cejas

Pace Analytical Energy Services, LLC

220 William Pitt Way

Pittsburgh, PA 15238

11 February 2020

Table of Contents

Introduction

Pace Analytical Energy Services, LLC is pleased to provide this report that focuses on the chemical fingerprinting results conducted on behalf of GHD. The interpretive report was carried out on 1 NAPL sample. The objective of this interpretive report is to characterize the petroleum type(s) in the sample with a particular emphasis on age constraining if possible.

Client ID	Lab ID	Date Collected	Date Received	C3-C12 VOC Fingerprinting by GC/MS	C8-C40 SVOC Fingerprinting by GC/MS	Organic Lead Isomers by GC/ECD
OL-11145929-010820-EM	32628-1	1/8/2020	1/9/2020	X	X	X

The sample was submitted to PACE Energy Laboratory (Pittsburgh, PA) and analyzed with the following analytical methods:

1) C8-C40 Semi-Quantitative Petroleum Characterization & "Fingerprinting" by GC/MS (ASTM D5739)
2) C3-C12 PIANO w/ Oxygenates and additives quantification and fingerprinting by GC/MS – full scan mode (EPA 8260 Modified)
1) EDB, MMT, and alkyl lead concentrations by GC/ECD

Analytical Methodology

PIANO Quantitation and Fingerprinting by EPA 8260C Modified

This GC/MS method was used to determine the concentrations of 109 gasoline range compounds, that include oxygenated additives – methyl tertiary butyl ether (MTBE), diisopropyl ether (DIPE), tertiary butyl ether (ETBE), tertiary amyl methyl ether (TAME), along with lead scavenger additives – ethyl dibromide (EDB), and ethylene dichloride (EDC). This analysis also included individual constituents of the five hydrocarbon classes – paraffins, isoparaffins, aromatics, naphthenes, and olefins (PIANO). The product sample was purged with conditions as prescribed in EPA Method 5030A. To bring all analytes within the range defined by the calibration curve, dilutions were performed as required. Compound concentrations were reported as mg/kg.

C8-C40+ Semi-Volatile Range Fingerprinting by GC/MS full scan (ASTM D5739)

Extracts were diluted, then injected into a GC equipped with a 60-meter DB-1 column to separate the hydrocarbons, which are detected with a mass spectrometer (MS) in full scan mode, interfaced to the GC. Hydrocarbons in the range of C_8 to C_{40} are identified. By scanning the ion fragments shown in the following table, labeled chromatograms and numerical values of some hydrocarbons are generated. Aromatic hydrocarbons are identified by scanning over a large number of ion fragments, and the results are normalized in a bar diagram. This analysis also allows for tentative IDs of unknown compounds w/ NIST mass spectra library.

Ion (m/z)	Compound Class
TIC	All Compounds
85	n-Alkanes
113	Iso-Alkanes and Isoprenoids
83	Alkylcyclohexanes
134	C4-Benzenes
123	Bicyclanes
191	Terpanes
217	Steranes
253	Monoaromatic Steranes
231	Triaromatic Steranes
Bar Diagram	Aromatic Hydrocarbons

EDB and alkyl lead speciation in product samples by GC/ECD

Product samples are directly injected into a GC equipped with a 60-meter DB1 column. Tetramethyllead, trimethylethyllead, dimethyldiethyllead, methyltriethyllead, tetraethyllead, methylcyclopentadienyl manganese tricarbonyl, and ethylene dibromide are detected with an electron capture detector (ECD) interfaced to the GC.

Investigation Strategy

The forensics chemical data employed data analysis techniques typically used in a subsurface gasoline forensics investigation. Weathering of the refined parent gasoline was assessed with petroleum geochemistry molecular ratios [1, 2]. United States gasoline refinery process and properties lines of evidence were applied and based on well-established process forensics insights. These insights included historical knowledge of changes in refiners gasoline blending strategies of hydrocarbon feedstocks and additives over time[3,4]. Specifically, characterization of the parent gasoline released relied on the diagnostic characterization of alkylate and straight run gasoline charachteristics. Also, environmental forensics characterization and age constraining of the refined gasoline relied on presence/absence and assemblages of oxygenate additives, organic lead additives, and organic sulfur species. Also, light to middle distillate fuel lines of evidence was based on knowledge of refinery process geochemistry.

