



Environment

Prepared for
Port of Vancouver USA
3103 NW Lower River Road
Vancouver, Washington 98660

Submitted by
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Submitted to
Washington Department of
Ecology

60624310
July 2024

Groundwater Monitoring Letter Report – June 2024

Former Automotive Services, Inc. Site
Port of Vancouver USA
2327 West Mill Plain Boulevard
Vancouver, Washington



July 17, 2024

Danielle Gibson
Washington State Department of Ecology
Southwest Region Office
Olympia, WA 98504-7775
PDF copy via email: danielle.gibson@ecy.wa.gov

Re: Groundwater Monitoring Letter Report – June 2024

Former Automotive Services, Inc. Site
Port of Vancouver USA
2327 West Mill Plain Boulevard
Vancouver, Washington
Facility Site ID: 4380
Cleanup Site ID: 5210
AECOM Project Number: 60519969

Dear Danielle Gibson:

AECOM has prepared this Groundwater Monitoring Letter Report (herein referred to as the report) on behalf of the Port of Vancouver USA (the Port). This report summarizes the results of the June 2024 groundwater monitoring event conducted at the Former Automotive Services, Inc. (ASI) Site (herein referred to as the Site).

1 Site Location and Background

The Site is located at 2327 West Mill Plain Boulevard in Vancouver, Washington (Figure 1). The Site consists of approximately 4.33 acres of nearly level concrete paved land. The current tax parcel number is 059115-068 and is owned by the Port (Ecology, 2014). The Port currently leases the Site to CalPortland, which operates an aggregate distribution plant (Figure 2).

The Site was historically an agricultural field before the ASI car wash facility was constructed in 1972 and 1973. ASI used hot water with kerosene to remove a Cosmoline-based protective coating from imported cars arriving at the Port's auto terminals. The Mill Plain Boulevard extension dissected the car wash facility in 1998. Residual contamination and former car wash areas are located at the Site as summarized below (Ecology, 2014).

- In 1980, due to a process malfunction in the facility's water treatment system, water with kerosene flowed onto the ground surface west of the car wash building resulting in petroleum soil contamination.
- In 1991, four underground storage tanks (USTs) (containing kerosene, gasoline, and diesel) at the car wash facility were removed; soil samples collected following the removal activities indicated residual petroleum contamination. During the UST removal activities, approximately 1,500 cubic yards of petroleum contaminated soil was excavated; however, an on-Site structure prevented complete removal and residual contaminated soil was left in place.
- In 1992, diesel-impacted soil was encountered on the west side of the Site near the adjacent Marathon aboveground storage tank farm. The source, based on field evidence, appeared to be from a surface spill in the 1960s prior to placement of Columbia River sand and silt dredge spoils over the area.

Between September 1999 and February 2001, cleanup activities included the on-Site bioremediation of diesel- and kerosene-impacted soils from two soil excavation events described below (Ecology, 2014):

- In August 1999, during the initial excavation event, soils were excavated to approximately 16 feet below ground surface (bgs) where a change in lithology was observed, and groundwater was encountered. The excavation was halted because of the presence of groundwater, lack of available stockpile space, and constraints along the Marathon property boundary.

- In July 2000, diesel contamination remaining from the initial event was removed. Excavation depths ranged from 17 to 20 feet bgs, and the footprint of the excavation area was expanded to follow contamination in all directions, including the adjoining Marathon property. Soil sampling from the sidewalls and bottom of the final excavation indicated approximately 389 cubic yards of diesel-impacted soil remained at the Site below 16 feet bgs. Groundwater impacts are limited to the center of the Site around well GL-2 (Figure 2).

As detailed in the 2014 No Further Action (NFA) letter from the Washington State Department of Ecology (Ecology), an Environmental Covenant 3407456 was filed with Clark County in 2012 and revised in September 2013 to address the remaining impacted areas (Ecology, 2014). To confirm the long-term effectiveness of the cleanup operations completed at the Site, confirmational groundwater monitoring is necessary; the data will be used by Ecology during periodic reviews. In the NFA, Ecology approved a monitoring plan for the Site's monitoring wells; the monitoring program is summarized in Section 3 below.

A total of seven monitoring wells have been installed at the Site: GL-1, GL-2 and GL-3 (formerly identified as MW-1, MW-2 and MW-3) in 1991 and GL-4, GL-5, GL-6 and GL-7 in 2002. All monitoring wells listed on Table 1 are constructed with screened intervals of 10 to 30 feet below top of casing (btoc).

2 Site Hydrogeology and Soils

The depth to groundwater seasonally ranges between 14 to 21 feet bgs (Ecology, 2014). The groundwater gradient is relatively flat ranging between northwest and south-southeast. Site soils are classified as Hillsboro loam with McBee silty clay loam across the center of the property trending from the northwest corner to southeast corner. The soils become sandy at approximately 10 to 15 feet bgs and the sand becomes coarser at 18 to 20 feet bgs (Ecology, 2014).

3 Groundwater Monitoring Program and Cleanup Levels

Since June 2007, the long-term groundwater monitoring has been conducted on an 18-month frequency at the Site in accordance with the following monitoring plans and revisions:

- *Long-Term Confirmational Groundwater Monitoring Plan* (CEC, 2007)
- Ecology approval email for use of low-flow sampling techniques (Ecology, 2009)
- *Revised Long-Term Confirmational Groundwater Monitoring Plan* dated May 10, 2010 (Kennedy/Jenks Consultants [KJ], 2010) (referred to herein as the 2010 Plan)
- The 2010 Plan proposed a reduction in the number of wells sampled during each event and the decommissioning of monitoring wells GL-5 and GL-7. In 2010, Ecology agreed that the remaining wells were deemed sufficient to monitor the localized area of diesel impacts in groundwater near GL-2 (Ecology, 2014). AECOM decommissioned GL-7 in October 2019 and GL-5 in April 2020 (AECOM, 2020a, 2020b)
- AECOM's *Groundwater Monitoring Letter Report – December 2022* dated March 9, 2023, recommended an additional reduction in the groundwater monitoring program. Ecology approved the request in the letter dated May 28, 2024. The revised current program is included as Table 1 (AECOM, 2023; Ecology, 2024). This reduction included:
 - o Discontinuing sampling GL-3, GL-4, and GL-6
 - o Discontinuing volatile organic compound (VOC) analysis
 - o Reporting to the method reporting limit instead of the method detection limit
 - o Discontinuing the step of using the disposable double check ball bailer for sample collection

Based on the approved modifications in May 2024, the compliance monitoring plan (Table 1) includes the collection of groundwater samples from monitoring wells GL-1 and GL-2 only and collection of depth-to-groundwater measurements from GL-1 through GL-4 and GL-6 every 18 months. The analyte list for groundwater samples collected includes diesel- and oil-range total petroleum hydrocarbons (diesel and oil) at GL-1 and GL-2.

In accordance with *Revised Long-Term Confirmational Groundwater Monitoring Plan*, the analytical results are compared to the Ecology Model Toxics Control Act (MTCA) Method A groundwater cleanup levels (CULs).

4 Activities Conducted During June 2024

AECOM completed the June 2024 groundwater monitoring event in accordance with the following three documents.

- Environmental Protection Agency (EPA) guidance document titled *Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures* (EPA, 1996)
- Revised Long-Term Confirmational Groundwater Monitoring Plan for the ASI/Glacier Site (KJ, 2010)
- Ecology NFA letter (Ecology, 2014)

Groundwater monitoring included the following:

- Depth-to-groundwater measurements were collected from monitoring wells GL-1 through G-4 and GL-6 using an electronic water level meter. The depth-to-groundwater was measured from the top of casing (TOC) at each well and recorded on the Monitoring Well Sampling Field Logs (Appendix A). Depth-to-groundwater measurements and calculated groundwater elevations are presented on Table 2.
- Groundwater samples were collected from monitoring wells GL-1 and GL-2. Each groundwater sample was collected following the low flow purging method with stabilization of the following field parameters: temperature, pH, conductivity, dissolved oxygen (DO), and oxidation reduction potential (ORP). A peristaltic pump was used for purging and sampling the monitoring wells. Monitoring Well Sampling Field Logs for this monitoring event are included in Appendix A and the final field parameters are reported in Table 3.
- A field duplicate sample collected from monitoring well GL-2.
- Sample containers were stored in a cooler with ice from the time of sample collection until delivery to the laboratory.
- Groundwater samples were delivered to Apex Laboratories of Tigard, Oregon under strict chain-of-custody procedures. The samples were submitted for diesel and oil by the NWTPH-Dx Method analysis in accordance with Table 1.
- Chain-of-custody forms are included in Appendix B with the laboratory analytical reports.
- Purge and decontamination water was placed into a labeled, aboveground polyethylene tank, which is temporarily staged under the 26th Avenue overpass pending characterization and disposal. Disposable sampling equipment (including tubing and nitrile gloves) was managed as municipal solid waste.

