

March 16, 2023

Oregon Department of Environmental Quality
Northwest Region
700 NE Multnomah Street, Suite 600
Portland, OR 97232

Attention: Sarah Greenfield, P.E.

Quarterly Report
Second Round Pilot Shutdown Monitoring Results
Former Astoria Warehousing Site
70 West Marine Drive
Astoria, Oregon
DEQ LUST File No. 04-18-0818
DEQ ECSI File No. 6381
Project: BigBeams-1-04-05

INTRODUCTION

NV5 is pleased to submit this quarterly report summarizing the results of the second round of pilot shutdown monitoring for the Former Astoria Warehousing Site located at 70 West Marine Drive in Astoria, Oregon (subject property). The subject property is shown relative to surrounding physical features on Figure 1. A site plan is shown on Figure 2. Acronyms and abbreviations used herein are defined at the end of this document.

BACKGROUND

NV5 prepared an SVE System Pilot Shutdown Work Plan (Work Plan) in September 2022 describing a scope of work to (1) evaluate if permanent cessation of the active SVE remediation system is feasible and (2) monitor the effects and potential rebound conditions associated with proposed permanent cessation of the SVE system that was designed and installed at the subject property in general accordance with PPA requirements.¹ DEQ approved the Work Plan on September 21, 2022.

¹ NV5, 2022. *SVE System Pilot Shutdown Work Plan; Former Astoria Warehousing Site; 70 West Marine Drive; Astoria, Oregon; DEQ LUST File No. 04-18-0818; DEQ ECSI File No. 6381*, dated September 8, 2022. Project: BigBeams-1-04-05

A detailed discussion of background information, rationale for implementing this scope of work, and identification of baseline conditions for purposes of rebound evaluation is presented in the Work Plan.

The first round of pilot shutdown monitoring is summarized in our report dated November 21, 2022. Based on the conclusions presented in the November 21, 2022, report, we recommend continuance of the pilot shutdown monitoring program.

ACTIVITIES COMPLETED DURING REPORTING PERIOD

In accordance with the Work Plan, NV5 completed the second round of pilot shutdown monitoring activities between January 25 and February 10, 2023. A detailed description of monitoring activities completed during this reporting period is presented in the sections below.

SUB-SLAB VAPOR MONITORING

On January 27, 2023, NV5 personnel accessed and sampled the four sampling locations previously installed in the former can manufacturing warehouse and shop (VP-1 through VP-4; Figure 2). Specifically, each Vapor Pin® was sampled as follows:

- Accessed the Vapor Pins™ and connected to a micromanometer. Recorded ambient sub-slab pressure/vacuum at each monitoring point.
- Connected each Vapor Pin™ to laboratory-provided, 1-liter Summa canisters and sampling trains using new, disposable PFA tubing.
- Installed a leak-check system at each location following DEQ-established protocol. The leak-check protocol consisted of placing cloths saturated with isopropanol around the fittings and the ground penetration. Each sub-slab vapor sample was analyzed for isopropanol to evaluate if the sampling system was sufficiently sealed.
- Purged each Vapor Pin™ of approximately 2 to 3 volumes of dead air space (tubing and sampling train) using a calibrated 10.6-eV PID. Recorded the PID reading before sample collection.
- Collected the sub-slab vapor sample using a 1-liter Summa sample canister with an in-line filter (0.7 micron) and flow controller (less than 200 mL/min). The initial and final vacuum pressures of the Summa canister were measured and recorded on the laboratory chain-of-custody form. The sub-slab vapor samples were analyzed for gasoline-range hydrocarbons and VOCs by EPA Method TO-15.

The sub-slab vapor sample collection start and end times, initial and final Summa canister vacuum pressures, barometric pressure, and ambient temperature were measured at each sub-slab vapor sample location and are presented in the table below.

Summary of Sub-Slab Vapor Sampling – January 2023

Sample I.D.	Date	Start/End Time	Initial/Final Vacuum (inHg)	Barometric Pressure (inHg)	Ambient Temperature (degrees Fahrenheit)
VP-1	01/27/23	1040/1046	30/4	30.28	~49 to 51
VP-2		1053/1059	30/4		
VP-3		1105/1110	30/4		
VP-4		1115/1121	30/4		

The sub-slab vapor sample chemical analytical results from the January 2023 monitoring event are discussed in the “Chemical Analytical Results” and “Data Evaluation” sections and summarized in Table 1, which also includes the results of prior sub-slab vapor sampling events for reference. Sub-slab vapor field sampling forms from the January 2023 event are presented in Attachment A.

GROUNDWATER GAUGING AND SAMPLING

NV5 personnel accessed each well (MW-1 through MW-8, OAS-1 through OAS-4 and PAS-2²) for gauging and sampling purposes. On January 25, 2023, NV5 gauged the aforementioned monitoring and observation wells in sequential fashion. NV5 collected depth to groundwater measurements from each well using an oil/water interface probe. The depth to groundwater measurements and calculated groundwater elevations are summarized in Table 2. Free product was not observed in any of the wells during the January 2023 monitoring event. The calculated groundwater elevation data indicate that shallow groundwater beneath the subject property generally flows north, which is consistent with previous findings. However, groundwater appears to have northwestern and northeastern components toward the shoreline at times, which may be affected by tidal influences. A groundwater contour map using the elevation data collected on January 25, 2023, is shown on Figure 3.

NV5 sampled monitoring wells MW-1 through MW-8 on January 25 and 26, 2023, in general accordance with the groundwater sampling methodology previously employed at the subject property. Each well was purged in general accordance with the EPA-recommended low-flow purging and sampling procedure using a peristaltic pump connected to new, expendable HDPE and silicon tubing. Groundwater quality parameters were measured using a YSI 556 multiparameter system until the following groundwater parameters stabilized (three consecutive readings):

- pH: ± 0.1 unit
- Conductivity: ± 3 percent
- Temperature: ± 3 percent
- Dissolved oxygen: ± 10 percent (or three readings less than 0.5 mg/L)

² OAS-1 through OAS-4 and PAS-2 are located within the shop area. Refer to Figure 3 of the Work Plan for precise locations.

- ORP: ± 10 mV
- Turbidity: ± 10 percent (or three readings less than 5 NTUs)

A summary of groundwater field parameters is presented in Table 3. Once the field parameters stabilized, a groundwater sample was collected from each well into laboratory-prepared containers in order of volatility, with the containers for VOC analysis filled first. Groundwater samples were immediately placed on ice. Standard chain-of-custody protocols were followed during transportation of samples to the laboratory. The groundwater sample chemical analytical results from the January 2023 monitoring event are discussed in the “Chemical Analytical Results” and “Data Evaluation” sections and summarized in Table 4, which includes the results of prior groundwater sampling for reference. Groundwater gauging and sampling field forms from the January 2023 event are presented in Attachment A.

Sampling equipment used in the collection of groundwater samples was decontaminated prior to use. Decontamination was performed on reusable sample processing equipment that came into contact with sampling media and the wells. Decontamination was performed prior to sampling each location using the following procedures:

1. Rinsed with tap water and scrubbed with a scrub brush until free of large particles
2. Washed with phosphate-free (Alconox™) detergent solution
3. Rinsed with tap water
4. Rinsed with distilled water

INDOOR AIR MONITORING

On January 27, 2023, NV5 deployed eight air samplers at the subject property. Each air sampler consisted of a Radiello 130 passive air sampler and was deployed for approximately 14 days. For comparison purposes, each sample was collected at the approximate same location of the previously collected indoor air samples. Seven air samples were collected from inside the subject property structure and one background air sample was collected from the exterior of the subject property structure. The sampling locations are shown on Figure 2.

Each sample was collected at approximately breathing level in areas of high occupancy and/or areas where previous vapor samples indicated elevated concentrations of COCs. The background air sample was collected from the exterior of the subject property structure at approximately 15 feet above the ground surface. The start and end times, initial and final barometric pressures, and initial and final ambient temperatures were measured at each sample location and are presented in the table below.

Summary of Indoor Air Sampling – January/February 2023

Sample I.D.	Location Description	Date	Start/End Time	Initial/Final Barometric Pressure (inHg)	Initial/Final Ambient Temperature (degrees Fahrenheit)
Indoor-1	Office area	01/27/23 through 02/10/23	1235/1120	30.28/30.15	54/57 (indoor) 47/48 (outdoor)
Indoor-2	Office area		1240/1123		
Indoor-3	Warehouse		1245/1126		
Indoor-4	Warehouse		1250/1130		
Indoor-5	Shop area		1255/1135		
Indoor-6	Warehouse		1300/1137		
Indoor-7	Warehouse		1305/1140		
Background	Exterior		1315/1145		

The indoor air sample chemical analytical results from the January/February 2023 monitoring event are discussed in the “Chemical Analytical Results” and “Data Evaluation” sections and summarized in Table 5. Indoor air sampling field forms from the January 2023 event are included in Attachment A.

RIVERBANK OBSERVATIONS

NV5 completed a series of visual observations of the riverbank adjacent to the subject property for evidence of groundwater seeps and petroleum-like sheens between January 25 and 27, 2023. The riverbank observations were conducted from the top of the bank at varying tidal stages. The riverbank observations were conducted by walking the top of the shoreline along the subject property, allowing for visual observations of the slope of the riverbank, which generally consists of riprap. The pier on the northwest portion of the subject property has concrete walls along the bank of the river and the small bay located to the east has a sandy shoreline on the south end along West Marine Drive.

A summary of the riverbank observations, including previous and more frequent observations associated with apparent sheens previously originating from the storm line outfall, is presented in Table 6. Riverbank field observation forms from the January 2023 event are presented in Attachment A.

CHEMICAL ANALYTICAL RESULTS

SUB-SLAB VAPOR SAMPLES

The four sub-slab vapor samples (VP-1 through VP-4) collected in January 2023 were submitted to Pace Analytical of Mount Juliet, Tennessee, for analysis for gasoline-range hydrocarbons and VOCs by EPA Method TO-15. A comparison of the sub-slab vapor sample chemical analytical results to applicable regulatory criteria is discussed below and shown in Table 1, which also includes previous sub-slab vapor analytical results. The chemical analytical program details, laboratory report, and chain-of-custody documentation are presented in Attachment B.

Gasoline-range hydrocarbons were detected in sub-slab vapor sample VP-3 at a concentration of 1,600 µg/m³. This detection is substantially less than the DEQ *Vapor Intrusion into Buildings* RBC for occupational receptors and less than the previous results. Gasoline-range hydrocarbons were not detected above the laboratory method reporting limit in sub-slab vapor samples VP-1, VP-2, and VP-4.

Several petroleum-related VOCs were detected in sub-slab vapor samples VP-1 through VP-4 collected in January 2023. Consistent with prior sampling events, each of the detected concentrations of VOCs was substantially less than the corresponding DEQ *Vapor Intrusion into Buildings* RBCs for occupational receptors.

GROUNDWATER SAMPLES

Groundwater samples collected during the January 2023 groundwater monitoring event were submitted to Pace Analytical of Mount Juliet, Tennessee, for analysis of gasoline-range hydrocarbons by Method NWTPH-Gx and RBDM VOCs by EPA Method 8260D. A comparison of the groundwater sample chemical analytical results to applicable regulatory criteria is discussed below and shown in Table 4, which also includes previous groundwater analytical results. The chemical analytical program details, laboratory report, and chain-of-custody documentation are presented in Attachment B.

Gasoline-range hydrocarbons were detected in the groundwater samples collected from monitoring wells MW-1, MW-4, and MW-8 at concentrations of 16,900 µg/L, 38,000 µg/L, and 34,500 µg/L, respectively. These detected concentrations were greater than the corresponding DEQ *Groundwater in Excavation* RBCs for construction/excavation worker receptors, but less than the DEQ *Volatilization to Outdoor Air* and *Vapor Intrusion into Buildings* RBCs for occupational receptors. Groundwater concentrations exceeding the DEQ *Groundwater in Excavation* RBCs are being addressed by implementing the DEQ-approved CMMP prepared for the subject property.

