

TECHNICAL MEMORANDUM

To: Estate of Irwin Jessen
c/o Jerome F. Eline II PS
1010 Esther Street
Vancouver, Washington 98660-3028

From: Guy Tanz, L.G. and Brad Berggren, L.G.

Date: September 11, 2024

Subject: Long Term Compliance Groundwater Monitoring Summary
Battle Ground Plaza Mini Mart, 805 and 809 West Main Street
Battle Ground, Washington
(Site No. 9977600 / Cleanup Site ID 5509 / VCP Project No. SW1359)

INTRODUCTION

At the request of the Estate of Irwin Jessen, PNG Environmental, Inc. (PNG) has prepared this technical memorandum summarizing the long-term compliance groundwater monitoring event completed at the Battle Ground Plaza site (Figures 1 and 2). Groundwater monitoring was completed in accordance with a September 4, 2019 Washington Department of Ecology (Ecology) No Further Action (NFA) Opinion for the site. The NFA Opinion indicates that while further remedial action for the site is not necessary, off-site contamination remaining beneath West Main Street requires long-term compliance groundwater monitoring on a once every 18-month (i.e., every 1.5 year) frequency per Enclosure C of the NFA Opinion (Attachment A).

BACKGROUND

Significant reductions in site groundwater contamination were achieved from initial detection in 2001 to Battle Ground Plaza Mini-Mart property closure in 2019. Over the course of property cleanup activities target contaminants of concern (i.e., gasoline-range total petroleum hydrocarbons [TPH] and benzene, toluene, ethylbenzene, xylenes and naphthalene [BTEX-N] constituents) dropped to not-detect concentrations in the former on-site well network including MW-2, MW-3, MW-4, MW-5, MW-6, MW-12, and MW-15 (Figure 2). MW-12 is located on the Mini-Mart property in the primary source area and down-gradient (south) from the north property boundary at West Main Street (i.e., within 15 feet of north property boundary control density fill [CDF] wall). Monitoring wells MW-3 and MW-4 are located 70 feet (southwest) and 30 feet (southeast) from the north property boundary CDF wall respectively. In early 2015 monitoring wells MW-16, MW-17, and MW-18 were installed under permit within the City of Battle Ground right-of-way and north of the CDF wall to facilitate compliance groundwater monitoring of this off-site property.

While the Mini-Mart property has received a property-specific NFA, soil and groundwater contamination remains beneath the City of Battle Ground property. Consequently, Ecology has required long-term compliance monitoring to verify groundwater quality conditions relating to the off-site property.

This technical memorandum summarizes the fourth long-term compliance monitoring event for the site since the property-specific NFA was received.

SUMMARY OF FIELD ACTIVITIES

Per Enclosure C of the Ecology NFA, the following activities were completed on August 7, 2024:

- Monitoring wells MW-2, MW-3, MW-4, MW-12, MW-16, MW-17, and MW-18 were measured for water levels to assess groundwater flow direction. Field sampling logs are located in Attachment B. A summary of current monitoring well network construction is included on Table 1.
- Monitoring wells MW-4, MW-12, MW-16, MW-17, and MW-18 were sampled for groundwater quality analysis. Laboratory analytical results are located in Attachment C.

RESULTS

The results of this compliance monitoring event are summarized below.

Water Level Monitoring

Groundwater elevation data collected from monitoring wells MW-2, MW-3, MW-4, MW-12, MW-16, MW-17, and MW-18 are included on Table 2. The well network is illustrated on Figure 2. Shallow zone groundwater at the site has been encountered between approximately 4 and 12 feet below ground surface (bgs) and interpreted to be a perched zone (GeoEngineers 2006). Based on GeoEngineer's prior work, another groundwater zone was also encountered between 24 to 29 feet bgs, and was referred to as deep zone groundwater. Groundwater flow between the shallow zone and deep zones was interpreted by GeoEngineers to be restricted by a Clay Unit between the shallow and deep zones, resulting in a likely shallow zone perched condition.

Since 2006, the interpreted shallow zone groundwater flow direction has been predominantly southerly. Flow interpretation is based on water level measurements as well as the primary direction of contaminant transport from prior soil excavation completed at the site. However, variability in groundwater levels has been observed over the years of monitoring in individual wells across the site. This variability suggests the perched shallow zone groundwater flow system is complex. In particular, historic variation in groundwater elevations are most likely affected by the prior soil removal events and associated placement of, (1) both more permeable backfill and less permeable CDF, (2) chemical oxidant injections, and (3) subtleties in the heterogeneous nature of the native site soils. As such, water levels and apparent gradients in proximity to individual wells, may not be representative of the predominant direction of groundwater flow and primary direction of observed contaminant transport in a southerly direction.

Groundwater levels for this monitoring event is illustrated in Figure 3. Consistent with prior monitoring events post site remediation, water levels are variable between wells with no discernable directional trend.

Groundwater Monitoring

GROUNDWATER SAMPLING

On August 7, 2024, water quality samples were collected from MW-4, MW-12, MW-16, MW-17, and MW-18. Low flow sampling methods were used to collect water samples. The pH, temperature, conductivity, dissolved oxygen content, and redox potential of the water was measured during the purging process to monitor for stabilization of these parameters (Table 3). Field sampling logs are located in Attachment B.

A representative sample of groundwater was obtained using the peristaltic pump operated at a slow-flow rate (i.e., flow rate less than 200 milliliters per minute [ml/min]). All groundwater samples were shipped with chain-of-custody documentation in sealed and chilled containers to Apex Laboratories (Tigard, Oregon) for analysis of target contaminants of concern including gasoline (TPH-G) by Northwest Method NW-TPH-G and BTEX-N by U. S. Environmental Protection Agency (EPA) Method 8260D.

The results of the groundwater quality monitoring are summarized on Table 4 and depicted on Figure 4. The laboratory report and chain of custody documentation is located in Attachment C.

GROUNDWATER MONITORING FINDINGS

Target contaminants were not detected above laboratory method reporting limits (MRLs) at on-site monitoring wells MW-4 or MW-12 (Table 4 and Figure 4). Laboratory MRLs are below Model Toxics Control Act (MTCA) Method A groundwater Cleanup Levels (CULs) established for the site.

Since the installation of off-site monitoring well MW-16 in February 2015, concentrations of groundwater target contaminants have fluctuated above and below MTCA cleanup levels. During this compliance monitoring event, the only contaminants detected in the three off-site wells (i.e., MW-16, MW-17, and MW-18) were at the MW-16 location. Over the last four monitoring events gasoline-range TPH has ranged between 608 ug/L (August 2021) up to 1,570 ug/L (August 2024); the most-recent concentration is above the MTCA Method A CUL of 800 ug/L. Volatile aromatic compounds (i.e., benzene, toluene, ethylbenzene, xylenes, and naphthalene), where detected in MW-16, have been below MTCA Method A CULs since September 2017.

MW-17 and MW-18 are located at opposing ends of the low permeability CDF wall adjacent to groundwater contamination delineated in the off-site up-gradient area (Figure 4). Since installation of MW-17 and MW-18 in 2015, groundwater contamination has not been detected in either well above MTCA CULs.

Groundwater quality results at on-site monitoring wells MW-12 and MW-4, as well as off-site monitoring wells MW-17 and MW-18 indicate the low permeability native soil materials together with the low permeability CDF wall are restricting contaminant migration back onto the Battle Ground Plaza property as expected.

Conclusions and Recommendations

While the Mini-Mart property has received a property-specific NFA, groundwater contamination remains beneath the City of Battle Ground property. Per Enclosure C of Ecology's 2019 NFA, long-term compliance monitoring to verify groundwater quality conditions relating to the off-site property are required until MTCA closure is attained.

Considering the groundwater monitoring completed to-date, the following conclusions and recommendations are made:

- Based on the detection of gasoline-range TPH above MTCA CULs at MW-16, continued monitoring at off-site monitoring wells MW-16, MW-17, and MW-18 in accordance with Ecology's NFA appears appropriate.
- Target contaminants have not been detected in on-site monitoring wells MW-4 and MW-12 over 21 distinct monitoring events since February 2010 (Table 4). Consequently, it is requested that Ecology approve discontinuation of further groundwater quality monitoring at these two monitoring wells.

The next compliance groundwater monitoring event is scheduled for February 2026.

REFERENCES

GeoEngineers. 2006 (September 8). *Focused Feasibility Study (FFS)*.
GeoEngineers, Inc.

Washington Department of Ecology. 2019 (September 4). *No Further Action at a Property Associated with a Site*. Washington Department of Ecology.

ATTACHMENTS

Tables

Table 1 – Well Construction Details
Table 2 – Groundwater Elevations
Table 3 – Groundwater Field Parameters by Well
Table 4 – Groundwater Analytical Results by Well

Figures

Figure 1 – Site Location Map
Figure 2 – Monitoring Well Network
Figure 3 – Groundwater Elevations – August 7, 2024
Figure 4 – Groundwater Analytical Results - Last Four Events

Attachments

Attachment A – Excerpts from Ecology No Further Action
Attachment B – Field Sampling Logs
Attachment C – Laboratory Analytical Data and Chain-of-Custody Documentation

c: Washington Department of Ecology

TABLES

Table 1
Well Construction Details
 Battle Ground Plaza Mini Mart
 Battle Ground, Washington

Well Identification	Ecology Number	Date of Installation	Installer	Installation Method	Construction Materials	Ground Surface Elevation (feet msl)	Well Casing Elevation (feet msl)	Well Diameter (inches)	Total Well Depth from TOC (feet)	Casing Stickup (feet)	Slot Size (inches)	Screen Length (feet)	Screened Interval Elevation (feet msl)
Former Battle Ground Plaza Property													
MW-2	BJR039	11/16/2016	Cascade Drilling	Push Probe	Slotted PVC	285.26	284.80	2	13.58	-0.46	0.020	10.0	281.22 - 271.22
MW-3	ALB945	09/23/2004	GeoTech Explorations	Push Probe?	Slotted PVC	284.14	283.72	1	13.94	-0.42	0.010	10.0	279.78 - 269.78
MW-4	ALB946	09/23/2004	GeoTech Explorations	Push Probe?	Slotted PVC	286.01	285.64	1	13.77	-0.37	0.010	10.0	281.87 - 271.87
MW-12	BBA898	03/16/2010	Cascade Drilling	Push Probe	Slotted PVC	285.03	284.82	2	14.41	-0.21	0.020	10.0	280.41 - 270.41
Off-Site Wells													
MW-16	BHL313	02/04/2015	Cascade Drilling	Push Probe	Slotted PVC	286.74	286.50	2	14.80	-0.24	0.020	10.0	281.70 - 271.70
MW-17	BAL323	10/20/2015	Cascade Drilling	Push Probe	Slotted PVC	286.01	285.72	2	15.50	-0.29	0.020	10.0	280.22 - 270.22
MW-18	BAL368	10/20/2015	Cascade Drilling	Push Probe	Slotted PVC	287.40	287.12	2	15.90	-0.28	0.020	10.0	281.22 - 271.22

Notes:
 msl = Mean sea level (NGVD 29 (47))
 PVC = Polyvinyl chloride
 TOC = Top of casing
 (MW-1 and MW-7 through MW-11 abandoned August 2009. MW-14s and MW-14i abandoned August 2014. MW-5, MW-6, MW-13, and MW-15 abandoned October 23, 2019.)

Table 2
Groundwater Elevations
 Battle Ground Plaza Mini Mart
 Battle Ground, Washington

Survey Data	Elevation of Top of Casing (feet msl) ^a						
	MW-2	MW-3	MW-4	MW-12	MW-16	MW-17	MW-18
03/30/2010	284.56	283.72	285.64	284.82	-	-	-
02/13/2015	-	-	-	-	286.50	-	-
10/30/2015	-	-	-	-	-	285.72	287.12
11/18/2016 ^b	284.80	-	-	-	-	-	-

Date Measured	Measured Water Level (feet btc)						
	MW-2	MW-3	MW-4	MW-12	MW-16	MW-17	MW-18
07/01/2010	5.94	3.44	8.22	3.96	-	-	-
01/28/2011	5.27	2.62	8.42	3.39	-	-	-
09/08/2011	9.21	5.63	11.41	6.38	-	-	-
12/08/2011	6.04	3.56	9.49	4.65	-	-	-
06/19/2012	5.82	3.70	8.34	4.03	-	-	-
09/14/2012	9.32	5.52	11.25	6.11	-	-	-
05/02/2013	6.70	3.76	9.92	4.63	-	-	-
05/21/2014	6.39	4.16	9.18	4.48	-	-	-
02/20/2015	6.16	3.55	8.88	4.23	9.83	-	-
05/05/2015	6.79	4.34	9.74	4.95	10.88	-	-
08/10/2015	10.13	5.54	12.40	6.74	13.62	-	-
11/03/2015	10.31	5.74	10.59	6.79	13.39	8.71	6.77
02/01/2016	5.95	3.25	8.02	3.95	7.82	5.01	5.68
05/03/2016	7.09	4.65	9.49	5.25	9.79	6.33	7.28
11/29/2016	4.62	4.49	8.46	4.69	8.64	5.07	5.72
03/01/2017	3.59	4.87	10.57	3.56	7.06	4.44	5.66
06/06/2017	5.06	4.60	8.43	5.05	8.71	6.17	6.79
09/05/2017	6.95	5.68	11.25	6.59	11.38	7.76	8.80
10/23/2019	5.64	5.05	10.96	5.68	9.41	5.88	6.80
08/10/2021	5.82	4.34	10.70	5.89	9.59	6.71	8.18
02/06/2023	4.40	4.68	10.76	4.43	7.28	5.23	6.46
08/07/2024	6.12	4.39	10.17	6.14	9.02	7.18	8.39

Table 2
Groundwater Elevations
 Battle Ground Plaza Mini Mart
 Battle Ground, Washington