5 Results of the June 2024 Monitoring Event

Depth-to-groundwater measurements from the five monitoring wells and the two groundwater samples were collected on June 6, 2024. Depth-to-groundwater measurements are listed on Table 2. Stabilized groundwater field parameters are provided in Table 3. Groundwater analytical results are summarized in Table 4. The laboratory analytical reports are included in Appendix B.

5.1 Groundwater Elevation Monitoring

Depth-to-groundwater measurements recorded were used to calculate groundwater elevations at each monitoring well. The groundwater elevations are presented in Table 2 in feet relative to the National Geodetic Vertical Datum based on the City of Vancouver Benchmark L-181. On June 6, 2024, the groundwater elevations ranged from 7.00 feet at GL-6 to 8.11 feet at GL-2, GL-3 and GL-4.

Groundwater elevation contours and the inferred direction of groundwater flow from this event are shown on Figure 3. The hydraulic gradient was calculated to be 0.007 ft/ft to the west. This is generally consistent with previous sampling events.

5.2 Groundwater Analytical Results

The analytical results from the primary groundwater samples are presented on Table 4. During this event, diesel was detected in both samples, and oil was not detected. Diesel was detected in GL-1 (0.273 milligram per liter [mg/L]) at a concentration below the CUL (0.5 mg/L). Diesel was detected in GL-2 (0.660 mg/L) at a concentration above the CUL.

6 Data Quality and Management

Based on a review of the laboratory reports, the analyses and results conformed to quality assurance standards, and the analytical data are of acceptable quality for their intended use. A data quality review is included in Appendix C.

AECOM will upload the data from this event into Ecology's Environmental Information Management (EIM) database in July 2024.

7 Conclusions and Recommendations

AECOM completed groundwater monitoring at the Site on June 6, 2024.

- Diesel has not been detected above the CUL for two consecutive events in GL-1.
- Diesel was detected above the CUL in GL-2 for the first time since 2021.

The groundwater monitoring will continue every 18 months in accordance with the *Revised Long-Term Confirmational Groundwater Monitoring Plan for the ASI/Glacier Site* (KJ, 2010). The next monitoring event is scheduled for December 2025.

Sampling of GL-3, GL-4, and GL-6 was discontinued from the program prior to this event (see Section 3). Based on their locations, AECOM recommends decommissioning GL-4 prior to the next event and maintaining GL-3 and GL-6 for groundwater level monitoring only.

8 References

AECOM, 2020a. *Monitoring Well Decommissioning Summary Letter – GL-7*. Former Automotive Services, Inc. Site. Port of Vancouver USA. April 2.

AECOM, 2020b. *Monitoring Well Decommissioning Summary Letter – GL-5*. Former Automotive Services, Inc. Site. Port of Vancouver USA. June 15.

AECOM, 2023. *Groundwater Monitoring Letter Report – December 2022*. Former Automotive Services, Inc. Site. Port of Vancouver USA. March 9.

CEC, 2007. *Long-Term Confirmational Groundwater Monitoring Plan for the ASI/Glacier Site*. Port of Vancouver USA. March 9.

Ecology, 2014. Letter from Washington State Department of Ecology to Port of Vancouver. *No Further Action for the Former Automotive Services Inc Site*. March 7.

Ecology, 2024. Letter from Washington State Department of Ecology to Port of Vancouver. *Approval of Request for Monitoring Requirements*. May 28.

EPA, 1996. *Ground Water Issue. Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures*. By Robert W. Puls and Michael J. Barcelona. EPA/540/S-95/504. April.

Kennedy/Jenks, 2010. Letter from Kennedy/Jenks Consultants to the Washington State Department of Ecology. *Subject: Automotive Services, Inc. – REVISED Long Term Groundwater Monitoring Plan, Former ASI/Glacier Site, Port of Vancouver USA*. May 10.

9 Limitations

AECOM has prepared this report for use by the Port. Within the limitations of scope, schedule, and budget, our services have been executed in accordance with accepted environmental science practices in this area at the time this report was prepared. No other warranty or conditions, expressed or implied, should be understood.

We appreciate the opportunity to be of service to the Port on this project. Please call Nicky Moody at (503) 969-6310 with any questions regarding this or any other referenced submittals.

Sincerely,

AECOM



Nicky Moody
Project Manager



Brian Webb, LG
Geologist



Brian Webb

cc: Matt Graves, LG, Environmental Manager, Port of Vancouver USA, 3103 NW Lower River Road, Vancouver, WA 98660, mgraves@Portvanusa.com

Attachments

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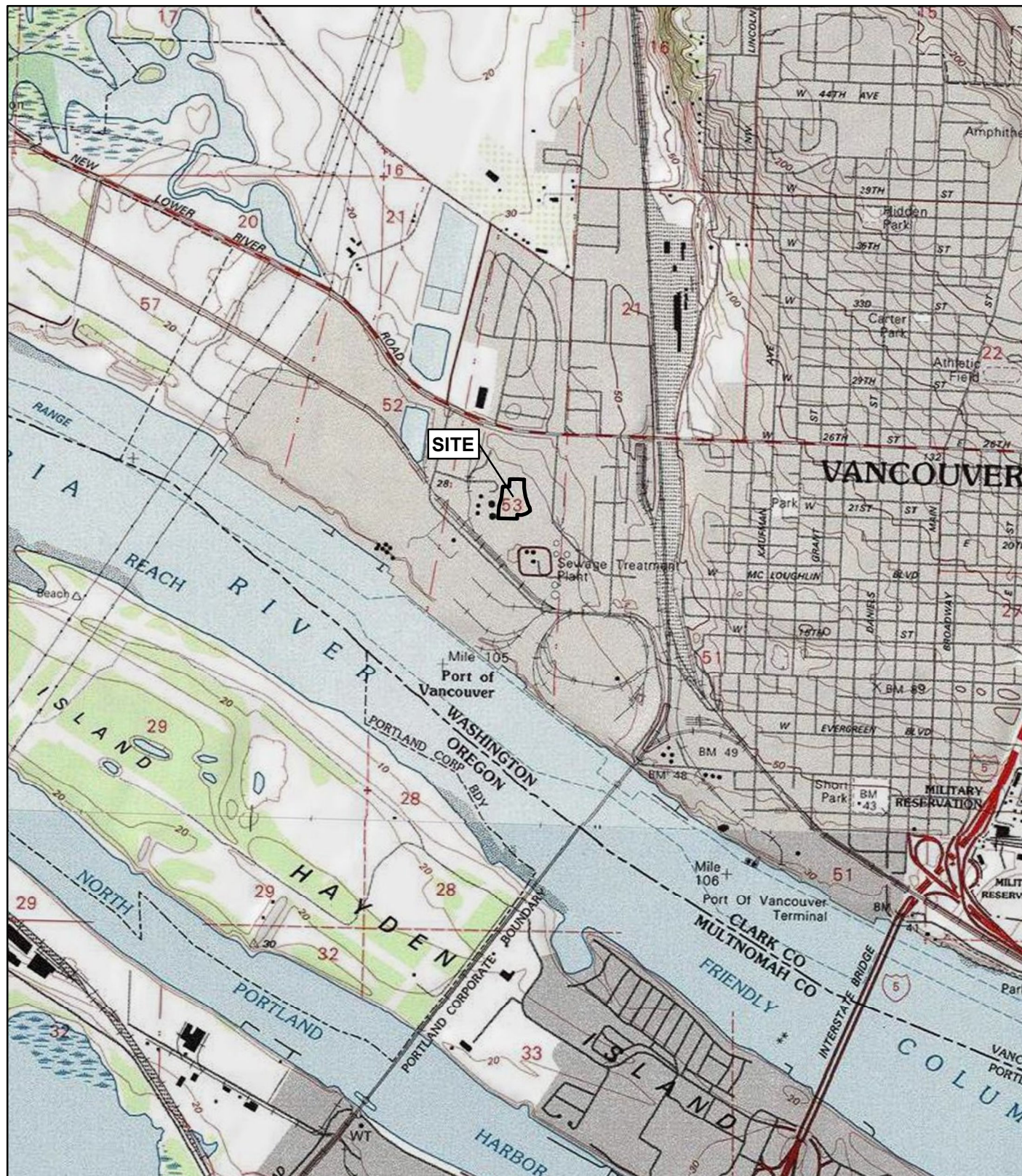
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VICINITY MAP

