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
Date:	January 13th, 2025		4.1.27
Copies To:	WSDOT Document Control Project Files	**LOT #:**	LOT-2946

These are:

- ☐ Per Your Request
- ☐ For Your Information
- ☐ For Your Acceptance
- ☒ For Your Files
- ☐ For Your Review and Comment

Sent Via:

- ☐ U.S. Mail
- ☐ Ground Service
- ☐ Express Overnight
- ☒ E-mail
- ☐ Courier
- ☐ Hand Deliver / Pick up via inter-office WSDOT courier

We are transmitting the following materials:

Y-11848 DA 4.1.27 Final Q9 Groundwater Monitoring Report

Comments:

Please find the above document(s) enclosed. We are submitting the *Final Q9 Groundwater Monitoring Report* in accordance with Contract Y-11848, Task Order DA, Deliverables 4.1.27

Program Engineering Manager

1/13/2025
Date

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

MEMORANDUM

To: Ron Paananen, HDR

From: Meg Strong, LG, LHG
Shannon & Wilson

Contract & Task Order: DA Deliverable 4.1.27

File Code:

Date: January 7, 2025

Copies To: Robyn Boyd
Dave Becher
Margaret Kucharski

Subject: Groundwater Monitoring Memorandum – Quarter No. 9, 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 for the site (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

DocuSign Tower
999 Third Ave., Suite 2200
Seattle, WA 98104
Phone: 206-770-3500
Fax: 206-770-3569

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. The monitoring well locations are depicted in Exhibit 1.

Ecology approved decommissioning five (5) of the CGM wells. Ecology approval was provided after a minimum of five (5) consecutive quarterly sampling results at these locations demonstrated groundwater compliance had been achieved within the site property. On July 10, 2023, MW-7-22 was decommissioned, and on March 4, 2024, MW-2-19, MW-6-22, MW-8-22, and MW-9-22 were decommissioned. A property-specific No Further Action letter was issued by Ecology in May 2024.

The CGM well network now consists of MW-3-19, which is the one remaining site monitoring well in which past sampling results have not met the groundwater compliance requirements. This memorandum presents the results of Quarter No. 9 CGM and documents the continued effect of the source zone removal on site groundwater quality. Results of the Quarter Nos. 1 through 8 CGM have been presented previously under a separate cover (Shannon & Wilson, 2022b, 2022c, 2023a, 2023b, 2023c, 2023d, 2024a and 2024b). The Quarter No. 9 event was limited to sampling only MW-3-19.

Quarter No. 9 Groundwater Monitoring Activities

Access to MW-3-19

Associated with construction work on the SR 520 project, the ground surface elevation in the vicinity of MW-3-19 was raised and the road alignment altered such that the well is now within the SR 520 access ramps. A concrete vault was constructed to provide access to the monitoring well that is secured with a locked lid. Access to monitoring well MW-3-19 therefore must be coordinated with ramp closures.

On September 29, 2024, Shannon & Wilson staff accessed MW-3-19 to remove oxygen-releasing compound (ORC®) socks from the monitoring well. It was noted that the monitoring well monument cover had been removed; the well was covered in rubble and consequently the ORC® socks could not be withdrawn. On October 2, 2024, WSDOT reported that their contractor had removed the rubble from within MW-3-19's vault and Shannon & Wilson staff returned to the vault on October 9, 2024, to assess the well condition. A down-hole camera was used to visually assess the monitoring well condition and it was noted that debris was present in the well above the ORC® socks and on the walls of the well.

On October 30, 2024, WSDOT stated that their contractor had undertaken work to enable the well to function. WSDOT reported that their contractor had used a vacuum truck to remove the debris in the well above the socks and removed the ORC® socks. It was reported by WSDOT's contractor that no water was removed during the cleaning work as debris was above the ORC® socks and the water table. Shannon & Wilson staff returned to MW-3-19 on November 6, 2024, and used the down-hole camera to verify that the monitoring well had no visual signs of damage and had been cleaned. On October 21, 2024, WSDOT notified Ecology about issues with accessing and sampling MW-3-19. On November 14, 2024, WSDOT notified Ecology that the well was useable for groundwater sampling after verification by Shannon & Wilson staff.

Well Gauging and Groundwater Sampling

On November 13, 2024, Shannon & Wilson gauged MW-3-19 to monitor for the presence of free product and to measure groundwater elevation at the well. Measurable free product was not encountered within MW-3-19 during Quarter No. 9 gauging; however, a petroleum odor was noted.

Shannon & Wilson purged MW-3-19 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, and turbidity. Field parameters collected during purging of the CGM wells can be found in Attachment 1 – Groundwater Sampling Field Forms. After three well volumes of water were purged, groundwater samples were collected from MW-3-19 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 MW-3-19 were delivered to OnSite Environmental Inc. of Redmond, Washington (OnSite), under standard chain-of-custody procedures and analyzed for the following:

- 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) Method 8260
- Diesel- and oil-range petroleum hydrocarbons using Ecology's NWTPH-Diesel Extended Method (NWTPH-Dx)
- 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 completion of the Quarter No. 9 well gauging and groundwater sampling activities, Shannon & Wilson installed three new 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 a remedial technology designed by Regenesis to expedite and aid in the natural aerobic degradation process of petroleum hydrocarbon contaminants. The timeline for use is approximately one year and the current ORC socks deployed in MW-3-19 will be replaced with new ORC® socks upon WSDOT approval.

Quarter No. 9 Results and Interpretation

Groundwater Elevation

The measured groundwater elevation for Quarter No. 9 is reported in Exhibit 2. Groundwater elevations are in North American Vertical Datum (of 1988). At MW-3-19 during November 2024, the groundwater elevation was approximately 0.8-foot lower compared to the groundwater elevation gauged in February 2024, and similar to the elevation gauged in November 2023.

The lower groundwater elevations observed likely reflect the shallow groundwater response to the dry season.

Groundwater Sampling Results

The laboratory analytical results for collected groundwater samples are summarized in Exhibit 3. The laboratory report is included as Attachment 2.

Groundwater Sampling Interpretation

Groundwater samples from MW-3-19 contained contaminant concentrations that exceeded applicable cleanup levels (CULs) (Exhibit 3).

Concentrations of gasoline-, diesel-, and lube oil-range petroleum hydrocarbons detected in MW-3-19 during Quarter No. 9 were lower compared to Quarter No. 8. The diesel-range petroleum hydrocarbon concentration continues to be flagged as being influenced by the gasoline-range petroleum hydrocarbons (Exhibit 3). The concentration of (1) gasoline-range and (2) diesel-range plus oil-range petroleum hydrocarbons measured in the CGM wells over time have been summarized as trend plots, included as Exhibit 4 and Exhibit 5, respectively.

Concentrations of benzene were lower compared to Quarter No. 8 and similar to concentrations from samples collected in November 2023. Generally, benzene concentrations have been trending downwards since May 2022 (Exhibit 6). (Note: toluene, ethylbenzene, and xylene concentrations have not exceeded applicable CULs during any of the quarterly CGM events.)

Concentrations of total and dissolved arsenic declined since the sampling event in Q8. However, as was concluded in the Remedial Investigation (Shannon & Wilson, 2020), the subsurface petroleum hydrocarbon contamination is suspected to be mobilizing arsenic to groundwater due to the reducing/anaerobic geochemical subsurface conditions produced as a result of the site petroleum hydrocarbon contamination. As petroleum hydrocarbon concentrations continue to diminish (Exhibits 4 and 5), dissolved and total arsenic concentrations at MW-3-19 should also continue to diminish as the groundwater recovers to more oxidizing/aerobic conditions (the naturally occurring arsenic mobilization reduces). The concentration of total and dissolved arsenic in CGM wells over time has been summarized in trend plots, included as Exhibit 7.