COCs were otherwise either not detected or were detected at concentrations less than applicable DEQ RBCs in the January 2023 groundwater samples.

INDOOR AIR SAMPLES

The eight air samples were submitted to Eurofins Air Toxics, LLC of Folsom, California, for analysis of VOCs by EPA Method TO-17. Analytical results were compared to DEQ *Inhalation* RBCs for occupational receptors. A comparison of the indoor air sample chemical analytical results to applicable regulatory criteria is discussed below and shown in Table 5, which also includes previous indoor air analytical results. The chemical analytical program details, laboratory report, and chain-of-custody documentation are presented in Attachment B.

Up to nine VOCs with DEQ-established screening levels were detected in the seven indoor air samples (Indoor-1 through Indoor-7). Chloroform was detected in each of the indoor air samples at concentrations exceeding the DEQ *Inhalation* RBC for occupational receptors. However, chloroform is not a petroleum-related COC at the subject property and, as discussed on site with DEQ in January 2023, its detection is attributed to the use of municipal (chlorinated) water for

washing operations within subject property structure. Petroleum-related VOCs were not detected in the January/February 2023 indoor air samples at concentrations greater than the DEQ *Inhalation* RBCs for occupational receptors.

Benzene, carbon tetrachloride, ethylbenzene, toluene, and xylenes were also detected in the background sample (Background) collected from the exterior of the subject property structure in January/February 2023.

DATA EVALUATION

SUB-SLAB VAPOR SAMPLES

For sub-slab vapor, the Work Plan defined rebound as those concentrations exceeding the August 2021 baseline sub-slab vapor concentrations for two consecutive quarterly monitoring events or increasing concentrations, as demonstrated by a trend evaluation, over three consecutive monitoring events. The Work Plan also stated that contingency measures will be triggered if rebound conditions are met or if sub-slab concentrations exceed the applicable DEQ RBC for occupational receptors in two consecutive quarterly monitoring events.

Based on our review of the January 2023 sub-slab vapor sample chemical analytical results, the detected concentrations of gasoline-range hydrocarbons and petroleum-related VOCs in sub-slab vapor samples VP-1 through VP-4 generally exhibited stable or decreasing trends relative to baseline values and were below all applicable DEQ RBCs.

GROUNDWATER SAMPLES

For groundwater, the Work Plan defined rebound as those concentrations exceeding the January 2022 baseline groundwater concentrations for two consecutive quarterly monitoring events or increasing concentrations, as demonstrated by a trend evaluation, over three consecutive monitoring events. The Work Plan also stated that contingency measures will be triggered if rebound conditions are met or if sub-slab vapor concentrations exceed the applicable DEQ RBC for occupational receptors in two consecutive quarterly monitoring events.

Our review of the January 2023 groundwater sample chemical analytical results indicates the following:

- The detected concentrations of gasoline-range hydrocarbons and petroleum-related VOCs in the groundwater sample collected from monitoring well MW-1 were elevated in comparison with the baseline values, but consistent with and slightly reduced relative to the October 2022 results. The concentration of gasoline-range hydrocarbons detected in the groundwater sample collected from monitoring well MW-1 slightly exceeded the DEQ *Groundwater in Excavation* RBC for construction/excavation workers.³

³ RBC exceedances for this exposure pathway are addressed through implementation of the DEQ-approved CMMP.

- The detected concentrations of gasoline-range hydrocarbons and petroleum-related VOCs in the groundwater sample collected from monitoring well MW-2 were slightly elevated in comparison to the baseline value and consistent with the October 2022 values. None of the detected concentrations of COCs exceeded the respective DEQ *Groundwater in Excavation* RBCs for construction/excavation workers.
- The detected concentration of gasoline-range hydrocarbons in the groundwater sample collected from monitoring well MW-3 reflects an approximate six-fold increase relative to the January 2022 value. None of the detected concentrations of COCs exceeded the respective DEQ *Groundwater in Excavation* RBCs for construction/excavation workers. October 2022 data are not available for comparison because monitoring well MW-3 is not included as part of the array of monitoring wells sampled quarterly as part of the pilot shutdown monitoring program. Monitoring well MW-3 is located near the most hydraulically up-gradient portion of the subject property and the increased concentration in gasoline-range hydrocarbons may reflect dynamic conditions upgradient of the subject property.
- The detected concentration of gasoline-range hydrocarbons in the groundwater sample collected from monitoring well MW-4 reflects an approximate two-fold increase relative to the January 2022 value, and petroleum-related VOC concentrations were also generally elevated with respect to the January 2022 values. October 2022 data are not available for comparison because monitoring well MW-4 is not included as part of the array of monitoring wells sampled quarterly as part of the pilot shutdown monitoring program.
- The detected concentrations of gasoline-range hydrocarbons and petroleum-related VOCs in the groundwater sample collected from monitoring well MW-5 were generally consistent with the January 2022 values. October 2022 data are not available for comparison because monitoring well MW-5 is not included as part of the array of monitoring wells sampled quarterly as part of the pilot shutdown monitoring program. None of the detected concentrations of COCs exceeded the respective DEQ *Groundwater in Excavation* RBCs for construction/excavation workers.
- The detected concentrations of gasoline-range hydrocarbons in the groundwater samples collected from monitoring wells MW-6, MW-7, and MW-8 reflect an approximate two-fold increase relative to the respective January 2022 and October 2022 values. Similarly, petroleum-related VOCs were also detected in these wells at elevated concentrations relative to the prior two sampling events. The concentration of gasoline-range hydrocarbons detected in the groundwater sample collected from monitoring well MW-8 exceeded the DEQ *Groundwater in Excavation* RBC for construction/excavation workers.³ None of the other detected concentrations of COCs in the samples collected from monitoring wells MW-6, MW-7, and MW-8 exceeded the respective DEQ *Groundwater in Excavation* RBCs for construction/excavation workers.

An evaluation of rebound conditions specific to groundwater samples (in accordance with the Work Plan) is presented in the “Conclusions and Recommendations” section.

INDOOR AIR SAMPLES

To evaluate potential rebound conditions associated with SVE system cessation, the August 2021 sample results are used to represent baseline conditions. Irrespective of the baseline values, indoor air data are used to confirm that indoor air concentrations are protective

of occupational workers. The Work Plan stated that contingency measures will be triggered if indoor air concentrations for site COCs exceed the applicable DEQ RBC for occupational receptors in any single monitoring event.

Based on our review of the January/February 2023 indoor air sample chemical analytical results, the detected concentrations of petroleum-related VOCs in indoor air samples Indoor-1 through Indoor-7 were generally equal to previously detected concentrations and below applicable DEQ RBCs. The detected concentrations of benzene in several of the indoor air samples were slightly elevated relative to earlier detected values but were well below the respective DEQ RBC of 1.6 µg/m³. As described above, sub-slab vapor samples VP-1 through VP-4 generally exhibited stable or decreasing trends relative to baseline values and were below all applicable DEQ RBCs, indicating that vapors are not accumulating below the slab at concentrations representing a vapor intrusion risk. Several of the detected VOCs in indoor air samples were also detected in the Background air sample.

Consistent with prior sampling events, chloroform was detected in each of the indoor air samples at concentrations exceeding the DEQ RBC for occupational receptors. As noted earlier, the presence of chloroform is attributed to the use of municipal (chlorinated) water for the periodic washing operations needed for the maintenance of brewing equipment used in the facility and is not a petroleum-related COC at the subject property.

CONCLUSIONS AND RECOMMENDATIONS

Based on our review of the pilot shutdown monitoring results collected to date, we present the following conclusions:

- The sub-slab vapor sampling results from the second round of pilot shutdown monitoring conducted in January 2023 do not indicate a rebounding trend in sub-slab vapor, and DEQ RBCs were not exceeded in any sub-slab vapor samples collected.
- The groundwater sampling results from the second round of pilot shutdown monitoring conducted in January 2023 (which included sampling of all subject property monitoring wells) indicates that rebound may be occurring in compliance monitoring wells MW-1, MW-6, MW-7, and MW-8. In addition, elevated concentrations of COCs were observed in monitoring wells MW-3 and MW-4 relative to the January 2022 concentrations. However, DEQ RBCs for occupational receptors for volatilization pathways were not exceeded in any groundwater samples collected and the results of the January 2023 sub-slab vapor sampling do not indicate a correlative increase in vapor concentrations as a result of increasing COC concentrations in groundwater. Moreover, the increased COC concentrations observed in the groundwater samples collected from monitoring wells MW-3 and MW-4 are peculiar given their distance from the previously established SVE system radius of influence and the fact that monitoring well MW-3 is located in the most hydraulically up-gradient portion of the subject property. Given the ambiguity with regard to the causes of increased COC concentrations in some monitoring wells (but not others, including monitoring well MW-2 located in direct proximity to the area targeted by prior remedial efforts) and the lack of correlative increase in sub-slab vapor concentrations, we recommend continuance of the pilot shutdown monitoring program to include repeat sampling of monitoring wells MW-3,

MW-4, and MW-5 to better characterize any trends in groundwater concentrations. We also encourage further discussion with DEQ to discuss the analytical results observed at monitoring well MW-3 and to determine if any formal contingency measures are warranted with regard to groundwater at this stage.

- The indoor air sampling results from the second round of pilot shutdown monitoring conducted in January/February 2023 exhibit similar results relative to prior sampling events, and DEQ RBCs were not exceeded in any indoor air samples collected except for chloroform, which is unrelated to subsurface contaminants as described in the sections above.

Based on the conclusions presented above and the rebound criteria established in the Work Plan, we recommend continuance of the pilot shutdown monitoring program. The results of the third round of pilot shutdown monitoring (scheduled for April 2023) will be evaluated with respect to the rebound evaluation criteria and reported to DEQ.

◆ ◆ ◆

We appreciate the opportunity to provide this information. Please contact us if you have questions regarding this report.

Sincerely,

NV5



Erik A. Hedberg, P.E., C.W.R.E.
Associate Engineer



Mike F. Coenen, P.E.
Principal Engineer



cc: Jeff Schatz, Oregon Department of Environmental Quality
Rebecca Digiustino, Oregon Department of Environmental Quality
Chris Nemlowill, Blue Jump Suit LLC and AHI Cannery LLC
Al Jaques, CM Services Co.