FORMER AUTOMOTIVE SERVICES, INC. SITE
PORT OF VANCOUVER USA
2327 WEST MILL PLAIN BOULEVARD, VANCOUVER, WA

FIGURE 1



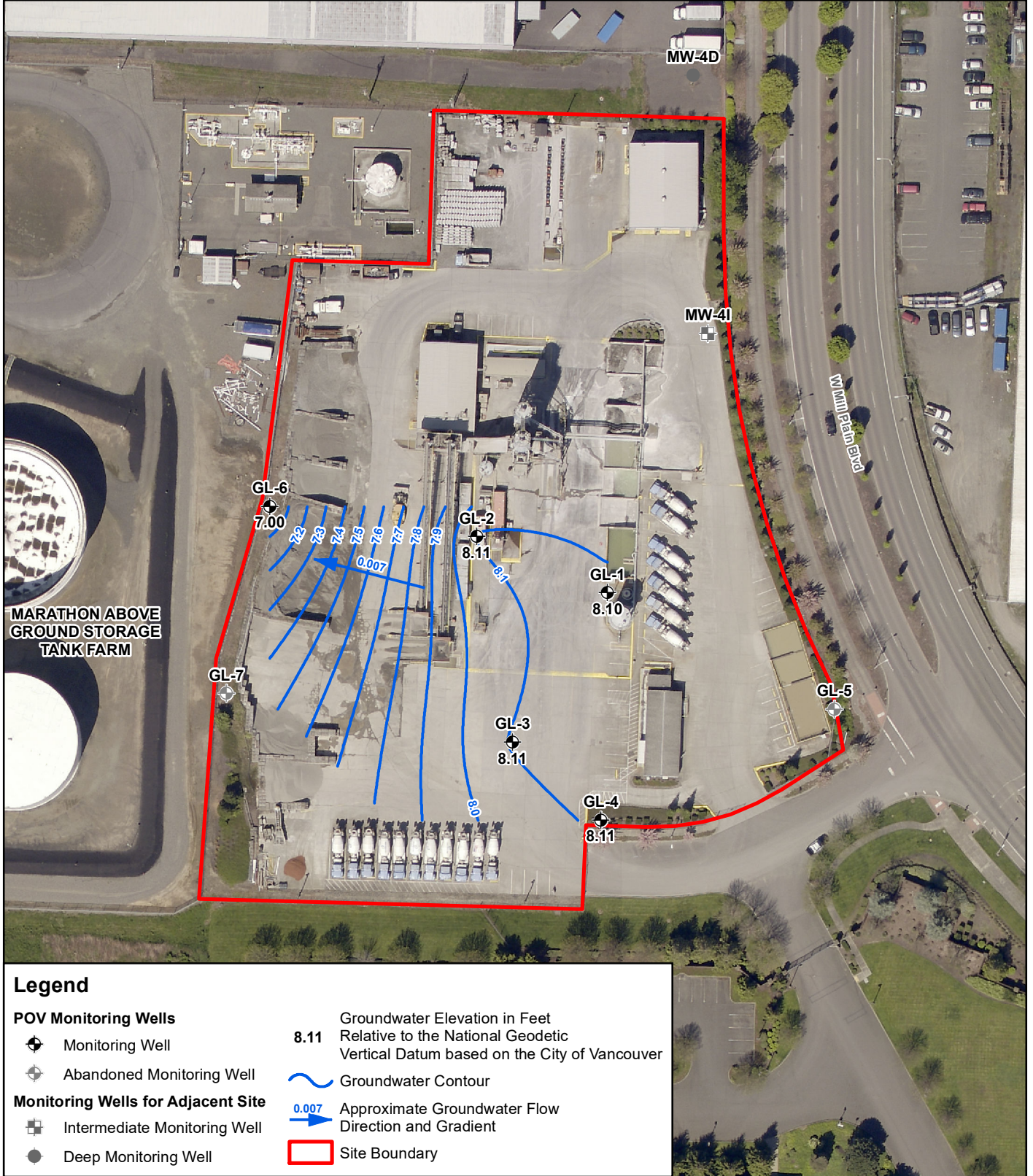
Sources: USGS Imagery, 2012. Clark County GIS, 2019.

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SITE MAP

FORMER AUTOMOTIVE SERVICES, INC. SITE
PORT OF VANCOUVER USA
2327 WEST MILL PLAIN BOULEVARD, VANCOUVER, WA

FIGURE 2



Legend

POV Monitoring Wells

- Monitoring Well
- Abandoned Monitoring Well

Monitoring Wells for Adjacent Site

- Intermediate Monitoring Well
- Deep Monitoring Well

- Groundwater Elevation in Feet Relative to the National Geodetic Vertical Datum based on the City of Vancouver
- Groundwater Contour
- Approximate Groundwater Flow Direction and Gradient
- Site Boundary

GROUNDWATER ELEVATION, CONTOURS, AND FLOW DIRECTION – JUNE 2024

FORMER AUTOMOTIVE SERVICES, INC. SITE
PORT OF VANCOUVER USA
2327 WEST MILL PLAIN BOULEVARD, VANCOUVER, WA

FIGURE 3



Tables

Table 1. Compliance Monitoring Plan
Former Automotive Services, Inc. Site

Current Well Identification	Original Well Identification	Well Log Total Depth	Well Log Screen Interval	Diameter	Monument Type	Current Compliance Monitoring Plan		
						+18 months	Guage & Inspect	Analytes
Units:		feet bgs	feet bgs	inches	--	--	--	--
GL-1	MW-1	33.00	10-30	2.00	Flush	X	X	Dx
GL-2	MW-2	27.20	10-30	2.00	Flush	X	X	Dx
GL-3	MW-3	26.80	10-30	2.00	Flush	X	X	--
GL-4	--	30.40	10-30	2.00	Flush	X	X	--
GL-6	--	28.00	10-30	2.00	Flush	X	X	--
GL-5	Decommissioned in April 2020 Decommissioned in October 2019 Included only in the adjacent Cadet Manufacturing site investigation Included only in the adjacent Cadet Manufacturing site investigation							
GL-7								
MW-4D								
MW-4I								

Acronyms and Abbreviations:

-- = not applicable or not included

18 mo = monitoring conducted every 18 months

BTOC = below top of well casing

D = Deep

I = intermediate

Dx = Diesel and oil-range total petroleum hydrocarbons

PP/Bailer = purging conducted using peristaltic pump and then sampling conducted using a double check ball disposable bailer

S = shallow

VOCs = volatile organic compounds

Table 2. Groundwater Elevation Results
Former Automotive Services, Inc. Site

Well Identification	Date	Top of Casing Elevation	Depth-to-Groundwater	Groundwater Elevation	Change in Groundwater Elevation
Units:		feet ^(a)	feet below TOC	feet ^(a)	feet
GL-1	4/1/2009	27.42	21.03	6.39	--
	12/16/2010	27.42	18.03	9.39	-3.00
	4/26/2012	27.42	13.79	13.63	-4.24
	10/17/2013	27.42	23.41	4.01	9.62
	4/29/2015	27.42	22.48	4.94	-0.93
	11/3/2016	27.42	20.70	6.72	-1.78
	6/10/2019	27.42	20.01	7.41	-0.69
	12/5/2019	27.42	23.20	4.22	3.19
	6/25/2021	27.42	20.68	6.74	-2.52
	12/29/2022	27.42	18.78	8.64	-1.90
	6/6/2024	27.42	19.32	8.10	0.54
GL-2	4/1/2009	27.82	21.41	6.41	--
	12/16/2010	27.82	18.41	9.41	-3.00
	4/26/2012	27.82	14.23	13.59	-4.18
	10/17/2013	27.82	23.75	4.07	9.52
	4/29/2015	27.82	22.85	4.97	-0.90
	11/2/2016	27.82	21.62	6.20	-1.23
	6/10/2019	27.82	20.31	7.51	-1.31
	12/5/2019	27.82	23.47	4.35	3.16
	6/25/2021	27.82	21.00	6.82	-2.47
	12/29/2022	27.82	19.16	8.66	-1.84
	6/6/2024	27.82	19.71	8.11	0.55
GL-3	4/1/2009	27.17	20.79	6.38	--
	12/16/2010	27.17	17.75	9.42	-3.04
	4/26/2012	27.17	13.51	13.66	-4.24
	10/17/2013	27.17	23.08	4.09	9.57
	4/29/2015	27.17	22.48	4.69	-0.60
	11/2/2016	27.17	20.72	6.45	-1.76
	6/10/2019	27.17	19.69	7.48	-1.03
	12/5/2019	27.17	23.16	4.01	3.47
	6/25/2021	27.17	20.46	6.71	-2.70
	12/29/2022	27.17	18.51	8.66	-1.95
	6/6/2024	27.17	19.06	8.11	0.55
GL-4	4/1/2009	28.31	21.95	6.36	--
	12/16/2010	28.31	18.87	9.44	-3.08
	4/26/2012	28.31	14.71	13.60	-4.16
	10/17/2013	28.31	24.28	4.03	9.57
	4/29/2015	28.31	23.31	5.00	-0.97
	11/1/2016	28.31	21.91	6.40	-1.40
	6/10/2019	28.31	20.91	7.40	-1.00
	12/5/2019	28.31	24.48	3.83	3.57
	6/25/2021	28.31	21.54	6.77	-2.94
	12/29/2022	28.31	19.77	8.54	-1.77
	6/6/2024	28.31	20.20	8.11	0.43