Results and Discussion

Evaluations of diagnostic refinery and additives blending features of a spilled gasoline are at the heart of a forensics investigation. The in-depth review of OL-11145929-010820-EM led to the conclusion that the NAPL was composed of gasoline and middle distillate range fuel (Figures 1, 2). A refined gasoline fingerprint is evident in the hydrocarbon fingerprint of Figure 1. A middle distillate fuel is apparent in the isoparaffins (113 m/z – in main data package) and alkylcyclohexanes (83 m/z) distributions (Figure 2). The sample contained more middle distillate fuel than gasoline.

Weathering Properties

Gasoline - Chemical alterations due to waterwashing were assessed by comparing the relationships between the main pairs of more water-soluble compounds of less soluble isomers. The expression of these weathering ratios was compared to proportions that are expected from fresh gasoline. Evaporative weathering was assessed by comparing the relationship of the main pairs of more volatile compounds about less volatile isomers. Both pairs of evaporation ratios share similar aqueous solubility properties (Table 1 ratio 1-2). Review of evaporation and dissolution ratios indicated that OL-11145929-010820-EM exhibited severe impacts from evaporation. The non-reportable BTEX ratio value along with the calculated values from the other dissolution ratios (Table 1 ratios 3-4) indicated a severely waterwashed gasoline.

Middle Distillate - The middle distillate fuel was present in the sample at a higher level than the gasoline. The severe n-paraffins depletion (85 m/z – Figure 2) presents evidence that the middle distillate fuel in the sample was severely altered by biodegradation[5]. In the case of middle distillate fuels, chemical changes due to biodegradation can most easily be observed from the relationship between n-paraffins (nC17) and isoprenoids (pristane). Correctly, the ratio between nC17/and pristane serves as a biodegradation proxy. The nC17/pristane ratio was calculated as

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[1] Kaplan, Isaac R., et al. "Forensic environmental geochemistry: differentiation of fuel-types, their sources and release time." *Organic Geochemistry* 27.5 (1997): 289-317.

[2] Peters, K. E., C. C. Walters, and J. M. Moldowan. *The biomarker guide: Volume 2, Biomarkers and isotopes in petroleum systems and earth history*. Cambridge University Press, 2007.

[3] Stout, Scott A., Gregory S. Douglas, and Alen D. Uhler. "Automotive gasoline." *Environmental Forensics Contaminant Specific Guide* (2006): 465-531.

[4] Kaplan, Isaac R. "Age dating of environmental organic residues." *Environmental Forensics* 4.2 (2003): 95-141.

[5] Wenger, Lloyd M., Cara L. Davis, and Gary H. Isaksen. "Multiple controls on petroleum biodegradation and impact on oil quality." *SPE Reservoir Evaluation & Engineering* 5.05 (2002): 375-383.

0.02 for OL-11145929-010820-EM and supported the qualitative indication that the middle distillate in the sample was severely altered by biodegradation (Table 1). Ratios 7 and 9 in Table 1 are PAH based weathering ratios. The depletions of lesser alkylated and lower ringed PAHs relative to higher alkylated and larger PAHs are reflected in ratios 7 and 9. The values expressed in these ratios indicate that the middle distillate fuel in the sample was severely weathered.

Gasoline Age Constraining

Refinery Process Attributes – The gasoline in OL-11145929-010820-EM was too severely weathered to afford defensible age constraining lines of evidence with diagnostic ratios that target refinery process attributes, e.g. relative character and enrichment of intermediate refinery feedstock.

