FINAL- Data Summary Report for Annual Groundwater Monitoring for the Tidewater Fuel Leak Site, Pasco, Washington

Washington Department of Ecology Facility ID (FSID): 39378684

Cleanup Site ID (CSID): 2331

Prepared for

Tidewater Terminal Company

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December 2019

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12/10/2019

This report was prepared under the supervision of
a licensed geologist, employed by CH2M, Inc.

Jacobs Project No. D3238000

Contents

1.0 Introduction

This data summary report presents results from groundwater monitoring conducted at the Tidewater Terminal Company (Tidewater) Fuel Leak Site (Site) in Pasco, Washington on June 25 and 26, 2019 (Figure 1). The field sampling was performed in accordance with the Compliance Monitoring Plan (CMP) dated November 30, 2017 (CH2M, 2017) and approved by the Washington Department of Ecology (Ecology) on December 8, 2017.

1.1 Purpose

This data summary report has been prepared by Jacobs to document field observations and analytical results from the June 2019 monitoring event conducted at the Site. As described in the CMP, the purpose of annual groundwater monitoring at the Site is to monitor indicator substances and secondary indicator parameters for the effectiveness of natural attenuation (NA) as the selected cleanup action for the Site (CH2M, 2017). Indicator substances from the CMP include Benzene, Toluene, Ethylbenzene, and total Xylenes (BTEX), and Gasoline, Diesel, and Heavy Oil-range Total Petroleum Hydrocarbons (TPH). Secondary indicator parameters include ferrous iron, manganese, methane, and sulfate, and will be used in conjugation with field parameters dissolved oxygen, oxidation reduction potential, and pH to evaluate effectiveness of natural attenuation (NA) at the Site. Table 1 (of the CMP) provides the cleanup levels for indicator substances for the Site. Table A-2 of the Sampling and Analysis Plan (Appendix A of the CMP) provides a full list of analytical parameters.

1.2 Objectives

This data summary report was prepared to describe the sampling approach and methods, laboratory analytical methods, and results. The sampling approach is described in the Sampling and Analysis Plan (Appendix A) of the CMP (CH2M, 2017) and was designed to collect samples from compliance wells located within the Site monitoring network (Figure 2).

This data summary report includes the following:

- Summary of field activities, sampling methods and details, and field observations
- Summary of analytical results

All fieldwork and laboratory analyses were performed in general accordance with the Sampling and Analysis Plan as included in the 2017 CMP.

2.0 Field Summary

This section provides a summary of the sampling activities and field observations during groundwater monitoring activities. Groundwater monitoring was performed on June 25 and 26, 2019 and conducted in general accordance with the CMP.

2.1 Groundwater Measurements and Elevations

Groundwater levels were measured prior to pumping and sampling wells so as not to influence the flat groundwater gradient at the Site. Groundwater measurements were collected from 11 wells as listed in Table 2 of the CMP. Wells that have had historic measurable sheen, or historic high concentrations of indicator substances, were measured for the presence of sheen using an oil-water interface probe. No sheen was detected in the wells monitored as part of the June 2019 monitoring event.

Groundwater levels were measured from the top of casing of each well. Groundwater measurements, including measurements for sheen, are provided in Table 1. Groundwater measurements were recorded on the groundwater field forms in Appendix A. Depths to water for all measured wells at the site ranged from 78.52 feet below ground surface (bgs) in MW-4 to 83.55 feet bgs in MW-7. AR-12 was found to be dry during the June 2019 sampling event.

Based on depth to water measurements, groundwater elevations were calculated and are shown in Table 1. Groundwater elevations at the site ranged from 343.70 feet above mean seal level (AMSL) in MW-7 to 343.86 feet AMSL in AR-1.

The groundwater gradient for the site is flat with only a 0.09-foot variation between all measured wells. These groundwater elevations are consistent with historical measurements. Groundwater elevations measured in the 2019 monitoring were 0.74 to 0.86 ft lower than were measured in May 2018. The groundwater flow direction to the south was inferred based on the 2019 measurements and historical groundwater elevations and groundwater plume geometry. Historical groundwater elevations are included in Appendix B.

Note that groundwater elevations are calculated from field depth to water measurements and surveyed top of well casing data. In 2010, a survey was performed for the wells at the site. Based on the 2010 survey, it was determined the survey data for AR-1 was incorrect, so no groundwater elevation was calculated for the 2018 CMP report. Well AR-1 was re-surveyed by Andeavor Logistics' (Andeavor) consultant CEECON on December 21, 2018, and AR-1 groundwater elevation data is included in Table 1 for the June 2019 monitoring event.

2.2 Groundwater Monitoring

Groundwater samples were collected from the six CMP network wells (Table 2 of the CMP) after groundwater levels were measured. Groundwater samples were collected using a nominal 2-inch diameter portable submersible pump powered by a direct current (DC) power car battery with disposable polyethylene tubing. Prior to use in each well, the submersible pump was decontaminated using a phosphate-free detergent and rinsed with de-ionized water.

Wells were sampled in order based on historical concentrations of petroleum hydrocarbons and starting with the lowest historical concentrations of petroleum hydrocarbons and moving to the highest. Wells sampled during the June 2019 monitoring event are listed in Table 2 of the CMP and include AR-4, AR-8, AR-11, MW-4, MW-6, and MW-8.

Well sampling was performed in accordance with the SAP using low-flow sampling techniques. Field parameters recorded on field forms for each well and are summarized in Table 1. Well Sampling Forms are provided in Appendix A of this report. Sampling occurred when stabilization of field parameters was indicated over three consecutive 5-minute intervals. Groundwater samples were collected in laboratory-provided sample containers. Ferrous iron field measurements were collected during groundwater collection activities and recorded on the Well Sampling Forms (Appendix A) and are summarized in Table 2.

As per the Quality Assurance Project Plan (QAPP) (Appendix B of the CMP), field duplicates (FDs), matrix spike/matrix spike duplicate (MS/MSDs), and equipment blank (EBs) were collected for quality control and verification of field and laboratory procedures. A FD sample was collected from AR-8, and a MS/MSD sample was collected from MW-8.

Purge water was collected during sampling activities, contained in a labeled 55-gallon drum, and stored at the Site within a secured area pending characterization by groundwater results and disposal.

3.0 Results

Groundwater samples were submitted to Anatek Laboratories in Spokane (Anatek), Washington on June 27, 2019 for analysis and analyzed for the parameters listed in Table 2 of the CMP.

3.1 Analytical Results

Groundwater results for indicator substances for the June 2019 monitoring event are listed for each well below. Analytical results are provided in Table 2. Analytical reports are provided in Appendix C.

- AR-11 – Petroleum hydrocarbons were not detected above laboratory method detection limits (MDL). AR-11 is considered the upgradient well for the site.
- MW-4 – Petroleum hydrocarbons were not detected above laboratory MDLs. MW-4 is considered the down-gradient perimeter well for the site.
- MW-6 – Gasoline range hydrocarbons (TPH-G) were detected at 145 micrograms per liter (µg/L). No other petroleum hydrocarbons were detected.
- AR-4 – TPH-G and BTEX constituents were detected in AR-4. TPH-G was detected at 22,000 µg/L, exceeding the Model Toxics Control Act (MTCA) cleanup level of 800 µg/L. Benzene was detected at 123 µg/L and exceeded the MTCA cleanup level of 5 µg/L. Total xylenes were detected at 4,870 ug/L exceeding the MTCA cleanup level of 1,600 ug/L. Toluene and ethylbenzene were detected in AR-4 at 10.5 µg/L and 305 µg/L, respectively, but did not exceed their respective MTCA Cleanup levels. AR-4 is located in the center of the petroleum hydrocarbon plume directly downgradient from the release.
- AR-8 –Petroleum hydrocarbons ethylbenzene, total xylenes, and TPH-G were detected, but only TPH-G (4,830 ug/L) exceeded the MTCA Cleanup level.
- MW-8 – TPH-G exceeded the MTCA Cleanup level at 5,190 µg/L. Toluene, ethylbenzene and total xylenes were detected, but below their respective MDLs.

Additionally, manganese, sulfate, nitrate, methane and ferrous iron were analyzed to determine if NA processes are still occurring at the site. Natural attenuation analytes are provided in Table 2. A short summary of NA parameters is below:

- Manganese – Manganese was detected in wells MW-8, AR-4, and AR-8. Manganese concentrations were highest in wells AR-4 and AR-8 at 1.94 mg/L and 1.24 mg/L, respectively. Manganese concentrations were detected in wells with higher groundwater petroleum hydrocarbon concentrations.
- Sulfate – Sulfate concentrations ranged from highs of 134 mg/L (MW-6), 133 mg/L (AR-11), and 131 mg/L (MW-4) to lows of 108 (MW-8), 51.4 mg/L (AR-8), and 46.7 mg/L (AR-4). Sulfate concentrations are lower within wells containing hydrocarbon concentrations.
- Nitrate – Concentrations of nitrate ranged from 29.0 mg/L to 29.5 mg/L in AR-11, MW-4, and MW-6. Concentrations of nitrate were detected at 24.0 mg/L, 2.39 mg/L, and 5.63 mg/L in wells MW-8, AR-8, and AR-4, respectively, and are lower in wells with higher groundwater petroleum hydrocarbon concentrations.
- Methane – Methane was detected in wells AR-4 and AR-8 at concentrations of 922 µg/L and 4.50 µg/L, respectively, elevated in the in wells with the highest groundwater petroleum hydrocarbon concentrations.

3.2 Quality Assurance Summary

Analytical results indicate all laboratory quality control requirements were met for the analyses performed. For both the fuel volatiles (BTEX) and petroleum hydrocarbon (TPH-G and TPH-D) analyses, laboratory performance criteria for calibration, precision (as measured by laboratory duplicate samples), and accuracy (as measured by spike and surrogate recovery and laboratory control sample analysis) were met. The relative percent difference (RPD) for the field duplicate sample collected at AR-8 was within acceptable limits for all analytes.

An equipment blank sample (EB-1) was collected by Jacobs field staff from the submersible pump during the sampling event as a quality check of the effectiveness of field decontamination procedures. Total xylenes were detected at 3.87 µg/L in the equipment blank collected from the submersible pump after field sampling. No other analytes were detected for the equipment blank, indicating decontamination procedures were generally effective and no cross contamination is suspected.

No analytes were detected in two trip blanks.

3.3 Water Quality and Field Parameters

During groundwater sampling, field parameters were recorded to provide additional details of water quality.

Dissolved oxygen (DO), pH, and oxidation-reduction potential (ORP) were recorded and provide additional data as to if biodegradation processes are occurring. Negative ORP field values, which indicate the potential of reducing conditions were recorded in AR-4 and AR-8. Low DO readings, which indicate increasing anaerobic conditions, were also recorded in AR-4 and AR-8. Field pH readings ranged from 7.04 (AR-4) to 7.55 (MW-4). Field parameters are recorded on the well sampling field sheets in Appendix A.

During sampling, ferrous iron was measured using a field kit. Field ferrous iron readings were only detected in wells AR-4 and AR-8 at 1.5 µg/L and 1.0 µg/L, respectively.

4.0 Conclusions

No petroleum hydrocarbons were detected in AR-11 and MW-4, and only a low-level detection of TPH-G was detected in MW-6 for the June 2019 monitoring event. These data support the conclusion that the petroleum hydrocarbon plume continues to be contained within the monitoring network.

AR-4, located within the center of the petroleum hydrocarbon plume directly downgradient for the release area, has the most MTCA Cleanup Level exceedances for the site with benzene, total xylenes, and TPH-G exceeding cleanup levels. However, benzene has decreased to the lowest concentration in AR-4 since June 2003. Historical groundwater monitoring results are provided in Appendix D. BTEX constituents did not exceed cleanup levels in the other compliance wells monitored in 2018. Time-series plots for benzene and TPH-G are provided in Appendix E.

Total xylenes and TPH-G concentrations were lower for the June 2019 monitoring event than the previous monitoring event conducted during May 2018, with the exception of MW-8. TPH-G, toluene, ethylbenzene, and total xylenes concentrations slightly increased in MW-8 for June 2019 when compared to May 2018 but remained below historical concentrations.

Field parameter data indicate that wells with historic and existing petroleum hydrocarbon detections showed negative ORP values (indicating potential for reducing conditions), lower DO readings (indicating presence of anaerobic conditions), and lower pH.

Natural attenuation constituents indicate that biodegradation of petroleum indicator substances is occurring in groundwater at the Site. Manganese concentrations were much higher in wells with petroleum hydrocarbons as opposed to wells that have not had petroleum hydrocarbon detections. Conversely, sulfate concentrations were noticeably lower in wells AR-4, AR-8, and MW-8, than wells where petroleum hydrocarbons were historically not detected.

Biodegradation processes associated with natural attenuation have been shown to reduce nitrates as well as petroleum hydrocarbons and is illustrated by the low nitrate values detected in AR-4 and AR-8 when compared to other wells at the Site. Methane is indicative of biodegradation processes and was detected in wells AR-4 and AR-8 which are located in the area of highest elevated groundwater concentrations of indicator parameters.

The results of the June 2019 monitoring event continue to support the conclusions presented in the September 2011 Remedial Investigation/Feasibility Study Report (CH2M/URS, 2011) as follows:

- The hydraulic gradient at the site is relatively flat with limited fluctuations.
- The petroleum hydrocarbons source has been addressed through remedial activities.
- Residual dissolved-phase petroleum hydrocarbons remain on site and within localized areas of the former free product plume. These areas include AR-1, AR-4, and AR-8.
- The lateral extent of the dissolved-phase plume has generally continued to maintain or decrease in area since active remedial actions were discontinued.
- Measured concentrations of field parameters and analytical results of natural attenuation constituents, as well as the decreased lateral extent and concentration of petroleum hydrocarbons in sampled wells, suggest biodegradation processes continue at the Site. Biodegradation and associated natural attenuation processes have contributed to the observed reduction in petroleum concentrations. These

processes are expected to continue, resulting in continued decreases in petroleum hydrocarbons in groundwater.

5.0 References

CH2M/URS 2011. *Remedial Investigation/Feasibility Study Report for the NWTC Pasco Terminal, Pasco, Washington.* September 29, 2011.

CH2M 2017. *Compliance Monitoring Plan for The Tidewater Fuel Leak Site, Pasco*. October 3.

Tables

Table 1. Groundwater Elevations and Field Parameter Readings

Tidewater Fuel Leak Site Compliance Monitoring Program

Well	Date Measured [1]	Reference Point Elevation (ft)	Depth to Water (ft btc)	Groundwater Elevation (ft)	Temp (°C)	pH	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mV)	Conductivity (mS/cm)	Turbidity (NTU)	Comments
AR-4	6/25/2019	426.47	82.76	343.71	20.4	7.04	1.49	-100	0.679	45	--
AR-8	6/25/2019	423.02	79.29	343.73	19.1	7.25	0.00	-124	0.644	5.6	Also collected Field Duplicate
AR-11	6/25/2019	422.62	78.83	343.79	19.7	7.37	9.13	41	0.737	0	--
MW-4	6/25/2019	422.29	78.52	343.77	20.1	7.55	8.59	82	0.754	0	--
MW-6	6/25/2019	422.50	78.72	343.78	20.2	7.46	9.46	46	0.724	0	--
MW-8	6/25/2019	427.15	83.44	343.71	18.0	7.36	5.36	0	0.647	2.2	Also collected MS/MSD Lab QC Sample
Water Levels Only											
AR-1	6/25/2019	423.99	80.13	343.86	--	--	--	--	--	--	--
AR-7	6/25/2019	425.44	81.68	343.76	--	--	--	--	--	--	--
AR-12	6/25/2019	425.50	DRY	--	--	--	--	--	--	--	--
MW-5	6/25/2019	425.02	81.29	343.73	--	--	--	--	--	--	--
MW-7	6/25/2019	427.25	83.55	343.70	--	--	--	--	--	--	--

Notes:

1 - Water level measurements were collected in June 25, 2019. Groundwater samples were collected on June 26, 2019.

1 - Reference Point Elevation not available - Groundwater elevation cannot be calculated

" -- " = Not applicable, not available, and/or not measured.

Reference point elevation is top of PVC casing; all elevations are in feet above mean sea level (NAVD88).

Field parameter readings represent final stabilized readings obtained during low-flow purge immediately prior to collection of water-quality sample

ft = feet

ft btc = feet below top of casing

C = degrees celcius

mg/L = milligrams per liter

mV = millivolts

uS/cm = microsiemens per centimeter

NTU = Nephelometric Turbidity Units

Table 2. Groundwater Quality Data

Tidewater Fuel Leak Site Compliance Monitoring Program

Well				**AR-11**	**MW-4**	**MW-6**	**MW-8**	**AR-8**	**FD (AR-8)**	**AR-4**	**Equipment Blank**
Sample ID				AR11-1906	MW4-1906	MW6-1906	MW8-1906	AR8-1906	FD-1906	AR4-1906	EB
Sample Date				6/26/2019	6/26/2019	6/26/2019	6/26/2019	6/26/2019	6/26/2019	6/26/2019	6/26/2019
Field Parameters	**Method**	**Units**	**MTCA Cleanup Level**								
pH	Field Probe	units	-	7.37	7.55	7.46	7.36	7.25	--	7.04	--
Temperature	Field Probe	°C	-	19.7	20.1	20.2	18	19.1	--	20.4	--
Spec. Conductance	Field Probe	mS/cm	-	0.737	0.754	0.724	0.647	0.644	--	0.679	--
Dissolved Oxygen	Field Probe	mg/L	-	9.13	8.59	9.46	5.36	0.00	--	1.49	--
Oxygen Red. Potential	Field Probe	mV	-	41	82	46	0	-124	--	-100	--
Turbidity	Field Probe	NTU	-	0.0	0.0	0.0	2.2	5.6	--	45.2	--
Ferrous Iron	Field Screen	mg/L	-	0	0	0	0	1.0	--	1.5	--
Petroleum Hydrocarbons											
Benzene	EPA 8260C	ug/L	5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	***123***	<0.5
Toluene	EPA 8260C	ug/L	320	<0.5	<0.5	<0.5	*8.10*	*0.53*	*0.53*	10.5	<0.5
Ethylbenzene	EPA 8260C	ug/L	400	<0.5	<0.5	<0.5	61.8	*88.0*	*82.7*	*305*	<0.5
Total Xylenes	EPA 8260C	ug/L	1,600	<1.0	<1.0	<1.0	810	*157.2*	*147.0*	***4,870***	3.87
TPH-Gasoline Range	NWTPH-Gx	ug/L	800	<100	<100	145	***5,190***	***4,830***	***4,610***	***22,000***	<100
TPH-Diesel Range	NWTPH-Dx	ug/L	500	<100	<100	<100	<100	<100	<100	<100	<100
TPH-Heavy Range	NWTPH-Dx	ug/L	500	<500	<500	<500	<500	<500	<500	<500	<500
MNA Parameters											
Manganese	EPA 200.8	mg/l	-	<0.001	<0.001	<0.001	0.289	1.24	1.16	1.94	--
Sulfate	EPA 300.0	mg/l	-	133	131	134	108	51.4	50.3	46.7	--
Nitrate	EPA 300.0	mg/l	-	29.2	29.5	29.0	24.0	2.39	3.10	5.63	--
Methane	RSK-175 MOD	ug/L	-	<0.65	<0.65	<0.65	<0.65	4.50	4.17	922	--
Iron	EPA 200.8	mg/l	-	0.0232	0.0474	0.0101	0.157	0.989	0.880	1.92	--

Notes:

Field parameters represent final stabilized readings obtained during sampling immediately prior to sample collection.

BOLD - Exceeds MTCA Cleanup Level

Non-detect values reported as "<" with the laboratory method detection limit.