Table 2. Groundwater Elevation Results
Former Automotive Services, Inc. Site

Well Identification	Date	Top of Casing Elevation	Depth-to-Groundwater	Groundwater Elevation	Change in Groundwater Elevation
GL-6	4/1/2009	25.88	19.51	6.37	--
	12/16/2010	25.88	16.53	9.35	-2.98
	4/26/2012	25.88	12.45	13.43	-4.08
	10/17/2013	25.88	21.85	4.03	9.40
	4/30/2015	25.88	22.90	2.98	1.05
	11/2/2016	25.88	19.17	6.71	-3.73
	6/11/2019	25.88	19.39	6.49	0.22
	12/5/2019	25.88	22.12	3.76	2.73
	6/25/2021	25.88	19.38	6.50	-2.74
	12/29/2022	25.88	18.01	7.87	-1.37
	6/6/2024	25.88	18.88	7.00	0.87

Acronyms and Abbreviations:

-- = not applicable
TOC = top of casing

Notes:

(a) = Elevation in feet relative to the National Geodetic Vertical Datum based on the City of Vancouver Benchmark L-181.

Table 3. Groundwater Field Parameter Measurements
Former Automotive Services, Inc. Site

Well Identification	Sample Date	Temperature	pH	Conductivity	ORP	Dissolved Oxygen
Units:		°C ^(a)	no units	mS/cm	mV	mg/l
GL-1	4/1/2009	55.69	6.53	0.369	NM	0.78
	12/16/2010	55.92	NM	0.537	NM	0.54
	4/26/2012	57.40	6.79	0.300	NM	2.97
	10/17/2013	57.30	6.61	0.890	NM	0.1
	4/29/2015	57.25	6.42	0.946	NM	0.1
	11/3/2016	54.91	6.64	0.514	NM	17.2
	6/10/2019	57.96	NM	0.794	NM	6.92
	12/5/2019	14.10	7.05	0.991	-113	0.0
	6/25/2021	18.02	6.61	0.981	-75	0.0
	12/29/2022	13.66	6.55	0.571	-42	0.0
	6/6/2024	15.70	6.60	1.990	-118.0	0.12
GL-2	4/1/2009	54.71	6.03	0.858	NM	1.38
	12/16/2010	55.26	NA	0.890	NM	1.00
	4/26/2012	55.40	6.92	0.715	NM	0.71
	10/17/2013	55.80	6.68	1.000	NM	0.08
	4/29/2015	56.91	6.7	0.946	NM	0.54
	11/2/2016	54.17	6.72	0.540	NM	1.91
	6/10/2019	57.61	6.59	0.845	NM	NM
	12/5/2019	12.97	6.85	1.030	37	0.00
	6/25/2021	15.82	6.56	1.030	299	0.00
	12/29/2022	12.39	6.7	0.599	10	0.0
	6/6/2024	15.10	6.50	0.920	232	0.33
GL-3	4/1/2009	55.77	6.20	0.363	NM	1.83
	12/16/2010	56.79	NA	0.375	NM	0.74
	4/26/2012	56.57	6.55	0.236	NM	0.95
	10/17/2013	58.80	6.02	0.468	NM	0.51
	4/29/2015	59.68	6.1	0.346	NM	0.48
	11/2/2016	56.48	5.93	0.238	NM	1.86
	6/10/2019	64.18	6.12	0.370	NM	NM
	12/5/2019	14.40	6.42	0.486	158	0.0
	6/25/2021	18.71	6.09	0.435	29	0.27
	12/29/2022	14.59	6.15	0.330	149	0.0
GL-4	4/1/2009	56.78	6.38	0.389	NM	1.42
	12/16/2010	56.68	NA	0.593	NM	0.71
	4/26/2012	55.33	6.71	0.373	NM	1.37
	10/18/2013	57.60	6.23	0.293	NM	0.25
	4/29/2015	58.04	6.2	0.376	NM	0.49
	11/1/2016	55.24	5.82	0.184	NM	2.31
	6/10/2019	58.55	6.11	0.260	NM	NM
	12/5/2019	12.30	6.50	0.320	186	0.0
	6/25/2021	21.16	6.08	0.353	50	2.97
	12/29/2022	13.74	5.91	0.213	3.52	0.99

Table 3. Groundwater Field Parameter Measurements
Former Automotive Services, Inc. Site

Well Identification	Sample Date	Temperature	pH	Conductivity	ORP	Dissolved Oxygen
GL-6	4/1/2009	52.65	5.92	0.175	NM	3.50
	12/16/2010	54.00	NA	0.190	NM	4.93
	4/26/2012	52.23	6.19	0.089	NM	8.03
	10/18/2013	53.60	6.15	0.070	NM	7.50
	4/30/2015	56.62	5.79	0.070	NM	7.21
	11/2/2016	53.64	5.62	0.140	NM	7.07
	6/11/2019	55.20	6.17	0.125	NM	4.11
	12/5/2019	11.86	6.21	0.136	209	4.12
	6/25/2021	14.55	6.00	0.138	306	4.84
	12/29/2022	11.60	5.92	0.134	364	4.19

Acronyms and Abbreviations:

°C = Degrees Celsius

mg/l = milligrams per liter

mS/cm = millisiemens per centimeter

mV = millivolts

NM = Not measured or not available to AECOM for this report

ORP = Oxidation-reduction potential

Notes:

(a) = Temperature readings collected prior to Decemeber 2019 collected in °F = Degrees Fahrenheit

Table 4. Volatile Organic Compounds and Total Petroleum Hydrocarbons in Groundwater
Former Automotive Services, Inc. Site

Well Identification	Date	Historically Site Detected VOCs						NWTPH-Dx	
		Acetone	sec-Butylbenzene	Isopropylbenzene	Naphthalene	n-Propylbenzene	PCE	Diesel	Oil
Units:		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L
Groundwater Cleanup Levels:		NE	NE	NE	160	NE	5	0.5	0.5
GL-1	4/1/2009	100	---	---	5.0 U	---	1.0 U	0.29	0.40 U
GL-1	12/16/2010	5.0 U	---	---	1.0 U	---	1.2	0.077	0.38 U
GL-1	4/26/2012	5.0 U	---	---	3.4	---	1.0 U	0.49	0.38 U
GL-1	10/17/2013	25 U	---	---	2.0 U	---	0.5 U	1.1	0.24 U
GL-1	4/29/2015	20 U	---	---	2.0 U	---	0.5 U	1.4	0.38 U
GL-1	11/3/2016	---	---	---	2.0 U	---	---	1.9	0.38 U
GL-1	6/10/2019	24.6	2.85	6.74	2.00 UJ	10.6	0.400 U	0.404	0.381 U
GL-1	12/5/2019	10.0 U	0.610 J	1.88	2.00 UJ	1.18	0.200 U	0.475	0.0755 U
GL-1	6/25/2021	10.0 U	0.500 U	0.5 U	4.00 UJ	0.25 U	0.200 U	0.715	0.0762 U
GL-1	12/29/2022	10.0 U	0.500 U	0.500 U	1.00 U	0.250 U	0.200 U	0.138	0.0800 U
GL-1	6/6/2024	---	---	---	---	---	---	0.273	0.107 J
GL-2	4/1/2009	20 U	---	---	5.0 U	---	1.0 U	0.78	0.40 U
GL-2	12/16/2010	5.0 U	---	---	1.0 U	---	1.0 U	0.8	0.40 U
GL-2	4/26/2012	5.0 U	---	---	1.0 U	---	1.0 U	0.92	0.38 U
GL-2	10/17/2013	25 U	---	---	2.0 U	---	0.5 U	1.2	0.24 U
GL-2	4/29/2015	20 U	---	---	2.0 U	---	0.5 U	0.943	0.38 U
GL-2	11/2/2016	---	---	---	2.0 U	---	---	0.189 U	0.38 U
GL-2	6/10/2019	20.0 U	1.00 U	1.00 U	2.00 UJ	0.500 U	0.400 U	0.659	0.381 U
GL-2	12/5/2019	10.0 U	0.500 U	0.500 U	2.00 UJ	0.250 U	0.200 U	0.647	0.0755 U
GL-2	6/25/2021	10.0 U	0.500 U	0.500 U	4.00 UJ	0.250 U	0.200 U	0.681	0.0755 U
GL-2	12/29/2022	10.0 U	0.500 U	0.500 U	1.00 U	0.250 U	0.210 J	0.270	0.0909 U
GL-2	6/6/2024	---	---	---	---	---	---	0.660	0.174 U
GL-3	4/1/2009	20 U	---	---	5.0 U	---	1.0 U	0.084	0.42 U
GL-3	12/16/2010	5.0 U	---	---	1.0 U	---	1.1	0.080 U	0.40 U
GL-3	4/26/2012	5.0 U	---	---	1.0 U	---	1.0 U	0.077 U	0.38 U
GL-3	10/17/2013	25 U	---	---	2.0 U	---	0.5 U	0.15	0.24 U
GL-3	4/29/2015	20 U	---	---	2.0 U	---	0.5 U	0.19 U	0.38 U
GL-3	11/2/2016	---	---	---	2.0 U	---	---	0.19 U	0.38 U
GL-3	6/10/2019	20.6	1.00 U	1.00 U	2.00 UJ	0.500 U	0.400 U	0.190 U	0.381 U
GL-3	12/5/2019	10.0 U	0.500 U	0.500 U	2.00 UJ	0.250 U	0.200 U	0.120	0.0792 U
GL-3	6/25/2021	10.0 U	0.500 U	0.500 U	4.00 UJ	0.250 U	0.200 U	0.0579 J	0.0755 U
GL-3	12/29/2022	20.0 U	0.500 U	0.500 U	1.00 U	0.250 U	0.260 J	0.0412 U	0.124 J