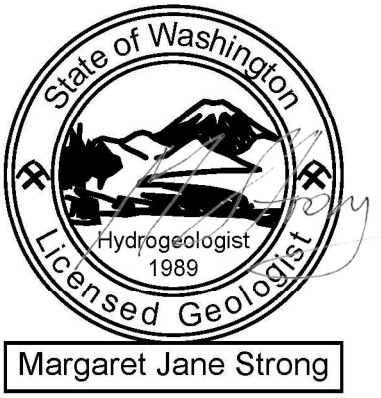
MW-3-19 is the most downgradient CGM well at the site, the furthest from the remedial excavation area, and is located outside the property boundary. The decreasing petroleum hydrocarbon concentrations observed at MW-3-19 during Quarter No. 9 may be reflective of the lagged timing that would be expected for remedial action to manifest in groundwater concentrations near this furthest downgradient well. Quarter No. 9 is the third consecutive monitoring event to document the decreasing trend of petroleum hydrocarbons at MW-3-19, potentially indicating removal of the source zone is becoming manifest in groundwater at this well location.

Given the on-going exceedance of the compliance values in groundwater at well MW-3-19, it is recommended that monitoring be performed on a semi-annual basis until compliance is met.

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



Meg Strong, LG, LHG
Senior Consultant

MJS:JNB/meh: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.

Shannon & Wilson, 2023d, Groundwater monitoring memorandum – quarter no. 6, 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, October 30.

Shannon & Wilson, 2024a, Groundwater monitoring memorandum – quarter no. 7, 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, January 22.

Shannon & Wilson, 2024b, Groundwater monitoring memorandum – quarter no. 8, 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, May 8.

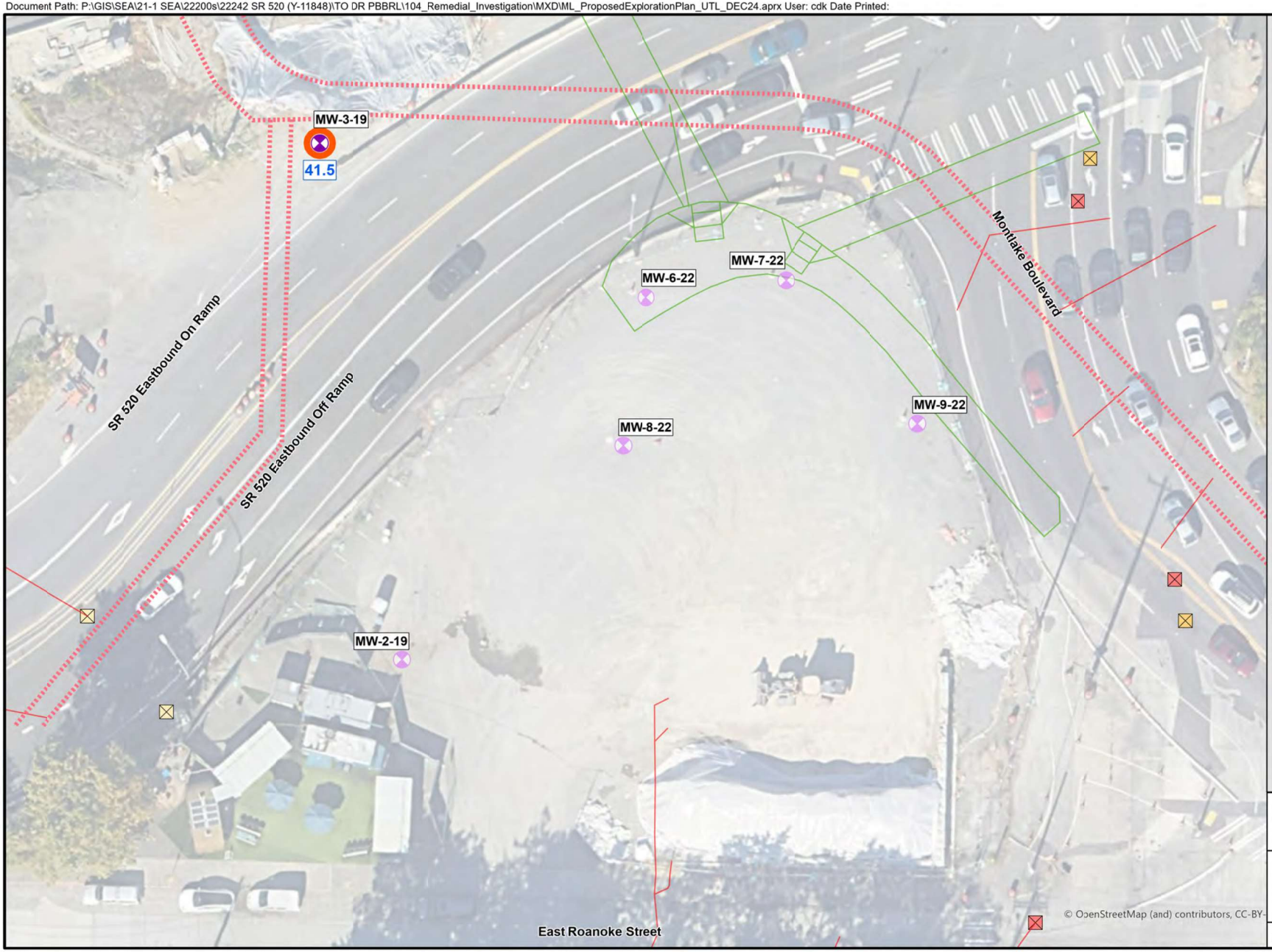
Exhibits

Exhibit 1 – Monitoring Well Locations
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: P:\GIS\SEA\21-1 SEA\22200s\22242 SR 520 (Y-11848)\TO DR PBBRL\104_Remedial_Investigation\MXD\ML_ProposedExplorationPlan_UTL_DEC24.aprx User: cdk Date Printed:



LEGEND

Decommissioned Monitoring Well Location and Designation

Well With Groundwater Concentrations Exceeding Applicable Cleanup Levels

Groundwater Elevation at Monitoring Well (November 2024)

41.5

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.

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. 7
2625 East Montlake Place East
Seattle, WA

MONITORING WELL LOCATIONS

January 2025 21-1-22242-104

SHANNON & WILSON, INC. GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS | EXHIBIT 1

EXHIBIT 2
GROUNDWATER LEVEL MEASUREMENTS

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
				11/17/2023	8.2	49.9
				2/19/2024[4]	-	-
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
				11/17/2023	17.2	41.8
				2/19/2024	16.7	42.3
				11/13/2024	17.5	41.5
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
				11/17/2023[2]	-	-
				2/19/2024[4]	-	-

EXHIBIT 2
GROUNDWATER LEVEL MEASUREMENTS

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-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[3]	13.9	45.2
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
				11/17/2023	9.6	49.0
				2/19/2024[4]	-	-
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
				8/3/2023	14.9	44.7
				11/17/2023	10.7	48.9
				2/19/2024[4]	-	-

NOTES:
1 Monitoring well elevation was surveyed from the center of the well monument lid.
2 Monitoring well was inaccessible, no measurement was taken.
3 MW-7-22 was gauged and sampled prior to it being decomissioned on 7/10/2022 by Graham.
4 Monitoring well elevations were not surveyed in wells that were not sampled.
The reference vertical datum is the North American Vertical Datum (of 1988).
bgs = below ground surface; TOC = top of casing