Survey Data	Elevation of Top of Casing (feet msl) ^a						
	MW-2	MW-3	MW-4	MW-12	MW-16	MW-17	MW-18
03/30/2010	284.56	283.72	285.64	284.82	-	-	-
02/13/2015	-	-	-	-	286.50	-	-
10/30/2015	-	-	-	-	-	285.72	287.12
11/18/2016 ^b	284.80	-	-	-	-	-	-

Date Measured	Groundwater Elevation (feet msl) ^a						
	MW-2	MW-3	MW-4	MW-12	MW-16	MW-17	MW-18
07/01/2010	278.62	280.28	277.42	280.86	-	-	-
01/28/2011	279.29	281.10	277.22	281.43	-	-	-
09/08/2011	275.35	278.09	274.23	278.44	-	-	-
12/08/2011	278.52	280.16	276.15	280.17	-	-	-
06/19/2012	278.74	280.02	277.30	280.79	-	-	-
09/14/2012	275.24	278.20	274.39	278.71	-	-	-
05/02/2013	277.86	279.96	275.72	280.19	-	-	-
05/21/2014	278.17	279.56	276.46	280.34	-	-	-
02/20/2015	278.40	280.17	276.76	280.59	276.67	-	-
05/05/2015	277.77	279.38	275.90	279.87	275.62	-	-
08/10/2015	274.43	278.18	273.24	278.08	272.88	-	-
11/03/2015	274.25	277.98	275.05	278.03	273.11	277.01	280.35
02/01/2016	278.61	280.47	277.62	280.87	278.68	280.71	281.44
05/03/2016	277.47	279.07	276.15	279.57	276.71	279.39	279.84
11/29/2016	280.18	279.23	277.18	280.13	277.86	280.65	281.40
03/01/2017	281.21	278.85	275.07	281.26	279.44	281.28	281.46
06/06/2017	279.74	279.12	277.21	279.77	277.79	279.55	280.33
09/05/2017	277.85	278.04	274.39	278.23	275.12	277.96	278.32
10/23/2019	279.16	278.67	274.68	279.14	277.09	279.84	280.32
08/10/2021	278.98	279.38	274.94	278.93	276.91	279.01	278.94
02/06/2023	280.40	279.04	274.88	280.39	279.22	280.49	280.66
08/07/2024	278.68	279.33	275.47	278.68	277.48	278.54	278.73

Notes:

^a Vertical Datum: NGVD 29(47)

^b MW-2 abandoned, reinstalled, and resurveyed October/November 2016.

btc - Below top of casing

msl = Mean sea level

Table 3
Groundwater Field Parameters by Well
 Battle Ground Plaza Mini Mart
 Battle Ground, Washington

Sample Location	Date	TPH-G ug/L	pH (units)	Temp. (°F)	Conductivity (ms/cm)	DO (mg/L)	Redox Potential (mv)
On-Site Wells							
MW-2	11/02/2010	487	5.8	64	0.350	1.42	-7.0
	02/23/2011	557	6.0	54	0.330	-	-11
	04/27/2011	241	6.0	54	0.320	2.20	3.0
	09/08/2011	100 U	6.1	66	0.358	0.970	-15
	12/08/2011	661	6.0	61	0.389	0.230	-34
	03/21/2012	291	6.2	53	0.360	0.390	55
	06/20/2012	826	6.8	59	0.374	0.920	45
	09/17/2012	334	6.0	65	0.348	1.98	44
	02/01/2013	252	6.3	58	0.375	0.690	31
	05/02/2013	438	6.7	60	0.363	0.530	0.30
	05/21/2014	982	7.0	57	0.358	0.340	-103
	02/20/2015	688	7.0	56	0.366	0.360	76
	05/05/2015	551	7.3	57	0.331	0.260	63
	08/10/2015	100 U	6.6	70	0.229	0.190	1.0
	11/03/2015	113	6.7	64	0.312	0.170	107
	02/01/2016	761	7.5	54	0.355	0.320	-129
	05/03/2016	790	6.2	60	0.471	0.410	45
	11/29/2016	100 U	7.2	59	0.202	2.50	162
	03/01/2017	100 U	6.7	53	0.427	0.300	308
	06/06/2017	100 U	7.2	66	0.361	0.310	54
	09/05/2017	100 U	7.2	76	0.605	0.490	115
	MW-3	11/02/2010	100 U	5.6	65	0.140	2.19
02/23/2011		100 U	5.8	52	0.140	-	124
09/08/2011		100 U	6.0	67	0.190	1.96	101
12/08/2011		100 U	5.8	60	0.182	0.840	80
03/21/2012		100 U	6.0	51	0.169	2.13	139
06/19/2012		100 U	6.3	60	0.175	0.370	104
05/21/2014		100 U	6.8	59	0.197	0.500	-36
02/20/2015		100 U	7.0	57	0.272	0.350	26
05/05/2015		100 U	7.1	60	0.211	0.260	39
08/10/2015		100 U	6.4	72	0.169	0.240	-5.0
11/03/2015		100 U	6.6	66	0.166	0.190	45
02/01/2016		100 U	7.3	55	0.172	0.340	-30
05/03/2016		100 U	6.0	62	0.252	0.350	101
11/29/2016		100 U	6.4	63	0.181	0.280	113
03/01/2017		100 U	6.7	56	0.214	0.250	304
06/06/2017	100 U	6.0	67	0.218	0.290	14	
09/05/2017	100 U	5.9	71	0.204	0.180	111	
MW-4	11/02/2010	100 U	5.4	64	0.140	2.77	218
	02/23/2011	100 U	5.7	53	0.130	-	150
	09/08/2011	100 U	5.9	64	0.186	2.46	145
	12/08/2011	100 U	5.7	61	0.176	2.61	112
	03/21/2012	100 U	6.2	54	0.180	2.25	149
	06/19/2012	100 U	6.5	59	0.171	0.350	99
	05/21/2014	100 U	6.5	58	0.170	0.630	40

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 Battle Ground Plaza Mini Mart
 Battle Ground, Washington

Sample Location	Date	TPH-G ug/L	pH (units)	Temp. (°F)	Conductivity (ms/cm)	DO (mg/L)	Redox Potential (mv)
MW-4 (cont'd)	02/20/2015	100 U	6.6	60	0.182	0.740	25
	05/05/2015	100 U	6.8	59	0.183	2.29	57
	08/10/2015	100 U	6.5	70	0.187	3.11	70
	11/04/2015	100 U	6.4	64	0.178	1.76	102
	02/01/2016	100 U	7.3	56	0.185	0.770	-12
	05/03/2016	100 U	5.7	65	0.274	0.830	185
	11/29/2016	100 U	6.2	61	0.179	1.91	147
	03/01/2017	100 U	6.8	55	0.243	2.33	305
	06/06/2017	100 U	5.3	64	0.226	1.17	92
	09/05/2017	100 U	6.0	71	0.236	2.50	100
	10/23/2019	100 U	8.2	62	0.207	1.71	-5.1
	08/10/2021	100 U	7.3	66	0.177	0.36	-12
	02/06/2023	100 U	6.8	54	0.161	0.43	65
	08/07/2024	100 U	7.2	58	0.239	1.35	218
MW-12	11/02/2010	100 U	6.5	65	0.410	2.39	118
	02/23/2011	100 U	6.5	53	0.390	-	87
	09/08/2011	100 U	6.8	65	0.518	0.830	68
	12/08/2011	100 U	6.7	61	0.557	0.390	78
	03/21/2012	100 U	6.8	54	0.522	0.500	132
	06/19/2012	100 U	7.0	59	0.508	0.300	72
	05/21/2014	100 U	7.5	61	0.420	0.150	-8.0
	02/20/2015	100 U	7.4	59	0.383	0.750	4.0
	05/05/2015	100 U	7.6	61	0.379	0.240	-1.0
	08/10/2015	100 U	7.5	70	0.430	0.290	-124
	11/03/2015	100 U	7.5	65	0.444	0.150	95
	02/01/2016	100 U	7.9	55	0.349	1.08	27
	05/04/2016	100 U	7.1	60	0.416	0.450	-17
	11/29/2016	100 U	7.2	62	0.348	1.26	186
	03/01/2017	100 U	7.7	53	0.297	2.08	382
	06/06/2017	100 U	6.8	61	0.282	0.470	31
	09/05/2017	100 U	7.1	69	0.451	0.290	160
	10/23/2019	100 U	8.4	61	0.290	0.450	-78
	08/10/2021	100 U	7.4	67	0.303	0.330	-37
	02/06/2023	100 U	7.0	56	0.203	2.66	26
08/07/2024	100 U	7.3	61	0.286	0.63	165	
Off-Site Wells							
MW-16	02/23/2015	4,360	7.3	56	0.586	0.310	133
	05/05/2015	1,200	7.5	60	0.630	0.210	6.0
	08/10/2015	100 U	7.0	71	0.573	0.420	-73
	11/04/2015	100 U	6.9	64	0.523	0.360	137
	02/01/2016	5,130	7.8	56	0.721	0.190	-122
	05/03/2016	3,000	6.5	64	0.766	0.270	32
	11/29/2016	3,900	6.8	32	0.620	0.380	-10
	03/01/2017	3,700	6.9	32	0.795	0.440	301
06/06/2017	6,210	6.5	32	0.721	0.380	-96	

Table 3
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 Battle Ground Plaza Mini Mart
 Battle Ground, Washington

Sample Location	Date	TPH-G ug/L	pH (units)	Temp. (°F)	Conductivity (ms/cm)	DO (mg/L)	Redox Potential (mv)
MW-16	09/05/2017	273	6.5	32	0.673	0.330	-28
(cont'd)	10/23/2019	820	8.3	61	0.498	0.440	-94
MW-99 (dup)	10/23/2019	801	8.3	61	0.498	0.440	-94
	08/10/2021	608	7.4	68	0.498	0.330	-50
MW-99 (dup)	08/10/2021	577	7.4	68	0.498	0.330	-50
	02/06/2023	724	7.1	55	0.399	0.330	16
MW-99 (dup)	02/06/2023	712	7.1	55	0.399	0.330	16
	08/07/2024	1,570	7.4	60	0.558	0.850	-46
MW-99 (dup)	08/07/2024	1,130	7.4	60	0.558	0.850	-46
MW-17	11/03/2015	100 U	6.5	61	0.140	1.72	140
	02/01/2016	100 U	7.1	52	0.197	0.540	7.0
	05/04/2016	100 U	6.2	58	0.249	0.360	53
	11/29/2016	100 U	6.5	32	0.135	3.71	159
	03/01/2017	100 U	6.7	32	0.183	3.82	326
	06/06/2017	100 U	6.1	32	0.168	0.970	122
	09/05/2017	100 U	6.0	32	0.182	0.350	151
	10/23/2019	100 U	8.0	58	0.116	0.740	-54
	08/10/2021	100 U	7.1	69	0.151	0.32	-23
	02/06/2023	100 U	6.8	54	0.102	2.80	66
	08/07/2024	100 U	6.9	60	0.163	0.950	122
MW-18	11/03/2015	388	6.9	63	0.180	0.210	70
	02/01/2016	100 U	7.5	55	0.188	0.180	1.0
	05/03/2016	354	6.2	64	0.269	0.350	162
	11/29/2016	431	6.7	32	0.170	0.370	76
	03/01/2017	100 U	7.1	32	0.241	0.430	281
	06/06/2017	229	7.7	32	0.326	2.11	16
	09/05/2017	100 U	6.5	32	0.238	0.220	-1.7
	10/23/2019	144	8.4	61	0.158	0.660	-7.8
	08/10/2021	100 U	7.2	67	0.164	0.330	-18
	02/06/2023	100 U	7.1	52	0.133	1.50	33
	08/07/2024	100 U	7.2	58	0.198	1.01	216

Notes:

Bold = Concentration exceeds MTCA Method A cleanup level for Unrestricted Land Use

DO = Dissolved oxygen

mg/L = Milligrams per Liter

ms/cm = Millisemens per Centimeter

mv = Millivolt

Total petroleum hydrocarbons as gasoline (TPH-G) analyzed by Method NW TPH-G

ug/L = Micrograms per Liter

Table 4
Groundwater Analytical Results by Well
 Battle Ground Plaza Mini Mart
 Battle Ground, Washington