Table 4. Volatile Organic Compounds and Total Petroleum Hydrocarbons in Groundwater
Former Automotive Services, Inc. Site

Well Identification	Date	Historically Site Detected VOCs						NWTPH-Dx	
		Acetone	sec-Butylbenzene	Isopropylbenzene	Naphthalene	n-Propylbenzene	PCE	Diesel	Oil
Units:		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L
Groundwater Cleanup Levels:		NE	NE	NE	160	NE	5	0.5	0.5
GL-4	4/1/2009	20 U	---	---	5.0 U	---	1.0 U	0.19 U	0.41 U
GL-4	12/16/2010	5.0 U	---	---	1.0 U	---	1.0 U	0.077	0.38 U
GL-4	4/26/2012	5.0 U	---	---	1.0 U	---	1.0 U	0.28	0.38 U
GL-4	10/18/2013	25 U	---	---	2.0 U	---	0.5 U	0.096 U	0.24 U
GL-4	4/29/2015	20 U	---	---	2.0 U	---	0.5 U	0.19 U	0.38 U
GL-4	11/2/2016	---	---	---	2.0 U	---	---	0.19 U	0.38 U
GL-4	6/10/2019	20.0 U	1.00 U	1.00 U	2.00 UJ	0.500 U	0.400 U	0.190 U	0.381 U
GL-4	12/5/2019	20.0 UJ	0.500 U	0.500 U	2.00 UJ	0.250 U	0.200 U	0.0629 J	0.0784 U
GL-4	6/25/2021	10.0 U	0.500 U	0.500 U	4.00 UJ	0.250 U	0.200 U	0.0377 U	0.0755 U
GL-4	12/29/2022	10.0 U	0.500 U	0.500 U	1.00 U	0.250 U	0.230 J	0.0455 U	0.184
GL-6	4/1/2009	20 U	---	---	5.0 U	---	1.0 U	0.082 U	0.41 U
GL-6	12/16/2010	5.0 U	---	---	1.0 U	---	1.0 U	0.34	0.38 U
GL-6	4/26/2012	5.0 U	---	---	1.0 U	---	1.0 U	0.079 U	0.40 U
GL-6	10/18/2013	25 U	---	---	2.0 U	---	0.5 U	0.096 U	0.24 U
GL-6	4/30/2015	20 U	---	---	2.0 U	---	0.5 U	0.189 U	0.377 U
GL-6	11/2/2016	---	---	---	2.0 U	---	---	0.189 U	0.381 U
GL-6	6/11/2019	20.0 U	1.00 U	1.00 U	2.00 UJ	0.500 U	0.400 U	0.190 U	0.381 U
GL-6	12/5/2019	20.0 UJ	0.500 U	0.500 U	2.00 UJ	0.250 U	0.200 U	0.0385 U	0.0769 U
GL-6	6/25/2021	20.0 U	0.500 U	0.500 U	4.00 UJ	0.250 U	0.200 U	0.0377 U	0.0755 U
GL-6	12/29/2022	10.0 U	0.500 U	0.500 U	1.00 U	0.250 U	0.200 U	0.0449 U	0.0899 U

Notes:

Values in **bold** were detected above the sample quantitation limit.

CULs are defined in the *Revised Long-Term Confirmational Groundwater Monitoring Plan* (see Section 3).

 Shaded values exceed the CUL.

Acronyms and Abbreviations:

--- = Sample not analyzed for constituent

CUL = Groundwater Cleanup Level

J = Constituent was positively identified; the associated value is estimated

mg/L = milligrams per liter

NE = Not established

NS = Not sampled because well was dry or for another unforeseen reason

NWTPH-Dx = Diesel- and oil-range total petroleum hydrocarbons

PCE = Tetrachloroethene

U = Constituent not detected at or above noted sample quantitation limit

µg/L = micrograms per liter

UJ = Constituent not detected at or above noted sample quantitation limit limit. However, the reported sample quantitation limit is approximate.

VOCs = volatile organic compounds

Appendix A
Field Forms

Project Information										
Project Name:		Automotive Services, Inc. (ASI)				Field Team:		Alex McLean		
Project Number:		60519969				Date:		6/6/24		Page 1 of 1
Field Measurements and Observations										
Well ID	Time	Depth to Water (feet BTOC)	Condition Assessment • Well Tag ID verification • Status of each well • Replace broken lids, bolts, gaskets, caps, & locks	Aquifer	Screen Interval (feet)	Sampling Plan				
						Collect Sample	Sampling Method	Analytes	QC	No. of preserved Ambers
GL-6	1100	18.88	air ed/d: 16y.	Shallow	10-30					
GL-4	1115	20.20	Good	Shallow	10-30					
GL-3	1135	19.06	Filled with water	Shallow	10-30					
GL-2	1125	19.71	Good, water in monument	Shallow	10-30	X	Peristaltic Pump	Dx	FD	Primary: 2 FD: 2
GL-1	1120	20.20	Good, water in monument	Shallow	10-30	X	Peristaltic Pump	Dx		Primary: 2

Definitions:

FB = field blank (using lab dionized water)
 FD = field duplicate
 Dx = diesel and heavy oil range organics
 QC = quality control samples

Sampling Schedule (18+ months):

December 2019

June 2021

December 2022

June 2024

Sampling Notes:

Lab = Apex Labs

Drum purge water. Store drums under the 26th Ave Underpass until they are full enough for disposal.

AM 6/6/24 monument.
 19.32

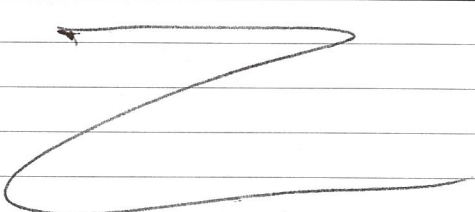
Well Number: GL-2
Date: 6/2/24

Well Construction Information				
Stick-up or Flush	Well Diameter (in)	Total Depth (ft btoc)	Screen Interval (ft bgs or btoc)	
FLUSH	2	33	10-30	
Monitoring Information				
Initial DTW (ft btoc)	Saturated Screen Interval (ft bgs or btoc)	Pump Intake Depth (ft btoc): (Mid Sat. Screen Interval)		
19.75	19.75-30	29.9		
Sample Containers				Filtered?
Number	Type	Preservative	Analysis Required	
3	40 mL VOA	HCl	Gx / VOC	
2x2	1L Amber	HCl	Dx	
on 15				
6/5/24				