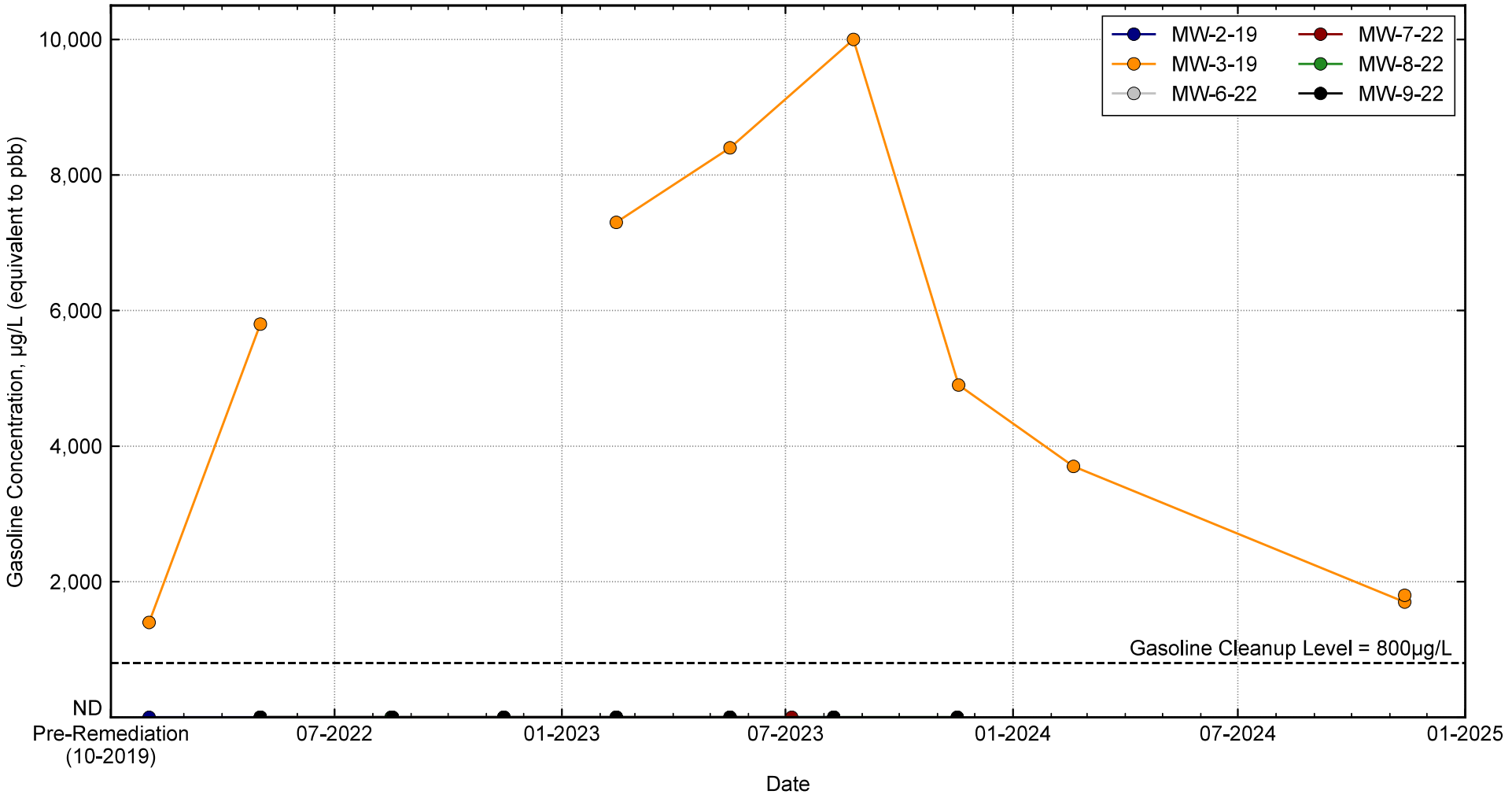
EXHIBIT 3
SUMMARY OF GROUNDWATER ANALYTICAL RESULTS

		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**
	11/18/2023	**4900**	**1700 M**	**320**	**43**	<10	**11**	**22**	<2.0	**20**	**21**
	2/19/2024	**3700**	**1300 M**	**290**	**67**	<20	**8.5**	**10**	<4.0	**21**	**15**
	11/13/2024	**1700**	**1300 M**	**290**	**39**	<5.0	**1.7**	**4.7**	<1.0	**21**	**17**
	11/13/2024[#]	**1800**	**1200 M**	**380**	**44**	<5.0	**1.4**	**4.7**	<1.0	**19**	**15**
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

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-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
	11/17/2023	<100	<110	<210	<0.20	<1.0	<0.20	<0.40	<0.20	<3.3	<3.0
	11/17/2023#	<100	<110	<210	<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
	11/17/2023	<100	<100	<200	<0.20	<1.0	<0.20	<0.40	<0.20	<3.3	<3.0
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	--	--
	2/19/2024	<100	<0.16	<0.16	<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.
Duplicate sample.
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; CUL = cleanup level; EPA = U.S. Environmental Protection Agency; MTCA = Model Toxics Control Act; µg/L = micrograms per liter; NWTPH = Northwest Total Petroleum Hydrocarbon



Notes:
1. The time period beteween pre-remediation and quarterly monitoring has been condensed to compare data more closely.
2. MW-3-19 was not sampled during Q2 or Q3 due to the presence of non-aqueous phase liquid gauged in the well.
3. Gasoline concentrations non-detect (ND) in MW-2-19, MW-6-22, MW-7-22, MW-8-22, and MW-9-22 while these wells were included in quarterly sampling efforts.

SR 520 Bridge Replacement and HOV Program
I-5 to Montlake - I/C and Bridge Replacement
Groundwater Monitoring Report - Quarter No. 9

