2022 Groundwater Monitoring Report

Tidewater Fuel Leak Site
2900 Sacajawea Park Road
Pasco, Washington 99301
Facility ID 39378684
Cleanup Site ID 2331

For
Tidewater Terminal Company

August 9, 2022

GeoEngineers
Earth Science + Technology

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File No. 09991-005-01

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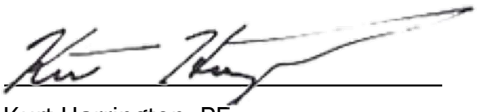

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JW:JKH:sfw

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1.0 INTRODUCTION

This report presents results of the June 2022 groundwater well gauging and monitoring event conducted at the Tidewater Terminal Company (Tidewater) Fuel Leak Site in Pasco, Washington (herein referred to as "site"). Site groundwater has been contaminated with petroleum hydrocarbons resulting from a July 2000 leak of unleaded gasoline from one (1) of Tidewater's fuel transfer lines located near groundwater monitoring well AR-1. The historical release resulted in localized degradation of groundwater quality within the unconfined groundwater zone beneath the site. Groundwater monitoring has been conducted on an annual basis at the site since execution of a November 22, 2016 Consent Decree (No. 16-250951-11) to observe and document trends in groundwater conditions and quality.

The site is located on a three (3)-acre easement that crosses the 33-acre Pasco Bulk Terminal currently owned by Marathon Petroleum Corporation (Marathon). The site is located approximately as shown on Figure 1 - Vicinity Map, at 2900 Sacajawea Park Road, Pasco, Washington 99301. Locations of groundwater monitoring wells and groundwater elevations are presented on Figure 2 - Site Plan and Groundwater Elevations, June 1, 2022. The 2022 monitoring event 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 GeoEngineers, Inc. (GeoEngineers) to document the field measured parameters and chemical analytical results from the June 1 and 2, 2022 groundwater 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 monitored natural attenuation (MNA) 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 (TPHg, TPHd, and TPHo). 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 the effectiveness of MNA at the Site. The CMP provides the cleanup levels for indicator substances for the Site (Table 1 of the CMP). The Sampling and Analysis Plan (Appendix A of the CMP, Table A-2) provides a full list of analytical parameters.

1.2. Objectives

As required by the Consent Decree and defined in the Cleanup Action Plan (CAP), the CMP describes the monitoring locations, methods, frequency, analytical parameters, and reporting obligations required to ensure that the Ecology-selected cleanup objectives established in the CAP are eventually met (i.e., MNA, coupled with passive bioventing and institutional controls). To this end, this annual report summarizes the results of protection/performance water quality monitoring within and surrounding localized areas of residual contamination near the historical release. 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 a summary of field activities, sampling methods and field observations, and a 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 GROUNDWATER MONITORING PROGRAM

The Tidewater compliance monitoring network includes one upgradient monitoring location (AR-11), three (3) sentinel wells (MW-4, MW6, and MW-8), and two (2) interior plume source area wells (AR 1 and AR- 8). Annual groundwater monitoring activities generally include measuring the depth to groundwater in the eleven (11) site monitoring wells listed in Table 1 - Groundwater Elevations and Field Parameter Readings, measuring water quality parameters, collecting groundwater samples from the six (6) compliance monitoring wells, submitting samples to an analytical laboratory for chemical analysis, interpreting data and trends on field and laboratory findings, and preparing this report.

Prior to 2021, well AR-4 was monitored as one of the interior plume source wells. During the 2020 groundwater monitoring event, a submersible sampling pump became stuck near the bottom of the 88-foot deep well. As documented in the 2020 monitoring report (Jacobs, 2021), efforts to retrieve the pump were unsuccessful and Tidewater proposed to include well AR-1 in the CMP. Well AR-1 meets the definition of an interior plume source area well as it is located at the source of the historic release and subsequent plume.

On July 21, 2021, representatives of GeoEngineers and Tidewater observed video camera deployment into wells AR-1 and AR-4 by Environmental West Exploration of Spokane, Washington. The video showed damage to the casing of AR-4 at approximately 5 feet below ground surface (bgs). The casing of AR-1 appeared to be intact. Subsequently, an aboveground steel monument set in concrete was constructed over AR-4 by Environmental West Exploration, a Washington licensed well driller, to support its long-term use for groundwater level monitoring.

Also on July 21, 2021, a caliper survey was conducted in well AR-1, which showed the well casing to be relatively straight and intact. Well AR-1 was re-developed by purging approximately five (5) casing volumes from the well. Details of the camera investigation, caliper survey, purging observations, and other well repair activities were presented in the 2021 groundwater monitoring report (GeoEngineers, 2021).

On July 23, 2021, GeoEngineers notified Ecology concerning the condition of AR-4 and requested adopting well AR-1 as a compliance sampling well. On July 26, 2021, Ecology approved the request via email. Since the 2021 groundwater monitoring event, well AR-1 has been sampled as an interior plume source area well. AR-4 is monitored for depth to groundwater.

2.1. Groundwater Measurements and Elevations

The 2022 groundwater monitoring was conducted by GeoEngineers personnel on June 1 and June 2, 2022. Groundwater levels in all eleven wells listed in Table 1 of the CMP were measured prior to purging and sampling the six compliance wells. No separate-phase hydrocarbons (SPH) have been observed in wells at the site since at least 2018. However, the water table interface in all 11 CMP wells were carefully gauged for SPH using an oil-water interface probe. The presence of SPH was not detected in the site's monitoring wells during the 2022 monitoring event.

Groundwater levels were measured from the top of casing of each well. Groundwater measurements were recorded on the groundwater field forms in Appendix A Field Forms. Groundwater measurements are provided in Table 1. Depths to water for all measured wells at the site ranged from 78.48 feet below top of casing in well MW-4 to 83.47 feet bgs in well MW-7. Well AR-12 was dry in June 2022.

Based on depth to water measurements, groundwater elevations were calculated and are shown in Table 1. Groundwater elevations at the Site ranged from 343.78 feet above mean seal level (AMSL) in wells MW-5 and MW-7 to 343.83 feet AMSL in wells AR-1, AR-8, and AR-11.

The groundwater gradient for the site is flat with less than 0.001 foot/feet (ft/ft) variation between upgradient and downgradient wells. These groundwater elevations are consistent with historical measurements. Groundwater elevations measured in the 2022 monitoring event were approximately 0.8 feet higher than were measured in July 2021. The groundwater flow direction to the south was inferred based on historical groundwater elevations and groundwater plume geometry. Historical groundwater elevations are included in Appendix B.

Groundwater elevations are calculated from field measurements of depth to water and surveyed top of well casing elevations. Groundwater elevations in well AR-1 have been anomalously high compared to surrounding wells since the initial survey of the well network. During the 2022 monitoring event, GeoEngineers field staff checked the top of casing elevation at AR-1 relative to well AR-11 using a tripod-mounted transit and survey rod. It was determined that the top of casing elevation was 0.11 foot lower than the surveyed elevation. The cause of the discrepancy is unknown. The new AR-1 top of casing elevation was used to determine the groundwater elevation reported in Table 1 and Appendix B (Historical Groundwater Elevation Measurements).

2.2. Groundwater Monitoring

Groundwater samples were collected from the following six (6) CMP network wells (listed in Table 2 of the CMP): AR-1, AR-8, AR-11, MW-4, MW-6, and MW-8. Groundwater samples were collected using a 2-inch diameter portable submersible pump powered by a direct current (DC) power battery with new polyethylene tubing at each well. Following purging and sampling in each well, the submersible pump and water level probe were 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. The order of sampling during the June 2022 monitoring event was AR-11, MW-4, MW-6, MW-8, AR-8, and AR-1.

Well sampling was performed in accordance with the Sampling and Analysis Plan 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. Wells were purged until field parameters stabilized over three (3) consecutive 5-minute intervals. Groundwater samples were collected in laboratory-provided sample containers, and placed immediately in an iced cooler under chain of custody protocol. Ferrous iron concentrations were field measured using a Hach 890 colorimeter at the time of collecting samples and recorded on the Well Sampling Forms (Appendix A). Field measurement of ferrous iron are summarized in Table 2 Groundwater Quality Data.

Field duplicates, matrix spike/matrix spike duplicates, and equipment rinsate blanks were collected as quality control for field and laboratory procedures as specified in the Quality Assurance Project Plan (QAPP) (Appendix B of the CMP). The field duplicate sample was collected from well AR-8, and the matrix spike duplicate was collected from well MW-6. 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 at the Tidewater Snake River Terminal.

3.0 RESULTS

Groundwater samples collected on June 1 and 2, 2022 were labeled, placed in a cooler with ice, and delivered under chain-of-custody protocol to Anatek Laboratories (Anatek) of Spokane, Washington. Groundwater samples were analyzed for the analytes (indicator substances) listed in Table 2 of the CMP as follows:

- Gasoline-range total petroleum hydrocarbon (TPHg) by NWTPH-Gx; and diesel-range total petroleum hydrocarbons (TPHd)/oil-range total petroleum hydrocarbons (TPHo) by NWTPH-Dx.
- Benzene, toluene, ethylbenzene, and xylenes (collectively BTEX) by EPA Method 8260D.

Groundwater concentrations of petroleum hydrocarbons and BTEX for the June 2022 monitoring event are detailed by well below. Analytical results are provided in Table 2. Laboratory reports are provided in Appendix C.

- AR-11: Petroleum hydrocarbons and BTEX were not detected above laboratory method detection limits (MDL). AR-11 is characterized as the upgradient well for the site in the CMP.
- MW-4: Petroleum hydrocarbons and BTEX were not detected above laboratory MDLs. MW-4 is characterized as a down-gradient sentinel well for the site.
- MW-6: Petroleum hydrocarbons and BTEX were not detected above laboratory MDLs. MW-6 is characterized as a down-gradient sentinel well for the site.
- MW-8: Diesel- and oil-range organics were not detected in well MW-8. Gasoline-range organics were detected at a concentration of 3,980 micrograms per liter (µg/L). This concentration exceeded the Model Toxics Control Act (MTCA) cleanup level of 800 µg/L. Toluene, ethylbenzene, and total xylenes were detected at concentrations less than corresponding MTCA cleanup levels. Benzene was not detected in well MW-8 above laboratory MDLs. MW-8 is characterized as a cross-gradient sentinel well adjacent to the Tidewater pipeline.
- AR-8: Diesel- and oil-range organics were not detected in well AR-8. Gasoline-range organics were detected at a concentration of 1,660 µg/L, exceeding the MTCA cleanup level. Ethylbenzene and total xylenes were detected at concentrations less than corresponding MTCA cleanup levels. Benzene and toluene were not detected in well AR-8 above laboratory MDLs. AR-8 is characterized as an interior plume source area well in the CMP.
- AR-1: Diesel- and oil-range organics were not detected in well AR-1. Gasoline-range organics were detected at a concentration of 43,600 µg/L, exceeding the MTCA cleanup level. AR-1 is located near the 2000 release and represents the primary interior plume source area well. Other detected concentrations are listed below:

- Benzene was detected at 1,080 µg/L and exceeded the MTCA cleanup level of 5 µg/L.
- Toluene was detected at 1,080 µg/L and exceeded the MTCA cleanup level of 1,000 µg/L.
- Ethylbenzene was detected at a concentration below the MTCA cleanup level.
- Total xylenes were detected at 4,750 µg/L and exceeded the MTCA cleanup level of 1,000 µg/L.

- Please note that in the 2021 CMP Report TPHg concentration in well AR-1 was reported as 4,520 ug/L due to a transcription error. The laboratory-reported concentration was 45,200 ug/L.

In addition to the indicator substances, groundwater samples were analyzed for secondary indicator parameters manganese, sulfate, nitrate, methane and ferrous iron to determine if MNA processes are still occurring at the site. Natural attenuation analytes are provided in Table 2. A summary of MNA parameters as follows:

- Manganese—Manganese was detected in each of the wells sampled in June 2022. Manganese concentrations were highest in wells AR-8 and AR-1 at 1.32 milligrams per liter (mg/L) and 1.95 mg/L, respectively. The upgradient and downgradient sentinel wells had manganese concentrations at least one (1) order of magnitude lower, ranging from 0.00849 to 0.163 mg/L.
- Sulfate—Sulfate concentrations ranged from 111 to 130 mg/L in the upgradient and downgradient sentinel wells. In the cross-gradient and interior plume source area wells, sulfate concentrations ranged from 49 to 84 mg/L. Concentrations of sulfate was lowest in well AR-1, near the source of the release.
- Nitrate: Nitrate concentrations ranged from 29.8 to 32.5 mg/L in the upgradient and downgradient sentinel wells. In the cross-gradient and interior plume source area wells, nitrate concentrations ranged from 0.53 to 19.0 mg/L. Concentrations of nitrate was lowest in well AR-1, near the source of the release.
- Methane—Methane was detected at concentrations of 7.61 and 155 µg/L in the interior source plume wells. Concentration of methane was highest in well AR-1, near the source of the release. Methane was not detected in the upgradient or sentinel wells.
- Iron—Ferrous iron was not detected in any of the June 2022 groundwater samples using laboratory Standard Method (SM) 3500. Field measurements of soluble ferrous iron are discussed in Section 3.2.

3.1. Quality Assurance Summary

Quality assurance samples were collected by GeoEngineers in the field (e.g., field duplicates, equipment blank, and trip blanks). Additionally, the analytical laboratory performed quality assurance on samples during analysis.

3.1.1. Field Quality Assurance Samples

A field duplicate was collected from AR-8 during the June 2022 event. The relative percent difference (RPD) for the field duplicate sample collected at AR-8 was within acceptable limits for all analytes. An equipment rinsate sample (ER-2206) was also collected by GeoEngineers field staff from the submersible pump and oil/water interface probe during the sampling event to test of the effectiveness of field decontamination procedures. No analytes were detected for the equipment blank, indicating decontamination procedures were generally effective and no cross contamination is suspected. No analytes were detected in the trip blanks.

3.1.2. Field Quality Assurance Samples

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 reviewed. Laboratory quality assurance results indicate laboratory quality control requirements were generally met for the analyses performed with the following exceptions:

- Anatek Report WCF0083 — Samples MW-4, MW-6, and AR-11 — The matrix spike to matrix spike duplicate relative percent difference (RPD) for BTEX analysis was outside acceptance criteria. Batch precision and accuracy were demonstrated.
- Anatek Report WCF0179 — Samples MW-8, AR-8, AR-1, and ER-2206 — The matrix spike to matrix spike duplicate relative percent difference (RPD) for BTEX analysis was outside acceptance criteria. Batch precision and accuracy were demonstrated. Sample MW-8 was initially analyzed for sulfate with an improper dilution. The sample was re-analyzed with the proper dilution and the corrected result is reported herein.

3.1.3. Assessment

Based on our review of the laboratory quality assurance results, no data were rejected or qualified.

3.2. Water Quality Field Parameters

During groundwater sampling, field parameters were recorded to provide additional details of water quality. Dissolved oxygen (DO), pH, oxidation-reduction potential (ORP) and soluble ferrous iron 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-1, AR-8, AR-11, and MW-8. Low DO readings, which indicate increasing anaerobic conditions, were recorded in AR-1 and AR-8. Field pH readings ranged from 7.30 (AR-8) to 7.64 (MW-8). Field concentrations of ferrous iron ranged from 0.57mg/L in AR-8 to 0.03 mg/L in well AR-11. Field concentrations of iron were generally higher in wells with higher groundwater petroleum hydrocarbon concentrations. Field parameters are recorded on the well sampling field sheets in Appendix A and are provided in Table 1.

4.0 CONCLUSIONS

No petroleum hydrocarbons were detected in wells AR-11, MW-4, or MW-6 during the June 2022 monitoring event. These data support the conclusion that the petroleum hydrocarbon plume remains isolated within the monitoring network.

Detected concentrations of TPHg, and toluene, ethylbenzene and total xylenes were consistent with, or slightly lower in wells MW-8 and AR-8 during the June 2022 monitoring event than previous events. 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). Historical groundwater monitoring results are provided in Appendix D. Time series plots for benzene and TPH-g are provided in Appendix E.

Well AR-1 is located within the center of the petroleum hydrocarbon plume directly downgradient for the release area, had the highest TPHg and BTEX concentrations at the site. TPHg, benzene, toluene, and

xylenes exceeded MTCA cleanup levels. This is consistent with previous monitoring events. However, ethylbenzene was detected at a concentration below the MTCA cleanup level. TPHd and TPHo were non-detect, as the 2000 release was unleaded gasoline. Well AR-1 meets the Point of Compliance definition (CMP Section 2.2.2) and also meets the CMP monitoring objectives (CMP Section 3.1).

An assessment of the potential for biodegradation of contaminants was performed using geochemical parameters of groundwater samples collected from monitoring wells located within the former free product plume area (AR-1 and MW-8) and comparing those results with the results of similar analyses from groundwater samples collected from upgradient (MW-11) and downgradient wells (MW 4, MW 8 and MW-6). Specifically, increased microbial activity tends to result in decreased ORP and DO concentrations in groundwater within source areas relative to upgradient and downgradient areas. Anaerobic microbial respiration also can cause a decrease in nitrate and sulfate concentrations, and an increase in dissolved manganese, ferrous iron, and methane. MNA constituents indicate that biodegradation of petroleum indicator substances is occurring in groundwater at the site. Specifically, manganese and methane concentrations were higher in wells with petroleum hydrocarbons as opposed to wells that have not had petroleum hydrocarbon detections. Conversely, sulfate concentrations were lower in wells AR-1, 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 as illustrated by the low levels of nitrates in AR-1 and AR-8 (and historically in AR-4) when compared to other wells at the Site.

The results of the June 2022 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 hydrocarbon source has been addressed through remedial activities.
- Residual dissolved-phase petroleum hydrocarbons remain on site and within localized areas of the former SPH plume. These areas include monitoring wells AR-1, AR-4, AR-8, and MW-8.
- The lateral extent of the dissolved-phase plume has been stable since active remedial actions were discontinued.
- Measured concentrations of field parameters and analytical results of natural attenuation constituents, as well as the stable lateral extent and concentration of petroleum hydrocarbons in sampled wells, suggest that biodegradation processes continue at the site.

5.0 RECOMMENDATIONS (YEAR 2023)

We recommend continuing to monitor according to the CMP, including the continuation of AR-1 compliance sampling in place of AR-4. The next groundwater monitoring event is scheduled for June 2023.

6.0 LIMITATIONS

GeoEngineers has prepared this report for use by Tidewater Terminal Company for the Fuel Leak Site in Pasco, Washington. Our services were conducted in general accordance with our proposal dated June 28, 2021 and authorized by Tidewater on June 30, 2021.

Within the limitations of scope, schedule and budget, our services have been executed in accordance with generally accepted practices in the field of environmental monitoring in this area at the time this report was prepared. No warranty or other conditions express or implied should be understood. Report limitations and guidelines for use are included in Appendix F.

We appreciate the opportunity to provide these continued services to Tidewater. Please call Kurt Harrington, PE at 503.502.1831 if you have questions regarding the contents of this report.

7.0 REFERENCES

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

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

Jacobs 2020. FINAL—Data Summary Report for Annual Groundwater Monitoring for the Tidewater Fuel Leak Site, Pasco, Washington. January 2021.

GeoEngineers 2021. 2021 Groundwater Monitoring Report for the Tidewater Fuel Leak Site, Pasco, Washington. December 10, 2021.

Washington Department of Ecology 2016. State of Washington, Department of Ecology v. Tidewater Terminal Company, Inc., Consent Decree No. 16-250951-11. November 22.

TABLES

GeoEngineers

Table 1. Groundwater Elevations and Field Parameter Readings

Tidewater Fuel Leak Site Compliance Monitoring Program

Well	Date Monitored [1]	Reference Point Elevation (ft)	Depth to Water (ft btc)	Groundwater Elevation (ft)	Temp (°C)	pH	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mV)	Ferrous Iron (mg/L)	Conductivity (mS/cm)	Turbidity (NTU)	Comments
AR-1	6/2/2022	423.88 [3]	80.05	343.83	18.5	7.51	2.65	-164.0	0.24	0.745	8.6	--
AR-8	6/2/2022	423.02	79.19	343.83	18.2	7.30	4.23	-140.6	0.57	0.576	3.5	Also collected Field Duplicate Sample
AR-11	6/1/2022	422.62	78.79	343.83	14.6	7.61	8.85	-12.3	0.03	0.787	14.0	--
MW-4	6/1/2022	422.29	78.48	343.81	16.8	7.56	7.52	74.5	0.05	0.676	5.8	--
MW-6	6/1/2022	422.50	78.68	343.82	17.1	7.32	8.09	50.7	0.12	0.648	7.7	Also collected MS/MSD Lab QC Sample
MW-8	6/2/2022	427.15	83.36	343.79	17.9	7.64	6.27	-57.5	0.53	0.595	9.9	--
Water Levels Only												
AR-4	6/1/2022	426.51 [2]	82.69	343.82	--	--	--	--	--	--	--	--
AR-7	6/1/2022	425.44	81.63	343.81	--	--	--	--	--	--	--	--
AR-12	6/1/2022	425.50	Dry	--	--	--	--	--	--	--	--	--
MW-5	6/1/2022	425.02	81.24	343.78	--	--	--	--	--	--	--	--
MW-7	6/1/2022	427.25	83.47	343.78	--	--	--	--	--	--	--	--

Notes:

1 - All water level measurements were conducted on June 1, 2022. Groundwater samples were collected on June 1 and 2, 2022.

2 - Reference point elevation was resurveyed on July 27, 2021.

3 - Reference point elevation was resurveyed on June 1, 2022.