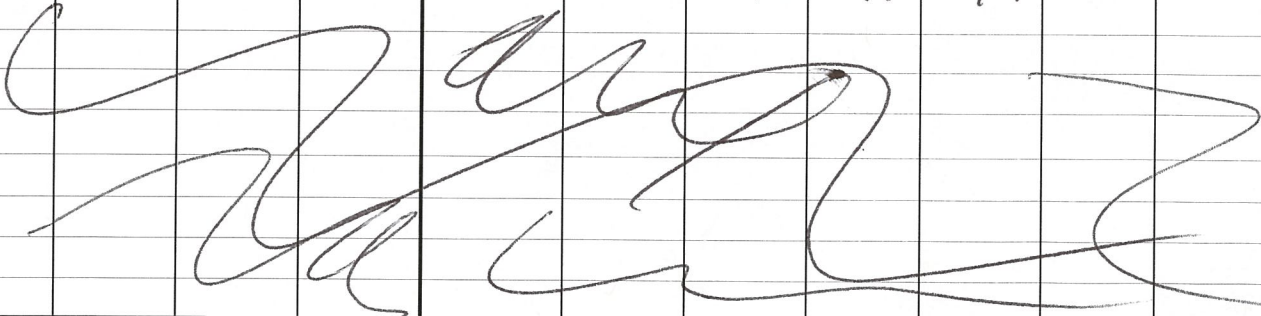
Note: bgs= below ground surface btoc=below top of casing DTW=depth to water
Clarity: VC=very cloudy Cl=cloudy SC=slightly cloudy AC=almost clear C=clear CC=crystal clear

Monitoring Well Sampling Field Log - Low Flow

Well Number: GL-1
Date: 6/15/24

Project Information	
Project Name:	<u>Port of Vancouver</u>
AECOM Project Number:	<u>60624310</u>
Sampling Information	
Field Team:	<u>A. McLean</u>
Purge Method:	<u>Low flow / Per: pump</u>
Sampling Method:	<u>Low flow / Per: pump</u>
Water Quality Meter:	Model: <u>Aquaread</u> Serial Number: <u>0445985</u>
Purge Water Disposition:	<u>on-site tank</u>
Comments	
	

Well Construction Information			
Stick-up or Flush	Well Diameter (in)	Total Depth (ft btoc)	Screen Interval (ft bgs or btoc)
<u>FLUSH</u>	<u>2</u>	<u>33</u>	<u>10-30</u>
Monitoring Information			
Initial DTW (ft btoc)	Saturated Screen Interval (ft bgs or btoc)	Pump Intake Depth (ft btoc): (Mid Sat. Screen Interval)	
<u>19.35</u>	<u>19.35-30</u>	<u>29.5</u>	
Sample Containers			
Number	Type	Preservative	Analysis Required
<u>3</u>	<u>40 mL VOA</u>	<u>HCl</u>	<u>Gx/VOC</u>
<u>2</u>	<u>1L Amber</u>	<u>HCl</u>	<u>Dx</u>
<u>AM</u> <u>6/15/24</u>			

Well Purge Data										
Time	Volume Purged (L)	Purge Rate (L/min) (≤ 0.5 L/min)	DTW (ft btoc)	Temp. ($^{\circ}$ C)	pH	ORP (mV)	Conductivity (mS/cm)	Turbidity	D.O. (mg/L)	Comments (i.e. odor, sediment, color)
	Pump On		Initial	$\pm 3\%$	± 0.1	± 10 mv	$\pm 3\%$	$\pm 10\%$ (> 5) 3 values < 5	$\pm 10\%$ (> 0.5) 3 values < 0.5	$\leq$ Stabilization Criteria EPA 2017
1250										Non-Scale
1255	0.7	0.15	19.35	16.40	6.55	-105.2	2.101	366	0.75	
1258	1.3	0.15	19.35	15.70	6.57	-109.7	2.079	358	0.40	
1350	2.0	0.13	19.35	15.40	6.58	-112.3	2.041	371	0.28	
1355	2.7	0.15	19.35	15.50	6.58	-114.2	2.042	360	0.23	
1400	3.3	0.15	19.35	15.60	6.59	-115.2	2.013	207	0.20	
1405	4.0	0.15	19.50	15.70	6.60	-117.3	1.993	212	0.11	
1410	4.7	0.15	19.61	15.70	6.60	-118.0	1.990	217	0.12	
										
Start Sampling 1410			Sample ID: GL-1-20240606				Sample Time: 1410			
End Sampling 1425			QA/QC Sample ID: _____				QA/QC Sample Time: _____			

Note: bgs= below ground surface btoc=below top of casing DTW=depth to water
Clarity: VC=very cloudy Cl=cloudy SC=slightly cloudy AC=almost clear C=clear CC=crystal clear

Appendix B

Laboratory Report and Chain-of-Custody Form



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

Wednesday, June 26, 2024

Nicky Moody

AECOM

888 SW 5th Ave, Suite 600

Portland, OR 97204

RE: A4F0986 - POV ASI - [none]

Thank you for using Apex Laboratories. We greatly appreciate your business and strive to provide the highest quality services to the environmental industry.

Enclosed are the results of analyses for work order A4F0986, which was received by the laboratory on 6/7/2024 at 1:09:00PM.

If you have any questions concerning this report or the services we offer, please feel free to contact me by email at: DAuvil@apex-labs.com, or by phone at 503-718-2323.

Please note: All samples will be disposed of within 30 days of sample receipt, unless prior arrangements have been made.

Cooler Receipt Information

Acceptable Receipt Temperature is less than, or equal to, 6 degC (not frozen), or received on ice the same day as sampling.

(See Cooler Receipt Form for details)

Default Cooler 4.8 degC

This Final Report is the official version of the data results for this sample submission, unless superseded by a subsequent, labeled amended report.

All other deliverables derived from this data, including Electronic Data Deliverables (EDDs), CLP-like forms, client requested summary sheets, and all other products are considered secondary to this report.



Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document(s) and updated by any subsequent written communications. This analytical report must be reproduced in its entirety.

Darrell Auvil, Client Services Manager



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

AECOM

888 SW 5th Ave, Suite 600
Portland, OR 97204

Project: POVASI

Project Number: [none]

Project Manager: Nicky Moody

Report ID:

A4F0986 - 06 26 24 0928

ANALYTICAL REPORT FOR SAMPLES

SAMPLE INFORMATION

Client Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
GL-1-20240606	A4F0986-01	Water	06/06/24 14:10	06/07/24 13:09
GL-2-20240606	A4F0986-02	Water	06/06/24 12:50	06/07/24 13:09
GL-200-20240606	A4F0986-03	Water	06/06/24 12:50	06/07/24 13:09

Apex Laboratories

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Darrell Auvil, Client Services Manager



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062**AECOM**888 SW 5th Ave, Suite 600
Portland, OR 97204Project: **POVASI**

Project Number: [none]

Project Manager: Nicky Moody

Report ID:

A4F0986 - 06 26 24 0928

ANALYTICAL SAMPLE RESULTS

Diesel and/or Oil Hydrocarbons by NWTPH-Dx

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
GL-1-20240606 (A4F0986-01)				Matrix: Water		Batch: 24F0443		
Diesel	0.273	0.0435	0.0870	mg/L	1	06/14/24 08:44	NWTPH-Dx LL	
Oil	0.107	0.0870	0.174	mg/L	1	06/14/24 08:44	NWTPH-Dx LL	J
Surrogate: o-Terphenyl (Surr)		Recovery: 95 %		Limits: 50-150 %	1	06/14/24 08:44	NWTPH-Dx LL	
GL-2-20240606 (A4F0986-02)				Matrix: Water		Batch: 24F0443		
Diesel	0.660	0.0435	0.0870	mg/L	1	06/14/24 09:32	NWTPH-Dx LL	F-11
Oil	ND	0.0870	0.174	mg/L	1	06/14/24 09:32	NWTPH-Dx LL	
Surrogate: o-Terphenyl (Surr)		Recovery: 95 %		Limits: 50-150 %	1	06/14/24 09:32	NWTPH-Dx LL	
GL-200-20240606 (A4F0986-03)				Matrix: Water		Batch: 24F0443		
Diesel	0.512	0.206	0.412	mg/L	5	06/14/24 09:55	NWTPH-Dx LL	F-11
Oil	ND	0.412	0.825	mg/L	5	06/14/24 09:55	NWTPH-Dx LL	
Surrogate: o-Terphenyl (Surr)		Recovery: 84 %		Limits: 50-150 %	5	06/14/24 09:55	NWTPH-Dx LL S-05	

Apex Laboratories

Darrell Auvil, Client Services Manager

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ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

AECOM

888 SW 5th Ave, Suite 600
Portland, OR 97204Project: **POVASI**

Project Number: [none]

Project Manager: Nicky Moody

Report ID:

A4F0986 - 06 26 24 0928

QUALITY CONTROL (QC) SAMPLE RESULTS

Diesel and/or Oil Hydrocarbons by NWTPH-Dx

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes	
Batch 24F0443 - EPA 3510C (Fuels/Acid Ext.)						Water							
Blank (24F0443-BLK1)		Prepared: 06/13/24 06:03		Analyzed: 06/14/24 03:53									
NWTPH-Dx LL													
Diesel	ND	0.0400	0.0800	mg/L	1	---	---	---	---	---	---		
Oil	ND	0.0800	0.160	mg/L	1	---	---	---	---	---	---		
Surr: o-Terphenyl (Surr)		Recovery: 101 %		Limits: 50-150 %		Dilution: 1x							
LCS (24F0443-BS1)		Prepared: 06/13/24 06:03		Analyzed: 06/14/24 04:16									
NWTPH-Dx LL													
Diesel	0.417	0.0400	0.0800	mg/L	1	0.500	---	83	36 - 132%	---	---		
Surr: o-Terphenyl (Surr)		Recovery: 102 %		Limits: 50-150 %		Dilution: 1x							
LCS Dup (24F0443-BSD1)		Prepared: 06/13/24 06:03		Analyzed: 06/14/24 04:40									Q-19
NWTPH-Dx LL													
Diesel	0.435	0.0400	0.0800	mg/L	1	0.500	---	87	36 - 132%	4	30%		
Surr: o-Terphenyl (Surr)		Recovery: 100 %		Limits: 50-150 %		Dilution: 1x							

No Client related Batch QC samples analyzed for this batch. See notes page for more information.

