WSDOT

SR 520 BRIDGE REPLACEMENT AND HOV PROGRAM

LETTER OF TRANSMITTAL

To:	Julia Mizuhata	**Contract & Task Order:**	Y-11848 DA
From:	Ron Paananen	**File Code:**	Y-11848 DA 4.1.21
Date:	October 31, 2023		
Copies To:	WSDOT Document Control Project Files	**LOT #:**	LOT-2799

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- ☐ For Your Information
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- ☐ For Your Files
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We are transmitting the following materials:

Y-11848 DA 4.1.21 FINAL Q6 Groundwater Monitoring Report

Comments:

Please find the above document(s) enclosed. We are submitting the *Final Groundwater Monitoring Report for Quarter 6 of the Montlake Phase: Montlake Gas Station - Hazardous Material Cleanup Project* in accordance with Contract Y-11848, Task Order DA, Deliverables 4.1.21.

Program Engineering Manager

11/1/2023
Date

Wells Fargo Building
999 Third Ave., Suite 2300
Seattle, WA 98104
Phone: 206-770-3500

MEMORANDUM

To: Ron Paananen, HDR

From: Joseph Sawdey, LG, LHG
Meg Strong, LG, LHG
Shannon & Wilson

Date: October 30, 2023

Copies To: Robyn Boyd
Dave Becher
Margaret Kucharski

Contract & Task Order: DA Deliverable 4.1.21

File Code:

Subject: Groundwater Monitoring Memorandum – Quarter No. 6, Voluntary Cleanup Program NW3242, Montlake Gas Station, Seattle, Washington

Background

In 2019, the Washington State Department of Transportation (WSDOT) entered the Former Montlake Gas Station property located in Seattle, Washington (site), into the Washington State Department of Ecology (Ecology) Voluntary Cleanup Program (VCP).

As part of the VCP application, Shannon & Wilson submitted a Remedial Investigation (RI) work plan and a subsequent RI report to Ecology, on behalf of WSDOT. The RI report included investigation data that was used to characterize the nature and extent of petroleum hydrocarbon contamination in soil and groundwater associated with historic fueling operations at the site (Shannon & Wilson, 2020).

In 2021, PBS Engineering and Environmental prepared and submitted to Ecology a Remedial Action Plan detailing the proposed remediation excavation activities (PBS, 2021a). In August and September 2021, PBS oversaw the closure and removal of the site's underground storage tanks and piping, as well as the excavation of the associated petroleum-contaminated soil source zone (source zone), as documented in the Remedial Action Completion Report (PBS, 2021b). Soil compliance has been achieved at the site, as documented by confirmation sampling performed by PBS during the remedial excavation.

Groundwater compliance is currently being evaluated. On April 19 and 20, 2022, Shannon & Wilson installed additional compliance groundwater monitoring (CGM) wells at the site following Ecology recommendations (Shannon & Wilson, 2022a). The CGM well network

for the site previously consisted of six monitoring wells: MW-2-19, MW-3-19, MW-6-22, MW-7-22, MW-8-22, and MW-9-22. On July 10, 2023, MW-7-22 was decommissioned due to ongoing project construction needs, and the CGM well network now consists of the remaining five wells listed above. (Note: groundwater monitoring was performed on July 6, 2023, at MW-7-22 immediately prior to the well being decommissioned. The results from sampling MW-7-22 are presented herein.) The monitoring wells have been surveyed and locations are depicted in Exhibit 1. This memorandum presents the results of Quarter No. 6 CGM and documents the continued effect(s) of the source zone removal on site groundwater quality. Results of the Quarter Nos. 1 through 5 CGM have been presented previously under a separate cover (Shannon & Wilson, 2022b, 2022c, 2023a, 2023b, and 2023c).

Quarter No. 6 Groundwater Monitoring Activities

Well Gauging

Due to MW-7-22 being decommissioned, this well was gauged for free product and groundwater elevation on July 6, 2023. Due to clean fill being temporarily emplaced on MW-3-19, this well was gauged for free product and groundwater elevation on August 25, 2023.

On August 9, 2023, Shannon & Wilson gauged each of the remaining four CGM wells to monitor for the presence of free product and to measure groundwater elevations. Measurable free product was not encountered within MW-7-22 on July 6, 2023, or within the five CGM wells during Quarter No. 6 gauging; however, a petroleum odor was observed at MW-3-19 on August 25, 2023.

Groundwater Sampling

During the Quarter No. 6 CGM event (occurring over multiple dates, as described above), Shannon & Wilson purged each of the CGM wells using a peristaltic pump with a flow-through cell and a water quality meter to measure the following field parameters: temperature, oxidation-reduction potential, pH, conductivity, dissolved oxygen, turbidity, salinity, and total dissolved solids. Field parameters collected during purging of the CGM wells can be found in Attachment 1 – Groundwater Sampling Field Forms. Prior to purging MW-3-19, Shannon & Wilson removed the three Regenesis oxygen-releasing compound (ORC®) socks from the well on August 17, 2023, eight days prior to collecting groundwater samples from the well on August 25, 2023. Due to laboratory-related issues, MW-6-22 was also resampled on August 25, 2023 (for details see the discussion in Groundwater Sampling Results below). Upon stabilization of the field parameters during well purging (indicating steady groundwater flow to the well), groundwater samples were collected from each of the six CGM wells by discharging groundwater from the end of the peristaltic tubing into clean, laboratory-supplied containers. Collected groundwater samples were immediately put on ice and stored within an insulated cooler. Groundwater samples from each of the CGM wells were delivered to OnSite Environmental Inc. of Redmond, Washington (OnSite), under standard chain-of-custody procedures and analyzed for:

- Gasoline-range petroleum hydrocarbons using Ecology's Northwest Total Petroleum Hydrocarbon (NWTPH)-Gasoline Extended Method;

- Benzene, toluene, ethylbenzene, and xylene (BTEX) by U.S. Environmental Protection Agency (EPA) 8260 Method;
- Diesel- and oil-range petroleum hydrocarbons using Ecology's NWTPH-Diesel Extended Method (NWTPH-Dx); and
- Total and dissolved arsenic by EPA Method 200.8.

For complete details on the groundwater sampling methodology, refer to the Sample Collection and Chemical Testing sections of the Work Plan (Shannon & Wilson, 2019).

ORC Sock Deployment

Following the completion of the Quarter No. 6 well gauging and groundwater sampling activities, Shannon & Wilson reinstalled the three Regenesis ORC® socks below the water table and within the screened portion of MW-3-19 due to continued contaminant detections at the well. The ORC® socks are designed by Regenesis to expedite and aid in the natural aerobic degradation process of petroleum hydrocarbon contaminants.

Quarter No. 6 Results and Interpretation

Groundwater Elevation and Flow Directions

Measured groundwater elevations for Quarter No. 6 are displayed in Exhibit 1 and reported in Exhibit 2. Groundwater elevations in North American Vertical Datum (of 1988) during August 2023 ranged from as low as 41.6 feet (MW-3-19) to as high as 48.3 feet above mean sea level (MW-2-19). Using the measured groundwater elevations, a groundwater potentiometric surface was interpolated with associated groundwater flow directions inferred to occur perpendicular to the equipotential lines comprising the potentiometric surface. (See Exhibit 1: Note that because the groundwater elevation reported for MW-7-22 was collected one month prior to the other CGM wells, it was excluded for groundwater interpolations presented on Exhibit 1). The groundwater elevation measured at MW-3-19 was again significantly lower with less seasonal fluctuation compared to the other CGM wells (see Exhibit 2). The much lower and static nature of the groundwater elevations monitored at MW-3-19 is suggestive of hydraulic isolation from the more uniform groundwater flow regime encountered across the site.

The groundwater setting at the site observed during Quarter No. 6 is consistent with that observed during the RI and previous quarterly CGM events (Shannon & Wilson, 2020, 2022b, 2022c, 2023a, 2023b, and 2023c). In general, groundwater elevations measured in Quarter No. 6 were lower by approximately 1.3 to 1.7 feet, compared to groundwater elevations measured during Quarter No. 5. The lower groundwater elevations observed likely reflect the shallow groundwater response to the continued local dry season.

The groundwater elevation observed at MW-3-19 was unchanged between the groundwater monitoring events for Quarter Nos. 5 and 6 (May to August 2023). This lack of fluctuation in groundwater elevation is different in nature compared to the other CGM wells, as discussed above.

The estimated groundwater flow direction for Quarter No. 6 is uniformly north to northwest, consistent with previous monitoring events, when MW-3-19 was included as part of the potentiometric surface (Shannon & Wilson, 2022b 2023b, 2023c).

Groundwater Sampling Results

The laboratory analytical results for collected groundwater samples are summarized in Exhibit 3. The laboratory report is included as Attachment 2. Exhibit 1 indicates which monitoring wells had groundwater sample contaminant concentrations that exceed applicable cleanup levels (CULs) during the August 2023 sampling event.

The groundwater sample initially collected from MW-6-22 on August 9, 2023, was compromised during diesel- and lube oil-range petroleum hydrocarbons laboratory analysis (refer to the NWTPH-Dx Analysis Case Narrative of the Laboratory Report No. 2308-127 included in Attachment 2). OnSite identified that the sample collected from MW-6-22 on August 9, 2023, had been compromised due to cross-contamination caused by a contaminated piece of glassware during the NWTPH-Dx laboratory testing procedures. At the request of Shannon & Wilson, the sample was re-extracted and analyzed for diesel- and lube oil-range petroleum hydrocarbons; the result for the re-extracted sample was non-detect. To verify, Shannon & Wilson resampled groundwater at MW-6-22 on August 25 2023, for diesel- and lube oil-range petroleum hydrocarbons analysis. The second sample result for MW-6-22 was also non detect for diesel- and lube oil-range petroleum hydrocarbons.

Groundwater Sampling Interpretation

Groundwater samples collected from the CGM wells located within the property boundary (MW-2-19, MW-6-22, MW-7-22, MW-8-22, and MW-9-22) had either non-detectable concentrations or concentrations below applicable CULs for petroleum hydrocarbons (gasoline-, diesel-, and oil-range petroleum hydrocarbons) and BTEX. MW-6-22 and MW-9-22 had detectable concentrations of total arsenic; however, the concentrations were below applicable CULs and dissolved arsenic concentrations were less than the total concentrations.

Groundwater samples from one CGM well, MW-3-19, contained contaminant concentrations that exceeded applicable CULs (Exhibits 1 and 3). During Quarter Nos. 2 and 3, groundwater samples from MW-3-19 were not collected because measurable free product was detected in the well. During Quarter Nos. 4, 5, and 6, a petroleum odor and/or sheen was observed, but with no measurable product, and thus, groundwater samples were collected and analyzed. Concentrations of gasoline- and diesel-range petroleum hydrocarbons, as well as the dissolved arsenic exceedances, increased at MW-3-19 compared to Quarter No. 5 (May 2023). However, benzene exceedances detected at MW-3-19 during Quarter No. 6 continued to decrease. The diesel-range petroleum hydrocarbon concentration continues to be flagged as being influenced by the gasoline-range petroleum hydrocarbons (Exhibit 3). MW-3-19 is the most downgradient CGM well at the site, the furthest from the remedial excavation area, and is located outside the property boundary. The contaminant concentrations observed at MW-3-19 may be related to the observed degree of hydraulic isolation in the vicinity of MW-3-19, which would impact timing for the remedial action to manifest near the this well.

The concentration of gasoline-range petroleum hydrocarbons measured in the CGM wells over time have been summarized in trend plots, included as Exhibit 4.

The concentration of diesel-range plus oil-range petroleum hydrocarbons measured in the CGM wells over time have been summarized in trend plots, included as Exhibit 5.

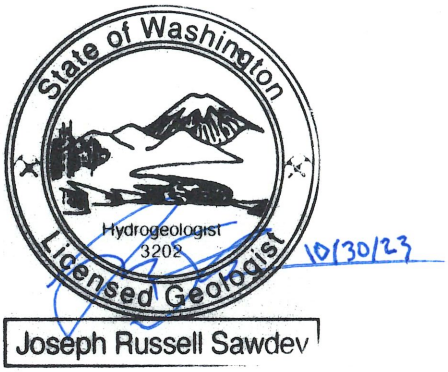
The concentration of benzene measured in the CGM wells over time has been summarized in trend plots, included as Exhibit 6.

The concentration of total and dissolved arsenic in the CGM wells over time has been summarized in trend plots, included as Exhibit 7.

We appreciate this opportunity to provide environmental services to you for this project. If you have questions regarding this letter, please contact the undersigned at (206) 632-8020.

Sincerely,

Shannon & Wilson



Joseph Sawdey, LG, LHG
Senior Hydrogeologist

Meg Strong, LG, LHG
Senior Consultant

JXS:MJS:JNB/jxs

References

PBS Engineering and Environmental, 2021a, Remedial action plan, Montlake Gas Station, State Route 520 Montlake to Lake Washington Interchange and Bridge Replacement Project, Seattle, Washington: Report prepared by PBS, Seattle, Wash., project no. 41221.003, for Graham Contracting Ltd, Bellevue, Wash., March Seattle, Wash., March 2021.

PBS Engineering and Environmental, 2021b, Remedial action completion report, Montlake Gas Station, State Route 520 Montlake to Lake Washington Interchange and Bridge Replacement Project, Seattle, Washington: Report prepared by PBS, Seattle, Wash., 41221.003, for Graham Contracting Ltd., Bellevue, Wash., December.

Shannon & Wilson, 2019, Data gaps investigation work plan/sampling and analysis plan for Montlake Gas Station, SR 520 Bridge Replacement and HOV Program, Seattle, Washington: Workplan prepared by Shannon & Wilson, Seattle, Wash., 21-1-22242-101, for Washington State Department of Transportation, July.

Shannon & Wilson, 2020, Remedial investigation report for Montlake Gas Station, SR 520 Bridge Replacement and HOV Program, Seattle, Washington: Report prepared by Shannon & Wilson, Seattle, Wash., 21-1-22242-104, for Washington State Department of Transportation, 1 v., March.

Shannon & Wilson, 2022a, Compliance groundwater monitoring well installation exhibit for Montlake Gas Station, SR 520 Bridge Replacement and HOV Program, Seattle, Washington: Exhibit prepared by Shannon & Wilson, Seattle, Wash., 21-1-22242-104, for Washington State Department of Transportation, May 2022.

Shannon & Wilson, 2022b, Groundwater monitoring memorandum – quarter no. 1, voluntary cleanup program NW3242, Montlake Gas Station, SR 520 Bridge Replacement and HOV Program, Seattle, Washington: Memorandum from Joseph Sawdey and Meg Strong, Shannon & Wilson, Seattle, Wash., 21-1-22242-104, to Ron Paananen, HDR, June 27.