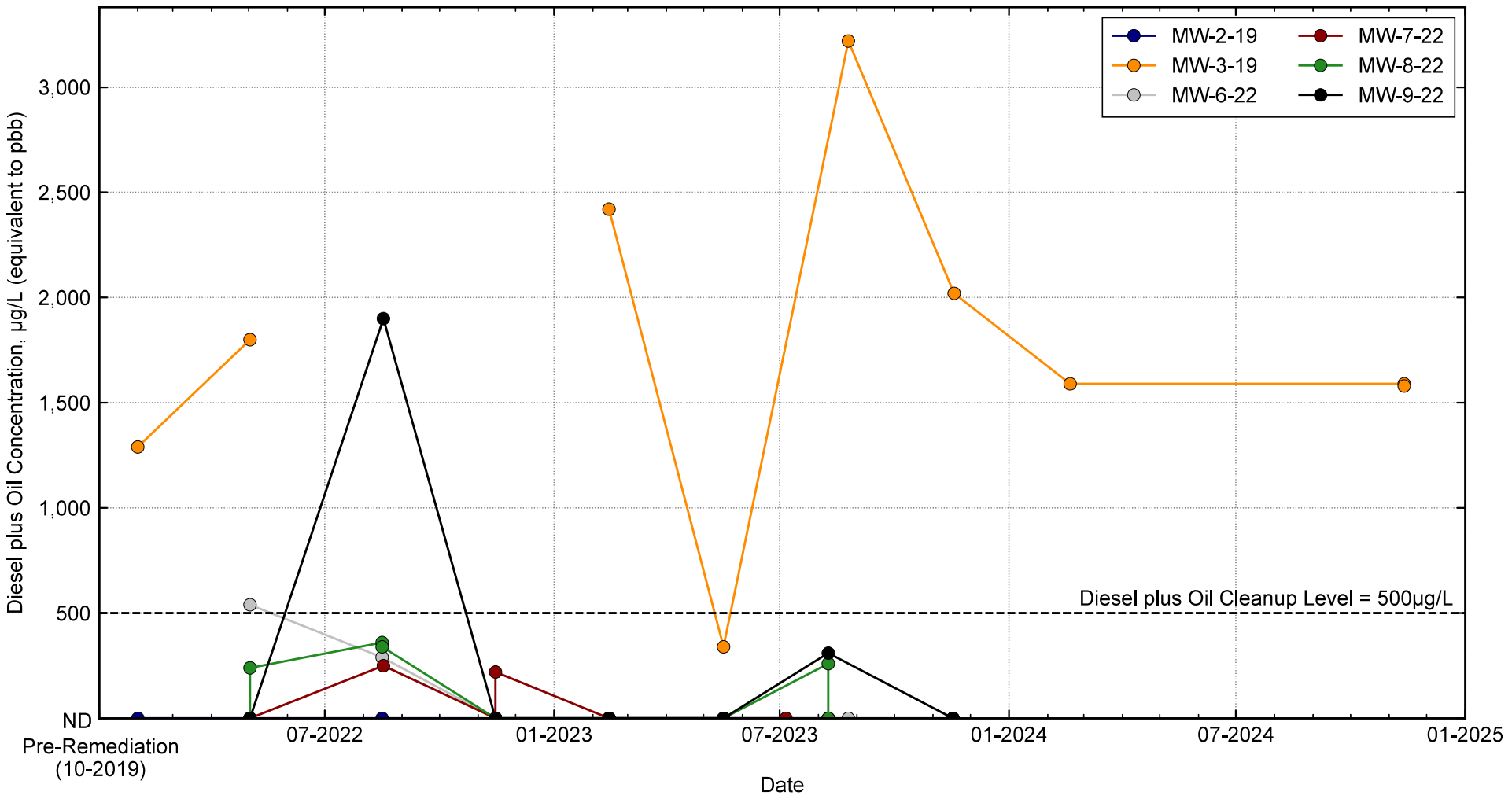
GROUNDWATER CONCENTRATION TREND PLOT - GASOLINE

January 2025 21-1-22242-104

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

EXHIBIT 4

EXHIBIT 4



Notes:
1. The time period beteween pre-remediation and quarterly monitoring has been condensed to compare data more closely.
2. MW-3-19 was not sampled during Q2 or Q3 due to the presence of non-aqueous phase liquid gauged in the well.
3. Diesel/oil concentrations non-detect (ND) or below applicable cleanup levels in MW-2-19, MW-6-22, MW-7-22, MW-8-22, and MW-9-22 since November 2022 (Quarter No. 3) till sampling in those wells ceased.

SR 520 Bridge Replacement and HOV Program
I-5 to Montlake - I/C and Bridge Replacement
Groundwater Monitoring Report - Quarter No. 9

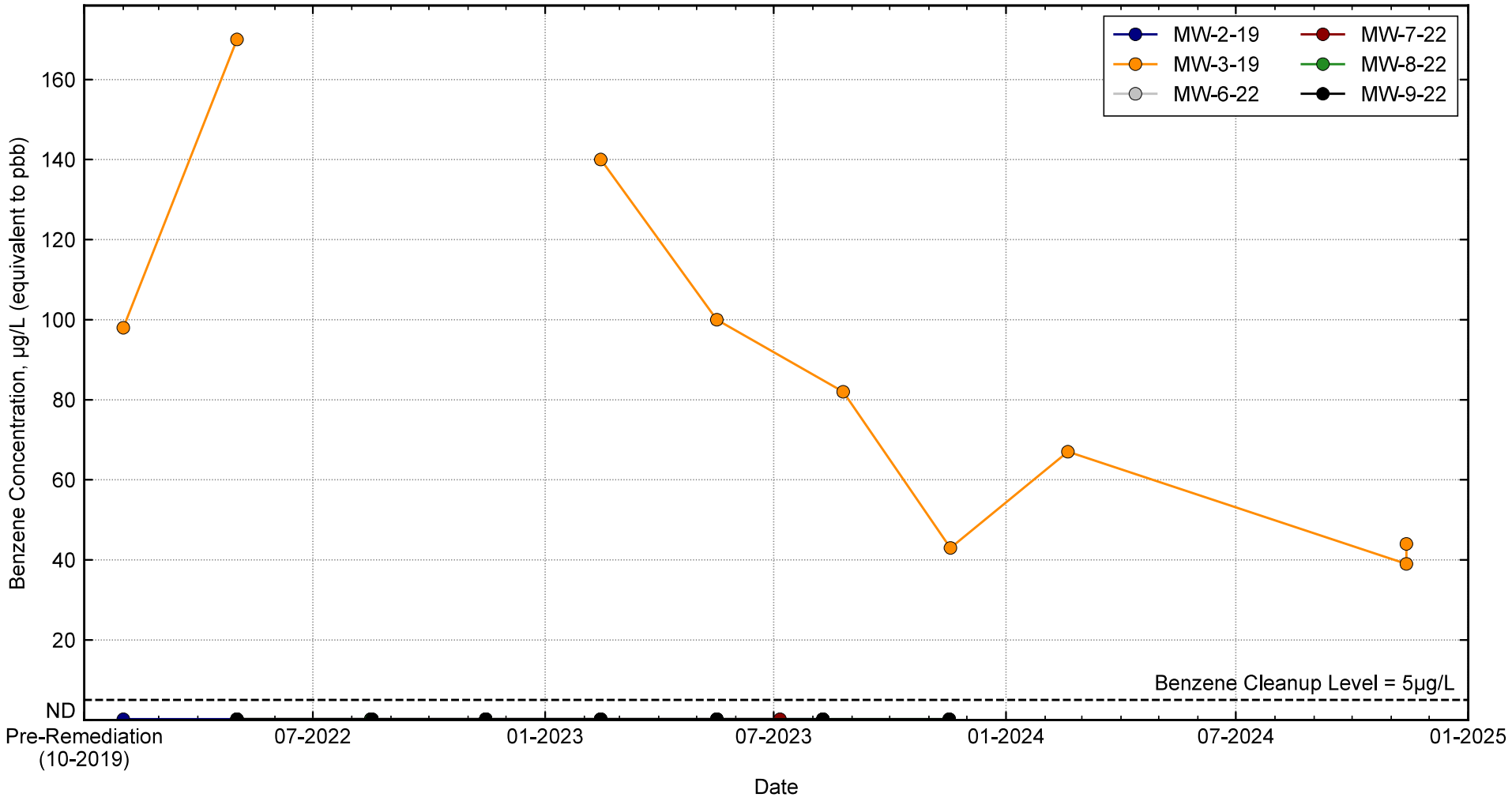
GROUNDWATER CONCENTRATION TREND PLOT - DIESEL PLUS OIL

January 2025 21-1-22242-104

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

EXHIBIT 5

EXHIBIT 5



Notes:
1. The time period beteween pre-remediation and quarterly monitoring has been condensed to compare data more closely.
2. MW-3-19 was not sampled during Q2 or Q3 due to the presence of non-aqueous phase liquid gauged in the well.
3. Benzene concentrations non-detect in MW-2-19, MW-6-22, MW-7-22, MW-8-22, and MW-9-22 while these wells were included in quarterly sampling efforts.