" -- " = 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 celsius

mg/L = milligrams per liter

mV = millivolts

mS/cm = millisiemens per centimeter

NTU = Nephelometric Turbidity Units

Table 2. Groundwater Quality Data

Tidewater Fuel Leak Site Compliance Monitoring Program

Well Sample ID Sample Date				AR-11 AR11-2206 6/1/2022	MW-4 MW4-2206 6/1/2022	MW-6 MW6-2206 6/1/2022	MW-8 MW8-2206 6/2/2022	AR-8 AR8-2206 6/2/2022	FD (AR-8) FD-2206 6/2/2022	AR-1 AR1-2206 6/2/2022	Equipment Blank ER-2206 6/2/2022
Field Parameters	**Method**	**Units**	**MTCA CUL [1]**								
pH	Field Probe	units	--	7.61	7.56	7.32	7.64	7.30	--	7.51	--
Temperature	Field Probe	°C	--	14.6	16.8	17.1	17.9	18.2	--	18.5	--
Conductivity	Field Probe	mS/cm	--	0.787	0.676	0.648	0.595	0.576	--	0.745	--
Dissolved Oxygen	Field Probe	mg/L	--	8.85	7.52	8.09	6.27	4.23	--	2.65	--
Oxygen Reduction Potential	Field Probe	mV	--	-12.3	74.5	50.7	-57.5	-140.6	--	-164.0	--
Turbidity	Field Probe	NTU	--	14.0	5.8	7.7	9.9	3.5	--	8.6	--
Ferrous Iron	Field Screen	mg/L	--	0.03	0.05	0.12	0.53	0.57	--	0.24	--
Petroleum Hydrocarbons											
Benzene	EPA 624.1	µg/L	5	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	**1,080**	<0.500
Toluene	EPA 624.1	µg/L	1,000	<0.500	<0.500	<0.500	**2.6**	<0.500	<0.500	**1,080**	<0.500
Ethylbenzene	EPA 624.1	µg/L	700	<0.500	<0.500	<0.500	**39.9**	**25.8**	**25.6**	**376**	<0.500
Total Xylenes	EPA 624.1	µg/L	1,000	<0.500	<0.500	<0.500	**502**	**27.8**	**27.6**	**4,750**	<0.500
TPH-Gasoline Range	NWTPH-Gx	µg/L	800	<100	<100	<100	**3,980**	**1,660**	**1,650**	**43,600**	<100
TPH-Diesel Range	NWTPH-Dx	µg/L	500	<160	<160	<160	<160	<160	<160	<160	<160
TPH-Heavy Range	NWTPH-Dx	µg/L	500	<400	<400	<400	<400	<400	<400	<400	<400
MNA Parameters											
Manganese	EPA 200.8	mg/L	--	0.163	0.0156	0.00849	0.463	1.24	1.32	1.95	--
Sulfate	EPA 300.0	mg/L	--	130	118	111	83.8	64.8	68.5	48.6	--
Nitrate	EPA 300.0	mg/L	--	30.5	32.5	29.8	19.0	5.1	5.1	0.528	--
Methane	RSK-175 MOD	µg/L	--	<0.65	<0.65	<0.65	<0.65	7.61	7.53	155	--
Ferrous Iron	SM-3500	mg/L	--	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	--

Notes:

[1] From the November 2016 Cleanup Action Plan Table 1.

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

BOLD = Detection

Grey shading = Exceeds MTCA Cleanup Level

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

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

MTCA CUL = Model Toxics Control Act Cleanup Level

°C = degrees celsius

µg/L = micrograms per liter

mg/L = milligrams per liter

mV = millivolts

mS/cm = millisiemens per centimeter

NTU = Nephelometric Turbidity Units

FIGURES

GeoEngineers

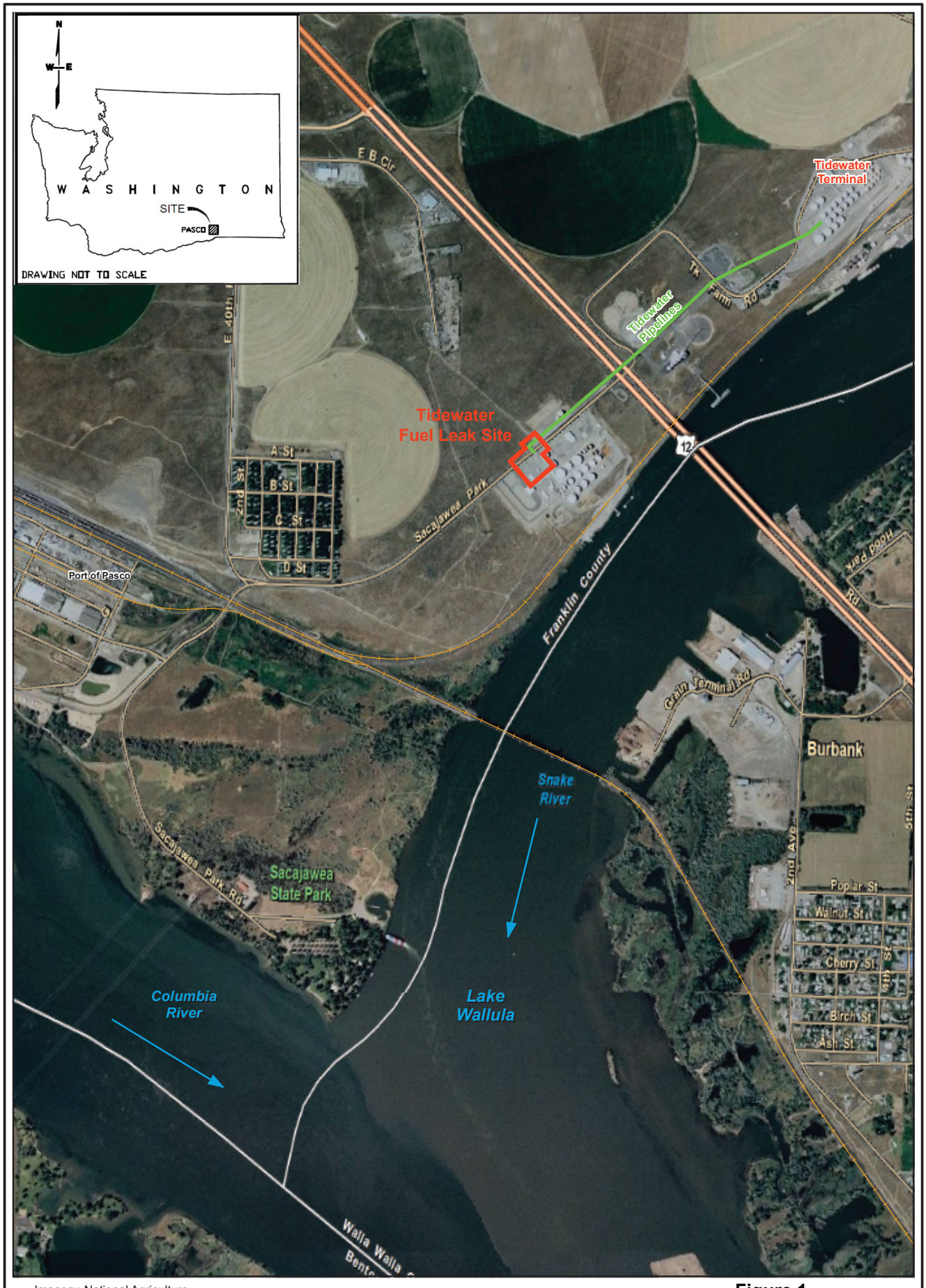
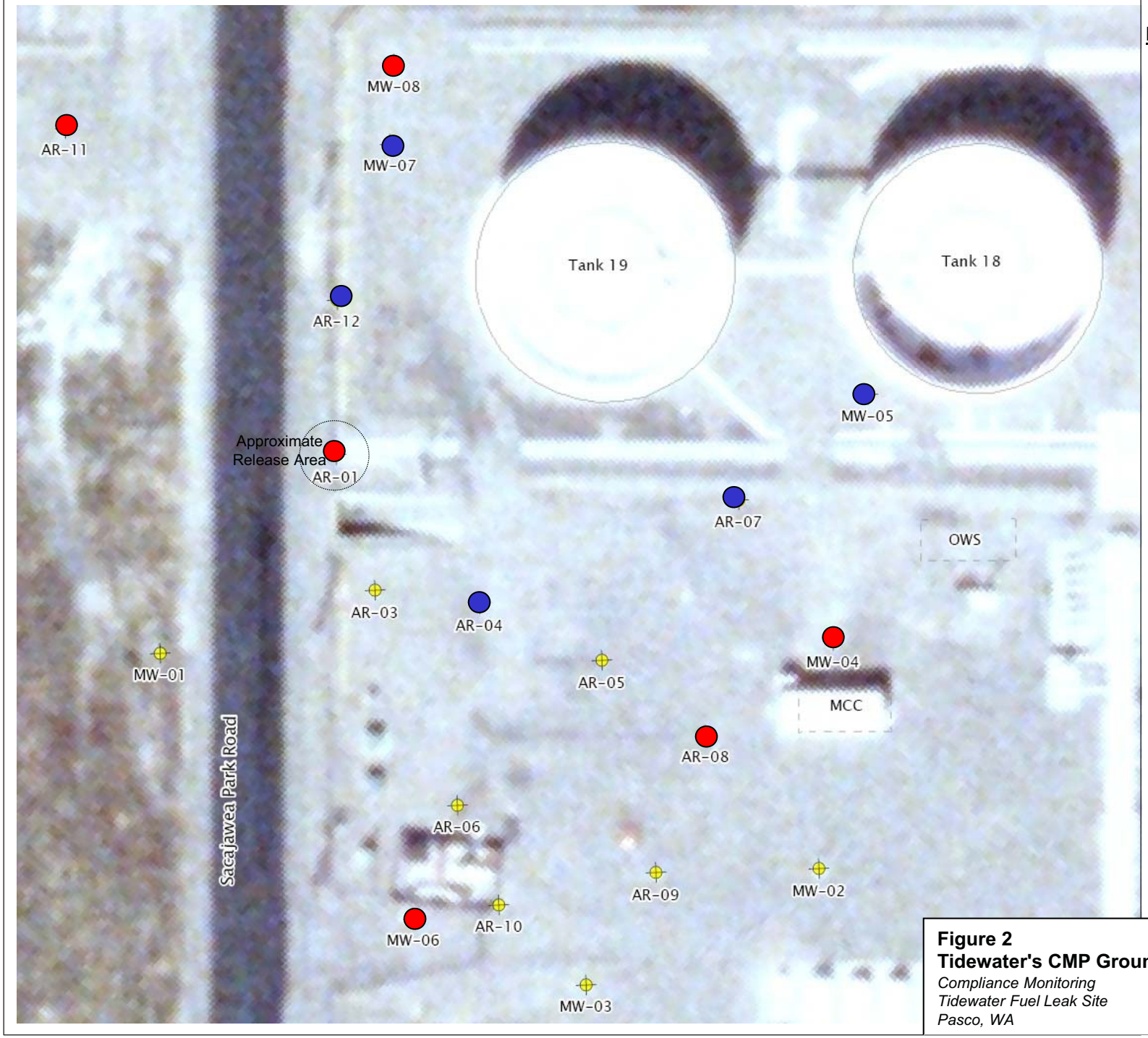


Figure 1
Site Location
Compliance Monitoring
Tidewater Fuel Leak Site
Pasco, WA



LEGEND

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

North

0 inch 1
0 feet 90

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

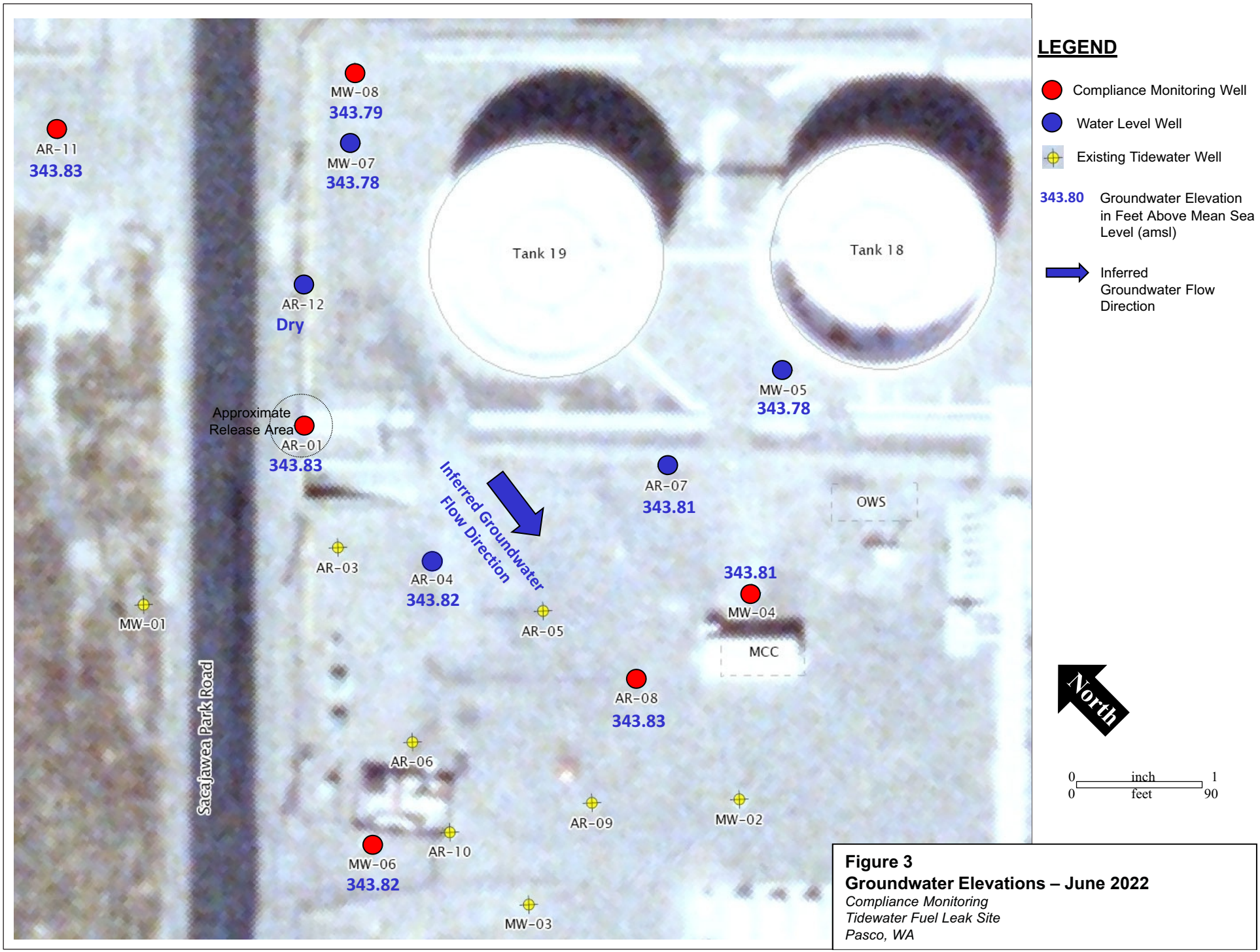
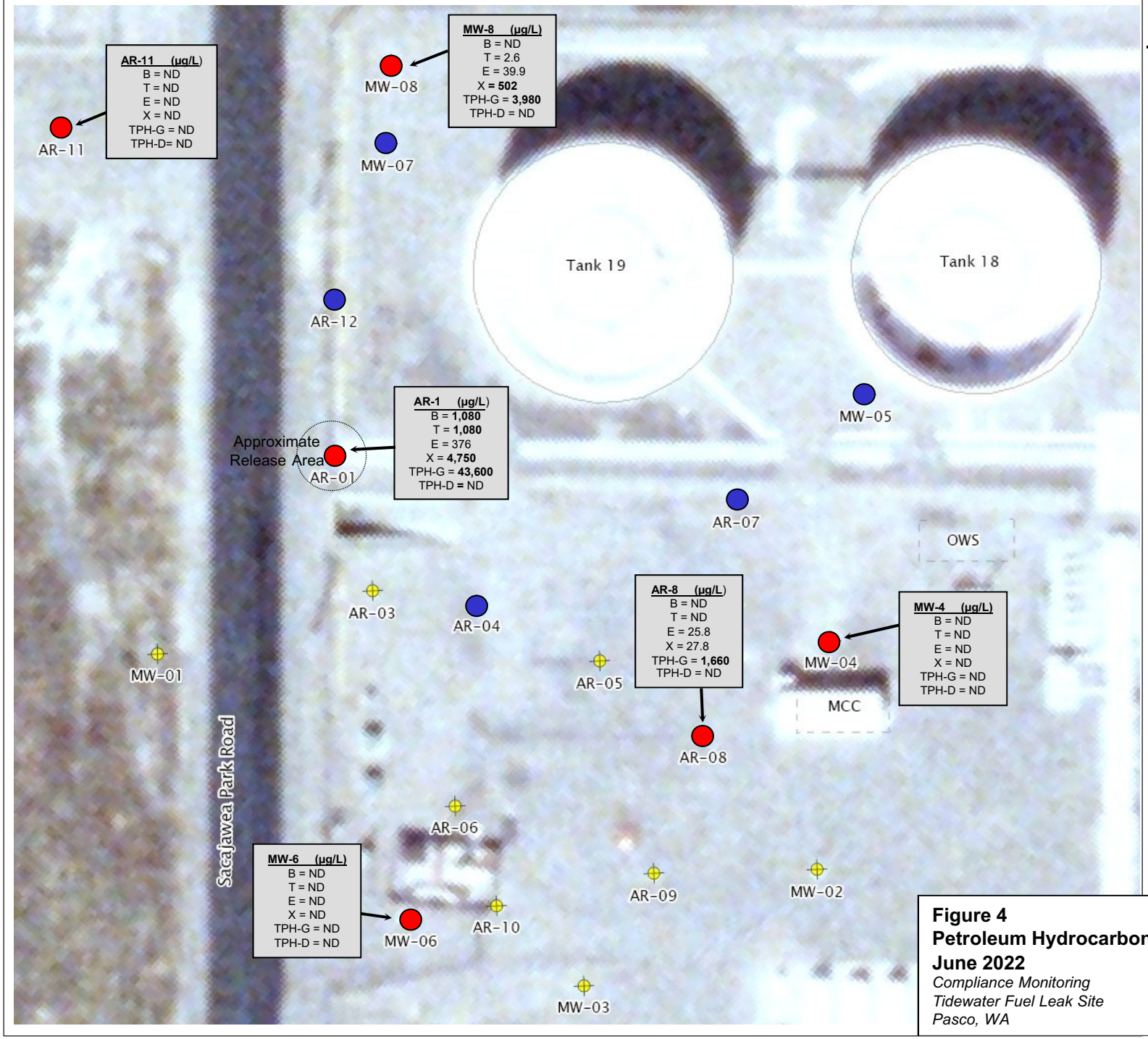


Figure 3
Groundwater Elevations – June 2022
Compliance Monitoring
Tidewater Fuel Leak Site
Pasco, WA



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 2022
Compliance Monitoring
Tidewater Fuel Leak Site
Pasco, WA

APPENDICES

GeoEngineers

APPENDIX A
Field Forms

GeoEngineers

5820 S Kelly Ave, Ste B,
Portland, Oregon 97239
503-906-6577

Field Report

File Number: 09991-005-00

Project: GWM 2022 - Pasco Fuel Leak Site			Date: 6/1 - 6/2
Owner: Tidewater	Time of Arrival: 0900		Report Number: 1-2
Prepared by: SW	Location: Pasco Terminal	Time of Departure: 1500	Page: 1 of 1
Purpose of visit: GWM	Weather: Sunny 75-85 degrees during work	Travel Time: 40 mins	Permit Number: --

Upon arrival to the site I assessed personal safety hazards: ☐ Yes or ☑ Referred to Site Safety Plan and Safety Tailgate if applicable

Safety Hazards Were Addressed by: ☑ Staying Alert to Construction and Equipment Hazards ☐ Other (describe)

6/1/22

830 - On site, meet Dan Anderson (Marathon). Discuss safety, site procedures, Dave (Marathon) performs sample area air level check issued permit

915 - Begin GWM (see field gauging + monitoring forms)

1430 - Meet Jon Travis (GEI) @ AR-11. Safety (traffic) + begin backsight to AR-11 & foresight to AR-1. Instrument level indicates AR-1 0.11 feet lower than previous surveyed elev.

1515 - Site clear, permit closed, off site.

6/2/22

830 - On site, meet Dave (Marathon). Safety, air levels, permit issued

0900 - Begin/resume GWM (see field monitoring forms).

1330 - Collect equipment rinsate sample ER 2206 using distilled water to rinse Monsoon Pro pump + water interface probe

1400 - Collect IDW profile sample from drum - IDW 2206 to be delivered to Apex Portland

1500 - Site clear, permit closed, offsite

☒ THIS FIELD REPORT IS PRELIMINARY

A preliminary report is provided solely as evidence that field observation was performed. Observations and/or conclusions and/or recommendations conveyed in the final report may vary from and shall take precedence over those indicated in a preliminary report.

FIELD REPRESENTATIVE [signature] DATE 6/3/22

☐ THIS FIELD REPORT IS FINAL

A final report is an instrument of professional service. Any conclusions drawn from this report should be discussed with and evaluated by the professional involved.