Sample Location	Sample Number	Sample Date	Gasoline	Benzene	Toluene	Ethylbenzene	Total Xylenes	Naphthalene
On-Site Wells								
MW-4	100330-203	03/30/2010	100 U	0.25 U	0.50 U	0.50 U	3.0 U	-
	100701-213	07/01/2010	100 U	0.25 U	0.50 U	0.50 U	1.5 U	-
	101102-223	11/02/2010	100 U	0.25 U	1.0 U	0.50 U	1.5 U	-
	110223-233	02/23/2011	100 U	0.25 U	0.50 U	0.50 U	1.5 U	-
	110908-253	09/08/2011	100 U	0.25 U	1.0 U	0.50 U	1.5 U	-
	111208-263	12/08/2011	100 U	0.25 U	1.0 U	0.50 U	1.5 U	-
	120321-273	03/21/2012	100 U	0.25 U	1.0 U	0.50 U	1.5 U	-
	120619-283	06/19/2012	100 U	0.25 U	1.0 U	0.50 U	1.5 U	-
	MW-4	05/22/2014	100 U	0.25 U	1.0 U	0.50 U	1.5 U	-
	MW-4	02/20/2015	100 U	0.25 U	1.0 U	0.50 U	1.5 U	2.0 U
	MW-4	05/05/2015	100 U	0.25 U	1.0 U	0.50 U	1.5 U	2.0 U
	MW-4	08/11/2015	100 U	0.25 U	1.0 U	0.50 U	1.5 U	2.0 U
	MW-4	11/04/2016	100 U	0.20 U	1.0 U	0.50 U	1.5 U	2.0 U
	MW-4	02/01/2016	100 U	0.20 U	1.0 U	0.50 U	1.5 U	2.0 U
	MW-4	05/03/2016	100 U	0.20 U	1.0 U	0.50 U	1.5 U	2.0 U
	MW-4	11/30/2016	100 U	0.20 U	1.0 U	0.50 U	1.5 U	2.0 U
	MW-4	03/02/2017	100 U	0.20 U	1.0 U	0.50 U	1.5 U	2.0 U
	MW-4	06/06/2017	100 U	0.20 U	1.0 U	0.50 U	1.5 U	2.0 U
	MW-4	09/06/2017	100 U	0.20 U	1.0 U	0.50 U	1.5 U	2.0 U
	MW-4	10/23/2019	100 U	0.20 U	1.0 U	0.50 U	1.5 U	2.0 U
	MW-4	08/10/2021	100 U	0.20 U	1.0 U	0.50 U	1.5 U	4.0 U
	MW-4	02/06/2023	100 U	0.20 U	1.0 U	0.50 U	1.5 U	2.0 U
	MW-4	08/07/2024	100 U	0.20 U	1.0 U	0.50 U	1.5 U	5.0 U
MW-12	100330-201	03/30/2010	100 U	0.25 U	0.50 U	0.50 U	3.0 U	-
	100701-211	07/01/2010	100 U	0.25 U	0.50 U	0.50 U	1.5 U	-
	101102-221	11/02/2010	100 U	0.25 U	1.0 U	0.50 U	1.5 U	-
	110223-231	02/23/2011	100 U	0.25 U	0.50 U	0.50 U	1.5 U	-
	110908-251	09/08/2011	100 U	0.25 U	1.0 U	0.50 U	1.5 U	-
	111208-261	12/08/2011	100 U	0.25 U	1.0 U	0.50 U	1.5 U	-
	120321-271	03/22/2012	100 U	0.25 U	1.0 U	0.50 U	1.5 U	-
	120619-281	06/19/2012	100 U	0.25 U	1.0 U	0.50 U	1.5 U	-
	MW-12	05/21/2014	100 U	0.25 U	1.0 U	0.50 U	1.5 U	-
	MW-12	02/20/2015	100 U	0.25 U	1.0 U	0.50 U	1.5 U	2.0 U
	MW-12	05/05/2015	100 U	0.25 U	1.0 U	0.50 U	1.5 U	2.0 U
	MW-12	08/10/2015	100 U	0.25 U	1.0 U	0.50 U	1.5 U	2.0 U
	MW-12	11/03/2015	100 U	0.20 U	1.0 U	0.50 U	1.5 U	2.0 U
	MW-12	02/01/2016	100 U	0.20 U	1.0 U	0.50 U	1.5 U	2.0 U
	MW-12	05/03/2016	100 U	0.20 U	1.0 U	0.50 U	1.5 U	2.0 U
	MW-12	11/29/2016	100 U	0.20 U	1.0 U	0.50 U	1.5 U	2.0 U
	MW-12	03/01/2017	100 U	0.20 U	1.0 U	0.50 U	1.5 U	2.0 U
	MW-12	06/06/2017	100 U	0.20 U	1.0 U	0.50 U	1.5 U	2.0 U
	MW-12	09/05/2017	100 U	0.20 U	1.0 U	0.50 U	1.5 U	2.0 U
	MW-12	10/23/2019	100 U	0.20 U	1.0 U	0.50 U	1.5 U	2.0 U
	MW-12	08/10/2021	100 U	0.20 U	1.0 U	0.50 U	1.5 U	4.0 U
	MW-12	02/06/2023	100 U	0.20 U	1.0 U	0.50 U	1.5 U	2.0 U
	MW-12	08/07/2024	100 U	0.20 U	1.0 U	0.50 U	1.5 U	5.0 U
Off-Site Wells								
MW-16	MW-16	02/23/2015	4,360	22	1.0 U	169	132	10
	MW-16	05/05/2015	1,200	2.9	1.0 U	58	6.5	7.4
	MW-16	08/11/2015	100 U	0.25 U	1.0 U	0.56	1.5 U	2.0 U
	MW-16	11/04/2015	100 U	0.20 U	1.0 U	0.50 U	1.5 U	2.0 U
	MW-16	02/01/2016	5,130	17	10 U	577	105	49

Table 4
Groundwater Analytical Results by Well
 Battle Ground Plaza Mini Mart
 Battle Ground, Washington

Sample Location	Sample Number	Sample Date	Gasoline	Benzene	Toluene	Ethylbenzene	Total Xylenes	Naphthalene
MW-16 (cont'd)	MW-16	05/03/2016	300	5.1	1.0 U	173	2.8	16
	MW-16	11/29/2016	3,900	9.8	1.0 U	310	28	98
	MW-16	03/01/2017	3,700	6.1	1.0 U	342	8.2	47
	MW-99 (dup)	03/01/2017	3,200	5.9	1.0 U	348	7.0	40
	MW-16	06/06/2017	6,210	7.1	5.0 U	889	13	85
	MW-99 (dup)	06/06/2017	6,170	7.1	5.0 U	897	14	87
	MW-16	09/05/2017	273	0.41	1.0 U	20	1.5 U	2.0 U
	MW-99 (dup)	09/05/2017	273	0.40	1.0 U	18	1.5 U	2.0 U
	MW-16	10/23/2019	820	0.70	1.0 U	2.8	1.5 U	2.9
	MW-99 (dup)	10/23/2019	801	0.65	1.0 U	2.9	1.5 U	3.2
	MW-16	08/10/2021	608	0.23	1.0 U	1.2	1.5 U	4.0 U
	MW-99 (dup)	08/10/2021	577	0.23	1.0 U	1.1	1.5 U	4.0 U
	MW-16	02/06/2023	724	0.30	1.0 U	1.3	1.5 U	3.2
	MW-99 (dup)	02/06/2023	712	0.25	1.0 U	1.4	1.5 U	3.3
	MW-16	08/07/2024	1,570	0.33	1.0 U	28	1.5 U	5.0 U
	MW-99 (dup)	08/07/2024	1,130	0.33	1.0 U	24	1.5 U	5.0 U
MW-17	MW-17	11/03/2015	100 U	0.20 U	1.0 U	0.50 U	1.5 U	2.0 U
	MW-17	02/01/2016	100 U	0.20 U	1.0 U	0.50 U	1.5 U	2.0 U
	MW-17	05/04/2016	100 U	0.20 U	1.0 U	0.50 U	1.5 U	2.0 U
	MW-17	11/29/2016	100 U	0.20 U	1.0 U	0.50 U	1.5 U	2.0 U
	MW-17	03/01/2017	100 U	0.20 U	1.0 U	0.50 U	1.5 U	2.0 U
	MW-17	06/06/2017	100 U	0.20 U	1.0 U	0.50 U	1.5 U	2.0 U
	MW-17	09/05/2017	100 U	0.20 U	1.0 U	0.50 U	1.5 U	2.0 U
	MW-17	10/23/2019	100 U	0.20 U	1.0 U	0.50 U	1.5 U	2.0 U
	MW-17	08/10/2021	100 U	0.20 U	1.0 U	0.50 U	1.5 U	4.0 U
	MW-17	02/06/2023	100 U	0.20 U	1.0 U	0.50 U	1.5 U	2.0 U
	MW-17	08/07/2024	100 U	0.20 U	1.0 U	0.50 U	1.5 U	5.0 U
MW-18	MW-18	11/03/2015	388	0.20 U	1.0 U	0.50 U	1.5 U	2.0 U
	MW-18	02/01/2016	100 U	0.20 U	1.0 U	0.50 U	1.5 U	2.0 U
	MW-18	05/03/2016	354	0.20 U	1.0 U	0.50 U	1.5 U	2.0 U
	MW-18	11/29/2016	431	0.20 U	1.0 U	0.50 U	1.5 U	2.0 U
	MW-18	03/01/2017	100 U	0.20 U	1.0 U	0.50 U	1.5 U	2.0 U
	MW-18	06/06/2017	229	0.20 U	1.0 U	0.50 U	1.5 U	2.0 U
	MW-18	09/05/2017	286	0.20 U	1.0 U	0.50 U	1.5 U	2.0 U
	MW-18	10/23/2019	144	0.20 U	1.0 U	0.50 U	1.5 U	2.0 U
	MW-18	08/10/2021	100 U	0.20 U	1.0 U	0.50 U	1.5 U	4.0 U
	MW-18	02/06/2023	100 U	0.20 U	1.0 U	0.50 U	1.5 U	2.0 U
	MW-18	08/07/2024	100 U	0.20 U	1.0 U	0.50 U	1.5 U	5.0 U
MTCA Method A Cleanup Levels ^a			800	5	1,000	700	1,000	160

Notes:

Bold = Concentration exceeds Method A Cleanup Level for Unrestricted Land Use

^a Washington Model Toxics Control Act (MTCA) Method A Cleanup Levels for Groundwater (Table 720-1) (October 12, 2007)

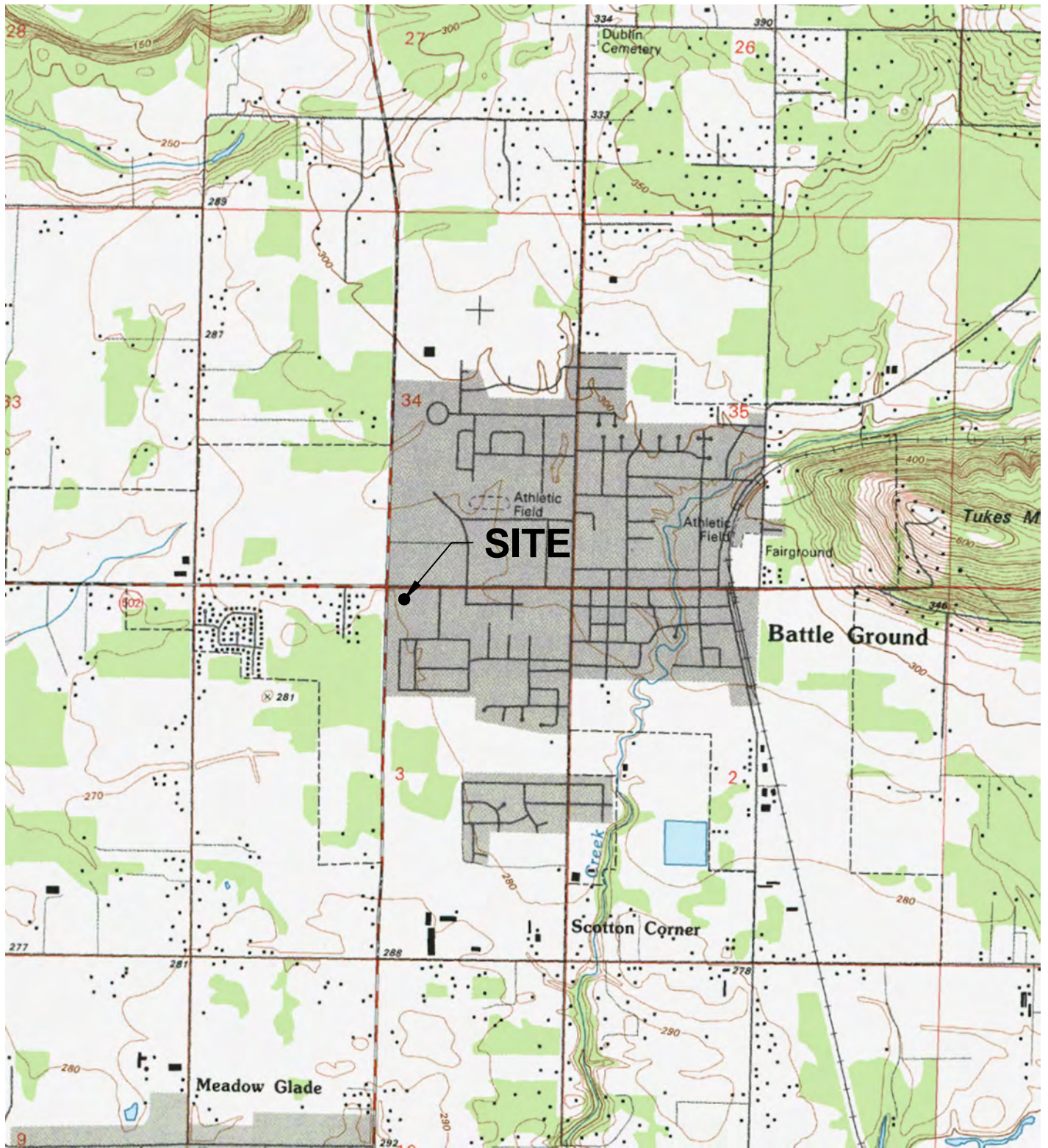
- = Not sampled for this parameter or not applicable

Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX) analyzed by U.S. Environmental Protection Agency (EPA) Method 8260B/C
 Total petroleum hydrocarbons as gasoline (TPH-G) analyzed by Method NW TPH-G

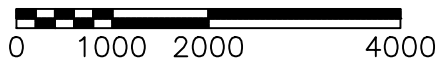
U = not detected above concentration indicated

ug/L = Micrograms per Liter

FIGURES



APPROXIMATE SCALE IN FEET



NOTE: USGS, BATTLE GROUND \square UADRANGLE
WASHINGTON-CLAR \square CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)

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PNG ENVIRONMENTAL, INC.

6665 SW Hampton St., Ste. 101 Tigard, OR 97223
TEL (503) 620-2387
FAX (503) 620-2977

DATE: 9-27-17
FILE NAME: 1191-01
DRAWN BY: JJT
APPROVED BY: SV





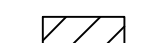

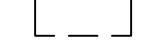
BATTLE GROUND PLAZA MINI MART
805/809 WEST MAIN ST.
BATTLE GROUND, WA.