SR 520 Bridge Replacement and HOV Program
I-5 to Montlake - I/C and Bridge Replacement
Groundwater Monitoring Report - Quarter No. 9

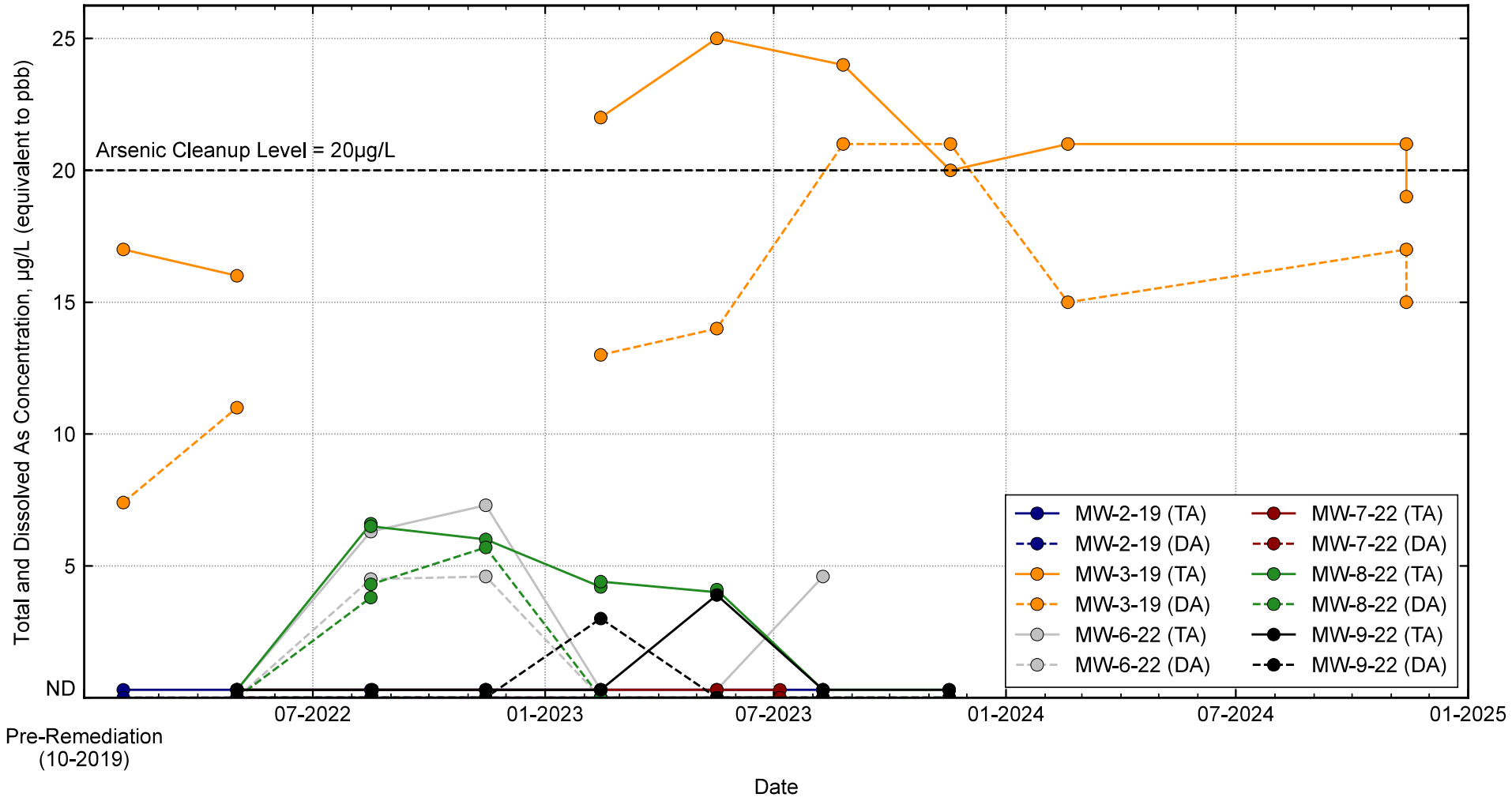
GROUNDWATER CONCENTRATION TREND PLOT - BENZENE

January 2025 21-1-22242-104

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

EXHIBIT 6

EXHIBIT 6



Notes:
1. The time period beteween pre-remediation and quarterly monitoring has been condensed to compare data more closely.
2. MW-3-19 was not sampled during Q2 or Q3 due to the presence of non-aqueous phase liquid gauged in the well.
3. TA = Total Arsenic, DA = Dissolved Arsenic

SR 520 Bridge Replacement and HOV Program
I-5 to Montlake - I/C and Bridge Replacement
Groundwater Monitoring Report - Quarter No. 9

GROUNDWATER CONCENTRATION TREND PLOT - ARSENIC

January 2025 21-1-22242-104

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

EXHIBIT 7

EXHIBIT 7

Attachment 1

Contents:

Groundwater Sampling Field Forms (2 Sheets)

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: 11/13/24
WELL NO: MW-3-19 SAMPLE NO: MW-3-19:111324 ECOLOGY TAG NO: BLT987
DUPLICATE NO: MW-100:111324
WEATHER: Clear, 50's
MS / MSD? Yes ☐ No ☐
WELL SITE CONDITIONS / MP DEFINITION: North TOC
(MP is typically the north PVC rim)

SAMPLING DATA

TIME STARTED: 2210
PID HEAD SPACE: — ppm
MP DISTANCE ABOVE / BELOW GROUND SURFACE: 5.4 ft.
TOTAL DEPTH OF WELL BELOW MP: 33.31 ft. 24.91
DTW BELOW MP: 22.91 - 5.4 = 17.51 ft. 3.0 - 5.4
WATER COLUMN IN WELL: 7.4 ft.
CASING DIAMETER: 2 in.
GALLONS PER FOOT: 0.16
GALLONS IN WELL: 1.184 (x3 = 3.552)
TIME PURGING STARTED: 2230

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

SAMPLE CONTAINERS

Number	Size	Type	Pres.

FIELD PARAMETERS

GALLONS REMOVED	TEMP. (C°)	D.O. (mg / L)	SP.COND. (ms / cm³)	TDS (g / L)	SALINITY (ppt)	pH	ORP	TURBIDITY (NTU)	COLOR	TIME	DTW (ft)
Initial	16.3	1.49	809	—	—	8.32	154.8	241	opaque	2230	17.51
0.3	16.3	1.02	691	—	—	8.14	153.7	241	opaque	2235	
0.6	16.3	0.95	907	—	—	7.96	156.0	182	opaque	2240	
0.9	16.3	1.01	971	—	—	6.54	192.8	71.2	opaque	2245	
1.3	16.4	0.96	979	—	—	6.42	195.7	42.0	opaque	2250	
1.7	16.3	1.01	987	—	—	6.40	184.6	34.9	opaque	2255	
2.1	16.3	0.98	1001	—	—	6.44	173.6	25.8	opaque	2300	
2.3	16.2	1.11	1017	—	—	6.49	175.5	21.9	opaque	2305	
2.6	16.1	0.92	1034	—	—	6.56	177.8	16.4	clear	2310	
2.9	16.0	1.10	940	—	—	6.82	189.9	32.5	clear	2315	

EVACUATION METHOD: Peri pump
PUMP INTAKE DEPTH (if applicable): ~19 ft
PURGE WATER DISPOSITION (e.g., drum #): Drum on site
WATER QUALITY (e.g., sheen, odor): Noticeable odor
WATER QUALITY METER(S) USED; CALIBRATION DATE / TIME: YSI Quatro Cal. by MEH 11/13/24 @ 2130
SAMPLING METHOD: Low flow EPA
SAMPLE TIME: 2330
SAMPLING PERSONNEL: MEH
DUPLICATE "TIME": 2300
REMARKS (e.g., recovery rate):

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: sac

GAC	Temp	D.O	Cond	PH	ORP	Turb	Color	Time	DTW
3.2	15.9	0.87	720	6.52	156.9	@ 20.3	Clear	2320	
3.6	15.2	1.10	726	6.43	167.2	43.5	Clear	2325	
								2330	

3 well volumes purged, started sampling @ 2330

Attachment 2

Contents:

Laboratory Report and Chain-of-Custody Form (18 Sheets)

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

December 4, 2024

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. 2411-205

Dear Joseph:

Enclosed are the analytical results and associated quality control data for samples submitted on November 14, 2024.