Organic Lead Isomers - Significant quantities of organic lead additives were detected in OL-11145929-010820-EM. The organic lead fingerprint was consisted with a TEL dominant anti knock package (Figure 1).

The occurrence of organic lead isomers in addition to the process forensics lines of evidence suggests that the gasoline was of a leaded gasoline vintage (pre 1996), and thus not likely related to a recent release.

Middle Distillate Age Constraining

Multiple lines of evidence were applied for the age estimation of the middle distillate fuel containing samples. The lines of evidence included implicit sulfur abundance diagnostics in the D2/P2 ratio, signatures of HDS impacts, and a biodegradation model. The distributions of C1-C3 dibenzothiophenes (DBT) shows that the middle distillate fuel was likely not impacted by a hydro-desulfurization process (HDS) at the refinery (C2 DBT shown in Figure 2). The OL-11145929-010820-EM sample exhibited a D2/P2 value of 0.46 (Table 1). This high ratio value and lack of an HDS impact signature suggests that the middle distillate admixture in OL-11145929-010820-EM was likely a high sulfur middle distillate fuel. Assuming a moderate weathering potential regime in the subsurface, (this is plausible given the depth to groundwater and lithology on-site[6]) in combination with the aforementioned chemical and physical properties of the middle distillate fuel, the middle distillate in the subsurface was not likely recently released. The organic sulfur characteristics suggests that the middle distillate fuel may have been released before 1993 in the case it was an on-road fuel, and possibly released before 2006 in the case it was an off-road variety. Assuming a moderate weathering potential regime, the biodegradation aspects are consistent with a middle distillate fuel having experienced a residence time in the subsurface between 16 – 24 years.

[6] Depth to groundwater varied from ~7 ft. to ~15 ft. The Site is underlain by alluvial deposits consisting of sand with varying amounts of silt, clay, and gravel from ground surface to approximately 3 to 30 feet bgs. Silt and clay layers are also intermittently present throughout the Site from depths of approximately 3 to 18 feet bgs.

Conclusion

It was determined that OL-11145929-010820-EM was a middle distillate fuel/ gasoline admixture. The middle distillate fuel was the dominant component of the mixture. Multiple lines of evidence were used for their age constraining. It was concluded that the gasoline was of a leaded vintage that was likely released before 1996. It was concluded that the middle distillate fuel was likely high sulfur fuel, that was significantly altered by biodegradation in the environment. These #2 fuel attributes present the possibility that the #2 fuel may have been released between 16 and 24 years ago from the moment of sample collection.

Please call the lab at 412-826-5245, or you may email any questions or concerns to mark.cejas@pacelabs.com regarding any analytical data reports or interpretations.