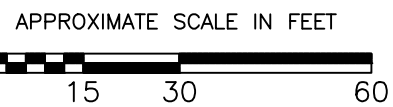
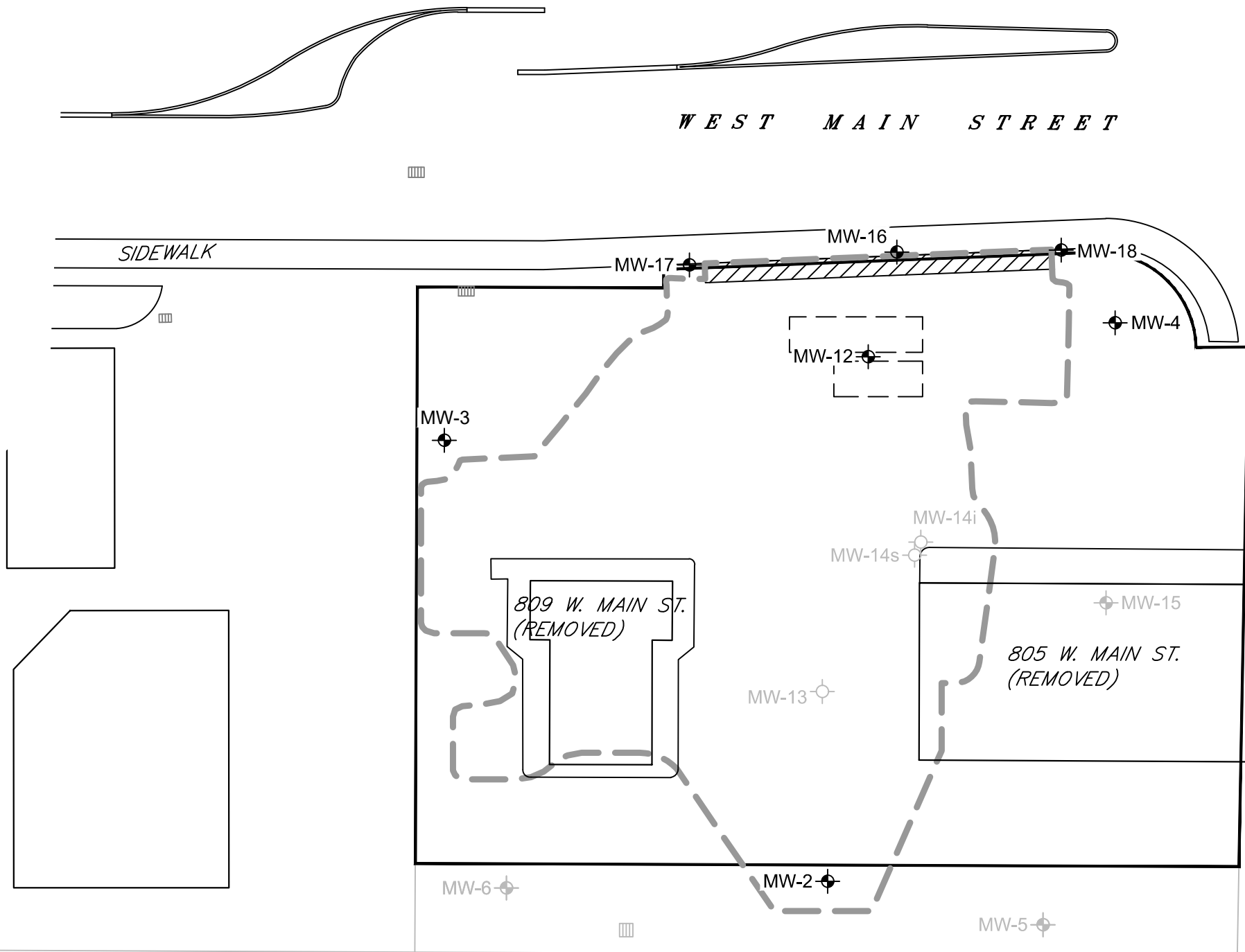
SITE LOCATION MAP

Project No. 1191-01
Figure No.

1

LEGEND





-  Property Boundary
-  MW-4 Monitoring Well
-  MW-5 Abandoned Monitoring Well per Ecology 2019 NFA
-  MW-13 Abandoned as part of previous soil removals
-  Control Density Fill Restoration
-  Final Excavation Limit
-  2009 Removed Tan



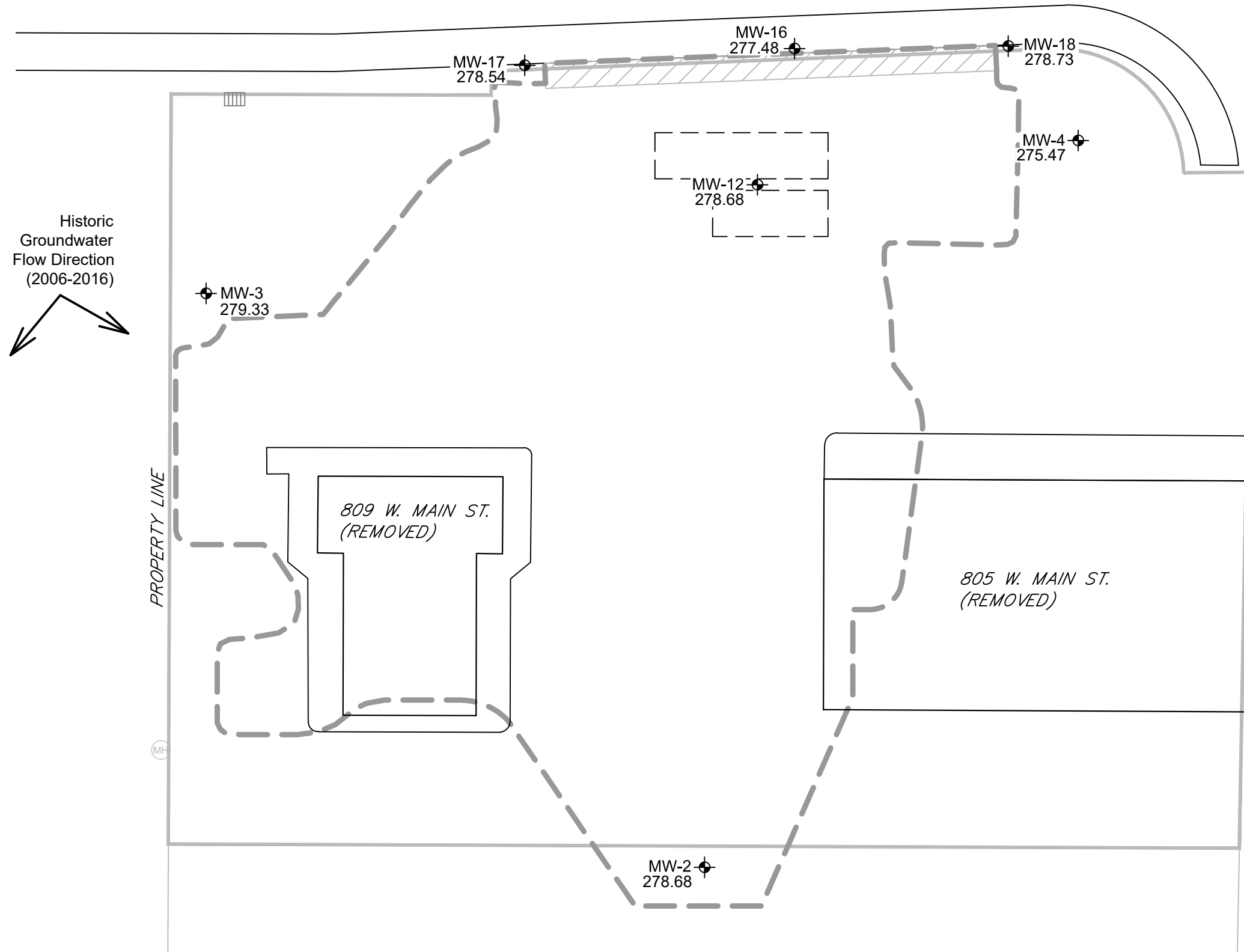
<p>PNG ENVIRONMENTAL, INC. 6665 SW Hampton St., Ste. 101 Tigard, OR 97223 TEL (503) 620-2387 FAX (503) 620-2977</p>	DATE: 10-15-19 FILE NAME: 1191-01 DRAWN BY: JJT APPROVED BY: GT	BATTLE GROUND PLAZA MINI MART 805/809 WEST MAIN ST. BATTLE GROUND, WA.	MONITORING WELL NETWORK	Project No. 1191-01 Figure No. 2
	BATTLE GROUND PLAZA MINI MART 805/809 WEST MAIN ST. BATTLE GROUND, WA.			

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LEGEND

- Property Boundary
- MW-4  Monitoring Well
-  2015 Area of Soil Removal and Control Density Fill Restoration
-  Final Excavation Limit
- 278.54 Groundwater Elevation (feet MSL)
-  Approximate Groundwater Flow Direction

WEST MAIN STREET



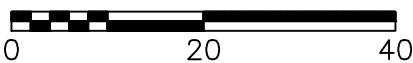
Historic
Groundwater
Flow Direction
(2006-2016)

PROPERTY LINE

809 W. MAIN ST.
(REMOVED)

805 W. MAIN ST.
(REMOVED)

APPROXIMATE SCALE IN FEET



PNG ENVIRONMENTAL, INC.

6665 SW Hampton St., Ste. 101 Tigard, OR 97223
TEL (503) 620-2387
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DATE: 8-27-24
FILE NAME: 1191-01
DRAWN BY: JJT
APPROVED BY: GT



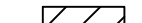

BATTLE GROUND PLAZA MINI MART
805/809 WEST MAIN ST.
BATTLE GROUND, WA.

GROUNDWATER ELEVATIONS
AUGUST 7, 2024

Project No.
1191-01

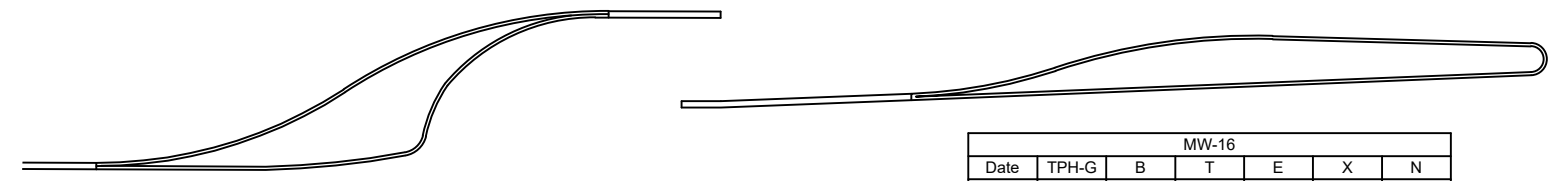
Figure No.
3

LEGEND

-  Property Boundary
-  Monitoring Well
-  Control Density Fill Restoration
-  Final Excavation Limit
- TPH-G = Gasoline Concentration (ug/L)
- B = Benzene Concentration (ug/L)
- T = Toluene Concentration (ug/L)
- E = Ethylbenzene Concentration (ug/L)
- X = Xylenes Concentration (ug/L)
- N = Naphthalene Concentration (ug/L)

Note:
 MTCA Method A Cleanup Levels for Unrestricted Land Use:
 TPH-G = 800 ug/L
 Benzene = 5 ug/L
 Toluene = 1,000 ug/L
 Ethylbenzene = 700 ug/L
 Xylenes = 1,000 ug/L
 Naphthalene = 160 ug/L

WEST MAIN STREET



MW-16						
Date	TPH-G	B	T	E	X	N
10/23/19	820	0.70	1.0U	2.8	1.5U	2.9
8/10/21	608	0.23	1.0U	1.2	1.5U	4.0U
2/6/23	724	0.30	1.0U	1.3	1.5U	3.3
8/7/24	1,570	0.33	1.0U	28	1.5U	5.0U

MW-18						
Date	TPH-G	B	T	E	X	N
10/23/19	144	0.20U	1.0U	0.50U	1.5U	2.0U
8/10/21	100U	0.20U	1.0U	0.50U	1.5U	4.0U
2/6/23	100U	0.20U	1.0U	0.50U	1.5U	2.0U
8/7/24	100U	0.20U	1.0U	0.50U	1.5U	5.0U

MW-17						
Date	TPH-G	B	T	E	X	N
10/23/19	100U	0.20U	1.0U	0.50U	1.5U	2.0U
8/10/21	100U	0.20U	1.0U	0.50U	1.5U	4.0U
2/6/23	100U	0.20U	1.0U	0.50U	1.5U	2.0U
8/7/24	100U	0.20U	1.0U	0.50U	1.5U	5.0U

MW-4						
Date	TPH-G	B	T	E	X	N
10/23/19	100U	0.20U	1.0U	0.50U	1.5U	2.0U
8/10/21	100U	0.20U	1.0U	0.50U	1.5U	4.0U
2/6/23	100U	0.20U	1.0U	0.50U	1.5U	2.0U
8/7/24	100U	0.20U	1.0U	0.50U	1.5U	5.0U

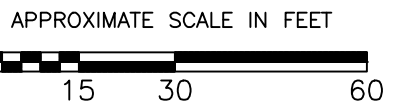
MW-3

MW-12						
Date	TPH-G	B	T	E	X	N
10/23/19	100U	0.20U	1.0U	0.50U	1.5U	2.0U
8/10/21	100U	0.20U	1.0U	0.50U	1.5U	4.0U
2/6/23	100U	0.20U	1.0U	0.50U	1.5U	2.0U
8/7/24	100U	0.20U	1.0U	0.50U	1.5U	5.0U

809 W. MAIN ST.
(REMOVED)

805 W. MAIN ST.
(REMOVED)

MW-2



PNG ENVIRONMENTAL, INC.
 6665 SW Hampton St., Ste. 101 Tigard, OR 97223
 TEL (503) 620-2387 FAX (503) 620-2977

DATE: 9-11-24
 FILE NAME: 1191-01
 DRAWN BY: JJT
 APPROVED BY: GT

BATTLE GROUND PLAZA MINI MART
 805/809 WEST MAIN ST.
 BATTLE GROUND, WA.