Apex Laboratories

Darrell Auvil, Client Services Manager

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**ANALYTICAL REPORT****Apex Laboratories, LLC**6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323

ORELAP ID: OR100062

AECOM888 SW 5th Ave, Suite 600
Portland, OR 97204Project: **POVASI**

Project Number: [none]

Project Manager: Nicky Moody

Report ID:**A4F0986 - 06 26 24 0928****SAMPLE PREPARATION INFORMATION****Diesel and/or Oil Hydrocarbons by NWTPH-Dx****Prep: EPA 3510C (Fuels/Acid Ext.)**

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 24F0443							
A4F0986-01	Water	NWTPH-Dx LL	06/06/24 14:10	06/13/24 11:19	920mL/2mL	1000mL/2mL	1.09
A4F0986-02	Water	NWTPH-Dx LL	06/06/24 12:50	06/13/24 11:19	920mL/2mL	1000mL/2mL	1.09
A4F0986-03	Water	NWTPH-Dx LL	06/06/24 12:50	06/13/24 11:19	970mL/2mL	1000mL/2mL	1.03

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Darrell Auvil, Client Services Manager



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

AECOM

888 SW 5th Ave, Suite 600
Portland, OR 97204

Project: **POVASI**

Project Number: [none]

Project Manager: Nicky Moody

Report ID:

A4F0986 - 06 26 24 0928

QUALIFIER DEFINITIONS

Client Sample and Quality Control (QC) Sample Qualifier Definitions:

Apex Laboratories

- F-11** The hydrocarbon pattern indicates possible weathered diesel, mineral oil, or a contribution from a related component.
- J** Estimated Result. Result detected below the lowest point of the calibration curve, but above the specified DL.
- Q-19** Blank Spike Duplicate (BSD) sample analyzed in place of Matrix Spike/Duplicate samples due to limited sample amount available for analysis.
- S-05** Surrogate recovery is estimated due to sample dilution required for high analyte concentration and/or matrix interference.

Apex Laboratories

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Darrell Auvil, Client Services Manager



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

AECOM

888 SW 5th Ave, Suite 600
Portland, OR 97204

Project: **POVASI**

Project Number: [none]

Project Manager: Nicky Moody

Report ID:

A4F0986 - 06 26 24 0928

REPORTING NOTES AND CONVENTIONS:

Abbreviations:

DET Analyte DETECTED at or above the detection or reporting limit.
ND Analyte NOT DETECTED at or above the detection or reporting limit.
NR Result Not Reported.
RPD Relative Percent Difference. RPDs for Matrix Spikes and Matrix Spike Duplicates are based on concentration, not recovery.

Detection Limits: Limit of Detection (LOD)

Limits of Detection (LODs) are normally set at a level of one half the validated Limit of Quantitation (LOQ).
If no value is listed ('-----'), then the data has not been evaluated below the Reporting Limit.

Reporting Limits: Limit of Quantitation (LOQ)

Validated Limits of Quantitation (LOQs) are reported as the Reporting Limits for all analyses where the LOQ, MRL, PQL or CRL are requested. The LOQ represents a level at or above the low point of the calibration curve, that has been validated according to Apex Laboratories' comprehensive LOQ policies and procedures.

Reporting Conventions:

Basis: Results for soil samples are generally reported on a 100% dry weight basis.
The Result Basis is listed following the units as "dry", "wet", or " " (blank) designation.
"dry" Sample results and Reporting Limits are reported on a dry weight basis. (i.e. "ug/kg dry")
See Percent Solids section for details of dry weight analysis.
"wet" Sample results and Reporting Limits for this analysis are normally dry weight corrected, but have not been modified in this case.
" " Results without 'wet' or 'dry' designation are not normally dry weight corrected. These results are considered 'As Received'.

QC Source:

In cases where there is insufficient sample provided for Sample Duplicates and/or Matrix Spikes, a Lab Control Sample Duplicate (LCS Dup) may be analyzed to demonstrate accuracy and precision of the extraction batch.

Non-Client Batch QC Samples (Duplicates and Matrix Spike/Duplicates) are not included in this report. Please request a Full QC report if this data is required.

Miscellaneous Notes:

" --- " QC results are not applicable. For example, % Recoveries for Blanks and Duplicates, % RPD for Blanks, Blank Spikes and Matrix Spikes, etc.
" *** " Used to indicate a possible discrepancy with the Sample and Sample Duplicate results when the %RPD is not available. In this case, either the Sample or the Sample Duplicate has a reportable result for this analyte, while the other is Non Detect (ND).

Blanks:

Standard practice is to evaluate the results from Blank QC Samples down to a level equal to one half of the Reporting Limit (RL).
Blank results for gravimetric analyses are evaluated to the Reporting Level, not to half of the Reporting Level.
-For Blank hits falling between ½ the RL and the RL (J flagged hits), the associated sample and QC data will receive a 'B-02' qualifier.
-For Blank hits above the RL, the associated sample and QC data will receive a 'B' qualifier, per Apex Laboratories' Blank Policy.

Apex Laboratories

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Darrell Auvil, Client Services Manager



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

AECOM

888 SW 5th Ave, Suite 600
Portland, OR 97204

Project: **POVASI**

Project Number: [none]

Project Manager: **Nicky Moody**

Report ID:

A4F0986 - 06 26 24 0928

REPORTING NOTES AND CONVENTIONS (Cont.):

Blanks (Cont.):

Sample results flagged with a 'B' or 'B-02' qualifier are potentially biased high if the sample results are less than ten times the level found in the blank for inorganic analyses, or less than five times the level found in the blank for organic analyses.

'B' and 'B-02' qualifications are only applied to sample results detected above the Reporting Level.

Preparation Notes:

Mixed Matrix Samples:

Water Samples:

Water samples containing significant amounts of sediment are decanted or separated prior to extraction, and only the water portion analyzed, unless otherwise directed by the client.

Soil and Sediment Samples:

Soil and Sediment samples containing significant amounts of water are decanted prior to extraction, and only the solid portion analyzed, unless otherwise directed by the client.

Sampling and Preservation Notes:

Certain regulatory programs, such as National Pollutant Discharge Elimination System (NPDES), require that activities such as sample filtration (for dissolved metals, orthophosphate, hexavalent chromium, etc.) and testing of short hold analytes (pH, Dissolved Oxygen, etc.) be performed in the field (on-site) within a short time window. In addition, sample matrix spikes are required for some analyses, and sufficient volume must be provided, and billable site specific QC requested, if this is required. All regulatory permits should be reviewed to ensure that these requirements are being met.

Data users should be aware of which regulations pertain to the samples they submit for testing. If related sample collection activities are not approved for a particular regulatory program, results should be considered estimates. Apex Laboratories will qualify these analytes according to the most stringent requirements, however results for samples that are for non-regulatory purposes may be acceptable.

Samples that have been filtered and preserved at Apex Laboratories per client request are listed in the preparation section of the report with the date and time of filtration listed.

Apex Laboratories maintains detailed records on sample receipt, including client label verification, cooler temperature, sample preservation, hold time compliance and field filtration. Data is qualified as necessary, and the lack of qualification indicates compliance with required parameters.

Apex Laboratories

Darrell Auvil, Client Services Manager

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LABORATORY ACCREDITATION INFORMATION

ORELAP Certification ID: OR100062 (Primary Accreditation)

EPA ID: OR01039

All methods and analytes reported from work performed at Apex Laboratories are included on Apex Laboratories' ORELAP Scope of Certification, with the exception of any analyte(s) listed below:

Apex Laboratories

Matrix	Analysis	TNI_ID	Analyte	TNI_ID	Accreditation
--------	----------	--------	---------	--------	---------------

All reported analytes are included in Apex Laboratories' current ORELAP scope.