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: December 4, 2024
Samples Submitted: November 14, 2024
Laboratory Reference: 2411-205
Project: 21-1-22242-112

Case Narrative

Samples were collected on November 13, 2024 and received by the laboratory on November 14, 2024. 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. However the soil results for the QA/QC samples are reported on a wet-weight basis.

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: December 4, 2024
Samples Submitted: November 14, 2024
Laboratory Reference: 2411-205
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-3-19:111324**					
Laboratory ID:	11-205-01					
Gasoline	**1700**	100	NWTPH-Gx	11-15-24	11-15-24	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*88*	*61-122*				
Client ID:	**MW-100:111324**					
Laboratory ID:	11-205-02					
Gasoline	**1800**	100	NWTPH-Gx	11-15-24	11-15-24	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*90*	*61-122*				

Date of Report: December 4, 2024
Samples Submitted: November 14, 2024
Laboratory Reference: 2411-205
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:	MB1115W1					
Gasoline	**ND**	100	NWTPH-Gx	11-15-24	11-15-24	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*83*	*61-122*				

Analyte	Result		Spike Level		Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE										
Laboratory ID:	11-150-01									
	ORIG	DUP								
Gasoline	**ND**	**ND**	NA	NA		NA	NA	NA	30	
Surrogate:										
Fluorobenzene						*80* *77*	*61-122*			

Date of Report: December 4, 2024
Samples Submitted: November 14, 2024
Laboratory Reference: 2411-205
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-3-19:111324**					
Laboratory ID:	11-205-01					
Benzene	39	1.0	EPA 8260D	11-15-24	11-15-24	
Toluene	ND	5.0	EPA 8260D	11-15-24	11-15-24	
Ethylbenzene	1.7	1.0	EPA 8260D	11-15-24	11-15-24	
m,p-Xylene	4.7	2.0	EPA 8260D	11-15-24	11-15-24	
o-Xylene	ND	1.0	EPA 8260D	11-15-24	11-15-24	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*95*	*68-133*				
Toluene-d8	*91*	*79-123*				
4-Bromofluorobenzene	*115*	*78-117*				
Client ID:	**MW-100:111324**					
Laboratory ID:	11-205-02					
Benzene	44	1.0	EPA 8260D	11-15-24	11-15-24	
Toluene	ND	5.0	EPA 8260D	11-15-24	11-15-24	
Ethylbenzene	1.4	1.0	EPA 8260D	11-15-24	11-15-24	
m,p-Xylene	4.7	2.0	EPA 8260D	11-15-24	11-15-24	
o-Xylene	ND	1.0	EPA 8260D	11-15-24	11-15-24	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*96*	*68-133*				
Toluene-d8	*102*	*79-123*				
4-Bromofluorobenzene	*98*	*78-117*				

Date of Report: December 4, 2024
Samples Submitted: November 14, 2024
Laboratory Reference: 2411-205
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:	MB1115W1					
Benzene	ND	0.20	EPA 8260D	11-15-24	11-15-24	
Toluene	ND	1.0	EPA 8260D	11-15-24	11-15-24	
Ethylbenzene	ND	0.20	EPA 8260D	11-15-24	11-15-24	
m,p-Xylene	ND	0.40	EPA 8260D	11-15-24	11-15-24	
o-Xylene	ND	0.20	EPA 8260D	11-15-24	11-15-24	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*99*	*68-133*				
Toluene-d8	*99*	*79-123*				
4-Bromofluorobenzene	*92*	*78-117*				

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB1115W1									
	SB	SBD	SB	SBD	SB	SBD				
Benzene	**8.98**	**9.88**	10.0	10.0	90	99	76-124	10	15	
Toluene	**10.5**	**9.04**	10.0	10.0	105	90	75-120	15	15	
Ethylbenzene	**10.0**	**10.4**	10.0	10.0	100	104	80-121	4	15	
m,p-Xylene	**20.0**	**22.7**	20.0	20.0	100	114	80-122	13	15	
o-Xylene	**9.76**	**11.0**	10.0	10.0	98	110	80-121	12	15	
Surrogate:										
Dibromofluoromethane					*101*	*96*	*68-133*			
Toluene-d8					*109*	*91*	*79-123*			
4-Bromofluorobenzene					*98*	*110*	*78-117*			

Date of Report: December 4, 2024
Samples Submitted: November 14, 2024
Laboratory Reference: 2411-205
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-3-19:111324**					
Laboratory ID:	11-205-01					
Diesel Range Organics	**1.3**	0.20	NWTPH-Dx	11-15-24	11-19-24	M
Lube Oil Range Organics	**0.29**	0.20	NWTPH-Dx	11-15-24	11-19-24	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*111*	*50-150*				
Client ID:	**MW-100:111324**					
Laboratory ID:	11-205-02					
Diesel Range Organics	**1.2**	0.21	NWTPH-Dx	11-15-24	11-19-24	M
Lube Oil Range Organics	**0.38**	0.21	NWTPH-Dx	11-15-24	11-19-24	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*109*	*50-150*				

Date of Report: December 4, 2024
Samples Submitted: November 14, 2024
Laboratory Reference: 2411-205
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:	MB1115W1					
Diesel Range Organics	**ND**	0.16	NWTPH-Dx	11-15-24	11-15-24	
Lube Oil Range Organics	**ND**	0.16	NWTPH-Dx	11-15-24	11-15-24	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*81*	*50-150*				

Analyte	Result		Spike Level		Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE										
Laboratory ID:	11-174-01									
	ORIG	DUP								
Diesel Range Organics	**0.248**	**0.208**	NA	NA		NA	NA	18	40	
Lube Oil Range	**ND**	**ND**	NA	NA		NA	NA	NA	40	
Surrogate:										
o-Terphenyl						*125* *101*	*50-150*			

Date of Report: December 4, 2024
Samples Submitted: November 14, 2024
Laboratory Reference: 2411-205
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-3-19:111324**					
Laboratory ID:	11-205-01					
Arsenic	**21**	8.3	EPA 200.8	12-2-24	12-2-24	
Client ID:	**MW-100:111324**					
Laboratory ID:	11-205-02					
Arsenic	**19**	8.3	EPA 200.8	12-2-24	12-2-24	

Date of Report: December 4, 2024
Samples Submitted: November 14, 2024
Laboratory Reference: 2411-205
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:	MB1202WM1					
Arsenic	**ND**	3.3	EPA 200.8	12-2-24	12-2-24	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	11-163-05										
	ORIG	DUP									
Arsenic	**ND**	**ND**	NA	NA		NA		NA	NA	20	
MATRIX SPIKES											
Laboratory ID:	11-163-05										
	MS	MSD	MS	MSD		MS	MSD				
Arsenic	**112**	**105**	111	111	ND	**101**	**95**	75-125	6	20	