°C = degrees celcius

mg/L = milligrams per liter

mV = millivolts

mS/cm = millisiemens per centimeter

NTU = Nephelometric Turbidity Units

Figures

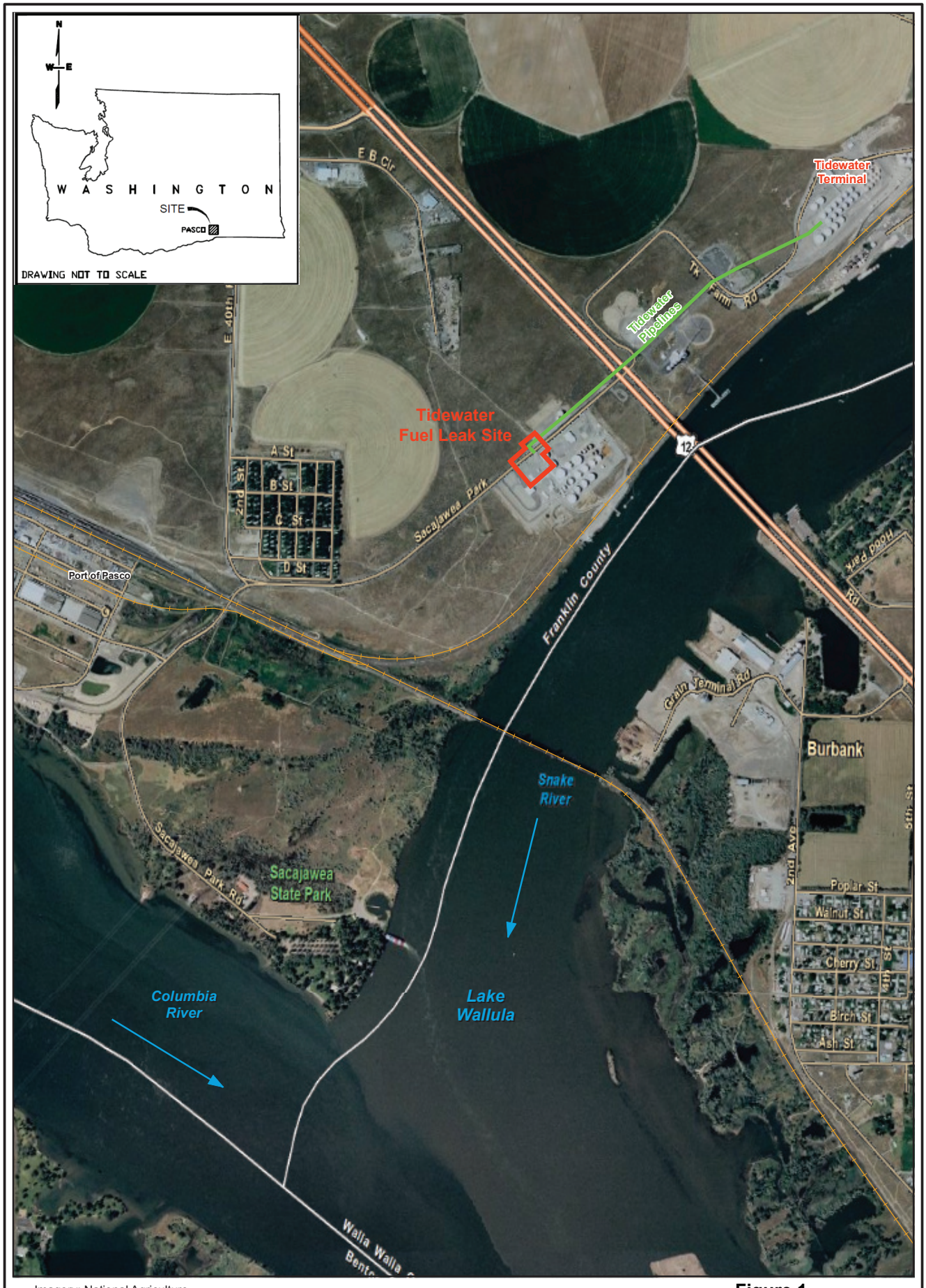

Figure 1
Site Location
Compliance Monitoring
Tidewater Fuel Leak Site
Pasco, WA

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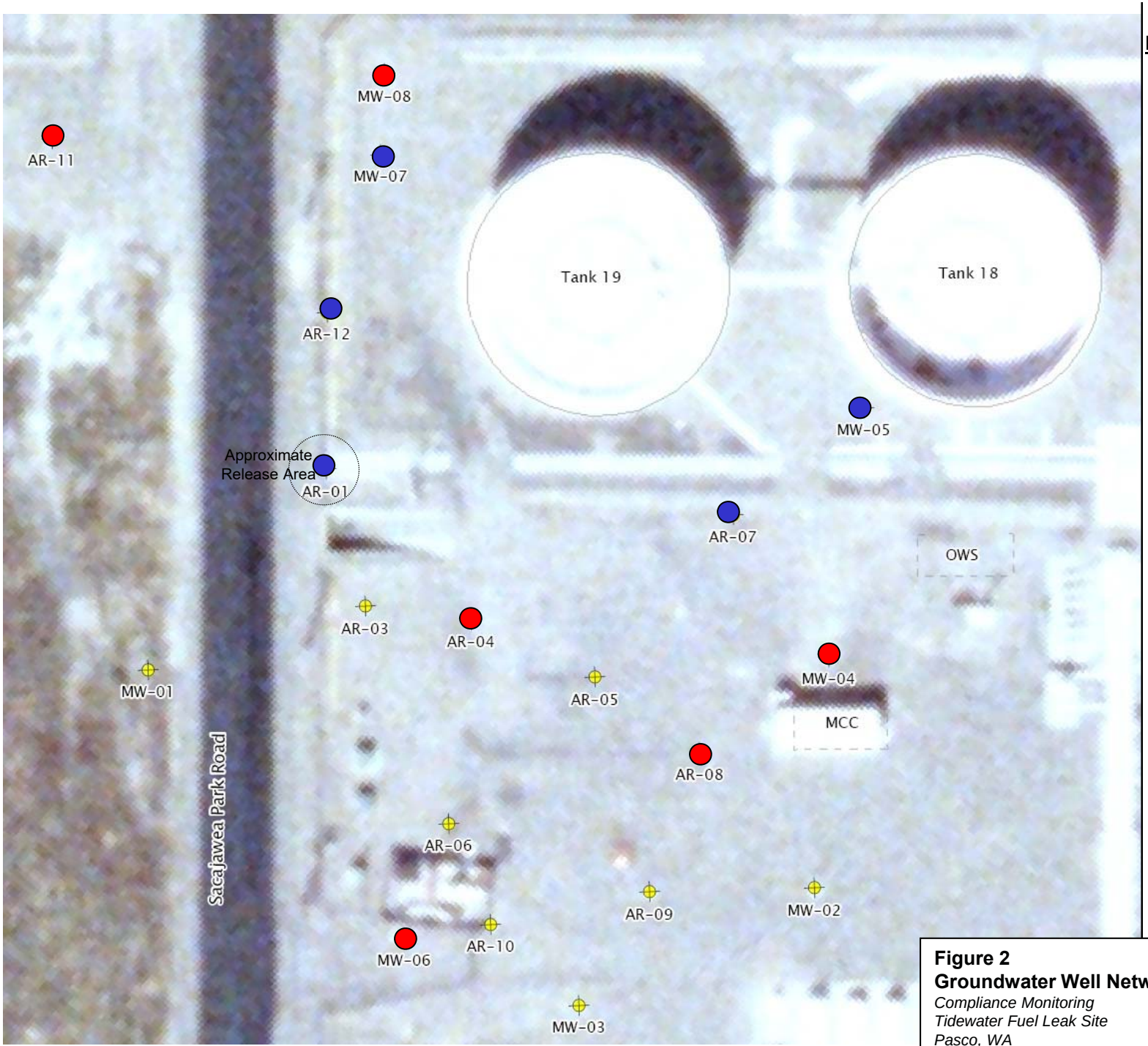
K:\ELM\25012081_CPL_Pasco_2009\GIS\MXD\Site_Aerial.mxd



LEGEND

- Compliance Monitoring Well
- Water Level Well
- Existing Tidewater Well

North

0 inch 1
0 feet 90

Figure 2
Groundwater Well Network
Compliance Monitoring
Tidewater Fuel Leak Site
Pasco, WA

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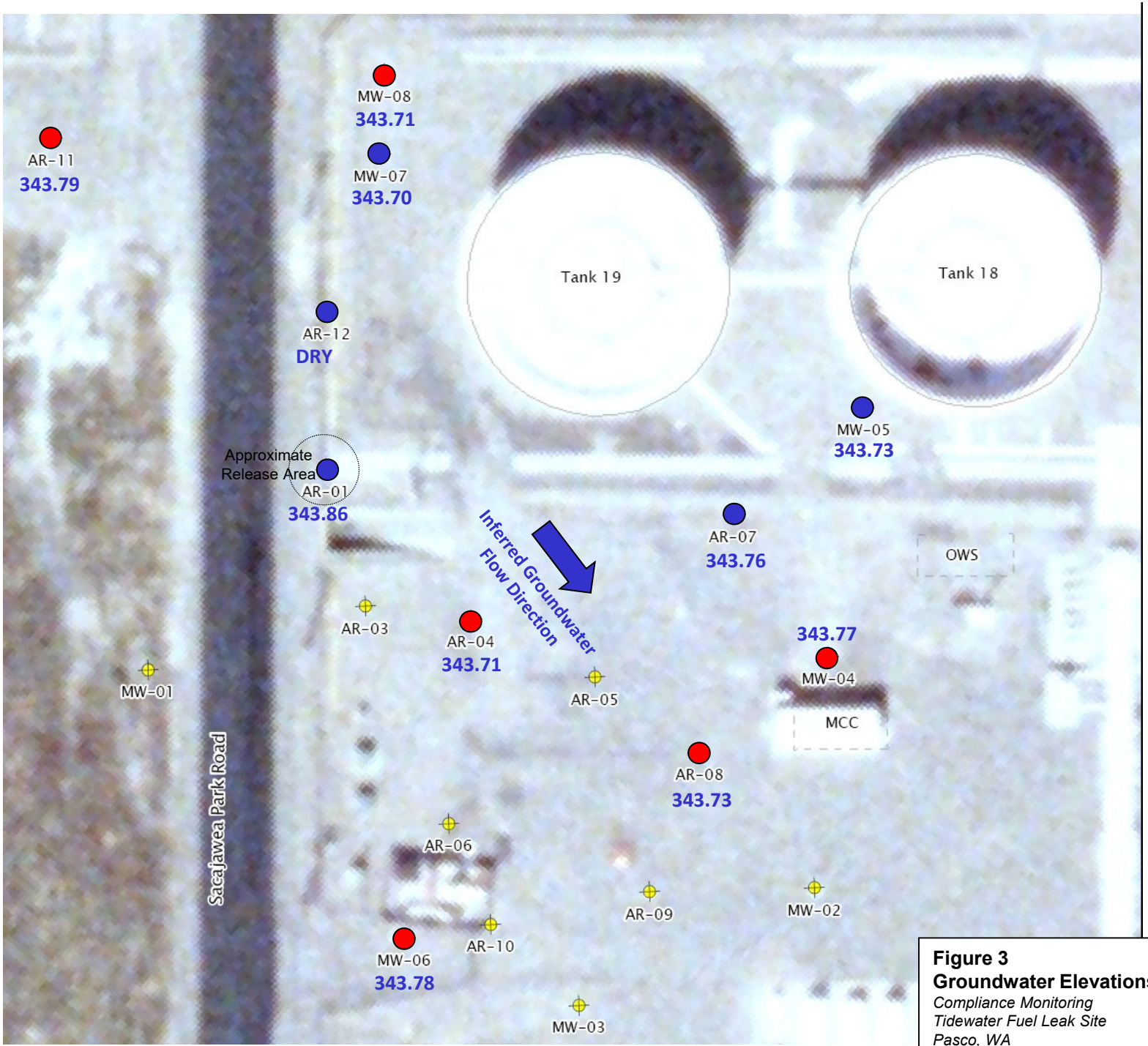

LEGEND

- Compliance Monitoring Well
- Water Level Well
- Existing Tidewater Well
- 344.53 Groundwater Elevation in Feet Above Mean Sea Level (amsl)
- DRY Well Dry - Elevation Not Available
- Inferred Groundwater Flow Direction

North

0 inch 1
0 feet 90

Figure 3
Groundwater Elevations – June 2019
Compliance Monitoring
Tidewater Fuel Leak Site
Pasco, WA

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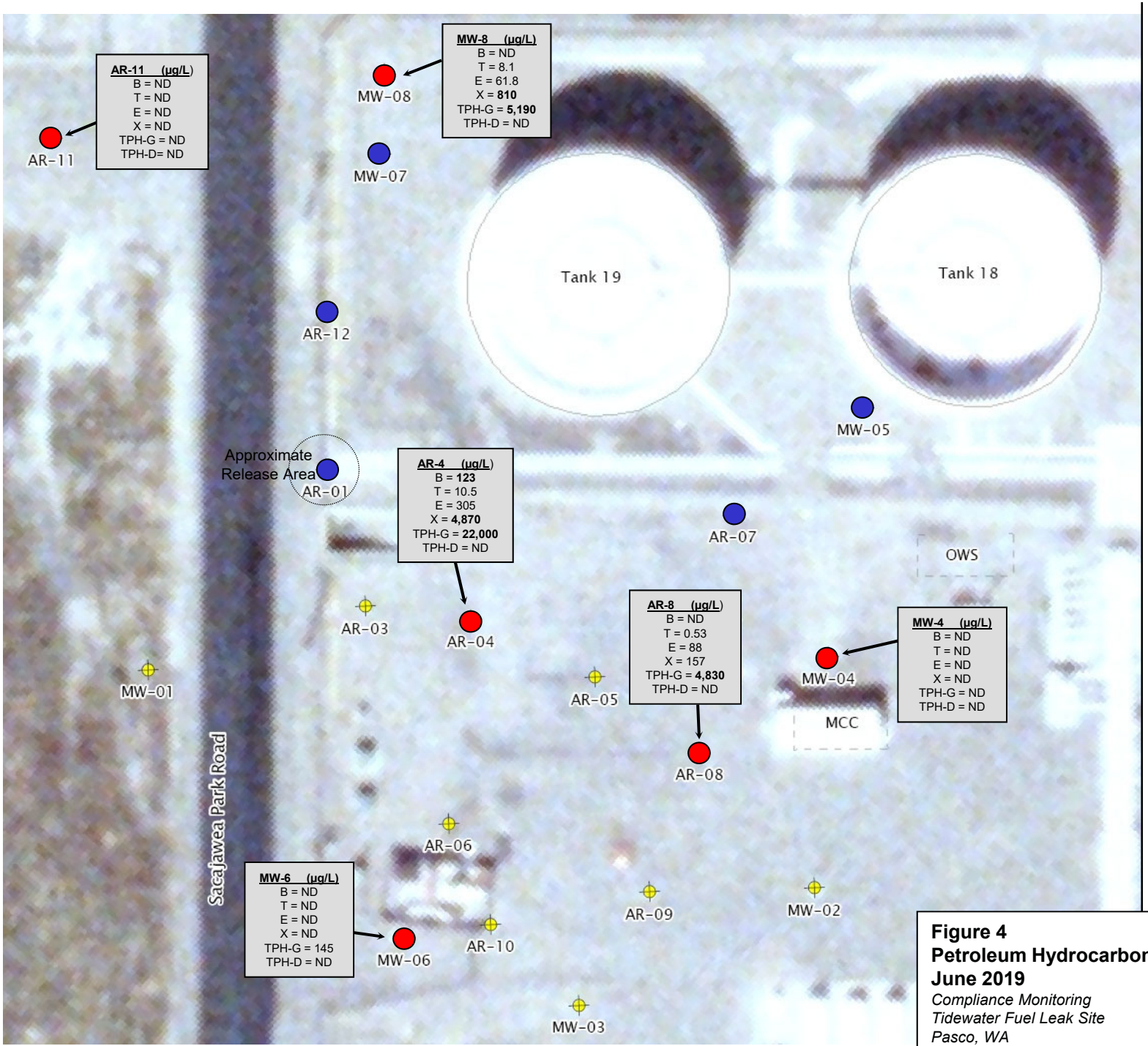

LEGEND

- Compliance Monitoring Well
- Water Level Well
- Existing Tidewater Well

µg/L – micrograms per liter
BOLD = MCL exceedance
ND = Analyte not detected

B = Benzene
T = Toluene
E = Ethylbenzene
X = Total xylenes
TPH-G = Gasoline
TPH-D = Diesel

North

0 inch 1
0 feet 90

Figure 4
Petroleum Hydrocarbons in Groundwater
June 2019
Compliance Monitoring
Tidewater Fuel Leak Site
Pasco, WA

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Appendix A
Field Forms

JACOBS Groundwater Purging and Sampling Form

SITE: Tidewater Fuel Leak Site Project Number D3238000 **Well ID:** AR11

Field Team: Barton, Iverson Date: 6-26-19

Weather/Temp: Sunny, 60 Slight breeze Arrival Time to Well: 8.30

Purge Method: ☑ Submersible ☐ Peristaltic ☐ Grab ☐ Other: ____ **Initial DTW (ft btc):** 78.83

Notes: ~2.3 volts FP Depth: — Total Well Depth (ft btc): 86.80

Field Parameters									
Time [1]	DTW [2]	Purge Vol. (gal)	pH	Sp. Cond. (mS/cm)	DO (mg/L)	Temp (°C)	ORP (mV)	Turbidity (NTU)	Note color, odor, etc.
9.20	*Begin Pumping*								
930	78.84	1.5gal	6.74	.733	9.92	19.95	90	38.9	
9.35	78.89	3.5	7.24	.731	9.81	19.31	55	4.7	
9.40	78.89	4.6	7.35	.730	9.40	18.98	44	6.4	
9.45	78.89	5.0	7.39	.735	10.17	19.25	47	3.4	
9.50	78.90	5.5	7.37	.734	9.53	19.84	57	0.0	
9.55	78.89	6.2	7.36	.735	9.88	18.74	60	0.0	
10.00	78.89	7.0	7.37	.733	9.24	18.81	64	0.0	
10.05	78.89	7.5	7.41	.739	10.65	18.60	55	0.0	
10.10	78.89	8.0	7.35	.738	9.28	19.49	41	0.0	
10.15	78.89	8.5	7.33	.736	8.90	19.35	45	0.0	
10.20	78.89	9.0	7.36	.736	9.07	19.75	45	0.0	
10.25	78.89	9.5	7.37	.737	9.13	19.67	41	0.0	
Stabilization Criteria [3]	-	-	± 0.1 units	± 3%	± 0.3 mg/L	-	± 10 mV	± 10% [4]	-

[1] Collect field parameters in consistent 3-5 minute intervals for Low-Flow method [2] DTW: Total drawdown should not exceed 0.33 ft for Low-Flow method

[3] Stabilization achieved once field parameters stabilize for 3 successive readings for Low-Flow method; minimum parameter subset: pH, sp. cond., and turbidity or DO

[4] For turbidity readings > 10 NTUs [5] Low-flow target purge rate is 0.1 - 0.5 L/min (0.03 - 0.13 gal/min)

Sample ID: A11-1906 **Sample Time:** 10.25

Analysis:
- ☒ BTEX (8260B)
- ☒ NWTPH-Gx
- ☒ NWTPH-Dx
- ☒ NWTPH-Rx
- ☒ SO4, NO3 (300.0)
- ☒ Manganese (6010B)
- ☒ Methane (RSK-175)
- ☒ Ferrous Iron (SM3500)
- ☐ _____
- ☐ _____

Fe2+ Field Screen Result: 0

QC SAMPLE: ☐ *Field Duplicate* ☐ *MS/MSD* ☐ *EQ Rinsate Blank* TOTAL PURGED (GAL): _____