GROUNDWATER ANALYTICAL RESULTS
 LAST FOUR EVENTS

Project No. 1191-01
 Figure No. 4

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Attachment A
Excerpts From Ecology No Further Action



Electronic Copy

STATE OF WASHINGTON

DEPARTMENT OF ECOLOGY

PO Box 47775 • Olympia, Washington 98504-7775 • 360-407-6300

Call 711 for Washington Relay Service • Persons with a speech disability can call 877-833-6341

September 4, 2019

Linda Anderson
P.O. Box 821669
Vancouver, WA 98682-0038

Re: No Further Action at a Property associated with a Site:

- **Site Name:** Battle Ground Mini Mart 805
- **Site Address:** 813 W Main St, Battle Ground, Clark County, WA 98604
- **Facility/Site No.:** 9977600
- **Cleanup Site ID:** 5509
- **VCP Project No.:** SW1359

Dear Linda Anderson:

The Washington State Department of Ecology (Ecology) received your request for an opinion on your cleanup of the Property associated with the Battle Ground Mini Mart 805 facility (Site). This letter provides our opinion. We are providing this opinion under the authority of the Model Toxics Control Act (MTCA)¹, chapter 70.105D RCW.

Issues Presented and Opinion

1. Is further remedial action necessary at the Property to clean up contamination associated with the Site?

NO. Ecology has determined that no further remedial action is necessary at the Property to clean up contamination associated with the Site.

2. Is further remedial action still necessary elsewhere at the Site?

YES. Ecology has determined that further remedial action is still necessary elsewhere at the Site.

This opinion is based on an analysis of whether the remedial action meets the substantive requirements of MTCA, chapter 70.105D RCW, and implementing regulations, chapter 173-340 WAC (collectively "substantive requirements of MTCA"). The analysis is provided below.

¹ <https://fortress.wa.gov/ecy/publications/SummaryPages/9406.html>

Enclosure C

Long-term Groundwater Monitoring Plan

specifically, in-place management is protective of human health and the environment. Over the course of 19 groundwater monitoring events since 2010, target COCs have not been detected at compliance monitoring well MW-12 located 15 feet down-gradient from this area or at more distal monitoring wells MW-3 and MW-4. These results indicate residual groundwater contamination is not migrating back onto the Mini Mart property. In addition, upon completion of the north boundary soil removal, the area of remaining contaminated soil is located behind a 4 foot wide, 12 foot deep, and 84 foot long CDF wall. These residual soils are also beneath an asphalt concrete street and concrete sidewalk limiting accessibility. Lastly, the bulk of residual contaminated soil is located at a depth of eight feet bgs, well below existing underground utilities within the area.

Elements that support the City of Battle Ground property closure per the Site Closure Plan are described in detail below and include:

- 1) Long term compliance groundwater monitoring.
- 2) Memorandum of understanding with the City of Battle Ground.
- 3) Financial assurance.
- 4) Periodic regulatory review.

6.3.1 Long Term Compliance Groundwater Monitoring

To verify that the residual off-site soil contamination does not pose a risk of recontamination to the adjacent Mini Mart property, Ecology requested implementation of long term compliance groundwater monitoring.

Per the 2015 Site Closure Plan, the compliance groundwater monitoring well network will consist of MW-2, MW-3, MW-4, MW-12, MW-16, MW-17, and MW-18 (Figure 14). MW-5, MW-6, MW-13, and MW-15 will be abandoned in accordance with Ecology rules. The network will be monitored once every eighteen months until MTCA closure is attained. The monitoring data collected is summarized by well as follows:

Monitoring Wells MW-2, MW-3, MW-4, MW-12, MW-16, MW-17, and MW-18 will be measured for water levels to determine groundwater flow. Wells MW-4, MW-12, MW-16, MW-17, and MW-18 will be sampled for groundwater quality including gasoline-range TPH, BTEX, and Naphthalene.

6.3.2 Memorandum of Understanding

The property owner has signed a memorandum of understanding (MOU) with the City of Battle Ground. The MOU documents that both parties agree to elements of the 2015 Site Closure Plan. In addition, the MOU documents those specifics warranting consideration by both parties including long term groundwater compliance monitoring and financial assurance (by funds held within a remediation trust described below) until completion of the MTCA cleanup. The MOU is included in Appendix X.

6.3.3 Financial Assurance

At which time Ecology provides an opinion indicating the site has attained closure, the Mini Mart property owner will fund a remediation trust to facilitate future anticipated monitoring activities on the Battle Ground property. The trust was included as a component to the MOU signed with the City of Battle Ground. The trust will be managed by a third party law firm.

At the completion of long-term groundwater monitoring, and the compliance well network has been properly abandoned, the remaining funds within the trust will transfer to the City of Battle Ground. The trust is included as part of the MOU (Appendix X).

6.3.4 Regulatory Review

Periodic review of the compliance groundwater monitoring results will be required by Ecology. At a minimum, Ecology will review the site every five years to ensure the continued protection of human health and the environment. Ecology will also review monitoring results to determine if the off-site property meets the substantive requirements of a full MTCA Method A cleanup.

Attachment B
Field Sampling Logs

Company: PUG Environmental Project Mgr: GUY JARE Project Name: Battle Ground Project #: 1191
 Address: 6015 SW Haystack Trnd, OR 97229 Phone: 503-600-7377 Email: guy@pug-environment.com PO #: 1191

Sampled by: Jay Gami-Lee ANALYSIS REQUEST

DATE	TIME	MATRIX	# OF CONTAINERS	NWTPH-HCID	NWTPH-DX	NWTPH-GX	8260 BTEX + Napthalene	8260 RBDM VOCs	8260 Halo VOCs	8260 VOCs Full List	8270 SIM PAHs	8270 Semi-Vols Full List	8082 PCBs	8081 Pesticides	RCRA Metals (8)	Priority Metals (13)	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Hg, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Tl, V, Zn, TOTAL DISS. TCLP	TCLP Metals (8)	Hold Sample	Frozen Archive
8/24/07	0751	W	1				X													
8/24/07	1038		3		X	X	X													
8/24/07	1037				X	X	X													
8/24/07	0921				X	X	X													
8/24/07	0957				X	X	X													
8/24/07	0853				X	X	X													
8/24/07	0913				X	X	X													

Standard Turn Around Time (TAT) = 10 Business Days

SPECIAL INSTRUCTIONS:

TAT Requested (circle): Standard

1 Day 2 Day 3 Day 5 Day Other: _____

SAMPLES ARE HELD FOR 30 DAYS

RELINQUISHED BY: Signature: <u>[Signature]</u> Date: <u>0753</u>	RECEIVED BY: Signature: <u>[Signature]</u> Date: <u>8/8/07</u>
Printed Name: <u>[Name]</u>	Printed Name: <u>[Name]</u>
Company: <u>Apex</u>	Company: <u>Apex</u>

GROUNDWATER SAMPLE COLLECTION FORM

PNG Environmental, Inc.

Well ID no: MW-4	Project name: Battle Ground Plaza
Sample no: MW-4	Project no: 1191
Date: 8/7/2024 Sample Time: 1038	Collector: JMG

Well Information

Monument condition: Good / Needs repair _____
 Well cap condition: Good / Locked / Replaced / Needs replacement
 Headspace reading: Not measured ppm Odor Y N
 Elevation mark: Yes / Added / Other Well diameter = 2-inch / 4-inch / 6-inch / Other 1"

Purge Data

Total well depth: 13.77 ft Top of screen: 3.77 ft bgs
 Depth to product: - ft Water above screen: Y N
 Depth to water: 10.17 ft Pump/Tubing Intake Depth: 11.97 ~~11.97~~ 7.6 ft bgs
 Casing volume: 3.60 ft H₂O X 0.04 gpf = 0.144 X 3 = _____
 Casing volumes (GPF): 3/4"=0.02 1"=0.04 2"=0.16 4"=0.65 6"=1.47

Purge Method

Pump type: Peristaltic / Submersible / Bladder / Pneumatic / Other
 Purge tubing: New LDPE / New Teflon / Other
 Purge start time: 0809 Purge stop time: _____ Purge rate: ~100 mL/min
 Refill Timer Setting: _____ Discharge Timer Setting: _____ Pressure Setting: _____

Field Parameters

Meter used		QED YSI / Hanna / Other					
Gallons (ml)	Temp (°C)	Conductivity (mS/cm)	DO (mg/L)	pH St units	Turbidity (NTU)	ORP mV	Comments
250	57.77	0.245	5.91	7.00	0.159	224.3	Clear
500	58.70	0.242	2.38	7.63	0.157	223.7	"
750	58.61	0.234	1.52	7.54	0.157	222.2	"
1000	58.20	0.232	1.66	7.36	0.152	220.5	"
1250	57.85	0.238	1.51	7.27	0.150	219.9	"
1500	57.60	0.239	1.35	7.20	0.150	218.2	" DRY

Ferrous Iron (mg/L): _____ Total / Dissolved

Sample Containers

Number	Type	Preservative	Filtered
3	VOA / Amber / Poly	HCL / None / Nitric / Sulfuric / Other	Y / N
	VOA / Amber / Poly	HCL / None / Nitric / Sulfuric / Other	Y / N
	VOA / Amber / Poly	HCL / None / Nitric / Sulfuric / Other	Y / N
	VOA / Amber / Poly	HCL / None / Nitric / Sulfuric / Other	Y / N
	VOA / Amber / Poly	HCL / None / Nitric / Sulfuric / Other	Y / N

Comments: 0.521 Dm @ 1500 ml, clear RL (3/700 ml w/ FC. Vol)
1038 ~ 3 min / 1 container

Sampler's Signature: _____ Date: 8/7/2024

GROUNDWATER SAMPLE COLLECTION FORM

PNG Environmental, Inc.

Well ID no:	MW-12	Project name:	Battle Ground Plaza
Sample no:	MW-12	Project no:	1191
Date:	8/7/2024	Sample Time:	10:27
		Collector:	JMG

Well Information

Monument condition Good / Needs repair _____
 Well cap condition Good / Locked / Replaced / Needs replacement
 Headspace reading Not measured ppm Odor Y/N
 Elevation mark Yes / Added / Other Well diameter 2-inch 4-inch / 6-inch / Other

Purge Data

Total well depth 14.41 ft Top of screen 4.41 ft bgs
 Depth to product _____ ft Water above screen Y/N
 Depth to water 6.14 ft Pump/Tubing Intake Depth 7.10.28 ft bgs
 Casing volume 8.27 ft H₂O X 0.16 gpf = _____ X 3 = _____
 Casing volumes (GPF) 3/4"=0.02 1"=0.04 2"=0.16 4"=0.65 6"=1.47

Purge Method

Pump type Peristaltic / Submersible / Bladder / Pneumatic / Other
 Purge tubing New LDPE / New Teflon / Other _____
 Purge start time 10:05 Purge stop time 10:23 Purge rate 3.1024/min
 Refill Timer Setting _____ Discharge Timer Setting _____ Pressure Setting _____

Field Parameters

Meter used QED / YSI / Hanna / Other

Gallons/min	Temp (°C)	Conductivity (mS/cm)	DO (mg/L)	pH St units	Turbidity (NTU)	ORP mV	Comments
250	59.93	0.234	7.39	7.08	0.154	203.1	Clear
500	60.53	0.240	1.36	7.10	0.157	195.4	"
750	60.80	0.248	1.07	7.15	0.162	187.2	"
1000	60.41	0.254	0.87	7.19	0.166	181.2	"
1250	60.35	0.271	0.77	7.20	0.177	176.5	"
1500	60.34	0.274	0.67	7.25	0.190	169.2	"
1750	60.33	0.280	0.65	7.26	0.194	167.6	"
2000	60.51	0.286	0.63	7.28	0.198	164.6	"

Ferrous Iron (mg/L): Total / Dissolved


Sample Containers

Number	Type	Preservative	Filtered
3	<u>VOA</u> / Amber / Poly	<u>HCL</u> / None / Nitric / Sulfuric / Other	Y / N
	VOA / Amber / Poly	HCL / None / Nitric / Sulfuric / Other	Y / N
	VOA / Amber / Poly	HCL / None / Nitric / Sulfuric / Other	Y / N
	VOA / Amber / Poly	HCL / None / Nitric / Sulfuric / Other	Y / N
	VOA / Amber / Poly	HCL / None / Nitric / Sulfuric / Other	Y / N

Comments:

Sampler's Signature

Date: 8/7/2024



GROUNDWATER SAMPLE COLLECTION FORM

PNG Environmental, Inc.