Respectfully submitted,

Mark Jonathan Cejas
Technical Director of Petroleum Forensics

TABLES

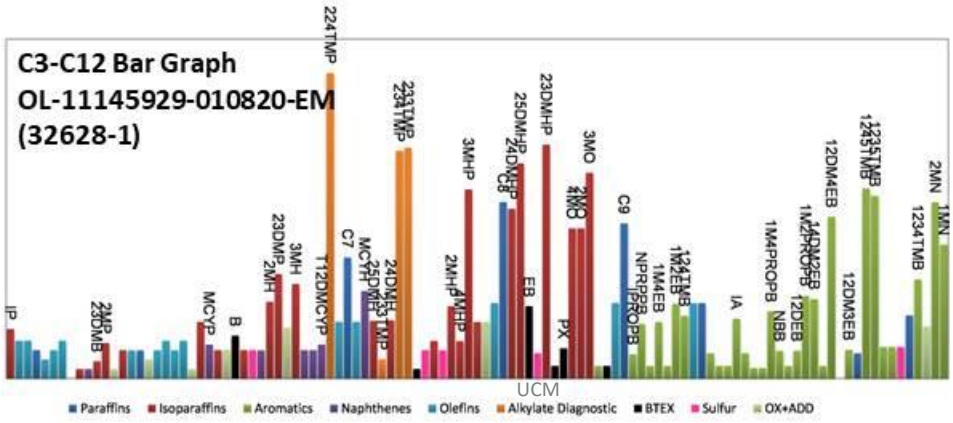
	PAES ID	**32628-1**
	Sample ID	**OL-11145929-010820-EM**
	VOC Diagnostics	
	Evaporation	
1)	n-Pentane / (n-Pentane+n-Heptane)	NR
2)	2-Methylpentane / (2-Methylpentane+2-Methylheptane)	0.33
	Waterwashing	
3)	Toluene / (Toluene+Methylcyclohexane)	NR
4)	(Benzene+Toluene)/(Ethylbenzene+Xylenes)	NR
	Diagnostic Ratios (Refining Properties)	
5)	2,2,4-Trimethylpentane / (2,2,4-Trimethylpentane+Methylcyclohexane)	0.78
6)	2,2,4-Trimethylpentane / Total TMPs	0.39
	Oxygenates & Other (mg/kg)	
	Methyl-tert-butyl ether (MTBE)	U
	Di-isopropyl ether (DIPE)	U
	Ethyl-tert-butyl ether (ETBE)	U
	Tert-amyl methyl ether (TAME)	U
	MMT	U
	Lead Scavengers (mg/kg)	
	1,2-Dichloroethane (EDC)	U
	1,2-Dibromoethane (EDB)	U
	Organic Lead Isomers (mg/kg)	
	Tetramethyl Lead	U
	Trimethylethyl Lead	U
	Dimethyldiethyl Lead	7.30
	Methyltriethyl Lead	31.90
	Tetraethyl Lead	123.20
	SVOC Diagnostics	
7)	N2/P2	1.59
8)	N2/N3	0.43
9)	nC17/Pristane Ratio	0.02
10)	D2/P2	0.46
11)	DEC2/N2	0.47

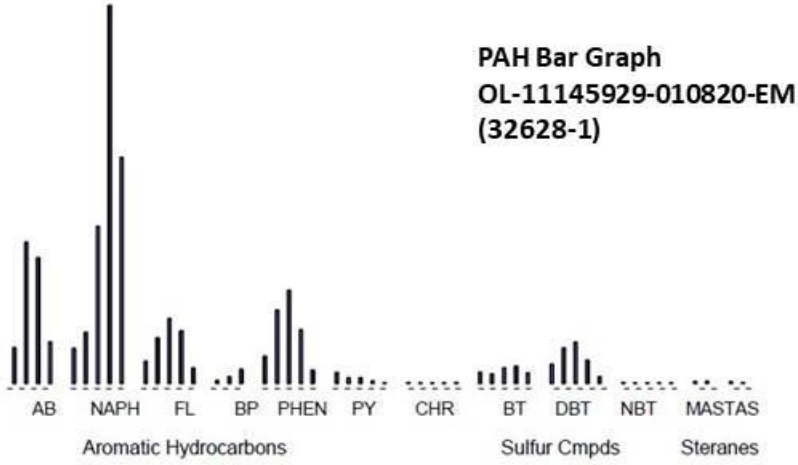
Note: If field is "NR" a ratio was not calculable.

D2=C2-Dibenzothiophenes
P2=C2-Phenanthrenes
DEC2-C2-Decalins
N2-C2-Naphthalenes

Table 1. Table of diagnostic information.