Shannon & Wilson, 2022c, Groundwater monitoring memorandum – quarter no. 2, voluntary cleanup program NW3242, Montlake Gas Station, SR 520 Bridge Replacement and HOV Program, Seattle, Washington: Memorandum from Joseph Sawdey and Meg Strong, Shannon & Wilson, Seattle, Wash., 21-1-22242-104, to Ron Paananen, HDR, October 6.

Shannon & Wilson, 2023a, Groundwater monitoring memorandum – quarter no. 3, voluntary cleanup program NW3242, Montlake Gas Station, SR 520 Bridge Replacement and HOV Program, Seattle, Washington: Memorandum from Joseph Sawdey and Meg Strong, Shannon & Wilson, Seattle, Wash., 21-1-22242-104, to Ron Paananen, HDR, January 5.

Shannon & Wilson, 2023b, Groundwater monitoring memorandum – quarter no. 4, voluntary cleanup program NW3242, Montlake Gas Station, SR 520 Bridge Replacement and HOV Program, Seattle, Washington: Memorandum from Joseph Sawdey and Meg Strong, Shannon & Wilson, Seattle, Wash., 21-1-22242-104, to Ron Paananen, HDR, March 30.

Shannon & Wilson, 2023c, Groundwater monitoring memorandum – quarter no. 5, voluntary cleanup program NW3442, Montlake Gas Station, SR 520 Bridge Replacement and HOV Program, Seattle, Washington: Memorandum from Joseph Sawdey and Meg Strong, Shannon & Wilson, Seattle, Wash., 21-1-22242-104, to Ron Paananen, HDR, June 23.

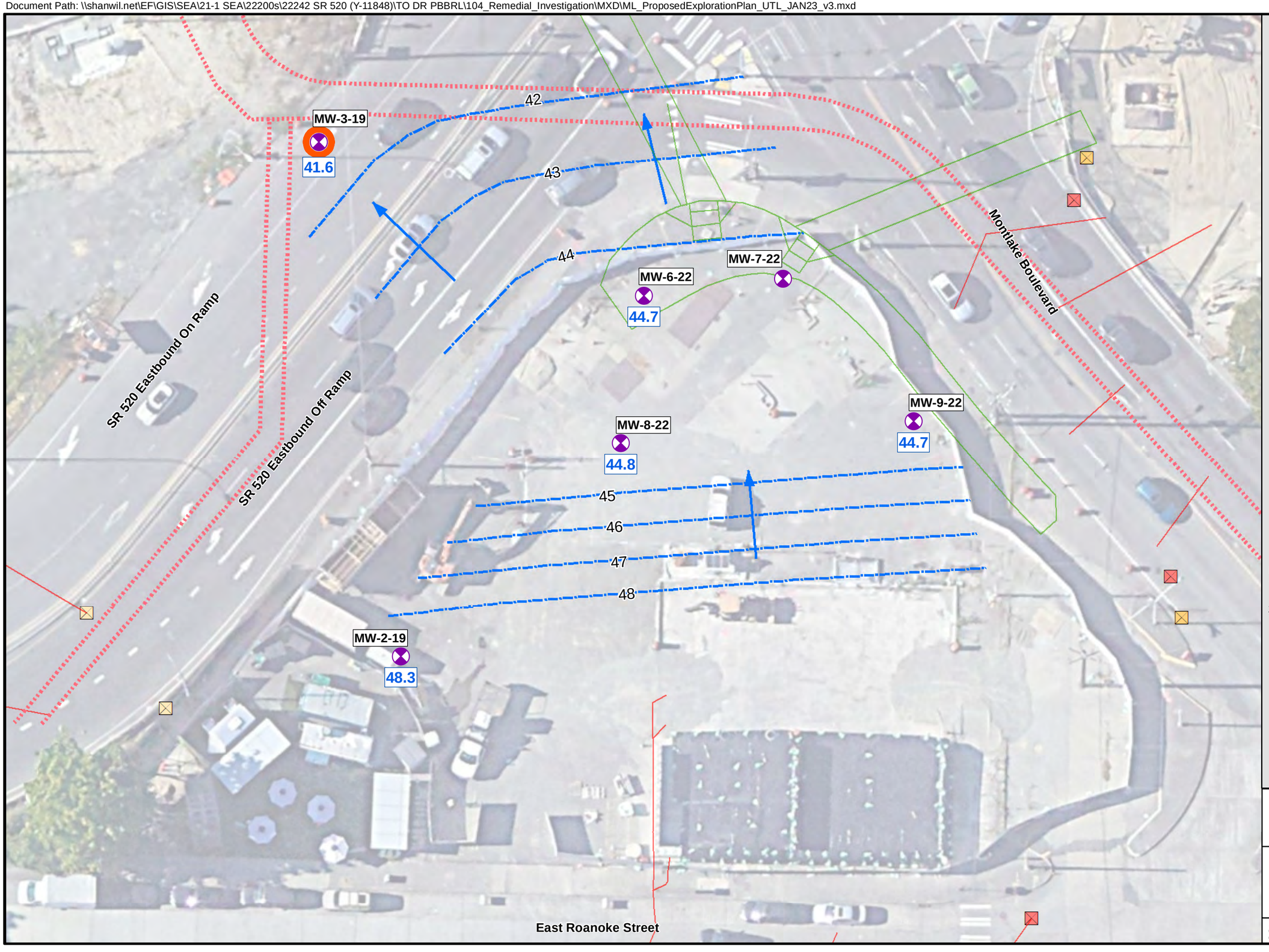
Exhibits

Exhibit 1 – Groundwater Potentiometric Surface Map with Groundwater Elevation
Exhibit 2 – Groundwater Level Measurements
Exhibit 3 – Summary of Groundwater Analytical Results
Exhibit 4 – Groundwater Concentration Trend Plots – Gasoline
Exhibit 5 – Groundwater Concentration Trend Plots – Diesel Plus Oil
Exhibit 6 – Groundwater Concentration Trend Plots – Benzene
Exhibit 7 – Groundwater Concentration Trend Plots – Arsenic

Attachments

Attachment 1 – Groundwater Sampling Field Forms
Attachment 2 – Laboratory Report and Chain-of-Custody Form

Document Path: \\shanwil.net\EF\GIS\SEA\21-1 SEA\22200s\22242 SR 520 (Y-11848)\TO DR PBBRL\104_Remedial_Investigation\MXD\ML_ProposedExplorationPlan_UTL_JAN23_v3.mxd



LEGEND

Monitoring Well Location and Designation

Well With Groundwater Concentrations Exceeding Applicable Cleanup Levels

Interpolated Groundwater Elevation (Feet, NAVD 88)

Interpolated Groundwater Flowline

Groundwater Elevation at Monitoring Well (August 2023)
46.9

Existing Utility - Catch Basin

Existing Utility - Inlet

Existing Utility - Wastewater Pipe

Existing Utility - Sewer or Combined-Sewer Line

Approximate Post Construction Crosswalk/Sidewalk Configuration

NOTES:
1. All Existing Utility data should be considered approximate. City of Seattle, 2019.
2. MW-7-22 gauged approximately one month prior to other CGM Wells and therefor has not been included in the potentiometric surface interpolations.

N W E S

0 40
Feet

SR 520 Bridge Replacement and HOV Program
SR 520 I-5 to Montlake -I/C and Bridge Replacement
Groundwater Monitoring Report No. 6
2625 East Montlake Place East
Seattle, WA

GROUNDWATER POTENTIOMETRIC SURFACE MAP WITH GROUNDWATER ELEVATION

October 2023 21-1-22242-104

SHANNON & WILSON, INC. GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

EXHIBIT 1

Montlake Gas Station Monitoring Well	Screened Interval (feet bgs)	Surveyed Monitoring Well Elevation[1] (feet)	TOC Elevation (feet)	Date	Depth to Water (feet below TOC)	Groundwater Elevation (feet)
MW-2-19	10 to 20	58.87	58.12	10/17/2019	10.1	48.0
				5/2/2022	8.3	49.8
				8/16/2022	9.4	48.7
				11/15/2022	9.9	48.2
				2/14/2023	8.4	49.8
				5/17/2023	8.6	49.6
				8/9/2023	9.8	48.3
MW-3-19	10 to 25	59.29	59.01	10/17/2019	17.4	41.6
				5/2/2022	17.3	41.8
				8/16/2022	17.4	41.6
				11/15/2022	17.5	41.5
				2/14/2023	17.5	41.6
				5/17/2023	17.4	41.6
				8/25/2023	17.5	41.6
MW-6-22	11 to 26	59.71	59.36	5/2/2022	12.2	47.2
				8/16/2022	13.9	45.5
				11/15/2022	14.9	44.4
				2/14/2023	12.5	46.8
				5/17/2023	13.0	46.4
				8/9/2023	14.7	44.7
MW-7-22	10.5 to 25.5	59.68	59.18	5/2/2022	12.1	47.1
				8/17/2022	13.8	45.4
				11/15/2022	14.8	44.4
				2/14/2023	12.4	46.8
				5/17/2023	12.8	46.3
				7/5/2023[2]	13.9	45.2

Montlake Gas Station Monitoring Well	Screened Interval (feet bgs)	Surveyed Monitoring Well Elevation[1] (feet)	TOC Elevation (feet)	Date	Depth to Water (feet below TOC)	Groundwater Elevation (feet)
MW-8-22	10.5 to 25.5	58.90	58.55	5/2/2022	11.3	47.2
				8/16/2022	13.0	45.6
				11/15/2022	14.0	44.5
				2/14/2023	11.6	46.9
				5/17/2023	12.1	46.5
				8/9/2023	13.8	44.8
MW-9-22	10 to 25	59.93	59.58	5/2/2022	12.4	47.2
				8/17/2022	14.1	45.5
				11/15/2022	15.1	44.5
				2/14/2023	12.7	46.9
				5/17/2023	13.1	46.4
				8/9/2023	14.9	44.7

NOTES:

1 Monitoring well elevation was surveyed from the center of the well monument lid.

2 MW-7-22 was gauged and sampled prior to it being decomissioned on 7/10/2022 by Graham.

The reference vertical datum is the North American Vertical Datum (of 1988).