Secondary Accreditations

Apex Laboratories also maintains reciprocal accreditation with non-TNI states (Washington DOE), as well as other state specific accreditations not listed here.

Subcontract Laboratory Accreditations

Subcontracted data falls outside of Apex Laboratories' Scope of Accreditation.

Please see the Subcontract Laboratory report for full details, or contact your Project Manager for more information.

Field Testing Parameters

Results for Field Tested data are provided by the client or sampler, and fall outside of Apex Laboratories' Scope of Accreditation.

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APEX LABS 6700 SW Sandburg St., Tigard, OR 97223 Ph. 503-718-2323		CHAIN OF CUSTODY		Lab # <u>A4F0986</u> COC <u>1 of 1</u>	
Company: AECOM / POV	Project Mgr: Nicky Moody / Matt Graves	Project Name: POV - ASI	Project #: n/a	Direct bill to POV	
Address: AECOM, Portland, Oregon	Phone: 503-969-6310	Email: christina.whider@aecom.com; nicky.moody@aecom.com	PO #		
Sampled by: Alex McLean		ANALYSIS REQUEST			
Site Location:					
OR WA CA					
AK ID					
SAMPLE ID					
GL-1-202406-06	DATE: 6/6/24 TIME: 1410	NWTPH-HCID	NWTPH-DX	NWTPH-CX	8260 BTEX
GL-2-202406-06	DATE: 6/6/24 TIME: 1230		X		8260 RBDM VOCs
GL-200-202406-06	DATE: 6/6/24 TIME: 1200		X		8260 Halo VOCs
					8260 VOCs Full List
					8270 SIM PAHs
					8270 Semi-Vols Full List
					8082 PCBs
					8081 Pest
					RCRA Metals (8)
					Priority Metals (13)
					Al, Sb, As, Ba, Be, Bi, Cd, Cr, Co, Cu, Fe, Pb, Hg, Mn, Mo, Ni, K, Se, Ag, Na, TL, V, Zn
					TOTAL DISS. TCLP
					TCLP Metals (8)
					Archive
Normal Turn Around Time (TAT) = 10 Business Days		SPECIAL INSTRUCTIONS:			
1 Day 2 Day 3 Day		Reporting units in mg/L down to the MRL only			
4 DAY 5 DAY Other: standard		Low level NWTPH-Dx as was completed in December 2022			
TAT Requested (circle)					
SAMPLES ARE HELD FOR 30 DAYS					
RELINQUISHED BY:	RECEIVED BY:				
Signature: [Signature]	Signature: [Signature]				
Date: 6/7/24	Date: 6/7/24				
Printed Name: Alex McLean	Printed Name: [Signature]				
Company: AECOM	Company: Apex				

Apex Laboratories

Darrell Auvel, Client Services Manager

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Project: **POV ASI**

Project Number: [none]

Project Manager: Nicky Moody

Report ID:

A4F0986 - 06 26 24 0928

APEXLABS COOLER RECEIPT FORM

Client: AECOM / POV Element WO#: A4F0986Project/Project #: POV - ASI

Delivery Info:

Date/time received: 6/7/24 @ 1309 By: AJMDelivered by: Apex ☒ Client ☐ ESS ☐ FedEx ☐ UPS ☐ Radio ☐ Morgan ☐ SDS ☐ Evergreen ☐ Other ☐From USDA Regulated Origin? Yes ☐ No ☒Cooler Inspection Date/time inspected: 6/7/24 @ 1351 By: AJMChain of Custody included? Yes ☒ No ☐Signed/dated by client? Yes ☒ No ☐Contains USDA Reg. Soils? Yes ☐ No ☒ Unsure (email RegSoils) ☐

	Cooler #1	Cooler #2	Cooler #3	Cooler #4	Cooler #5	Cooler #6	Cooler #7
Temperature (°C)	<u>4.8</u>						
Custody seals? (Y/N)	<u>N</u>						
Received on ice? (Y/N)	<u>Y</u>						
Temp. blanks? (Y/N)	<u>Y</u>						
Ice type: (Gel/Real/Other)	<u>Real</u>						
Condition (In/Out):	<u>In</u>						

Cooler out of temp? (Y/N) Possible reason why: Green dots applied to out of temperature samples? Yes ☒ No ☐Out of temperature samples form initiated? Yes ☒ No ☐Sample Inspection: Date/time inspected: 6/7/24 @ 15:48 By: AJMAll samples intact? Yes ☒ No ☐ Comments: Bottle labels/COCs agree? Yes ☒ No ☐ Comments: COC/container discrepancies form initiated? Yes ☐ No ☒Containers/volumes received appropriate for analysis? Yes ☒ No ☐ Comments: Do VOA vials have visible headspace? Yes ☐ No ☐ NA ☒Comments: Water samples: pH checked: Yes ☒ No ☐ NA ☐ pH appropriate? Yes ☒ No ☐ NA ☐ pH ID: A231172Comments: Labeled by: AJMWitness: AJMCooler Inspected by: AJM

Form Y-003 R-02

Apex Laboratories

Darrell Auvil, Client Services Manager

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Appendix C
Data Quality Review Report

Data Quality Review Report

Laboratory & Report No.	Apex Laboratories, Incorporated #A4F0986
Report Date	June 26, 2024
Sampling Event	June 6, 2024
Site Location	Port of Vancouver, ASI
AECOM Project No.	60624310 Task 5
Project Name	June 2024 Groundwater Monitoring

This document summarizes the data quality review of the two primary groundwater samples and one field duplicate sample, collected on June 6, 2024, collected at the former Automotive Services, Incorporated (ASI) site located at the Port of Vancouver in Vancouver, Washington. Samples submitted to Apex Laboratories (Apex) of Tigard, Oregon and were analyzed for diesel-range and oil-range hydrocarbons by NWTPH-Dx.

Analytical data results and associated quality assurance (QA) and quality control (QC) data for all samples are presented in Apex report A4F0986. Data was reviewed based on the National Functional Guidelines for Organic Superfund Methods Data Review, November 2020. Chain-of-custody (COC) records, holding times, field/method/trip blanks, surrogate recoveries, matrix spike/matrix spike duplicate recoveries, laboratory and/or field duplicate results, blank spike recoveries (laboratory control samples), and reporting limits were reviewed where applicable to assess compliance with the above listed method. If data qualification was required, data were qualified based on the definitions and use of qualifying flags outlined in the EPA document specified above.

Qualifiers assigned as a result of this review are included in Table 1. The following criteria were evaluated during the review:

- COC Records – Acceptable
- Temperature – Acceptable
- Preservation – Acceptable except as noted below:
- Holding Times – Acceptable
- Method Blanks – Acceptable
- Surrogates – Acceptable
- Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) – Acceptable
- Matrix Spike (MS) – MSs were not performed in association with these analyses. Accuracy was accessed using the LCS and LCSD results.
- Laboratory Duplicates – Acceptable

Diesel and Oil-range Hydrocarbons by NWTPH-Dx – A laboratory duplicate was not performed in association with this analysis. Precision was assessed using LCS/LCSD and field duplicate

results.

- Field Duplicate – Acceptable

A field duplicate was submitted for GL-2 and identified as GL-200. Results were comparable.

- Reporting Limits – Acceptable

- Other Items of Note

Diesel and Oil-range Hydrocarbons by NWTPH-Dx – The laboratory noted that the diesel-range hydrocarbon patterns in GL-2, and GL-200 indicated possible weathered diesel, mineral oil, or a contribution from a related component. No data qualifiers were assigned based on these qualitative observations by the laboratory.

Overall Assessment of Data

The completeness of the analytical report for this groundwater monitoring event is 100%. The usefulness of the data is based on the EPA guidance documents referenced in the introduction of this report. Upon consideration of the information presented above, the data are usable for meeting project objectives. The data qualifiers assigned by the laboratory are shown on the laboratory reports.

Data Qualifier Definitions

- U The analyte was analyzed for but was not detected above the reported sample quantitation limit.
- J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- R The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
- DNR Do Not Report. Another result is available that is more reliable.

References

EPA, 2020. *EPA National Functional Guidelines for Organic Superfund Methods Data Review*. EPA-540-R-20-005. November.

Table 1. Sample Qualification Summary

Field Sample ID	Laboratory Sample ID	Analyte	Qualifier	Rationale
No Data Qualifiers Were Assigned to the Results Reported in A4F0986 Based on This Data Review.				