REVIEWED BY DATE

Attachments:

Distribution:

Paseo Terminal
6/1/22

Well	IH (backsight)	TOC elev.	Inst. Elev	Foresight	Field Elev	Δ'
AR-11	4.30'	422.62	426.92			
AR-1	—	423.99		3.04	423.88	-0.11

Pasco Terminal
Tidewater
GW

6/1/22

Well	Time	DTP	DTW	Product thickness	Notes
MW-4	949	—	78.48		
MW-6	1029	—	78.68		
MW-5	953	—	81.24		
AR-8	944	—	79.19		
AR-4	1024	—	82.69		
MW-8	1000	—	83.36		
MW-7	1004	—	83.47		
AR-12	1009	—	Dry		
AR-7	1012	—	81.63		
AR-1	1034	—	80.05		Replaced cap lock
AR-11	1036	—	78.79		Replaced cap lock

WELL MONITORING DATA SHEET

GEOENGINEERS

Well ID:	AR-11	Job Number:	
Client:	Tidewater - Pasco Terminal	Date:	6/1
Project:	GWM 6/2022	Sampler:	AW
Weather:	Sun 75°	Time In/Out:	1035 - 1150

WELL DATA

Monument Type:	Flush-mount/Stick-up	Well Diameter:	2"	Depth to Free Product:	—
	Other:	Well Depth:	86.5	Free Product Thickness:	—
Monument Condition:	good	Depth to Water:	78.79	Water Column Length:	—
Well Cap Lock Present:	Yes No	Screened Interval:	73-88	Purge Volume:	—

Comments:

Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)				
Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162	4-inch = 0.653	1 gal = 3.785 liters

PURGING DATA

Purge Method:	Monsoon Pro Low flow	Pump Intake Depth:	83' Midscreen
Sampling Method:		Tubing Material & Type:	LDPE (NEW) / DEDICATED

Time	Volume Purged (liters)	Purge Rate (L/min)	DTW (btc)	Turbidity (NTU)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
				+/- 10% /10 NTU	+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
1105		.3	78.79	70.5	7.24	23.40	2356	8.06	80.7	cloudy
1110		↓	78.79	31.1	7.58	19.45	842	8.76	-7.9	↓
1115			78.79	20.5	7.61	14.65	793	8.93	-12.7	clear
1120			78.79	15.4	7.62	14.60	785	8.90	-11.9	↓
1125			78.79	13.6	7.62	14.61	784	8.87	-12.1	
1130		↓	78.79	14.0	7.61	14.61	787	8.85	-12.3	

PURGING DATA

Sample ID:	AR-11	Sampling Flow Rate:	.3		Analytical Laboratory:	Anatek
Sample Time:	1130	Final Depth to Water:	78.79		Regulator Setting:	16.7 V

No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
8 x 40	HCl	VOC/Gx	—	—	—	—
1 x 40	↓	CH_4	—	—	—	—
1 x 1L	HCl	Dx	—	—	—	—
1 x 250	~~HNO3~~ AW	TMet	N	—	—	—
1 x 125	-	Fe/NO_3/SO_4	—	—	—	—

NOTES/ADDITIONAL COMMENTS

Equipment: Monsoon Pro, Aquaread - AP 2000 D, Hach Dr 890 - Reg setting: 16.7

1100 Begin pumping - Field Ferrous Fe = 0.03 mg/L

WELL MONITORING DATA SHEET

GEOENGINEERS

Well ID:	MW-4	Job Number:	–
Client:	Tidewater - Pasco Terminal	Date:	6/1
Project:	GWM 06/2022	Sampler:	AW
Weather:	Sun / 80°	Time In/Out:	1155 - 1310

WELL DATA

Monument Type:	Flush-mount/Stick-up	Well Diameter:	2"	Depth to Free Product:	–
	Other:	Well Depth:	89'	Free Product Thickness:	–
Monument Condition:	good	Depth to Water:	78.48	Water Column Length:	–
Well Cap Lock Present:	Yes / No	Screened Interval:	75-90	Purge Volume:	–

Comments:

Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)

Water height multipliers (gal): 1-inch well = 0.041 | 2-inch = 0.162 | 4-inch = 0.653 | 1 gal = 3.785 liters

PURGING DATA

Purge Method: Monsoon Pro low flow | Pump Intake Depth: 84' Midscreen

Sampling Method: | Tubing Material & Type: LDPE | NEW / DEDICATED

Time	Volume Purged (liters)	Purge Rate (L/min)	DTW (btc)	Turbidity (NTU)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
				+/- 10% /10 NTU	+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
1215		.3	78.48	72.6	7.44	19.55	751	8.08	101.5	cloudy
1220		1	78.48	9.8	7.51	16.9	693	7.69	82.4	↓
1225		.3	↓	5.5	7.54	17.2	680	7.20	79.5	
1230		↓	↓	6.3	7.54	17.0	675	7.55	77.2	↓
1235		↓	↓	11.4	7.55	16.9	674	7.53	76.5	clear
1240		↓	↓	6.0	7.56	16.9	675	7.53	75.0	↓
1245		↓	↓	5.5	7.56	16.8	675	7.52	74.8	↓
1250		↓	↓	5.8	7.56	16.8	676	7.42	74.5	↓

PURGING DATA

Sample ID:	MW-4	Sampling Flow Rate:	.3		Analytical Laboratory:		Anatek
Sample Time:	1250	Final Depth to Water:	78.48		Regulator Setting:		16.4 V
No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID	
5x40	HCl	VOC / Gx / CH_4	–		–	–	–
1x1L	↓	Dx	–		–	–	–
1x250	~~HNO3~~ AW	TMet	N		–	–	–
1x125	–	Fe / NO_3 / SO_4	–		–	–	–

NOTES/ADDITIONAL COMMENTS

Equipment: Monsoon Pro, Aquaread - AP 2000 D, Hach Dr 890 → Ferrous Fe field : 0.05 mg/L

1210 Begin pumping

WELL MONITORING DATA SHEET

GEOENGINEERS

Well ID:	MW-6	Job Number:	
Client:	Tidewater - Pasco Terminal	Date:	6/1/22
Project:	GWM 06/2022	Sampler:	JW
Weather:	Sun 85°	Time In/Out:	1310 - 1415

WELL DATA

Monument Type:	Flush-mount/Stick-up	Well Diameter:	2"	Depth to Free Product:	—
	Other:	Well Depth:	90'	Free Product Thickness:	—
Monument Condition:	good	Depth to Water:	78.69	Water Column Length:	—
Well Cap Lock Present:	Yes / No	Screened Interval:	75-90'	Purge Volume:	—

Comments:

Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)

Water height multipliers (gal): 1-inch well = 0.041 | 2-inch = 0.162 | 1 gal = 3.785 liters

PURGING DATA

Purge Method:	Monsoon Pro	Pump Intake Depth:	84' Mid screen
Sampling Method:	Low flow	Tubing Material & Type:	LDPE (NEW)

Time	Volume Purged (liters)	Purge Rate (L/min)	DTW (btc)	Turbidity (NTU)	pH	Temp (°C)	d (µS/cm)	(mg		Clarity/Color Other Remarks
				+/- 10% /10 NTU	+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
1325		0.3	78.69	73.7	7.55	19.9	741	9.05	96.6	cloudy
1330		↓	78.69	19.0	7.39	17.2	680	8.24	60.5	clear
1335			↓	8.3	7.32	17.0	654	8.17	55.9	↓
1340				8.0	7.32	17.1	650	8.11	53.8	
1345				7.7	7.32	17.1	648	8.09	50.7	

PURGING DATA

Sample ID:	MW-6	Sampling Flow Rate:	0.3			Analytical Laboratory:	Anatek
Sample Time:	1345	Final Depth to Water:	78.69			Regulator Setting:	16.8V
No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID	
5 x 40	HCl	VOC/Gx/cHx	—				
1 x 1L	↓	Dx	—				
1 x 250	~~HNO3~~ JW	TMet	N	—	—		
1 x 125	—	Fe/NO3/SO4	—	—	—	MW-6 MSD	
4 x 40	HCl	VOC/Gx	—	—	—	MW-6 MSD	
1 x 1L	↓	Dx	—	—	—	MW-6 MSD	

16.0
1320

NOTES/ADDITIONAL COMMENTS

Equipment: Monsoon Pro, Aquaread - AP 2000 D, Hach Dr 890 Field Ferrous Fe = 0.12 mg/L

1320 begin pumping

WELL MONITORING DATA SHEET

GEOENGINEERS

Well ID:	MW-8	Job Number:	
Client:	Tidewater - Pasco Terminal	Date:	6/2/22
Project:	GWM 6/2022	Sampler:	TW
Weather:	Sun 75°	Time In/Out:	930 - 1045

WELL DATA

Monument Type:	Flush-mount/Stick-up	Well Diameter:	2"	Depth to Free Product:	
	Other:	Well Depth:	93' TOC	Free Product Thickness:	—
Monument Condition:	good	Depth to Water:	83.35	Water Column Length:	—
Well Cap Lock Present:	Yes / No	Screened Interval:	75-90 bgs	Purge Volume:	—
Comments:					

Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)				
Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162	4-inch = 0.653	1 gal = 3.785 liters

PURGING DATA

Purge Method:	Monsoon Pro Low flow	Pump Intake Depth:	88' Midscreen
Sampling Method:		Tubing Material & Type	LDPE NEW / DEDICATED

Time	Volume Purged (liters)	Purge Rate (L/min)	DTW (btc)	Turbidity (NTU)	pH	Temp (°C)	Cond (µS/cm)	DO (mg	ORP (mV)	Clarity/Color Other Remarks
				+/- 10% /10 NTU	+/-0.1	.5 °C	+/-5%	+/-0.5 ppm		
1005		.3	83.35	78.2	7.42	19.10	651	5.40	-90.3	cloudy
1010		.3	83.35	18.5	7.57	18.03	602	5.72	-92.1	↓
1015		↓	83.35	4.8	7.66	17.91	598	6.26	-68.4	clear
1020		↓	↓	11.0	7.64	17.90	599	6.34	-62.3	↓
1025		↓	↓	9.5	7.64	17.90	596	6.32	-60.9	↓
1030		↓	↓	9.9	7.64	17.88	595	6.27	-57.5	↓

PURGING DATA

Sample ID:	MW-8	Sampling Flow Rate:	.3		Analytical Laboratory:		Anatek
Sample Time:	1030	Final Depth to Water:	83.35		Regulator Setting:		17.0V
No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID	
5 x 40	HCl	VOC / Gx / CH4					
1 x 1L	↓	Dx					
1 x 250	4NO3	TMet	N				
1 x 125	—	Fe / NO3 / SO4					

NOTES/ADDITIONAL COMMENTS

Equipment: Monsoon Pro, Aquaread - AP 2000 D, Hach Dr 890 Field Ferrous Fe: 0.53 mg/L

1000 Begin pumping

WELL MONITORING DATA SHEET

GEOENGINEERS

Well ID:	AR-8	Job Number:	
Client:	Tidewater - Pasco Terminal		1/2/22
Project:	GWM 6/2022	Sampler:	4
Weather:	Sun 80°	Time In/Out:	1050 - 1145

WELL DATA

Monument Type:	(Flush-mount) tick-up	Well Diameter:	2"	Depth to Free Product:	
	Other:	Well Depth:	85'	Free Product Thickness:	
Monument Condition:	good	Depth to Water:	79.15		—
Well Cap Lock Present:	(Yes) No	Screened Interval:	73		
Comments:					
Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)					
Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162		1 gal = 3.785 liters	

PURGING DATA

Purge Method:	Monsoon Pro	Pump Intake Depth:	82' Mid screen		
Sampling Method:	Low flow	Tubing Material & Type	LDP	(NEW) / DEDICATED	

Time	Volume Purged (liters)	Purge Rate (L/min)	DTW (btc)	Turbidity (NTU)	pH	(°C)	Cond (µS/cm)		ORP (mV)	Clarity/Color Other Remarks
				+/- 10% /10 NTU	+/-0.1	C	+/-5%	+/-0.5 ppm		
1105		0.3	79.15	69.1	6.86	21.18	441	5.55	-94.0	
1110		0.3	79.15	18.7	7.33	18.40	552	4.	1193	
1115		↓	↓	11.5	7.29	18.30	560	4.15	-12.9	↓
1120		↓	↓	16.9	7.29	18.26	569	4.	30	↓
1125		↓	↓	8.4	7.30	18.22	572	4.24	136.0	↓
1130		↓	↓	3.9	7.30	18.22	577	4.23	-138.1	↓
1135		↓	↓	3.6	7.30	18.21	576	4.20	139.5	↓
1140		↓	↓	3.5	7.30	18.20	576	4.23	-140.6	↓

PURGING DATA

Sample ID:	AR-8-2206	Sampling Flow Rate:	0.3				Anatek
Sample Time:	1140	Final Depth to Water:	79.15				14.8
No. of Containers/Type	Preservative	Analysis/Method	Field Filte			Duplicate ID	
5x40	HCl	VOC/Gx/CH4	—				—
1x1L	HCl	Dx	—				—
1x250	—	TMet	N	—			—
1x125	—	Fe/NO3/SO4	—			~~AR-8~~	—
[8 btls Same as above dup]							FD 2 FD 2206

NOTES/ADDITIONAL COMMENTS

Equipment: Monsoon Pro, Aquaread - AP 2000 D, Hach Dr 890 Field Ferrous Fe: .57 mg/L

1100 Begin pumping

WELL MONITORING DATA SHEET

GEOENGINEERS

Well ID:	AR-1	Job Number:	
Client:	Tidewater - Pasco Terminal	Date:	6/2
Project:	GWM 6/2022	Sampler:	JW
Weather:	Sun 85°	Time In/Out:	1220 - 1330

WELL DATA

Monument Type:	Flush-mount/Stick-up	Well Diameter:	2"	Depth to Free Product:	—
	Other:	Well Depth:	88'	Free Product Thickness:	—
Monument Condition:	good	Depth to Water:	80.01	Water Column Length:	—
Well Cap Lock Present:	Yes No	Screened Interval:	73-88	Purge Volume:	—

Comments:

Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)

Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162	4-inch = 0.653	1 gal = 3.785 liters

PURGING DATA

Purge Method:	Monsoon Pro low flow	Pump Intake Depth:	84' Midscreen
Sampling Method:		Tubing Material & Type:	LDPE (NEW) / DEDICATED

Time	Volume Purged (liters)	Purge Rate (L/min)	DTW (btc)	Turbidity (NTU)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
				+/- 10% /10 NTU	+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
1235		.3	80.01	97.3	7.81	21.53	804	4.07	-113.5	cloudy
1240		.3	80.01	50.6	7.55	18.78	760	3.10	-140.5	↓
1245		↓	↓	15.9	7.52	18.52	748	2.90	-151.3	↓
1250		↓	↓	29.1	7.52	18.49	745	2.84	-156.8	cleaner
1255		↓	↓	8.5	7.52	18.50	746	2.75	-158.3	
1300		↓	↓	8.0	7.50	18.52	743	2.71	-161.0	↓
1305		↓	↓	8.6	7.51	18.52	745	2.65	-164.0	↓

PURGING DATA

Sample ID:	AR-1-2206	Sampling Flow Rate:	0.3			Analytical Laboratory:	Anatek
Sample Time:	1305	Final Depth to Water:	80.01			Regulator Setting:	17.2 V
No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID	
5x40	HCl	VOC/Gx/CH4	—				
1x1L	HCl	Dx	—				
1x250	—	TMet	N		—		
1x125	—	Fe/NO3/SO4	—		—		

NOTES/ADDITIONAL COMMENTS

Equipment: Monsoon Pro, Aquaread - AP 2000 D, Hach Dr 890 Field Ferrous Fe 0.24 mg/L

1230 begin pumping

APPENDIX B
Historical Groundwater Elevations

Appendix B - Historical Groundwater Elevation Measurements

Tidewater Fuel Leak Site Compliance Monitoring Program

Well	Date Measured	Reference Point Elevation (feet NGVD)	Depth to Water (feet)	Product Thickness (feet)	Groundwater Elevation (feet NGVD)	Groundwater Elevation Change from Previous Event (feet)
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[2]	423.99	79.38	0	344.61	1.63
	6/25/2019		80.13	0	343.86	0.75
	6/24/2020		79.83	0	344.16	0.3
	7/27/2021		80.83	0	343.16	1
	6/1/2022[4]	423.88	80.05	0	343.83	0.67
AR-2[1]	6/29/2010	--	--	--	--	--
	12/16/2010	--	--	--	--	--
	5/28/2014	--	--	--	--	--
AR-3[1]	6/29/2010	428.01	--	--	--	--
	12/15/2010		--	--	--	--
	5/28/2014		--	--	--	--
AR-4	6/29/2010	426.47	81.90	0	344.57	--
	12/15/2010		82.38	0	344.09	0.48
	5/28/2014		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
	6/24/2020		82.52	0	343.95	0.24
	7/27/2021[3]	426.51	83.47	0	343.04	0.91
	6/1/2022		82.69	0	343.82	0.78
AR-5	6/29/2010	423.08	78.52	0	344.56	--
	12/15/2010		79.00	0	344.08	0.48
	5/28/2014		78.62	0	344.46	0.38
AR-6	6/29/2010	425.17	80.61	0	344.56	--
	12/15/2010		81.11	0	344.06	0.5
	5/28/2014		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
	5/28/2014		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
	6/24/2020		81.41	0	344.03	0.27
	7/27/2021		82.39	0	343.05	0.98
	6/1/2022		81.63	0	343.81	0.76
AR-8	6/29/2010	423.02	78.43	0	344.59	--
	12/15/2010		78.94	0	344.08	0.51
	5/28/2014		78.50	0	344.52	0.44
	5/1/2018		78.43	0	344.59	0.07
	6/25/2019		79.29	0	343.73	0.86
	6/24/2020		78.99	0	344.03	0.3
	7/27/2021		80.01	0	343.01	1.02
	6/1/2022		79.19	0	343.83	0.82
AR-9	6/29/2010	423.05	78.46	0	344.59	--
	12/15/2010		78.95	0	344.10	0.49
	5/28/2014		78.60	0	344.45	0.35
AR-10	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	0	344.46	0.37
AR-11	6/29/2010	422.62	78.00	0	344.62	--
	12/15/2010		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
	6/24/2020		78.54	0	344.08	0.29
	7/27/2021		79.59	0	343.03	1.05
	6/1/2022		78.79	0	343.83	0.8
AR-12	6/29/2010	425.50	80.96	sheen	344.54	--
	12/16/2010		dry	--	--	--
	5/28/2014		dry	--	--	--
	5/1/2018		81.02	0	344.48	0.06
	6/25/2019		dry	--	--	--
	6/24/2020		81.50	0	344.00	0.48
	7/27/2021		dry	--	--	--
	6/1/2022		dry	--	--	--
MW-4	7/27/2021	422.29	79.28	0	343.01	--
	6/1/2022		78.48	0	343.81	0.8
MW-5	7/27/2021	425.02	82.02	0	343.00	--
	6/1/2022		81.24	0	343.78	0.78
MW-6	7/27/2021	422.50	79.47	0	343.03	--
	6/1/2022		78.68	0	343.82	0.79
MW-7	7/27/2021	427.25	84.23	0	343.02	--
	6/1/2022		83.47	0	343.78	0.76
MW-8	7/27/2021	427.15	84.13	0	343.02	--
	6/1/2022		83.36	0	343.79	0.77

1 - Well not part of CMP program

2 - Well was re-surveyed in December 2018

3 - Reference point elevation was resurveyed on July 27, 2021.

4 - Reference point elevation was resurveyed on June 1, 2022.

" -- " = 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).

APPENDIX C
Analytical Laboratory Reports

Anatek Labs, Inc.