bgs = below ground surface; TOC = top of casing

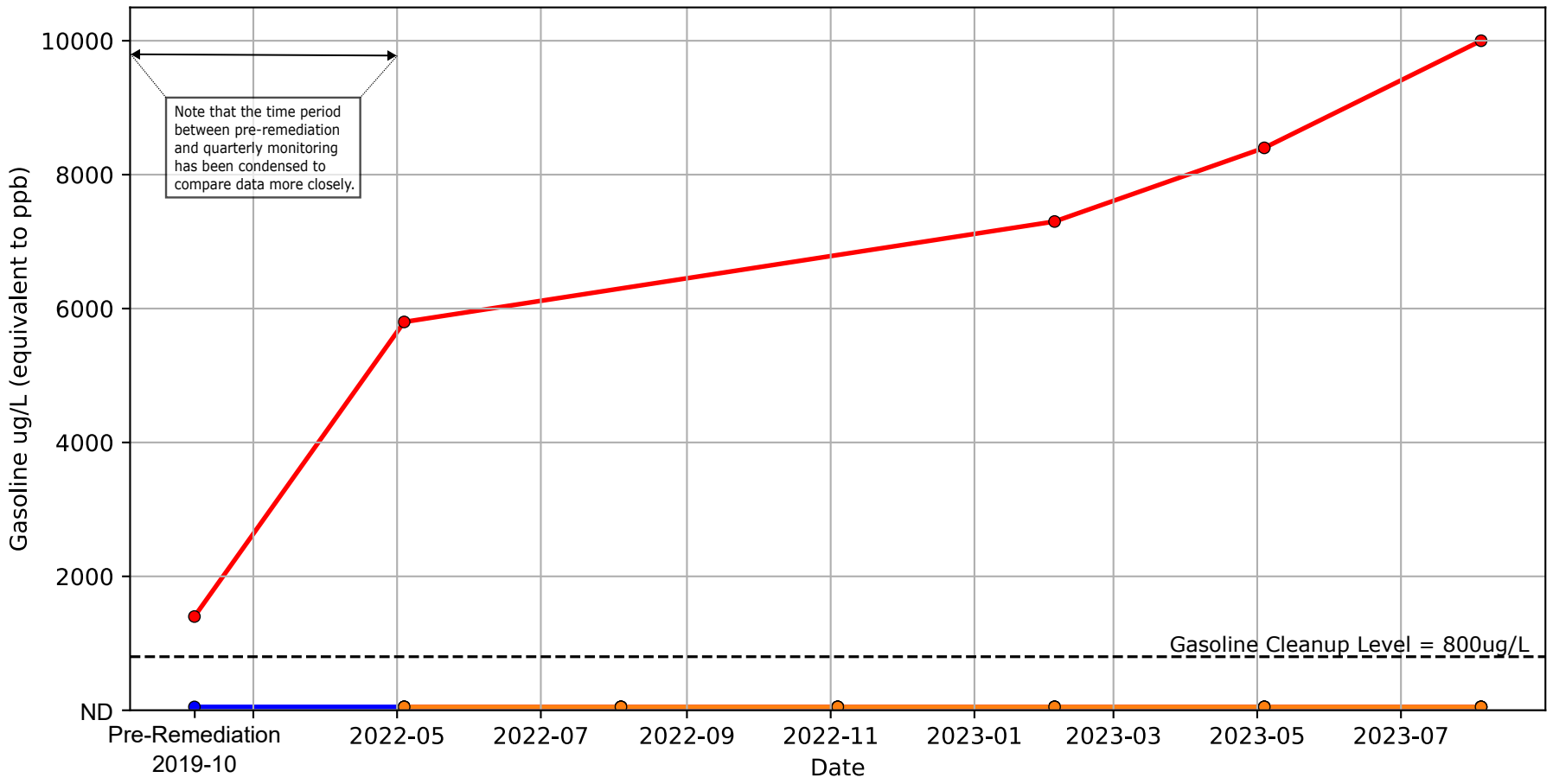
EXHIBIT 3
SUMMARY OF GROUNDWATER ANALYTICAL RESULTS

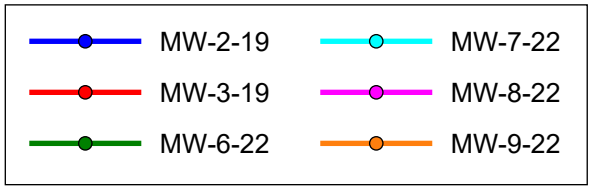
		Petroleum Hydrocarbons (µg/L)			Volatile Organic Compounds (µg/L)[3]					Metals (µg/L)[4]	
Montlake Gas Station Monitoring Well	Sample Date	Gasoline Range Organics[1]	Diesel Range Organics[2]	Lube Oil Range Organics[2]	Benzene	Toluene	Ethylbenzene	m,p-Xylene	o-Xylene	Total Arsenic	Dissolved Arsenic
MW-2-19	10/17/2019	<100	<260	<420	<0.20	<1.0	<0.20	<0.40	<0.20	<3.3	<3.0
	5/2/2022	<100	<180	<240	<0.20	<1.0	<0.20	<0.40	<0.20	<3.3	<3.0
	8/16/2022	<100	<130	<210	<0.20	<1.0	<0.20	<0.40	<0.20	<3.3	<3.0
	11/15/2022	<100	<210	<210	<0.20	<1.0	<0.20	<0.40	<0.20	<3.3	<3.0
	2/14/2023	<100	<200	<200	<0.20	<1.0	<0.20	<0.40	<0.20	<3.3	<3.0
	5/17/2023	<100	<210	<210	<0.20	<1.0	<0.20	<0.40	<0.20	<3.3	<3.0
	8/9/2023	<100	<110	<220	<0.20	<1.0	<0.20	<0.40	<0.20	<3.3	<3.0
MW-3-19 [5]	10/17/2019	**1400**	**630**	**660**	**98**	<4	**24**	**9.3**	**1.1**	**17**	**7.4**
	5/2/2022	**5800**	**1300 M**	**500**	**170**	<10	**190**	**220**	**3.2**	**16**	**11**
	2/14/2023	**7300**	**2100 M**	**320**	**140**	<5.0	**72**	**94**	**2.3**	**22**	**13**
	5/17/2023	**8400**	<1700 M	**340**	**100**	<20	**79**	**120**	<4.0	**25**	**14**
	8/25/2023	**10000**	**2900 M**	**320**	**82**	<20	**37**	**90**	<4.0	**24**	**21**
MW-6-22	5/2/2022	<100	**210**	**330**	<0.20	<1.0	<0.20	<0.40	<0.20	<3.3	<3.0
	8/16/2022	<100	<130	**290**	<0.20	<1.0	<0.20	<0.40	<0.20	**6.3**	**4.5**
	11/15/2022	<100	<200	<200	<0.20	<1.0	<0.20	<0.40	<0.20	**7.3**	**4.6**
	2/14/2023	<100	<210	<210	<0.20	<1.0	<0.20	<0.40	<0.20	<3.3	<3.0
	5/17/2023	<100	<210	<210	<0.20	<1.0	<0.20	<0.40	<0.20	<3.3	<3.0
	8/9/2023	<100	<100	<210	<0.20	<1.0	<0.20	<0.40	<0.20	**4.6**	<3.0
	8/25/2023	--	<160	<160	--	--	--	--	--	--	--
MW-7-22	5/2/2022	<100	<170	<230	<0.20	<1.0	<0.20	<0.40	<0.20	<3.3	<3.0
	8/17/2022	<100	<130	**250**	<0.20	<1.0	<0.20	<0.40	<0.20	<3.3	<3.0
	11/15/2022	<100	<210	<210	<0.20	<1.0	<0.20	<0.40	<0.20	<3.3	<3.0
	11/15/2022	<100	<210	**220**	<0.20	<1.0	<0.20	<0.40	<0.20	<3.3	<3.0
	2/14/2023	<100	<200	<200	<0.20	<1.0	<0.20	<0.40	<0.20	<3.3	<3.0
	5/17/2023	<100	<210	<210	<0.20	<1.0	<0.20	<0.40	<0.20	<3.3	<3.0
	7/6/2023	<100	<210	<210	<0.20	<1.0	<0.20	<0.40	<0.20	<3.3	<3.0
MW-8-22	5/2/2022	<100	<170	<220	<0.20	<1.0	<0.20	<0.40	<0.20	<3.3	<3.0
	5/2/2022	<100	<170	**240**	<0.20	<1.0	<0.20	<0.40	<0.20	<3.3	<3.0
	8/16/2022	<100	<130	**360**	<0.20	<1.0	<0.20	<0.40	<0.20	**6.6**	**3.8**
	8/16/2022	<100	<140	**340**	<0.20	<1.0	<0.20	<0.40	<0.20	**6.5**	**4.3**
	11/15/2022	<100	<200	<200	<0.20	<1.0	<0.20	<0.40	<0.20	**6**	**5.7**
	2/14/2023	<100	<210	<210	<0.20	<1.0	<0.20	<0.40	<0.20	**4.2**	<3.0
	2/14/2023	<100	<200	<200	<0.20	<1.0	<0.20	<0.40	<0.20	**4.4**	<3.0
	5/17/2023	<100	<210	<210	<0.20	<1.0	<0.20	<0.40	<0.20	**4**	<3.0
	5/17/2023	<100	<220	<220	<0.20	<1.0	<0.20	<0.40	<0.20	**4.1**	<3.0
	8/9/2023	<100	<110	**260**	<0.20	<1.0	<0.20	<0.40	<0.20	<3.3	<3.0
	8/9/2023	<100	<110	<230	<0.20	<1.0	<0.20	<0.40	<0.20	<3.3	<3.0
MW-9-22	5/2/2022	<100	<160	<220	<0.20	<1.0	<0.20	<0.40	<0.20	<3.3	<3.0
	8/17/2022	<100	**1900**	<300	<0.20	<1.0	<0.20	<0.40	<0.20	<3.3	<3.0
	11/15/2022	<100	<210	<210	<0.20	<1.0	<0.20	<0.40	<0.20	<3.3	<3.0
	2/14/2023	<100	<210	<210	<0.20	<1.0	<0.20	<0.40	<0.20	<3.3	**3.0**
	5/17/2023	<100	<220	<220	<0.20	<1.0	<0.20	<0.40	<0.20	**3.9**	<3.0
	8/9/2023	<100	<110	**310**	<0.20	<1.0	<0.20	<0.40	<0.20	<3.3	<3.0

EXHIBIT 3
SUMMARY OF GROUNDWATER ANALYTICAL RESULTS

		Petroleum Hydrocarbons (µg/L)			Volatile Organic Compounds (µg/L)[3]					Metals (µg/L)[4]	
Montlake Gas Station Monitoring Well	Sample Date	Gasoline Range Organics[1]	Diesel Range Organics[2]	Lube Oil Range Organics[2]	Benzene	Toluene	Ethylbenzene	m,p-Xylene	o-Xylene	Total Arsenic	Dissolved Arsenic
Trip Blank	5/2/2022	<100	--	--	<0.20	<1.0	<0.20	<0.40	<0.20	--	--
	8/18/2022	<100	--	--	<0.20	<1.0	<0.20	<0.40	<0.20	--	--
	11/15/2022	<100	--	--	<0.20	<1.0	<0.20	<0.40	<0.20	--	--
	2/14/2023	<100	--	--	<0.20	<1.0	<0.20	<0.40	<0.20	--	--
	7/6/2021	<100	--	--	<0.20	<1.0	<0.20	<0.40	<0.20	--	--
	8/9/2023	<100	--	--	<0.20	<1.0	<0.20	<0.40	<0.20	--	--
MTCA Method A CUL		**1000/800***	**500**	**500**	**5.00**	**1000**	**700**	**1000†**	**1000†**	**20§**	**20§**

NOTES:
1 Gasoline-range petroleum hydrocarbons using Washington State Department of Ecology's (Ecology's) NWTPH-Gasoline Extended Method
2 Diesel- and oil-range petroleum hydrocarbons using Ecology's NWTPH-Diesel Extended Method
3 Volatile organic compounds by EPA Method 8260D
4 Total and dissolved arsenic by EPA Method 200.8
5 In August and November 2022, MW-3-19 had measurable free product and was not sampled.
Highlighted text indicates the analyte was detected above the MTCA Method A CUL.
Highlighted text indicates the analyte was not detected, however the practical quantitation limit is above the MTCA Method A CUL.
Bold text indicates the analyte was detected above laboratory practical quantitation limit.
M flag indicates hydrocarbons in the gasoline range are impacting the diesel range result.
* Cleanup level (CUL) for gasoline-range organics is 1,000 µg/L without the presence of benzene and 800 µg/L with the presence of benzene.
† MTCA Method A CUL for total xylenes is used because a MTCA Method A CUL is not established for the isomers of m-, p-, or o-xylene.
§ Site specific CUL for arsenic (total and dissolved) based on statistical analysis of natural background levels of arsenic in groundwater.
-- = not analyzed; < = not detected above laboratory reporting limit; µg/L = micrograms per liter; CUL = cleanup level; EPA = U.S. Environmental Protection Agency; MTCA = Model Toxics Control Act; NWTPH = Northwest Total Petroleum Hydrocarbon





Note: Gasolione concentrations non detect (ND) in MW-2-19, MW-6-22, MW-7-22, MW-8-22, and MW-9-22

SR 520 Bridge Replacement and HOV Program
I-5 to Montlake - I/C and Bridge Replacement
Groundwater Monitoring Report - Quarter No. 6

Groundwater Concentration Trend Plots - Gasoline

October 2023 21-1-22242-104

SHANNON & WILSON, INC.
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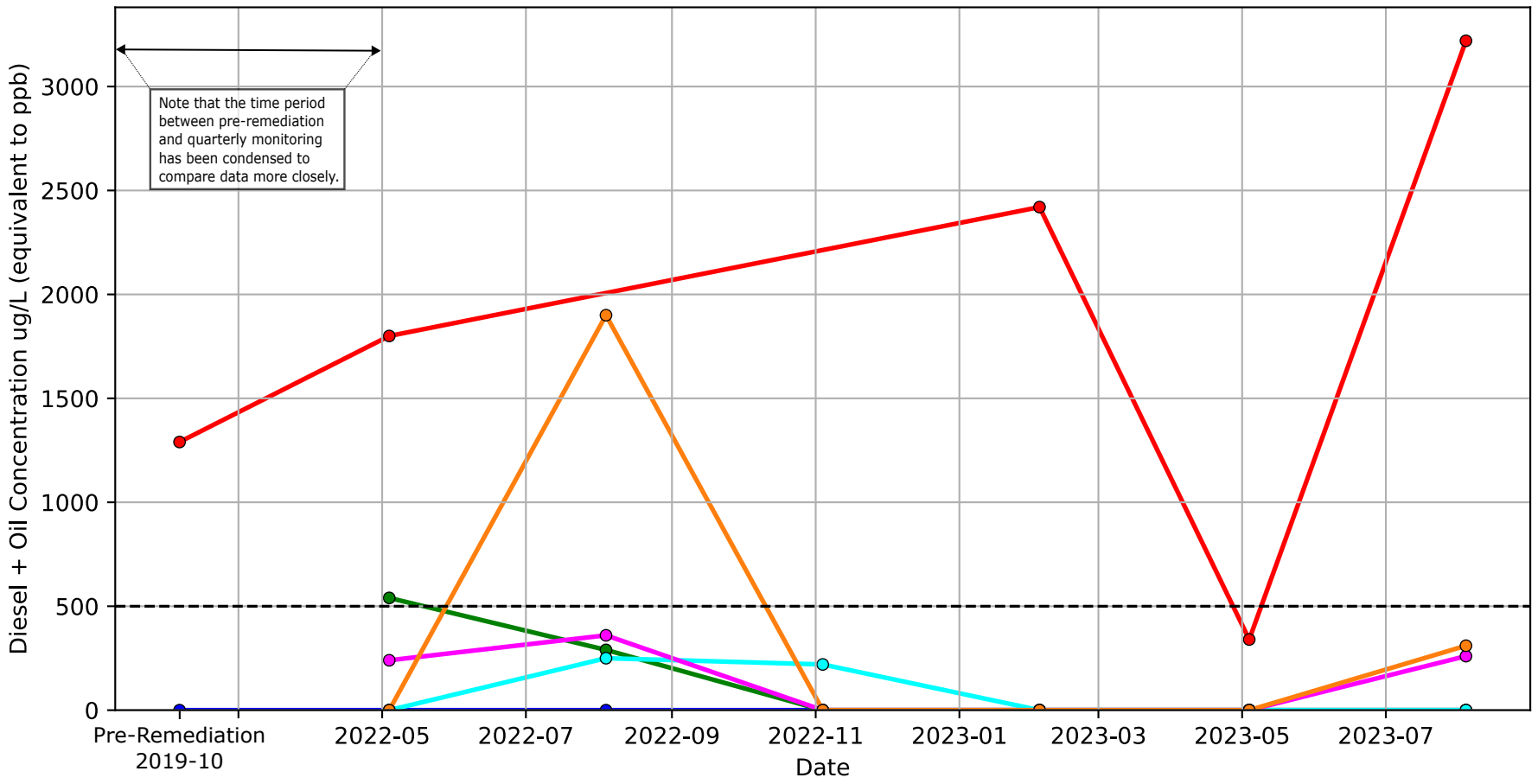
EXHIBIT 4

FIG. 4



Note: Diesel-range concentrations not detected (ND) in MW-3-19 during Q5 (plot is of lube oil-range only)

SR 520 Bridge Replacement and HOV Program
I-5 to Montlake - I/C and Bridge Replacement
Groundwater Monitoring Report - Quarter No. 6