FIGURES





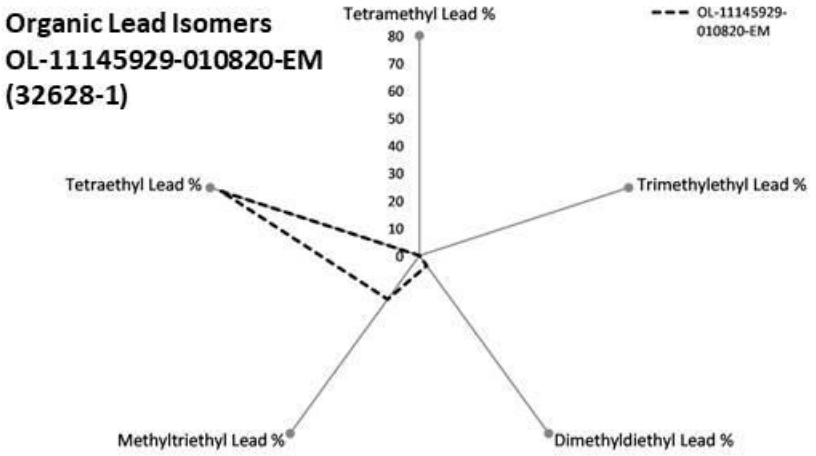


Figure 1. Diagnostic information for 32628-1

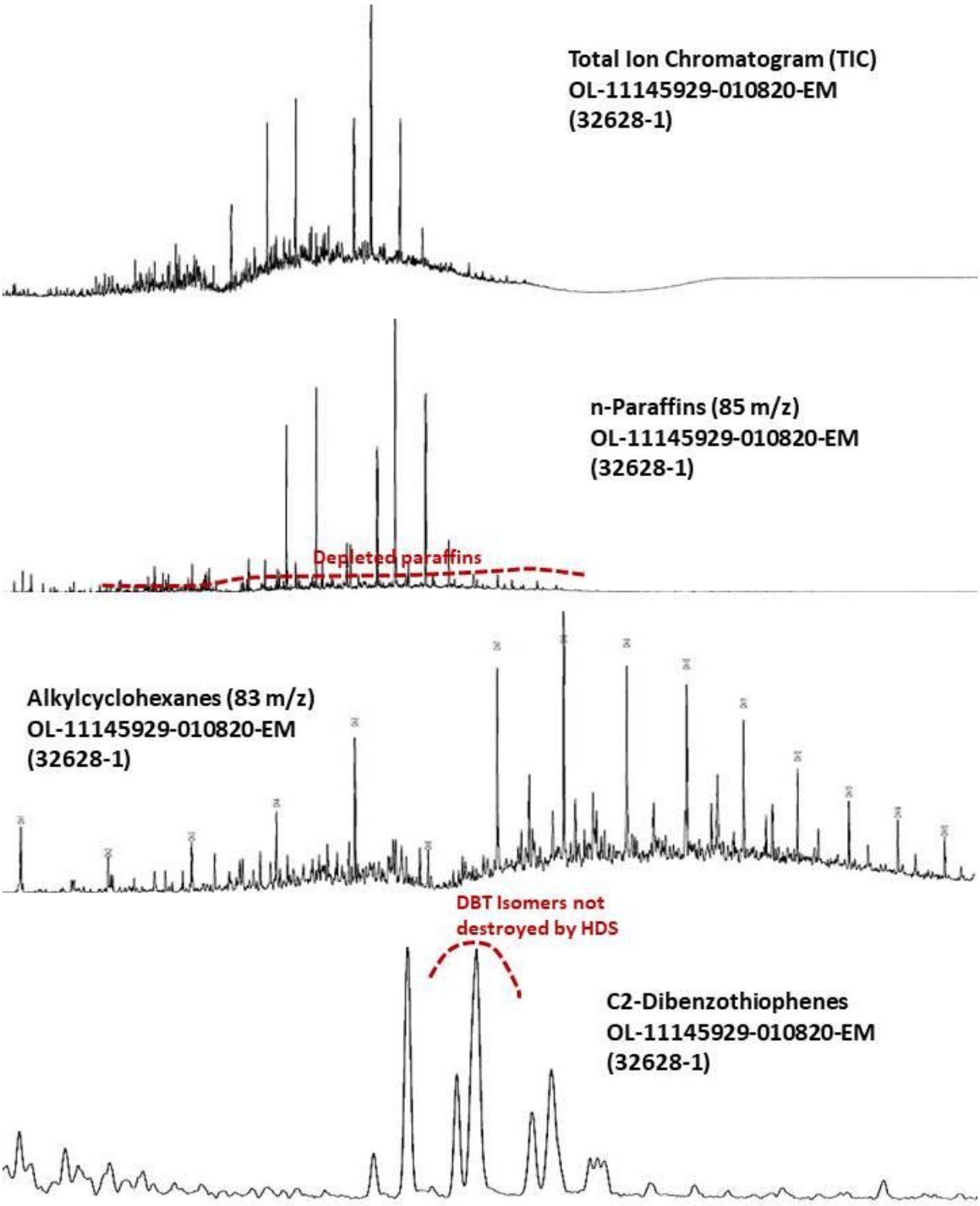


Figure 2. Diagnostic information for 32628-1.

Appendix D
Waste Disposal Documentation

476425

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
[illegible]	2	800-337-7455	HD-P66-VKMA-202

GENERATOR

5. Generator's Name and Mailing Address
Phillips 66 Company
70 Broadway
Sacramento CA 95818
Att: Ed Raiston
Generator's Phone: 310 522-1168

Generator's Site Address (if different than mailing address)
Phillips 66-Yakima (AOC 980)
920 North Sixth Avenue
Yakima WA 98902

6. Transporter 1 Company Name: DH Environmental Inc
U.S. EPA ID Number: WAH000047217

7. Transporter 2 Company Name: Chemical Waste Management
U.S. EPA ID Number: ORD089452353

8. Designated Facility Name and Site Address
CHEMICAL WASTE MANAGEMENT, INC
17629 CEDAR SPRINGS LANE
ARLINGTON OR 97812
Facility's Phone: 541 454-2643
U.S. EPA ID Number: ORD089452353

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	Non-RCRA, non-DOT (Ground Water with TPH)	01	TP	220	G.	
2.						
3.						
4.						

13. Special Handling Instructions and Additional Information
1) OR344577

WMXH - 980687

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: D. Tudor on behalf of P66 | Signature | Month 4 | Day 28 | Year 20

INT'L

15. International shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: A. Lentana | Signature | Month 4 | Day 28 | Year 20

Transporter 2 Printed/Typed Name: J. Pinaula | Signature | Month 4 | Day 29 | Year 20

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) | U.S. EPA ID Number