1282 Alturas Drive - Moscow, ID 83843 - (208) 883-2839 - Fax (208) 8829246 - email moscow@anateklabs.com
504 E Sprague Ste. D - Spokane, WA 99202 - (509) 838-3999 - fax (509) 838-4433 - email spokane@anateklabs.com

Client:	GeoEngineers, Inc.- Portland	Work Order:	WCF0083
Address:	5820 S Kelly Ave Suite B	Project:	Pasco Terminal
	Portland, OR 97239	Reported:	6/13/2022 16:37
Attn:	Kurt Harrington		

Analytical Results Report

Sample Location:	AR-11-2206		
Lab/Sample Number:	WCF0083-01	Collect Date:	06/01/22 11:30
Date Received:	06/02/22 12:22	Collected By:	Jonathan Weatherford
Matrix:	Water		

Analyte	Result	Units	PQL	Analyzed	Analyst	Method	Qualifier
Inorganics							
Nitrate-N	30.5	mg/L	0.200	6/3/22 11:30	ZML	EPA 300.0	
Sulfate	130	mg/L	1.00	6/6/22 23:39	ZML	EPA 300.0	
Total Metals							
Iron (II)	ND	mg/L	0.0100	6/3/22 11:53	ZML	SM 3500-Fe B	*
Metals by ICP-MS							
Manganese	0.163	mg/L	0.00100	6/9/22 20:51	JLG	EPA 200.8	
Hydrocarbons							
Diesel	ND	mg/L	0.160	6/4/22 2:52	ARC	NWTPH-Dx	
Lube Oil	ND	mg/L	0.400	6/4/22 2:52	ARC	NWTPH-Dx	
Mineral Oil	ND	mg/L	0.160	6/4/22 2:52	ARC	NWTPH-Dx	
Surrogate: n-Hexacosane	*92.7%*		*50-150*	*6/4/22 2:52*	*ARC*	*NWTPH-Dx*	
Volatiles							
Gasoline	ND	mg/L	0.100	6/6/22 14:07	ARC	NWTPH-Gx	
Surrogate: 4-Bromofluorobenzene	*101%*		*50-150*	*6/6/22 14:07*	*ARC*	*NWTPH-Gx*	
Benzene	ND	ug/L	0.500	6/6/22 17:34	ARC	EPA 8260D	R15
Ethylbenzene	ND	ug/L	0.500	6/6/22 17:34	ARC	EPA 8260D	R15
m/p Xylenes (MCL for total)	ND	ug/L	0.500	6/6/22 17:34	ARC	EPA 8260D	R15
o-Xylene (MCL for total)	ND	ug/L	0.500	6/6/22 17:34	ARC	EPA 8260D	R15
Toluene	ND	ug/L	0.500	6/6/22 17:34	ARC	EPA 8260D	R15
Surrogate: 1,2-Dichlorobenzene-d4	*101%*		*70-130*	*6/6/22 17:34*	*ARC*	*EPA 8260D*	
Surrogate: 4-Bromofluorobenzene	*98.8%*		*70-130*	*6/6/22 17:34*	*ARC*	*EPA 8260D*	
Surrogate: Toluene-d8	*102%*		*70-130*	*6/6/22 17:34*	*ARC*	*EPA 8260D*	

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Analytical Results Report

(Continued)

Sample Location: MW-4-2206
Lab/Sample Number: WCF0083-02 Collect Date: 06/01/22 12:50
Date Received: 06/02/22 12:22 Collected By: Jonathan Weatherford
Matrix: Water

Analyte	Result	Units	PQL	Analyzed	Analyst	Method	Qualifier
Inorganics							
Nitrate-N	32.5	mg/L	0.500	6/3/22 11:47	ZML	EPA 300.0	
Sulfate	118	mg/L	0.500	6/3/22 11:47	ZML	EPA 300.0	
Total Metals							
Iron (II)	ND	mg/L	0.0100	6/3/22 11:53	ZML	SM 3500-Fe B	*
Metals by ICP-MS							
Manganese	0.0156	mg/L	0.00100	6/9/22 20:54	JLG	EPA 200.8	
Hydrocarbons							
Diesel	ND	mg/L	0.160	6/4/22 3:47	ARC	NWTPH-Dx	
Lube Oil	ND	mg/L	0.400	6/4/22 3:47	ARC	NWTPH-Dx	
Mineral Oil	ND	mg/L	0.160	6/4/22 3:47	ARC	NWTPH-Dx	
Surrogate: n-Hexacosane	*92.0%*		*50-150*	*6/4/22 3:47*	*ARC*	*NWTPH-Dx*	
Volatiles							
Gasoline	ND	mg/L	0.100	6/6/22 14:45	ARC	NWTPH-Gx	
Surrogate: 4-Bromofluorobenzene	*103%*		*50-150*	*6/6/22 14:45*	*ARC*	*NWTPH-Gx*	
Benzene	ND	ug/L	0.500	6/6/22 18:04	ARC	EPA 8260D	R15
Ethylbenzene	ND	ug/L	0.500	6/6/22 18:04	ARC	EPA 8260D	R15
m/p Xylenes (MCL for total)	ND	ug/L	0.500	6/6/22 18:04	ARC	EPA 8260D	R15
o-Xylene (MCL for total)	ND	ug/L	0.500	6/6/22 18:04	ARC	EPA 8260D	R15
Toluene	ND	ug/L	0.500	6/6/22 18:04	ARC	EPA 8260D	R15
Surrogate: 1,2-Dichlorobenzene-d4	*101%*		*70-130*	*6/6/22 18:04*	*ARC*	*EPA 8260D*	
Surrogate: 4-Bromofluorobenzene	*99.6%*		*70-130*	*6/6/22 18:04*	*ARC*	*EPA 8260D*	
Surrogate: Toluene-d8	*102%*		*70-130*	*6/6/22 18:04*	*ARC*	*EPA 8260D*	

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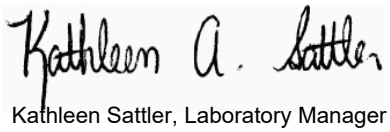
Analytical Results Report

(Continued)

Sample Location: MW-6-2206
Lab/Sample Number: WCF0083-03 Collect Date: 06/01/22 13:45
Date Received: 06/02/22 12:22 Collected By: Jonathan Weatherford
Matrix: Water

Analyte	Result	Units	PQL	Analyzed	Analyst	Method	Qualifier
Inorganics							
Nitrate-N	29.8	mg/L	0.500	6/3/22 12:03	ZML	EPA 300.0	
Sulfate	111	mg/L	0.500	6/3/22 12:03	ZML	EPA 300.0	
Total Metals							
Iron (II)	ND	mg/L	0.0100	6/3/22 11:53	ZML	SM 3500-Fe B	*
Metals by ICP-MS							
Manganese	0.00849	mg/L	0.00100	6/9/22 20:57	JLG	EPA 200.8	
Hydrocarbons							
Diesel	ND	mg/L	0.160	6/4/22 0:06	ARC	NWTPH-Dx	
Lube Oil	ND	mg/L	0.400	6/4/22 0:06	ARC	NWTPH-Dx	
Mineral Oil	ND	mg/L	0.160	6/4/22 0:06	ARC	NWTPH-Dx	
Surrogate: n-Hexacosane	*93.2%*		*50-150*	*6/4/22 0:06*	*ARC*	*NWTPH-Dx*	
Volatiles							
Gasoline	ND	mg/L	0.100	6/6/22 15:23	ARC	NWTPH-Gx	
Surrogate: 4-Bromofluorobenzene	*103%*		*50-150*	*6/6/22 15:23*	*ARC*	*NWTPH-Gx*	
Benzene	ND	ug/L	0.500	6/6/22 16:05	ARC	EPA 8260D	R15
Ethylbenzene	ND	ug/L	0.500	6/6/22 16:05	ARC	EPA 8260D	R15
m/p Xylenes (MCL for total)	ND	ug/L	0.500	6/6/22 16:05	ARC	EPA 8260D	R15
o-Xylene (MCL for total)	ND	ug/L	0.500	6/6/22 16:05	ARC	EPA 8260D	R15
Toluene	ND	ug/L	0.500	6/6/22 16:05	ARC	EPA 8260D	R15
Surrogate: 1,2-Dichlorobenzene-d4	*103%*		*70-130*	*6/6/22 16:05*	*ARC*	*EPA 8260D*	
Surrogate: 4-Bromofluorobenzene	*96.6%*		*70-130*	*6/6/22 16:05*	*ARC*	*EPA 8260D*	
Surrogate: Toluene-d8	*103%*		*70-130*	*6/6/22 16:05*	*ARC*	*EPA 8260D*	

Authorized Signature,



Kathleen Sattler, Laboratory Manager

R15	MS/MSD RPD exceeded method acceptance limit. Matrix spike recovery was outside acceptance criteria. Batch precision and accuracy were demonstrated.
PQL	Practical Quantitation Limit
ND	Not Detected
MCL	EPA's Maximum Contaminant Level
Dry	Sample results reported on a dry weight basis
*	Not a state-certified analyte

RPD	Relative Percent Difference
%REC	Percent Recovery
Source	Sample that was spiked or duplicated.

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Certifications

Code	Description	Facility	Number
W WA DOE	Washington Department of Ecology	Anatek-Spokane, WA	C585

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Quality Control Data

Inorganics

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: BCF0159 - W Ions										
Blank (BCF0159-BLK1)					Prepared & Analyzed: 6/3/2022					
Nitrate-N	ND		0.100	mg/L						
Sulfate	ND		0.100	mg/L						
Blank (BCF0159-BLK2)					Prepared & Analyzed: 6/3/2022					
Nitrate-N	ND		0.100	mg/L						
Sulfate	ND		0.100	mg/L						
LCS (BCF0159-BS1)					Prepared & Analyzed: 6/3/2022					
Nitrate-N	3.81			mg/L	4.00		95.1	90-110		
Sulfate	3.95			mg/L	4.00		98.7	90-110		
LCS (BCF0159-BS2)					Prepared & Analyzed: 6/3/2022					
Nitrate-N	4.05			mg/L	4.00		101	90-110		
Sulfate	4.28			mg/L	4.00		107	90-110		
Matrix Spike (BCF0159-MS1)		**Source: WCF0179-01**			Prepared & Analyzed: 6/3/2022					
Nitrate-N	22.8			mg/L	4.00	19.0	97.0	80-120		
Sulfate	66.6			mg/L	4.00	83.8	NR	80-120		
Matrix Spike Dup (BCF0159-MSD1)		**Source: WCF0179-01**			Prepared & Analyzed: 6/3/2022					
Nitrate-N	22.9			mg/L	4.00	19.0	97.9	80-120	0.149	20
Sulfate	66.6			mg/L	4.00	83.8	NR	80-120	0.00931	20
Batch: BCF0191 - W Ions										
Blank (BCF0191-BLK1)					Prepared & Analyzed: 6/6/2022					
Sulfate	ND		0.100	mg/L						

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Quality Control Data
(Continued)

Inorganics (Continued)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: BCF0191 - W Ions (Continued)										
Blank (BCF0191-BLK2)					Prepared & Analyzed: 6/6/2022					
Sulfate	ND		0.100	mg/L						
LCS (BCF0191-BS1)					Prepared & Analyzed: 6/6/2022					
Sulfate	4.21			mg/L	4.00		105	90-110		
LCS (BCF0191-BS2)					Prepared & Analyzed: 6/6/2022					
Sulfate	4.01			mg/L	4.00		100	90-110		
Matrix Spike (BCF0191-MS1)		**Source: WCF0112-01**			Prepared & Analyzed: 6/7/2022					
Sulfate	66.1			mg/L	4.00	62.2	97.6	80-120		
Matrix Spike Dup (BCF0191-MSD1)		**Source: WCF0112-01**			Prepared & Analyzed: 6/7/2022					
Sulfate	66.1			mg/L	4.00	62.2	97.6	80-120	0.000600	20

Quality Control Data
(Continued)

Metals by ICP-MS

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: BCF0140 - W 3010 Digest										
Blank (BCF0140-BLK1)					Prepared: 6/3/2022 Analyzed: 6/9/2022					
Manganese	ND		0.00100	mg/L						
LCS (BCF0140-BS1)					Prepared: 6/3/2022 Analyzed: 6/9/2022					
Manganese	0.0457		0.00100	mg/L	0.0500		91.3	85-115		
Matrix Spike (BCF0140-MS1)		**Source: WCF0048-01**			Prepared: 6/3/2022 Analyzed: 6/9/2022					
Manganese	0.279		0.00100	mg/L	0.0500	0.231	95.3	70-130		
Matrix Spike (BCF0140-MS2)		**Source: WCF0083-03**			Prepared: 6/3/2022 Analyzed: 6/9/2022					
Manganese	0.0634		0.00100	mg/L	0.0500	0.00849	110	70-130		
Matrix Spike Dup (BCF0140-MSD1)		**Source: WCF0048-01**			Prepared: 6/3/2022 Analyzed: 6/9/2022					
Manganese	0.274		0.00100	mg/L	0.0500	0.231	85.4	70-130	1.79	20
Matrix Spike Dup (BCF0140-MSD2)		**Source: WCF0083-03**			Prepared: 6/3/2022 Analyzed: 6/9/2022					
Manganese	0.0659		0.00100	mg/L	0.0500	0.00849	115	70-130	3.79	20

Quality Control Data
(Continued)

Hydrocarbons

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: BCF0113 - W TPH-Dx										
Blank (BCF0113-BLK1)					Prepared & Analyzed: 6/3/2022					
Diesel	ND		0.160	mg/L						
Lube Oil	ND		0.400	mg/L						
Mineral Oil	ND		0.160	mg/L						
Surrogate: n-Hexacosane			*46.6*	*ppm*	*50.1*		*93.1*	*50-150*		

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Quality Control Data
(Continued)

Hydrocarbons (Continued)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: BCF0113 - W TPH-Dx (Continued)										
LCS (BCF0113-BS1)					Prepared & Analyzed: 6/3/2022					
Diesel	0.641		0.160	mg/L	0.800		80.1	70-130		
Lube Oil	ND		0.400	mg/L				70-130		
Surrogate: n-Hexacosane			*35.7*	*ppm*	*50.1*		*71.3*	*50-150*		
LCS Dup (BCF0113-BSD1)					Prepared & Analyzed: 6/3/2022					
Diesel	0.611		0.160	mg/L	0.800		76.4	70-130	4.81	20
Lube Oil	ND		0.400	mg/L				70-130		20
Surrogate: n-Hexacosane			*44.5*	*ppm*	*50.1*		*88.8*	*50-150*		
Matrix Spike (BCF0113-MS1)		**Source: WCF0083-03**			Prepared: 6/3/2022 Analyzed: 6/4/2022					
Diesel	0.889		0.160	mg/L	1.00	ND	88.9	70-130		
Lube Oil	ND		0.400	mg/L		ND		70-130		
Surrogate: n-Hexacosane			*47.3*	*ppm*	*50.1*		*94.4*	*50-150*		
Matrix Spike Dup (BCF0113-MSD1)		**Source: WCF0083-03**			Prepared: 6/3/2022 Analyzed: 6/4/2022					
Diesel	0.858		0.160	mg/L	1.00	ND	85.8	70-130	3.61	20
Lube Oil	ND		0.400	mg/L		ND		70-130		20
Surrogate: n-Hexacosane			*46.8*	*ppm*	*50.1*		*93.4*	*50-150*		

Quality Control Data
(Continued)

Volatiles

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: BCF0198 - W VOC										
Blank (BCF0198-BLK1)					Prepared & Analyzed: 6/6/2022					
Benzene	ND	R15	0.500	ug/L						
Ethylbenzene	ND	R15	0.500	ug/L						
m/p Xylenes (MCL for total)	ND	R15	0.500	ug/L						
o-Xylene (MCL for total)	ND	R15	0.500	ug/L						
Toluene	ND	R15	0.500	ug/L						
Surrogate: Toluene-d8			*5.05*	*ug/L*	*5.00*		*101*	*70-130*		
Surrogate: 1,2-Dichlorobenzene-d4			*5.04*	*ug/L*	*5.00*		*101*	*70-130*		
Surrogate: 4-Bromofluorobenzene			*4.81*	*ug/L*	*5.00*		*96.2*	*70-130*		
LCS (BCF0198-BS1)					Prepared & Analyzed: 6/6/2022					
Benzene	5.27	R15	0.500	ug/L	5.00		105	70-130		
Ethylbenzene	5.19	R15	0.500	ug/L	5.00		104	70-130		
o-Xylene (MCL for total)	5.27	R15	0.500	ug/L	5.00		105	70-130		
Toluene	5.02	R15	0.500	ug/L	5.00		100	70-130		
Surrogate: Toluene-d8			*5.12*	*ug/L*	*5.00*		*102*	*70-130*		
Surrogate: 1,2-Dichlorobenzene-d4			*4.98*	*ug/L*	*5.00*		*99.6*	*70-130*		
Surrogate: 4-Bromofluorobenzene			*5.04*	*ug/L*	*5.00*		*101*	*70-130*		
Matrix Spike (BCF0198-MS1)		**Source: WCF0083-03**			Prepared & Analyzed: 6/6/2022					
Benzene	9.68	R15		ug/L	9.55	0.00	101	70-130		
Ethylbenzene	9.83	R15		ug/L	9.55	0.00	103	70-130		
o-Xylene (MCL for total)	10.0	R15		ug/L	9.55	0.00	105	70-130		

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Quality Control Data
(Continued)

Volatiles (Continued)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: BCF0198 - W VOC (Continued)										
Matrix Spike (BCF0198-MS1)	**Source: WCF0083-03**				Prepared & Analyzed: 6/6/2022					
Toluene	9.09	R15		ug/L	9.55	0.00	95.2	70-130		
Surrogate: Toluene-d8			*5.11*	*ug/L*	*5.00*		*102*	*70-130*		
Surrogate: 1,2-Dichlorobenzene-d4			*5.00*	*ug/L*	*5.00*		*100*	*70-130*		
Surrogate: 4-Bromofluorobenzene			*5.27*	*ug/L*	*5.00*		*105*	*70-130*		
Matrix Spike Dup (BCF0198-MSD1)	**Source: WCF0083-03**				Prepared & Analyzed: 6/6/2022					
Benzene	7.81	R15		ug/L	9.55	0.00	81.8	70-130	21.4	20
Ethylbenzene	7.92	R15		ug/L	9.55	0.00	82.9	70-130	21.5	20
o-Xylene (MCL for total)	7.97	R15		ug/L	9.55	0.00	83.5	70-130	22.8	20
Toluene	7.37	R15		ug/L	9.55	0.00	77.2	70-130	20.9	20
Surrogate: Toluene-d8			*5.11*	*ug/L*	*5.00*		*102*	*70-130*		
Surrogate: 1,2-Dichlorobenzene-d4			*4.99*	*ug/L*	*5.00*		*99.8*	*70-130*		
Surrogate: 4-Bromofluorobenzene			*5.18*	*ug/L*	*5.00*		*104*	*70-130*		
Batch: BCF0220 - W VOC										
Blank (BCF0220-BLK1)					Prepared & Analyzed: 6/6/2022					
Gasoline	ND		0.100	mg/L						
Surrogate: 4-Bromofluorobenzene			*103*	*ug/L*	*100*		*103*	*50-150*		
LCS (BCF0220-BS1)					Prepared & Analyzed: 6/6/2022					
Gasoline	3.85		0.100	mg/L	3.82		101	80-120		
Surrogate: 4-Bromofluorobenzene			*93.6*	*ug/L*	*100*		*93.6*	*50-150*		
LCS Dup (BCF0220-BSD1)					Prepared & Analyzed: 6/6/2022					
Gasoline	3.75		0.100	mg/L	3.82		98.2	80-120	2.60	20
Surrogate: 4-Bromofluorobenzene			*92.8*	*ug/L*	*100*		*92.8*	*50-150*		

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Quality Control Data
(Continued)

Volatiles (Continued)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: BCF0220 - W VOC (Continued)										
Matrix Spike (BCF0220-MS1)	**Source: WCF0083-03**				Prepared & Analyzed: 6/6/2022					
Gasoline	3.77		0.100	mg/L	3.82	ND	98.9	70-130		
Surrogate: 4-Bromofluorobenzene			*98.0*	*ug/L*	*100*		*98.0*	*50-150*		
Matrix Spike Dup (BCF0220-MSD1)	**Source: WCF0083-03**				Prepared & Analyzed: 6/6/2022					
Gasoline	3.81		0.100	mg/L	3.82	ND	99.8	70-130	0.919	20
Surrogate: 4-Bromofluorobenzene			*96.3*	*ug/L*	*100*		*96.3*	*50-150*		

WCF0083

Due: 06/16/22

ANATEK LABS

Chain of Custody Record

Anatek L
1282 Alturas Drive, Mosco
504 E Sprague Ste D, Spoka

Turn A

Please refer to our normal turn around ... www.anateklabs.com/pricing-lists

- ✓ Normal
- __ Next Day*
- __ 2nd Day*
- __ Other*_____

__ Phone
__ Email

*All rush order requests must have prior approval

Company Name: GeoEngineers, Inc.	Project Manager: Kurt Harrington
Address: 5820 S. Kelly Ave. Ste B	Project Name & # : Pasco Terminal
City: Portland State: OR Zip: 97239	Purchase Order #: 009991-005-00
Phone: 503-906-6577	Sampler Name & Phone: Jon Weatherford 505-423-7435
Email Address(es): kharrington@geoengineers.com	

List Analyses Requested

Lab ID	Sample Identification	Sampling Date/Time	Matrix	# of Containers	Sample Volume	Preservative:	BTEX 8260	NWTPH-Dx	NWTPH-Gx	Ferrous Fe	Mn	SO4, NO3	Methane	NWTPH-Dx
	AR-11-2206	6/1/22 1130	H_2O	5	500 mL		✓	✓	✓	✓	✓	✓	✓	✓
	MW-4-2206	6/1/22 1250	↓	↓	↓		↓	↓	↓	↓	↓	↓	↓	↓
	MW-6-2206	6/1/22 1345												
	MW-6 MSD -2206	6/1/22 1345												

Note Special Instructions/Comments

-2206 added to sample ID per Jon Weatherford 6-3-22 1134

Inspection Checklist

Received Intact?	Y	N
Labels & Chains Agree?	Y	N
Containers Sealed?	Y	N
No VOC Head Space?	Y	N
Cooler?	Y	N
Ice/Ice Packs Present?	Y	N

Temperature (°C): 11.4

Number of Containers:

Shipped Via:

Preservative:

Date & Time:

Inspected By: Gel Attached

	Printed Name	Signature	Company	Date	Time
Relinquished by	Jon Weatherford		GeoEngineers	6/1/22	1600
Received by	Joseph Pipkin		Anatek	6/2/22	1222
Relinquished by					
Received by					
Relinquished by					
Received by					

Samples submitted to Anatek Labs may be subcontacted to other accredited labs if necessary. This message serves as notice of this possibility. Subcontracted analyses will be clearly noted on the analytical report.

UPS/c/i

Anatek Labs, Inc.

Sample Receipt and Preservation Form

WCF0083

Due: 06/16/22

Client Name: GeoEngineers Project: *(apply Anatek sample label here)*

TAT: (Normal) RUSH: _____ days

Samples Received From: FedEx (UPS) USPS Client Courier Other: _____

Custody Seal on Cooler/Box: Yes No Custody Seals Intact: Yes No N/A

Number of Coolers/Boxes: 1 Type of Ice: (Ice/Ice Packs) Blue Ice Dry Ice None

Packing Material: (Bubble Wrap) Bags Foam/Peanuts None Other: _____

Cooler Temp As Read (°C): 11.4 Cooler Temp Corrected (°C): _____ Thermometer Used: _____

				Comments:
Samples Received Intact?	(Yes)	No	N/A	
Chain of Custody Present?	(Yes)	No	N/A	
Samples Received Within Hold Time?	(Yes)	No	N/A	
Samples Properly Preserved?	(Yes)	No	N/A	
VOC Vials Free of Headspace (<6mm)?	(Yes)	No	~~N/A~~	
VOC Trip Blanks Present?	Yes	(No)	~~N/A~~	
Labels and Chains Agree?	(Yes)	No	N/A	
Total Number of Sample Bottles Received: _____				G1000 x4, P250 x2, P125 x4, g4 x many
Chain of Custody Fully Completed?	(Yes)	No	N/A	
Correct Containers Received?	(Yes)	No	N/A	
Anatek Bottles Used?	(Yes)	No	Unknown	

Record preservatives (and lot numbers, if known) for containers below:

HCl 2102437c2 HCl(VOA) 2103533

pH 2102558

Trips 5/24/22 960 JDP

Notes, comments, etc. (also use this space if contacting the client - record names and date/time)

Received/Inspected By: _____ Date/Time: 1222 6/2/22

Form F06.00 - Eff. 10 Nov. 2021

Analytical Resources, LLC
Analytical Chemists and Consultants

11 June 2022

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

RE: WCF0083

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)
22F0109	N/A

Shelly Fishel
Digitally signed by Shelly Fishel
Date: 2022.06.11 12:57:08 -07'00'

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, LLC

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Shelly Fishel, Project Manager

ACCREDITED IN ACCORDANCE WITH nelac
Cert# 100006-012

~~22F0106~~
22F0109 SUF 06/07/2022

7.3°C

Anatek Labs, Inc.