Groundwater Concentration Trend Plot - Diesel plus Oil

October 2023 21-1-22242-104

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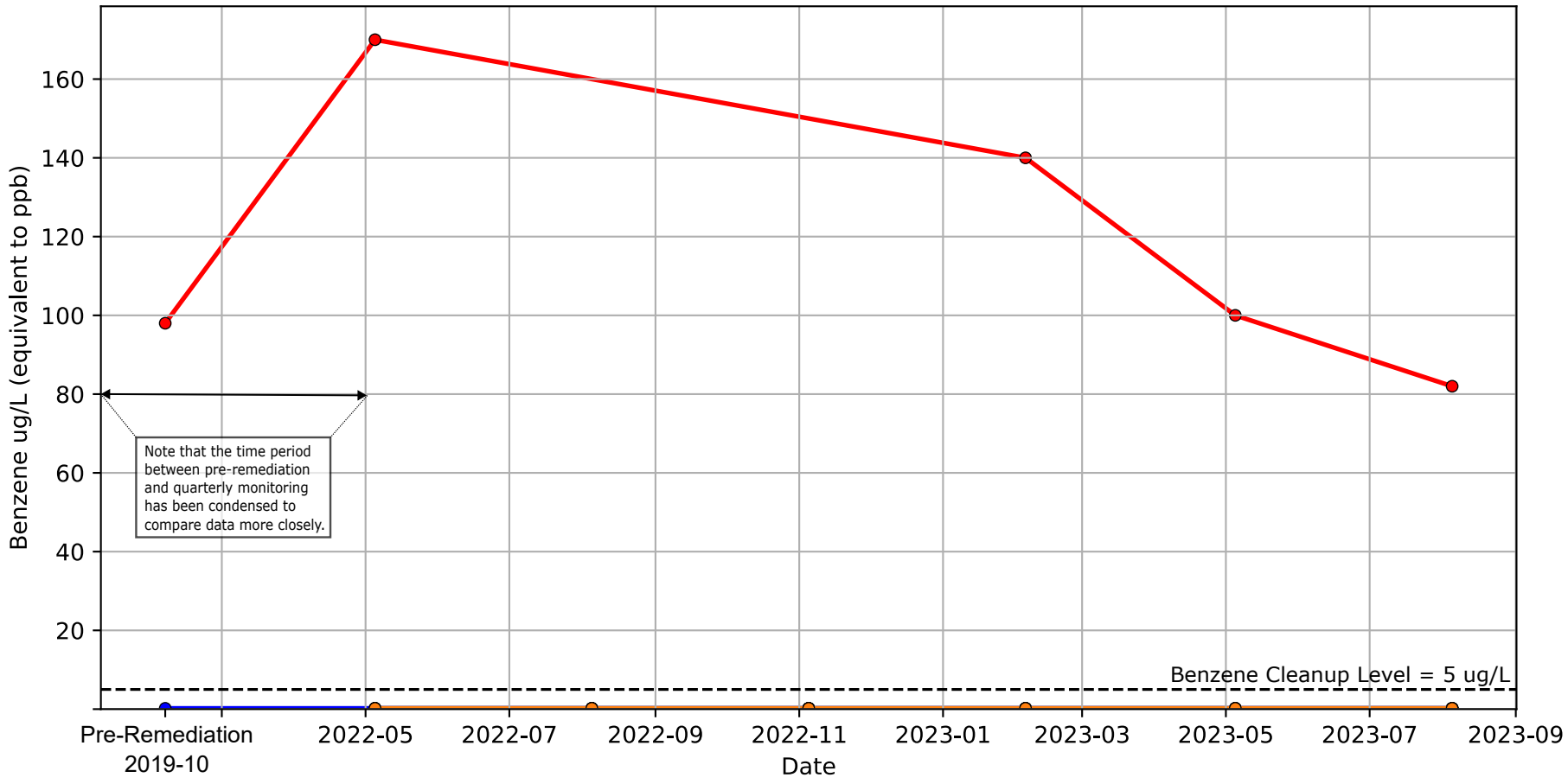
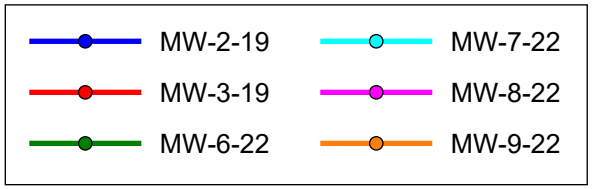
EXHIBIT 5

FIG. 5





Note: Benzene concentrations non detect (ND) in MW-2-19, MW-6-22, MW-7-22, MW-8-22, and MW-9-22

SR 520 Bridge Replacement and HOV Program
I-5 to Montlake - I/C and Bridge Replacement
Groundwater Monitoring Report - Quarter No. 6

Groundwater Concentration Trend Plots - Benzene

October 2023 21-1-22242-104

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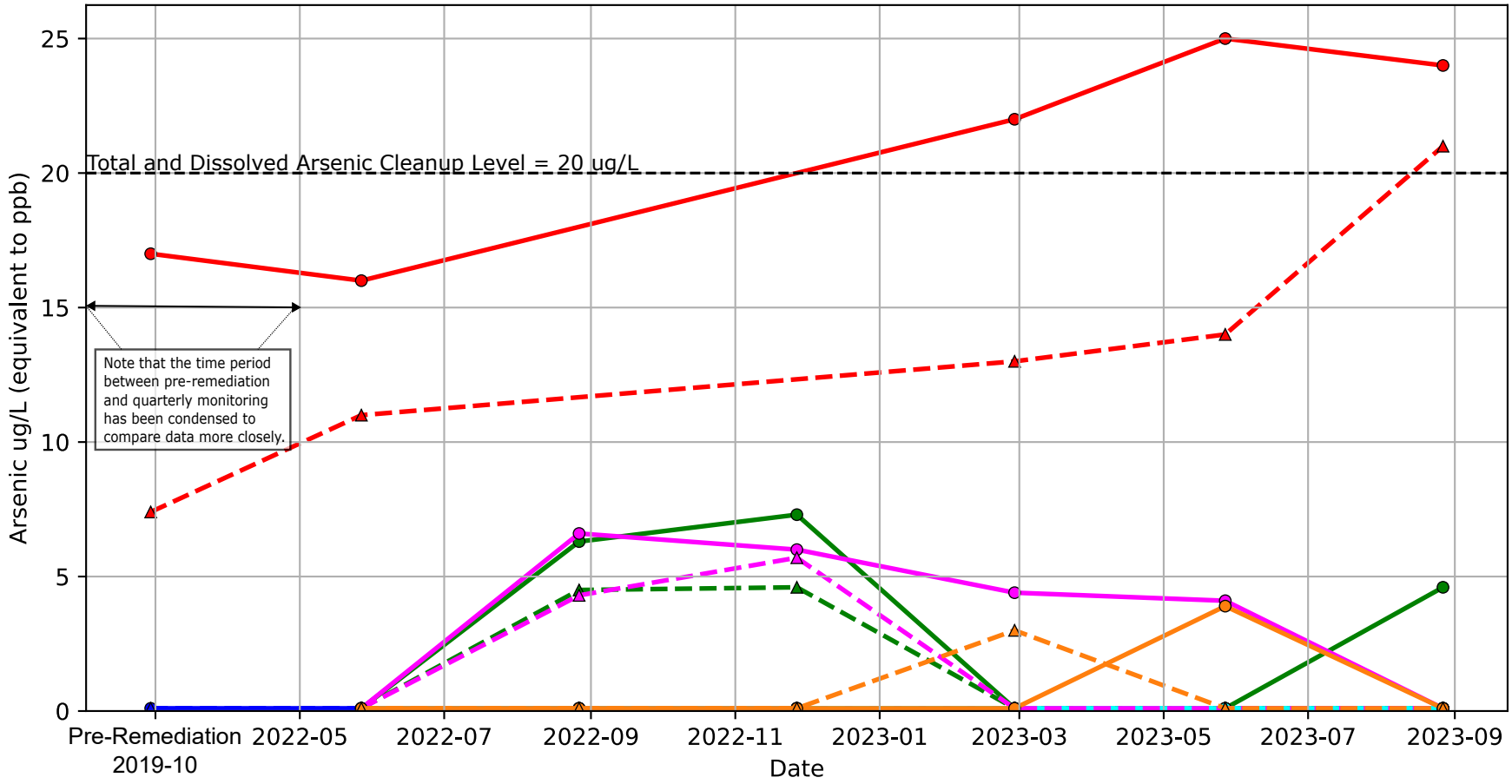
EXHIBIT 6

FIG. 6



Note: Arsenic concentrations non detect (ND) in MW-2-19 and MW-7-22.

FIG. 7

SR 520 Bridge Replacement and HOV Program
I-5 to Montlake - I/C and Bridge Replacement
Groundwater Monitoring Report - Quarter No. 6

Groundwater Concentration Trend Plots - Arsenic

October 2023 21-1-22242-104

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EXHIBIT 7

P:\SEA\21-1 SEA\22200s\22242 SR 520 (Y-11848)\TO DA - Montlake VCP\-112 Groundwater Monitoring\Q6 GW Monitoring\Plots ver0.13.0, by:JXS

Attachment 1

Contents:

Groundwater Sampling Field Forms (8 Sheets)

SHANNON & WILSON, INC. GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

WATER SAMPLING LOG

JOB NO. 21-1-22242-112
PAGE _____ OF _____

OWNER / LOCATION: WSDOT MGS
DATE: 7/5/23
WELL NO: MW-7-22 SAMPLE NO: 070523 ECOLOGY TAG NO: BNU 408
DUPLICATE NO: MW-100; 070523
WEATHER: Clear
MS / MSD? Yes ☐ No ☒
WELL SITE CONDITIONS / MP DEFINITION: Good
(MP is typically the north PVC rim)

SAMPLING DATA

TIME STARTED: 1030
PID HEAD SPACE: — ppm
MP DISTANCE ABOVE / BELOW GROUND SURFACE: _____ ft.
TOTAL DEPTH OF WELL BELOW MP: 25.5 ft.
DTW BELOW MP: 13.94 ft.
WATER COLUMN IN WELL: 11.56 ft.
CASING DIAMETER: 2" in.
GALLONS PER FOOT: 0.16
GALLONS IN WELL: 1.85
TIME PURGING STARTED: 10:55

LNAPL THICKNESS: 0.00 ft. Sample ☐
DNAPL THICKNESS: _____ ft. Sample ☐

SAMPLE CONTAINERS

Number	Size	Type	Pres.

FIELD PARAMETERS

GALLONS REMOVED	TEMP. (C°)	~~Eh~~ ORP (mV)	pH	COND. (µmhos / cm)	D.O. (mg / L)	TURBIDITY (NTU)	SALINITY (%) NA	TDS (g / L) NA	COLOR	TIME
Initial	16.0	181.6	6.94	721	2.9 ↓	42.7			Clear	11:00
0.25	15.8	187.3	6.97	711	2.12	30.3			"	11:04
0.5	15.8	154.3	6.97	700	1.57	22.3			"	11:08
0.75	15.6	132	6.98	699	1.52	19.5			"	11:12
1.0	15.7	114.1	6.98	698	1.36	17.5			"	11:16
1.25	15.7	104.2	6.98	694	1.28	15.4			"	11:20
1.5	15.8	91.1	6.98	696	1.10	16.1			"	11:24
1.75	15.7	89.7	6.98	689	1.08	15.7			"	11:28
After Sampling										

~2 gal tub

EVACUATION METHOD: Peri Pump
PUMP INTAKE DEPTH (if applicable): mid Screen
PURGE WATER DISPOSITION (e.g., drum #): good - no odor or sheen
WATER QUALITY (e.g., sheen, odor): drum # 2 (now full)
WATER QUALITY METER(S) USED; CALIBRATION DATE / TIME: YSI Quatro
SAMPLING METHOD: Peristaltic Low flow SAMPLE TIME: 1130
SAMPLING PERSONNEL: JXS DUPLICATE "TIME": 1140
REMARKS (e.g., recovery rate): _____

TIME COMPLETED: 1200

WELL CASING VOLUMES

Gal / ft 1-1/4" = 0.077 2" = 0.16 3" = 0.37 4" = 0.65
1-1/2" = 0.10 2-1/2" = 0.24 3-1/2" = 0.50 6" = 1.46

Filename: J:\Support\Library\FIELD AND LAB FORMS\AutoCAD_Water Sampling Log.dwg Date: 02-10-2011 Login: sac

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

JOB NO.: 21-1-22242-112

Project: Former Montlake Gas Station

Conducted by: MRH

Weather: Cloudy, High 60's

WATER LEVEL MEASUREMENTS

Location ID	Date	Time	Measuring Point (MP)	Depth to Water from MP (feet)	VWP Reading Digits	VWP Reading °C	Comments (i.e. pressure change when opend, inaccesibility, etc.)
MW-8-22	8/9/23	0925	NTOC	13.76			BNV 406
MW-6-22	↓	0927	↓	14.67			BNV 407
MW-9-22		0930		14.85			BNV 409
MW-2-19		1000		9.80			BLT 996

Comments: _____

Checked By: _____ Date: _____

SHANNON & WILSON, INC. GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

WATER SAMPLING LOG

JOB NO. 21-1-22242-112
PAGE 1 OF 1

OWNER / LOCATION: Former Montlake GAS Station
DATE: 8/9/2023
WELL NO: MW-B-22 SAMPLE NO: MW-B-22-08092023 ECOLOGY TAG NO: BNV 406
DUPLICATE NO: MW-101-08092023
WEATHER: Cloudy, 60s
MS / MSD? Yes ☐ No ☒
WELL SITE CONDITIONS / MP DEFINITION: NTOC
(MP is typically the north PVC rim)

SAMPLING DATA

TIME STARTED: 0939
PID HEAD SPACE: N/A ppm
MP DISTANCE ABOVE / BELOW GROUND SURFACE: 0.3 ft.
TOTAL DEPTH OF WELL BELOW MP: 26.05 ft.
DTW BELOW MP: 13.76 ft.
WATER COLUMN IN WELL: 12.29 ft.
CASING DIAMETER: 2 in.
GALLONS PER FOOT: 0.16
GALLONS IN WELL: 1.96 (x3 = 5.9 gal)
TIME PURGING STARTED: 0945

LNAPL THICKNESS: ft. Sample ☐
DNAPL THICKNESS: ft. Sample ☐

SAMPLE CONTAINERS

Number	Size	Type	Pres.