QC Sample ID: _____ *QC Sample Time:* _____

Comments: _____

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Groundwater Purging and Sampling Form

SITE: Tidewater Fuel Leak Site Project Number D3238000 **Well ID:** MW6

Field Team: Barbaw / Iverson Date: 6-26-19

Weather/Temp: 60°, overcast Arrival Time to Well: 11.10

Purge Method: ☑ Submersible ☐ Peristaltic ☐ Grab ☐ Other: _____ **Initial DTW (ft btc):** 78.72

Notes: Vol 6 - 20 - 21 FP Depth: _____ Total Well Depth (ft btc): 88.41

Field Parameters									
Time [1]	DTW [2]	Purge Vol. (gal)	pH	Sp. Cond. (mS/cm)	DO (mg/L)	Temp (°C)	ORP (mV)	Turbidity (NTU)	Note color, odor, etc.
11.35	*Begin Pumping*								
11.40	78.75	.5gal	7.64	.604	9.07	19.62	79	0.0	
11.45	78.75	1.2	7.44	.717	8.81	19.58	58	0.0	
11.50	78.75	2.5	7.52	.724	9.60	19.27	56	0.0	
11.55	78.76	3.0	7.49	.723	9.62	19.87	53	0.0	
12.00	78.76	3.5	7.42	.722	9.42	20.12	42	0.0	
12.05	78.76	3.8	7.44	.722	9.48	20.41	50	0.0	
12.10	78.7	4.5	7.46	~~.724~~	~~9.46~~	20.24	46	0.0	
Stabilization Criteria [3]	-	-	± 0.1 units	± 3%	± 0.3 mg/L	-	± 10 mV	± 10% [4]	-

[1] Collect field parameters in consistent 3-5 minute intervals for Low-Flow method [2] DTW: Total drawdown should not exceed 0.33 ft for Low-Flow method

[3] Stabilization achieved once field parameters stabilize for 3 successive readings for Low-Flow method: minimum parameter subset: pH, sp. cond., and turbidity or DO

[4] For turbidity readings > 10 NTUs [5] Low-flow target purge rate is 0.1 - 0.5 L/min (0.03 - 0.13 gal/min)

Sample ID: MW6 - 1906 **Sample Time:** 12.10

Analysis:
- ☒ BTEX (8260B)
- ☒ NWTPH-Gx
- ☒ NWTPH-Dx
- ☒ NWTPH-Rx
- ☒ SO4, NO3 (300.0)
- ☒ Manganese (6010B)
- ☒ Methane (RSK-175)
- ☒ Ferrous Iron (SM3500)
- ☐ _____
- ☐ _____

Fe2+ Field Screen Result: 0

QC SAMPLE: ☐ Field Duplicate ☐ MS/MSD ☐ EQ Rinsate Blank TOTAL PURGED (GAL): _____

QC Sample ID: _____ QC Sample Time: _____

Comments: _____

JACOBS Groundwater Purging and Sampling Form

SITE: Tidewater Fuel Leak Site Project Number D3238000 **Well ID:** MW4

Field Team: Bartow / Iverson Date: 6-26-19

Weather/Temp: 70, sunny w/ clouds Arrival Time to Well: 12.45

Purge Method: ☒ Submersible ☐ Peristaltic ☐ Grab ☐ Other: _____ **Initial DTW (ft btc):** 78.52

Notes: Volb -18-19 FP Depth: — Total Well Depth (ft btc): 89.30

Field Parameters									
Time [1]	DTW [2]	Purge Vol. (gal)	pH	Sp. Cond. (mS/cm)	DO (mg/L)	Temp (°C)	ORP (mV)	Turbidity (NTU)	Note color, odor, etc.
1307 ~~1307~~ AI	Begin Pumping								
13.10	78.59	1.5	7.70	.734	8.15	19.01	108	12.0	
13.15	78.59	1.7	7.47	.739	9.05	18.98	83	3.8	
13.20	78.59	2.5	7.44	.736	8.61	18.83	70	0.0	
1325	78.59	3.0	7.52	0.735	9.71	18.14	62	1.0	
1330	78.59	3.5	7.35	0.741	8.69	19.08	85	0	
1335	78.58	4.5	7.29	0.741	8.17	18.94	75	0	
flow check 1340	78.59	5.0	7.22	0.737	7.78	19.41	69	0	
1345	78.59	5.5	7.18	0.737	6.44	20.14	80	0	
400 mL/min 1350	78.59	6.0	7.20	0.737	7.32	20.24	82	0	
1355	78.59	6.5	7.57	0.745	8.59	19.52	72	0	
SB 1400 ~~1340~~	78.59	7.0	7.55	0.747	8.40	19.71	74	0	
SB 1405 ~~1345~~	78.59	7.5	7.55	0.754	8.59	20.11	81	0	
1410									
Stabilization Criteria [3]	-	-	± 0.1 units	± 3%	± 0.3 mg/L	-	± 10 mV	± 10% [4]	-

[1] Collect field parameters in consistent 3-5 minute intervals for Low-Flow method [2] DTW: Total drawdown should not exceed 0.33 ft for Low-Flow method

[3] Stabilization achieved once field parameters stabilize for 3 successive readings for Low-Flow method; minimum parameter subset: pH, sp. cond., and turbidity or DO

[4] For turbidity readings > 10 NTUs [5] Low-flow target purge rate is 0.1 - 0.5 L/min (0.03 - 0.13 gal/min)

Sample ID: MW4-1406 **Sample Time:** 1410

Analysis:
- ☒ BTEX (8260B)
- ☒ NWTPH-Gx
- ☒ NWTPH-Dx
- ☒ NWTPH-Rx
- ☒ SO4, NO3 (300.0)
- ☒ Manganese (6010B)
- ☒ Methane (RSK-175)
- ☒ Ferrous Iron (SM3500)
- ☐ _____
- ☐ _____

Fe2+ Field Screen Result: 0

QC SAMPLE: ☐ Field Duplicate ☐ MS/MSD ☐ EQ Rinsate Blank TOTAL PURGED (GAL): _____

QC Sample ID: _____ QC Sample Time: _____

Comments: _____

JACOBS Groundwater Purging and Sampling Form

SITE: Tidewater Fuel Leak Site Project Number D3238000 **Well ID:** AR8

Field Team: Borbow / Iverson Date: 6-26-19

Weather/Temp: 65 - Cloudy Arrival Time to Well: 15.00

Purge Method: ☑ Submersible ☐ Peristaltic ☐ Grab ☐ Other: _____ **Initial DTW (ft btc):** 79.29

Notes: Volts - 19 FP Depth: — Total Well Depth (ft btc): 85.38

Field Parameters									
Time [1]	DTW [2]	Purge Vol. (gal)	pH	Sp. Cond. (mS/cm)	DO (mg/L)	Temp (°C)	ORP (mV)	Turbidity (NTU)	Note color, odor, etc.
15.17	*Begin Pumping*								
15.20	79.36	0.5	7.62	.605	0	23.72	-99	21.8	turbid
15.25	79.33	2	7.53	.611	0	21.42	-135	37.6	Cloudy, turbid
15.30	79.24	3.5	7.35	.365	4.12	22.56	-100	8.8	Petro odor.
15.35	79.33	3.8	7.47	.643	.49	14.74	-112	6.3	Petro odor
15.40	79.32	4.5	7.38	.645	.16	14.75	-120	6.1	" "
15.45	79.32	5.0	7.37	.644	0.0	16.55	-127	6.5	" "
15.50	79.32	6.0	7.36	.647	0.36	18.96	-132	6.6	" "
15.55	79.32	7.0	7.35	.646	0.51	18.83	-116	6.1	" "
16.00	79.31	7.6	7.21	.647	0.00	18.85	-115	4.6	" "
16.05	79.31	8.2	7.23	.644	0.00	18.97	-120	5.4	" "
16.10	79.31	9.0	7.25	.644	0.00	19.13	-124	5.6	"
Stabilization Criteria [3]	-	-	± 0.1 units	± 3%	± 0.3 mg/L	-	± 10 mV	± 10% [4]	-

[1] Collect field parameters in consistent 3-5 minute intervals for Low-Flow method [2] DTW: Total drawdown should not exceed 0.33 ft for Low-Flow method

[3] Stabilization achieved once field parameters stabilize for 3 successive readings for Low-Flow method: minimum parameter subset: pH, sp. cond., and turbidity or DO

[4] For turbidity readings > 10 NTUs [5] Low-flow target purge rate is 0.1 - 0.5 L/min (0.03 - 0.13 gal/min)

Sample ID: AR8-1906 **Sample Time:** 16.10

Analysis:
- ☑ BTEX (8260B)
- ☑ NWTPH-Gx
- ☑ NWTPH-Dx
- ☑ NWTPH-Rx
- ☑ SO4, NO3 (300.0)
- ☑ Manganese (6010B)
- ☑ Methane (RSK-175)
- ☑ Ferrous Iron (SM3500)
- ☐ _____
- ☐ _____

Fe2+ Field Screen Result: 1.0

QC SAMPLE: ☒ Field Duplicate ☐ MS/MSD ☐ EQ Rinsate Blank TOTAL PURGED (GAL): _____

QC Sample ID: FD-1906 QC Sample Time: 12.00

Comments: _____

JACOBS Groundwater Purging and Sampling Form

SITE: Tidewater Fuel Leak Site Project Number D3238000 **Well ID:** AR-4

Field Team: Barlow / Iverson Date: 6-26-19

Weather/Temp: 75, Overcast Arrival Time to Well: 16.45

Purge Method: ☒ Submersible ☐ Peristaltic ☐ Grab ☐ Other: _____ **Initial DTW (ft btc):** 82.76

Notes: Volt - 20 -18, Stick-up height ~ 33.25" FP Depth: _____ Total Well Depth (ft btc): 91.52

Field Parameters									
Time [1]	DTW [2]	Purge Vol. (gal)	pH	Sp. Cond. (mS/cm)	DO (mg/L)	Temp (°C)	ORP (mV)	Turbidity (NTU)	Note color, odor, etc.
17.05	Begin Pumping								very, black
17.10	82.80	1.0	7.24	.652	1.05	22.11	-74	69.2	Turbid, sulfur smell
17.15	82.80	1.5	7.14	.657	3.26	21.65	-80	163.2	
17.20	82.80	1.9	7.10	.661	1.63	22.03	-47	60.8	
17.25	82.80	2.1	7.16	.686	1.60	20.28	-76	50.7	
17.30	82.80	2.4	7.09	.687	1.47	20.21	-84	41.3	
17.35	82.80	2.7	7.08	.683	1.20	20.46	-84	41.7	
17.40	82.80	3.0	7.06	.687	1.24	20.52	-83	45.3	
17.45	82.80	3.3	7.02	.687	1.84	20.47	-83	46.9	
17.50	~~15.56~~ 15.41	82.82	3.7	7.12	.693	1.72	20.11	-95	49.9	
17.55	15.55	82.81	4.2	7.05	.684	1.68	20.23	-95	44.6	
18.00	82.81	5.0	7.04	.679	1.49	20.39	-100	45.2	
Stabilization Criteria [3]	-	-	± 0.1 units	± 3%	± 0.3 mg/L	-	± 10 mV	± 10% [4]	-

[1] Collect field parameters in consistent 3-5 minute intervals for Low-Flow method [2] DTW: Total drawdown should not exceed 0.33 ft for Low-Flow method

[3] Stabilization achieved once field parameters stabilize for 3 successive readings for Low-Flow method; minimum parameter subset: pH, sp. cond., and turbidity or DO

[4] For turbidity readings > 10 NTUs [5] Low-flow target purge rate is 0.1 - 0.5 L/min (0.03 - 0.13 gal/min)

Sample ID: AR4-1906 **Sample Time:** 18.00

Analysis:
- ☑ BTEX (8260B)
- ☑ NWTPH-Gx
- ☑ NWTPH-Dx
- ☑ NWTPH-Rx
- ☑ SO4, NO3 (300.0)
- ☑ Manganese (6010B)
- ☑ Methane (RSK-175)
- ☑ Ferrous Iron (SM3500)
- ☐ _____
- ☐ _____

Fe2+ Field Screen Result: 1.5

QC SAMPLE: ☐ Field Duplicate ☐ MS/MSD ☐ EQ Rinsate Blank TOTAL PURGED (GAL): _____

QC Sample ID: _____ QC Sample Time: _____

Comments: _____

JACOBS Groundwater Purging and Sampling Form

SITE: Tidewater Fuel Leak Site Project Number D3238000 **Well ID:** MW8

Field Team: Barlow / Iverson Date: 6-26-19

Weather/Temp: 75, windy overcast Arrival Time to Well: 19:20

Purge Method: ☑ Submersible ☐ Peristaltic ☐ Grab ☐ Other: _____ **Initial DTW (ft btc):** 83.44

Notes: 21 VOLT FP Depth: _____ Total Well Depth (ft btc): 94.69

Field Parameters									
Time [1]	DTW [2]	Purge Vol. (gal)	pH	Sp. Cond. (mS/cm)	DO (mg/L)	Temp (°C)	ORP (mV)	Turbidity (NTU)	Note color, odor, etc.
19:17	Begin Pumping								
19:20	83.53	—	7.72	.537	C	17.34	58	97.C	light tan color odor
1925	83.51	1.5	7.42	0.588	1.76	17.59	3	10.7	
1930	83.51	3.0	7.39	0.604	4.80	17.84	-16	6.2	
1935	83.51	3.6	7.41	0.626	5.17 ~~4.80~~ SU	17.79	-13	4.6 ~~5.7~~ SU	
1940	83.51	4.0	7.38	0.636	4.45	17.87	-15	4.29	
1945	83.51	4.5	7.40	0.632	4.48	17.72	-13	15.5	
1950	83.51	5.0	7.41	0.640	5.41	18.20	-9	12.4	
1955	83.51	5.5	7.45	0.641	5.53	18.30	-5	5.8	
2000	83.51	6.0	7.40	0.647	5.36	18.25	-1	6.6	
2005	83.51	6.5	7.36	0.642	5.36	18.06	0	2.2	
Stabilization Criteria [3]	-	-	± 0.1 units	± 3%	± 0.3 mg/L	-	± 10 mV	± 10% [4]	-

[1] Collect field parameters in consistent 3-5 minute intervals for Low-Flow method [2] DTW: Total drawdown should not exceed 0.33 ft for Low-Flow method
[3] Stabilization achieved once field parameters stabilize for 3 successive readings for Low-Flow method: minimum parameter subset: pH, sp. cond., and turbidity or DO
[4] For turbidity readings > 10 NTUs [5] Low-flow target purge rate is 0.1 - 0.5 L/min (0.03 - 0.13 gal/min)

Sample ID: MW8 - 1906 **Sample Time:** 2010

Analysis:
- ☑ BTEX (8260B)
- ☑ NWTPH-Gx
- ☑ NWTPH-Dx
- ☑ NWTPH-Rx
- ☑ SO4, NO3 (300.0)
- ☑ Manganese (6010B)
- ☑ Methane (RSK-175)
- ☑ Ferrous Iron (SM3500)
- ☐ _____
- ☐ _____

Fe2+ Field Screen Result: 0

QC SAMPLE: ☐ Field Duplicate ☒ MS/MSD ☒ EQ Rinsate Blank TOTAL PURGED (GAL): _____

QC Sample ID: ~~EB 1805~~ EB - 1906 QC Sample Time: 1400

Comments: _____

Tidewater Monitoring Wells - Screen and Field Measurements

JACOBS

Field Team: GREER, BARTOW, IVERSON Date: 6-25-19

Well	As-built TD (bgs)	Screen Interval (bgs)	Well in Good Condition?	Sheen?	Depth to Free Product	DTW (btc)	TD (btc)	FP thick	Notes/Comments
AR-11	88	73 - 88	OK	—	—	78.83	86.80	—	TAG BLG-561
MW-4	90	75 - 90	OK	—	—	78.52	89.30	—	TAG AFS-980 (existing)
MW-6	90	75 - 90	OK	—	—	78.72	88.41	—	TAG AFS-981 (existing)
MW-5	90	75 - 90	OK	—	—	81.29	91.34	—	see below
AR-8	88	73 - 88	ok	—	—	~~83~~ 79.29	85.38	—	TAG BLG-558 (NEW)
AR-4	88	73 - 88	ok	—	—	82.76	91.52	—	TAG BLG-554 (NEW)
MW-8	90	75 - 90	ok	—	—	83.44	44.69	—	No tag
MW-7	90	75 - 90	ok	—	—	83.55	94.51	—	No tag
AR-12	88	73 - 88	ok			DRY	83.52		New tag BLG-562 (NEW)
AR-7	88	73 - 88	ok	—	—	81.68	91.58	—	New tag BLG-557 (NEW)
AR-1	88	73 - 88	NO BOLTS	—	—	80.13	86.50	—	ODOR TAG BLG-551

Notes MW-4 bolts missing. MW-5 may have well tag at bottom of monument
AR-12 can be difficult to get probe into well
AR-8 under orange cone
checked AR-12 with both WL meters - no observed water on probes

Shaded = Free product/sheen in well (2006)

		O_2	LEL
PID	1653	21.4	0
PID	1711	21.5	0
PID	1721	21.5	0
PID	1730	21.5	0

Appendix B
Historic Groundwater Elevations

Appendix B - Historical Groundwater Elevation Measurements

Pasco, Washington

Well	Date Sampled	Reference Point Elevation (feet NGVD)	Depth to Water (feet)	Product Thickness (feet)	Groundwater Elevation (feet NGVD)	Groundwater Elevation Change in Feet From Previous Reading
MW-1 [a]	6/28/2010	421.82	77.23	0	344.59	--
	12/14/2010		77.72	0	344.1	-0.49
	5/28/2014		77.35	0	344.47	0.37
MW-2 [a]	6/29/2010	422.95	78.37	0	344.58	--
	12/15/2010		78.86	0	344.09	-0.49
	5/28/2014		78.49	0	344.46	0.37
MW-3 [a]	6/29/2010	422.37	77.84	0	344.53	--
	12/15/2010		78.33	0	344.04	-0.49
	5/28/2014		77.92	0	344.45	0.41
MW-4	6/29/2010	422.29	77.72	0	344.57	--
	12/15/2010		78.22	0	344.07	-0.5
	5/29/2014		77.82	0	344.47	0.4
	5/1/2018		77.80	0	344.49	0.02
	6/25/2019		78.52	0	343.77	-0.72
MW-5	6/29/2010	425.02	80.48	0	344.54	--
	12/15/2010		80.95	0	344.07	-0.47
	5/29/2014		80.59	0	344.43	0.36
	5/1/2018		80.51	0	344.51	0.08
	6/25/2019		81.29	0	343.73	-0.78
MW-6	6/28/2010	422.5	77.92	0	344.58	--
	12/14/2010		78.41	0	344.09	-0.49
	5/28/2014		77.99	0	344.51	0.42
	5/1/2018		77.98	0	344.52	0.01
	6/25/2019		78.72	0	343.78	-0.74
MW-7	6/29/2010	427.25	82.74	sheen	344.51	--
	12/16/2010		83.19	0	344.06	-0.45
	5/29/2014		82.79	0	344.46	0.4
	5/1/2018		82.78	0	344.47	0.01
	6/25/2019		83.55	0	343.7	-0.77
MW-8	6/29/2010	427.15	82.62	sheen	344.53	--
	12/16/2010		83.09	0	344.06	-0.47
	5/29/2014		82.69	0	344.46	0.4
	5/1/2018		82.61	0	344.54	0.08
	6/25/2019		83.44	0	343.71	-0.83
AR-1	6/29/2010	425.80	81.28	0.01	344.52	--
	12/16/2010		81.70	sheen	344.10	-0.42
	5/28/2014		79.56	sheen	346.24	2.14
	5/1/2018 [b]	423.99	79.38	0	344.61	-1.63
	6/25/2019		80.13	0	343.86	-0.75