SUBCONTRACT ORDER

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Sending Laboratory:

Anatek Labs, Inc.- Spokane
504 E Sprague Ave, Suite D
Spokane, WA 99202
Phone: 509-838-3999
Fax: 509-838-4433

Project Manager: Kathleen Sattler
kathy@anateklabs.com

Subcontracted Laboratory:

Analytical Resources LLC
4611 S. 134TH Place, Suite 100
Tukwila, WA 98168
Phone: (206) 695-6200
Fax: (206) 695-6202

Work Order: WCF0083

Analysis	Due	Expires	Comments
Lab Sample ID: WCF0083-01 ***Water*** ***Sampled: 06/01/2022 11:30***			
Client Sample Name: AR-11			
W Methane	06/14/2022	06/15/2022 11:30	
Containers Supplied:			
Lab Sample ID: WCF0083-02 ***Water*** ***Sampled: 06/01/2022 12:50***			
Client Sample Name: MW-4			
W Methane	06/14/2022	06/15/2022 12:50	
Containers Supplied:			
Lab Sample ID: WCF0083-03 ***Water*** ***Sampled: 06/01/2022 13:45***			
Client Sample Name: MW-6			
W Methane	06/14/2022	06/15/2022 13:45	
Containers Supplied:			

Released By — Date 6/6/22

Received By — Date 06/07/22

Anatek Labs, Inc. Spokane	Project: WCF0083	
504 East Sprague, Suite D	Project Number: [none]	**Reported:**
Spokane WA, 99202	Project Manager: Kathy Sattler	11-Jun-2022 12:54

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
AR-11	22F0109-01	Water	01-Jun-2022 11:30	07-Jun-2022 11:00
MW-4	22F0109-02	Water	01-Jun-2022 12:50	07-Jun-2022 11:00
MW-6	22F0109-03	Water	01-Jun-2022 13:45	07-Jun-2022 11:00

Anatek Labs, Inc. Spokane	Project: WCF0083	
504 East Sprague, Suite D	Project Number: [none]	**Reported:**
Spokane WA, 99202	Project Manager: Kathy Sattler	11-Jun-2022 12:54

Work Order Case Narrative

Client: Anatek Labs, Inc. Spokane
Project: WCF0083
Work Order: 22F0109

Sample receipt

Sample(s) as listed on the preceding page were received 07-Jun-2022 11:00 under ARI work order 22F0109. For details regarding sample receipt, please refer to the Cooler Receipt Form.

Volatile Gases - MEE by RSK175

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

The vials used for samples 22F0109-02 and 22F0109-3 contained bubbles 2-4mm in diameter. The vial used for sample 22F0109-01 contained bubbles >4mm in diameter.

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 blank spike and blank spike duplicate (BS/LCS and BSD/LCSD) spike recoveries and relative percent difference (RPD) were within control limits.

Analytical Resources, LLC
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Anatek Project Name: WCF 0083

COC No(s): ① NA Delivered by: Fed-Ex UPS Courier Hand Delivered Other: ___

Assigned ARI Job No: ~~22F0106~~ 22F0109 Tracking No: 1Z2A95Y 0394B 2210 NA

Preliminary Examination Phase: ①SLF 06/07/2022

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 1100 7.3

If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: 9708

Cooler Accepted by: SD Date: 06/07/22 Time: 1100

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: HN ~~Date:~~ 06/07/22 Time: 16:07 (*) Labels checked by: ___

***** 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:

(*) Logged by SLF 06/07/2022 1722

Analytical Resources, LLC
Analytical Chemists and Consultants

Cooler Temperature Compliance Form

22F0109 SLF 06/07/2022

ARI Work Order: ~~22F0106~~

Cooler#: _____ Temperature(°C): 7.3°C

Sample ID	Bottle Count	Bottle Type
Sample received @ over 6°C		

Cooler#: _____ Temperature(°C): _____

Sample ID	Bottle Count	Bottle Type

Cooler#: _____ Temperature(°C): _____

Sample ID	Bottle Count	Bottle Type

Cooler#: _____ Temperature(°C): _____

Sample ID	Bottle Count	Bottle Type

Completed by: HN Date: 06/07/22 Time: 11:00

Anatek Labs, Inc. Spokane	Project: WCF0083	
504 East Sprague, Suite D	Project Number: [none]	**Reported:**
Spokane WA, 99202	Project Manager: Kathy Sattler	11-Jun-2022 12:54

AR-11

22F0109-01 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 06/01/2022 11:30
Instrument: FID6 Analyst: LH — Analyzed: 06/08/2022 09:25

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 22F0109-01 A
Preparation Batch: BKF0174 — Sample Size: 10 mL
Prepared: 06/08/2022 — 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			*62-122 %*	*98.4*	*%*	

Anatek Labs, Inc. Spokane	Project: WCF0083	
504 East Sprague, Suite D	Project Number: [none]	**Reported:**
Spokane WA, 99202	Project Manager: Kathy Sattler	11-Jun-2022 12:54

MW-4

22F0109-02 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 06/01/2022 12:50
Instrument: FID6 Analyst: LH — Analyzed: 06/08/2022 09:43

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 22F0109-02 A
Preparation Batch: BKF0174 — Sample Size: 10 mL
Prepared: 06/08/2022 — 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			*62-122 %*	*82.2*	*%*	

Anatek Labs, Inc. Spokane	Project: WCF0083	
504 East Sprague, Suite D	Project Number: [none]	**Reported:**
Spokane WA, 99202	Project Manager: Kathy Sattler	11-Jun-2022 12:54

MW-6

22F0109-03 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 06/01/2022 13:45
Instrument: FID6 Analyst: LH — Analyzed: 06/08/2022 10:01

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 22F0109-03 A
Preparation Batch: BKF0174 — Sample Size: 10 mL
Prepared: 06/08/2022 — 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			*62-122 %*	*91.4*	*%*	

Anatek Labs, Inc. Spokane	Project: WCF0083	
504 East Sprague, Suite D	Project Number: [none]	**Reported:**
Spokane WA, 99202	Project Manager: Kathy Sattler	11-Jun-2022 12:54

Analysis by: Analytical Resources, LLC

Dissolved Gases - Quality Control

Batch BKF0174 - EPA 5030C (Purge and Trap)

Instrument: FID6 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKF0174-BLK1)				Prepared: 08-Jun-2022 Analyzed: 08-Jun-2022 07:32						
Methane	ND	0.65	ug/L							U
Surrogate: Propane	1780		ug/L	*1800*		*98.9*	*62-122*			
LCS (BKF0174-BS1)				Prepared: 08-Jun-2022 Analyzed: 08-Jun-2022 06:23						
Methane	631	0.65	ug/L	656		96.2	80-120			
Surrogate: Propane	1860		ug/L	*1800*		*103*	*62-122*			
LCS Dup (BKF0174-BSD1)				Prepared: 08-Jun-2022 Analyzed: 08-Jun-2022 06:41						
Methane	659	0.65	ug/L	656		100	80-120	4.29	30	
Surrogate: Propane	1850		ug/L	*1800*		*103*	*62-122*			

Anatek Labs, Inc. Spokane	Project: WCF0083	
504 East Sprague, Suite D	Project Number: [none]	**Reported:**
Spokane WA, 99202	Project Manager: Kathy Sattler	11-Jun-2022 12:54

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	03/28/2023
NELAP	ORELAP - Oregon Laboratory Accreditation Program	WA100006-012	05/12/2023
WADOE	WA Dept of Ecology	C558	06/30/2022
WA-DW	Ecology - Drinking Water	C558	06/30/2022

Anatek Labs, Inc. Spokane	Project: WCF0083	
504 East Sprague, Suite D	Project Number: [none]	**Reported:**
Spokane WA, 99202	Project Manager: Kathy Sattler	11-Jun-2022 12:54

Notes and Definitions

*	Flagged value is not within established control limits.
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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Client:	GeoEngineers, Inc.- Portland	Work Order:	WCF0179
Address:	5820 S Kelly Ave Suite B	Project:	Pasco Terminal 009991-005-00
	Portland, OR 97239	Reported:	6/20/2022 09:58
Attn:	Kurt Harrington		

Analytical Results Report

Sample Location:	MW-8-2206		
Lab/Sample Number:	WCF0179-01	Collect Date:	06/02/22 10:30
Date Received:	06/03/22 09:52	Collected By:	Jonathan Weatherford
Matrix:	Water		

Analyte	Result	Units	PQL	Analyzed	Analyst	Method	Qualifier
Inorganics							
Nitrate-N	19.0	mg/L	0.100	6/3/22 22:47	ZML	EPA 300.0	
Sulfate	83.8	mg/L	0.500	6/6/22 21:10	ZML	EPA 300.0	
Total Metals							
Iron (II)	ND	mg/L	0.0100	6/3/22 16:16	ZML	SM 3500-Fe B	*
Metals by ICP-MS							
Manganese	0.463	mg/L	0.00100	6/10/22 16:31	JLG	EPA 200.8	
Hydrocarbons							
Diesel	ND	mg/L	0.160	6/15/22 15:30	ARC	NWTPH-Dx	
Lube Oil	ND	mg/L	0.400	6/15/22 15:30	ARC	NWTPH-Dx	
Mineral Oil	ND	mg/L	0.160	6/15/22 15:30	ARC	NWTPH-Dx	
Surrogate: n-Hexacosane	*90.9%*		*50-150*	*6/15/22 15:30*	*ARC*	*NWTPH-Dx*	
Volatiles							
Gasoline	3.98	mg/L	0.100	6/6/22 17:16	ARC	NWTPH-Gx	
Surrogate: 4-Bromofluorobenzene	*104%*		*50-150*	*6/6/22 17:16*	*ARC*	*NWTPH-Gx*	
Benzene	ND	ug/L	0.500	6/6/22 21:01	ARC	EPA 8260D	R15
Ethylbenzene	39.9	ug/L	5.00	6/9/22 12:00	ARC	EPA 8260D	R15
m/p Xylenes (MCL for total)	267	ug/L	5.00	6/9/22 12:00	ARC	EPA 8260D	R15
o-Xylene (MCL for total)	235	ug/L	5.00	6/9/22 12:00	ARC	EPA 8260D	R15
Toluene	2.60	ug/L	0.500	6/6/22 21:01	ARC	EPA 8260D	R15
Surrogate: 1,2-Dichlorobenzene-d4	*104%*		*70-130*	*6/6/22 21:01*	*ARC*	*EPA 8260D*	
Surrogate: 4-Bromofluorobenzene	*114%*		*70-130*	*6/6/22 21:01*	*ARC*	*EPA 8260D*	
Surrogate: Toluene-d8	*104%*		*70-130*	*6/6/22 21:01*	*ARC*	*EPA 8260D*	

Anatek Labs, Inc.

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Analytical Results Report

(Continued)

Sample Location:	MW-8-2206		
Lab/Sample Number:	WCF0179-01	Collect Date:	06/02/22 10:30
Date Received:	06/03/22 09:52	Collected By:	Jonathan Weatherford
Matrix:	Water		

Analyte	Result	Units	PQL	Analyzed	Analyst	Method	Qualifier
Inorganics							
Sulfate	62.6	mg/L	0.100	6/3/22 22:47	ZML	EPA 300.0	

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Analytical Results Report

(Continued)

Sample Location:	AR-8-2206		
Lab/Sample Number:	WCF0179-02	Collect Date:	06/02/22 11:40
Date Received:	06/03/22 09:52	Collected By:	Jonathan Weatherford
Matrix:	Water		

Analyte	Result	Units	PQL	Analyzed	Analyst	Method	Qualifier
Inorganics							
Nitrate-N	5.05	mg/L	0.100	6/3/22 23:37	ZML	EPA 300.0	
Sulfate	64.8	mg/L	1.00	6/6/22 21:26	ZML	EPA 300.0	
Total Metals							
Iron (II)	ND	mg/L	0.0100	6/3/22 16:10	ZML	SM 3500-Fe B	*
Metals by ICP-MS							
Manganese	1.24	mg/L	0.0100	6/10/22 16:34	JLG	EPA 200.8	
Hydrocarbons							
Diesel	ND	mg/L	0.160	6/15/22 23:51	ARC	NWTPH-Dx	
Lube Oil	ND	mg/L	0.400	6/15/22 23:51	ARC	NWTPH-Dx	
Mineral Oil	ND	mg/L	0.160	6/15/22 23:51	ARC	NWTPH-Dx	
Surrogate: n-Hexacosane	*89.5%*		*50-150*	*6/15/22 23:51*	*ARC*	*NWTPH-Dx*	
Volatiles							
Gasoline	1.66	mg/L	0.100	6/6/22 17:54	ARC	NWTPH-Gx	
Surrogate: 4-Bromofluorobenzene	*105%*		*50-150*	*6/6/22 17:54*	*ARC*	*NWTPH-Gx*	
Benzene	ND	ug/L	0.500	6/6/22 21:30	ARC	EPA 8260D	R15
Ethylbenzene	25.8	ug/L	0.500	6/6/22 21:30	ARC	EPA 8260D	R15
m/p Xylenes (MCL for total)	9.35	ug/L	0.500	6/6/22 21:30	ARC	EPA 8260D	R15
o-Xylene (MCL for total)	18.4	ug/L	0.500	6/6/22 21:30	ARC	EPA 8260D	R15
Toluene	ND	ug/L	0.500	6/6/22 21:30	ARC	EPA 8260D	R15
Surrogate: 1,2-Dichlorobenzene-d4	*102%*		*70-130*	*6/6/22 21:30*	*ARC*	*EPA 8260D*	
Surrogate: 4-Bromofluorobenzene	*97.4%*		*70-130*	*6/6/22 21:30*	*ARC*	*EPA 8260D*	
Surrogate: Toluene-d8	*105%*		*70-130*	*6/6/22 21:30*	*ARC*	*EPA 8260D*	

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Analytical Results Report

(Continued)

Sample Location: FD-2206
Lab/Sample Number: WCF0179-03 Collect Date: 06/02/22 11:40
Date Received: 06/03/22 09:52 Collected By: Jonathan Weatherford
Matrix: Water

Analyte	Result	Units	PQL	Analyzed	Analyst	Method	Qualifier
Inorganics							
Nitrate-N	5.11	mg/L	0.100	6/3/22 23:54	ZML	EPA 300.0	
Sulfate	68.5	mg/L	1.00	6/6/22 21:43	ZML	EPA 300.0	
Total Metals							
Iron (II)	ND	mg/L	0.0100	6/3/22 16:14	ZML	SM 3500-Fe B	*
Metals by ICP-MS							
Manganese	1.32	mg/L	0.0100	6/10/22 16:37	JLG	EPA 200.8	
Hydrocarbons							
Diesel	ND	mg/L	0.160	6/16/22 1:41	ARC	NWTPH-Dx	
Lube Oil	ND	mg/L	0.400	6/16/22 1:41	ARC	NWTPH-Dx	
Mineral Oil	ND	mg/L	0.160	6/16/22 1:41	ARC	NWTPH-Dx	
Surrogate: n-Hexacosane	*85.7%*		*50-150*	*6/16/22 1:41*	*ARC*	*NWTPH-Dx*	
Volatiles							
Gasoline	1.65	mg/L	0.100	6/6/22 18:32	ARC	NWTPH-Gx	
Surrogate: 4-Bromofluorobenzene	*105%*		*50-150*	*6/6/22 18:32*	*ARC*	*NWTPH-Gx*	
Benzene	ND	ug/L	0.500	6/6/22 22:00	ARC	EPA 8260D	R15
Ethylbenzene	25.6	ug/L	0.500	6/6/22 22:00	ARC	EPA 8260D	R15
m/p Xylenes (MCL for total)	9.01	ug/L	0.500	6/6/22 22:00	ARC	EPA 8260D	R15
o-Xylene (MCL for total)	18.6	ug/L	0.500	6/6/22 22:00	ARC	EPA 8260D	R15
Toluene	ND	ug/L	0.500	6/6/22 22:00	ARC	EPA 8260D	R15
Surrogate: 1,2-Dichlorobenzene-d4	*100%*		*70-130*	*6/6/22 22:00*	*ARC*	*EPA 8260D*	
Surrogate: 4-Bromofluorobenzene	*94.0%*		*70-130*	*6/6/22 22:00*	*ARC*	*EPA 8260D*	
Surrogate: Toluene-d8	*103%*		*70-130*	*6/6/22 22:00*	*ARC*	*EPA 8260D*	

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Analytical Results Report

(Continued)

Sample Location: AR-1-2206
Lab/Sample Number: WCF0179-04 Collect Date: 06/02/22 13:05
Date Received: 06/03/22 09:52 Collected By: Jonathan Weatherford
Matrix: Water

Analyte	Result	Units	PQL	Analyzed	Analyst	Method	Qualifier
Inorganics							
Nitrate-N	0.528	mg/L	0.100	6/4/22 0:11	ZML	EPA 300.0	
Sulfate	48.6	mg/L	0.500	6/7/22 15:29	ZML	EPA 300.0	
Total Metals							
Iron (II)	ND	mg/L	0.0100	6/3/22 16:12	ZML	SM 3500-Fe B	*
Metals by ICP-MS							
Manganese	1.95	mg/L	0.0100	6/10/22 16:40	JLG	EPA 200.8	
Hydrocarbons							
Diesel	ND	mg/L	0.160	6/16/22 5:21	ARC	NWTPH-Dx	
Lube Oil	ND	mg/L	0.400	6/16/22 5:21	ARC	NWTPH-Dx	
Mineral Oil	ND	mg/L	0.160	6/16/22 5:21	ARC	NWTPH-Dx	
Surrogate: n-Hexacosane	*88.7%*		*50-150*	*6/16/22 5:21*	*ARC*	*NWTPH-Dx*	
Volatiles							
Gasoline	43.6	mg/L	2.50	6/7/22 12:00	ARC	NWTPH-Gx	
Surrogate: 4-Bromofluorobenzene	*101%*		*50-150*	*6/7/22 12:00*	*ARC*	*NWTPH-Gx*	
Benzene	1080	ug/L	50.0	6/9/22 13:00	ARC	EPA 8260D	R15
Ethylbenzene	376	ug/L	12.5	6/6/22 22:29	ARC	EPA 8260D	R15
m/p Xylenes (MCL for total)	2430	ug/L	50.0	6/9/22 13:00	ARC	EPA 8260D	R15
o-Xylene (MCL for total)	2320	ug/L	50.0	6/9/22 13:00	ARC	EPA 8260D	R15
Toluene	1080	ug/L	50.0	6/9/22 13:00	ARC	EPA 8260D	R15
Surrogate: 1,2-Dichlorobenzene-d4	*98.6%*		*70-130*	*6/6/22 22:29*	*ARC*	*EPA 8260D*	
Surrogate: 4-Bromofluorobenzene	*95.0%*		*70-130*	*6/6/22 22:29*	*ARC*	*EPA 8260D*	
Surrogate: Toluene-d8	*99.6%*		*70-130*	*6/6/22 22:29*	*ARC*	*EPA 8260D*	

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Analytical Results Report

(Continued)

Sample Location: ER-2206
Lab/Sample Number: WCF0179-05 Collect Date: 06/02/22 13:30
Date Received: 06/03/22 09:52 Collected By: Jonathan Weatherford
Matrix: Water

Analyte	Result	Units	PQL	Analyzed	Analyst	Method	Qualifier
Hydrocarbons							
Diesel	ND	mg/L	0.160	6/16/22 2:36	ARC	NWTPH-Dx	
Lube Oil	ND	mg/L	0.400	6/16/22 2:36	ARC	NWTPH-Dx	
Mineral Oil	ND	mg/L	0.160	6/16/22 2:36	ARC	NWTPH-Dx	
Surrogate: n-Hexacosane	*95.9%*		*50-150*	*6/16/22 2:36*	*ARC*	*NWTPH-Dx*	
Volatiles							
Gasoline	ND	mg/L	0.100	6/6/22 19:48	ARC	NWTPH-Gx	
Surrogate: 4-Bromofluorobenzene	*101%*		*50-150*	*6/6/22 19:48*	*ARC*	*NWTPH-Gx*	
Benzene	ND	ug/L	0.500	6/6/22 22:59	ARC	EPA 8260D	R15
Ethylbenzene	ND	ug/L	0.500	6/6/22 22:59	ARC	EPA 8260D	R15
m/p Xylenes (MCL for total)	ND	ug/L	0.500	6/6/22 22:59	ARC	EPA 8260D	R15
o-Xylene (MCL for total)	ND	ug/L	0.500	6/6/22 22:59	ARC	EPA 8260D	R15
Toluene	ND	ug/L	0.500	6/6/22 22:59	ARC	EPA 8260D	R15
Surrogate: 1,2-Dichlorobenzene-d4	*99.0%*		*70-130*	*6/6/22 22:59*	*ARC*	*EPA 8260D*	
Surrogate: 4-Bromofluorobenzene	*91.8%*		*70-130*	*6/6/22 22:59*	*ARC*	*EPA 8260D*	
Surrogate: Toluene-d8	*100%*		*70-130*	*6/6/22 22:59*	*ARC*	*EPA 8260D*	

Authorized Signature,

Kathleen A. Sattler

Kathleen Sattler, Laboratory Manager

R15	MS/MSD RPD exceeded method acceptance limit. Matrix spike recovery was outside acceptance criteria. Batch precision and accuracy were demonstrated.
PQL	Practical Quantitation Limit
ND	Not Detected
MCL	EPA's Maximum Contaminant Level
Dry	Sample results reported on a dry weight basis
*	Not a state-certified analyte
RPD	Relative Percent Difference
%REC	Percent Recovery
Source	Sample that was spiked or duplicated.