FIELD PARAMETERS

GALLONS REMOVED	TEMP. (C°)	~~Eh~~ ORP (mV)	pH	COND. (µmhos / cm)	D.O. (mg / L)	TURBIDITY (NTU)	SALINITY (%)	TDS (g/L)	COLOR	TIME
Initial	16.1	245.9	6.79	796	0.59	2.02			clear	0948
0.5	15.7	256.3	6.94	737	0.18	3.33			clear	0953
1.0	15.7	254.4	6.96	736	0.18	4.36			clear	0958
1.25	15.8	252.3	6.97	738	0.15	1.90			clear	1001
1.5	15.7	248.6	7.00	739	0.14	3.59			clear	1006
After Sampling										

EVACUATION METHOD: Peri-pump
PUMP INTAKE DEPTH (if applicable): Mid-screen
PURGE WATER DISPOSITION (e.g., drum #): Drum on Site
WATER QUALITY (e.g., sheen, odor): No odor or sheen
WATER QUALITY METER(S) USED; CALIBRATION DATE / TIME: YSI pro Quatro, 8/9/23 @ 0900
SAMPLING METHOD: EPA Low Flow
SAMPLE TIME: 1015
SAMPLING PERSONNEL: MRH
DUPLICATE "TIME": 1600
REMARKS (e.g., recovery rate): Duplicate Sample MW-101-08092023

TIME COMPLETED: 1050

WELL CASING VOLUMES
Gal / ft 1-1/4" = 0.077 2" = 0.16 3" = 0.37 4" = 0.65
1-1/2" = 0.10 2-1/2" = 0.24 3-1/2" = 0.50 6" = 1.46

Filename: J:\Support\Library\FIELD AND LAB FORMS\AutoCAD_Water Sampling Log.dwg Date: 12-10-2011 Login: sac

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

WATER SAMPLING LOG

JOB NO. 21-1-22242-11.2
PAGE 1 OF 1

OWNER / LOCATION: Former Montlake Gas Station
DATE: 8/9/2023
WELL NO: MW-2-19 SAMPLE NO: MW-2-19:08092023 ECOLOGY TAG NO: BLT996
DUPLICATE NO: —
WEATHER: Some rain, 60s
MS / MSD? Yes ☐ No ☑
WELL SITE CONDITIONS / MP DEFINITION: NTOC
(MP is typically the north PVC rim)

SAMPLING DATA

TIME STARTED: 1100
PID HEAD SPACE: N/A ppm
MP DISTANCE ABOVE / BELOW GROUND SURFACE: 0.3 ft.
TOTAL DEPTH OF WELL BELOW MP: 19.26 ft.
DTW BELOW MP: 9.80 ft.
WATER COLUMN IN WELL: 9.46 ft.
CASING DIAMETER: 2 in.
GALLONS PER FOOT: 0.16
GALLONS IN WELL: 1.51 (x3 = 4.5)
TIME PURGING STARTED: 1106

LNAPL THICKNESS: — ft. Sample ☐
DNAPL THICKNESS: / ft. Sample ☐

SAMPLE CONTAINERS

Number	Size	Type	Pres.

FIELD PARAMETERS

GALLONS REMOVED	TEMP. (C°)	ORP Eh (mV)	pH	COND. (µmhos/cm)	D.O. (mg/L)	TURBIDITY (NTU)	SALINITY (%)	TDS (g/L)	COLOR	TIME
Initial	16.3	188.9	6.31	771	0.47	6.85			clear	1108
0.25	16.3	190.9	6.28	759	0.23	5.27			clear	1111
0.5	16.4	191.3	6.29	752	0.19	4.50			clear	1114
0.75	16.5	191.5	6.28	753	0.18	3.49			clear	1117
1.0	16.6	191.2	6.28	754	0.22	4.21			clear	1122
1.25	16.5	191.1	6.26	754	0.23	3.40			clear	1127
After Sampling										

EVACUATION METHOD: Peri-pump
PUMP INTAKE DEPTH (if applicable): Mid Screen
PURGE WATER DISPOSITION (e.g., drum #): Drum on site
WATER QUALITY (e.g., sheen, odor): No odor or sheen
WATER QUALITY METER(S) USED; CALIBRATION DATE / TIME: YSI Pro Quatro; 8/9/23 @0900
SAMPLING METHOD: EPA Low Flow
SAMPLE TIME: 1140
SAMPLING PERSONNEL: MPH
DUPLICATE "TIME": —
REMARKS (e.g., recovery rate):

TIME COMPLETED: 1200

WELL CASING VOLUMES

Gal / ft 1-1/4" = 0.077 2" = 0.16 3" = 0.37 4" = 0.65
1-1/2" = 0.10 2-1/2" = 0.24 3-1/2" = 0.50 6" = 1.46

Filename: J:\Support\Library\FIELD AND LAB FORMS\AutoCAD_Water Sampling Log.dwg Date: 02-10-2011 Login: sac

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

WATER SAMPLING LOG

JOB NO. 21-1-22242-112
PAGE 1 OF 1

OWNER / LOCATION: Former Montlake Gas Station
DATE: 8/9/2023
WELL NO: MW-6-22 SAMPLE NO: MW-6-22-080923 ECOLOGY TAG NO: BNV 407
DUPLICATE NO:
WEATHER: Rain; low 70s
MS / MSD? Yes ☐ No ☑
WELL SITE CONDITIONS / MP DEFINITION: NTOC
(MP is typically the north PVC rim)

SAMPLING DATA

TIME STARTED: 1202
PID HEAD SPACE: N/A ppm
MP DISTANCE ABOVE / BELOW GROUND SURFACE: 0.35 ft.
TOTAL DEPTH OF WELL BELOW MP: 25.98 ft.
DTW BELOW MP: 14.67 ft.
WATER COLUMN IN WELL: 11.31 ft.
CASING DIAMETER: 2 in.
GALLONS PER FOOT: 0.16
GALLONS IN WELL: 1.81 (x3 = 5.43)
TIME PURGING STARTED: 1205

LNAPL THICKNESS: — ft. Sample ☐
DNAPL THICKNESS: — ft. Sample ☐

SAMPLE CONTAINERS

Number	Size	Type	Pres.

FIELD PARAMETERS

GALLONS REMOVED	TEMP. (C°)	ORP Eh (mV)	pH	COND. (µmhos / cm)	D.O. (mg / L)	TURBIDITY (NTU)	SALINITY (%)	TDS (g / L)	COLOR	TIME
Initial	17.5	155.5	7.06	711	1.70	7.46			clear	1206
0.25	17.0	144.3	7.06	712	1.42	1.65			clear	1209
0.5	16.9	121.7	7.07	719	1.32	3.54			clear	1212
0.75	16.9	108.3	7.08	726	1.20	0.18			clear	1215
1.0	17.0	45.0	7.11	739	0.64	2.34			clear	1221
1.25	16.7	0.6	7.13	735	0.43	1.26			clear	1227
1.0	16.7	-39.3	7.13	765	0.20	2.07			clear	1242
2.2	16.6	-41.7	7.13	767	0.20	4.24			clear	1245
2.4	16.6	-43.3	7.13	767	0.19	3.30			clear	1249
After Sampling										

Upward readings for ORP is likely slightly

EVACUATION METHOD: Peri Pump
PUMP INTAKE DEPTH (if applicable): Mid Screen
PURGE WATER DISPOSITION (e.g., drum #): Drum on site
WATER QUALITY (e.g., sheen, odor): No odor or sheen
WATER QUALITY METER(S) USED; CALIBRATION DATE / TIME: YSI Pro Quatro, 8/9/23 @ 0700
SAMPLING METHOD: EPA Low Flow
SAMPLE TIME: 1300
SAMPLING PERSONNEL: MRH
DUPLICATE "TIME":
REMARKS (e.g., recovery rate): Had to purge relatively slowly to avoid drawdown

TIME COMPLETED: 1310

Filename: J:\Support\Library\FIELD AND LAB FORMS\AutoCAD\Water Sampling Log.dwg Date: 02-10-2011 Login: sac

WELL CASING VOLUMES

Gal / ft 1-1/4" = 0.077 2" = 0.16 3" = 0.37 4" = 0.65
1-1/2" = 0.10 2-1/2" = 0.24 3-1/2" = 0.50 6" = 1.46

SHANNON & WILSON, INC. GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

WATER SAMPLING LOG

JOB NO. 21-1-22242-112
PAGE 1 OF 1

OWNER / LOCATION: Former Montlake Gas Station
DATE: 8/9/23
WELL NO: MW-9-22 SAMPLE NO: MW-9-22-08092023 ECOLOGY TAG NO: BNV409
DUPLICATE NO:
WEATHER: Cloudy, 70s
MS / MSD? Yes ☐ No ☑
WELL SITE CONDITIONS / MP DEFINITION: NTOC
(MP is typically the north PVC rim)

SAMPLING DATA

TIME STARTED: 1315
PID HEAD SPACE: N/A ppm
MP DISTANCE ABOVE / BELOW GROUND SURFACE: ft.
TOTAL DEPTH OF WELL BELOW MP: 25.15 ft.
DTW BELOW MP: 14.85 ft.
WATER COLUMN IN WELL: 10.3 ft.
CASING DIAMETER: ~~0.16~~ 2 in.
GALLONS PER FOOT: ~~0.16~~ 0.16
GALLONS IN WELL: 1.65 (x3=4.9)
TIME PURGING STARTED: 1319

LNAPL THICKNESS: ft. Sample ☐
DNAPL THICKNESS: ft. Sample ☐

SAMPLE CONTAINERS

Number	Size	Type	Pres.

FIELD PARAMETERS

GALLONS REMOVED	TEMP. (C°)	ORP Eh (mV)	pH	COND. (µmhos/cm)	D.O. (mg/L)	TURBIDITY (NTU)	SALINITY (%)	TDS (g/L)	COLOR	TIME
Initial	16.2	98.1	7.15	551	1.44	9.82			clear	1319
0.2	15.6	99.0	7.01	545	0.47	4.51			clear	1322
0.4	15.5	99.3	6.89	538	0.21	4.63			clear	1325
0.6	15.7	98.5	6.83	537	0.16	4.50			clear	1328
0.8	15.7	97.7	6.82	536	0.21	3.89			clear	1331
1.0	15.7	97.1	6.82	536	0.20	3.82			clear	1334
After Sampling										

EVACUATION METHOD: Peri pump
PUMP INTAKE DEPTH (if applicable): Mid Screen
PURGE WATER DISPOSITION (e.g., drum #): Drum on site
WATER QUALITY (e.g., sheen, odor): No odor or sheen
WATER QUALITY METER(S) USED; CALIBRATION DATE / TIME: YSI Pro Quatro ; 8/9/23 @ 0900
SAMPLING METHOD: EPA LOW FLOW SAMPLE TIME: 1345
SAMPLING PERSONNEL: MKH DUPLICATE "TIME":
REMARKS (e.g., recovery rate):

TIME COMPLETED: 1400

WELL CASING VOLUMES

Gal / ft 1-1/4" = 0.077 2" = 0.16 3" = 0.37 4" = 0.65
1-1/2" = 0.10 2-1/2" = 0.24 3-1/2" = 0.50 6" = 1.46

Filename: J:\Support\Library\FIELD AND LAB FORMS\AutoCAD_Water Sampling Log.dwg Date: 02-10-2011 Login: sac

SHANNON & WILSON, INC. GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

WATER SAMPLING LOG

JOB NO. 21-1-22242
PAGE 1 OF 1

OWNER / LOCATION: WSDOT / MGS
DATE: 8/25/23
WELL NO: MW-3-19 SAMPLE NO: MW-3-19;082523 ECOLOGY TAG NO: —
DUPLICATE NO: —
WEATHER: Overcast / light rain
MS / MSD? Yes ☐ No ☐
WELL SITE CONDITIONS / MP DEFINITION: No Bolts
(MP is typically the north PVC rim)

SAMPLING DATA

TIME STARTED: 10:15
PID HEAD SPACE: — ppm
MP DISTANCE ABOVE / BELOW GROUND SURFACE: -0.2 ft.
TOTAL DEPTH OF WELL BELOW MP: 25.0 ft.
DTW BELOW MP: 17.46 ft.
WATER COLUMN IN WELL: 7.54 ft.
CASING DIAMETER: 2" in.
GALLONS PER FOOT: 0.16
GALLONS IN WELL: 1.2
TIME PURGING STARTED: —

LNAPL THICKNESS: — ft. Sample ☐
DNAPL THICKNESS: — ft. Sample ☐

SAMPLE CONTAINERS

Number	Size	Type	Pres.
5	40 mL	VOA	HCl
2	0.5 L	Amber	HCl
1	0.25 L	HDPE	HNO_3
1	"	"	None

FIELD PARAMETERS

GALLONS REMOVED	TEMP. (C°)	Eh (mV) ORP	pH	COND. (µmhos / cm)	D.O. (mg / L)	TURBIDITY (NTU)	SALINITY (%)	TDS (g / L)	COLOR	TIME
Initial	17.0	-107.9	7.48	869	0.48	8.9	—	—	Clear	1030
0.8	17.2	-136.8	7.45	885	0.30	12.0	—	—	"	1033
1.1	17.2	-159.0	7.35	893	0.19	11.8	—	—	"	1036
1.4	17.1	-168.7	7.20	894	0.22	18.05	—	—	"	1039
1.7	17.1	-166.4	7.19	877	0.23	16.45	—	—	"	1042
2.0	17.0	-169.9	7.18	875	0.22	16.02	—	—	"	1045
2.3	17.0	-169.8	7.17	873	0.21	16.59	—	—	"	1048
After Sampling										

EVACUATION METHOD: Peristaltic
PUMP INTAKE DEPTH (if applicable): —
PURGE WATER DISPOSITION (e.g., drum #): Drum
WATER QUALITY (e.g., sheen, odor): Odor see remarks
WATER QUALITY METER(S) USED; CALIBRATION DATE / TIME: YSI Professional 8/24 1200
SAMPLING METHOD: Low Flow
SAMPLE TIME: 1050
SAMPLING PERSONNEL: JXS
DUPLICATE "TIME": —
REMARKS (e.g., recovery rate): Hydrocarbon odor / no sheen observed

TIME COMPLETED: 1050

WELL CASING VOLUMES

Gal / ft 1-1/4" = 0.077 2" = 0.16 3" = 0.37 4" = 0.65
1-1/2" = 0.10 2-1/2" = 0.24 3-1/2" = 0.50 6" = 1.46

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

WATER SAMPLING LOG

JOB NO. 21-1-22242
PAGE _____ OF _____

OWNER / LOCATION: Montlake Gas Station
DATE: 8/25/23
WELL NO: MW-6-22 SAMPLE NO: MW-6-22:082523 ECOLOGY TAG NO: _____
DUPLICATE NO: _____
WEATHER: Overcast
MS / MSD? Yes ☐ No ☒
WELL SITE CONDITIONS / MP DEFINITION: Good
(MP is typically the north PVC rim)

SAMPLING DATA

TIME STARTED: 0915
PID HEAD SPACE: — ppm
MP DISTANCE ABOVE / BELOW GROUND SURFACE: 0.3 ft.
TOTAL DEPTH OF WELL BELOW MP: 24.5 ft.
DTW BELOW MP: 15.14 ft.
WATER COLUMN IN WELL: 9.36 ft.
CASING DIAMETER: 2" in.
GALLONS PER FOOT: 0.16
GALLONS IN WELL: 1.5
TIME PURGING STARTED: 0925

LNAPL THICKNESS: — ft. Sample ☐
DNAPL THICKNESS: — ft. Sample ☐

SAMPLE CONTAINERS

Number	Size	Type	Pres.
2	0.5L	Amber	HCl
1			
1			
3			

FIELD PARAMETERS

GALLONS REMOVED	TEMP. (C°)	~~Eh~~ ORP (mV)	pH	COND. (µmhos / cm)	D.O. (mg / L)	TURBIDITY (NTU)	SALINITY (%)	TDS (g / L)	COLOR	TIME
Initial	16.3	-99.7	6.76	550	0.43	16.34*	—	—	clear	0930
0.5	16.3	-102.4	6.74	548	0.33	30.5*	—	—	"	0933
0.8	16.3	-106.6	6.73	546	0.25	39.0	—	—	"	0936
1.1	16.3	-105.4	6.72	544	0.23	36.1	—	—	"	0939
1.4	16.4	-98.2	6.72	544	0.26	33.2	—	—	"	0942
1.7	16.3	-98.5	6.71	543	0.27	32.5	—	—	"	0945
2.0	16.3	-98.9	6.71	543	0.27	32.1	—	—	"	0948
After Sampling										

EVACUATION METHOD: Peristaltic pump
PUMP INTAKE DEPTH (if applicable): _____
PURGE WATER DISPOSITION (e.g., drum #): Drum
WATER QUALITY (e.g., sheen, odor): No odor or sheen
WATER QUALITY METER(S) USED; CALIBRATION DATE / TIME: ~~YSI~~ YSI Pro Series 8/24 1700
SAMPLING METHOD: Low Flow
SAMPLE TIME: 0950
SAMPLING PERSONNEL: JXS
DUPLICATE "TIME": _____
REMARKS (e.g., recovery rate): Turb. by Geotech Portable Meter
* YSI Pro turb to erratic

TIME COMPLETED: _____

WELL CASING VOLUMES

Gal / ft 1-1/4" = 0.077 2" = 0.16 3" = 0.37 4" = 0.65
1-1/2" = 0.10 2-1/2" = 0.24 3-1/2" = 0.50 6" = 1.46

Filename: J:\Support\Library\FIELD AND LAB FORMS\AutoCAD_Water Sampling Log.dwg Date: 02-10-2011 Login: sar

Attachment 2

Contents:

Laboratory Report and Chain-of-Custody Form (51 Sheets)

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

July 14, 2023

Joseph Sawdey
Shannon & Wilson, Inc.
400 N 34th Street, Suite 100
Seattle, WA 98103

Re: Analytical Data for Project 21-1-22242-112
Laboratory Reference No. 2307-021

Dear Joseph:

Enclosed are the analytical results and associated quality control data for samples submitted on July 6, 2023.