Date of Report: December 4, 2024
Samples Submitted: November 14, 2024
Laboratory Reference: 2411-205
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-3-19:111324**					
Laboratory ID:	11-205-01					
Arsenic	**17**	3.0	EPA 200.8	11-15-24	12-2-24	
Client ID:	**MW-100:111324**					
Laboratory ID:	11-205-02					
Arsenic	**15**	3.0	EPA 200.8	11-15-24	12-2-24	

Date of Report: December 4, 2024
Samples Submitted: November 14, 2024
Laboratory Reference: 2411-205
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:	MB1115F1					
Arsenic	**ND**	3.0	EPA 200.8	11-15-24	12-2-24	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	11-343-06										
	ORIG	DUP									
Arsenic	**6.44**	**6.02**	NA	NA		NA		NA	7	20	
MATRIX SPIKES											
Laboratory ID:	11-343-06										
	MS	MSD	MS	MSD		MS	MSD				
Arsenic	**90.6**	**89.4**	80.0	80.0	6.44	**105**	**104**	75-125	1	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

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, Inc.
Project Number: 21-1-22242-112
Project Name: Former Montlake Gas Station
Project Manager: Joseph Sawdey
Sampled by: Mason Hall (MEH)

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

Laboratory Number: 11-205

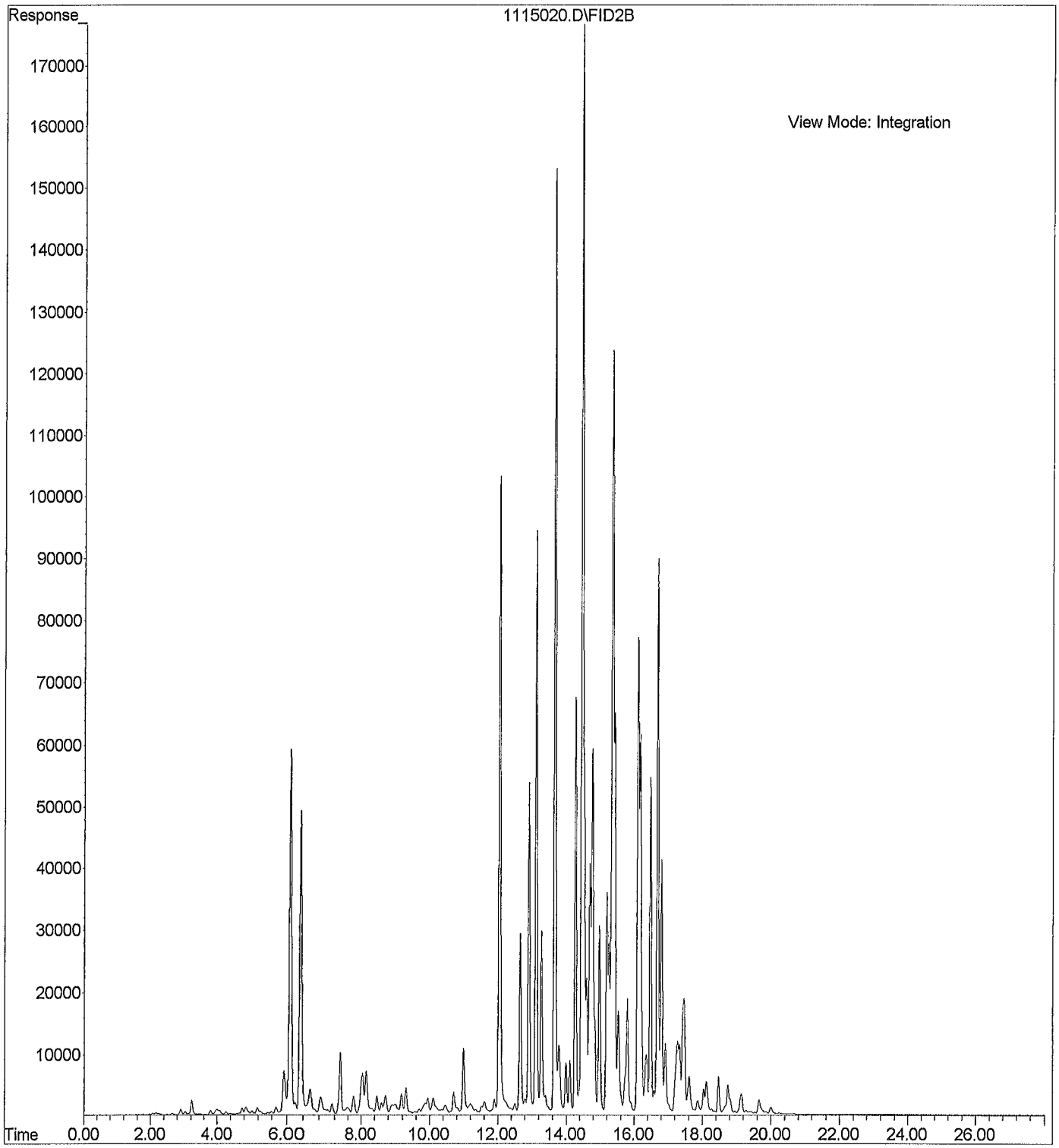
Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX (8021 ☐ 8260 ☒)	NWTPH-Gx	NWTPH-Dx (SG Clean-up ☐)	Volatiles 8260	Halogenated Volatiles 8260	EDB EPA 8011 (Waters Only)	Semivolatiles 8270/SIM (with low-level PAHs)	PAHs 8270/SIM (low-level)	PCBs 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 and dissolved Arsenic	200.8			% Moisture
1	MW-3-19: 111324	11/13/24	2330	GW	11		X		X														X				
2	MW-100: 111324	11/13/24	2300	GW	11		X		X														X				
3	TB-1-111324	11/13/24		W	3		(X)																				

	Signature	Company	Date	Time
Relinquished		Shannon & Wilson	11/14/24	1030
Received		alpha	11/14/24	12:50
Relinquished		alpha	11/14/24	15:05
Received		OSE	11/14/24	1505
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