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Certifications

Code	Description	Facility	Number
W WA DOE	Washington Department of Ecology	Anatek-Spokane, WA	C585

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Quality Control Data

Inorganics

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: BCF0159 - W Ions										
Blank (BCF0159-BLK1)					Prepared & Analyzed: 6/3/2022					
Nitrate-N	ND		0.100	mg/L						
Sulfate	ND		0.100	mg/L						
Blank (BCF0159-BLK2)					Prepared & Analyzed: 6/3/2022					
Nitrate-N	ND		0.100	mg/L						
Sulfate	ND		0.100	mg/L						
LCS (BCF0159-BS1)					Prepared & Analyzed: 6/3/2022					
Nitrate-N	3.81			mg/L	4.00		95.1	90-110		
Sulfate	3.95			mg/L	4.00		98.7	90-110		
LCS (BCF0159-BS2)					Prepared & Analyzed: 6/3/2022					
Nitrate-N	4.05			mg/L	4.00		101	90-110		
Sulfate	4.28			mg/L	4.00		107	90-110		
Matrix Spike (BCF0159-MS1)		**Source: WCF0179-01**			Prepared & Analyzed: 6/3/2022					
Nitrate-N	22.8			mg/L	4.00	19.0	97.0	80-120		
Sulfate	66.6			mg/L	4.00	62.6	100	80-120		
Matrix Spike Dup (BCF0159-MSD1)		**Source: WCF0179-01**			Prepared & Analyzed: 6/3/2022					
Nitrate-N	22.9			mg/L	4.00	19.0	97.9	80-120	0.149	20
Sulfate	66.6			mg/L	4.00	62.6	100	80-120	0.00931	20
Batch: BCF0191 - W Ions										
Blank (BCF0191-BLK1)					Prepared & Analyzed: 6/6/2022					
Sulfate	ND		0.100	mg/L						

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Quality Control Data
(Continued)

Inorganics (Continued)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: BCF0191 - W Ions (Continued)										
Blank (BCF0191-BLK2)					Prepared & Analyzed: 6/6/2022					
Sulfate	ND		0.100	mg/L						
LCS (BCF0191-BS1)					Prepared & Analyzed: 6/6/2022					
Sulfate	4.21			mg/L	4.00		105	90-110		
LCS (BCF0191-BS2)					Prepared & Analyzed: 6/6/2022					
Sulfate	4.01			mg/L	4.00		100	90-110		
Matrix Spike (BCF0191-MS1)		**Source: WCF0112-01**			Prepared & Analyzed: 6/7/2022					
Sulfate	66.1			mg/L	4.00	62.2	97.6	80-120		
Matrix Spike Dup (BCF0191-MSD1)		**Source: WCF0112-01**			Prepared & Analyzed: 6/7/2022					
Sulfate	66.1			mg/L	4.00	62.2	97.6	80-120	0.000600	20
Batch: BCF0294 - W Ions										
Blank (BCF0294-BLK1)					Prepared & Analyzed: 6/7/2022					
Sulfate	ND		0.100	mg/L						
Blank (BCF0294-BLK2)					Prepared & Analyzed: 6/7/2022					
Sulfate	ND		0.100	mg/L						
LCS (BCF0294-BS1)					Prepared & Analyzed: 6/7/2022					
Sulfate	4.20			mg/L	4.00		105	90-110		
LCS (BCF0294-BS2)					Prepared & Analyzed: 6/7/2022					
Sulfate	4.26			mg/L	4.00		106	90-110		

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Quality Control Data
(Continued)

Inorganics (Continued)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: BCF0294 - W Ions (Continued)										
Matrix Spike (BCF0294-MS1)		**Source: WCF0179-04**			Prepared & Analyzed: 6/7/2022					
Sulfate	13.7			mg/L	4.00	9.71	98.6	80-120		
Matrix Spike Dup (BCF0294-MSD1)		**Source: WCF0179-04**			Prepared & Analyzed: 6/7/2022					
Sulfate	13.7			mg/L	4.00	9.71	101	80-120	0.653	20

Quality Control Data
(Continued)

Metals by ICP-MS

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: BCF0140 - W 3010 Digest										
Blank (BCF0140-BLK1)					Prepared: 6/3/2022 Analyzed: 6/9/2022					
Manganese	ND		0.00100	mg/L						
LCS (BCF0140-BS1)					Prepared: 6/3/2022 Analyzed: 6/9/2022					
Manganese	0.0457		0.00100	mg/L	0.0500		91.3	85-115		
Matrix Spike (BCF0140-MS1)		**Source: WCF0048-01**			Prepared: 6/3/2022 Analyzed: 6/9/2022					
Manganese	0.279		0.00100	mg/L	0.0500	0.231	95.3	70-130		
Matrix Spike (BCF0140-MS2)		**Source: WCF0083-03**			Prepared: 6/3/2022 Analyzed: 6/9/2022					
Manganese	0.0634		0.00100	mg/L	0.0500	0.00849	110	70-130		
Matrix Spike Dup (BCF0140-MSD1)		**Source: WCF0048-01**			Prepared: 6/3/2022 Analyzed: 6/9/2022					
Manganese	0.274		0.00100	mg/L	0.0500	0.231	85.4	70-130	1.79	20
Matrix Spike Dup (BCF0140-MSD2)		**Source: WCF0083-03**			Prepared: 6/3/2022 Analyzed: 6/9/2022					
Manganese	0.0659		0.00100	mg/L	0.0500	0.00849	115	70-130	3.79	20

Quality Control Data
(Continued)

Hydrocarbons

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: BCF0465 - W TPH-Dx										
Blank (BCF0465-BLK1)					Prepared & Analyzed: 6/15/2022					
Diesel	ND		0.160	mg/L						
Lube Oil	ND		0.400	mg/L						
Mineral Oil	ND		0.160	mg/L						
Surrogate: n-Hexacosane			*45.8*	*ppm*	*50.1*		*91.4*	*50-150*		
LCS (BCF0465-BS1)					Prepared & Analyzed: 6/15/2022					
Diesel	0.737		0.160	mg/L	1.00		73.7	70-130		
Lube Oil	ND		0.400	mg/L				70-130		
Surrogate: n-Hexacosane			*44.9*	*ppm*	*50.1*		*89.6*	*50-150*		
Duplicate (BCF0465-DUP1)		**Source: WCF0179-02**			Prepared: 6/15/2022 Analyzed: 6/16/2022					
Diesel	ND		0.160	mg/L		ND				20

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Quality Control Data
(Continued)

Hydrocarbons (Continued)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: BCF0465 - W TPH-Dx (Continued)										
Duplicate (BCF0465-DUP1)		**Source: WCF0179-02**			Prepared: 6/15/2022 Analyzed: 6/16/2022					
Lube Oil	ND		0.400	mg/L		ND				20
Mineral Oil	ND		0.160	mg/L		ND				20
Surrogate: n-Hexacosane			*47.0*	*ppm*	*50.1*		*93.8*	*50-150*		
Matrix Spike (BCF0465-MS1)		**Source: WCF0179-05**			Prepared: 6/15/2022 Analyzed: 6/16/2022					
Diesel	0.883		0.160	mg/L	1.00	ND	88.3	70-130		
Lube Oil	ND		0.400	mg/L		ND		70-130		
Surrogate: n-Hexacosane			*45.8*	*ppm*	*50.1*		*91.5*	*50-150*		
Matrix Spike Dup (BCF0465-MSD1)		**Source: WCF0179-05**			Prepared: 6/15/2022 Analyzed: 6/16/2022					
Diesel	0.910		0.160	mg/L	1.00	ND	91.0	70-130	2.93	20
Lube Oil	ND		0.400	mg/L		ND		70-130		20
Surrogate: n-Hexacosane			*47.2*	*ppm*	*50.1*		*94.1*	*50-150*		

Quality Control Data
(Continued)

Volatiles

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: BCF0198 - W VOC										
Blank (BCF0198-BLK1)					Prepared & Analyzed: 6/6/2022					
Benzene	ND	R15	0.500	ug/L						
Ethylbenzene	ND	R15	0.500	ug/L						
m/p Xylenes (MCL for total)	ND	R15	0.500	ug/L						
o-Xylene (MCL for total)	ND	R15	0.500	ug/L						
Toluene	ND	R15	0.500	ug/L						
Surrogate: Toluene-d8			*5.05*	*ug/L*	*5.00*		*101*	*70-130*		
Surrogate: 1,2-Dichlorobenzene-d4			*5.04*	*ug/L*	*5.00*		*101*	*70-130*		
Surrogate: 4-Bromofluorobenzene			*4.81*	*ug/L*	*5.00*		*96.2*	*70-130*		
LCS (BCF0198-BS1)					Prepared & Analyzed: 6/6/2022					
Benzene	5.27	R15	0.500	ug/L	5.00		105	70-130		
Ethylbenzene	5.19	R15	0.500	ug/L	5.00		104	70-130		
o-Xylene (MCL for total)	5.27	R15	0.500	ug/L	5.00		105	70-130		
Toluene	5.02	R15	0.500	ug/L	5.00		100	70-130		
Surrogate: Toluene-d8			*5.12*	*ug/L*	*5.00*		*102*	*70-130*		
Surrogate: 1,2-Dichlorobenzene-d4			*4.98*	*ug/L*	*5.00*		*99.6*	*70-130*		
Surrogate: 4-Bromofluorobenzene			*5.04*	*ug/L*	*5.00*		*101*	*70-130*		
Matrix Spike (BCF0198-MS1)		**Source: WCF0083-03**			Prepared & Analyzed: 6/6/2022					
Benzene	9.68	R15		ug/L	9.55	0.00	101	70-130		
Ethylbenzene	9.83	R15		ug/L	9.55	0.00	103	70-130		
o-Xylene (MCL for total)	10.0	R15		ug/L	9.55	0.00	105	70-130		
Toluene	9.09	R15		ug/L	9.55	0.00	95.2	70-130		
Surrogate: Toluene-d8			*5.11*	*ug/L*	*5.00*		*102*	*70-130*		
Surrogate: 1,2-Dichlorobenzene-d4			*5.00*	*ug/L*	*5.00*		*100*	*70-130*		
Surrogate: 4-Bromofluorobenzene			*5.27*	*ug/L*	*5.00*		*105*	*70-130*		
Matrix Spike Dup (BCF0198-MSD1)		**Source: WCF0083-03**			Prepared & Analyzed: 6/6/2022					

Anatek Labs, Inc.

1282 Alturas Drive - Moscow, ID 83843 - (208) 883-2839 - Fax (208) 8829246 - email moscow@anateklabs.com
504 E Sprague Ste. D - Spokane, WA 99202 - (509) 838-3999 - fax (509) 838-4433 - email spokane@anateklabs.com

Quality Control Data
(Continued)

Volatiles (Continued)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: BCF0198 - W VOC (Continued)										
Matrix Spike Dup (BCF0198-MSD1)		**Source: WCF0083-03**			Prepared & Analyzed: 6/6/2022					
Benzene	7.81	R15		ug/L	9.55	0.00	81.8	70-130	21.4	20
Ethylbenzene	7.92	R15		ug/L	9.55	0.00	82.9	70-130	21.5	20
o-Xylene (MCL for total)	7.97	R15		ug/L	9.55	0.00	83.5	70-130	22.8	20
Toluene	7.37	R15		ug/L	9.55	0.00	77.2	70-130	20.9	20
Surrogate: Toluene-d8			*5.11*	*ug/L*	*5.00*		*102*	*70-130*		
Surrogate: 1,2-Dichlorobenzene-d4			*4.99*	*ug/L*	*5.00*		*99.8*	*70-130*		
Surrogate: 4-Bromofluorobenzene			*5.18*	*ug/L*	*5.00*		*104*	*70-130*		
Batch: BCF0220 - W VOC										
Blank (BCF0220-BLK1)					Prepared & Analyzed: 6/6/2022					
Gasoline	ND		0.100	mg/L						
Surrogate: 4-Bromofluorobenzene			*103*	*ug/L*	*100*		*103*	*50-150*		
LCS (BCF0220-BS1)					Prepared & Analyzed: 6/6/2022					
Gasoline	3.85		0.100	mg/L	3.82		101	80-120		
Surrogate: 4-Bromofluorobenzene			*93.6*	*ug/L*	*100*		*93.6*	*50-150*		
LCS Dup (BCF0220-BSD1)					Prepared & Analyzed: 6/6/2022					
Gasoline	3.75		0.100	mg/L	3.82		98.2	80-120	2.60	20
Surrogate: 4-Bromofluorobenzene			*92.8*	*ug/L*	*100*		*92.8*	*50-150*		
Matrix Spike (BCF0220-MS1)		**Source: WCF0083-03**			Prepared & Analyzed: 6/6/2022					
Gasoline	3.77		0.100	mg/L	3.82	ND	98.9	70-130		
Surrogate: 4-Bromofluorobenzene			*98.0*	*ug/L*	*100*		*98.0*	*50-150*		
Matrix Spike Dup (BCF0220-MSD1)		**Source: WCF0083-03**			Prepared & Analyzed: 6/6/2022					
Gasoline	3.81		0.100	mg/L	3.82	ND	99.8	70-130	0.919	20
Surrogate: 4-Bromofluorobenzene			*96.3*	*ug/L*	*100*		*96.3*	*50-150*		

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

Quality Control Data
(Continued)

Volatiles (Continued)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: BCF0224 - W VOC										
Blank (BCF0224-BLK1)					Prepared & Analyzed: 6/7/2022					
Gasoline	ND		0.100	mg/L						
Surrogate: 4-Bromofluorobenzene			*103*	*ug/L*	*100*		*103*	*50-150*		
LCS (BCF0224-BS1)					Prepared & Analyzed: 6/7/2022					
Gasoline	3.72		0.100	mg/L	3.82		97.4	80-120		
Surrogate: 4-Bromofluorobenzene			*93.5*	*ug/L*	*100*		*93.5*	*50-150*		

WCF0179

Due: 06/17/22

Chain of Custody Record

ANATEK LABS

Anatek La
1282 Alturas Drive, Moscow
504 E Sprague Ste D, Spokane

Turn Arc

Please refer to ... around times at www.anateklabs.com/pricing-lists

Company Name: GeoEngineers	Project Manager: Kurt Harrington
Address: 5820 S Kelly Ave, Ste B	Project Name & #: Pasco Terminal 009991-005-00
City: Portland State: OR Zip: 97239	Purchase Order #: 009991-005-00
Phone: 503-906-9577	Sampler Name & Phone: Jon Weatherford 503-423-7435
Email Address(es): kharrington@geoengineers.com	

✓ Normal ___ Phone
___ Next Day* ___ Email
___ 2nd Day*
___ Other*_____
*All rush order requests must have prior approval

List Analyses Requested

Lab ID	Sample Identification	Sampling Date/Time	Matrix	# of Containers	Sample Volume	Preservative: BTEX 8260	NWTPH-Gx	NWTPH-Dx	Ferrous Fe	Mn	SO_4, NO_3	Methane	NWTPH-Dil
	MW-8-2206	6/2/22 1030	H_2O	8		✓	✓	✓	✓	✓	✓	✓	✓
	AR-8-2206	1140		8		↓	↓	↓	↓	↓	↓	↓	↓
	FD-2206	1140		8									
	AR4-2206	1305		8									
	EB-2206	1330		5									
	TW Trip Blanks					H	H						

Note Special Instructions/Comments

H = hold trip blanks for PM requested analysis if needed.

Inspection Checklist

Received Intact?		
Labels & Chains Agree?	Y	N
Containers Sealed?	Y	N
No VOC Head Space?	Y	N
Cooler?	Y	N
Ice/Ice Packs Present?	Y	N

Temperature (°C): 3.8 IR2
Number of Containers:
Shipped Via:
Preservative:
Date & Time:
Inspected By:

	Printed Name	Signature	Company	Date	Time
Relinquished by	Jon Weatherford		GeoEngineers	6/2/22	1600
Received by	Joseph Pippin		Anatek	6/3/22	9:52
Relinquished by					
Received by					
Relinquished by					
Received by					

Samples submitted to Anatek Labs may be subcontacted to other accredited labs if necessary. This message serves as notice of this possibility. Subcontracted analyses will be clearly noted on the analytical report.

Anatek Labs, Inc.

Sample Receipt and Preservation Form

WCF0179

Due: 06/17/22

Client Name: GeoEngineers Cascadia Project: (apply Anatek

TAT: Normal RUSH: _____ days

Samples Received From: FedEx UPS USPS Client Courier Other: _____

Custody Seal on Cooler/Box: Yes No Custody Seals Intact: Yes No N/A

Number of Coolers/Boxes: 1 Type of Ice: Ice/Ice Packs Blue Ice Dry Ice None

Packing Material: Bubble Wrap Bags Foam/Peanuts None Other: _____

Cooler Temp As Read (°C): 3.8 Cooler Temp Corrected (°C): / Thermometer Used: 112

				Comments:
Samples Received Intact?	Yes	No	N/A	
Chain of Custody Present?	Yes	No	N/A	
Samples Received Within Hold Time?	Yes	No	N/A	
Samples Properly Preserved?	Yes	No	N/A	
VOC Vials Free of Headspace (<6mm)?	Yes	No	N/A	
VOC Trip Blanks Present?	Yes	No	N/A	
Labels and Chains Agree?	Yes	No	N/A	
Total Number of Sample Bottles Received: _____				

Chain of Custody Fully Completed?	Yes	No	N/A	
Correct Containers Received?	Yes	No	N/A	
Anatek Bottles Used?	Yes	No	Unknown	

Record preservatives (and lot numbers, if known) for containers below:

HCl 210273722 HCl (VOA) 2103533

pH 2102558

Notes, comments, etc. (also use this space if contacting the client - record names and date/time)

Received/Inspected By: _____ Date/Time: 952 6/3/22

Form F06.00 - Eff. 10 Nov. 2021

Analytical Resources, LLC
Analytical Chemists and Consultants

11 June 2022

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

RE: WCF0179

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)
22F0106	N/A

Shelly Fishel
Digitally signed by Shelly Fishel
Date: 2022.06.11 12:50:59 -07'00'

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, LLC

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Shelly Fishel, Project Manager

ACCREDITED IN ACCORDANCE WITH nelac
Cert# 100006-012

22F0106

1.3°C

Anatek Labs, Inc.

SUBCONTRACT ORDER

1282 Alturas Drive - Moscow, ID 83843 - (208) 8832839 - Fax (208) 8829246 - email moscow@anateklabs.com
504 E Sprague Ste. D - Spokane, WA 99202 - (509) 838-3999 - fax (509) 838-4433 - email spokane@anateklabs.com

Sending Laboratory:

Anatek Labs, Inc.- Spokane
504 E Sprague Ave, Suite D
Spokane, WA 99202
Phone: 509-838-3999
Fax: 509-838-4433

Project Manager: Kathleen Sattler
kathy@anateklabs.com

Subcontracted Laboratory:

Analytical Resources LLC
4611 S. 134TH Place, Suite 100
Tukwila, WA 98168
Phone: (206) 695-6200
Fax: (206) 695-6202

Work Order: WCF0179

Analysis	Due	Expires	Comments
Lab Sample ID: WCF0179-01 ***Water*** ***Sampled: 06/02/2022 10:30***			
Client Sample Name: MW-8-2206			
W Methane	06/15/2022	06/16/2022 10:30	
Containers Supplied:			
Lab Sample ID: WCF0179-02 ***Water*** ***Sampled: 06/02/2022 11:40***			
Client Sample Name: AR-8-2206			
W Methane	06/15/2022	06/16/2022 11:40	
Containers Supplied:			
Lab Sample ID: WCF0179-03 ***Water*** ***Sampled: 06/02/2022 11:40***			
Client Sample Name: FD-2206			
W Methane	06/15/2022	06/16/2022 11:40	
Containers Supplied:			
Lab Sample ID: WCF0179-04 ***Water*** ***Sampled: 06/02/2022 13:05***			
Client Sample Name: AR-1-2206			
W Methane	06/15/2022	06/16/2022 13:05	
Containers Supplied:			

Released By — Date 6/6/22 — Received By — Date 06/07/22

Anatek Labs, Inc. Spokane	Project: WCF0179	
504 East Sprague, Suite D	Project Number: [none]	**Reported:**
Spokane WA, 99202	Project Manager: Kathy Sattler	11-Jun-2022 12:47

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-8-2206	22F0106-01	Water	02-Jun-2022 10:30	06-Jun-2022 11:00
AR-8-2206	22F0106-02	Water	02-Jun-2022 11:40	06-Jun-2022 11:00
FD-2206	22F0106-03	Water	02-Jun-2022 11:40	06-Jun-2022 11:00
AR-1-2206	22F0106-04	Water	02-Jun-2022 13:05	06-Jun-2022 11:00

Anatek Labs, Inc. Spokane	Project: WCF0179	
504 East Sprague, Suite D	Project Number: [none]	**Reported:**
Spokane WA, 99202	Project Manager: Kathy Sattler	11-Jun-2022 12:47

Work Order Case Narrative

Client: Anatek Labs, Inc. Spokane
Project: WCF0179
Work Order: 22F0106

Sample receipt

Samples as listed on the preceding page were received 06-Jun-2022 11:00 under ARI work order 22F0106. For details regarding sample receipt, please refer to the Cooler Receipt Form.