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

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

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: July 14, 2023
Samples Submitted: July 6, 2023
Laboratory Reference: 2307-021
Project: 21-1-22242-112

Case Narrative

Samples were collected on July 5, 2023 and received by the laboratory on July 6, 2023. They were maintained at the laboratory at a temperature of 2°C to 6°C.

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

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

Date of Report: July 14, 2023
Samples Submitted: July 6, 2023
Laboratory Reference: 2307-021
Project: 21-1-22242-112

GASOLINE RANGE ORGANICS
NWTPH-Gx

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**Trip Blanks**					
Laboratory ID:	07-021-01					
Gasoline	**ND**	100	NWTPH-Gx	7-10-23	7-10-23	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*95*	*65-122*				
Client ID:	**MW-7-22:07052023**					
Laboratory ID:	07-021-02					
Gasoline	**ND**	100	NWTPH-Gx	7-10-23	7-10-23	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*88*	*65-122*				

Date of Report: July 14, 2023
Samples Submitted: July 6, 2023
Laboratory Reference: 2307-021
Project: 21-1-22242-112

GASOLINE RANGE ORGANICS
NWTPH-Gx
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0710W2					
Gasoline	**ND**	100	NWTPH-Gx	7-10-23	7-10-23	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*86*	*65-122*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	07-021-02										
	ORIG	DUP									
Gasoline	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Surrogate:											
Fluorobenzene						*88*	*88*	*65-122*			

Date of Report: July 14, 2023
Samples Submitted: July 6, 2023
Laboratory Reference: 2307-021
Project: 21-1-22242-112

VOLATILE ORGANICS EPA 8260D

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**Trip Blanks**					
Laboratory ID:	07-021-01					
Benzene	ND	0.20	EPA 8260D	7-7-23	7-7-23	
Toluene	ND	1.0	EPA 8260D	7-7-23	7-7-23	
Ethylbenzene	ND	0.20	EPA 8260D	7-7-23	7-7-23	
m,p-Xylene	ND	0.40	EPA 8260D	7-7-23	7-7-23	
o-Xylene	ND	0.20	EPA 8260D	7-7-23	7-7-23	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*102*	*75-127*				
Toluene-d8	*98*	*80-127*				
4-Bromofluorobenzene	*103*	*78-125*				
Client ID:	**MW-7-22:07052023**					
Laboratory ID:	07-021-02					
Benzene	ND	0.20	EPA 8260D	7-7-23	7-7-23	
Toluene	ND	1.0	EPA 8260D	7-7-23	7-7-23	
Ethylbenzene	ND	0.20	EPA 8260D	7-7-23	7-7-23	
m,p-Xylene	ND	0.40	EPA 8260D	7-7-23	7-7-23	
o-Xylene	ND	0.20	EPA 8260D	7-7-23	7-7-23	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*102*	*75-127*				
Toluene-d8	*97*	*80-127*				
4-Bromofluorobenzene	*102*	*78-125*				

Date of Report: July 14, 2023
Samples Submitted: July 6, 2023
Laboratory Reference: 2307-021
Project: 21-1-22242-112

VOLATILE ORGANICS EPA 8260D
QUALITY CONTROL

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0707W1					
Benzene	ND	0.20	EPA 8260D	7-7-23	7-7-23	
Toluene	ND	1.0	EPA 8260D	7-7-23	7-7-23	
Ethylbenzene	ND	0.20	EPA 8260D	7-7-23	7-7-23	
m,p-Xylene	ND	0.40	EPA 8260D	7-7-23	7-7-23	
o-Xylene	ND	0.20	EPA 8260D	7-7-23	7-7-23	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*100*	*75-127*				
Toluene-d8	*98*	*80-127*				
4-Bromofluorobenzene	*103*	*78-125*				

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0707W1									
	SB	SBD	SB	SBD	SB	SBD				
Benzene	**9.32**	**9.40**	10.0	10.0	93	94	81-124	1	16	
Toluene	**9.06**	**9.16**	10.0	10.0	91	92	83-118	1	18	
Ethylbenzene	**10.1**	**10.2**	10.0	10.0	101	102	80-124	1	15	
m,p-Xylene	**19.8**	**19.9**	20.0	20.0	99	100	80-124	1	15	
o-Xylene	**10.1**	**10.0**	10.0	10.0	101	100	80-124	1	15	
Surrogate:										
Dibromofluoromethane					*101*	*102*	*75-127*			
Toluene-d8					*100*	*99*	*80-127*			
4-Bromofluorobenzene					*107*	*105*	*78-125*			

Date of Report: July 14, 2023
Samples Submitted: July 6, 2023
Laboratory Reference: 2307-021
Project: 21-1-22242-112

DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW-7-22:07052023**					
Laboratory ID:	07-021-02					
Diesel Range Organics	**ND**	0.21	NWTPH-Dx	7-10-23	7-10-23	
Lube Oil Range Organics	**ND**	0.21	NWTPH-Dx	7-10-23	7-10-23	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*86*	*50-150*				

Date of Report: July 14, 2023
Samples Submitted: July 6, 2023
Laboratory Reference: 2307-021
Project: 21-1-22242-112

DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx
QUALITY CONTROL

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0710W1					
Diesel Range Organics	**ND**	0.16	NWTPH-Dx	7-10-23	7-10-23	
Lube Oil Range Organics	**ND**	0.16	NWTPH-Dx	7-10-23	7-10-23	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*91*	*50-150*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	SB0710W1										
	ORIG	DUP									
Diesel Fuel #2	**0.397**	**0.367**	NA	NA		NA		NA	8	40	
Surrogate:											
o-Terphenyl						*93*	*83*	*50-150*			

Date of Report: July 14, 2023
Samples Submitted: July 6, 2023
Laboratory Reference: 2307-021
Project: 21-1-22242-112

TOTAL ARSENIC
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW-7-22:07052023**					
Laboratory ID:	07-021-02					
Arsenic	**ND**	3.3	EPA 200.8	7-6-23	7-6-23	

Date of Report: July 14, 2023
Samples Submitted: July 6, 2023
Laboratory Reference: 2307-021
Project: 21-1-22242-112

TOTAL ARSENIC
EPA 200.8
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0706WM1					
Arsenic	**ND**	3.3	EPA 200.8	7-6-23	7-6-23	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	06-191-05										
	ORIG	DUP									
Arsenic	**ND**	**ND**	NA	NA		NA		NA	NA	20	
MATRIX SPIKES											
Laboratory ID:	06-191-05										
	MS	MSD	MS	MSD		MS	MSD				
Arsenic	**121**	**119**	111	111	ND	**109**	**107**	75-125	2	20	

Date of Report: July 14, 2023
Samples Submitted: July 6, 2023
Laboratory Reference: 2307-021
Project: 21-1-22242-112

DISSOLVED ARSENIC
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW-7-22:07052023**					
Laboratory ID:	07-021-02					
Arsenic	**ND**	3.0	EPA 200.8	7-6-23	7-6-23	

Date of Report: July 14, 2023
Samples Submitted: July 6, 2023
Laboratory Reference: 2307-021
Project: 21-1-22242-112

DISSOLVED ARSENIC
EPA 200.8
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0706F1					
Arsenic	**ND**	3.0	EPA 200.8	7-6-23	7-6-23	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	06-348-01										
	ORIG	DUP									
Arsenic	**ND**	**ND**	NA	NA		NA		NA	NA	20	
MATRIX SPIKES											
Laboratory ID:	06-348-01										
	MS	MSD	MS	MSD		MS	MSD				
Arsenic	**81.0**	**76.8**	80.0	80.0	ND	**101**	**96**	75-125	5	20	

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

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

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

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

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

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

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

I - Compound recovery is outside of the control limits.

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

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

L - The RPD is outside of the control limits.

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

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

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

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

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

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

Q - Surrogate recovery is outside of the control limits.

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

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

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

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

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

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

X - Sample extract treated with a mercury cleanup procedure.

X1 - Sample extract treated with a sulfuric acid/silica gel cleanup procedure.

X2 - Sample extract treated with a silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in methods 8260 & 8270, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Y1 - Negative effects of the matrix from this sample on the instrument caused values for this analyte in the bracketing continuing calibration verification standard (CCVs) to be outside of 20% acceptance criteria. Because of this, quantitation limits and sample concentrations should be considered estimates.

Z -

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

Chain of Custody

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

Company: Shannon & Wilson
Project Number: 21-1-22242-112
Project Name: Former Montlake Gas Station
Project Manager: Joseph Sawtelle
Sampled by: " "

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

Laboratory Number: 07-021

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX (8021☐ 8260☒)	NWTPH-Gx	NWTPH-Dx (SG Clean-up ☐) *	Volatiles 8260	Halogenated Volatiles 8260	EDB EPA 8011 (Waters Only)	Semivolatiles 8270/SIM (with low-level PAHs)	PAHs 8270/SIM (low-level)	PCBs 8082	Organochlorine Pesticides 8081	Organophosphorus Pesticides 8270/SIM	Chlorinated Acid Herbicides 8151	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664	Total + dissolved arsenic (As) by EPA 7000.8**		HOLD	% Moisture
1	Trip blanks	7/5	0800	Water	3		X																			
2	MW-7-22:07052023	↓	1130	↓	9		X		X														X			
3	MW-100:07052023	↓	—	↓	9		X		X														X		X	

	Signature	Company	Date	Time
Relinquished		SWI	7/5	14:05
Received	D. Isaacson	ALPHA	7/6/23	1139
Relinquished	D. Isaacson	ALPHA	7/6/23	1214
Received		ORE	7/6/23	1214
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

Invoice WSDOT ATTN: Robyn Boyd: BoydRL@wsdot.wa.gov

* Hold extract for potential analyses w S.G. Cleanup. Initial run w/ SG Cleanup

** Lab to filter dissolved As sample

Data Package: Standard ☐ Level III ☐ Level IV ☐

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

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

August 21, 2023

Joseph Sawdey
Shannon & Wilson, Inc.
400 N 34th Street, Suite 100
Seattle, WA 98103

Re: Analytical Data for Project 21-1-22242-112
Laboratory Reference No. 2308-127

Dear Joseph:

Enclosed are the analytical results and associated quality control data for samples submitted on August 10, 2023.

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

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

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: August 21, 2023
Samples Submitted: August 10, 2023
Laboratory Reference: 2308-127
Project: 21-1-22242-112

Case Narrative

Samples were collected on August 9, 2023 and received by the laboratory on August 10, 2023. They were maintained at the laboratory at a temperature of 2°C to 6°C.

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

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

NWTPH-Dx Analysis

Please note that the data for sample MW-6-22:08092023 was initially erroneously reported with a detection of Diesel range Hydrocarbons at a concentration of 1.5 ppm and Lube Oil Range Hydrocarbons at 0.84 ppm. We were requested to re-extract the sample to confirm the result as it was unexpected. OnSIte re-extracted the complete set of samples and we were not able to reproduce the result in that sample. After further investigation, it was determined that the initial detection was due to a contaminated piece of glassware used in the concentration step in the analytical process.