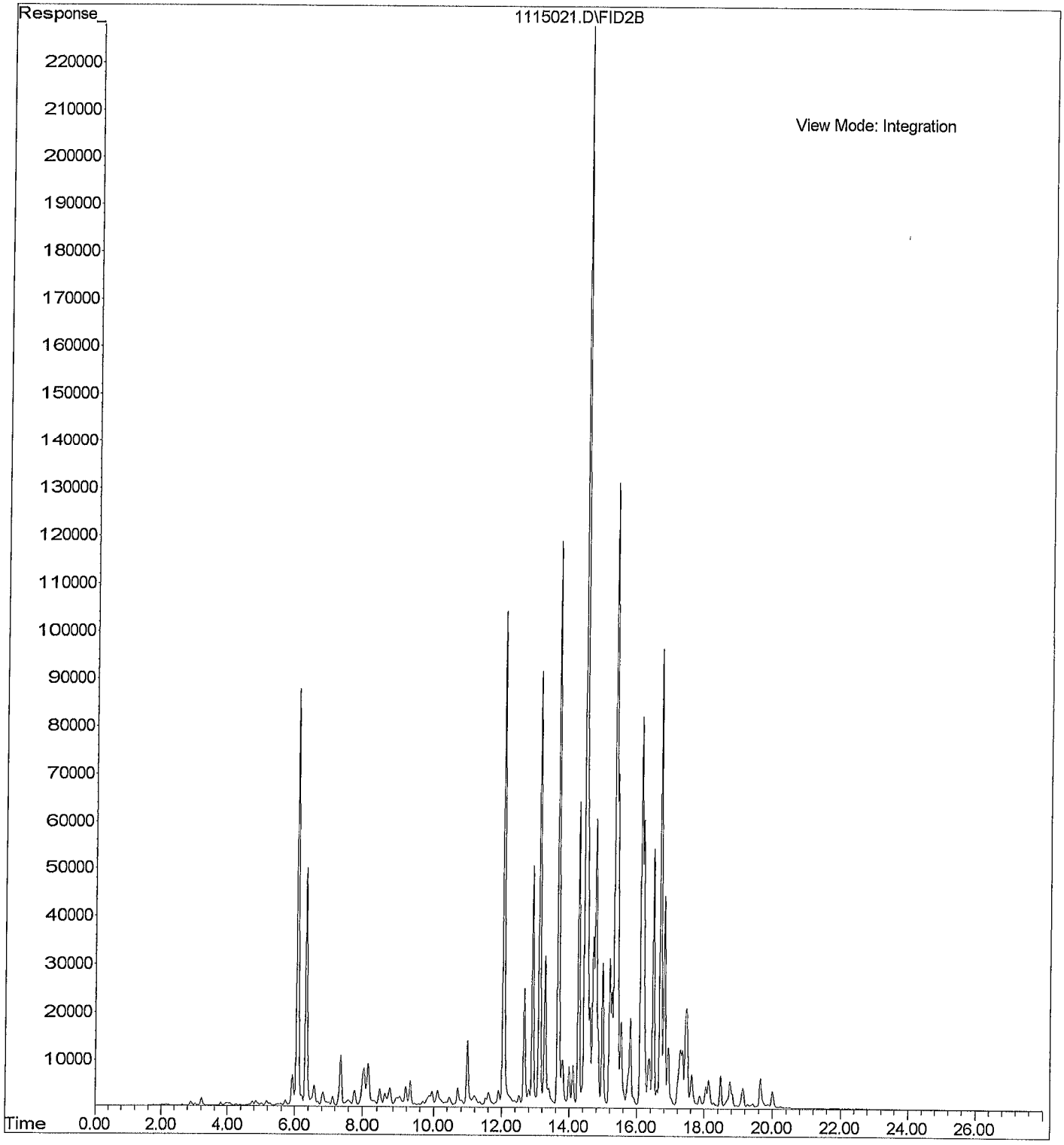
Comments/Special Instructions
Samples were NOT field filtered
(X) - Hold for analysis

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

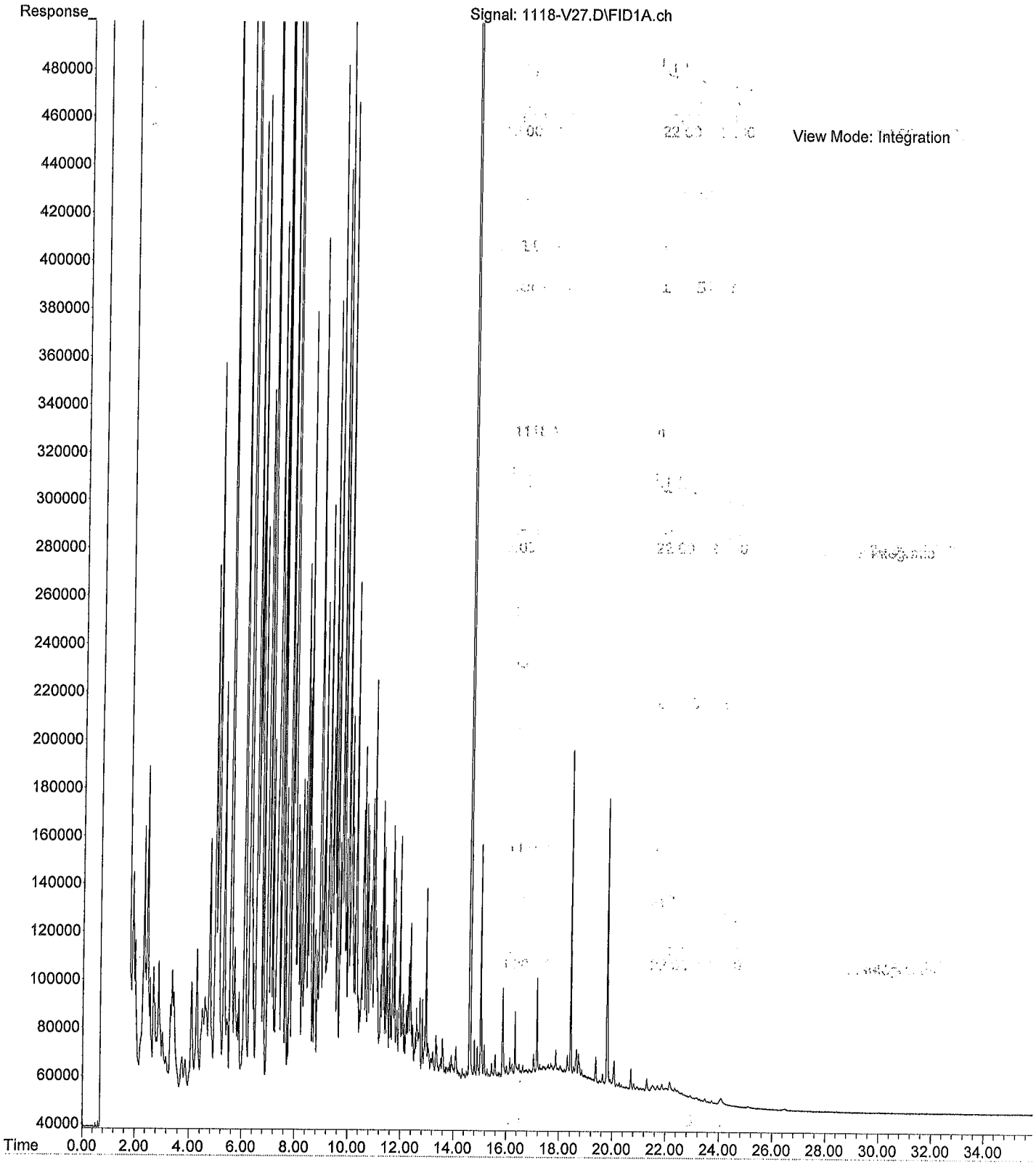
File : X:\BTEX\HOPE\DATA\H241115\1115020.D
Operator :
Acquired : 16 Nov 2024 00:16 using AcqMethod 241025SH.M
Instrument : Hope
Sample Name: 11-205-01h
Misc Info :
Vial Number: 20



File : X:\BTEX\HOPE\DATA\H241115\1115021.D
Operator :
Acquired : 16 Nov 2024 00:47 using AcqMethod 241025SH.M
Instrument : Hope
Sample Name: 11-205-02h
Misc Info :
Vial Number: 21



File :X:\DIESELS\Vigo\Data\V241118\1118-V27.D
Operator : LW
Acquired : 19 Nov 2024 1:35 using AcqMethod V241115F.M
Instrument : Vigo
Sample Name: 11-205-01 RC
Misc Info : Sample
Vial Number: 27



File :X:\DIESELS\Vigo\Data\V241118.SEC\1118-V78.D
Operator : LW
Acquired : 19 Nov 2024 2:15 using AcqMethod V241115F.M
Instrument : Vigo
Sample Name: 11-205-02 RC
Misc Info : RearSamp
Vial Number: 78