Volatile Gases - MEE by RSK175

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

The vial used for sample 22F0106-03 contained bubbles >4mm in diameter. The vial use for sample 22F0106-04 contained headspace.

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 blank spike and blank spike duplicate (BS/LCS and BSD/LCSD) spike recoveries and relative percent difference (RPD) were within control limits.

Analytical Resources, LLC
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Anatek

Project Name: ______

COC No(s): ______ NA

Delivered by: Fed-Ex (UPS) Courier Hand Delivered Other: ______

Assigned ARI Job No: 22F0106

Tracking No: 1Z2AA95Y0394B2210 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 1100 — 7.3

If cooler temperature is out of compliance fill out form 00070F — Temp Gun ID#: 9708

Cooler Accepted by: [initials] Date: 06/07/22 Time: 1100

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: HN Date: 06/07/22 Time: 16:07 Labels checked by: ______

***** 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:

Analytical Resources, LLC
Analytical Chemists and Consultants

Cooler Temperature Compliance Form

ARI Work Order: 22F0106

Cooler#: _____ **Temperature(°C):** 7.3°C

Sample ID	Bottle Count	Bottle Type
Sample received @ over 6°C		

Cooler#: _____ **Temperature(°C):** _____

Sample ID	Bottle Count	Bottle Type

Cooler#: _____ **Temperature(°C):** _____

Sample ID	Bottle Count	Bottle Type

Cooler#: _____ **Temperature(°C):** _____

Sample ID	Bottle Count	Bottle Type

Completed by: HN Date: 06/01/22 Time: 11:00

Anatek Labs, Inc. Spokane	Project: WCF0179	
504 East Sprague, Suite D	Project Number: [none]	**Reported:**
Spokane WA, 99202	Project Manager: Kathy Sattler	11-Jun-2022 12:47

MW-8-2206

22F0106-01 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 06/02/2022 10:30
Instrument: FID6 Analyst: LH — Analyzed: 06/08/2022 08:13

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 22F0106-01 A
Preparation Batch: BKF0174 — Sample Size: 10 mL
Prepared: 06/08/2022 — 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			*62-122 %*	*98.5*	*%*	

Anatek Labs, Inc. Spokane	Project: WCF0179	
504 East Sprague, Suite D	Project Number: [none]	**Reported:**
Spokane WA, 99202	Project Manager: Kathy Sattler	11-Jun-2022 12:47

AR-8-2206

22F0106-02 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 06/02/2022 11:40

Instrument: FID6 Analyst: LH — Analyzed: 06/08/2022 08:31

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 22F0106-02 A

Preparation Batch: BKF0174 — Sample Size: 10 mL

Prepared: 06/08/2022 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Methane	74-82-8	1	0.65	7.61	ug/L	
Surrogate: Propane			*62-122 %*	*91.2*	*%*	

Anatek Labs, Inc. Spokane	Project: WCF0179	
504 East Sprague, Suite D	Project Number: [none]	**Reported:**
Spokane WA, 99202	Project Manager: Kathy Sattler	11-Jun-2022 12:47

FD-2206

22F0106-03 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 06/02/2022 11:40
Instrument: FID6 Analyst: LH — Analyzed: 06/08/2022 08:49

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 22F0106-03 A
Preparation Batch: BKF0174 — Sample Size: 10 mL
Prepared: 06/08/2022 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Methane	74-82-8	1	0.65	7.53	ug/L	
Surrogate: Propane			*62-122 %*	*96.2*	*%*	

Anatek Labs, Inc. Spokane	Project: WCF0179	
504 East Sprague, Suite D	Project Number: [none]	**Reported:**
Spokane WA, 99202	Project Manager: Kathy Sattler	11-Jun-2022 12:47

AR-1-2206

22F0106-04 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 06/02/2022 13:05

Instrument: FID6 Analyst: LH — Analyzed: 06/08/2022 09:07

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 22F0106-04 A

Preparation Batch: BKF0174 — Sample Size: 10 mL

Prepared: 06/08/2022 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Methane	74-82-8	1	0.65	155	ug/L	
Surrogate: Propane			*62-122 %*	*85.3*	*%*	

Anatek Labs, Inc. Spokane	Project: WCF0179	
504 East Sprague, Suite D	Project Number: [none]	**Reported:**
Spokane WA, 99202	Project Manager: Kathy Sattler	11-Jun-2022 12:47

Analysis by: Analytical Resources, LLC

Dissolved Gases - Quality Control

Batch BKF0174 - EPA 5030C (Purge and Trap)

Instrument: FID6 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKF0174-BLK1)				Prepared: 08-Jun-2022 Analyzed: 08-Jun-2022 07:32						
Methane	ND	0.65	ug/L							U
Surrogate: Propane	1780		ug/L	*1800*		*98.9*	*62-122*			
LCS (BKF0174-BS1)				Prepared: 08-Jun-2022 Analyzed: 08-Jun-2022 06:23						
Methane	631	0.65	ug/L	656		96.2	80-120			
Surrogate: Propane	1860		ug/L	*1800*		*103*	*62-122*			
LCS Dup (BKF0174-BSD1)				Prepared: 08-Jun-2022 Analyzed: 08-Jun-2022 06:41						
Methane	659	0.65	ug/L	656		100	80-120	4.29	30	
Surrogate: Propane	1850		ug/L	*1800*		*103*	*62-122*			

Anatek Labs, Inc. Spokane	Project: WCF0179	
504 East Sprague, Suite D	Project Number: [none]	**Reported:**
Spokane WA, 99202	Project Manager: Kathy Sattler	11-Jun-2022 12:47

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	03/28/2023
NELAP	ORELAP - Oregon Laboratory Accreditation Program	WA100006-012	05/12/2023
WADOE	WA Dept of Ecology	C558	06/30/2022
WA-DW	Ecology - Drinking Water	C558	06/30/2022

Anatek Labs, Inc. Spokane	Project: WCF0179	
504 East Sprague, Suite D	Project Number: [none]	**Reported:**
Spokane WA, 99202	Project Manager: Kathy Sattler	11-Jun-2022 12:47

Notes and Definitions

*	Flagged value is not within established control limits.
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.

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
	Jun-20	NS	NS	NS	NS	NS	NS	NS
	Jul-21	**1,530**	**3,550**	**730**	**4,850**	**4520** [1]	**2,700**	**1,200**
	Jun-22	**1,080**	**1,080**	376	**4,750**	**43,600**	<160	<400
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	*1.0 U*	*1.0 U*	*1.0 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**
FD (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*
	Jun-20	**132**	*50 U*	276	**3,780**	**20,100**	*160 U*	*400 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
AR-7	May-14	*1.0 U*	1.4	21	86	1,280	*20 U*	*50 U*
FD (AR-7 Dup)	May-14	*1.0 U*	*1.0 U*	16	65	883	*20 U*	*50 U*

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

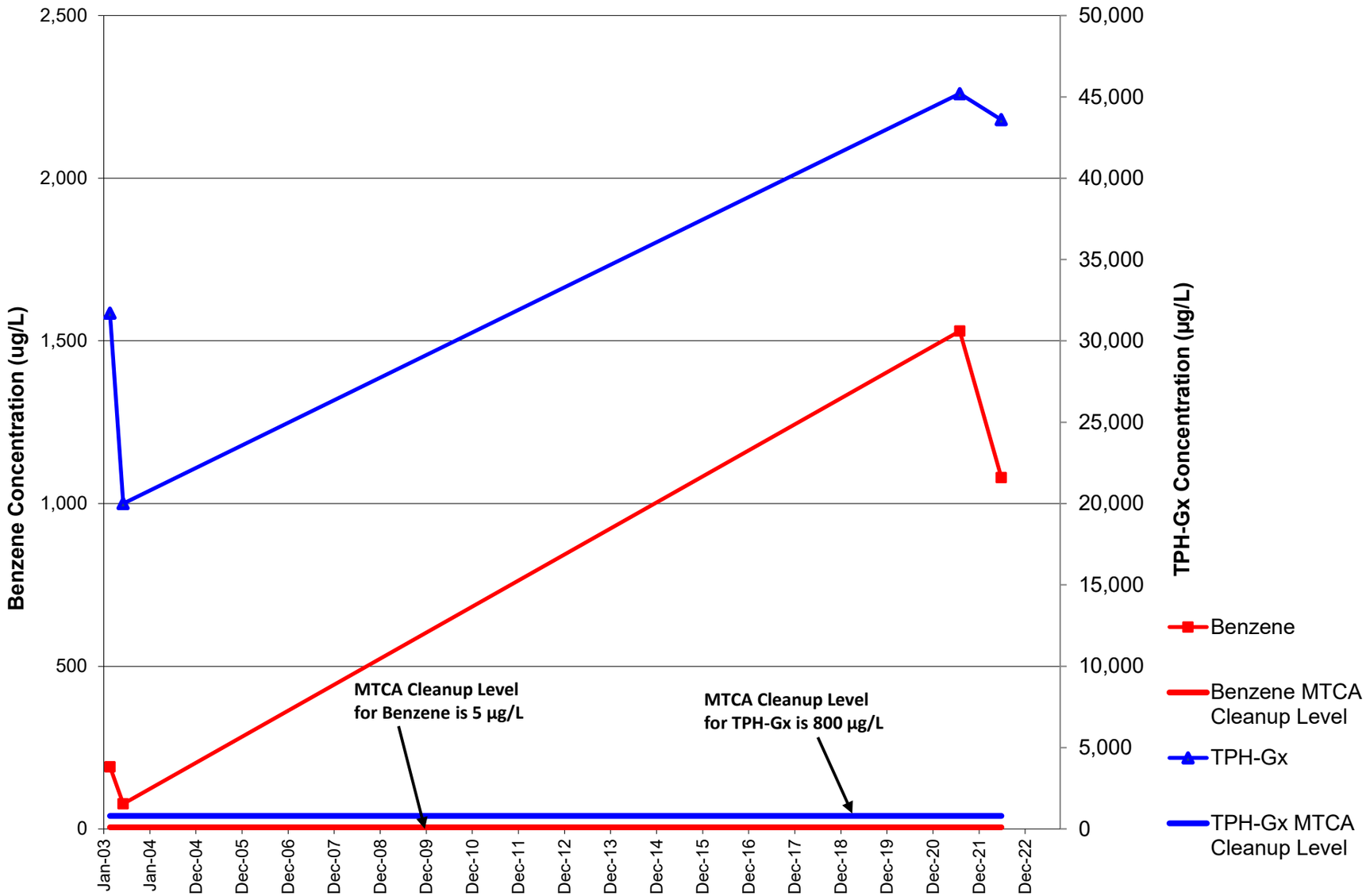
Well ID	Date	Benzene (µg/L) MCL 5	Toluene (µg/L) MCL 1,000	Ethylbenzene (µg/L) MCL 700	Total Xylenes (µg/L) 1,000	TPH-G (µg/L) MCL 800/1,000	TPH-D (µg/L) MCL 500	TPH-D - Heavy Oil (µg/L) MCL 500
AR-8	Jul-02	**47.3**	229	32	918	**5,330**	NA	NA
	Nov-02	**19.2**	**1,070**	384	**4,170**	**57,400**	NA	NA
	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
	Nov-07	**8.0**	46	35	610	**7,400**	**23,000**	**<4,700**
	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 (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 (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*
	Jun-20	*1.25 U*	*1.25 U*	61.7	109.7	**3,520**	*160 U*	*400 U*
FD (AR-8 Dup)	Jun-20	*1.25 U*	*1.25 U*	62.6	103.8	**3,220**	*160 U*	*400 U*
	Jul-21	*2.50 U*	*2.50 U*	119	121.5	**4,500**	*160 U*	*400 U*
FD (AR-8 Dup)	Jul-21	*2.50 U*	*2.50 U*	112	129.6	**4,720**	*160 U*	*400 U*
	Jun-22	*0.5 U*	*0.5 U*	25.8	27.8	**1,660**	*160 U*	*400 U*
FD (AR-8 Dup)	Jun-22	*0.5 U*	*0.5 U*	25.6	27.6	**1,650**	*160 U*	*400 U*
AR-9	Nov-01	*1 U*	*1 U*	*1 U*	*2 U*	*50 U*	NA	NA
FD (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
	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	*1.0 U*	3.5	*2.0 U*	*50 U*	NA	NA
	Nov-02	*1.0 U*	*1.0 U*	*1.0 U*	*2.0 U*	78	NA	NA
	Feb-03	*1.0 U*	*1.0 U*	*1.0 U*	*2.0 U*	*50 U*	NA	NA
	Jun-03	*1.0 U*	*1.0 U*	*1.0 U*	*2.0 U*	*50 U*	NA	NA
	Sep-03	*1.0 U*	*1.0 U*	*1.0 U*	*2.0 U*	*50 U*	NA	NA
	Mar-06	*0.5 U*	*0.5 U*	*0.5 U*	*1.0 U*	*250 U*	*250 U*	NA
	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	*1.0 U*	*1.0 U*	*1.0 U*	*2.0 U*	*50 U*	*230 U*	*560 U*
	Aug-01	*1.0 U*	*1.0 U*	*1.0 U*	*2.0 U*	*50 U*	NA	NA
	Nov-02	*1.0 U*	*1.0 U*	*1.0 U*	*2.0 U*	*50 U*	NA	NA
	Dec-03	*1.0 U*	1.9	*1.0 U*	1.1	*50 U*	NA	NA
	Mar-06	*0.5 U*	*0.5 U*	*0.5 U*	*1.0 U*	*250 U*	*250 U*	NA
	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*
	Jun-20	*0.5 U*	*0.5 U*	*0.5 U*	*1.0 U*	*100 U*	*160 U*	*400 U*
	Jul-21	*0.5 U*	*0.5 U*	*0.5 U*	*0.5 U*	*100 U*	*160 U*	*400 U*
	Jun-22	*0.5 U*	*0.5 U*	*0.5 U*	*0.5 U*	*100 U*	*160 U*	*400 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	*1.0 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
FD (MW-1 dup)	Feb-03	**453**	19.7	43	43.8	263	NA	NA
	Feb-03	**369**	15	32	33.8	240	NA	NA
FD (MW-1 dup)	Jun-03	**240**	131	78	257	**841**	NA	NA
	Jun-03	**131**	68	35	128	**1,420**	NA	NA
FD (MW-1 dup)	Sep-03	**149**	77	38	145	589	NA	NA
	Sep-03	**112**	69	26	NR	431	NA	NA
FD (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
FD (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**
	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*

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

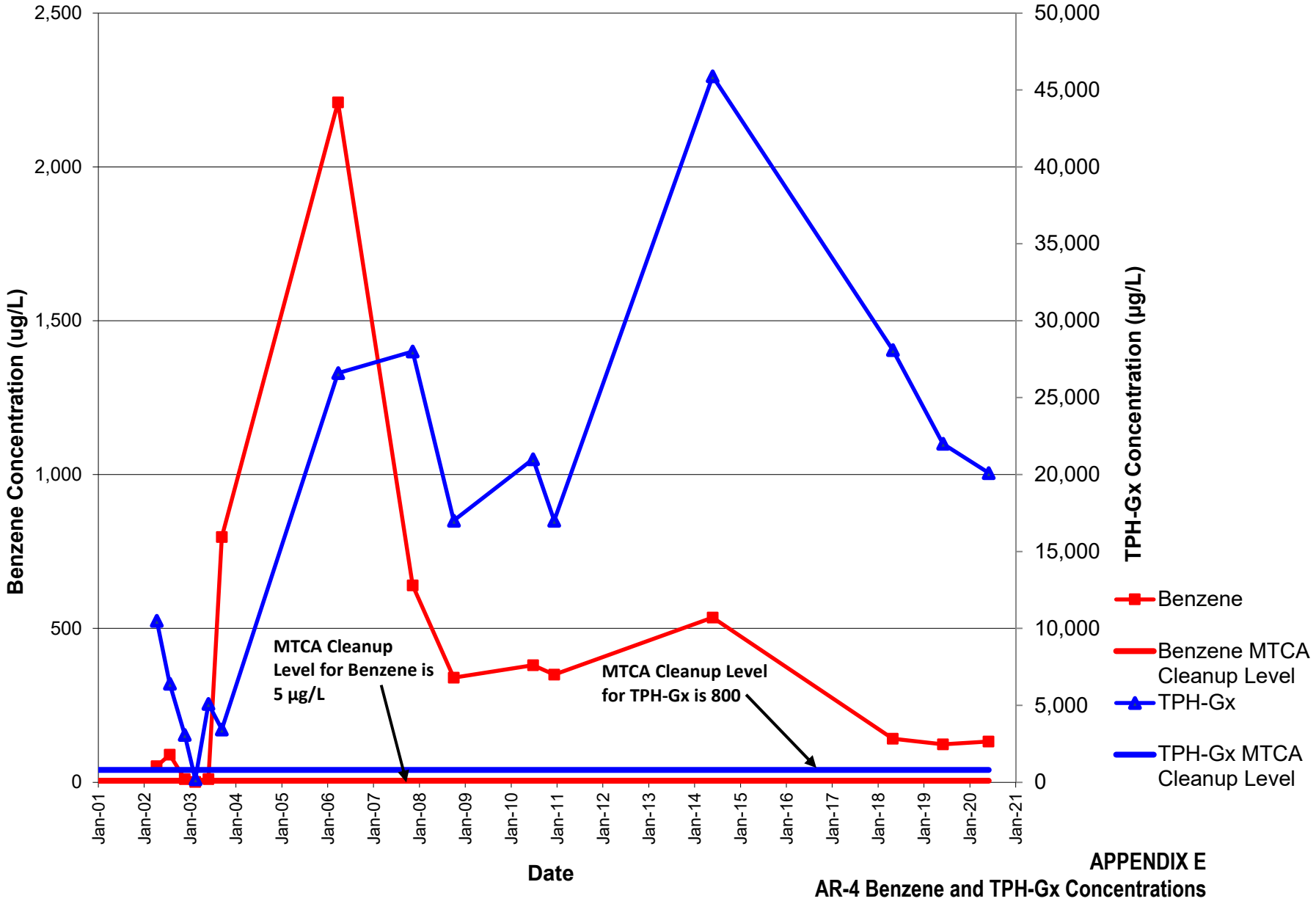
Well ID	Date	Benzene (µg/L) MCL 5	Toluene (µg/L) MCL 1,000	Ethylbenzene (µg/L) MCL 700	Total Xylenes (µg/L) 1,000	TPH-G (µg/L) MCL 800/1,000	TPH-D (µg/L) MCL 500	TPH-D - Heavy Oil (µg/L) MCL 500
MW-2	Mar-01	*1.0 U*	*1.0 U*	*1.0 U*	*2.0 U*	*50 U*	*220 U*	*540 U*
	Aug-01	*1.0 U*	*1.0 U*	*1.0 U*	*2.0 U*	*50 U*	NA	NA
	Nov-01	*1.0 U*	*1.0 U*	*1.0 U*	*2.0 U*	*50 U*	NA	NA
	Nov-02	*1.0 U*	*1.0 U*	*1.0 U*	*2.0 U*	82	NA	NA
	Mar-06	*0.5 U*	*0.5 U*	*0.5 U*	*1.0 U*	*250 U*	*250 U*	NA
	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*
MW-3	Mar-01	*1.0 U*	*1.0 U*	*1.0 U*	*2.0 U*	*50 U*	270	NA
	Aug-01	*1.0 U*	*1.0 U*	*1.0 U*	*2.0 U*	*50 U*	NA	NA
	Nov-02	*1.0 U*	*1.0 U*	*1.0 U*	*2.0 U*	117	NA	NA
	Mar-06	*0.5 U*	*0.5 U*	*0.5 U*	*1.0 U*	*250 U*	*250 U*	NA
	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	*1.0 U*	*1.0 U*	*1.0 U*	*2.0 U*	*50 U*	*200 U*	*680 U*
	Aug-01	*1.0 U*	*1.0 U*	*1.0 U*	*2.0 U*	*50 U*	NA	NA
	Nov-01	*1.0 U*	*1.0 U*	*1.0 U*	*2.0 U*	*50 U*	NA	NA
	Nov-02	*1.0 U*	*1.0 U*	*1.0 U*	*2.0 U*	55	NA	NA
	Dec-03	*1.0 U*	*1.0 U*	*1.0 U*	*2.0 U*	*50 U*	NA	NA
	Mar-06	*0.5 U*	*0.5 U*	*0.5 U*	*1.0 U*	*250 U*	*250 U*	NA
	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*
	Jun-20	*0.5 U*	*0.5 U*	*0.5 U*	*1.0 U*	*100 U*	*160 U*	*400 U*
	Jul-21	*0.5 U*	*0.5 U*	*0.5 U*	*0.5 U*	*100 U*	*160 U*	*400 U*
	Jun-22	*0.5 U*	*0.5 U*	*0.5 U*	*0.5 U*	*100 U*	*160 U*	*400 U*
MW-5	Mar-01	*1.0 U*	*1.0 U*	*1.0 U*	*2.0 U*	*50 U*	*200 U*	NA
	Aug-01	*1.0 U*	*1.0 U*	*1.0 U*	*2.0 U*	*50 U*	NA	NA
	Nov-02	*1.0 U*	*1.0 U*	*1.0 U*	*2.0 U*	**954**	NA	NA
	Mar-06	*0.5 U*	*0.5 U*	*0.5 U*	*1.0 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	*1.0 U*	*1.0 U*	*1.0 U*	*2.0 U*	*50 U*	*190 U*	*480 U*
	Aug-01	*1.0 U*	*1.0 U*	*1.0 U*	*2.0 U*	*50 U*	NA	NA
	Nov-01	*1.0 U*	*1.0 U*	*1.0 U*	*2.0 U*	*50 U*	NA	NA
	Nov-02	*1.0 U*	*1.0 U*	*1.0 U*	*2.0 U*	62	NA	NA
	Sep-03	*1.0 U*	*1.0 U*	*1.0 U*	*2.0 U*	*50 U*	NA	NA
	Dec-03	*1.0 U*	*1.0 U*	*1.0 U*	*2.0 U*	*50 U*	NA	NA
	Mar-06	*0.5 U*	*0.5 U*	*0.5 U*	*1.0 U*	*250 U*	*250 U*	NA
	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*
	Jun-20	*0.5 U*	*0.5 U*	*0.5 U*	*1.0 U*	*100 U*	*160 U*	*400 U*
	Jul-21	*0.5 U*	*0.5 U*	*0.5 U*	*0.5 U*	*100 U*	*160 U*	*400 U*
	Jun-22	*0.5 U*	*0.5 U*	*0.5 U*	*0.5 U*	*100 U*	*160 U*	*400 U*
MW-7	Mar-01	**990**	**3,000**	130	**1,260**	**11,000,000**	**1,240**	**510**
	Nov-07	**70**	530	53	930	**7,000**	**2,000**	300
	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 U**
	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*
	Jun-20	*10.0 U*	*25 U*	106	**1,241**	**8,130**	*160 U*	*400 U*
	Jul-21	*12.5 U*	15.5	120	**1,357**	**11,300**	*160 U*	*400 U*
	Jun-22	*0.5 U*	2.6	40	**502**	**3,980**	*160 U*	*400 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 above method reporting limit
N/A = Not applicable or not available
FD = Field duplicate