Please note that any other QA/QC issues associated with these extractions and analyses will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: August 21, 2023
Samples Submitted: August 10, 2023
Laboratory Reference: 2308-127
Project: 21-1-22242-112

GASOLINE RANGE ORGANICS
NWTPH-Gx

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**Trip Blanks**					
Laboratory ID:	08-127-01					
Gasoline	**ND**	100	NWTPH-Gx	8-10-23	8-10-23	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*104*	*65-122*				
Client ID:	**MW-8-22:08092023**					
Laboratory ID:	08-127-02					
Gasoline	**ND**	100	NWTPH-Gx	8-10-23	8-10-23	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*101*	*65-122*				
Client ID:	**MW-2-19:08092023**					
Laboratory ID:	08-127-03					
Gasoline	**ND**	100	NWTPH-Gx	8-10-23	8-10-23	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*104*	*65-122*				
Client ID:	**MW-6-22:08092023**					
Laboratory ID:	08-127-04					
Gasoline	**ND**	400	NWTPH-Gx	8-10-23	8-10-23	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*105*	*65-122*				
Client ID:	**MW-9-22:08092023**					
Laboratory ID:	08-127-05					
Gasoline	**ND**	100	NWTPH-Gx	8-10-23	8-10-23	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*104*	*65-122*				
Client ID:	**MW-101:08092023**					
Laboratory ID:	08-127-06					
Gasoline	**ND**	100	NWTPH-Gx	8-10-23	8-10-23	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*107*	*65-122*				

Date of Report: August 21, 2023
Samples Submitted: August 10, 2023
Laboratory Reference: 2308-127
Project: 21-1-22242-112

GASOLINE RANGE ORGANICS
NWTPH-Gx
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0810W2					
Gasoline	**ND**	100	NWTPH-Gx	8-10-23	8-10-23	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*103*	*65-122*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	08-127-06										
	ORIG	DUP									
Gasoline	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Surrogate:											
Fluorobenzene						*107*	*103*	*65-122*			

Date of Report: August 21, 2023
Samples Submitted: August 10, 2023
Laboratory Reference: 2308-127
Project: 21-1-22242-112

VOLATILE ORGANICS EPA 8260D

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**Trip Blanks**					
Laboratory ID:	08-127-01					
Benzene	ND	0.20	EPA 8260D	8-11-23	8-11-23	
Toluene	ND	1.0	EPA 8260D	8-11-23	8-11-23	
Ethylbenzene	ND	0.20	EPA 8260D	8-11-23	8-11-23	
m,p-Xylene	ND	0.40	EPA 8260D	8-11-23	8-11-23	
o-Xylene	ND	0.20	EPA 8260D	8-11-23	8-11-23	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*96*	*75-127*				
Toluene-d8	*100*	*80-127*				
4-Bromofluorobenzene	*93*	*78-125*				
Client ID:	**MW-8-22:08092023**					
Laboratory ID:	08-127-02					
Benzene	ND	0.20	EPA 8260D	8-11-23	8-11-23	
Toluene	ND	1.0	EPA 8260D	8-11-23	8-11-23	
Ethylbenzene	ND	0.20	EPA 8260D	8-11-23	8-11-23	
m,p-Xylene	ND	0.40	EPA 8260D	8-11-23	8-11-23	
o-Xylene	ND	0.20	EPA 8260D	8-11-23	8-11-23	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*96*	*75-127*				
Toluene-d8	*100*	*80-127*				
4-Bromofluorobenzene	*95*	*78-125*				
Client ID:	**MW-2-19:08092023**					
Laboratory ID:	08-127-03					
Benzene	ND	0.20	EPA 8260D	8-11-23	8-11-23	
Toluene	ND	1.0	EPA 8260D	8-11-23	8-11-23	
Ethylbenzene	ND	0.20	EPA 8260D	8-11-23	8-11-23	
m,p-Xylene	ND	0.40	EPA 8260D	8-11-23	8-11-23	
o-Xylene	ND	0.20	EPA 8260D	8-11-23	8-11-23	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*98*	*75-127*				
Toluene-d8	*101*	*80-127*				
4-Bromofluorobenzene	*93*	*78-125*				

Date of Report: August 21, 2023
Samples Submitted: August 10, 2023
Laboratory Reference: 2308-127
Project: 21-1-22242-112

VOLATILE ORGANICS EPA 8260D

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW-6-22:08092023**					
Laboratory ID:	08-127-04					
Benzene	ND	0.20	EPA 8260D	8-11-23	8-11-23	
Toluene	ND	1.0	EPA 8260D	8-11-23	8-11-23	
Ethylbenzene	ND	0.20	EPA 8260D	8-11-23	8-11-23	
m,p-Xylene	ND	0.40	EPA 8260D	8-11-23	8-11-23	
o-Xylene	ND	0.20	EPA 8260D	8-11-23	8-11-23	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*96*	*75-127*				
Toluene-d8	*101*	*80-127*				
4-Bromofluorobenzene	*93*	*78-125*				
Client ID:	**MW-9-22:08092023**					
Laboratory ID:	08-127-05					
Benzene	ND	0.20	EPA 8260D	8-11-23	8-11-23	
Toluene	ND	1.0	EPA 8260D	8-11-23	8-11-23	
Ethylbenzene	ND	0.20	EPA 8260D	8-11-23	8-11-23	
m,p-Xylene	ND	0.40	EPA 8260D	8-11-23	8-11-23	
o-Xylene	ND	0.20	EPA 8260D	8-11-23	8-11-23	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*96*	*75-127*				
Toluene-d8	*103*	*80-127*				
4-Bromofluorobenzene	*93*	*78-125*				
Client ID:	**MW-101:08092023**					
Laboratory ID:	08-127-06					
Benzene	ND	0.20	EPA 8260D	8-11-23	8-11-23	
Toluene	ND	1.0	EPA 8260D	8-11-23	8-11-23	
Ethylbenzene	ND	0.20	EPA 8260D	8-11-23	8-11-23	
m,p-Xylene	ND	0.40	EPA 8260D	8-11-23	8-11-23	
o-Xylene	ND	0.20	EPA 8260D	8-11-23	8-11-23	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*98*	*75-127*				
Toluene-d8	*100*	*80-127*				
4-Bromofluorobenzene	*93*	*78-125*				

Date of Report: August 21, 2023
Samples Submitted: August 10, 2023
Laboratory Reference: 2308-127
Project: 21-1-22242-112

VOLATILE ORGANICS EPA 8260D
QUALITY CONTROL

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0811W1					
Benzene	ND	0.20	EPA 8260D	8-11-23	8-11-23	
Toluene	ND	1.0	EPA 8260D	8-11-23	8-11-23	
Ethylbenzene	ND	0.20	EPA 8260D	8-11-23	8-11-23	
m,p-Xylene	ND	0.40	EPA 8260D	8-11-23	8-11-23	
o-Xylene	ND	0.20	EPA 8260D	8-11-23	8-11-23	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*96*	*75-127*				
Toluene-d8	*99*	*80-127*				
4-Bromofluorobenzene	*94*	*78-125*				

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0811W1									
	SB	SBD	SB	SBD	SB	SBD				
Benzene	**10.7**	**10.3**	10.0	10.0	107	103	80-121	4	16	
Toluene	**11.1**	**10.6**	10.0	10.0	111	106	80-120	5	18	
Ethylbenzene	**10.4**	**9.87**	10.0	10.0	104	99	80-125	5	18	
m,p-Xylene	**20.7**	**20.1**	20.0	20.0	104	101	80-127	3	18	
o-Xylene	**10.2**	**9.76**	10.0	10.0	102	98	80-126	4	18	
Surrogate:										
Dibromofluoromethane					*99*	*98*	*75-127*			
Toluene-d8					*100*	*100*	*80-127*			
4-Bromofluorobenzene					*99*	*99*	*78-125*			

Date of Report: August 21, 2023
Samples Submitted: August 10, 2023
Laboratory Reference: 2308-127
Project: 21-1-22242-112

DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW-8-22:08092023**					
Laboratory ID:	08-127-02					
Diesel Range Organics	**ND**	0.11	NWTPH-Dx	8-18-23	8-18-23	
Lube Oil Range Organics	**0.26**	0.22	NWTPH-Dx	8-18-23	8-18-23	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*83*	*50-150*				
Client ID:	**MW-2-19:08092023**					
Laboratory ID:	08-127-03					
Diesel Range Organics	**ND**	0.11	NWTPH-Dx	8-18-23	8-18-23	
Lube Oil Range Organics	**ND**	0.22	NWTPH-Dx	8-18-23	8-18-23	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*92*	*50-150*				
Client ID:	**MW-6-22:08092023**					
Laboratory ID:	08-127-04					
Diesel Range Organics	**ND**	0.10	NWTPH-Dx	8-18-23	8-18-23	
Lube Oil Range Organics	**ND**	0.21	NWTPH-Dx	8-18-23	8-18-23	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*96*	*50-150*				
Client ID:	**MW-9-22:08092023**					
Laboratory ID:	08-127-05					
Diesel Range Organics	**ND**	0.11	NWTPH-Dx	8-18-23	8-18-23	
Lube Oil Range Organics	**0.31**	0.21	NWTPH-Dx	8-18-23	8-18-23	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*92*	*50-150*				
Client ID:	**MW-101:08092023**					
Laboratory ID:	08-127-06					
Diesel Range Organics	**ND**	0.11	NWTPH-Dx	8-18-23	8-18-23	
Lube Oil Range Organics	**ND**	0.23	NWTPH-Dx	8-18-23	8-18-23	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*101*	*50-150*				

Date of Report: August 21, 2023
Samples Submitted: August 10, 2023
Laboratory Reference: 2308-127
Project: 21-1-22242-112

DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx
QUALITY CONTROL

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0818W1					
Diesel Range Organics	**ND**	0.080	NWTPH-Dx	8-18-23	8-18-23	
Lube Oil Range Organics	**ND**	0.16	NWTPH-Dx	8-18-23	8-18-23	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*93*	*50-150*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	SB0818W1										
	ORIG	DUP									
Diesel Fuel #2	**0.484**	**0.438**	NA	NA		NA		NA	10	40	
Surrogate:											
o-Terphenyl						*91*	*94*	*50-150*			

Date of Report: August 21, 2023
Samples Submitted: August 10, 2023
Laboratory Reference: 2308-127
Project: 21-1-22242-112

TOTAL ARSENIC
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW-8-22:08092023**					
Laboratory ID:	08-127-02					
Arsenic	**ND**	3.3	EPA 200.8	8-10-23	8-15-23	
Client ID:	**MW-2-19:08092023**					
Laboratory ID:	08-127-03					
Arsenic	**ND**	3.3	EPA 200.8	8-10-23	8-15-23	
Client ID:	**MW-6-22:08092023**					
Laboratory ID:	08-127-04					
Arsenic	**4.6**	3.3	EPA 200.8	8-10-23	8-15-23	
Client ID:	**MW-9-22:08092023**					
Laboratory ID:	08-127-05					
Arsenic	**ND**	3.3	EPA 200.8	8-10-23	8-15-23	
Client ID:	**MW-101:08092023**					
Laboratory ID:	08-127-06					
Arsenic	**ND**	3.3	EPA 200.8	8-10-23	8-15-23	

Date of Report: August 21, 2023
Samples Submitted: August 10, 2023
Laboratory Reference: 2308-127
Project: 21-1-22242-112

TOTAL ARSENIC
EPA 200.8
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0815WM1					
Arsenic	**ND**	3.3	EPA 200.8	8-15-23	8-15-23	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	07-224-04										
	ORIG	DUP									
Arsenic	**ND**	**ND**	NA	NA		NA		NA	NA	20	
MATRIX SPIKES											
Laboratory ID:	07-224-04										
	MS	MSD	MS	MSD		MS	MSD				
Arsenic	**116**	**121**	111	111	ND	**105**	**109**	75-125	4	20	

Date of Report: August 21, 2023
Samples Submitted: August 10, 2023
Laboratory Reference: 2308-127
Project: 21-1-22242-112

DISSOLVED ARSENIC
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW-8-22:08092023**					
Laboratory ID:	08-127-02					
Arsenic	**ND**	3.0	EPA 200.8	8-10-23	8-15-23	
Client ID:	**MW-2-19:08092023**					
Laboratory ID:	08-127-03					
Arsenic	**ND**	3.0	EPA 200.8	8-10-23	8-15-23	
Client ID:	**MW-6-22:08092023**					
Laboratory ID:	08-127-04					
Arsenic	**ND**	3.0	EPA 200.8	8-10-23	8-15-23	
Client ID:	**MW-9-22:08092023**					
Laboratory ID:	08-127-05					
Arsenic	**ND**	3.0	EPA 200.8	8-10-23	8-15-23	
Client ID:	**MW-101:08092023**					
Laboratory ID:	08-127-06					
Arsenic	**ND**	3.0	EPA 200.8	8-10-23	8-15-23	

Date of Report: August 21, 2023
Samples Submitted: August 10, 2023
Laboratory Reference: 2308-127
Project: 21-1-22242-112

DISSOLVED ARSENIC
EPA 200.8
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0810F1					
Arsenic	**ND**	3.0	EPA 200.8	8-10-23	8-15-23	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	08-127-02										
	ORIG	DUP									
Arsenic	**ND**	**ND**	NA	NA		NA		NA	NA	20	
MATRIX SPIKES											
Laboratory ID:	08-127-02										
	MS	MSD	MS	MSD		MS	MSD				
Arsenic	**92.4**	**91.0**	80.0	80.0	ND	**116**	**114**	75-125	2	20	

Date of Report: August 21, 2023
Samples Submitted: August 10, 2023
Laboratory Reference: 2308-127
Project: 21-1-22242-112

DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW-8-22:08092023**					
Laboratory ID:	08-127-02					
Diesel Range Organics	**ND**	0.22	NWTPH-Dx	8-18-23	8-18-23	X2
Lube Oil Range Organics	**ND**	0.22	NWTPH-Dx	8-18-23	8-18-23	X2
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*60*	*50-150*				
Client ID:	**MW-9-22:08092023**					
Laboratory ID:	08-127-05					
Diesel Range Organics	**ND**	0.21	NWTPH-Dx	8-18-23	8-18-23	X2
Lube Oil Range Organics	**ND**	0.21	NWTPH-Dx	8-18-23	8-18-23	X2
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*54*	*50-150*				

Date of Report: August 21, 2023
Samples Submitted: August 10, 2023
Laboratory Reference: 2308-127
Project: 21-1-22242-112

DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx
QUALITY CONTROL

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0818W1					
Diesel Range Organics	**ND**	0.16	NWTPH-Dx	8-18-23	8-18-23	X2
Lube Oil Range Organics	**ND**	0.16	NWTPH-Dx	8-18-23	8-18-23	X2
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*58*	*50-150*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	SB0818W1										
	ORIG	DUP									
Diesel Fuel #2	**0.474**	**0.400**	NA	NA		NA		NA	17	40	X2
Surrogate:											
o-Terphenyl						*89*	*85*	*50-150*			

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

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

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

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

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

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

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

I - Compound recovery is outside of the control limits.

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

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

L - The RPD is outside of the control limits.

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

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

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

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

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

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

Q - Surrogate recovery is outside of the control limits.

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

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

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

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

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

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

X - Sample extract treated with a mercury cleanup procedure.

X1 - Sample extract treated with a sulfuric acid/silica gel cleanup procedure.

X2 - Sample extract treated with a silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in methods 8260 & 8270, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Y1 - Negative effects of the matrix from this sample on the instrument caused values for this analyte in the bracketing continuing calibration verification standard (CCVs) to be outside of 20% acceptance criteria. Because of this, quantitation limits and sample concentrations should be considered estimates.