Appendix B - Historical Groundwater Elevation Measurements

Pasco, Washington

Well	Date Sampled	Reference Point Elevation (feet NGVD)	Depth to Water (feet)	Product Thickness (feet)	Groundwater Elevation (feet NGVD)	Groundwater Elevation Change in Feet From Previous Reading
AR-2 [a]	6/29/2010	NA	NA	NA	NA	--
	12/16/2010		NA	NA	NA	NA
	5/28/2014		NA	NA	NA	NA
AR-3 [a]	6/29/2010	428.01	NA	NA	NA	--
	12/15/2010		NA	NA	NA	NA
	5/28/2014		NA	NA	NA	NA
AR-4	6/29/2010	426.47	81.90	0	344.57	--
	12/15/2010		82.38	0	344.09	-0.48
	5/29/2014		81.99	0	344.48	0.39
	5/1/2018		81.93	0	344.54	0.06
	6/25/2019		82.76	0	343.71	-0.83
AR-5 [a]	6/29/2010	423.08	78.52	0	344.56	--
	12/15/2010		79.00	0	344.08	-0.48
	5/29/2014		78.62	0	344.46	0.38
AR-6 [a]	6/29/2010	425.17	80.61	0	344.56	--
	12/15/2010		81.11	0	344.06	-0.5
	5/29/2014		80.72	0	344.45	0.39
AR-7	6/29/2010	425.44	80.82	sheen	344.62	--
	12/16/2010		81.33	sheen	344.11	-0.51
	5/29/2014		80.96	0	344.48	0.37
	5/1/2018		80.92	0	344.52	0.04
	6/25/2019		81.68	0	343.76	-0.76
AR-8	6/29/2010	423.02	78.43	0	344.59	--
	12/15/2010		78.94	0	344.08	-0.51
	5/29/2014		78.50	0	344.52	0.44
	5/1/2018		78.43	0	344.59	0.07
	6/25/2019		79.29		343.73	-0.86
AR-9 [a]	6/29/2010	423.05	78.46	0	344.59	--
	12/15/2010		78.95	0	344.1	-0.49
	5/29/2014		78.60		344.45	0.35
AR-10 [a]	6/29/2010	422.59	78.01	0	344.58	--
	12/14/2010		78.50	0	344.09	-0.49
	5/28/2014		78.13		344.46	0.37
AR-11	6/28/2010	422.62	78.00	0	344.62	--
	12/14/2010		78.49	0	344.13	-0.49
	5/28/2014		78.15	0	344.47	0.34
	5/1/2018		78.09	0	344.53	0.06
	6/25/2019		78.83	0	343.79	-0.74

Appendix B - Historical Groundwater Elevation Measurements

Pasco, Washington

Well	Date Sampled	Reference Point Elevation (feet NGVD)	Depth to Water (feet)	Product Thickness (feet)	Groundwater Elevation (feet NGVD)	Groundwater Elevation Change in Feet From Previous Reading
AR-12	6/29/2010	425.50	80.96	sheen	344.54	--
	12/15/2010		dry	NA	NA	NA
	5/28/2014		dry	NA	NA	NA
	5/1/2018		81.02	0	344.48	NA
	6/25/2019		dry	NA	NA	NA

Notes:

a - Well not part of CMP program

b - Well AR-1 was re-surveyed in December 2018 and is applied to calculating GW elevations starting in May 2018

NGVD = National Geodetic Vertical Datum of 1929

N/A = Not applicable or not available

Appendix C
Laboratory Data Report

Anatek Labs, Inc.

1282 Alturas Drive • Moscow, ID 83843 • (208) 883-2839 • Fax (208) 882-9246 • email moscow@anateklabs.com
504 E Sprague Ste. D • Spokane WA 99202 • (509) 838-3999 • Fax (509) 838-4433 • email spokane@anateklabs.com

Client: JACOBS
Address: 999 W RIVERSIDE AVE #500
SPOKANE, WA 99201
Attn: REUBEN GREER

Batch #: 190627037
Project Name: TIDEWATER CMP

Analytical Results Report

Sample Number 190627037-001
Client Sample ID AR11-1906
Matrix Water
Comments

Sampling Date 6/26/2019
Sampling Time 10:25 AM
Sample Location

Date/Time Received 6/27/201912:05 PM
Extraction Date

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Iron	0.0232	mg/L	0.01	7/3/2019 2:24:00 PM	BAG	EPA 200.8	
Manganese	ND	mg/L	0.001	7/3/2019 2:24:00 PM	BAG	EPA 200.8	
Methane	ND	ug/L	0.65	7/2/2019 11:30:00 AM	SUB	RSK 175 MOD	
NO3/N	29.2	mg/L	0.2	6/28/2019 1:54:00 PM	LMC	EPA 300.0	H2
Sulfate	133	mg/L	1	7/8/2019 8:25:00 PM	LMC	EPA 300.0	
Diesel	ND	mg/L	0.1	7/9/2019 4:55:00 PM	LMC	NWTPHDX	
Lube Oil	ND	mg/L	0.5	7/9/2019 4:55:00 PM	LMC	NWTPHDX	
Gasoline	<0.1	mg/L	0.1	7/1/2019 9:02:00 PM	ARY	NWTPHG	
Benzene	<0.5	µg/L	0.5	7/2/2019 12:41:00 PM	ARY	EPA 8260C	
Ethylbenzene	<0.5	µg/L	0.5	7/2/2019 12:41:00 PM	ARY	EPA 8260C	
m+p-Xylene	<1.0	µg/L	1	7/2/2019 12:41:00 PM	ARY	EPA 8260C	
o-Xylene	<0.5	µg/L	0.5	7/2/2019 12:41:00 PM	ARY	EPA 8260C	
Toluene	<0.5	µg/L	0.5	7/2/2019 12:41:00 PM	ARY	EPA 8260C	

Surrogate Data

Sample Number 190627037-001

Surrogate Standard	Method	Percent Recovery	Control Limits
1,2-Dichlorobenzene-d4	EPA 8260C	99.0	70-130
4-Bromofluorobenzene	EPA 8260C	101.8	70-130
Toluene-d8	EPA 8260C	102.2	70-130
hexacosane	NWTPHDX	78.8	50-150
4-Bromofluorobenzene	NWTPHG	106.0	50-150

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; FL(NELAP):E87893; ID:ID00013; MT:CERT0028; NM: ID00013;NV:ID00013; OR:ID200001-002; WA:C595
Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095; FL(NELAP): E871099

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Client: JACOBS
Address: 999 W RIVERSIDE AVE #500
SPOKANE, WA 99201
Attn: REUBEN GREER

Batch #: 190627037
Project Name: TIDEWATER CMP

Analytical Results Report

Sample Number 190627037-002
Client Sample ID MW6-1906
Matrix Water
Comments

Sampling Date 6/26/2019
Sampling Time 12:10 PM
Sample Location

Date/Time Received 6/27/201912:05 PM
Extraction Date

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Iron	0.0101	mg/L	0.01	7/3/2019 2:28:00 PM	BAG	EPA 200.8	
Manganese	ND	mg/L	0.001	7/3/2019 2:28:00 PM	BAG	EPA 200.8	
Methane	ND	ug/L	0.65	7/2/2019 11:30:00 AM	SUB	RSK 175 MOD	
NO3/N	29.0	mg/L	0.2	6/28/2019 2:11:00 PM	LMC	EPA 300.0	H2
Sulfate	134	mg/L	1	7/8/2019 8:41:00 PM	LMC	EPA 300.0	
Diesel	ND	mg/L	0.1	7/9/2019 5:50:00 PM	LMC	NWTPHDX	
Lube Oil	ND	mg/L	0.5	7/9/2019 5:50:00 PM	LMC	NWTPHDX	
Gasoline	0.145	mg/L	0.1	7/1/2019 9:40:00 PM	ARY	NWTPHG	
Benzene	<0.5	µg/L	0.5	7/2/2019 1:12:00 PM	ARY	EPA 8260C	
Ethylbenzene	<0.5	µg/L	0.5	7/2/2019 1:12:00 PM	ARY	EPA 8260C	
m+p-Xylene	<1.0	µg/L	1	7/2/2019 1:12:00 PM	ARY	EPA 8260C	
o-Xylene	<0.5	µg/L	0.5	7/2/2019 1:12:00 PM	ARY	EPA 8260C	
Toluene	<0.5	µg/L	0.5	7/2/2019 1:12:00 PM	ARY	EPA 8260C	

Surrogate Data

Sample Number 190627037-002

Surrogate Standard	Method	Percent Recovery	Control Limits
1,2-Dichlorobenzene-d4	EPA 8260C	100.8	70-130
4-Bromofluorobenzene	EPA 8260C	102.8	70-130
Toluene-d8	EPA 8260C	101.4	70-130
hexacosane	NWTPHDX	96.4	50-150
4-Bromofluorobenzene	NWTPHG	107.0	50-150

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Client: JACOBS
Address: 999 W RIVERSIDE AVE #500
SPOKANE, WA 99201
Attn: REUBEN GREER

Batch #: 190627037
Project Name: TIDEWATER CMP

Analytical Results Report

Sample Number 190627037-003
Client Sample ID MW4-1906
Matrix Water
Comments

Sampling Date 6/26/2019
Sampling Time 2:10 PM
Sample Location

Date/Time Received 6/27/201912:05 PM
Extraction Date

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Iron	0.0474	mg/L	0.01	7/3/2019 2:31:00 PM	BAG	EPA 200.8	
Manganese	0.00121	mg/L	0.001	7/3/2019 2:31:00 PM	BAG	EPA 200.8	
Methane	ND	ug/L	0.65	7/2/2019 11:30:00 AM	SUB	RSK 175 MOD	
NO3/N	29.5	mg/L	1	6/28/2019 2:28:00 PM	LMC	EPA 300.0	H2
Sulfate	131	mg/L	1	6/28/2019 2:28:00 PM	LMC	EPA 300.0	
Diesel	ND	mg/L	0.1	7/9/2019 5:45:00 PM	LMC	NWTPHDX	
Lube Oil	ND	mg/L	0.5	7/9/2019 5:45:00 PM	LMC	NWTPHDX	
Gasoline	<0.1	mg/L	0.1	7/1/2019 10:19:00 PM	ARY	NWTPHG	
Benzene	<0.5	µg/L	0.5	7/2/2019 1:42:00 PM	ARY	EPA 8260C	
Ethylbenzene	<0.5	µg/L	0.5	7/2/2019 1:42:00 PM	ARY	EPA 8260C	
m+p-Xylene	<1.0	µg/L	1	7/2/2019 1:42:00 PM	ARY	EPA 8260C	
o-Xylene	<0.5	µg/L	0.5	7/2/2019 1:42:00 PM	ARY	EPA 8260C	
Toluene	<0.5	µg/L	0.5	7/2/2019 1:42:00 PM	ARY	EPA 8260C	

Surrogate Data

Sample Number 190627037-003

Surrogate Standard	Method	Percent Recovery	Control Limits
1,2-Dichlorobenzene-d4	EPA 8260C	101.2	70-130
4-Bromofluorobenzene	EPA 8260C	104.2	70-130
Toluene-d8	EPA 8260C	102.4	70-130
hexacosane	NWTPHDX	93.2	50-150
4-Bromofluorobenzene	NWTPHG	107.0	50-150

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Client: JACOBS
Address: 999 W RIVERSIDE AVE #500
SPOKANE, WA 99201
Attn: REUBEN GREER

Batch #: 190627037
Project Name: TIDEWATER CMP

Analytical Results Report

Sample Number 190627037-004
Client Sample ID AR8-1906
Matrix Water
Comments

Sampling Date 6/26/2019
Sampling Time 4:10 PM
Sample Location

Date/Time Received 6/27/201912:05 PM
Extraction Date

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Iron	0.989	mg/L	0.01	7/3/2019 2:34:00 PM	BAG	EPA 200.8	
Manganese	1.24	mg/L	0.01	7/3/2019 2:41:00 PM	BAG	EPA 200.8	
Methane	4.50	ug/L	0.65	7/2/2019 11:30:00 AM	SUB	RSK 175 MOD	
NO3/N	2.39	mg/L	0.1	6/28/2019 3:28:00 AM	LMC	EPA 300.0	
Sulfate	51.4	mg/L	1	7/8/2019 8:58:00 PM	LMC	EPA 300.0	
Diesel	ND	mg/L	0.1	7/9/2019 7:41:00 PM	LMC	NWTPHDX	
Lube Oil	ND	mg/L	0.5	7/9/2019 7:41:00 PM	LMC	NWTPHDX	
Gasoline	4.83	mg/L	0.1	7/1/2019 10:57:00 PM	ARY	NWTPHG	
Benzene	<0.5	µg/L	0.5	7/2/2019 2:12:00 PM	ARY	EPA 8260C	
Ethylbenzene	88.0	µg/L	2.5	7/2/2019 2:12:00 PM	ARY	EPA 8260C	
m+p-Xylene	60.1	µg/L	5	7/2/2019 2:12:00 PM	ARY	EPA 8260C	
o-Xylene	97.1	µg/L	2.5	7/2/2019 2:12:00 PM	ARY	EPA 8260C	
Toluene	0.53	µg/L	0.5	7/2/2019 2:12:00 PM	ARY	EPA 8260C	

Surrogate Data

Sample Number 190627037-004

Surrogate Standard	Method	Percent Recovery	Control Limits
1,2-Dichlorobenzene-d4	EPA 8260C	98.4	70-130
4-Bromofluorobenzene	EPA 8260C	100.8	70-130
Toluene-d8	EPA 8260C	105.4	70-130
hexacosane	NWTPHDX	96.6	50-150
4-Bromofluorobenzene	NWTPHG	109.0	50-150

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Client: JACOBS
Address: 999 W RIVERSIDE AVE #500
SPOKANE, WA 99201
Attn: REUBEN GREER

Batch #: 190627037
Project Name: TIDEWATER CMP

Analytical Results Report

Sample Number 190627037-005
Client Sample ID AR4-1906
Matrix Water
Comments

Sampling Date 6/26/2019
Sampling Time 6:00 PM
Sample Location

Date/Time Received 6/27/201912:05 PM
Extraction Date

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Iron	1.92	mg/L	0.01	7/3/2019 2:37:00 PM	BAG	EPA 200.8	
Manganese	1.94	mg/L	0.01	7/3/2019 2:44:00 PM	BAG	EPA 200.8	
Methane	922	ug/L	0.65	7/2/2019 11:30:00 AM	SUB	RSK 175 MOD	
NO3/N	5.63	mg/L	0.1	6/28/2019 4:52:00 AM	LMC	EPA 300.0	
Sulfate	46.7	mg/L	0.2	6/28/2019 3:17:00 PM	LMC	EPA 300.0	
Diesel	ND	mg/L	0.1	7/9/2019 8:37:00 PM	LMC	NWTPHDX	
Lube Oil	ND	mg/L	0.5	7/9/2019 8:37:00 PM	LMC	NWTPHDX	
Gasoline	22.0	mg/L	1	7/2/2019 3:04:00 PM	ARY	NWTPHG	
Benzene	121	µg/L	50	5/2/2019 2:43:00 PM	ARY	EPA 8260C	
Ethylbenzene	305	µg/L	50	5/2/2019 2:43:00 PM	ARY	EPA 8260C	
m+p-Xylene	2410	µg/L	100	5/2/2019 2:43:00 PM	ARY	EPA 8260C	
o-Xylene	2460	µg/L	50	5/2/2019 2:43:00 PM	ARY	EPA 8260C	
Toluene	<50.0	µg/L	50	5/2/2019 2:43:00 PM	ARY	EPA 8260C	

Surrogate Data

Sample Number 190627037-005

Surrogate Standard	Method	Percent Recovery	Control Limits
1,2-Dichlorobenzene-d4	EPA 8260C	100.8	70-130
4-Bromofluorobenzene	EPA 8260C	97.8	70-130
Toluene-d8	EPA 8260C	102.2	70-130
hexacosane	NWTPHDX	88.2	50-150
4-Bromofluorobenzene	NWTPHG	107.0	50-150

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Client: JACOBS
Address: 999 W RIVERSIDE AVE #500
SPOKANE, WA 99201
Attn: REUBEN GREER

Batch #: 190627037
Project Name: TIDEWATER CMP

Analytical Results Report

Sample Number	190627037-005B	**Sampling Date**	6/26/2019	**Date/Time Received**	6/27/201912:05 PM
Client Sample ID	AR4-1906 lower PQL	**Sampling Time**	6:00 PM	**Extraction Date**	
Matrix	Water	**Sample Location**			
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Benzene	123	µg/L	1	7/1/2019 11:35:00 AM	ARY	EPA 8021	
Toluene	10.5	µg/L	1	7/1/2019 11:35:00 AM	ARY	EPA 8021	

Surrogate Data

Sample Number 190627037-005B

Surrogate Standard	Method	Percent Recovery	Control Limits
4-Bromofluorobenzene	EPA 8021	93.9	70-130

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Client: JACOBS
Address: 999 W RIVERSIDE AVE #500
SPOKANE, WA 99201
Attn: REUBEN GREER

Batch #: 190627037
Project Name: TIDEWATER CMP

Analytical Results Report

Sample Number 190627037-006
Client Sample ID MW8-1906
Matrix Water
Comments

Sampling Date 6/26/2019
Sampling Time 8:10 PM
Sample Location

Date/Time Received 6/27/201912:05 PM
Extraction Date

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Iron	0.157	mg/L	0.01	7/3/2019 2:57:00 PM	BAG	EPA 200.8	
Manganese	0.289	mg/L	0.001	7/3/2019 2:57:00 PM	BAG	EPA 200.8	
Methane	ND	ug/L	0.65	7/2/2019 11:30:00 AM	SUB	RSK 175 MOD	
NO3/N	24.0	mg/L	1	6/28/2019 4:57:00 PM	LMC	EPA 300.0	
Sulfate	108	mg/L	1	6/28/2019 4:57:00 PM	LMC	EPA 300.0	
Diesel	ND	mg/L	0.1	7/9/2019 9:32:00 PM	LMC	NWTPHDX	
Lube Oil	ND	mg/L	0.5	7/9/2019 9:32:00 PM	LMC	NWTPHDX	
Gasoline	5.19	mg/L	0.5	7/2/2019 3:43:00 PM	ARY	NWTPHG	
Benzene	<12.5	µg/L	12.5	7/2/2019 3:13:00 PM	ARY	EPA 8260C	
Ethylbenzene	61.8	µg/L	12.5	7/2/2019 3:13:00 PM	ARY	EPA 8260C	
m+p-Xylene	538	µg/L	25	7/2/2019 3:13:00 PM	ARY	EPA 8260C	
o-Xylene	272	µg/L	12.5	7/2/2019 3:13:00 PM	ARY	EPA 8260C	
Toluene	<12.5	µg/L	12.5	7/2/2019 3:13:00 PM	ARY	EPA 8260C	

Surrogate Data

Sample Number 190627037-006

Surrogate Standard	Method	Percent Recovery	Control Limits
1,2-Dichlorobenzene-d4	EPA 8260C	98.4	70-130
4-Bromofluorobenzene	EPA 8260C	97.2	70-130
Toluene-d8	EPA 8260C	100.0	70-130
hexacosane	NWTPHDX	91.6	50-150
4-Bromofluorobenzene	NWTPHG	108.0	50-150

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Client: JACOBS
Address: 999 W RIVERSIDE AVE #500
SPOKANE, WA 99201
Attn: REUBEN GREER