Well ID no:	MW-16 MW-99 DUP	Project name: Battle Ground Plaza
Sample no:	MW-16 & MW-99	Project no: 1191
Date:	8/7/2024 Sample Time: 0931/0933	Collector: JMG

Well Information

Monument condition Good / Needs repair _____
 Well cap condition Good / Locked / Replaced / Needs replacement
 Headspace reading Not measured / ppm Odor Y/N
 Elevation mark Yes / Added / Other Well diameter 2-inch 4-inch / 6-inch / Other

Purge Data

Total well depth 14.80 ft Top of screen 4.8 ft bgs
 Depth to product _____ ft Water above screen Y/N
 Depth to water 9.02 ft Pump/Tubing Intake Depth 21.9 ft bgs
 Casing volume 5.78 ft H₂O X 0.16 gpf = _____ X 3 = _____
 Casing volumes (GPF) 3/4"=0.02 1"=0.04 2"=0.16 4"=0.65 6"=1.47

Purge Method

Pump type Peristaltic / Submersible / Bladder / Pneumatic / Other
 Purge tubing New LDPE / New Teflon / Other _____
 Purge start time 0900 Purge stop time 0919 Purge rate 2100 ml/min
 Refill Timer Setting _____ Discharge Timer Setting _____ Pressure Setting _____

Field Parameters

Meter used		QED <u>YSI</u> / Hanna / Other					
Gallons (ml)	Temp (°C)	Conductivity (mS/cm)	DO (mg/L)	pH St units	Turbidity (NTU)	ORP mV	Comments
250	57.67	0.579	2.22	7.16	0.376	137.9	Clear
500	58.57	0.578	1.49	7.23	0.376	70.2	"
750	58.69	0.581	1.22	7.27	0.377	23.3	"
1000	58.67	0.578	1.08	7.29	0.375	-2.9	"
1250	59.01	0.571	0.98	7.32	0.371	-21.3	"
1500	58.97	0.565	0.89	7.34	0.367	-36.3	"
1750	59.43	0.560	0.84	7.36	0.364	-44.7	"
2000	59.71	0.558	0.85	7.37	0.363	-46.2	"

Ferrous Iron (mg/L): _____ Total / Dissolved

Sample Containers

Number	Type	Preservative	Filtered
6	<u>VOA</u> / Amber / Poly	<u>HCL</u> / None / Nitric / Sulfuric / Other	Y / N
	VOA / Amber / Poly	HCL / None / Nitric / Sulfuric / Other	Y / N
	VOA / Amber / Poly	HCL / None / Nitric / Sulfuric / Other	Y / N
	VOA / Amber / Poly	HCL / None / Nitric / Sulfuric / Other	Y / N
	VOA / Amber / Poly	HCL / None / Nitric / Sulfuric / Other	Y / N

Comments: _____

Sampler's Signature _____ Date: 8/7/2024

GROUNDWATER SAMPLE COLLECTION FORM

PNG Environmental, Inc.

Well ID no:	MW-17	Project name:	Battle Ground Plaza
Sample no:	MW-17	Project no:	1191
Date:	8/7/2024	Sample Time:	0957
		Collector:	JMG

Well Information

Monument condition Good / Needs repair _____
 Well cap condition Good / ~~Locked~~ / Replaced / Needs replacement
 Headspace reading Not measured / _____ ppm Odor Y/N
 Elevation mark Yes / Added / Other _____ Well diameter 2-inch 4-inch / 6-inch / Other

Purge Data

Total well depth 15.50 ft Top of screen 5.5 ft bgs
 Depth to product _____ ft Water above screen Y/N
 Depth to water 7.18 ft Pump/Tubing Intake Depth 311.34 ft bgs
 Casing volume 8.32 ft H₂O X 0.16 gpf = _____ X 3 = _____
 Casing volumes (GPF) 3/4"=0.02 1"=0.04 2"=0.16 4"=0.65 6"=1.47

Purge Method

Pump type Peristaltic / Submersible / Bladder / Pneumatic / Other
 Purge tubing New LDPE / New Teflon / Other _____
 Purge start time 0935 Purge stop time 0954 Purge rate 3100ml/min
 Refill Timer Setting _____ Discharge Timer Setting _____ Pressure Setting _____

Field Parameters

Meter used QED YSI / Hanna / Other

Gallons/min	Temp (°C)	Conductivity (mS/cm)	DO (mg/L)	pH St units	Turbidity (NTU)	ORP mV	Comments
250	58.89	0.166	3.43	7.83	0.108	137.4	Clear
500	59.93	0.168	1.91	7.50	0.110	133.0	"
750	60.73	0.169	1.51	7.34	0.110	129.0	"
1000	60.99	0.168	1.26	7.16	0.109	126.2	"
1250	61.10	0.166	1.09	7.04	0.108	126.3	"
1500	61.2	0.166	1.08	6.99	0.108	124.8	" DO=1.07
1750	60.73	0.164	0.93	6.96	0.107	123.7	"
2000	60.43	0.163	0.95	6.92	0.106	121.3	"

Ferrous Iron (mg/L): Total / Dissolved

Sample Containers

Number	Type	Preservative	Filtered
3	<u>VOA</u> / Amber / Poly	<u>HCL</u> / None / Nitric / Sulfuric / Other	Y / N
	VOA / Amber / Poly	HCL / None / Nitric / Sulfuric / Other	Y / N
	VOA / Amber / Poly	HCL / None / Nitric / Sulfuric / Other	Y / N
	VOA / Amber / Poly	HCL / None / Nitric / Sulfuric / Other	Y / N
	VOA / Amber / Poly	HCL / None / Nitric / Sulfuric / Other	Y / N

Comments:

Sampler's Signature _____ Date: 8/7/2024

GROUNDWATER SAMPLE COLLECTION FORM

PNG Environmental, Inc.

Well ID no: MW-18	Project name: Battle Ground Plaza
Sample no: MW-18	Project no: 1191
Date: 8/7/2024 Sample Time: 0953	Collector: JMG

Well Information

Monument condition: Good / Needs repair _____

Well cap condition: Good / Locked / Replaced / Needs replacement

Headspace reading: Not measured / _____ ppm Odor Y N

Elevation mark: Yes / Added / Other Well diameter: 2-inch / 4-inch / 6-inch / Other

Purge Data

Total well depth: 15.90 ft Top of screen: 5.9 ft bgs

Depth to product: _____ ft Water above screen: Y N

Depth to water: 8.39 ft Pump/Tubing Intake Depth: 11.7 ft bgs

Casing volume: 7.51 ft H₂O X 0.16 gpf = _____ X 3 = _____

Casing volumes (GPF): 3/4"=0.02 1"=0.04 2"=0.16 4"=0.65 6"=1.47

Purge Method

Pump type: Peristaltic / Submersible / Bladder / Pneumatic / Other

Purge tubing: New LDPE / New Teflon / Other _____

Purge start time: 0932 Purge stop time: 0950 Purge rate: 2100 mL/min

Refill Timer Setting: _____ Discharge Timer Setting: _____ Pressure Setting: _____

Field Parameters

Meter used: QED / YSI / Hanna / Other

Gallons (ml)	Temp (°C)	Conductivity (mS/cm)	DO (mg/L)	pH St units	Turbidity (NTU)	ORP mV	Comments
250	56.94	0.205	3.01	7.31	0.133	226.6	Clear
500	56.86	0.205	1.72	7.24	0.133	225.4	"
750	57.53	0.204	1.40	7.22	0.133	223.8	"
1000	57.41	0.203	1.15	7.21	0.131	221.3	"
1250	57.74	0.199	1.03	7.20	0.130	219.1	"
1500	57.56	0.199	1.01	7.19	0.128	217.7	"
1750	57.84	0.197	1.00	7.18	0.128	216.6	"
2000	57.96	0.198	1.01	7.18	0.129	215.5	"

Ferrous Iron (mg/L): _____ Total / Dissolved

Sample Containers

Number	Type	Preservative	Filtered
3	<input checked="" type="checkbox"/> VOA / Amber / Poly	<input checked="" type="checkbox"/> HCL / None / Nitric / Sulfuric / Other	Y / N
	VOA / Amber / Poly	HCL / None / Nitric / Sulfuric / Other	Y / N
	VOA / Amber / Poly	HCL / None / Nitric / Sulfuric / Other	Y / N
	VOA / Amber / Poly	HCL / None / Nitric / Sulfuric / Other	Y / N
	VOA / Amber / Poly	HCL / None / Nitric / Sulfuric / Other	Y / N

Comments: _____

Sampler's Signature: _____ Date: 8/7/2024

Attachment C
Laboratory Analytical Data and
Chain-of Custody Documentation



ANALYTICAL REPORT

Apex Laboratories, LLC

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

Wednesday, August 21, 2024

Guy Tanz
PNG Environmental, INC
6665 SW Hampton Street Suite 101
Tigard, OR 97223

RE: A4H0981 - Battle Ground Mini Mart - 1191

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 A4H0981, which was received by the laboratory on 8/8/2024 at 7:53:00AM.

If you have any questions concerning this report or the services we offer, please feel free to contact me by email at: pnerenberg@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	
<p><u>Acceptable Receipt Temperature is less than, or equal to, 6 degC (not frozen), or received on ice the same day as sampling.</u></p> <p>(See Cooler Receipt Form for details)</p>	
<p>Default Cooler</p> <hr style="width: 20%; margin-left: 0;"/>	<p>0.3 degC</p>

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.

Philip Nerenberg, Lab Director



ANALYTICAL REPORT

Apex Laboratories, LLC

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

PNG Environmental, INC 6665 SW Hampton Street Suite 101 Tigard, OR 97223	Project: <u>Battle Ground Mini Mart</u> Project Number: 1191 Project Manager: Guy Tanz	Report ID: A4H0981 - 08 21 24 1816
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ANALYTICAL REPORT FOR SAMPLES

SAMPLE INFORMATION

Client Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
TB-080724	A4H0981-01	Water	08/07/24 07:51	08/08/24 07:53
MW-4	A4H0981-02	Water	08/07/24 10:38	08/08/24 07:53
MW-12	A4H0981-03	Water	08/07/24 10:27	08/08/24 07:53
MW-16	A4H0981-04	Water	08/07/24 09:21	08/08/24 07:53
MW-17	A4H0981-05	Water	08/07/24 09:57	08/08/24 07:53
MW-18	A4H0981-06	Water	08/07/24 08:53	08/08/24 07:53
MW-99	A4H0981-07	Water	08/07/24 09:23	08/08/24 07:53

Apex Laboratories

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Philip Nerenberg, Lab Director



ANALYTICAL REPORT

Apex Laboratories, LLC

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

PNG Environmental, INC 6665 SW Hampton Street Suite 101 Tigard, OR 97223	Project: Battle Ground Mini Mart Project Number: 1191 Project Manager: Guy Tanz	Report ID: A4H0981 - 08 21 24 1816
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ANALYTICAL SAMPLE RESULTS

Gasoline Range Hydrocarbons (Benzene through Naphthalene) by NWTPH-Gx

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-4 (A4H0981-02)				Matrix: Water		Batch: 24H0437		
Gasoline Range Organics	ND	---	0.100	mg/L	1	08/13/24 16:50	NWTPH-Gx (MS)	
<i>Surrogate: 4-Bromofluorobenzene (Sur)</i>		<i>Recovery: 99 %</i>		<i>Limits: 50-150 %</i>		<i>1</i>	<i>08/13/24 16:50</i>	<i>NWTPH-Gx (MS)</i>
<i>1,4-Difluorobenzene (Sur)</i>		<i>104 %</i>		<i>50-150 %</i>		<i>1</i>	<i>08/13/24 16:50</i>	<i>NWTPH-Gx (MS)</i>
MW-12 (A4H0981-03)				Matrix: Water		Batch: 24H0437		
Gasoline Range Organics	ND	---	0.100	mg/L	1	08/13/24 17:11	NWTPH-Gx (MS)	
<i>Surrogate: 4-Bromofluorobenzene (Sur)</i>		<i>Recovery: 95 %</i>		<i>Limits: 50-150 %</i>		<i>1</i>	<i>08/13/24 17:11</i>	<i>NWTPH-Gx (MS)</i>
<i>1,4-Difluorobenzene (Sur)</i>		<i>102 %</i>		<i>50-150 %</i>		<i>1</i>	<i>08/13/24 17:11</i>	<i>NWTPH-Gx (MS)</i>
MW-16 (A4H0981-04)				Matrix: Water		Batch: 24H0437		
Gasoline Range Organics	1.57	---	0.100	mg/L	1	08/13/24 17:33	NWTPH-Gx (MS)	
<i>Surrogate: 4-Bromofluorobenzene (Sur)</i>		<i>Recovery: 105 %</i>		<i>Limits: 50-150 %</i>		<i>1</i>	<i>08/13/24 17:33</i>	<i>NWTPH-Gx (MS)</i>
<i>1,4-Difluorobenzene (Sur)</i>		<i>105 %</i>		<i>50-150 %</i>		<i>1</i>	<i>08/13/24 17:33</i>	<i>NWTPH-Gx (MS)</i>
MW-17 (A4H0981-05)				Matrix: Water		Batch: 24H0437		
Gasoline Range Organics	ND	---	0.100	mg/L	1	08/13/24 17:54	NWTPH-Gx (MS)	
<i>Surrogate: 4-Bromofluorobenzene (Sur)</i>		<i>Recovery: 99 %</i>		<i>Limits: 50-150 %</i>		<i>1</i>	<i>08/13/24 17:54</i>	<i>NWTPH-Gx (MS)</i>
<i>1,4-Difluorobenzene (Sur)</i>		<i>105 %</i>		<i>50-150 %</i>		<i>1</i>	<i>08/13/24 17:54</i>	<i>NWTPH-Gx (MS)</i>
MW-18 (A4H0981-06)				Matrix: Water		Batch: 24H0437		
Gasoline Range Organics	ND	---	0.100	mg/L	1	08/13/24 18:15	NWTPH-Gx (MS)	
<i>Surrogate: 4-Bromofluorobenzene (Sur)</i>		<i>Recovery: 96 %</i>		<i>Limits: 50-150 %</i>		<i>1</i>	<i>08/13/24 18:15</i>	<i>NWTPH-Gx (MS)</i>
<i>1,4-Difluorobenzene (Sur)</i>		<i>103 %</i>		<i>50-150 %</i>		<i>1</i>	<i>08/13/24 18:15</i>	<i>NWTPH-Gx (MS)</i>
MW-99 (A4H0981-07)				Matrix: Water		Batch: 24H0437		
Gasoline Range Organics	1.13	---	0.100	mg/L	1	08/13/24 18:36	NWTPH-Gx (MS)	
<i>Surrogate: 4-Bromofluorobenzene (Sur)</i>		<i>Recovery: 101 %</i>		<i>Limits: 50-150 %</i>		<i>1</i>	<i>08/13/24 18:36</i>	<i>NWTPH-Gx (MS)</i>
<i>1,4-Difluorobenzene (Sur)</i>		<i>103 %</i>		<i>50-150 %</i>		<i>1</i>	<i>08/13/24 18:36</i>	<i>NWTPH-Gx (MS)</i>

Apex Laboratories

Philip Nerenberg, Lab Director

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.