Z -

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

Chain of Custody

Page 1 of 1

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

Company: Shannon & Wilson
Project Number: 21-1-22242-112
Project Name: Former Montlake Gas Station
Project Manager: Joseph Sawdey
Sampled by: MRH

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☒ 3 Days
☐ Standard (7 Days)
☒ By 8/16/23 (other)

Laboratory Number: 08-127

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX (8021☐ 8260☒)	NWTPH-Gx	NWTPH-Dx (SG Clean-up☐)	Volatiles 8260	Halogenated Volatiles 8260	EDB EPA 8011 (Waters Only)	Semivolatiles 8270/SIM (with low-level PAHs)	PAHs 8270/SIM (low-level)	PCBs 8082	Organochlorine Pesticides 8081	Organophosphorus Pesticides 8270/SIM	Chlorinated Acid Herbicides 8151	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664	Total & diss. As, Sb, Mn 200.8				% Moisture
1	Trip Blanks	8/9/23	0900	Water	3		X																				
2	MW-8-22:08092023		1015		9		X		X														X				
3	MW-2-19:08092023		1140		9		X		X														X				
4	MW-6-22:08092023		1300		9		X		X														X				
5	MW-9-22:08092023		1345		9		X		X														X				
6	MW-101:08092023		1600		9		X		X														X				

	Signature	Company	Date	Time
Relinquished	[signature]	SWI	8/10/23	0800
Received	Speedy Alpha	#17	8/10/23	10:25
Relinquished	Speedy Alpha	#17	8/10/23	12:21
Received	Nichelle Bishop	OSE	~~8/8/23~~ 8/10/23	1221
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions
- Lab to filter metals
- Hold extra volume for potential SGC-Dx analysis

Data Package: Standard ☐ Level III ☐ Level IV ☐
Chromatograms with final report ☐ Electronic Data Deliverables (EDDs) ☐

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

August 31, 2023

Meg Strong
Shannon & Wilson, Inc.
400 N 34th Street, Suite 100
Seattle, WA 98103

Re: Analytical Data for Project 21-1-22242-112
Laboratory Reference No. 2308-300

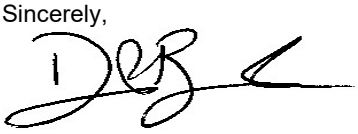
Dear Meg:

Enclosed are the analytical results and associated quality control data for samples submitted on August 25, 2023.

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

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

Sincerely,



David Baumeister
Project Manager

Enclosures

Date of Report: August 31, 2023
Samples Submitted: August 25, 2023
Laboratory Reference: 2308-300
Project: 21-1-22242-112

Case Narrative

Samples were collected on August 25, 2023 and received by the laboratory on August 25, 2023. They were maintained at the laboratory at a temperature of 2°C to 6°C.

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

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

Date of Report: August 31, 2023
Samples Submitted: August 25, 2023
Laboratory Reference: 2308-300
Project: 21-1-22242-112

DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW-6-22:082523**					
Laboratory ID:	08-300-01					
Diesel Range Organics	**ND**	0.21	NWTPH-Dx	8-30-23	8-31-23	
Lube Oil Range Organics	**ND**	0.21	NWTPH-Dx	8-30-23	8-31-23	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*100*	*50-150*				

Date of Report: August 31, 2023
Samples Submitted: August 25, 2023
Laboratory Reference: 2308-300
Project: 21-1-22242-112

DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx
QUALITY CONTROL

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0830W1					
Diesel Range Organics	**ND**	0.16	NWTPH-Dx	8-30-23	8-31-23	
Lube Oil Range Organics	**ND**	0.16	NWTPH-Dx	8-30-23	8-31-23	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*96*	*50-150*				

Analyte	Result		Spike Level		Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE										
Laboratory ID:	SB0830W1									
	ORIG	DUP								
Diesel Fuel #2	**0.396**	**0.376**	NA	NA		NA	NA	5	40	
Surrogate:										
o-Terphenyl						*97* *98*	*50-150*			

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

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

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

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

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

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

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

I - Compound recovery is outside of the control limits.

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

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

L - The RPD is outside of the control limits.

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

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

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

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

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

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

Q - Surrogate recovery is outside of the control limits.

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

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

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

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

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

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

X - Sample extract treated with a mercury cleanup procedure.

X1 - Sample extract treated with a sulfuric acid/silica gel cleanup procedure.

X2 - Sample extract treated with a silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in methods 8260 & 8270, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Y1 - Negative effects of the matrix from this sample on the instrument caused values for this analyte in the bracketing continuing calibration verification standard (CCVs) to be outside of 20% acceptance criteria. Because of this, quantitation limits and sample concentrations should be considered estimates.

Z -

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

Chain of Custody

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

Company: Shannon & Wilson
Project Number: 21-1-22242-112
Project Name: Montlake Gas Station
Project Manager: Meg Strong
Sampled by: Joe Sawkem

Turnaround Request (in working days)

(Check One)

☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☒ 4 days (other) need by 8/31

Laboratory Number: 08-300

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX (8021☐ 8260☐)	NWTPH-Gx	NWTPH-Dx (SG Clean-up ☐)	Volatiles 8260	Halogenated Volatiles 8260	EDB EPA 8011 (Waters Only)	Semivolatiles 8270/SIM (with low-level PAHs)	PAHs 8270/SIM (low-level)	PCBs 8082	Organochlorine Pesticides 8081	Organophosphorus Pesticides 8270/SIM	Chlorinated Acid Herbicides 8151	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664	% Moisture
1	MW-6-22:082523	8/25	0950	H_2O	2				X														

	Signature	Company	Date	Time	Comments/Special Instructions
Relinquished		SWI	8/25	1250	
Received		Alpha	8/25	13:10	
Relinquished		Alpha	8/25	1510	
Received		ORE	8/25/23	1510	
Relinquished					
Received					Data Package: Standard ☐ Level III ☐ Level IV ☐
Reviewed/Date		Reviewed/Date			Chromatograms with final report ☐ Electronic Data Deliverables (EDDs) ☐

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

September 5, 2023

Meg Strong
Shannon & Wilson, Inc.
400 N 34th Street, Suite 100
Seattle, WA 98103

Re: Analytical Data for Project 21-1-22242-112
Laboratory Reference No. 2308-301

Dear Meg:

Enclosed are the analytical results and associated quality control data for samples submitted on August 25, 2023.

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

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

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: September 5, 2023
Samples Submitted: August 25, 2023
Laboratory Reference: 2308-301
Project: 21-1-22242-112

Case Narrative

Samples were collected on August 25, 2023 and received by the laboratory on August 25, 2023. They were maintained at the laboratory at a temperature of 2°C to 6°C.

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

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

Date of Report: September 5, 2023
Samples Submitted: August 25, 2023
Laboratory Reference: 2308-301
Project: 21-1-22242-112

GASOLINE RANGE ORGANICS
NWTPH-Gx

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW-3-19:082523**					
Laboratory ID:	08-301-01					
Gasoline	**10000**	500	NWTPH-Gx	8-28-23	8-28-23	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*95*	*65-122*				

Date of Report: September 5, 2023
Samples Submitted: August 25, 2023
Laboratory Reference: 2308-301
Project: 21-1-22242-112

GASOLINE RANGE ORGANICS
NWTPH-Gx
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0828W2					
Gasoline	**ND**	100	NWTPH-Gx	8-28-23	8-28-23	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*85*	*65-122*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	08-267-02										
	ORIG	DUP									
Gasoline	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Surrogate:											
Fluorobenzene						*92*	*86*	*65-122*			

Date of Report: September 5, 2023
Samples Submitted: August 25, 2023
Laboratory Reference: 2308-301
Project: 21-1-22242-112

VOLATILE ORGANICS EPA 8260D

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW-3-19:082523**					
Laboratory ID:	08-301-01					
Benzene	82	4.0	EPA 8260D	8-28-23	8-28-23	
Toluene	ND	20	EPA 8260D	8-28-23	8-28-23	
Ethylbenzene	37	4.0	EPA 8260D	8-28-23	8-28-23	
m,p-Xylene	90	8.0	EPA 8260D	8-28-23	8-28-23	
o-Xylene	ND	4.0	EPA 8260D	8-28-23	8-28-23	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*103*	*75-127*				
Toluene-d8	*98*	*80-127*				
4-Bromofluorobenzene	*107*	*78-125*				

Date of Report: September 5, 2023
Samples Submitted: August 25, 2023
Laboratory Reference: 2308-301
Project: 21-1-22242-112

VOLATILE ORGANICS EPA 8260D
QUALITY CONTROL

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0828W1					
Benzene	ND	0.20	EPA 8260D	8-28-23	8-28-23	
Toluene	ND	1.0	EPA 8260D	8-28-23	8-28-23	
Ethylbenzene	ND	0.20	EPA 8260D	8-28-23	8-28-23	
m,p-Xylene	ND	0.40	EPA 8260D	8-28-23	8-28-23	
o-Xylene	ND	0.20	EPA 8260D	8-28-23	8-28-23	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*101*	*75-127*				
Toluene-d8	*97*	*80-127*				
4-Bromofluorobenzene	*103*	*78-125*				

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0828W1									
	SB	SBD	SB	SBD	SB	SBD				
Benzene	**10.3**	**9.58**	10.0	10.0	103	96	80-121	7	16	
Toluene	**10.8**	**9.91**	10.0	10.0	108	99	80-120	9	18	
Ethylbenzene	**11.0**	**10.5**	10.0	10.0	110	105	80-125	5	18	
m,p-Xylene	**21.8**	**21.0**	20.0	20.0	109	105	80-127	4	18	
o-Xylene	**11.3**	**11.0**	10.0	10.0	113	110	80-126	3	18	
Surrogate:										
Dibromofluoromethane					*95*	*94*	*75-127*			
Toluene-d8					*98*	*92*	*80-127*			
4-Bromofluorobenzene					*108*	*105*	*78-125*			

Date of Report: September 5, 2023
Samples Submitted: August 25, 2023
Laboratory Reference: 2308-301
Project: 21-1-22242-112

DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW-3-19:082523**					
Laboratory ID:	08-301-01					
Diesel Range Organics	**2.9**	0.20	NWTPH-Dx	8-30-23	8-31-23	M
Lube Oil Range Organics	**0.32**	0.20	NWTPH-Dx	8-30-23	8-31-23	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*96*	*50-150*				

Date of Report: September 5, 2023
Samples Submitted: August 25, 2023
Laboratory Reference: 2308-301
Project: 21-1-22242-112

DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx
QUALITY CONTROL

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0830W1					
Diesel Range Organics	**ND**	0.16	NWTPH-Dx	8-30-23	8-31-23	
Lube Oil Range Organics	**ND**	0.16	NWTPH-Dx	8-30-23	8-31-23	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*96*	*50-150*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	SB0830W1										
	ORIG	DUP									
Diesel Fuel #2	**0.396**	**0.376**	NA	NA		NA		NA	5	40	
Surrogate:											
o-Terphenyl						*97*	*98*	*50-150*			

Date of Report: September 5, 2023
Samples Submitted: August 25, 2023
Laboratory Reference: 2308-301
Project: 21-1-22242-112

TOTAL ARSENIC
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW-3-19:082523**					
Laboratory ID:	08-301-01					
Arsenic	**24**	3.3	EPA 200.8	9-1-23	9-1-23	

Date of Report: September 5, 2023
Samples Submitted: August 25, 2023
Laboratory Reference: 2308-301
Project: 21-1-22242-112

TOTAL ARSENIC
EPA 200.8
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0901WM1					
Arsenic	**ND**	3.3	EPA 200.8	9-1-23	9-1-23	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	08-038-10										
	ORIG	DUP									
Arsenic	**ND**	**ND**	NA	NA		NA		NA	NA	20	
MATRIX SPIKES											
Laboratory ID:	08-276-10										
	MS	MSD	MS	MSD		MS	MSD				
Arsenic	**108**	**108**	111	111	ND	**98**	**97**	75-125	1	20	

Date of Report: September 5, 2023
Samples Submitted: August 25, 2023
Laboratory Reference: 2308-301
Project: 21-1-22242-112

DISSOLVED ARSENIC
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW-3-19:082523**					
Laboratory ID:	08-301-01					
Arsenic	**21**	3.0	EPA 200.8	8-25-23	9-1-23	

Date of Report: September 5, 2023
Samples Submitted: August 25, 2023
Laboratory Reference: 2308-301
Project: 21-1-22242-112

DISSOLVED ARSENIC
EPA 200.8
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0825F1					
Arsenic	**ND**	3.0	EPA 200.8	8-25-23	9-1-23	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	08-276-10										
	ORIG	DUP									
Arsenic	**ND**	**ND**	NA	NA		NA		NA	NA	20	
MATRIX SPIKES											
Laboratory ID:	08-276-10										
	MS	MSD	MS	MSD		MS	MSD				
Arsenic	**86.8**	**93.2**	80.0	80.0	ND	**109**	**117**	75-125	7	20	

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

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

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

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

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

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

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

I - Compound recovery is outside of the control limits.

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

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

L - The RPD is outside of the control limits.

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

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

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

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

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

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

Q - Surrogate recovery is outside of the control limits.

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

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

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

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

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

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

X - Sample extract treated with a mercury cleanup procedure.

X1 - Sample extract treated with a sulfuric acid/silica gel cleanup procedure.

X2 - Sample extract treated with a silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in methods 8260 & 8270, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Y1 - Negative effects of the matrix from this sample on the instrument caused values for this analyte in the bracketing continuing calibration verification standard (CCVs) to be outside of 20% acceptance criteria. Because of this, quantitation limits and sample concentrations should be considered estimates.

Z -

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

Chain of Custody

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

Company: Shannon & Wilson
Project Number: 21-1-22242-112
Project Name: Montlake Gas Station
Project Manager: Meg Strong
Sampled by: Joe Sawdey

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

Laboratory Number: 08-301

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX (8021☐ 8260☒)	NWTPH-Gx	NWTPH-Dx (SG Clean-up ☐)	Volatiles 8260	Halogenated Volatiles 8260	EDB EPA 8011 (Waters Only)	Semivolatiles 8270/SIM (with low-level PAHs)	PAHs 8270/SIM (low-level)	PCBs 8082	Organochlorine Pesticides 8081	Organophosphorus Pesticides 8270/SIM	Chlorinated Acid Herbicides 8151	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664	Total + Dissolved * Arsenic			Holds	% Moisture
1	MW-3-19:082523	8/25	1050	H_2O	9		X		X														X				
2	Trip Blank	—	—	H_2O	1		X																			X	

	Signature	Company	Date	Time
Relinquished		SWI	8/25	1300
Received		alpha	8/25	13:10
Relinquished		alpha	8/25	15:10
Received		CRE	8/25/23	1520
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions
- Hold extra volume for potential NWTPH-Dx w SGC analysis.
- MW-3-19:082523 may have high conc.'s of petroleum hydrocarbons.
* Lab to filter dissolved As sample

Data Package: Standard ☐ Level III ☐ Level IV ☐

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