Batch #: 190627037
Project Name: TIDEWATER CMP

Analytical Results Report

Sample Number	190627037-006F	**Sampling Date**	6/26/2019	**Date/Time Received**	6/27/201912:05 PM
Client Sample ID	MW8-1906 lower PQL	**Sampling Time**	8:10 PM	**Extraction Date**	
Matrix	Water	**Sample Location**			
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Benzene	<1.0	µg/L	1	7/2/2019 12:13:00 PM	ARY	EPA 8021	
Toluene	8.10	µg/L	1	7/2/2019 12:13:00 PM	ARY	EPA 8021	

Surrogate Data

Sample Number 190627037-006F

Surrogate Standard	Method	Percent Recovery	Control Limits
4-Bromofluorobenzene	EPA 8021	96.7	70-130

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Client: JACOBS
Address: 999 W RIVERSIDE AVE #500
SPOKANE, WA 99201
Attn: REUBEN GREER

Batch #: 190627037
Project Name: TIDEWATER CMP

Analytical Results Report

Sample Number 190627037-007
Client Sample ID FD-1906
Matrix Water
Comments

Sampling Date 6/26/2019
Sampling Time 12:00 PM
Sample Location

Date/Time Received 6/27/201912:05 PM
Extraction Date

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Iron	0.880	mg/L	0.01	7/3/2019 3:06:00 PM	BAG	EPA 200.8	
Manganese	1.16	mg/L	0.01	7/3/2019 3:32:00 PM	BAG	EPA 200.8	
Methane	4.17	ug/L	0.65	7/2/2019 11:30:00 AM	SUB	RSK 175 MOD	
NO3/N	3.10	mg/L	0.1	6/28/2019 5:59:00 AM	LMC	EPA 300.0	
Sulfate	50.3	mg/L	1	7/8/2019 9:14:00 PM	LMC	EPA 300.0	
Diesel	ND	mg/L	0.1	7/9/2019 10:28:00 PM	LMC	NWTPHDX	
Lube Oil	ND	mg/L	0.5	7/9/2019 10:28:00 PM	LMC	NWTPHDX	
Gasoline	4.61	mg/L	0.1	7/2/2019 12:51:00 AM	ARY	NWTPHG	
Benzene	<0.5	µg/L	0.5	7/2/2019 3:43:00 PM	ARY	EPA 8260C	
Ethylbenzene	82.7	µg/L	2.5	7/2/2019 3:43:00 PM	ARY	EPA 8260C	
m+p-Xylene	55.5	µg/L	5	7/2/2019 3:43:00 PM	ARY	EPA 8260C	
o-Xylene	91.5	µg/L	2.5	7/2/2019 3:43:00 PM	ARY	EPA 8260C	
Toluene	0.53	µg/L	0.5	7/2/2019 3:43:00 PM	ARY	EPA 8260C	

Surrogate Data

Sample Number 190627037-007

Surrogate Standard	Method	Percent Recovery	Control Limits
1,2-Dichlorobenzene-d4	EPA 8260C	97.0	70-130
4-Bromofluorobenzene	EPA 8260C	95.2	70-130
Toluene-d8	EPA 8260C	103.0	70-130
hexacosane	NWTPHDX	92.8	50-150
4-Bromofluorobenzene	NWTPHG	106.0	50-150

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Client: JACOBS
Address: 999 W RIVERSIDE AVE #500
SPOKANE, WA 99201
Attn: REUBEN GREER

Batch #: 190627037
Project Name: TIDEWATER CMP

Analytical Results Report

Sample Number 190627037-008
Client Sample ID EB-1906
Matrix Water
Comments

Sampling Date 6/26/2019
Sampling Time 2:00 PM
Sample Location

Date/Time Received 6/27/201912:05 PM
Extraction Date

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Diesel	ND	mg/L	0.1	7/9/2019 11:23:00 PM	LMC	NWTPHDX	
Lube Oil	ND	mg/L	0.5	7/9/2019 11:23:00 PM	LMC	NWTPHDX	
Gasoline	<0.1	mg/L	0.1	7/2/2019 1:29:00 AM	ARY	NWTPHG	
Benzene	<0.5	µg/L	0.5	7/2/2019 4:14:00 PM	ARY	EPA 8260C	
Ethylbenzene	<0.5	µg/L	0.5	7/2/2019 4:14:00 PM	ARY	EPA 8260C	
m+p-Xylene	2.05	µg/L	1	7/2/2019 4:14:00 PM	ARY	EPA 8260C	
o-Xylene	1.82	µg/L	0.5	7/2/2019 4:14:00 PM	ARY	EPA 8260C	
Toluene	<0.5	µg/L	0.5	7/2/2019 4:14:00 PM	ARY	EPA 8260C	

Surrogate Data

Sample Number 190627037-008

Surrogate Standard	Method	Percent Recovery	Control Limits
1,2-Dichlorobenzene-d4	EPA 8260C	98.6	70-130
4-Bromofluorobenzene	EPA 8260C	95.6	70-130
Toluene-d8	EPA 8260C	100.6	70-130
hexacosane	NWTPHDX	68.6	50-150
4-Bromofluorobenzene	NWTPHG	108.0	50-150

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Client: JACOBS
Address: 999 W RIVERSIDE AVE #500
SPOKANE, WA 99201
Attn: REUBEN GREER

Batch #: 190627037
Project Name: TIDEWATER CMP

Analytical Results Report

Sample Number 190627037-009 **Sampling Date** 6/26/2019 **Date/Time Received** 6/27/201912:05 PM
Client Sample ID TRIP BLANK 1 **Sampling Time** **Extraction Date**
Matrix Water **Sample Location**
Comments

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Benzene	<0.5	µg/L	0.5	7/2/2019 4:44:00 PM	ARY	EPA 8260C	
Ethylbenzene	<0.5	µg/L	0.5	7/2/2019 4:44:00 PM	ARY	EPA 8260C	
m+p-Xylene	<1.0	µg/L	1	7/2/2019 4:44:00 PM	ARY	EPA 8260C	
o-Xylene	<0.5	µg/L	0.5	7/2/2019 4:44:00 PM	ARY	EPA 8260C	
Toluene	<0.5	µg/L	0.5	7/2/2019 4:44:00 PM	ARY	EPA 8260C	

Surrogate Data

Sample Number 190627037-009

Surrogate Standard	Method	Percent Recovery	Control Limits
1,2-Dichlorobenzene-d4	EPA 8260C	100.8	70-130
4-Bromofluorobenzene	EPA 8260C	96.6	70-130
Toluene-d8	EPA 8260C	99.6	70-130

Sample Number 190627037-010 **Sampling Date** 6/26/2019 **Date/Time Received** 6/27/201912:05 PM
Client Sample ID TRIP BLANK 2 **Sampling Time** **Extraction Date**
Matrix Water **Sample Location**
Comments

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Benzene	<0.5	µg/L	0.5	7/2/2019 5:14:00 PM	ARY	EPA 8260C	
Ethylbenzene	<0.5	µg/L	0.5	7/2/2019 5:14:00 PM	ARY	EPA 8260C	
m+p-Xylene	<1.0	µg/L	1	7/2/2019 5:14:00 PM	ARY	EPA 8260C	
o-Xylene	<0.5	µg/L	0.5	7/2/2019 5:14:00 PM	ARY	EPA 8260C	
Toluene	<0.5	µg/L	0.5	7/2/2019 5:14:00 PM	ARY	EPA 8260C	

Surrogate Data

Sample Number 190627037-010

Surrogate Standard	Method	Percent Recovery	Control Limits
1,2-Dichlorobenzene-d4	EPA 8260C	99.8	70-130
4-Bromofluorobenzene	EPA 8260C	98.2	70-130
Toluene-d8	EPA 8260C	100.8	70-130

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Client:	JACOBS	**Batch #:**	190627037
Address:	999 W RIVERSIDE AVE #500 SPOKANE, WA 99201	**Project Name:**	TIDEWATER CMP
Attn:	REUBEN GREER		

Analytical Results Report

Authorized Signature

Kathleen A. Sattler, Lab Manager

H2	Initial analysis within holding time, Reanalysis for the required dilution was past holding time.
MCL	EPA's Maximum Contaminant Level
ND	Not Detected
PQL	Practical Quantitation Limit

This report shall not be reproduced except in full, without the written approval of the laboratory.
The results reported relate only to the samples indicated.
Soil/solid results are reported on a dry-weight basis unless otherwise noted.

Anatek Labs, Inc.

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504 E Sprague Ste. D • Spokane WA 99202 • (509) 838-3999 • Fax (509) 838-4433 • email spokane@anateklabs.com

Client: JACOBS
Address: 999 W RIVERSIDE AVE #500
SPOKANE, WA 99201
Attn: REUBEN GREER

Batch #: 190627037
Project Name: TIDEWATER CMP

Analytical Results Report

Quality Control Data

Lab Control Sample

Parameter	LCS Result	Units	LCS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
Diesel	0.716	mg/L	1	71.6	50-150	7/9/2019	7/9/2019
Sulfate	4.33	mg/L	4	108.3	90-110	7/8/2019	7/8/2019
Manganese	0.0504	mg/L	0.05	100.8	85-115	7/1/2019	7/3/2019
Iron	0.111	mg/L	0.1	111.0	85-115	7/1/2019	7/3/2019
Iron	0.111	mg/L	0.1	111.0	85-115	7/1/2019	7/3/2019
Toluene	5.11	µg/L	5	102.2	70-130	7/2/2019	7/2/2019
o-Xylene	5.33	µg/L	5	106.6	70-130	7/2/2019	7/2/2019
Ethylbenzene	5.33	µg/L	5	106.6	70-130	7/2/2019	7/2/2019
Benzene	5.38	µg/L	5	107.6	70-130	7/2/2019	7/2/2019
Gasoline	2.78	mg/L	2.77	100.4	70-130	7/2/2019	7/2/2019
Gasoline	2.72	mg/L	2.77	98.2	70-130	7/1/2019	7/1/2019
Sulfate	4.10	mg/L	4	102.5	90-110	6/28/2019	6/28/2019
NO3/N	3.85	mg/L	4	96.3	90-110	6/28/2019	6/28/2019
NO3/N	3.95	mg/L	4	98.8	90-110	6/27/2019	6/27/2019

Matrix Spike

Sample Number	Parameter	Sample Result	MS Result	Units	MS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
190628052-002	Gasoline	<0.1	2.66	mg/L	2.77	96.0	70-130	7/2/2019	7/2/2019
190619065-002	Gasoline	<0.1	2.81	mg/L	2.77	101.4	70-130	7/1/2019	7/1/2019
190627037-006	Diesel	ND	0.997	mg/L	1	99.7	50-150	7/9/2019	7/9/2019
190708022-001A	Sulfate	0.842	4.80	mg/L	4	99.0	80-120	7/8/2019	7/8/2019
190627024-001A	Sulfate	25.2	29.3	mg/L	4	102.5	80-120	6/28/2019	6/28/2019
190627037-006C	NO3/N	24.0	27.9	mg/L	4	97.5	80-120	6/27/2019	6/27/2019
190627024-001A	NO3/N	10.1	14.2	mg/L	4	102.5	80-120	6/28/2019	6/28/2019
190628043-002A	Manganese	0.00109	0.0516	mg/L	0.05	101.0	70-130	7/1/2019	7/3/2019
190628043-002A	Iron	0.0403	0.150	mg/L	0.1	109.7	70-130	7/1/2019	7/3/2019
190628043-002A	Iron	0.0403	0.150	mg/L	0.1	109.7	70-130	7/1/2019	7/3/2019

Matrix Spike Duplicate

Parameter	MSD Result	Units	MSD Spike	%Rec	%RPD	AR %RPD	Prep Date	Analysis Date
Gasoline	2.79	mg/L	2.77	100.7	4.8	0-20	7/2/2019	7/2/2019
Gasoline	2.78	mg/L	2.77	100.4	1.1	0-20	7/1/2019	7/1/2019

Comments: METHANE SUB TO ANALYTICAL RESOURCES

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; FL(NELAP):E87893; ID:ID00013; MT:CERT0028; NM: ID00013;NV:ID00013; OR:ID200001-002; WA:C595
Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095; FL(NELAP): E871099

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Client: JACOBS
Address: 999 W RIVERSIDE AVE #500
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Attn: REUBEN GREER

Batch #: 190627037
Project Name: TIDEWATER CMP

Analytical Results Report

Quality Control Data

Matrix Spike Duplicate

Parameter	MSD Result	Units	MSD Spike	%Rec	%RPD	AR %RPD	Prep Date	Analysis Date
Diesel	1.11	mg/L	1	111.0	10.7	0-50	7/9/2019	7/9/2019
Sulfate	5.12	mg/L	4	107.0	6.5	0-20	7/8/2019	7/8/2019
Sulfate	29.5	mg/L	4	107.5	0.7	0-20	6/28/2019	6/28/2019
NO3/N	28.1	mg/L	4	102.5	0.7	0-20	6/27/2019	6/27/2019
NO3/N	14.4	mg/L	4	107.5	1.4	0-20	6/28/2019	6/28/2019
Manganese	0.0509	mg/L	0.05	99.6	1.4	0-20	7/1/2019	7/3/2019
Iron	0.147	mg/L	0.1	106.7	2.0	0-20	7/1/2019	7/3/2019
Iron	0.147	mg/L	0.1	106.7	2.0	0-20	7/1/2019	7/3/2019

Method Blank

Parameter	Result	Units	PQL	Prep Date	Analysis Date
Benzene	<0.5	µg/L	0.5	7/2/2019	7/2/2019
Diesel	ND	mg/L	0.1	7/9/2019	7/9/2019
Ethylbenzene	<0.5	µg/L	0.5	7/2/2019	7/2/2019
Gasoline	<0.1	mg/L	0.1	7/1/2019	7/1/2019
Gasoline	<0.1	mg/L	0.1	7/2/2019	7/2/2019
Iron	ND	mg/L	0.01	7/1/2019	7/3/2019
Iron	ND	mg/L	0.01	7/1/2019	7/3/2019
Lube Oil	ND	mg/L	0.5	7/9/2019	7/9/2019
m+p-Xylene	<1.0	µg/L	1	7/2/2019	7/2/2019
Manganese	ND	mg/L	0.001	7/1/2019	7/3/2019
NO3/N	ND	mg/L	0.1	6/27/2019	6/27/2019
NO3/N	ND	mg/L	0.1	6/28/2019	6/28/2019
o-Xylene	<0.5	µg/L	0.5	7/2/2019	7/2/2019
Sulfate	ND	mg/L	0.1	6/28/2019	6/28/2019
Sulfate	ND	mg/L	0.1	7/8/2019	7/8/2019
Toluene	<0.5	µg/L	0.5	7/2/2019	7/2/2019

AR	Acceptable Range
ND	Not Detected
PQL	Practical Quantitation Limit
RPD	Relative Percentage Difference

Comments: METHANE SUB TO ANALYTICAL RESOURCES

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; FL(NELAP):E87893; ID:ID00013; MT:CERT0028; NM: ID00013;NV:ID00013; OR:ID200001-002; WA:C595
Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095; FL(NELAP): E871099

Analytical Resources, Incorporated
Analytical Chemists and Consultants

05 July 2019

Kathy Sattler
Anatek Labs, Inc.
504 East Sprague, Suite D
Spokane, WA 99202

RE: 190627037 CH2R

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

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

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

Associated Work Order(s)	Associated SDG ID(s)
19F0422	N/A

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

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

Analytical Resources, Inc.

19F0422

Anatek Labs, Inc.

Chain of Custody Record

1282 Alturas Drive, Moscow ID 83843 (208) 883-2839 FAX 882-9246
504 E Sprague Ste D, Spokane WA 99202 (509) 838-3999 FAX 838-4433

Anatek Log-In #

Company Name:	Anatek Labs	Project Manager:	Kathy Sattler
Address:	504 E Sprague Ave, Ste D	Project Name & # :	190627037 CH2R
City: Spokane	State: WA Zip: 99202	Email Address :	kathy@anateklabs.com
Phone:	(509) 838-3999	Purchase Order #:	
Fax:		Sampler Name & phone:	

Turn Around Time & Reporting

Please refer to our normal turn around times at:
http://www.anateklabs.com/services/guidelines/reporting.asp

✓ Normal
__Next Day*
__2nd Day*
__Other*_____

*All rush order requests must be prior approved.

__Phone
__Mail
__Fax
__Email

Provide Sample Description / List Analyses Requested

Lab ID	Sample Identification	Sampling Date/Time	Matrix	# of Containers	Sample Volume	Preservative: METHANE
	190627037-001	6/26/19 1025	W	3		x
	190627037-002	6/26/19 1210	W	3		x
	190627037-003	6/26/19 1410	W	3		x
	190627037-004	6/26/19 1610	W	3		x
	190627037-005	6/26/19 1800	W	3		x
	190627037-006	6/26/19 2010	W	9		x
	190627037-007	6/26/19 1200	W	3		x

Note Special Instructions/Comments

FEDEX - ANALYTICAL RESOURCES

MS/MSD

Inspection Checklist

Received Intact?	Y	N
Labels & Chains Agree?	Y	N
Containers Sealed?	Y	N
VOC Head Space?	Y	N

Temperature (°C):_____
Preservative:_____
Date & Time:_____
Inspected By:_____

	Printed Name	Signature	Company	Date	Time
Relinquished by	Wendy DE	Wendy DE	Anatek	6/27/19	1700
Received by	Jacob Waltz		ARI	6/28/19	1103
Relinquished by					
Received by					
Relinquished by					
Received by					

Anatek Labs, Inc.	Project: 190627037 CH2R	
504 East Sprague, Suite D	Project Number: [none]	**Reported:**
Spokane WA, 99202	Project Manager: Kathy Sattler	05-Jul-2019 09:40

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
190627037-001	19F0422-01	Water	26-Jun-2019 10:25	28-Jun-2019 11:03
190627037-002	19F0422-02	Water	26-Jun-2019 12:10	28-Jun-2019 11:03
190627037-003	19F0422-03	Water	26-Jun-2019 14:10	28-Jun-2019 11:03
190627037-004	19F0422-04	Water	26-Jun-2019 16:10	28-Jun-2019 11:03
190627037-005	19F0422-05	Water	26-Jun-2019 18:00	28-Jun-2019 11:03
190627037-006	19F0422-06	Water	26-Jun-2019 20:10	28-Jun-2019 11:03
190627037-007	19F0422-07	Water	26-Jun-2019 12:00	28-Jun-2019 11:03

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Anatek Labs, Inc.	Project: 190627037 CH2R	
504 East Sprague, Suite D	Project Number: [none]	**Reported:**
Spokane WA, 99202	Project Manager: Kathy Sattler	05-Jul-2019 09:40

Work Order Case Narrative

Volatile Gases - MEE by RSK175

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

Initial and continuing calibrations were within method requirements.

The surrogate percent recoveries were within control limits.

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

The Matrix Spike/Matrix Spike duplicate recoveries and RPD were within limits.