Facility's Phone:

17c. Signature of Alternate Facility (or Generator) | Month | Day | Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: Kellen Dunlap | Signature | Month 5 | Day 8 | Year 20

169-BLC-O 5 11977 (Rev. 9/09)

DESIGNATED FACILITY'S COPY

476425

NON-HAZARDOUS WASTE MANIFEST (Continuation Sheet)	19. Generator ID Number NONE REQUIRED	20. Page 2 of 2	21. Waste Tracking Number HD-P66-YKMA-202

22. Generator's Name: PHILLIPS 66 COMPANY

23. Transporter 3 Company Name: UPRR — U.S. EPA ID Number: NED987122910

24. Transporter 4 Company Name: COLUMBIA RIDGE LAND FILL — U.S. EPA ID Number: ORD073457

	25. Waste Shipping Name and Description	26. Containers No.	26. Containers Type	27. Total Quantity	28. Unit Wt./Vol.	
					7	
					7	

GENERATOR

29. Special Handling Instructions and Additional Information

TANKER # WMXU 980687

TRANSPORTER

30. Transporter 3 Acknowledgment of Receipt of Materials

Printed/Typed Name: Heather D. Malo — Signature: Heather Malo — Month: 1 — Day: 29 — Year: 20

31. Transporter 4 Acknowledgment of Receipt of Materials

Printed/Typed Name: Brittney Hawkins — Signature: Brittney Hawkins — Month: 5 — Day: 6 — Year: 20

DESIGNATED FACILITY

32. Discrepancy

about GHD

GHD is one of the world's leading professional services companies operating in the global markets of water, energy and resources, environment, property and buildings, and transportation. We provide engineering, environmental, and construction services to private and public sector clients.

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