EAH:MFC:kt

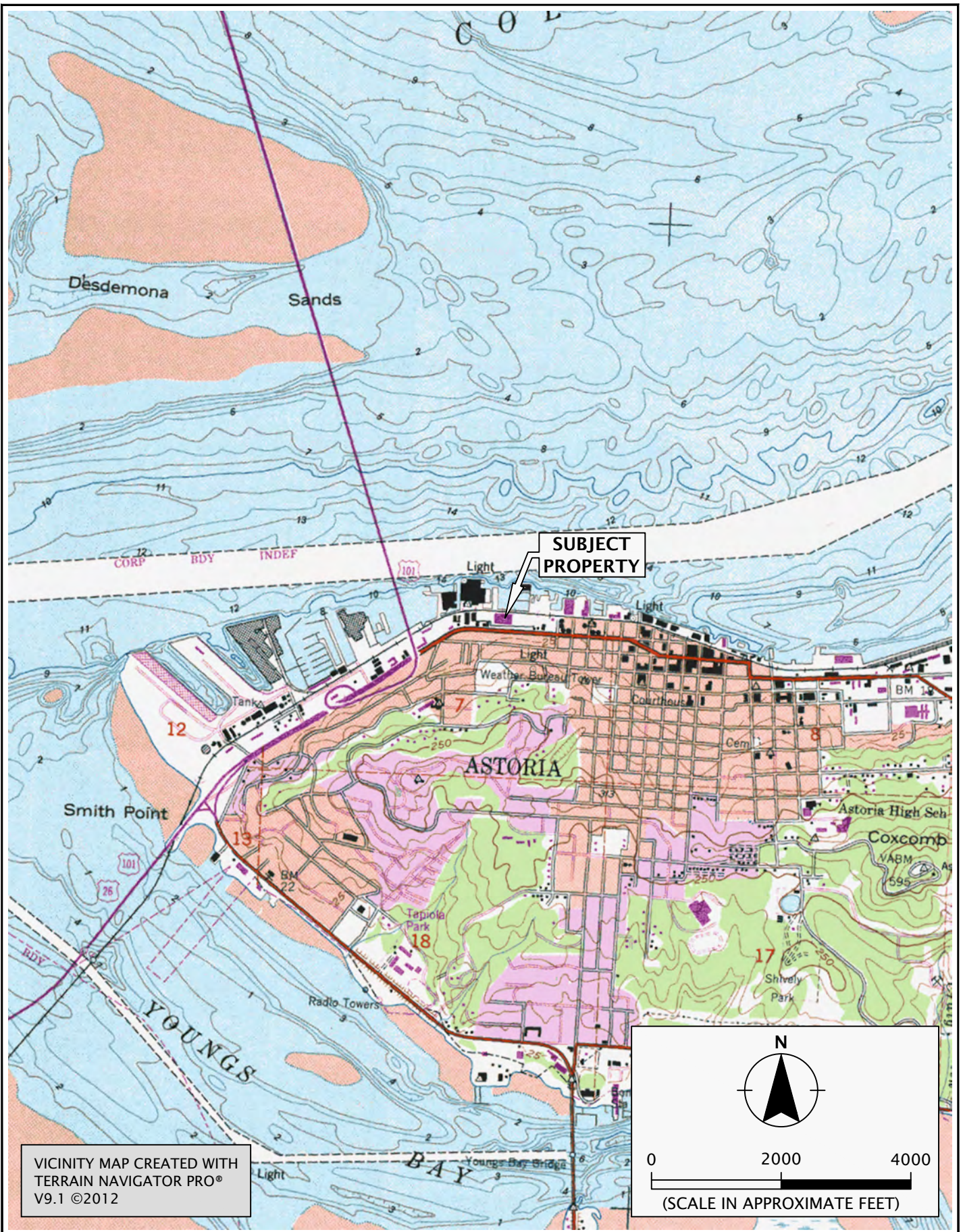
Attachments

One copy submitted

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FIGURES



NIV5

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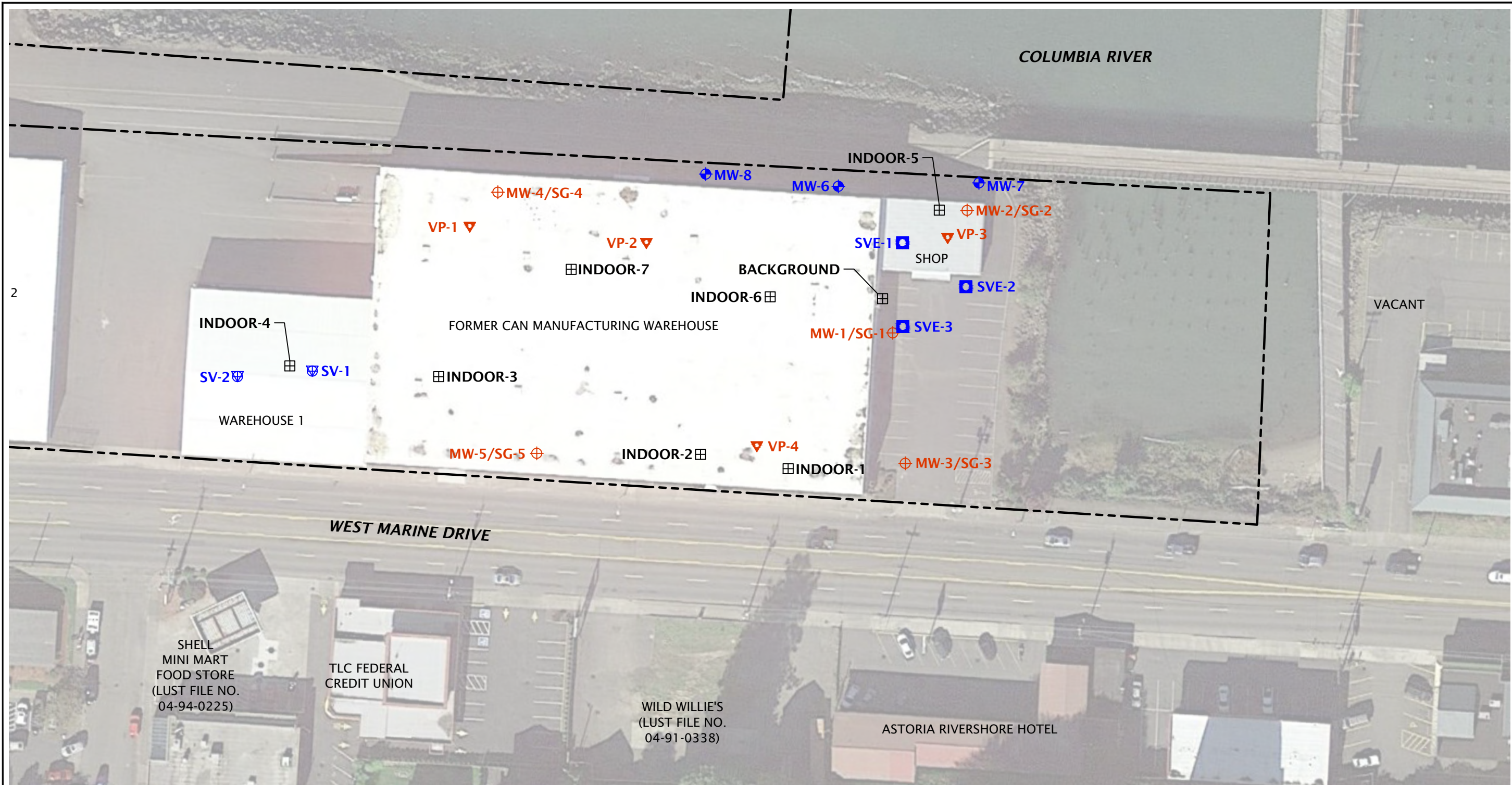
VICINITY MAP

MARCH 2023

FORMER ASTORIA WAREHOUSING SITE
ASTORIA, OR

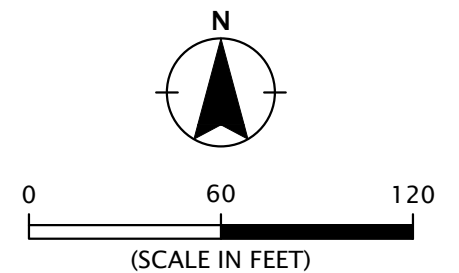
FIGURE 1

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LEGEND:

- SUBJECT PROPERTY BOUNDARY
- SVE-1 ■ SVE WELL
- MW-6 ● MONITORING WELL (GEODESIGN, 2019)
- SV-1 ● SUB-SLAB VAPOR SAMPLE (GEODESIGN, 2019)
- VP-1 ▼ VAPOR PIN (PNG, 2018)
- MW-1/SG-1 ● MONITORING WELL/SOIL GAS SAMPLE (PNG, 2018)
- INDOOR-1 ■ RADIELLO SAMPLE



SITE PLAN BASED ON AERIAL PHOTOGRAPH OBTAINED FROM GOOGLE EARTH PRO JULY 16, 2019

NV5

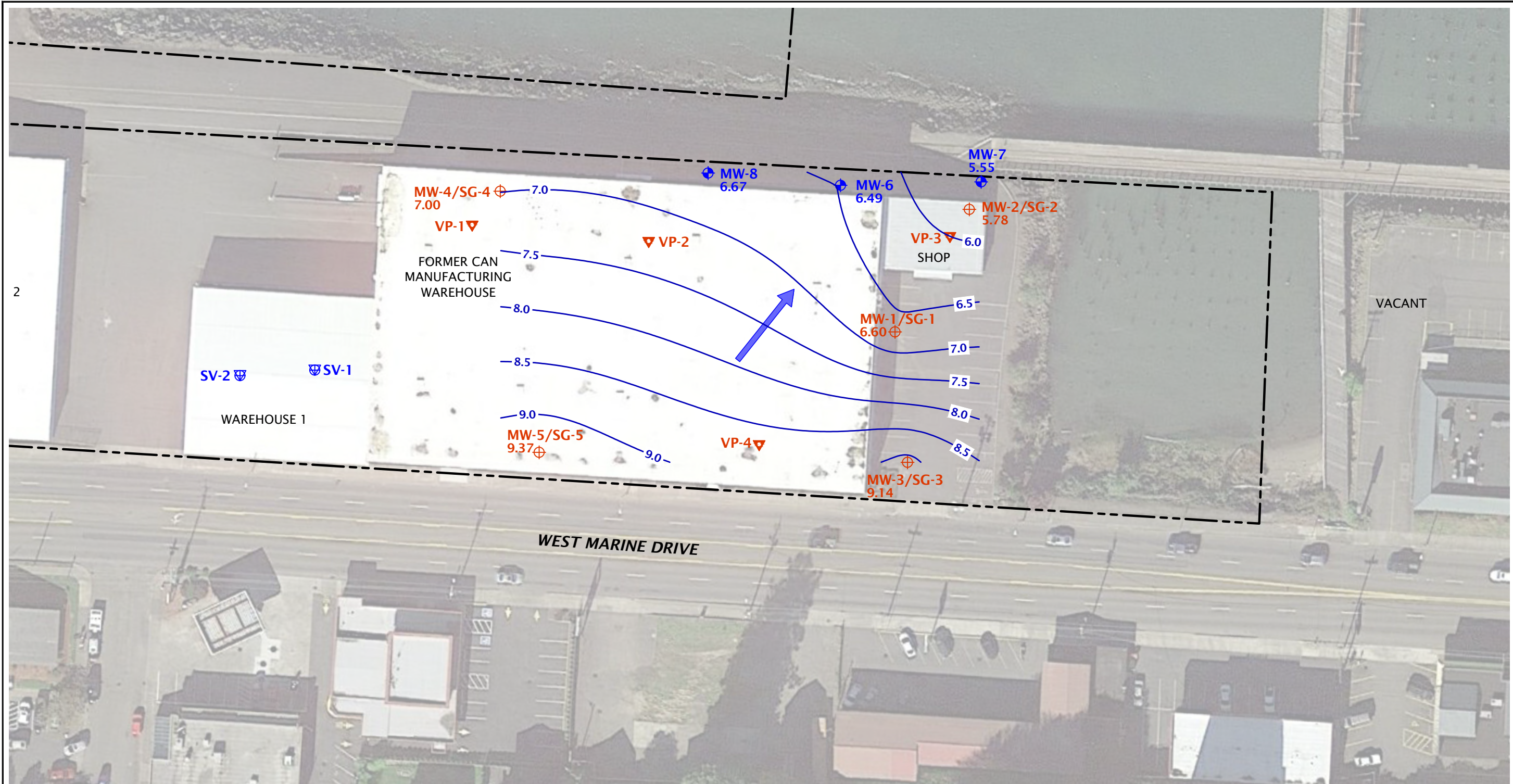
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MARCH 2023

SITE PLAN

FORMER ASTORIA WAREHOUSING SITE
ASTORIA, OR

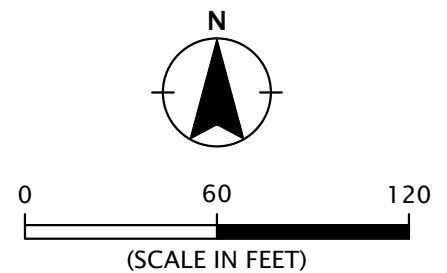
FIGURE 2

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LEGEND:

- SUBJECT PROPERTY BOUNDARY
- MW-6 MONITORING WELL (GEODESIGN, 2019)
- SV-1 SUB-SLAB VAPOR SAMPLE (GEODESIGN, 2019)
- VP-1 VAPOR PIN (PNG, 2018)
- MW-1/SG-1 MONITORING WELL/SOIL GAS SAMPLE (PNG, 2018)
- 6.0 GROUNDWATER ELEVATION CONTOUR AS MEASURED ON JANUARY 25, 2023 (0.5-FOOT CONTOUR INTERVAL) NAVD88 DATUM
- GROUNDWATER FLOW DIRECTION



SITE PLAN BASED ON AERIAL PHOTOGRAPH OBTAINED FROM GOOGLE EARTH PRO JULY 16, 2019

TABLES

TABLE 1 Summary of Sub-Slab Vapor Sample Chemical Analytical Results Gasoline-Range Hydrocarbons and VOCs Former Astoria Warehousing Site 70 West Marine Drive Astoria, Oregon																	
Sample I.D.	Sample Date	Gasoline-Range Hydrocarbons EPA Method TO-03/15 (µg/m³)	VOCs ¹ EPA Method TO-15 (µg/m³)														
			Benzene	Ethylbenzene	iso-Propylbenzene	MTBE	Naphthalene	2-Propanol	Styrene	PCE	Toluene	TCE	1,2,4-TMB	1,3,5-TMB	m,p-Xylene	o-Xylene	
VP-1	09/24/18	18,000	79	360	30	5.4 U	43	17 U	6.4 U	10 U	6.4	8.1 U	690	150	640		
	06/28/19	32,000 U	2.3 U	2.3 U	2.3 U	2.4 U	2.3 U	9.4 U	2.4 U	2.4 U	4.9	2.4 U	2.4 U	2.4 U	4.9 U	2.4 U	
	12/17/20	500 U	3.9 U	5.3 U	6.0 U	18 U	–	56	5.2 U	8.3 U	4.6 U	6.6 U	6.0 U	6.0 U	5.3 U	5.3 U	
	08/11/21	2,610	0.639 U	0.867 U	0.983 U	0.721 U	3.30 U	6.59	0.851 U	1.36 U	1.88 U	1.07 U	4.06	1.12	1.78	0.867 U	
	10/04/22 ³	826 U	0.639 U	0.867 U	0.983 U	0.721 U	3.30 U	21.8	0.851 U	1.78	4.18	1.07 U	0.982 U	0.982 U	2.43	0.867 U	
	01/27/23 ⁴	826 U	0.639 U	0.867 U	0.983 U	0.721 U	3.30 U	7.89	0.851 U	1.36 U	1.88 U	4.86	0.982 U	0.982 U	1.73 U	0.867 U	
VP-2	09/24/18	27,000	100	510	43	5.1 U	130	17 U	6.0 U	9.6 U	6.4	7.6 U	1,300	260	893		
	06/28/19	33,000 U	2.4 U	2.4 U	2.4 U	2.4 U	2.3 U	14	2.4 U	2.4 U	3.9	2.4 U	2.4 U	2.4 U	5.0 U	2.4 U	
	12/17/20	480 U	3.7 U	5.0 U	5.7 U	17 U	–	11 U	5.0 U	7.9 U	4.4 U	6.3 U	5.7 U	5.7 U	5.0 U	5.0 U	
	08/11/21	826 U	0.639 U	0.867 U	0.983 U	0.721 U	3.30 U	5.97	0.851 U	2.59	1.88 U	1.07 U	2.80	1.01	1.73 U	0.867 U	
	10/04/22 ³	826 U	0.639 U	1.96	0.983 U	0.721 U	3.30 U	27.5	0.851 U	1.53	5.35	1.07 U	4.17	1.05	9.32	3.31	
	01/27/23 ⁴	826 U	0.639 U	0.867 U	0.983 U	0.721 U	3.30 U	9.29	0.851 U	2.34	1.88 U	4.67	0.982 U	0.982 U	1.73 U	0.867 U	
VP-3	09/24/18	61,000,000	650,000	210,000	7,500 U	5,500 U	32,000 U	3.9 U	1.3 U	10,000 U	5,800 CN, J	8,200 U	20,000	11,000	267,000		
	06/28/19	58,000,000	530,000	67,000	9,500 U	9,700 U	9,100 U	38,000 U	9,500 U	9,500 U	9,500 U	9,500 U	13,000	9,500 U	120,000	9,500 U	
	12/17/20	57,000,000	470,000	210,000	5,900	2,300 U	–	6,400 U	2,800 U	4,400 U	2,700	3,500 U	62,000	25,000	240,000	4,400	
	08/11/21	24,400	130	67.6	10.2	0.721 U	3.30 U	3.07 U	0.851 U	1.36 U	3.44	1.07 U	395	154	156	6.46	
	10/04/22 ³	8,300	6.13	5.29	0.983 U	0.721 U	3.30 U	11.4	0.851 U	1.36 U	7.31	1.07 U	8.00	4.46	14.4	2.39	
	01/27/23 ⁴	1,600	0.760	0.867 U	0.983 U	1.83	3.30 U	69.8	0.851 U	1.36 U	1.88 U	1.07 U	0.982 U	0.982 U	1.73 U	0.867 U	
VP-4	09/24/18	4,900,000	1,800	1,600	380 U	280 U	1,600 U	750 U	320 U	520 U	290 U	410 U	920	470	1,400		
	06/28/19	1,200,000	130 U	130 U	130 U	130 U	130 U	520 U	130 U	130 U	130 U	130 U	130 U	130 U	270 U	130 U	
	12/17/20	6,100,000	830 U	1,100 U	1,300 U	940 U	–	2,600 U	1,100 U	1,800 U	980 U	1,400 U	1,300 U	1,300 U	1,100 U	1,100 U	
	08/11/21	6,570	1.70	0.867 U	0.983 U	8.25	3.30 U	6.00	0.851 U	2.18	1.88 U	1.07 U	6.48	1.84	1.73 U	0.867 U	
	10/04/22 ³	826 U	0.639 U	0.984	0.983 U	0.721 U	3.30 U	15.0	0.851 U	1.36 U	2.16	1.07 U	2.41	0.98 U	4.47	1.60	
	01/27/23 ⁴	826 U	0.639 U	0.867 U	0.983 U	1.99	3.30 U	8.14	0.851 U	6.42	1.88 U	1.07 U	0.982 U	0.982 U	1.73 U	0.867 U	
DEQ Generic RBCs ²																	
Vapor Intrusion into Buildings																	
Occupational		1,700,000	1,600	4,900	1,800,000	47,000	360	NE	4,400,000	47,000	21,900,000	2,900	260,000	260,000	440,000		
Notes: 1. Only VOCs detected with regulatory screening values are listed. For a complete listing of VOCs, refer to the laboratory report in Attachment B. 2. DEQ Generic RBCs dated May 2018 3. First round of pilot shutdown monitoring (October 2022) 4. Second round of pilot shutdown monitoring (January 2023) CN: High concentration of VOCs required an off-line dilution using a Tedlar bag. Toluene is a common contaminant in Tedlar bags and a CN-flag was applied to indicate a high bias. J: The result is an estimated quantity. U: Not detected. Reporting or detection limit shown. Bolding indicates analyte detection. Shading indicates analyte detection at a concentration greater than DEQ RBCs. --: not analyzed																	

TABLE 2 Summary of Groundwater Elevation Data Former Astoria Warehousing Site 70 West Marine Drive Astoria, Oregon								
Monitoring Well I.D.	Top of Casing Elevation (feet MSL)	Stickup (feet)	Well Depth (feet BGS)	Screened Interval (feet BGS)	Date Measured	Depth to Water (BTOC)	Groundwater Elevation (feet MSL)	Free Product (thickness in feet)
MW-1	16.45	-0.35	19.2	4 -19	10/03/18	10.91	5.54	NM
					06/28/19	11.31	5.14	NM
					11/15/19	10.83	5.62	No
					12/07/19	10.84	5.61	NM
					12/16/19	10.34	6.11	No
					02/19/20	10.21	6.24	No
					02/19/20	10.20	6.25	No
					04/20/20	11.04	5.41	No
					04/28/20	10.44	6.01	No
					06/10/20	10.29	6.16	No
					06/25/20	10.50	5.95	No
					08/25/20	10.81	5.64	No
					08/26/20	10.94	5.51	No
					12/17/20	9.94	6.51	No
					12/18/20	10.00	6.45	No
					12/18/20	9.86	6.59	No
					12/18/20	9.90	6.55	No
					12/18/20	9.85	6.60	No
					01/15/21	8.94	7.51	No
					02/11/21	10.05	6.40	No
					03/02/21	9.46	6.99	No
					04/01/21	8.94	7.51	No
					05/04/21	10.90	5.55	No
					08/10/21	10.95	5.50	No
					08/11/21	10.89	5.56	No
					01/04/22	9.05	7.40	No
					10/03/22	10.90	5.55	No
					01/25/23	9.85	6.60	No
MW-2	17.78	-0.55	19.0	4 -19	10/03/18	12.38	5.40	NM
					06/28/19	13.01	4.77	NM
					11/15/19	12.25	5.53	No
					12/07/19	12.41	5.37	NM
					12/16/19	12.12	5.66	No
					02/19/20	12.07	5.71	No
					02/19/20	12.06	5.72	No
					04/20/20	12.82	4.96	No
					04/28/20	12.40	5.38	No
					04/28/20	12.55	5.23	No
					06/10/20	12.15	5.63	No
					06/25/20	12.11	5.67	No
					08/25/20	12.60	5.18	No
					08/26/20	12.54	5.24	No
					12/17/20	11.21	6.57	No
					12/18/20	11.78	6.00	No
					12/18/20	11.21	6.57	No
					12/18/20	11.15	6.63	No
					12/18/20	11.11	6.67	No
					01/15/21	10.70	7.08	No
					02/11/21	11.49	6.29	No
					03/02/21	11.57	6.21	No
					04/01/21	12.45	5.33	No
					05/04/21	12.82	4.96	No
					08/10/21	12.91	4.87	No
					08/11/21	12.28	5.50	No
					01/04/22	10.75	7.03	No
					10/03/22	12.50	5.28	No
					01/25/23	12.00	5.78	No

TABLE 2 Summary of Groundwater Elevation Data Former Astoria Warehousing Site 70 West Marine Drive Astoria, Oregon								
Monitoring Well I.D.	Top of Casing Elevation (feet MSL)	Stickup (feet)	Well Depth (feet BGS)	Screened Interval (feet BGS)	Date Measured	Depth to Water (BTOC)	Groundwater Elevation (feet MSL)	Free Product (thickness in feet)
MW-3	16.70	-0.33	18.6	4 -19	10/03/18	8.79	7.91	NM
					06/28/19	8.67	8.03	NM
					11/15/19	8.21	8.49	No
					12/07/19	8.22	8.48	NM
					12/16/19	7.87	8.83	No
					02/19/20	7.56	9.14	No
					02/19/20	7.50	9.20	No
					04/20/20	8.10	8.60	No
					04/28/20	8.14	8.56	No
					06/10/20	8.18	8.52	No
					06/25/20	8.20	8.50	No
					08/25/20	8.76	7.94	No
					08/26/20	8.78	7.92	No
					12/17/20	7.61	9.09	No
					12/18/20	7.62	9.08	No
					12/18/20	7.65	9.05	No
					12/18/20	7.60	9.10	No
					12/18/20	7.60	9.10	No
					01/15/21	7.21	9.49	No
					02/11/21	7.54	9.16	No
					03/02/21	7.49	9.21	No
					04/01/21	7.78	8.92	No
					05/04/21	8.28	8.42	No
					08/10/21	8.87	7.83	No
					08/11/21	8.85	7.85	No
					01/04/22	7.10	9.60	No
					10/03/22	8.80	7.90	No
					01/25/23	7.56	9.14	No
MW-4	17.70	-0.35	18.8	4 -19	10/03/18	12.08	5.62	NM
					06/28/19	12.32	5.38	NM
					11/15/19	11.84	5.86	No
					12/07/19	11.90	5.80	NM
					12/16/19	11.53	6.17	No
					02/19/20	11.00	6.70	No
					02/19/20	10.99	6.71	No
					04/20/20	11.93	5.77	No
					04/28/20	11.81	5.89	No
					06/10/20	11.44	6.26	No
					06/25/20	11.70	6.00	No
					08/25/20	11.95	5.75	No
					08/26/20	12.00	5.70	No
					12/17/20	11.11	6.59	No
					12/18/20	12.17	5.53	No
					12/18/20	11.06	6.64	No
					12/18/20	10.97	6.73	No
					12/18/20	10.90	6.80	No
					01/15/21	10.09	7.61	No
					02/11/21	10.81	6.89	No
					03/02/21	8.68	9.02	No
					04/01/21	11.45	6.25	No
					05/04/21	11.85	5.85	No
					08/10/21	12.10	5.60	No
					08/11/21	12.10	5.60	No
					01/04/22	10.10	7.60	No
					10/03/22	12.00	5.70	No
					01/25/23	10.70	7.00	No