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Anatek Labs

Project Name: 190627037 CHAR

COC No(s): _____ NA

Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____

Assigned ARI Job No: 19F0422

Tracking No: 7755 9814 8131 NA

Preliminary Examination Phase:

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

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

Time 1103 4.6°C

If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: DOO 5706

Cooler Accepted by: JBw Date: 06/28/19 Time: 1103

Complete custody forms and attach all shipping documents

Log-In Phase:

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

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

Samples Logged by: JBw Date: 06/28/19 Time: 1406 Labels checked by: JBw

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

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

Additional Notes, Discrepancies, & Resolutions:

By: Date:

Anatek Labs, Inc.	Project: 190627037 CH2R	
504 East Sprague, Suite D	Project Number: [none]	**Reported:**
Spokane WA, 99202	Project Manager: Kathy Sattler	05-Jul-2019 09:40

190627037-001

19F0422-01 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 06/26/2019 10:25

Instrument: FID6 Analyst: LH — Analyzed: 07/02/2019 11:03

Sample Preparation: Preparation Method: No Prep - Volatiles; Preparation Batch: BHF0678; Prepared: 02-Jul-2019; Sample Size: 10 mL; Final Volume: 10 mL — Extract ID: 19F0422-01 C

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Methane	74-82-8	1	0.65	ND	ug/L	U
Surrogate: Propane			*72-122 %*	*86.7*	*%*	

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Anatek Labs, Inc.	Project: 190627037 CH2R	
504 East Sprague, Suite D	Project Number: [none]	**Reported:**
Spokane WA, 99202	Project Manager: Kathy Sattler	05-Jul-2019 09:40

190627037-002

19F0422-02 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 06/26/2019 12:10

Instrument: FID6 Analyst: LH — Analyzed: 07/02/2019 11:17

Sample Preparation: Preparation Method: No Prep - Volatiles; Preparation Batch: BHF0678; Prepared: 02-Jul-2019; Sample Size: 10 mL; Final Volume: 10 mL — Extract ID: 19F0422-02 C

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Methane	74-82-8	1	0.65	ND	ug/L	U
Surrogate: Propane			*72-122 %*	*86.8*	*%*	

Anatek Labs, Inc.	Project: 190627037 CH2R	
504 East Sprague, Suite D	Project Number: [none]	**Reported:**
Spokane WA, 99202	Project Manager: Kathy Sattler	05-Jul-2019 09:40

190627037-003

19F0422-03 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 06/26/2019 14:10

Instrument: FID6 Analyst: LH — Analyzed: 07/02/2019 13:26

Sample Preparation: Preparation Method: No Prep - Volatiles — Extract ID: 19F0422-03 C

Preparation Batch: BHF0678 — Sample Size: 10 mL

Prepared: 02-Jul-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Methane	74-82-8	1	0.65	ND	ug/L	U
Surrogate: Propane			*72-122 %*	*85.3*	*%*	

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Anatek Labs, Inc.	Project: 190627037 CH2R	
504 East Sprague, Suite D	Project Number: [none]	**Reported:**
Spokane WA, 99202	Project Manager: Kathy Sattler	05-Jul-2019 09:40

190627037-004

19F0422-04 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 06/26/2019 16:10

Instrument: FID6 Analyst: LH — Analyzed: 07/02/2019 13:41

Sample Preparation: Preparation Method: No Prep - Volatiles — Extract ID: 19F0422-04 C

Preparation Batch: BHF0678 — Sample Size: 10 mL

Prepared: 02-Jul-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Methane	74-82-8	1	0.65	**4.50**	ug/L	
Surrogate: Propane			*72-122 %*	*84.3*	*%*	

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Anatek Labs, Inc.	Project: 190627037 CH2R	
504 East Sprague, Suite D	Project Number: [none]	**Reported:**
Spokane WA, 99202	Project Manager: Kathy Sattler	05-Jul-2019 09:40

190627037-005

19F0422-05 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 06/26/2019 18:00

Instrument: FID6 Analyst: LH — Analyzed: 07/02/2019 13:55

Sample Preparation: Preparation Method: No Prep - Volatiles — Extract ID: 19F0422-05 C

Preparation Batch: BHF0678 — Sample Size: 10 mL

Prepared: 02-Jul-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Methane	74-82-8	1	0.65	**922**	ug/L	
Surrogate: Propane			*72-122 %*	*85.5*	*%*	

Anatek Labs, Inc.	Project: 190627037 CH2R	
504 East Sprague, Suite D	Project Number: [none]	**Reported:**
Spokane WA, 99202	Project Manager: Kathy Sattler	05-Jul-2019 09:40

190627037-006

19F0422-06 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 06/26/2019 20:10

Instrument: FID6 Analyst: LH — Analyzed: 07/02/2019 14:09

Sample Preparation: Preparation Method: No Prep - Volatiles — Extract ID: 19F0422-06 E

Preparation Batch: BHF0678 — Sample Size: 10 mL

Prepared: 02-Jul-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Methane	74-82-8	1	0.65	ND	ug/L	U
Surrogate: Propane			*72-122 %*	*86.6*	*%*	

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Anatek Labs, Inc.	Project: 190627037 CH2R	
504 East Sprague, Suite D	Project Number: [none]	**Reported:**
Spokane WA, 99202	Project Manager: Kathy Sattler	05-Jul-2019 09:40

190627037-007

19F0422-07 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 06/26/2019 12:00

Instrument: FID6 Analyst: LH — Analyzed: 07/02/2019 14:23

Sample Preparation: Preparation Method: No Prep - Volatiles; Preparation Batch: BHF0678; Prepared: 02-Jul-2019; Sample Size: 10 mL; Final Volume: 10 mL — Extract ID: 19F0422-07 C

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Methane	74-82-8	1	0.65	**4.17**	ug/L	
Surrogate: Propane			*72-122 %*	*88.8*	*%*	

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Anatek Labs, Inc.	Project: 190627037 CH2R	
504 East Sprague, Suite D	Project Number: [none]	**Reported:**
Spokane WA, 99202	Project Manager: Kathy Sattler	05-Jul-2019 09:40

Dissolved Gases - Quality Control

Batch BHF0678 - No Prep - Volatiles

Instrument: FID6 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHF0678-BLK1)				Prepared: 02-Jul-2019 Analyzed: 02-Jul-2019 08:23						
Methane	ND	0.65	ug/L							U
Surrogate: Propane	1590		ug/L	*1800*		*88.6*	*72-122*			
LCS (BHF0678-BS1)				Prepared: 02-Jul-2019 Analyzed: 02-Jul-2019 07:42						
Methane	593	0.65	ug/L	656		90.4	80-120			
Surrogate: Propane	1570		ug/L	*1800*		*87.0*	*62-122*			
LCS Dup (BHF0678-BSD1)				Prepared: 02-Jul-2019 Analyzed: 02-Jul-2019 08:08						
Methane	580	0.65	ug/L	656		88.3	80-120	2.29	30	
Surrogate: Propane	1550		ug/L	*1800*		*86.1*	*62-122*			
Matrix Spike (BHF0678-MS1)	**Source: 19F0422-06**			Prepared: 02-Jul-2019 Analyzed: 02-Jul-2019 14:38						
Methane	538	0.65	ug/L	656	ND	82.0	80-120			
Surrogate: Propane	1470		ug/L	*1800*	*1560*	*81.6*	*62-122*			

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

Matrix Spike Dup (BHF0678-MSD1)	**Source: 19F0422-06**			Prepared: 02-Jul-2019 Analyzed: 02-Jul-2019 15:06						
Methane	568	0.65	ug/L	656	ND	86.6	80-120	5.45	30	
Surrogate: Propane	1560		ug/L	*1800*	*1560*	*86.9*	*62-122*			

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

Anatek Labs, Inc.	Project: 190627037 CH2R	
504 East Sprague, Suite D	Project Number: [none]	**Reported:**
Spokane WA, 99202	Project Manager: Kathy Sattler	05-Jul-2019 09:40

Certified Analyses included in this Report

Analyte	Certifications
EPA RSK-175 in Water	
Methane	NELAP
Ethane	NELAP
Ethene	NELAP
Acetylene	NELAP

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

Anatek Labs, Inc.	Project: 190627037 CH2R	
504 East Sprague, Suite D	Project Number: [none]	**Reported:**
Spokane WA, 99202	Project Manager: Kathy Sattler	05-Jul-2019 09:40

Notes and Definitions

U	This analyte is not detected above the reporting limit (RL) or if noted, not detected above the limit of detection (LOD).
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
[2C]	Indicates this result was quantified on the second column on a dual column analysis.

Anatek Labs, Inc.

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Login Report

Customer Name: JACOBS
999 W RIVERSIDE AVE #500
SPOKANE WA 99201

Order ID: 190627037
Order Date: 6/27/2019

Contact Name: REUBEN GREER
Project Name: TIDEWATER CMP

Comment: METHANE SUB TO ANALYTICAL RESOURCES

Sample #: 190627037-001 **Customer Sample #:** AR11-1906

Recv'd: ☑ **Matrix:** Water **Collector:** SHANNON BARTOW **Date Collected:** 6/26/2019
Quantity: 10 **Date Received:** 6/27/2019 12:05:00 PM **Time Collected:** 10:25 AM
Comment:

Test	Lab	Method	Due Date	Priority
IRON	S	EPA 200.8	7/9/2019	***Normal (~10 Days)***
MANGANESE SPO	S	EPA 200.8	7/9/2019	***Normal (~10 Days)***
METHANE	S	RSK 175 MOD	7/9/2019	***Normal (~10 Days)***
NITRATE/N	S	EPA 300.0	7/9/2019	***Normal (~10 Days)***
SULFATE	S	EPA 300.0	7/9/2019	***Normal (~10 Days)***
TPHDX-NW	S	NWTPHDX	7/9/2019	***Normal (~10 Days)***
TPHG-NW-SPO	S	NWTPHG	7/9/2019	***Normal (~10 Days)***
VOC 8260 SPO	S	EPA 8260C	7/9/2019	***Normal (~10 Days)***

Sample #: 190627037-002 **Customer Sample #:** MW6-1906

Recv'd: ☑ **Matrix:** Water **Collector:** SHANNON BARTOW **Date Collected:** 6/26/2019
Quantity: 10 **Date Received:** 6/27/2019 12:05:00 PM **Time Collected:** 12:10 PM
Comment:

Test	Lab	Method	Due Date	Priority
IRON	S	EPA 200.8	7/9/2019	***Normal (~10 Days)***
MANGANESE SPO	S	EPA 200.8	7/9/2019	***Normal (~10 Days)***
METHANE	S	RSK 175 MOD	7/9/2019	***Normal (~10 Days)***
NITRATE/N	S	EPA 300.0	7/9/2019	***Normal (~10 Days)***
SULFATE	S	EPA 300.0	7/9/2019	***Normal (~10 Days)***
TPHDX-NW	S	NWTPHDX	7/9/2019	***Normal (~10 Days)***
TPHG-NW-SPO	S	NWTPHG	7/9/2019	***Normal (~10 Days)***
VOC 8260 SPO	S	EPA 8260C	7/9/2019	***Normal (~10 Days)***

Customer Name: JACOBS
999 W RIVERSIDE AVE #500
SPOKANE WA 99201

Order ID: 190627037
Order Date: 6/27/2019

Contact Name: REUBEN GREER
Project Name: TIDEWATER CMP

Comment: METHANE SUB TO ANALYTICAL RESOURCES

Sample #: 190627037-003 **Customer Sample #:** MW4-1906

Recv'd: ☑ **Matrix:** Water **Collector:** SHANNON BARTOW **Date Collected:** 6/26/2019
Quantity: 10 **Date Received:** 6/27/2019 12:05:00 PM **Time Collected:** 2:10 PM
Comment:

Test	Lab	Method	Due Date	Priority
IRON	S	EPA 200.8	7/9/2019	***Normal (~10 Days)***
MANGANESE SPO	S	EPA 200.8	7/9/2019	***Normal (~10 Days)***
METHANE	S	RSK 175 MOD	7/9/2019	***Normal (~10 Days)***
NITRATE/N	S	EPA 300.0	7/9/2019	***Normal (~10 Days)***
SULFATE	S	EPA 300.0	7/9/2019	***Normal (~10 Days)***
TPHDX-NW	S	NWTPHDX	7/9/2019	***Normal (~10 Days)***
TPHG-NW-SPO	S	NWTPHG	7/9/2019	***Normal (~10 Days)***
VOC 8260 SPO	S	EPA 8260C	7/9/2019	***Normal (~10 Days)***

Sample #: 190627037-004 **Customer Sample #:** AR8-1906

Recv'd: ☑ **Matrix:** Water **Collector:** SHANNON BARTOW **Date Collected:** 6/26/2019
Quantity: 10 **Date Received:** 6/27/2019 12:05:00 PM **Time Collected:** 4:10 PM
Comment:

Test	Lab	Method	Due Date	Priority
IRON	S	EPA 200.8	7/9/2019	***Normal (~10 Days)***
MANGANESE SPO	S	EPA 200.8	7/9/2019	***Normal (~10 Days)***
METHANE	S	RSK 175 MOD	7/9/2019	***Normal (~10 Days)***
NITRATE/N	S	EPA 300.0	7/9/2019	***Normal (~10 Days)***
SULFATE	S	EPA 300.0	7/9/2019	***Normal (~10 Days)***
TPHDX-NW	S	NWTPHDX	7/9/2019	***Normal (~10 Days)***
TPHG-NW-SPO	S	NWTPHG	7/9/2019	***Normal (~10 Days)***
VOC 8260 SPO	S	EPA 8260C	7/9/2019	***Normal (~10 Days)***

Sample #: 190627037-005 **Customer Sample #:** AR4-1906

Recv'd: ☑ **Matrix:** Water **Collector:** SHANNON BARTOW **Date Collected:** 6/26/2019
Quantity: 10 **Date Received:** 6/27/2019 12:05:00 PM **Time Collected:** 6:00 PM
Comment:

Test	Lab	Method	Due Date	Priority
IRON	S	EPA 200.8	7/9/2019	***Normal (~10 Days)***

Customer Name: JACOBS
999 W RIVERSIDE AVE #500
SPOKANE WA 99201

Order ID: 190627037
Order Date: 6/27/2019

Contact Name: REUBEN GREER
Project Name: TIDEWATER CMP

Comment: METHANE SUB TO ANALYTICAL RESOURCES

MANGANESE SPO	S	EPA 200.8	7/9/2019	***Normal (~10 Days)***
METHANE	S	RSK 175 MOD	7/9/2019	***Normal (~10 Days)***
NITRATE/N	S	EPA 300.0	7/9/2019	***Normal (~10 Days)***
SULFATE	S	EPA 300.0	7/9/2019	***Normal (~10 Days)***
TPHDX-NW	S	NWTPHDX	7/9/2019	***Normal (~10 Days)***
TPHG-NW-SPO	S	NWTPHG	7/9/2019	***Normal (~10 Days)***
VOC 8260 SPO	S	EPA 8260C	7/9/2019	***Normal (~10 Days)***

Sample #: 190627037-006 **Customer Sample #:** MW8-1906

Recv'd: ☑ **Matrix:** Water **Collector:** SHANNON BARTOW **Date Collected:** 6/26/2019
Quantity: 10 **Date Received:** 6/27/2019 12:05:00 PM **Time Collected:** 8:10 PM
Comment:

Test	Lab	Method	Due Date	Priority
IRON	S	EPA 200.8	7/9/2019	***Normal (~10 Days)***
MANGANESE SPO	S	EPA 200.8	7/9/2019	***Normal (~10 Days)***
METHANE	S	RSK 175 MOD	7/9/2019	***Normal (~10 Days)***
NITRATE/N	S	EPA 300.0	7/9/2019	***Normal (~10 Days)***
SULFATE	S	EPA 300.0	7/9/2019	***Normal (~10 Days)***
TPHDX-NW	S	NWTPHDX	7/9/2019	***Normal (~10 Days)***
TPHG-NW-SPO	S	NWTPHG	7/9/2019	***Normal (~10 Days)***
VOC 8260 SPO	S	EPA 8260C	7/9/2019	***Normal (~10 Days)***

Sample #: 190627037-006A **Customer Sample #:** MW8-1906MS

Recv'd: ☑ **Matrix:** Water **Collector:** SHANNON BARTOW **Date Collected:** 6/26/2019
Quantity: 10 **Date Received:** 6/27/2019 12:05:00 PM **Time Collected:** 8:10 PM
Comment:

Test	Lab	Method	Due Date	Priority
IRON	S	EPA 200.8	7/9/2019	***Normal (~10 Days)***
MANGANESE SPO	S	EPA 200.8	7/9/2019	***Normal (~10 Days)***
METHANE	S	RSK 175 MOD	7/9/2019	***Normal (~10 Days)***
NITRATE/N	S	EPA 300.0	7/9/2019	***Normal (~10 Days)***
SULFATE	S	EPA 300.0	7/9/2019	***Normal (~10 Days)***
TPHDX-NW	S	NWTPHDX	7/9/2019	***Normal (~10 Days)***
TPHG-NW-SPO	S	NWTPHG	7/9/2019	***Normal (~10 Days)***
VOC 8260 SPO	S	EPA 8260C	7/9/2019	***Normal (~10 Days)***

Customer Name: JACOBS
999 W RIVERSIDE AVE #500
SPOKANE WA 99201

Order ID: 190627037
Order Date: 6/27/2019

Contact Name: REUBEN GREER
Project Name: TIDEWATER CMP

Comment: METHANE SUB TO ANALYTICAL RESOURCES

Sample #: 190627037-006B **Customer Sample #:** MW8-1906MSD

Recv'd: ☑ **Matrix:** Water **Collector:** SHANNON BARTOW **Date Collected:** 6/26/2019
Quantity: 10 **Date Received:** 6/27/2019 12:05:00 PM **Time Collected:** 8:10 PM
Comment:

Test	Lab	Method	Due Date	Priority
IRON	S	EPA 200.8	7/9/2019	***Normal (~10 Days)***
MANGANESE SPO	S	EPA 200.8	7/9/2019	***Normal (~10 Days)***
METHANE	S	RSK 175 MOD	7/9/2019	***Normal (~10 Days)***
NITRATE/N	S	EPA 300.0	7/9/2019	***Normal (~10 Days)***
SULFATE	S	EPA 300.0	7/9/2019	***Normal (~10 Days)***
TPHDX-NW	S	NWTPHDX	7/9/2019	***Normal (~10 Days)***
TPHG-NW-SPO	S	NWTPHG	7/9/2019	***Normal (~10 Days)***
VOC 8260 SPO	S	EPA 8260C	7/9/2019	***Normal (~10 Days)***

Sample #: 190627037-007 **Customer Sample #:** FD-1906

Recv'd: ☑ **Matrix:** Water **Collector:** SHANNON BARTOW **Date Collected:** 6/26/2019
Quantity: 10 **Date Received:** 6/27/2019 12:05:00 PM **Time Collected:** 12:00 PM
Comment:

Test	Lab	Method	Due Date	Priority
IRON	S	EPA 200.8	7/9/2019	***Normal (~10 Days)***
MANGANESE SPO	S	EPA 200.8	7/9/2019	***Normal (~10 Days)***
METHANE	S	RSK 175 MOD	7/9/2019	***Normal (~10 Days)***
NITRATE/N	S	EPA 300.0	7/9/2019	***Normal (~10 Days)***
SULFATE	S	EPA 300.0	7/9/2019	***Normal (~10 Days)***
TPHDX-NW	S	NWTPHDX	7/9/2019	***Normal (~10 Days)***
TPHG-NW-SPO	S	NWTPHG	7/9/2019	***Normal (~10 Days)***
VOC 8260 SPO	S	EPA 8260C	7/9/2019	***Normal (~10 Days)***

Sample #: 190627037-008 **Customer Sample #:** EB-1906

Recv'd: ☑ **Matrix:** Water **Collector:** SHANNON BARTOW **Date Collected:** 6/26/2019
Quantity: 10 **Date Received:** 6/27/2019 12:05:00 PM **Time Collected:** 2:00 PM
Comment:

Test	Lab	Method	Due Date	Priority
TPHDX-NW	S	NWTPHDX	7/9/2019	***Normal (~10 Days)***

Customer Name: JACOBS
999 W RIVERSIDE AVE #500
SPOKANE WA 99201

Order ID: 190627037
Order Date: 6/27/2019

Contact Name: REUBEN GREER
Project Name: TIDEWATER CMP

Comment: METHANE SUB TO ANALYTICAL RESOURCES

TPHG-NW-SPO	S	NWTPHG	7/9/2019	***Normal (~10 Days)***
VOC 8260 SPO	S	EPA 8260C	7/9/2019	***Normal (~10 Days)***

Sample #: 190627037-009 **Customer Sample #:** TRIP BLANK 1

Recv'd: ☑ **Matrix:** Water **Collector:** SHANNON BARTOW **Date Collected:** 6/26/2019
Quantity: 2 **Date Received:** 6/27/2019 12:05:00 PM **Time Collected:**
Comment:

Test	Lab	Method	Due Date	Priority
VOC 8260 SPO	S	EPA 8260C	7/9/2019	***Normal (~10 Days)***

Sample #: 190627037-010 **Customer Sample #:** TRIP BLANK 2

Recv'd: ☑ **Matrix:** Water **Collector:** SHANNON BARTOW **Date Collected:** 6/26/2019
Quantity: 2 **Date Received:** 6/27/2019 12:05:00 PM **Time Collected:**
Comment:

Test	Lab	Method	Due Date	Priority
VOC 8260 SPO	S	EPA 8260C	7/9/2019	***Normal (~10 Days)***

SAMPLE CONDITION RECORD

Samples received in a cooler?	Yes
Samples received intact?	Yes
What is the temperature of the sample(s)? (°C)	1.8/0.8
Samples received with a COC?	Yes
Samples received within holding time?	Yes
Are all sample bottles properly preserved?	Yes
Are VOC samples free of headspace?	Yes
Is there a trip blank to accompany VOC samples?	Yes
Labels and chain agree?	Yes
Total number of containers?	104

90627 037 CH2R Last Due 7/9/2019
1st SAMP 6/26/2019 1st RCVD 6/27/2019
TIDEWATER CMP

Anatek Labs, Inc.