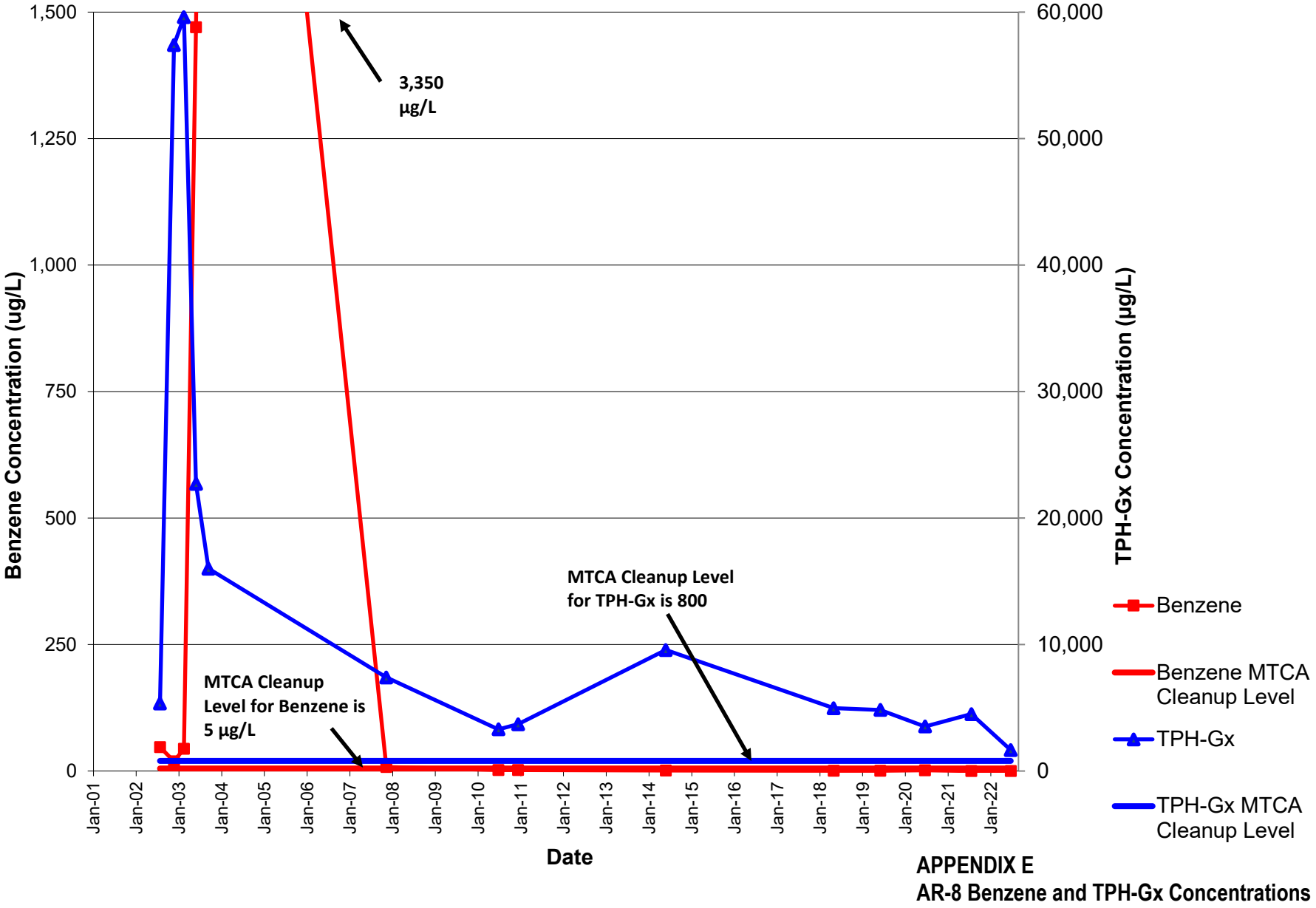
APPENDIX E
Historical Time Series Plots



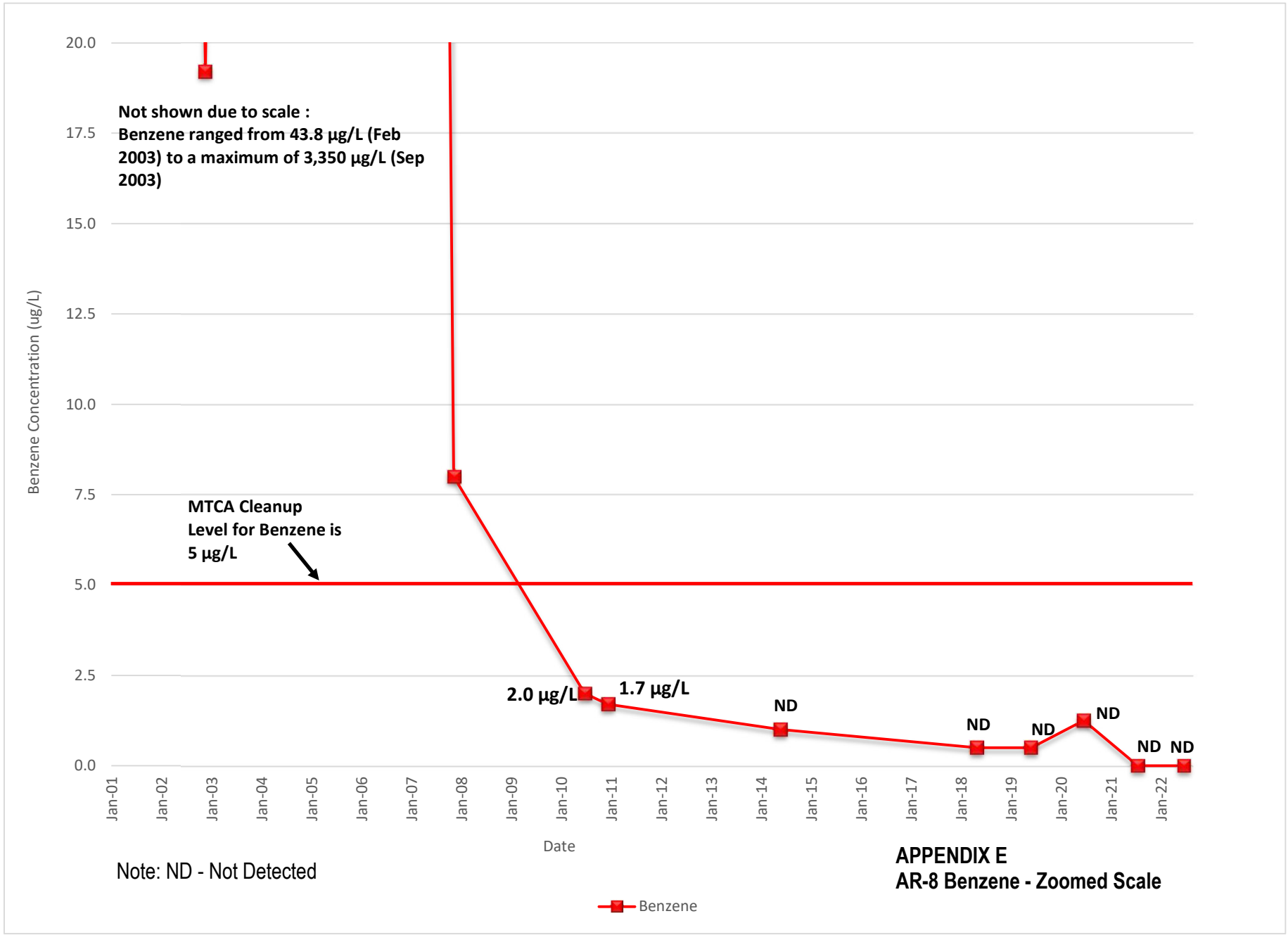
APPENDIX E
AR-1 Benzene and TPH-Gx Concentrations
Tidewater Fuel Leak Site



APPENDIX E
AR-4 Benzene and TPH-Gx Concentrations

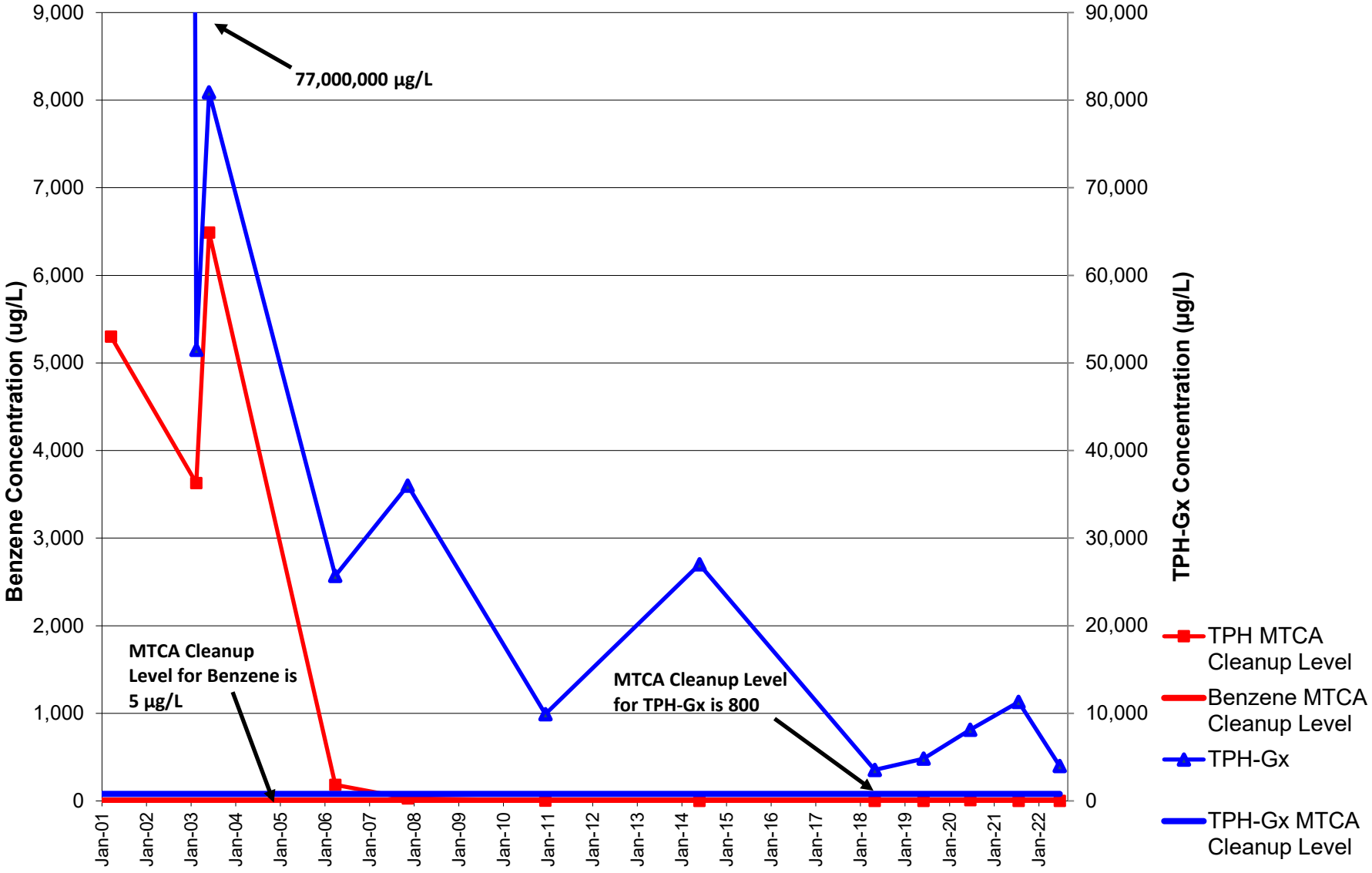


APPENDIX E
AR-8 Benzene and TPH-Gx Concentrations

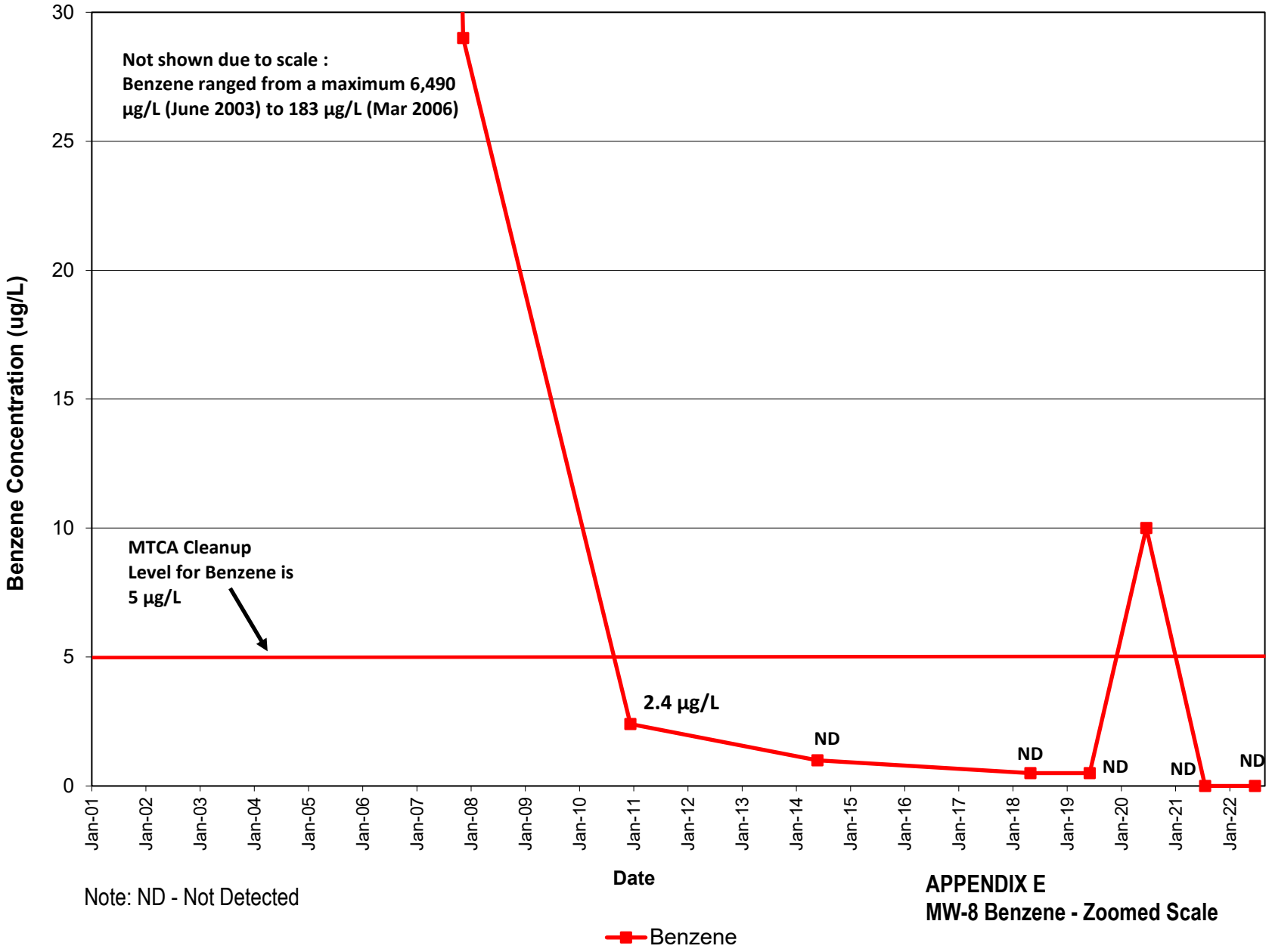


Note: ND - Not Detected

APPENDIX E
AR-8 Benzene - Zoomed Scale



APPENDIX E
MW-8 Benzene and TPH-Gx Concentrations



Note: ND - Not Detected

APPENDIX E
MW-8 Benzene - Zoomed Scale

APPENDIX F
Report Limitations and Guidelines for Use

APPENDIX F
REPORT LIMITATIONS AND GUIDELINES FOR USE[1]

This appendix provides information to help you manage your risks with respect to the use of this report.

Environmental Services are Performed for Specific Purposes, Persons and Projects

This report has been prepared for use by Tidewater Terminal Company. This report is not intended for use by others, and the information contained herein is not applicable to other sites.

GeoEngineers structures our services to meet the specific needs of our clients. For example, an environmental site assessment study conducted for a property owner may not fulfill the needs of a prospective purchaser of the same property. Because each environmental study is unique, each environmental report is unique, prepared solely for the specific client and project site. No one except Ecology should rely on this environmental report without first conferring with GeoEngineers. This report should not be applied for any purpose or project except the one originally contemplated.

This Environmental Report is Based on a Unique Set of Project-Specific Factors

This report has been prepared for the Tidewater Fuel Leak Site in Pasco, Washington. GeoEngineers considered a number of unique, project-specific factors when establishing the scope of services for this project and report. Unless GeoEngineers specifically indicates otherwise, do not rely on this report if it was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

If important changes are made after the date of this report, GeoEngineers should be given the opportunity to review our interpretations and recommendations and provide written modifications or confirmation, as appropriate.

Reliance Conditions for Third Parties

If a lending agency or other parties intend to place legal reliance on the product of our services, we require that those parties indicate in writing their acknowledgement that the scope of services provided, and the general conditions under which the services were rendered including the limitation of professional liability, are understood and accepted by them. This is to provide our firm with reasonable protection against open-ended liability claims by third parties with whom there would otherwise be no contractual limits to their actions.

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[1] Developed based on material provided by ASFE, Professional Firms Practicing in the Geosciences; www.asfe.org.

Environmental Regulations are Always Evolving

Some substances may be present in the site vicinity in quantities or under conditions that may have led, or may lead, to contamination of the subject site, but are not included in current local, state or federal regulatory definitions of hazardous substances or do not otherwise present current potential liability. GeoEngineers cannot be responsible if the standards for appropriate inquiry, or regulatory definitions of hazardous substance, change or if more stringent environmental standards are developed in the future.

Uncertainty May Remain Even After this Phase II ESA is Completed

No ESA can wholly eliminate uncertainty regarding the potential for contamination in connection with a property. Our interpretation of subsurface conditions in this study is based on field observations and chemical analytical data from widely-spaced sampling locations. It is always possible that contamination exists in areas that were not explored, sampled or analyzed.

Subsurface Conditions Can Change

This environmental report is based on conditions that existed at the time the study was performed. The findings and conclusions of this report may be affected by the passage of time, by manmade events such as construction on or adjacent to the site, by new releases of hazardous substances, or by natural events such as floods, earthquakes, slope instability or groundwater fluctuations. Always contact GeoEngineers before applying this report to determine if it is still applicable.

Most Environmental Findings are Professional Opinions

Our interpretations of subsurface conditions are based on field observations and chemical analytical data from widely spaced sampling locations at the site. Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. GeoEngineers reviewed field and laboratory data and then applied our professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ – sometimes significantly – from those indicated in this report. Our report, conclusions and interpretations should not be construed as a warranty of the subsurface conditions.

Do Not Redraw the Field Forms

Environmental scientists prepare field forms based upon their collected field data. To prevent errors or omissions, the forms included in an environmental report should never be redrawn for inclusion in other design drawings. Only photographic or electronic reproduction is acceptable, but recognize that separating forms from the report can elevate risk.

Read These Provisions Closely

Some clients, design professionals and contractors may not recognize that the geoscience practices (geotechnical engineering, geology and environmental science) are far less exact than other engineering and natural science disciplines. This lack of understanding can create unrealistic expectations that could lead to disappointments, claims and disputes. GeoEngineers includes these explanatory “limitations” provisions in our reports to help reduce such risks. Please confer with GeoEngineers if you are unclear how these “Report Limitations and Guidelines for Use” apply to your project or site. Geotechnical, Geologic and GeoEnvironmental Reports Should Not Be Interchanged.

The equipment, techniques and personnel used to perform an environmental study differ significantly from those used to perform a geotechnical or geologic study and vice versa. For that reason, a geotechnical engineering or geologic report does not usually relate any environmental findings, conclusions or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. Similarly, environmental reports are not used to address geotechnical or geologic concerns regarding a specific project.

GeoEngineers