TABLE 2 Summary of Groundwater Elevation Data Former Astoria Warehousing Site 70 West Marine Drive Astoria, Oregon								
Monitoring Well I.D.	Top of Casing Elevation (feet MSL)	Stickup (feet)	Well Depth (feet BGS)	Screened Interval (feet BGS)	Date Measured	Depth to Water (BTOC)	Groundwater Elevation (feet MSL)	Free Product (thickness in feet)
MW-5	17.97	-0.35	19.2	4 -19	10/03/18	10.24	7.73	NM
					06/28/19	9.79	8.18	NM
					11/15/19	9.54	8.43	No
					12/07/19	9.05	8.92	NM
					12/16/19	9.40	8.57	No
					02/19/20	8.50	9.47	No
					02/19/20	8.48	9.49	No
					04/20/20	9.24	8.73	No
					04/28/20	9.31	8.66	No
					06/10/20	Inaccessible		NA
					06/25/20	9.46	8.51	No
					08/25/20	10.10	7.87	No
					08/26/20	10.00	7.97	No
					12/17/20	9.10	8.87	No
					12/18/20	9.08	8.89	No
					12/18/20	9.10	8.87	No
					12/18/20	9.06	8.91	No
					12/18/20	9.04	8.93	No
					01/15/21	8.26	9.71	No
					02/11/21	8.62	9.35	No
					03/02/21	11.05	6.92	No
					04/01/21	8.26	9.71	No
					05/04/21	9.39	8.58	No
					08/10/21	10.08	7.89	No
					08/11/21	10.06	7.91	No
					01/04/22	8.40	9.57	No
					10/03/22	10.70	7.27	No
					01/25/23	8.60	9.37	No
MW-6	17.14	-0.25	25.5	5-25	12/07/19	11.49	5.65	NM
					12/16/19	11.11	6.03	No
					02/19/20	11.00	6.14	No
					04/20/20	11.90	5.24	No
					04/28/20	11.60	5.54	No
					06/10/20	11.09	6.05	No
					06/25/20	11.50	5.64	No
					08/25/20	12.70	4.44	No
					08/26/20	11.70	5.44	No
					12/17/20	10.58	6.56	No
					12/18/20	10.73	6.41	No
					12/18/20	10.45	6.69	No
					12/18/20	10.45	6.69	No
					12/18/20	10.41	6.73	No
					01/15/21	9.64	7.50	No
					02/11/21	10.72	6.42	No
					03/02/21	10.91	6.23	No
					04/01/21	11.37	5.77	No
					05/04/21	11.75	5.39	No
					08/10/21	11.71	5.43	No
					08/11/21	11.65	5.49	No
					01/04/22	9.70	7.44	No
					10/03/22	11.70	5.44	No
					01/25/23	10.65	6.49	No

TABLE 2 Summary of Groundwater Elevation Data Former Astoria Warehousing Site 70 West Marine Drive Astoria, Oregon								
Monitoring Well I.D.	Top of Casing Elevation (feet MSL)	Stickup (feet)	Well Depth (feet BGS)	Screened Interval (feet BGS)	Date Measured	Depth to Water (BTOC)	Groundwater Elevation (feet MSL)	Free Product (thickness in feet)
MW-7	16.41	-0.25	25.3	5-25	12/07/19	10.20	6.21	NM
					12/16/19	10.99	5.42	No
					02/19/20	10.62	5.79	No
					02/19/20	10.60	5.81	No
					04/20/20	11.49	4.92	No
					04/28/20	11.58	4.83	No
					06/10/20	11.07	5.34	No
					06/25/20	11.59	4.82	No
					08/25/20	12.59	3.82	No
					08/26/20	11.20	5.21	No
					12/17/20	10.35	6.06	No
					12/18/20	10.61	5.80	No
					12/18/20	9.64	6.77	No
					12/18/20	9.41	7.00	No
					01/15/21	8.90	7.51	No
					02/11/21	9.89	6.52	No
					03/02/21	8.92	7.49	No
					04/01/21	11.23	5.18	No
					05/04/21	11.74	4.67	No
					08/10/21	11.28	5.13	No
					08/11/21	10.80	5.61	No
					01/04/22	9.30	7.11	No
					10/03/22	11.25	5.16	No
					01/25/23	10.86	5.55	No
MW-8	16.62	-0.31	25.3	5-25	12/07/19	10.99	5.63	NM
					12/16/19	10.51	6.11	No
					02/19/20	10.25	6.37	No
					02/01/20	10.20	6.42	No
					04/20/20	11.19	5.43	No
					04/28/20	10.95	5.67	0.02
					04/28/20	11.03	5.59	No
					06/10/20	10.40	6.22	No
					06/25/20	10.45	6.17	No
					08/25/20	11.25	5.37	0.20
					08/26/20	11.15	5.47	No
					12/17/20	10.25	6.37	No
					12/18/20	10.14	6.48	No
					12/18/20	10.21	6.41	No
					12/18/20	9.88	6.74	No
					12/18/20	9.86	6.76	No
					01/15/21	8.94	7.68	No
					02/11/21	10.10	6.52	No
					03/02/21	10.31	6.31	No
					04/01/21	11.85	4.77	No
					05/04/21	11.18	5.44	No
					08/10/21	11.15	5.47	No
					01/04/22	9.10	7.52	No
					10/03/22	10.10	6.52	No
					01/25/23	9.95	6.67	No

TABLE 2 Summary of Groundwater Elevation Data Former Astoria Warehousing Site 70 West Marine Drive Astoria, Oregon								
Monitoring Well I.D.	Top of Casing Elevation (feet MSL)	Stickup (feet)	Well Depth (feet BGS)	Screened Interval (feet BGS)	Date Measured	Depth to Water (BTOC)	Groundwater Elevation (feet MSL)	Free Product (thickness in feet)
PAS-2	NM	NM	18.0	16-17	04/20/20	12.66	NM	No
					04/28/20	12.33		No
					06/10/20	12.33		No
					06/29/20	12.51		No
					08/25/20	12.33		No
					08/26/20	12.51		No
					12/17/20	11.29		No
					12/18/20	11.50		No
					12/18/20	11.47		No
					01/15/21	10.89		No
					02/11/21	11.86		No
					03/02/21	11.65		No
					04/01/21	12.35		No
					05/04/21	12.62		No
					08/10/21	12.55		No
					01/04/22	10.56		No
					01/25/23	11.70		No
OAS-1	NM	NM	19.3	10-20	12/11/19	12.35	NM	No
					04/20/20	12.68		No
					04/28/20	12.40		No
					04/28/20	12.50		No
					06/10/20	11.95		No
					06/29/20	12.57		No
					08/25/20	15.50		No
					08/26/20	12.57		No
					12/17/20	11.23		No
					12/18/20	11.71		No
					12/18/20	11.55		No
					12/18/20	11.50		No
					01/15/21	10.91		No
					02/11/21	11.87		No
					03/02/21	11.68		No
					04/01/21	12.31		No
					05/04/21	12.59		No
					08/10/21	12.55		No
OAS-2	NM	NM	19.6	10-20	01/04/22	10.61	NM	No
					01/25/23	11.73		No
					12/11/19	12.31		No
					04/20/20	12.60		0.21
					04/28/20	12.35		No
					04/28/20	12.46		No
					06/10/20	11.94		No
					06/29/20	12.51		No
					08/25/20	12.62		No
					08/26/20	12.18		No
					12/17/20	11.14		No
					12/18/20	11.68		No
					12/18/20	11.48		No
					12/18/20	11.49		No
					01/15/21	10.89		No
					02/11/21	11.86		No
					03/02/21	11.68		No
					04/01/21	12.30		No
					05/04/21	12.59		No
					08/10/21	12.47		No
					01/04/22	10.53		No
					01/25/23	11.73		No

TABLE 2 Summary of Groundwater Elevation Data Former Astoria Warehousing Site 70 West Marine Drive Astoria, Oregon								
Monitoring Well I.D.	Top of Casing Elevation (feet MSL)	Stickup (feet)	Well Depth (feet BGS)	Screened Interval (feet BGS)	Date Measured	Depth to Water (BTOC)	Groundwater Elevation (feet MSL)	Free Product (thickness in feet)
OAS-3	NM	NM	19.4	10-20	12/11/19	12.50	NM	No
					04/20/20	12.47		0.71
					04/28/20	12.46		0.49
					04/28/20	12.61		No
					06/10/20	12.24		No
					06/29/20	12.65		0.21
					08/25/20	12.62		No
					08/26/20	12.78		No
					12/17/20	11.45		0.25
					12/18/20	11.90		No
					12/18/20	11.76		No
					12/18/20	11.61		No
					12/18/20	11.55		No
					01/15/21	10.96		No
					02/11/21	12.00		No
					03/02/21	11.80		No
					04/01/21	12.50		No
					05/04/21	12.75		No
					08/10/21	12.63		No
					01/04/22	10.70		No
					01/25/23	11.95		No
OAS-4	NM	NM	19.6	10-20	12/11/19	12.53	NM	No
					04/20/20	12.80		No
					04/28/20	12.60		No
					04/28/20	12.71		No
					06/10/20	12.03		No
					06/29/20	12.70		No
					08/25/20	12.68		No
					08/26/20	12.18		No
					12/17/20	11.28		No
					12/18/20	11.95		No
					12/18/20	11.61		No
					12/18/20	11.60		No
					01/15/21	11.00		No
					02/11/21	12.05		No
					03/02/21	11.92		No
					04/01/21	12.65		No
					05/04/21	12.89		No
					08/10/21	12.70		No
					01/04/22	10.56		No
					01/25/23	12.05		No
					Notes: Vertical datum is NAVD88.			