ANALYTICAL REPORT

Apex Laboratories, LLC

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

PNG Environmental, INC 6665 SW Hampton Street Suite 101 Tigard, OR 97223	Project: Battle Ground Mini Mart Project Number: 1191 Project Manager: Guy Tanz	Report ID: A4H0981 - 08 21 24 1816
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ANALYTICAL SAMPLE RESULTS

BTEX+N Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
TB-080724 (A4H0981-01)			Matrix: Water			Batch: 24H0502		
Benzene	ND	---	0.200	ug/L	1	08/14/24 10:32	EPA 8260D	
Toluene	ND	---	1.00	ug/L	1	08/14/24 10:32	EPA 8260D	
Ethylbenzene	ND	---	0.500	ug/L	1	08/14/24 10:32	EPA 8260D	
Xylenes, total	ND	---	1.50	ug/L	1	08/14/24 10:32	EPA 8260D	
Naphthalene	ND	---	5.00	ug/L	1	08/14/24 10:32	EPA 8260D	
<i>Surrogate: 1,4-Difluorobenzene (Surr)</i>			<i>Recovery: 94 %</i>	<i>Limits: 80-120 %</i>	<i>1</i>	<i>08/14/24 10:32</i>	<i>EPA 8260D</i>	
<i>Toluene-d8 (Surr)</i>			<i>103 %</i>	<i>80-120 %</i>	<i>1</i>	<i>08/14/24 10:32</i>	<i>EPA 8260D</i>	
<i>4-Bromofluorobenzene (Surr)</i>			<i>99 %</i>	<i>80-120 %</i>	<i>1</i>	<i>08/14/24 10:32</i>	<i>EPA 8260D</i>	
MW-4 (A4H0981-02)			Matrix: Water			Batch: 24H0437		
Benzene	ND	---	0.200	ug/L	1	08/13/24 16:50	EPA 8260D	
Toluene	ND	---	1.00	ug/L	1	08/13/24 16:50	EPA 8260D	
Ethylbenzene	ND	---	0.500	ug/L	1	08/13/24 16:50	EPA 8260D	
Xylenes, total	ND	---	1.50	ug/L	1	08/13/24 16:50	EPA 8260D	
Naphthalene	ND	---	5.00	ug/L	1	08/13/24 16:50	EPA 8260D	
<i>Surrogate: 1,4-Difluorobenzene (Surr)</i>			<i>Recovery: 93 %</i>	<i>Limits: 80-120 %</i>	<i>1</i>	<i>08/13/24 16:50</i>	<i>EPA 8260D</i>	
<i>Toluene-d8 (Surr)</i>			<i>103 %</i>	<i>80-120 %</i>	<i>1</i>	<i>08/13/24 16:50</i>	<i>EPA 8260D</i>	
<i>4-Bromofluorobenzene (Surr)</i>			<i>100 %</i>	<i>80-120 %</i>	<i>1</i>	<i>08/13/24 16:50</i>	<i>EPA 8260D</i>	
MW-12 (A4H0981-03)			Matrix: Water			Batch: 24H0437		
Benzene	ND	---	0.200	ug/L	1	08/13/24 17:11	EPA 8260D	
Toluene	ND	---	1.00	ug/L	1	08/13/24 17:11	EPA 8260D	
Ethylbenzene	ND	---	0.500	ug/L	1	08/13/24 17:11	EPA 8260D	
Xylenes, total	ND	---	1.50	ug/L	1	08/13/24 17:11	EPA 8260D	
Naphthalene	ND	---	5.00	ug/L	1	08/13/24 17:11	EPA 8260D	
<i>Surrogate: 1,4-Difluorobenzene (Surr)</i>			<i>Recovery: 91 %</i>	<i>Limits: 80-120 %</i>	<i>1</i>	<i>08/13/24 17:11</i>	<i>EPA 8260D</i>	
<i>Toluene-d8 (Surr)</i>			<i>101 %</i>	<i>80-120 %</i>	<i>1</i>	<i>08/13/24 17:11</i>	<i>EPA 8260D</i>	
<i>4-Bromofluorobenzene (Surr)</i>			<i>100 %</i>	<i>80-120 %</i>	<i>1</i>	<i>08/13/24 17:11</i>	<i>EPA 8260D</i>	
MW-16 (A4H0981-04)			Matrix: Water			Batch: 24H0437		
Benzene	0.330	---	0.200	ug/L	1	08/13/24 17:33	EPA 8260D	
Toluene	ND	---	1.00	ug/L	1	08/13/24 17:33	EPA 8260D	
Ethylbenzene	27.9	---	0.500	ug/L	1	08/13/24 17:33	EPA 8260D	
Xylenes, total	ND	---	1.50	ug/L	1	08/13/24 17:33	EPA 8260D	

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Philip Nerenberg, Lab Director

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ANALYTICAL REPORT

Apex Laboratories, LLC

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

PNG Environmental, INC 6665 SW Hampton Street Suite 101 Tigard, OR 97223	Project: Battle Ground Mini Mart Project Number: 1191 Project Manager: Guy Tanz	Report ID: A4H0981 - 08 21 24 1816
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ANALYTICAL SAMPLE RESULTS

BTEX+N Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-16 (A4H0981-04)				Matrix: Water		Batch: 24H0437		
Naphthalene	ND	---	5.00	ug/L	1	08/13/24 17:33	EPA 8260D	
<i>Surrogate: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 93 %</i>		<i>Limits: 80-120 %</i>	<i>1</i>	<i>08/13/24 17:33</i>	<i>EPA 8260D</i>	
<i>Toluene-d8 (Surr)</i>		<i>101 %</i>		<i>80-120 %</i>	<i>1</i>	<i>08/13/24 17:33</i>	<i>EPA 8260D</i>	
<i>4-Bromofluorobenzene (Surr)</i>		<i>99 %</i>		<i>80-120 %</i>	<i>1</i>	<i>08/13/24 17:33</i>	<i>EPA 8260D</i>	
MW-17 (A4H0981-05)				Matrix: Water		Batch: 24H0437		
Benzene	ND	---	0.200	ug/L	1	08/13/24 17:54	EPA 8260D	
Toluene	ND	---	1.00	ug/L	1	08/13/24 17:54	EPA 8260D	
Ethylbenzene	ND	---	0.500	ug/L	1	08/13/24 17:54	EPA 8260D	
Xylenes, total	ND	---	1.50	ug/L	1	08/13/24 17:54	EPA 8260D	
Naphthalene	ND	---	5.00	ug/L	1	08/13/24 17:54	EPA 8260D	
<i>Surrogate: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 95 %</i>		<i>Limits: 80-120 %</i>	<i>1</i>	<i>08/13/24 17:54</i>	<i>EPA 8260D</i>	
<i>Toluene-d8 (Surr)</i>		<i>102 %</i>		<i>80-120 %</i>	<i>1</i>	<i>08/13/24 17:54</i>	<i>EPA 8260D</i>	
<i>4-Bromofluorobenzene (Surr)</i>		<i>101 %</i>		<i>80-120 %</i>	<i>1</i>	<i>08/13/24 17:54</i>	<i>EPA 8260D</i>	
MW-18 (A4H0981-06)				Matrix: Water		Batch: 24H0437		
Benzene	ND	---	0.200	ug/L	1	08/13/24 18:15	EPA 8260D	
Toluene	ND	---	1.00	ug/L	1	08/13/24 18:15	EPA 8260D	
Ethylbenzene	ND	---	0.500	ug/L	1	08/13/24 18:15	EPA 8260D	
Xylenes, total	ND	---	1.50	ug/L	1	08/13/24 18:15	EPA 8260D	
Naphthalene	ND	---	5.00	ug/L	1	08/13/24 18:15	EPA 8260D	
<i>Surrogate: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 94 %</i>		<i>Limits: 80-120 %</i>	<i>1</i>	<i>08/13/24 18:15</i>	<i>EPA 8260D</i>	
<i>Toluene-d8 (Surr)</i>		<i>103 %</i>		<i>80-120 %</i>	<i>1</i>	<i>08/13/24 18:15</i>	<i>EPA 8260D</i>	
<i>4-Bromofluorobenzene (Surr)</i>		<i>97 %</i>		<i>80-120 %</i>	<i>1</i>	<i>08/13/24 18:15</i>	<i>EPA 8260D</i>	
MW-99 (A4H0981-07)				Matrix: Water		Batch: 24H0437		
Benzene	0.330	---	0.200	ug/L	1	08/13/24 18:36	EPA 8260D	
Toluene	ND	---	1.00	ug/L	1	08/13/24 18:36	EPA 8260D	
Ethylbenzene	24.2	---	0.500	ug/L	1	08/13/24 18:36	EPA 8260D	
Xylenes, total	ND	---	1.50	ug/L	1	08/13/24 18:36	EPA 8260D	
Naphthalene	ND	---	5.00	ug/L	1	08/13/24 18:36	EPA 8260D	
<i>Surrogate: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 93 %</i>		<i>Limits: 80-120 %</i>	<i>1</i>	<i>08/13/24 18:36</i>	<i>EPA 8260D</i>	
<i>Toluene-d8 (Surr)</i>		<i>101 %</i>		<i>80-120 %</i>	<i>1</i>	<i>08/13/24 18:36</i>	<i>EPA 8260D</i>	
<i>4-Bromofluorobenzene (Surr)</i>		<i>98 %</i>		<i>80-120 %</i>	<i>1</i>	<i>08/13/24 18:36</i>	<i>EPA 8260D</i>	

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Philip Nerenberg, Lab Director

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ANALYTICAL REPORT

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6700 S.W. Sandburg Street
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503-718-2323
ORELAP ID: OR100062

PNG Environmental, INC 6665 SW Hampton Street Suite 101 Tigard, OR 97223	Project: Battle Ground Mini Mart Project Number: 1191 Project Manager: Guy Tanz	Report ID: A4H0981 - 08 21 24 1816
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QUALITY CONTROL (QC) SAMPLE RESULTS

Gasoline Range Hydrocarbons (Benzene through Naphthalene) by NWTPH-Gx

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24H0437 - EPA 5030C						Water						
Blank (24H0437-BLK1)			Prepared: 08/13/24 06:53 Analyzed: 08/13/24 11:30									
<u>NWTPH-Gx (MS)</u>												
Gasoline Range Organics	ND	---	0.100	mg/L	1	---	---	---	---	---	---	---
<i>Surr: 4-Bromofluorobenzene (Sur)</i>		<i>Recovery: 96 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>						
<i>1,4-Difluorobenzene (Sur)</i>		<i>102 %</i>		<i>50-150 %</i>		<i>"</i>						
LCS (24H0437-BS2)						Prepared: 08/13/24 06:53 Analyzed: 08/13/24 11:08						
<u>NWTPH-Gx (MS)</u>												
Gasoline Range Organics	0.513	---	0.100	mg/L	1	0.500	---	103	80-120%	---	---	---
<i>Surr: 4-Bromofluorobenzene (Sur)</i>		<i>Recovery: 97 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>						
<i>1,4-Difluorobenzene (Sur)</i>		<i>100 %</i>		<i>50-150 %</i>		<i>"</i>						
Duplicate (24H0437-DUP1)						Prepared: 08/13/24 06:53 Analyzed: 08/13/24 20:02						
<u>QC Source Sample: Non-SDG (A4H1044-01)</u>												
Gasoline Range Organics	ND	---	1.00	mg/L	10	---	ND	---	---	---	30%	---
<i>Surr: 4-Bromofluorobenzene (Sur)</i>		<i>Recovery: 94 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>						
<i>1,4-Difluorobenzene (Sur)</i>		<i>100 %</i>		<i>50-150 %</i>		<i>"</i>						

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QUALITY CONTROL (QC) SAMPLE RESULTS

BTEX+N Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24H0437 - EPA 5030C												
Water												
Blank (24H0437-BLK1)			Prepared: 08/13/24 06:53 Analyzed: 08/13/24 11:30									
EPA 8260D												
Benzene	ND	---	0.200	ug/L	1	---	---	---	---	---	---	
Toluene	ND	---	1.00	ug/L	1	---	---	---	---	---	---	
Ethylbenzene	ND	---	0.500	ug/L	1	---	---	---	---	---	---	
Xylenes, total	ND	---	1.50	ug/L	1	---	---	---	---	---	---	
Naphthalene	ND	---	5.00	ug/L	1	---	---	---	---	---	---	
<i>Surr: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 92 %</i>		<i>Limits: 80-120 %</i>		<i>Dilution: 1x</i>						
<i>Toluene-d8 (Surr)</i>		<i>103 %</i>		<i>80-120 %</i>		<i>"</i>						
<i>4-Bromofluorobenzene (Surr)</i>		<i>100 %</i>		<i>80-120 %</i>		<i>"</i>						
<hr/>												
LCS (24H0437-BS1)			Prepared: 08/13/24 06:53 Analyzed: 08/13/24 10:37									
EPA 8260D												
Benzene	19.2	---	0.200	ug/L	1	20.0	---	96	80-120%	---	---	
Toluene	20.4	---	1.00	ug/L	1	20.0	---	102	80-120%	---	---	
Ethylbenzene	22.2	---	0.500	ug/L	1	20.0	---	111	80-120%	---	---	
Xylenes, total	67.3	---	1.50	ug/L	1	60.0	---	112	80-120%	---	---	
Naphthalene	20.2	---	5.00	ug/L	1	20.0	---	101	80-120%	---	---	
<i>Surr: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 92 %</i>		<i>Limits: 80-120 %</i>		<i>Dilution: 1x</i>						
<i>Toluene-d8 (Surr)</i>		<i>100 %</i>		<i>80-120 %</i>		<i>"</i>						
<i>4-Bromofluorobenzene (Surr)</i>		<i>92 %</i>		<i>80-120 %</i>		<i>"</i>						
<hr/>												
Duplicate (24H0437-DUP1)			Prepared: 08/13/24 06:53 Analyzed: 08/13/24 20:02									
QC Source Sample: Non-SDG (A4H1044-01)												
Benzene	ND	---	2.00	ug/L	10	---	ND	---	---	---	30%	
Toluene	ND	---	10.0	ug/L	10	---	ND	---	---	---	30%	
Ethylbenzene	ND	---	5.00	ug/L	10	---	ND	---	---	---	30%	
Xylenes, total	ND	---	15.0	ug/L	10	---	ND	---	---	---	30%	
Naphthalene	ND	---	50.0	ug/L	10	---	ND	---	---	---	30%	
<i>Surr: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 103 %</i>		<i>Limits: 80-120 %</i>		<i>Dilution: 1x</i>						
<i>Toluene-d8 (Surr)</i>		<i>101 %</i>		<i>80-120 %</i>		<i>"</i>						
<i>4-Bromofluorobenzene (Surr)</i>		<i>99 %</i>		<i>80-120 %</i>		<i>"</i>						
<hr/>												
Matrix Spike (24H0437-MS1)			Prepared: 08/13/24 06:53 Analyzed: 08/13/24 15:25									