Chain of Custody Record

1282 Alturas Drive, Moscow ID 83843 (208) 883-2839 FAX 882-9246
504 E Sprague Ste D, Spokane WA 99202 (509) 838-3999 FAX 838-4433

Company Name: JACOBS
Address: 999 W RIVERSIDE AVE SUITE 500
City: SPOKANE State: WA Zip: 99201
Phone: 509-464-7215
Fax:

Project Manager: REUBEN GREER
Project Name & #: TIDEWATER CMP
Email Address: Reuben.Greer@jacobs.com
Purchase Order #:
Sampler Name & phone: SHANNON BARTOW 5413374415

Turn Around Time & Reporting

Please refer to our normal turn around times at:
http://www.anateklabs.com/services/guidelines/reporting.asp

X Normal
__Next Day*
__2nd Day*
__Other*_____

*All rush order requests must be prior approved.

__Phone
__Mail
__Fax
__Email

Provide Sample Description / **List Analyses Requested**

Lab ID	Sample Identification	Sampling Date/Time	Matrix	# of Containers	Sample Volume	Preservative	BTEX 52608	NWTPH Gx	NWTPH Dx	Ferrous Fe	Mn	SO_4, NO_3	Methane RSK-175	NWTPH Dx HEAVY OIL		
1	AR11-1906	6/26/19 1025	W	10			X	X	X	X	X	X	X	X		
2	MW6-1906	6/26/19 1210	W	10			X	X	X	X	X	X	X	X		
3	MW4-1906	6/26/19 1410	W	10			X	X	X	X	X	X	X	X		
4	AR8-1906	6/26/19 1610	W	10			X	X	X	X	X	X	X	X		
5	AR4-1906	6/26/19 1800	W	10			X	X	X	X	X	X	X	X		
6	MW8-1906	6/26/19 2010	W	30			X	X	X	X	X	X	X	X		
7	FD-1906	6/26/19 1200	W	10			X	X	X	X	X	X	X	X		
8	EB-1906	6/26/19 1400	W	10			X	X	X	X	X	X	X	X		
	Trip Blank 1						X									
	2						X									

Note Special Instructions/Comments

SWBS
Ana. Resources-Methane

Both trips in one cooler

MS/MSD

ANALYZE EB FOR BTEX, Gx, Dx ONLY

Inspection Checklist

Received Intact?	(Y)	N
Labels & Chains Agree?	(Y)	N
Containers Sealed?	(Y)	N
VOC Head Space?	Y	(N)

hd/2 coolers/ice

Temperature (°C): 1.8° / 0.8° dig-04
Preservative: ACI 57160, R3761<2
pH P18285-30
Date & Time: 6-27-19 1550
Inspected By: MG

	Printed Name	Signature	Company	Date	Time
Relinquished by	Anna Iversen		Jacobs	6-27-19	12.05
Received by	KScott		Anatek	6/27/19	1205
Relinquished by					
Received by					
Relinquished by					
Received by					

Appendix D
Historical Groundwater Monitoring Results

Appendix D
Tidewater Fuel Leak Site Historical Groundwater Monitoring Results
Pasco, Washington

Well ID	Date	Benzene (µg/L) MCL 5	Toluene (µg/L) MCL 1,000	Ethylbenzene (µg/L) MCL 700	Total Xylenes (µg/L) 1,000	TPH-G (µg/L) MCL 800/1,000	TPH-D (µg/L) MCL 500	TPH-D - Heavy Oil (µg/L) MCL 500
AR-1	Feb-03	**191**	**2,130**	153	**4,570**	**31,700**	NA	NA
	Jun-03	**77**	**1,340**	179	**3,590**	**20,000**	NA	NA
	Jun-10	NS	NS	NS	NS	NS	NS	NS
	Dec-10	NS	NS	NS	NS	NS	NS	NS
	May-14	NS	NS	NS	NS	NS	NS	NS
AR-3	Feb-03	**754**	**3,870**	148	**6,350**	**38,900**	NA	NA
	Jun-03	**6,750**	**6,270**	649	**7,170**	**37,400**	NA	NA
	Mar-06	NS	NS	NS	NS	NS	NS	NS
	Nov-07	NS	NS	NS	NS	NS	NS	NS
	Oct-08	NS	NS	NS	NS	NS	NS	NS
	Jun-10	NS	NS	NS	NS	NS	NS	NS
	Dec-10	NS	NS	NS	NS	NS	NS	NS
	May-14	NS	NS	NS	NS	NS	NS	NS
AR-4	Apr-02	**52**	337	13.9	**1,989**	**10,500**	NA	NA
	Jul-02	**90**	816	10.7	705	**6,400**	NA	NA
	Nov-02	**10.3**	118	5.5	345	**3,080**	NA	NA
	Feb-03	*1 U*	*1 U*	*1 U*	4.8	195	NA	NA
	Jun-03	**10.1**	66	10	326	**5,090**	NA	NA
	Sep-03	**797**	70	27	321	**3,430**	NA	NA
	Mar-06	**2,210**	**3,430**	481	**5,600**	**26,600**	**4,400**	NA
	Nov-07	**640**	**2,800**	220	**4,400**	**28,000**	**4,500**	**1,400**
	Oct-08	**340**	**2,100**	170	**2,700**	**17,000**	**2,500**	**5,900**
	Jun-10	**380**	**1,900**	270	**4,400**	**21,000**	**5,300**	**650**
MW-11 (AR-4 Dup)	Jun-10	**370**	**1,800**	250	**4,000**	**20,000**	**3,700**	440
	Dec-10	**350**	**1,400**	230	**3,600**	**17,000**	**3,700**	*260 U*
	May-14	**535**	789	385	**10,290**	**45,900**	*20 U*	*50 U*
	May-18	**141**	15.4	280	**5,450**	**28,100**	*50 U*	*250 U*
	Jun-19	**123**	10.5	305	**4,870**	**22,000**	*100 U*	*500 U*
AR-5	Jul-02	**379**	**1,010**	17.5	**3,850**	**39,000**	NA	NA
	Nov-02	0.7	10.6	*ND*	124	**2,900**	NA	NA
	Feb-03	4.3	12.2	1	90	**830**	NA	NA
	Jun-03	**15.2**	8.8	3.4	136	**1,740**	NA	NA
	Sep-03	**8.5**	4.6	1.3	33	557	NA	NA
	Dec-03	*1 U*	26.1	14.1	739	**6,010**	NA	NA
	Mar-06	*0.5 U*	*0.5 U*	*0.5 U*	0.57	250	NA	NA
	Nov-07	NS	NS	NS	NS	NS	NS	NS
	Oct-08	*0.9 U*	*0.9 U*	*0.5 U*	10	65	120	*95 U*
	Jun-10	*1.0 U*	*1.0 U*	*1.0 U*	*2.0 U*	*50 U*	*120 U*	*250 U*
	Dec-10	*1.0 U*	*1.0 U*	*1.0 U*	*2.0 U*	260	730	*270 U*
	May-14	*1.0 U*	*1.0 U*	*1.0 U*	2.09	*100 U*	*20 U*	*50 U*
AR-6	Nov-01	**29.8**	**402**	82	**2,800**	**2,390**	NA	NA
	Apr-02	**713**	559	27	**2,060**	**17,700**	NA	NA
	Jul-02	**1,820**	**3,100**	85	**4,780**	**24,700**	NA	NA
	Nov-02	**104**	289	67	**2,886**	**11,900**	NA	NA
	Feb-03	**531**	**1,280**	93	**2,900**	**23,700**	NA	NA
	Jun-03	**475**	**2,340**	110	**3,750**	**23,500**	NA	NA
	Sep-03	**221**	**3,140**	241	**4,610**	**25,000**	NA	NA
	Mar-06	*0.5 U*	*0.5 U*	*0.5 U*	6.7	330	260	NA
	Nov-07	0.6	2.5	0.7	73	670	**1,500**	**990**
	Oct-08	NS	NS	NS	NS	NS	NS	NS
	Jun-10	*1.0 U*	*1.0 U*	*1.0 U*	2.4	*50 U*	*120 U*	*250 U*
	Dec-10	*1.0 U*	*1.0 U*	*1.0 U*	8.6	81	*120 U*	*240 U*
	May-14	*1.0 U*	*1.0 U*	21.2	331	**4,640**	*20 U*	*50 U*
AR-7	Mar-06	NS	NS	NS	NS	NS	NS	NS
	Nov-07	NS	NS	NS	NS	NS	NS	NS
	Oct-08	NS	NS	NS	NS	NS	NS	NS
	Jun-10	NS	NS	NS	NS	NS	NS	NS
	Dec-10	NS	NS	NS	NS	NS	NS	NS
	May-14	*1.0 U*	1.4	21	86	1280 J	*20 U*	*50 U*
FD-2 (AR-7 Dup)	May-14	*1.0 U*	*1.0 U*	16	65	883 J	*20 U*	*50 U*
AR-8	Jul-02	**47.3**	229	32	918	**5,330**	NA	NA
	Nov-02	**19.2**	**1,070**	384	**4,170**	**57,400**	NA	NA
	Feb-03	**43.8**	577	276	**3,410**	**59,600**	NA	NA
	Jun-03	**1470**	**2,050**	651	**2,760**	**22,700**	NA	NA
	Sep-03	**3,350**	**1,740**	**1,480**	**2,520**	**16,000**	NA	NA
	Mar-06	NS	NS	NS	NS	NS	NS	NS
	Nov-07	**8.0**	46	35	610	**7,400**	**23,000**	**<4700**
	Oct-08	NS	NS	NS	NS	NS	NS	NS
	Jun-10	2.0	15	99	420	**3,300**	**2,000**	250
	Dec-10	1.7	26	100	460	**3,700**	**1,500**	*260 U*
FD-1 (AR-8 Dup)	Dec-10	1.7	36	100	590	**3,500**	**1,500**	*280 U*
	May-14	*1.0 U*	11	280	755	**9,570**	*20 U*	*50 U*
FD-1 (AR-8 Dup)	May-14	*1.0 U*	12	312	812	**9,880**	*20 U*	*50 U*
	May-18	*0.5 U*	0.90	145	200	**4,970**	*50 U*	*250 U*
FD (AR-8 Dup)	May-18	*0.5 U*	0.94	150	223	**4,980**	*50 U*	*250 U*
	Jun-19	*0.5 U*	0.53	88.0	157.2	**4,830**	*100 U*	*500 U*
FD (AR-8 Dup)	Jun-19	*0.5 U*	0.53	82.7	147.0	**4,610**	*100 U*	*500 U*

Appendix D
Tidewater Fuel Leak Site Historical Groundwater Monitoring Results
Pasco, Washington

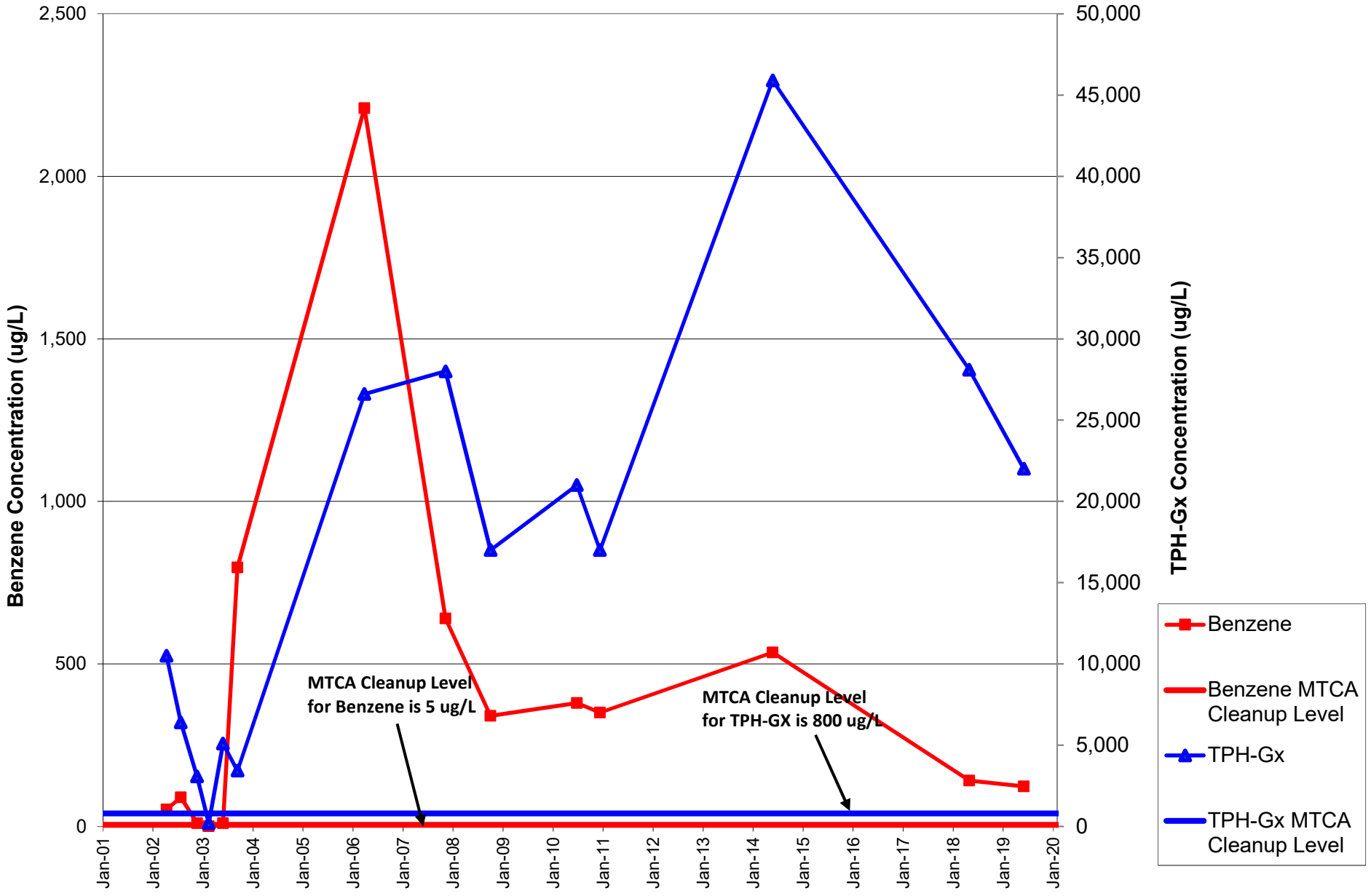
Well ID	Date	Benzene (µg/L) MCL 5	Toluene (µg/L) MCL 1,000	Ethylbenzene (µg/L) MCL 700	Total Xylenes (µg/L) 1,000	TPH-G (µg/L) MCL 800/1,000	TPH-D (µg/L) MCL 500	TPH-D - Heavy Oil (µg/L) MCL 500
AR-9	Nov-01	*1 U*	*1 U*	*1 U*	*2 U*	*50 U*	NA	NA
MW-12 (AR-9 dup)	Nov-01	*1 U*	*1 U*	*1.1*	*2 U*	*50 U*	NA	NA
	Nov-02	*1 U*	*1 U*	*1 U*	*2 U*	*50 U*	NA	NA
	Dec-03	*1 U*	*1 U*	*1 U*	*2 U*	*50 U*	NA	NA
	Mar-06	*0.5 U*	*0.5 U*	*0.5 U*	*1 U*	*250 U*	*250 U*	NA
	Nov-07	NS	NS	NS	NS	NS	NS	NS
	Oct-08	NS	NS	NS	NS	NS	NS	NS
	Jun-10	*1.0 U*	*1.0 U*	*1.0 U*	*2.0 U*	*50 U*	*120 U*	*240 U*
	Dec-10	*1.0 U*	*1.0 U*	*1.0 U*	*2.0 U*	*50 U*	*130 U*	*270 U*
	May-14	*1.0 U*	*1.0 U*	*1.0 U*	*2.0 U*	*100 U*	*20 U*	*50 U*
AR-10	Nov-01	**54**	13.7	*ND*	221	311	NA	NA
	Apr-02	3.1	*1 U*	3.5	*2 U*	*50 U*	NA	NA
	Nov-02	*1 U*	*1 U*	*1 U*	*2 U*	78	NA	NA
	Feb-03	*1 U*	*1 U*	*1 U*	*2 U*	*50 U*	NA	NA
	Jun-03	*1 U*	*1 U*	*1 U*	*2 U*	*50 U*	NA	NA
	Sep-03	*1 U*	*1 U*	*1 U*	*2 U*	*50 U*	NA	NA
	Mar-06	*0.5 U*	*0.5 U*	*0.5 U*	*1 U*	*250 U*	*250 U*	NA
	Nov-07	NS	NS	NS	NS	NS	NS	NS
	Oct-08	NS	NS	NS	NS	NS	NS	NS
	Jun-10	*1.0 U*	*1.0 U*	*1.0 U*	*2.0 U*	*50 U*	*120 U*	*240 U*
	Dec-10	*1.0 U*	*1.0 U*	*1.0 U*	*2.0 U*	*50 U*	*120 U*	*240 U*
	May-14	*1.0 U*	*1.0 U*	*1.0 U*	*2.0 U*	*100 U*	*20 U*	*50 U*
AR-11	Mar-01	*1 U*	*1 U*	*1 U*	*2 U*	*50 U*	*230 U*	*560 U*
	Aug-01	*1 U*	*1 U*	*1 U*	*2 U*	*50 U*	NA	NA
	Nov-02	*1 U*	*1 U*	*1 U*	*2 U*	*50 U*	NA	NA
	Dec-03	*1 U*	1.9	*1 U*	1.1	*50 U*	NA	NA
	Mar-06	*0.5 U*	*0.5 U*	*0.5 U*	*1 U*	*250 U*	*250 U*	NA
	Nov-07	NS	NS	NS	NS	NS	NS	NS
	Oct-08	NS	NS	NS	NS	*NS*	*NS*	*NS*
	Jun-10	*1.0 U*	*1.0 U*	*1.0 U*	*2.0 U*	*50 U*	*120 U*	*240 U*
	Dec-10	*1.0 U*	*1.0 U*	*1.0 U*	*2.0 U*	*50 U*	*120 U*	*240 U*
	May-14	*1.0 U*	*1.0 U*	*1.0 U*	*2.0 U*	*100 U*	*20 U*	*50 U*
	May-18	*0.5 U*	*0.5 U*	*0.5 U*	*0.5 U*	*100 U*	*50 U*	*250 U*
	Jun-19	*0.5 U*	*0.5 U*	*0.5 U*	*1.0 U*	*100 U*	*100 U*	*500 U*
AR-12	Feb-03	**3,860**	**10,400**	**1,000**	**13,560**	**84,700**	NA	NA
	Jun-03	**3,810**	**8,060**	**731**	**9,190**	**55,100**	NA	NA
	Nov-07	NS	NS	NS	NS	NS	NS	NS
	Oct-08	NS	NS	NS	NS	NS	NS	NS
	Jun-10	NS	NS	NS	NS	NS	NS	NS
	Dec-10	NS	NS	NS	NS	NS	NS	NS
	May-14	NS	NS	NS	NS	NS	NS	NS
MW-1	Mar-01	**20**	21	*1 U*	*2 U*	110	*230 U*	*580 U*
	Aug-01	**1,890**	**1,900**	9.5	**1,109**	**5,980**	NA	NA
	Nov-01	**336**	**88**	1 U	**211**	321	NA	NA
	Apr-02	**880**	33	5.3	43	667	NA	NA
	Jul-02	**1,040**	22	41	40	**1,600**	NA	NA
	Nov-02	**434**	36	57	131	**1,040**	NA	NA
	Nov-02	**385**	31	38	95	712	NA	NA
MW-19 (MW-1dup)	Feb-03	**453**	19.7	43	43.8	263	NA	NA
	Feb-03	**369**	15	32	33.8	240	NA	NA
MW-9 (MW-1 dup)	Jun-03	**240**	131	78	257	**841**	NA	NA
	Jun-03	**131**	68	35	128	**1,420**	NA	NA
MW-9 (MW-1 dup)	Sep-03	**149**	77	38	145	589	NA	NA
	Sep-03	**112**	69	26	NR	431	NA	NA
MW-9 (MW-1 dup)	Dec-03	**20.2**	58	3.1	26	102	NA	NA
	Dec-03	**8.0**	22	1.2	9.3	143	NA	NA
	Mar-06	0.5 U	0.71	8.4	8.7	250	250 U	NA
MW-11 (MW-1 dup)	Mar-06	0.5 U	0.69	6.8	6.1	250	250 U	NA
	Nov-07	*0.2 U*	0.20	0.5	*0.6 U*	*50 U*	*190*	**670**
	Oct-08	NS	NS	NS	NS	NS	NS	NS
	Jun-10	*1.0 U*	*1.0 U*	*1.0 U*	*2.0 U*	*50 U*	*120 U*	*240 U*
	Dec-10	*1.0 U*	*1.0 U*	*1.0 U*	*2.0 U*	*50 U*	*120 U*	*240 U*
	May-14	*1.0 U*	*1.0 U*	*1.0 U*	*2.0 U*	*100 U*	*20 U*	*50 U*
MW-2	Mar-01	*1 U*	*1 U*	*1 U*	*2 U*	*50 U*	*220 U*	*540 U*
	Aug-01	*1 U*	*1 U*	*1 U*	*2 U*	*50 U*	NA	NA
	Nov-01	*1 U*	*1 U*	*1 U*	*2 U*	*50 U*	NA	NA
	Nov-02	*1 U*	*1 U*	*1 U*	*2 U*	82	NA	NA
	Mar-06	*0.5 U*	*0.5 U*	*0.5 U*	*1 U*	*250 U*	*250 U*	NA
	Nov-07	NS	NS	NS	NS	NS	NS	NS
	Oct-08	*0.2 U*	*0.2 U*	*0.2 U*	*0.6 U*	*50 U*	78	*96 U*
	Jun-10	*1.0 U*	*1.0 U*	*1.0 U*	*2.0 U*	*50 U*	*120 U*	*250 U*
	Dec-10	*1.0 U*	*1.0 U*	*1.0 U*	*2.0 U*	*50 U*	*130 U*	*260 U*
	May-14	*1.0 U*	*1.0 U*	*1.0 U*	*2.0 U*	*100 U*	*20 U*	*50 U*