TABLE 3 Summary of Groundwater Parameters in Monitoring Well Samples Former Astoria Warehousing Site 70 West Marine Drive Astoria, Oregon								
Sample I.D.	Sample Date	Temperature (°F)	Dissolved Oxygen (mg/L)	pH	ORP (mV)	Specific Conductivity (µS/cm)	Turbidity (NTU)	Ferrous Iron (mg/L)
MW-1	10/03/18	61.7	0.19	6.42	-74.9	673	0.44	--
	11/15/19	60.8	0.30	6.54	-99.9	505	4.99	28.8
	06/25/20	59.1	0.86	6.44	-55.9	628	2.22	--
	08/11/21	63.2	0.18	6.58	-145.4	1,091	3.11	--
	01/04/22 ¹	60.4	2.80	5.40	-95.0	1,900	--	--
	10/03/22	61.7	3.45	6.31	-119.5	970	2.40	--
	01/25/23	58.8	0.51	6.24	-59.0	697	53.0 ²	--
MW-2	10/03/18	60.2	0.23	6.55	-124.5	791	0.51	--
	11/15/19	59.5	0.41	6.61	-118.1	670	0.10	64.6
	06/25/20	58.8	0.36	6.56	-73.1	664	2.12	--
	08/11/21	64.3	0.15	6.51	-128.4	1,208	1.98	--
	01/05/22 ¹	62.2	1.68	6.14	-131.1	1,760	--	--
	10/03/22	61.8	1.42	6.50	-145.5	1,279	2.70	--
	01/26/23	58.2	0.53	6.59	-105.0	802	35.2 ²	--
MW-3	10/03/18	60.7	0.29	6.75	-49.5	427	0.28	--
	11/15/19	60.5	0.90	6.76	-81.5	444	7.54	13.1
	06/25/20	58.3	0.37	6.60	-38.6	380	5.45	--
	08/11/21	62.1	0.28	6.73	-101.9	924	1.85	--
	01/04/22 ¹	57.9	3.10	6.20	-75.0	1,158	--	--
	10/03/22	--	--	--	--	--	--	--
	01/25/23	57.4	0.95	6.80	-77.0	467	209 ²	--
MW-4	10/03/18	57.5	0.28	7.13	-62.0	362	0.30	--
	11/15/19	57.3	0.41	6.55	-110.5	440	0.53	53.8
	06/25/20	56.9	0.62	6.47	-56.6	488	8.72	--
	08/11/21	58.7	0.21	6.48	-121.4	831	4.67	--
	01/05/22 ¹	57.1	2.29	5.67	-74.4	906	--	--
	10/03/22	--	--	--	--	--	--	--
	01/26/23	55.0	0.42	6.33	-47.0	720	351 ²	--
MW-5	10/03/18	60.7	0.26	6.99	-54.1	304	0.24	--
	11/15/19	60.6	0.34	6.55	-84.7	354	0.86	26.9
	06/25/20	58.8	0.17	6.56	-58.8	268	3.50	--
	08/11/21	61.4	0.39	6.51	-95.1	548	3.02	--
	01/04/22 ¹	47.0	18.60	5.30	-26.5	12	--	--
	10/03/22	--	--	--	--	--	--	--
	01/26/23	57.7	0.41	6.63	-67.0	479	40.1 ²	--
MW-6	12/07/19	57.0	0.38	6.55	-87.6	607	2.71	--
	06/25/20	58.0	0.16	6.56	-82.6	652	4.72	--
	08/11/21	61.0	0.21	6.50	-119.6	1,084	2.07	--
	01/04/22 ¹	58.5	2.10	5.10	-23.4	1,997	--	--
	10/03/22	59.1	1.17	6.30	-119.2	940	2.80	--
	01/26/23	55.8	0.42	6.55	-95.0	854	36.1 ²	--
MW-7	12/07/19	58.6	0.24	6.72	-105.2	672	2.29	--
	06/25/20	62.5	0.13	6.59	-99.8	691	9.58	--
	08/11/21	62.1	0.28	6.53	-134.6	1,329	1.47	--
	01/04/22 ¹	57.6	1.29	5.00	-57.8	4,740	--	--
	10/04/22	62.9	0.61	6.49	-119.9	1,072	3.70	--
	01/25/23	55.7	0.74	6.46	-80.0	2,070	110 ²	--
MW-8	12/07/19	56.2	0.52	6.57	-86.2	587	3.67	--
	06/25/20	57.1	0.20	6.44	-72.5	535	3.79	--
	08/11/21	59.5	0.14	6.4	-123.2	926	2.52	--
	01/04/22 ¹	58.0	4.00	4.80	-19.5	2,020	--	--
	10/04/22	58.4	0.68	6.39	-111.1	939	3.60	--
	01/26/23	54.0	0.53	6.32	-41.0	677	231 ²	--
PAS-2	12/07/19	59.9	0.38	6.86	-109.0	577	0.77	--
Notes: 1. Groundwater parameters measured during the January 2022 groundwater monitoring event indicate a possible malfunction of the YSI field meter and are therefore not necessarily considered representative of actual groundwater parameters. Parameters measured during this event were evaluated as relative values in the field to assess stabilization prior to sample collection only. 2. Turbidity observations during the January 2023 groundwater monitoring event indicate that the (rented) multi-parameter equipment retained residual solids within the flow cell from the onset of purging. Therefore, the noted turbidity values are not necessarily considered representative of actual groundwater parameters at the time of sample collection. Turbidity values measured during this event were evaluated as relative values in the field to assess stabilization prior to sample collection only. --: not analyzed								

TABLE 4
Summary of Monitoring Well Groundwater Sample Chemical Analytical Results
Gasoline-Range Hydrocarbons and RBDM VOCs
Former Astoria Warehousing Site
70 West Marine Drive
Astoria, Oregon

Monitoring Well	Sample Date	Gasoline-Range Hydrocarbons Method NWTPH-Gx (µg/L)	RBDM VOCs EPA Method 8260B/8260D (µg/L)																	
			Benzene	n-Butylbenzene	sec-Butylbenzene	tert-Butylbenzene	1,2-Dibromoethane	1,2-Dichloroethane	cis-1,2-Dichloroethene	Ethylbenzene	Isopropylbenzene	P-Isopropyltoluene	MTBE	Naphthalene	n-Propylbenzene	Toluene	1,2,3-TMB	1,2,4-TMB	1,3,5-TMB	Total Xylenes
MW-1	10/03/18	19,900	1,000	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	--	1,090	98.4	7.60	11.5	397	83.1	25.1	--	54.5	40.6	196
	11/15/19	6,280	292	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	--	529	25.3	5.00 U	5.06	174	73.9	6.36	--	5.82	5.00 U	29.1
	06/25/20	12,100	854	--	--	--	--	1.26 U	0.819 U	--	1,720	83.8	--	9.69 J	546	203	20.1	--	6.97 J	8.90 J
	08/11/21	12,700	663	--	--	--	--	10.0 U	10.0 U	--	1,780	74.1	--	7.40 J	505	247	15.3	--	10.0 U	6.37 J
	01/04/22	2,710	37.4	4.39	3.49	0.567 J	1.00 U	1.00 U	1.00 U	116	20.4	1.17	3.37 C3	51.0	60.8	2.15	40.4	0.396 J	0.914 J	7.19
	10/03/22 ²	18,200	486	--	--	--	--	1.26 U	0.819 U	--	1,870	141	--	1.01 U	521 C3	351	24.0	--	3.22 U	7.80 J
	01/25/23 ³	16,900	458	--	--	--	--	10.0 U	10.0 U	--	2,460	120	--	4.58 J	431 C3	334 C3	20.6	--	10.0 U	7.25 J
MW-2	10/03/18	34,500	2,320	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	--	1,690	89.6	21.7	26.0	465	277	52.3	--	1,650	370	3,180
	11/15/19	7,000	416	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	--	290	36.3	10.0 U	14.1	80.7	72.0	11.1	--	207	49.6	335
	06/25/20	6,160	625	--	--	--	--	0.126 U	0.0819 U	--	375	61.5	--	13.4	70.8	103	9.56	--	72.4	51.2
	08/11/21	2,580	119	--	--	--	--	10.0 U	10.0 U	--	12.0	37.1	--	12.0	33.1 J	68.3	4.81 J	--	10.0 U	10.9 J
	01/04/22	2,720	134	4.36	3.92	1.00 U	1.00 U	1.00 U	1.00 U	53.5	32.8	0.640 J	7.53 C3	17.5	76.6	7.58	16.8	14.6	15.8	40.9
	10/03/22 ²	3,720	184	--	--	--	--	1.26 U	0.819 U	--	60.5	29.1	--	11.7	19.1 C3, J	--	10.3	--	59.8	30.9
	01/26/23 ³	3,810 B	129	--	--	--	--	10.0 U	10.0 U	--	51.6	27.0	--	9.44 J	42.0 C3, J	53.1 C3	9.63 J	--	21.3	17.3
MW-3	10/03/18	148 B, J	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	--	0.500 U	0.500 U	0.500 U	1.30	2.50 U	0.500 U	0.500 U	--	0.500 U	0.500 U	1.50 U
	11/15/19	370	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	--	1.00 U	4.19	1.00 U	6.68	5.00 U	1.23	1.00 U	--	1.00 U	1.00 U	3.00 U
	06/25/20	634 B	0.09 U	--	--	--	--	0.126 U	0.0930 J	--	13.9	21.3	--	2.47	3.10 J	25.9	0.643 J	--	0.742 J	1.67
	08/11/21	603	1.00 U	--	--	--	--	1.00 U	1.00 U	--	1.00 U	11.4	--	9.01	5.00 U	17.6	0.716 J	--	1.00 U	0.256 J
	01/04/22	224	0.218 J	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	0.364 J	0.311 J	0.308 J	1.00 U	1.15 C3	1.77 J, B	0.550 J	1.00 U	0.360 J	1.00 U	0.212 J	0.662 J
	10/03/22 ²	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	01/25/23 ³	1,400 B	1.00 U	--	--	--	--	1.00 U	--	1.00 U	0.122 J	--	1.27	5.00 U, C3	1.00 U, C3	1.00 U	--	1.00 U	1.00 U	0.190 J
MW-4	10/03/18	6,080	133	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	--	168	18.7	3.99	6.45	33.0	65.0	82.1	--	167	56.1	757
	11/15/19	10,600	561	25.0 U	25.0 U	25.0 U	25.0 U	25.0 U	--	493	30.5	25.0 U	25.0 U	133	80.3	90.0	--	456	113	1,660
	06/25/20	17,000	1,060	--	--	--	--	2.52 U	1.64 U	--	1,190	44.3	--	2.66 J	247	102	--	660	179	3,420
	08/11/21	10,500	634	--	--	--	--	20.0 U	20.0 U	--	991	51.2	--	2.82 J	306	150	40.1	--	569	90.8
	01/04/22	21,200	289	4.09 J	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	206	27.1	11.2	3.70 C3, J	179	74.5	43.8	381	805	238	3,880
	10/03/22 ²	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	01/26/23 ³	38,000	1,180	--	--	--	--	20.0 U	20.0 U	750	46.0	--	20.0 U	169 C3	115 C3	119	--	1,350	384	9,260
MW-5	10/03/18	6,010	167	0.500 U	14.3	0.500 U	0.500 U	0.500 U	--	88.2	48.0	2.25	0.500 U	14.9	184	9.37	--	16.0	5.84	16.0
	11/15/19	3,420	83.5	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	--	48.2	23.8	10.0 U	10.0 U	50.0 U	79.8	10.0 U	--	10.4	10.0 U	30.0 U
	06/25/20	3,150	38.3	--	--	--	--	0.126 U	0.0819 U	--	90.6	31.6	--	0.101 U	29.2	76.4	7.79	--	5.86	3.37
	08/11/21	4,870	55.8	--	--	--	--	1.00 U	1.00 U	--	170	53.0	--	1.00 U	51.5	197	9.94	--	1.15	2.13
	01/04/22	1,800	3.52	11.8	12.8	0.308 J	1.00 U	1.00 U	1.00 U	2.40	12.1	1.16	9.40 C3	1.19 J, B	52.6	0.685 J	0.873 J	1.00 U	0.615 J	2.07 J
	10/03/22 ²	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	01/26/23 ³	1,580	1.70	--	--	--	--	1.00 U	1.00 U	2.53	10.6	--	9.42	5.00 U, C3	37.7 C3	1.00 U	--	1.00 U	0.511 J	1.73 J
MW-6	12/07/19	23,700	796	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	--	1,980	129	18.0	12.8	268	345	71.7	--	926	273	2,390
	06/25/20	72,200	681	--	--	--	--	0.6 U	0.4 U	--	459	78.8	--	16.8	102	37.5	--	258	94.5	582
	08/11/21	4,340	380	--	--	--	--	5.00 U	5.00 U	--	71.4	26.7	--	16.0	30.2	72.6	--	38.6	20.7	55.6
	01/04/22	1,670	169	1.65	1.51	1.00 U	1.00 U	1.00 U	1.00 U	26.0	11.1	0.466 J	7.85 C3	8.96 B	31.5	8.31	23.8	12.2	9.66	21.4
	10/03/22 ²	2,930	96.7	--	--	--	--	0.630 U	0.409 U	--	90.8	22.2	--	19.9	18.8 C3, J	41.6	7.21	--	18.1	19.7
	01/26/23 ³	4,860	363	--	--	--	--	5.00 U	5.00 U	--	166	32.4	--	6.60	33.0 C3	73.1 C3	15.6	--	32.7	33.9
	12/07/19	5,920	151	1.00 U	7.96	1.00 U	1.00 U	1.00 U	--	216	59.7	5.34	9.97	113	168	12.6	--	67.7	63.4	185
MW-7	06/25/20	7,610	556	--	--	--	--	0.630 U	0.409 U	--	586	102	--	15.2	355	217	15.4	--	11.6	96.8
	08/11/21	5,180	170	--	--	--	--	5.00 U	5.00 U	--	102	95.9	--	13.2	47.8	227	16.8	--	5.00 U	16.1
	01/04/22	3,060	178	5.43	5.71	0.552 J	1.00 U	1.00 U	1.00 U	70.3	42.4	0.755 J	2.75 C3	9.7 B	202	6.26	23.0	0.437 J	3.00	12.8
	10/04/22 ²	5,470	69.5	--	--	--	--	0.630 U	0.409 U	--	37.0	56.0	--	4.70 J	26.5 C3	125	6.09	--	1.61 U	4.260 J
	01/25/23 ³	10,600	887	--	--	--	--	5.00 U	5.00 U	--	729	124	--	6.83	63.5 C3	317 C3	30.1	--	14.1	11.1
	12/07/19	8,290	1,520	1.00 U	8.68	1.00 U	1.00 U	1.00 U	--	263	80.6	6.17	8.35	95.5	199	35.1	--	249	86.8	530
	06/25/20	2,840	2,330	--	--	--	--	3.15 U	2.05 U	--	1,900	131	--	6.24 J	381	297	91.4	--	1,310	441
MW-8	08/11/21	15,700	1,560	--	--	--	--	25.0 U	25.0 U	--	408	77.5	--	6.73 J	214	225	42.2	--	1,000	313
	01/04/22	17,200	2,750	10.5	7.92	1.00 U	1.00 U	1.00 U	1.00 U	408	64.0	15.5	7.41 C3	163	326	30.0	444	1,320	196	1,620
	10/04/22 ²	16,000	1,490	--	--	--	--	3.15 U	2.05 U	--	465	68.8	--	2.53 U	172 C3	197	25.40	--	989	296
	01/26/23 ³	34,500	1,250	--	--	--	--	25.0 U	25.0 U	--	1,020	95.1	--	4.12 J	231 C3	233 C3	45.9	--	2,210	582
PAS-2	12/07/19	8,160	102	124	7.07	1.22	1.00 U	1.00 U	--	122	109	1.00 U	10.4	13.9	163	16.0	--	10.0 U	28.8	49.0
DEQ Generic RBCs ¹																				
Volatilization to Outdoor Air																				
Occupational		>S	14,000	NE	NE	NE	790	9,000	>S	43,000	>S	NE	1,500,000	16,000	NE	>S	NE	>S	>S	>S
Vapor Intrusion into Buildings																				
Occupational		>S	2,800	NE	NE	NE	590	3,900	>S	8,200	>S	NE	870,000	11,000	NE	>S	NE	>S	>S	>S
Groundwater in Excavation																				
Construction/Excavation Worker		14,000	1,800	NE	NE	NE	27	630	18,000	4,500	51,000	NE	63,000	500	NE	220,000	NE	6,300	7,500	23,000