Apex Laboratories

Philip Nerenberg, Lab Director

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ANALYTICAL REPORT

Apex Laboratories, LLC

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

PNG Environmental, INC 6665 SW Hampton Street Suite 101 Tigard, OR 97223	Project: Battle Ground Mini Mart Project Number: 1191 Project Manager: Guy Tanz	Report ID: A4H0981 - 08 21 24 1816
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QUALITY CONTROL (QC) SAMPLE RESULTS

BTEX+N Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24H0437 - EPA 5030C						Water						
Matrix Spike (24H0437-MS1)						Prepared: 08/13/24 06:53 Analyzed: 08/13/24 15:25						
QC Source Sample: MW-99 (A4H0981-07)												
EPA 8260D												
Benzene	21.0	---	0.200	ug/L	1	20.0	0.330	104	79-120%	---	---	
Toluene	21.0	---	1.00	ug/L	1	20.0	ND	105	80-121%	---	---	
Ethylbenzene	54.7	---	0.500	ug/L	1	20.0	24.2	152	79-121%	---	---	Q-01
Xylenes, total	72.3	---	1.50	ug/L	1	60.0	ND	120	79-121%	---	---	
Naphthalene	26.7	---	5.00	ug/L	1	20.0	ND	133	61-128%	---	---	Q-01
<i>Surr: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 94 %</i>		<i>Limits: 80-120 %</i>		<i>Dilution: 1x</i>						
<i>Toluene-d8 (Surr)</i>		<i>98 %</i>		<i>80-120 %</i>		<i>"</i>						
<i>4-Bromofluorobenzene (Surr)</i>		<i>95 %</i>		<i>80-120 %</i>		<i>"</i>						

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ANALYTICAL REPORT

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PNG Environmental, INC 6665 SW Hampton Street Suite 101 Tigard, OR 97223	Project: Battle Ground Mini Mart Project Number: 1191 Project Manager: Guy Tanz	Report ID: A4H0981 - 08 21 24 1816
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QUALITY CONTROL (QC) SAMPLE RESULTS

BTEX+N Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24H0502 - EPA 5030C												
Water												
Blank (24H0502-BLK1)												
Prepared: 08/14/24 06:04 Analyzed: 08/14/24 08:23												
EPA 8260D												
Benzene	ND	---	0.200	ug/L	1	---	---	---	---	---	---	
Toluene	ND	---	1.00	ug/L	1	---	---	---	---	---	---	
Ethylbenzene	ND	---	0.500	ug/L	1	---	---	---	---	---	---	
Xylenes, total	ND	---	1.50	ug/L	1	---	---	---	---	---	---	
Naphthalene	ND	---	5.00	ug/L	1	---	---	---	---	---	---	
<i>Surr: 1,4-Difluorobenzene (Surr) Recovery: 94 % Limits: 80-120 % Dilution: 1x</i>												
<i>Toluene-d8 (Surr) 101 % 80-120 % "</i>												
<i>4-Bromofluorobenzene (Surr) 98 % 80-120 % "</i>												
LCS (24H0502-BS1)												
Prepared: 08/14/24 06:04 Analyzed: 08/14/24 07:30												
EPA 8260D												
Benzene	19.3	---	0.200	ug/L	1	20.0	---	96	80-120%	---	---	
Toluene	20.5	---	1.00	ug/L	1	20.0	---	102	80-120%	---	---	
Ethylbenzene	21.5	---	0.500	ug/L	1	20.0	---	107	80-120%	---	---	
Xylenes, total	65.9	---	1.50	ug/L	1	60.0	---	110	80-120%	---	---	
Naphthalene	20.3	---	5.00	ug/L	1	20.0	---	102	80-120%	---	---	
<i>Surr: 1,4-Difluorobenzene (Surr) Recovery: 94 % Limits: 80-120 % Dilution: 1x</i>												
<i>Toluene-d8 (Surr) 101 % 80-120 % "</i>												
<i>4-Bromofluorobenzene (Surr) 96 % 80-120 % "</i>												
Duplicate (24H0502-DUP1)												
Prepared: 08/14/24 06:04 Analyzed: 08/14/24 14:48												
QC Source Sample: Non-SDG (A4H1066-06)												
Benzene	ND	---	0.200	ug/L	1	---	ND	---	---	---	30%	
Toluene	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
Ethylbenzene	ND	---	0.500	ug/L	1	---	ND	---	---	---	30%	
Xylenes, total	ND	---	1.50	ug/L	1	---	ND	---	---	---	30%	
Naphthalene	ND	---	5.00	ug/L	1	---	ND	---	---	---	30%	
<i>Surr: 1,4-Difluorobenzene (Surr) Recovery: 92 % Limits: 80-120 % Dilution: 1x</i>												
<i>Toluene-d8 (Surr) 102 % 80-120 % "</i>												
<i>4-Bromofluorobenzene (Surr) 99 % 80-120 % "</i>												
Duplicate (24H0502-DUP2)												
Prepared: 08/14/24 06:04 Analyzed: 08/14/24 16:56												

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Philip Nerenberg, Lab Director

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ANALYTICAL REPORT

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 503-718-2323
 ORELAP ID: OR100062

PNG Environmental, INC	Project: Battle Ground Mini Mart	
6665 SW Hampton Street Suite 101	Project Number: 1191	Report ID:
Tigard, OR 97223	Project Manager: Guy Tanz	A4H0981 - 08 21 24 1816

QUALITY CONTROL (QC) SAMPLE RESULTS

BTEX+N Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24H0502 - EPA 5030C												
Water												
Duplicate (24H0502-DUP2)												
						Prepared: 08/14/24 06:04 Analyzed: 08/14/24 16:56						
QC Source Sample: Non-SDG (A4H0986-01)												
Benzene	380	---	10.0	ug/L	50	---	396	---	---	4	30%	
Toluene	1620	---	50.0	ug/L	50	---	1760	---	---	8	30%	
Ethylbenzene	108	---	25.0	ug/L	50	---	114	---	---	5	30%	
Xylenes, total	660	---	75.0	ug/L	50	---	702	---	---	6	30%	
Naphthalene	ND	---	250	ug/L	50	---	ND	---	---	---	30%	
<i>Surr: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 91 %</i>		<i>Limits: 80-120 %</i>		<i>Dilution: 1x</i>						
<i>Toluene-d8 (Surr)</i>		<i>102 %</i>		<i>80-120 %</i>		<i>"</i>						
<i>4-Bromofluorobenzene (Surr)</i>		<i>97 %</i>		<i>80-120 %</i>		<i>"</i>						

Matrix Spike (24H0502-MS1)												
						Prepared: 08/14/24 06:04 Analyzed: 08/14/24 09:49						
QC Source Sample: Non-SDG (A4H1089-01)												
EPA 8260D												
Benzene	203	---	2.00	ug/L	10	200	ND	101	79-120%	---	---	
Toluene	215	---	10.0	ug/L	10	200	ND	107	80-121%	---	---	
Ethylbenzene	229	---	5.00	ug/L	10	200	ND	114	79-121%	---	---	
Xylenes, total	697	---	15.0	ug/L	10	600	ND	116	79-121%	---	---	
Naphthalene	201	---	50.0	ug/L	10	200	ND	101	61-128%	---	---	
<i>Surr: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 94 %</i>		<i>Limits: 80-120 %</i>		<i>Dilution: 1x</i>						
<i>Toluene-d8 (Surr)</i>		<i>102 %</i>		<i>80-120 %</i>		<i>"</i>						
<i>4-Bromofluorobenzene (Surr)</i>		<i>94 %</i>		<i>80-120 %</i>		<i>"</i>						

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Philip Nerenberg, Lab Director



ANALYTICAL REPORT

Apex Laboratories, LLC

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

PNG Environmental, INC 6665 SW Hampton Street Suite 101 Tigard, OR 97223	Project: <u>Battle Ground Mini Mart</u> Project Number: 1191 Project Manager: Guy Tanz	Report ID: A4H0981 - 08 21 24 1816
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SAMPLE PREPARATION INFORMATION

Gasoline Range Hydrocarbons (Benzene through Naphthalene) by NWTPH-Gx

Prep: EPA 5030C					Sample	Default	RL Prep
Lab Number	Matrix	Method	Sampled	Prepared	Initial/Final	Initial/Final	Factor
<u>Batch: 24H0437</u>							
A4H0981-02	Water	NWTPH-Gx (MS)	08/07/24 10:38	08/13/24 10:58	5mL/5mL	5mL/5mL	1.00
A4H0981-03	Water	NWTPH-Gx (MS)	08/07/24 10:27	08/13/24 10:58	5mL/5mL	5mL/5mL	1.00
A4H0981-04	Water	NWTPH-Gx (MS)	08/07/24 09:21	08/13/24 10:58	5mL/5mL	5mL/5mL	1.00
A4H0981-05	Water	NWTPH-Gx (MS)	08/07/24 09:57	08/13/24 10:58	5mL/5mL	5mL/5mL	1.00
A4H0981-06	Water	NWTPH-Gx (MS)	08/07/24 08:53	08/13/24 10:58	5mL/5mL	5mL/5mL	1.00
A4H0981-07	Water	NWTPH-Gx (MS)	08/07/24 09:23	08/13/24 10:58	5mL/5mL	5mL/5mL	1.00

BTEX+N Compounds by EPA 8260D

Prep: EPA 5030C					Sample	Default	RL Prep
Lab Number	Matrix	Method	Sampled	Prepared	Initial/Final	Initial/Final	Factor
<u>Batch: 24H0437</u>							
A4H0981-02	Water	EPA 8260D	08/07/24 10:38	08/13/24 10:58	5mL/5mL	5mL/5mL	1.00
A4H0981-03	Water	EPA 8260D	08/07/24 10:27	08/13/24 10:58	5mL/5mL	5mL/5mL	1.00
A4H0981-04	Water	EPA 8260D	08/07/24 09:21	08/13/24 10:58	5mL/5mL	5mL/5mL	1.00
A4H0981-05	Water	EPA 8260D	08/07/24 09:57	08/13/24 10:58	5mL/5mL	5mL/5mL	1.00
A4H0981-06	Water	EPA 8260D	08/07/24 08:53	08/13/24 10:58	5mL/5mL	5mL/5mL	1.00
A4H0981-07	Water	EPA 8260D	08/07/24 09:23	08/13/24 10:58	5mL/5mL	5mL/5mL	1.00
<u>Batch: 24H0502</u>							
A4H0981-01	Water	EPA 8260D	08/07/24 07:51	08/14/24 07:48	5mL/5mL	5mL/5mL	1.00

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QUALIFIER DEFINITIONS

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

Apex Laboratories

Q-01 Spike recovery and/or RPD is outside acceptance limits.

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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'.
- Results for Volatiles analyses on soils and sediments that are reported on a "dry weight" basis include the water miscible solvent (WMS) correction referenced in the EPA 8000 Method guidance documents. Solid and Liquid samples reported on an "As Received" basis do not have the WMS correction applied, as dry weight was not performed.

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) may not be 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).

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REPORTING NOTES AND CONVENTIONS (Cont.):

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.

For further details, please request a copy of this document.

- 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, if results are not reported to the MDL.

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.

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Philip Nerenberg, Lab Director



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

Table with 3 columns: Client (PNG Environmental, INC), Project (Battle Ground Mini Mart), and Report ID (A4H0981 - 08 21 24 1816).

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

Table with 6 columns: Matrix, Analysis, TNI_ID, Analyte, TNI_ID, Accreditation. Content: 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.

Apex Laboratories

Handwritten signature of Philip Nerenberg

Philip Nerenberg, Lab Director

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APEX LABS COOLER RECEIPT FORM

Client: PNG Element WO#: A4 H0981

Project/Project #: Battle Ground / 1191

Delivery Info:
 Date/time received: 8/8/24 @ 0753 By: KRS
 Delivered by: Apex Client LESS FedEx UPS Radio Morgan SDS Evergreen Other
 From USDA Regulated Origin? Yes No

Cooler Inspection Date/time inspected: 8/8/24 @ 0753 By: KRS
 Chain 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>03</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: 8/11/24 @ 10:30 By: ZA
 All 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: _____
 Comments: _____
TB 3568

Labeled by: ZA Witness: AW Cooler Inspected by: ZA

Form Y-003 R-02