Appendix D
Tidewater Fuel Leak Site Historical Groundwater Monitoring Results
Pasco, Washington

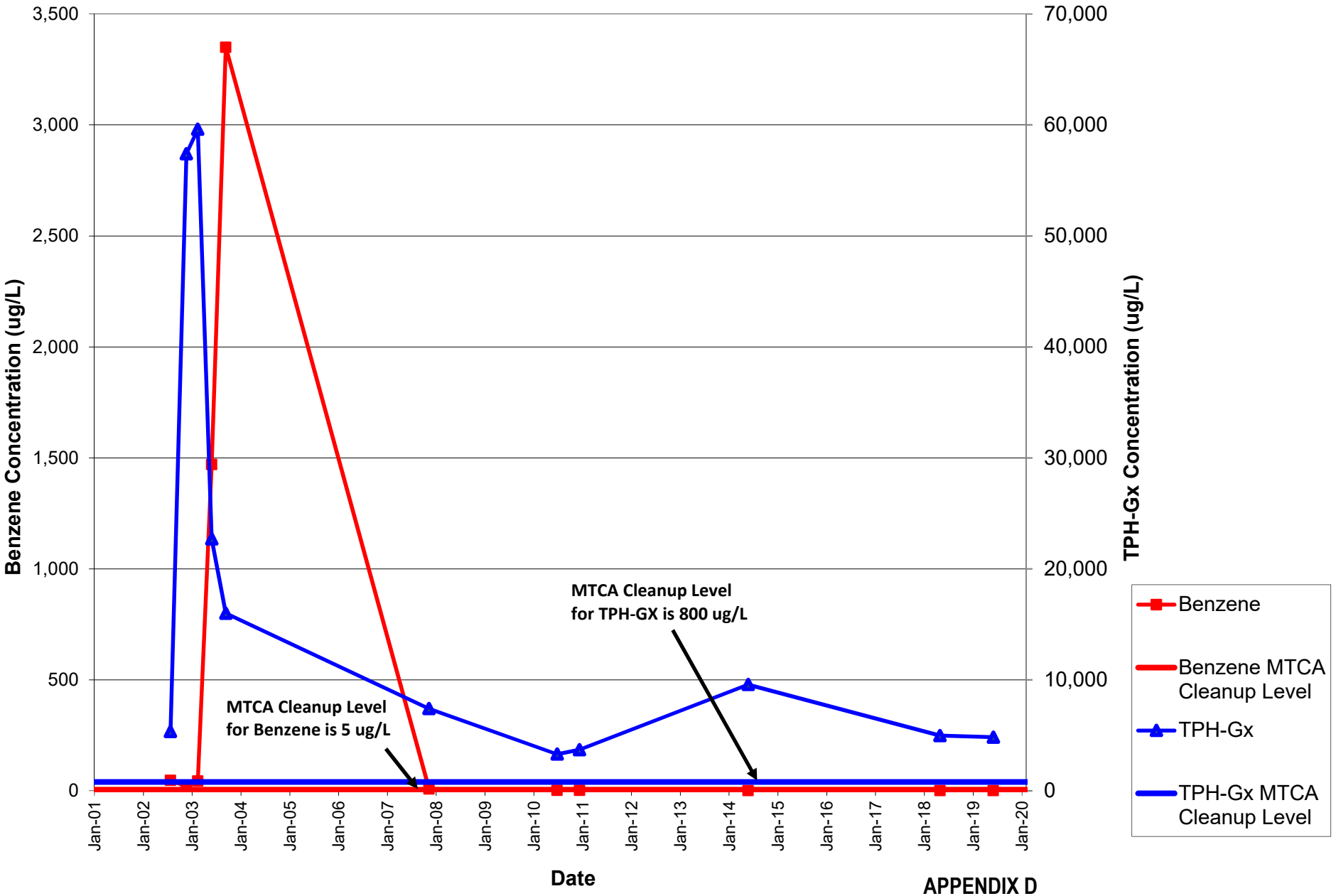
Well ID	Date	Benzene (µg/L) MCL 5	Toluene (µg/L) MCL 1,000	Ethylbenzene (µg/L) MCL 700	Total Xylenes (µg/L) 1,000	TPH-G (µg/L) MCL 800/1,000	TPH-D (µg/L) MCL 500	TPH-D - Heavy Oil (µg/L) MCL 500
MW-3	Mar-01	*1 U*	*1 U*	*1 U*	*2 U*	*50 U*	270	NA
	Aug-01	*1 U*	*1 U*	*1 U*	*2 U*	*50 U*	NA	NA
	Nov-02	*1 U*	*1 U*	*1 U*	*2 U*	117	NA	NA
	Mar-06	*0.5 U*	*0.5 U*	*0.5 U*	*1 U*	*250 U*	*250 U*	NA
	Nov-07	NS	NS	NS	NS	NS	NS	NS
	Oct-08	*0.2 U*	*0.2 U*	*0.2 U*	*0.6 U*	*50 U*	*80 U*	*100 U*
	Jun-10	*1.0 U*	*1.0 U*	*1.0 U*	*2.0 U*	*50 U*	*140*	*270 U*
	Dec-10	*1.0 U*	*1.0 U*	*1.0 U*	*2.0 U*	*50 U*	*120 U*	*250 U*
	May-14	*1.0 U*	*1.0 U*	*1.0 U*	*2.0 U*	*100 U*	*20 U*	*50 U*
MW-4	Mar-01	*1 U*	*1 U*	*1 U*	*2 U*	*50 U*	*200 U*	*680 U*
	Aug-01	*1 U*	*1 U*	*1 U*	*2 U*	*50 U*	NA	NA
	Nov-01	*1 U*	*1 U*	*1 U*	*2 U*	*50 U*	NA	NA
	Nov-02	*1 U*	*1 U*	*1 U*	*2 U*	55	NA	NA
	Dec-03	*1 U*	*1 U*	*1 U*	*2 U*	*50 U*	NA	NA
	Mar-06	*0.5 U*	*0.5 U*	*0.5 U*	*1 U*	*250 U*	*250 U*	NA
	Nov-07	NS	NS	NS	NS	NS	NS	NS
	Oct-08	*0.2 U*	*0.2 U*	*0.2 U*	*0.6 U*	*50 U*	*77 U*	*97 U*
	Jun-10	*1.0 U*	*1.0 U*	*1.0 U*	*2.0 U*	*50 U*	*120 U*	*250 U*
	Dec-10	*1.0 U*	*1.0 U*	*1.0 U*	*2.0 U*	*50 U*	*140 U*	*280 U*
	May-14	*1.0 U*	*1.0 U*	*1.0 U*	*2.0 U*	*100 U*	*20 U*	*50 U*
	May-18	*0.5 U*	*0.5 U*	*0.5 U*	*0.5 U*	*100 U*	*50 U*	*250 U*
	Jun-19	*0.5 U*	*0.5 U*	*0.5 U*	*1.0 U*	*100 U*	*100 U*	*500 U*
MW-5	Mar-01	*1 U*	*1 U*	*1 U*	*2 U*	*50 U*	*200 U*	NA
	Aug-01	*1 U*	*1 U*	*1 U*	*2 U*	*50 U*	NA	NA
	Nov-02	*1 U*	*1 U*	*1 U*	*2 U*	**954**	NA	NA
	Mar-06	*0.5 U*	*0.5 U*	*0.5 U*	*1 U*	*250 U*	**4,300**	NA
	Nov-07	*0.2 U*	*0.2 U*	*0.2 U*	*0.6 U*	*50 U*	**1,300**	**1,100**
	Oct-08	*0.2 U*	*0.2 U*	*0.2 U*	*0.6 U*	*50 U*	91	*98 U*
	Jun-10	*1.0 U*	*1.0 U*	*1.0 U*	*2.0 U*	*50 U*	*120 U*	*250 U*
	Dec-10	*1.0 U*	*1.0 U*	*1.0 U*	*2.0 U*	*50 U*	*130 U*	*260 U*
	May-14	*1.0 U*	*1.0 U*	*1.0 U*	*2.0 U*	*100 U*	*100 U*	*500 U*
MW-6	Mar-01	*1 U*	*1 U*	*1 U*	*2 U*	*50 U*	*190 U*	*480 U*
	Aug-01	*1 U*	*1 U*	*1 U*	*2 U*	*50 U*	NA	NA
	Nov-01	*1 U*	*1 U*	*1 U*	*2 U*	*50 U*	NA	NA
	Nov-02	*1 U*	*1 U*	*1 U*	*2 U*	62	NA	NA
	Sep-03	*1 U*	*1 U*	*1 U*	*2 U*	*50 U*	NA	NA
	Dec-03	*1 U*	*1 U*	*1 U*	*2 U*	*50 U*	NA	NA
	Mar-06	*0.5 U*	*0.5 U*	*0.5 U*	*1 U*	*250 U*	*250 U*	NA
	Nov-07	NS	NS	NS	NS	NS	NS	NS
	Oct-08	NS	NS	NS	NS	NS	NS	NS
	Jun-10	*1.0 U*	*1.0 U*	*1.0 U*	*2.0 U*	*50 U*	*120 U*	*240 U*
	Dec-10	*1.0 U*	*1.0 U*	*1.0 U*	*2.0 U*	*50 U*	*120 U*	*240 U*
	May-14	*1.0 U*	*1.0 U*	*1.0 U*	*2.0 U*	*100 U*	*20 U*	*50 U*
	May-18	*0.5 U*	*0.5 U*	*0.5 U*	*0.5 U*	*100 U*	*50 U*	*250 U*
	Jun-19	*0.5 U*	*0.5 U*	*0.5 U*	*1.0 U*	*145*	*100 U*	*500 U*
MW-7	Mar-01	**990**	**3,000**	130	**1,260**	**11,000,000**	**1,240**	**510**
	Mar-09	NS	NS	NS	NS	NS	NS	NS
	Nov-07	**70**	530	53	930	**7,000**	**2,000**	300
	Oct-08	NS	NS	NS	NS	NS	NS	NS
	Jun-10	NS	NS	NS	NS	NS	NS	NS
	Dec-10	*1.0 U*	4.1	*1.0 U*	27	350	*120 U*	*240 U*
	May-14	**88**	**1,910**	133	**2,702**	**19,200**	*20 U*	*50 U*
MW-8	Mar-01	**5,300**	**17,000**	**1,500**	**10,800**	**77,000,000**	**72,400**	**1,210**
	Feb-03	**3,630**	**8,540**	**931**	**8,450**	**51,500**	NA	NA
	Jun-03	**6,490**	**14,500**	**1,320**	**12,590**	**80,900**	NA	NA
	Mar-06	**183**	**5,440**	452	**5,140**	**25,700**	**8,400**	NA
	Nov-07	**29**	**2,200**	**410**	**5,500**	**36,000**	**6,500**	**<1,900**
	Oct-08	NS	NS	NS	NS	NS	NS	NS
	Jun-10	NS	NS	NS	NS	NS	NS	NS
	Dec-10	2.4	500	210	**2,000**	**9,900**	**2,500**	*260 U*
	May-14	*1.0 U*	286	462	**4,920**	**27,000**	*20 U*	*50 U*
	May-18	*0.5 U*	3.8	*0.5 U*	*0.5 U*	**3,540**	*50 U*	*250 U*
	Jun-19	*0.5 U*	8.10	61.8	810	**5,190**	*100 U*	*500 U*

Notes:
MCL - Maximum Contaminant Level. Based on Washington Department of Ecology Method A cleanup levels in Table 720-1 of the Model Toxics Control Act, Oct 2007.
µg/L - Micrograms per liter
BOLD - Exceeds MCL
U = Analyte not detected
J = Analyte value is estimated
NS = Not Sampled for one of the following reasons: insufficient water in well, presence of liquid hydrocarbons, inaccessibility, date was between sampling events, or well no longer in sampling program.
N/A = Not applicable or not available

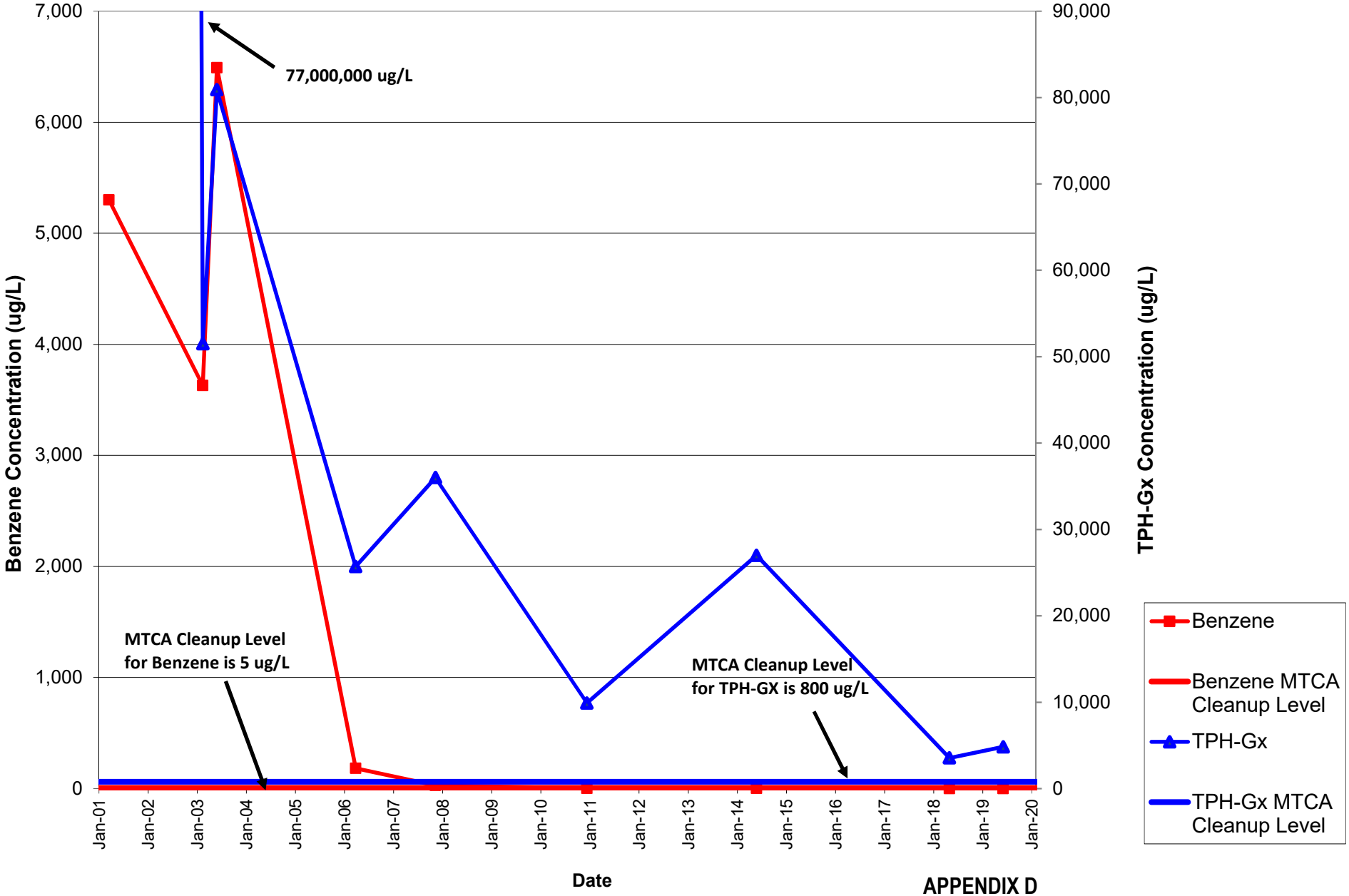
Appendix E
TPH-G and Benzene Time Series



APPENDIX D
AR-4 Benzene and TPH-GX Concentrations
Tidewater Fuel Leak Site



APPENDIX D
AR-8 Benzene and TPH-Gx Concentrations
Tidewater Fuel Leak Site



APPENDIX D
MW-8 Benzene and TPH-GX Concentrations
Tidewater Fuel Leak Site