TABLE 4
Summary of Monitoring Well Groundwater Sample Chemical Analytical Results
Gasoline-Range Hydrocarbons and RBDM VOCs
Former Astoria Warehousing Site
70 West Marine Drive
Astoria, Oregon

Notes:
1. DEQ Generic RBCs dated May 2018
2. First round of pilot shutdown monitoring (October 2022)
3. Second round of pilot shutdown monitoring (January 2023)
B: The same analyte is found in the associated blank.
C3: The reported concentration is an estimate. The continuing calibration standard associated with this data responded low. Method sensitivity check is acceptable.
J: The result is an estimated quantity.
>S: This groundwater RBC exceeds the solubility limit. Refer to Appendix D of DEQ's RBDM guidance document for the corresponding value of S. Groundwater concentrations in excess of S indicate that free product may be present.
U: Not detected. Reporting or detection limit shown.
Bolding indicates analyte detection.
Shading indicates analyte detection at a concentration greater than DEQ RBCs.
--: not analyzed

TABLE 5
Summary of Air Sample Chemical Analytical Results
VOCs
Former Astoria Warehousing Site
70 West Marine Drive
Astoria, Oregon

Sample I.D.	Sample Exposure Dates	VOCs ¹ EPA Method TO-17 (µg/m³)																
		Benzene	Bromomethane	Carbon Tetrachloride	Chloroform	1,4-Dichlorobenzene	1,2-Dichloroethane	Ethylbenzene	Freon 113	Methylene Chloride (Dichloromethane)	Styrene	PCE	Toluene	TCE	1,2,4-TMB	1,3,5-TMB	m,p-xylene	o-xylene
Indoor-1	06/29/19 to 07/13/19	0.72	0.36*	ND	ND	0.069	ND	0.91	0.3*	4.8*	0.69	0.073	0.63	0.046 U	1.5	0.38*	2.8	0.67
	11/06/19 to 11/15/19	0.90	–	0.23	0.19	0.15 U	0.10 U	1.7	–	–	0.13 U	0.13 U	2.5	0.11 U	–	–	5.7	1.6
	11/18/20 to 12/02/20	0.69	–	0.47	0.28	0.10 U	0.082	2.0	–	–	0.17	0.087 U	26	0.074 U	–	–	8.1	2.5
	08/12/21 to 08/26/21	0.37	–	0.34	0.86	0.098 U	0.065 U	0.60	–	–	0.20	0.084 U	1.2	0.072 U	–	–	2.3	0.86
	10/04/22 to 10/18/22	0.42	–	0.24	0.68	0.098 U	0.065 U	0.59	–	–	0.22	0.085 U	1.7	0.072 U	–	–	2.0	0.94
	01/27/23 to 02/10/23	0.81	–	0.37	1.3	0.098 U	0.065 U	0.42	–	–	0.18	0.084 U	1.6	0.072 U	–	–	1.3	0.61
Indoor-2	06/29/19 to 07/13/19	0.72	ND	ND	ND	ND	ND	0.97	ND	ND	0.65	0.074	0.61	0.046 U	1.1	ND	2.4	0.64
	11/06/19 to 11/15/19	1.0	–	0.24	0.24	0.15 U	0.10 U	1.9	–	–	0.13 U	0.13 U	2.7	0.11 U	–	–	6.2	1.7
	11/18/20 to 12/02/20	0.73	–	0.51	0.27	0.10 U	0.082	1.7	–	–	0.15	0.087 U	24	0.074 U	–	–	6.8	2.1
	08/12/21 to 08/26/21	0.33 J	–	0.29 J	0.73 J	0.098 U	0.065 U	0.47 J	–	–	0.17 J	0.084 U	1.2 J	0.072 U	–	–	1.7 J	0.64 J
	10/04/22 to 10/18/22	0.46	–	0.28	0.71	0.098 U	0.065 U	0.50	–	–	0.19	0.085 U	1.5	0.072 U	–	–	1.6	0.76
	01/27/23 to 02/10/23	0.78	–	0.34	1.2	0.098 U	0.065 U	0.36	–	–	0.15	0.084 U	1.6	0.072 U	–	–	1.1	0.54
Indoor-3	06/29/19 to 07/13/19	0.23	ND	0.4*	ND	ND	ND	0.23	ND	ND	0.17	0.063	1.2	0.046 U	0.58	ND	1.5	0.35
	11/06/19 to 11/15/19	0.42	–	0.24	0.10 U	0.15 U	0.10 U	0.80	–	–	0.13 U	0.13 U	1.3	0.11 U	–	–	2.8	0.84
	11/18/20 to 12/02/20	0.50	–	0.24	0.071 U	0.10 U	0.069 U	2.3	–	–	0.087 U	0.092	56	0.096	–	–	8.8	2.6
	08/12/21 to 08/26/21	0.32	–	0.22	0.65	0.098 U	0.064 U	0.57	–	–	0.20	0.084 U	1.2	0.072 U	–	–	2.2	0.77
	10/04/22 to 10/18/22	0.43	–	0.23	0.57	0.098 U	0.065 U	0.49	–	–	0.13	0.085 U	1.2	0.072 U	–	–	1.8	0.79
	01/27/23 to 02/10/23	0.68	–	0.23	0.78	0.098 U	0.065 U	0.34	–	–	0.12	0.084 U	1.1	0.072 U	–	–	1.2	0.49
Indoor-4	06/29/19 to 07/13/19	0.21	ND	0.49*	ND	ND	ND	0.18	ND	ND	0.14	0.054	1.1	0.046 U	0.45	ND	1.3	0.28
	11/06/19 to 11/15/19	0.42	–	0.25	0.10 U	0.15 U	0.10 U	0.63	–	–	0.13 U	0.13 U	1.2	0.11 U	–	–	2.2	0.67
	11/18/20 to 12/02/20	0.52	–	0.26	0.071 U	0.10 U	0.069 U	2.1	–	–	0.087 U	0.091	67	0.11	–	–	7.6	2.3
	08/12/21 to 08/26/21	0.31	–	0.17	0.44	0.098 U	0.065 U	0.56	–	–	0.20	0.084 U	1.3	0.072 U	–	–	2.2	0.76
	10/04/22 to 10/18/22	0.41	–	0.20	0.46	0.098 U	0.065 U	0.84	–	–	0.17	0.085 U	1.8	0.072 U	–	–	3.2	1.6
	01/27/23 to 02/10/23	0.73	–	0.23	0.71	0.098 U	0.065 U	0.87	–	–	0.30	0.13	2.2	0.072 U	–	–	3.4	1.8
Indoor-5	06/29/19 to 07/13/19	0.79	ND	0.43*	ND	ND	ND	1.3	0.29*	ND	0.23	0.098	2.5	0.046 U	1.4	ND	3.8	1.8
	11/06/19 to 11/15/19	0.46	–	0.20	0.10 U	0.15 U	0.10 U	0.65	–	–	0.13 U	0.13 U	1.4	0.11 U	–	–	2.3	0.69
	11/18/20 to 12/02/20	0.57	–	0.27	0.071 U	0.10 U	0.069 U	0.84	–	–	0.087 U	0.090 U	26	0.077 U	–	–	3.1	0.94
	08/12/21 to 08/26/21	0.32	–	0.27	0.61	0.097 U	0.064 U	0.64	–	–	0.22	0.084 U	1.5	0.072 U	–	–	2.6	0.88
	10/04/22 to 10/18/22	0.40	–	0.22	0.36	0.098 U	0.065 U	0.19	–	–	0.082 U	0.085 U	0.74	0.072 U	–	–	0.63	0.26
	01/27/23 to 02/10/23	0.76	–	0.27	0.72	0.098 U	0.065 U	0.23	–	–	0.14	0.084 U	1.1	0.072 U	–	–	0.74	0.33

TABLE 5
Summary of Air Sample Chemical Analytical Results
VOCs
Former Astoria Warehousing Site
70 West Marine Drive
Astoria, Oregon

Sample I.D.	Sample Exposure Dates	VOCs ¹ EPA Method TO-17 (µg/m³)																
		Benzene	Bromomethane	Carbon Tetrachloride	Chloroform	1,4-Dichlorobenzene	1,2-Dichloroethane	Ethylbenzene	Freon 113	Methylene Chloride (Dichloromethane)	Styrene	PCE	Toluene	TCE	1,2,4-TMB	1,3,5-TMB	m,p-xylene	o-xylene
Indoor-6	06/29/19 to 07/13/19	0.35	ND	0.38*	ND	ND	ND	0.44	ND	ND	0.23	0.11	1.6	0.046 U	1.1	ND	2.2	0.69
	11/06/19 to 11/15/19	0.47	–	0.23	0.10 U	0.15 U	0.10 U	0.82	–	–	0.13 U	0.13 U	1.5	0.11 U	–	–	2.9	0.88
	11/18/20 to 12/02/20	0.49	–	0.25	0.071 U	0.10 U	0.069 U	1.2	–	–	0.087 U	0.090 U	35	0.077 U	–	–	4.5	1.4
	08/12/21 to 08/26/21	0.33	–	0.21	0.63	0.098 U	0.065 U	0.69	–	–	0.22	0.084 U	1.3	0.072 U	–	–	2.8	1.0
	10/04/22 to 10/18/22	0.40	–	0.22	0.58	0.098 U	0.065 U	0.27	–	–	0.10	0.085 U	0.76	0.072 U	–	–	0.94	0.42
	01/27/23 to 02/10/23	0.65	–	0.22	0.81	0.098 U	0.065 U	0.27	–	–	0.12	0.084 U	1.0	0.072 U	–	–	0.90	0.39
Indoor-7	06/29/19 to 07/13/19	0.24	ND	0.48*	ND	ND	ND	0.22	0.27*	ND	0.14	0.058	0.96	0.046 U	0.44	1*	1.2	0.32
	11/06/19 to 11/15/19	0.46	–	0.26	0.10 U	0.15 U	0.10 U	0.87	–	–	0.13 U	0.13 U	1.5	0.11 U	–	–	3.1	0.92
	11/18/20 to 12/02/20	0.50	–	0.24	0.071 U	0.10 U	0.069 U	2.6	–	–	0.089	0.12	60	0.077 U	–	–	10	3.0
	08/12/21 to 08/26/21	0.30	–	0.22	0.62	0.098 U	0.065 U	0.52	–	–	0.16	0.084 U	1.1	0.072 U	–	–	2.0	0.68
	10/04/22 to 10/18/22	0.39	–	0.20	0.50	0.098 U	0.065 U	0.41	–	–	0.10	0.085 U	1.0	0.072 U	–	–	1.5	0.64
	01/27/23 to 02/10/23	0.68	–	0.21	0.76	0.098 U	0.065 U	0.31	–	–	0.12	0.084 U	1.1	0.072 U	–	–	1.0	0.46
Background	11/06/19 to 11/15/19	0.40	–	0.26	0.10 U	0.15 U	0.10 U	0.11 U	–	–	0.13 U	0.13 U	0.49	0.11 U	–	–	0.27	0.12 U
	11/18/20 to 12/02/20	0.50	–	0.32	0.071 U	0.10 U	0.069 U	0.14	–	–	0.087 U	0.090 U	1.5	0.077 U	–	–	0.41	0.14
	08/12/21 to 08/26/21	0.27	–	0.20	0.066 U	0.097 U	0.064 U	0.12	–	–	0.081 U	0.084 U	0.45	0.072 U	–	–	0.45	0.15
	10/04/22 to 10/18/22	0.45	–	0.26	0.094	0.098 U	0.065 U	0.17	–	–	0.082 U	0.085 U	0.89	0.072 U	–	–	0.52	0.21
	01/27/23 to 02/10/23	0.67	–	0.29	0.066 U	0.098 U	0.065 U	0.11	–	–	0.082 U	0.084 U	0.71	0.072 U	–	–	0.33	0.13

DEQ Generic RBCs ²																		
Inhalation																		
Occupational	1.6	22	2.0	0.53	1.1	0.47	4.9	130,000	1,200	4,400	47	22,000	2.9	260	260	440		

Notes:
1. Only VOCs detected with regulatory screening values are listed. For a complete listing of VOCs, refer to the laboratory report in Attachment A.
2. DEQ Generic RBCs dated May 2018
J: The identification of the analyte is acceptable; the reported value is an estimate.
U: Not detected. Reporting or detection limit shown.
Bolding indicates analyte detection.
Shading indicates analyte detection at a concentration greater than DEQ RBCs.
--: not analyzed
*: Laboratory reported concentration as ng/sample because they do not have an uptake rate. Values shown were calculated by assuming an uptake rate of 1 percent.

TABLE 6 Riverbank Observations Former Astoria Warehousing Site 70 West Marine Drive Astoria, Oregon								
Date	Time	Station Water Level During Observations ¹	Weather	Groundwater Seep Evaluation		Storm Pipe Outfall		Remarks
				Seeps Present?	Sheen?	Flow Present?	Sheen?	
2019 - 2020 Observations								
12/06/19	11:00	2.28	Sunny	No	No	–	–	
02/19/20	12:20	3.16	Sunny	No	No	–	–	
04/20/20	13:30	1.20	Sunny	No	No	–	–	
08/26/20	10:00	0.38	Sunny	No	No	–	–	
12/18/20	9:30	4.81	Rainy	No	No	–	–	
2021 Observations								
01/15/21	11:30	8.89	Foggy/overcast	No	No	–	–	
02/17/21	17:00	3.24	Partly sunny	No	No	–	–	
03/01/21	18:00	1.46	Sunny	No	No	–	–	
03/02/21	16:45	1.20	Sunny	No	No	–	–	
04/01/21	9:30	7.89	Sunny	Yes	Yes	–	–	
04/09/21	8:51	7.20	Sunny	At storm pipe	Yes	Yes	Yes	Changed sorbent pads
04/12/21	8:20	7.40	Sunny	At storm pipe	Yes	Yes	Yes	Changed sorbent pads
04/13/21	8:00	6.64	Sunny	At storm pipe	Yes	Yes	Yes	Increase in sheen
04/14/21	8:03	6.30	Sunny	At storm pipe	Yes	Yes	Yes	Decrease in sheen
04/15/21	8:05	6.08	Sunny	At storm pipe	Yes	Yes	Yes	Changed sorbent pads
04/16/21	8:04	5.40	Sunny	At storm pipe	Yes	Yes	Yes	Changed sorbent pads
04/19/21	9:04	4.60	Overcast	At storm pipe	Yes	Yes	Yes	
04/20/21	9:53	4.29	Sunny	At storm pipe	Yes	Yes	Yes	
04/21/21	10:56	3.75	Cloudy	At storm pipe	Yes	Yes	Yes	
04/22/21	12:30	3.45	Overcast	At storm pipe	Yes	Yes	Yes	
04/23/21	13:37	2.75	Overcast	At storm pipe	Yes	Yes	Yes	Changed sorbent pads
04/24/21	12:30	1.38	Rainy	At storm pipe	Yes	Yes	Yes	High flow from pipe
04/25/21	13:30	1.03	Overcast	At storm pipe	Yes	Yes	Yes	Changed sorbent pads
04/26/21	14:50	0.10	Cloudy	At storm pipe	Yes	Yes	Yes	
04/27/21	11:46	5.25	Cloudy	At storm pipe	Yes	Yes	Yes	
04/28/21	15:15	-0.30	Cloudy	At storm pipe	Yes	Yes	Yes	Changed sorbent pads
04/29/21	9:14	9.64	Sunny	At storm pipe	Yes	Yes	Yes	High flow from pipe
04/30/21	8:20	6.99	Rainy	At storm pipe	Yes	Yes	Yes	Changed sorbent pads
05/03/21	12:56	7.49	Rainy	Yes	Yes	Yes	Yes	Changed sorbent pads
05/04/21	11:54	4.81	Cloudy	–	–	Yes	Yes	
05/04/21	15:00	6.93	Partly sunny	Yes	Yes	No	–	
05/05/21	8:00	4.42		No	–	No	–	
05/06/21	15:15	5.50	Rainy	At storm pipe	Yes	Yes	Yes	
05/07/21	16:57	5.87	Cloudy	At storm pipe	Yes	Yes	Yes	
05/10/21	12:51	1.54	Sunny	At storm pipe	Yes	Yes	Yes	Dye visible. Changed sorbent pads
05/11/21	14:30	-0.06	Sunny	No	–	No	–	
05/12/21	14:25	0.46	Sunny	No	–	No	–	
05/13/21	15:22	-0.18	Sunny	No	–	No	–	
05/14/21	10:00	8.40	Cloudy	No	–	No	–	
05/17/21	13:00	7.06	Cloudy	No	–	No	–	
05/18/21	12:25	7.39	Cloudy	No	–	No	–	
05/19/21	11:20	5.68	Cloudy	No	–	No	–	
05/20/21	11:45	4.46	Cloudy	No	–	No	–	
05/21/21	12:10	2.97	Cloudy	No	–	No	–	
05/24/21	16:10	2.76	Cloudy	Yes	Yes	Yes	Yes	Changed sorbent pads
05/25/21	16:05	0.45	Cloudy	No	–	No	–	
05/26/21	16:30	-0.68	Cloudy	No	–	No	–	
05/27/21	15:50	-0.76	Cloudy	At storm pipe	Yes	Yes	Yes	
05/28/21	15:00	0.99	Sunny	At storm pipe	Yes	Yes	Yes	Changed sorbent pads
05/31/21	10:00	6.36	Cloudy	No	–	No	–	
08/11/21	7:28	4.98	Sunny	No	–	No	–	
08/11/21	10:30	8.63	Sunny	Yes	Yes	–	–	
08/12/21	9:30	7.14	Sunny	Yes	Yes	No	–	
08/17/21	7:29	3.17	Cloudy	No	–	No	–	
08/24/21	7:29	6.31	Cloudy	No	–	No	–	
08/26/21	10:00	7.20	Partly sunny	Yes	Yes	No	–	
08/31/21	7:28	2.46	Cloudy	–	–	Yes	Yes	
09/07/21	7:29	7.79	Sunny	No	–	No	–	
09/14/21	7:30	0.37	Sunny	No	–	No	–	
09/21/21	7:29	7.28	Sunny	No	–	No	–	
09/28/21	7:28	1.40	Rainy	At storm pipe	Yes	Yes	Yes	High flow from pipe
10/05/21	7:28	8.62	Rainy	At storm pipe	Yes	Yes	Yes	High flow from pipe
10/12/21	7:28	-0.82	Cloudy	No	–	No	–	
10/19/21	7:28	7.97	Partly sunny	No	–	No	–	
10/26/21	7:29	2.07	Rainy	At storm pipe	Yes	Yes	Yes	High flow from pipe
11/02/21	7:30	7.68	Cloudy	No	–	No	–	Outlet plugged
11/09/21	7:29	0.43	Rainy	No	–	Yes	No	
11/16/21	7:29	7.80	Partly sunny	At storm pipe	Yes	No	–	
11/23/21	7:30	2.02	Rainy	No	–	Yes	No	High flow from pipe
11/30/21	7:30	5.11	Rainy	No	–	Yes	No	
12/07/21	7:30	1.55	Rainy	No	–	Yes	No	
12/14/21	7:30	7.02	Cloudy	No	–	No	–	
12/21/21	7:30	3.68	Cloudy	Yes	No	Yes	No	
12/28/21	7:31	3.36	Cloudy	No	–	No	–	

TABLE 6 Riverbank Observations Former Astoria Warehousing Site 70 West Marine Drive Astoria, Oregon								
Date	Time	Station Water Level During Observations ¹	Weather	Groundwater Seep Evaluation		Storm Pipe Outfall		Remarks
				Seeps Present?	Sheen?	Flow Present?	Sheen?	
2022 Observations								
01/04/22	7:33	3.60	Cloudy	No	--	No	--	
01/11/22	7:33	8.20	Rainy	No	--	Yes	No	
01/18/22	7:29	3.80	Cloudy	No	--	No	--	
01/25/22	7:29	7.50	Sunny	No	--	No	--	
10/04/22	9:30	-0.07	Sunny	No	--	No	--	
2023 Observations								
01/25/23	10:15	6.50	Cloudy	No	No	--	--	
01/25/23	12:00	8.40	Partly sunny	No	No	--	--	
01/25/23	14:30	5.71	Sunny	No	No	--	--	
01/26/23	10:00	4.76	Cloudy	No	No	--	--	
01/26/23	16:30	3.42	Cloudy	No	No	--	--	
01/27/23	10:00	4.11	Sunny	No	No	--	--	
01/27/23	12:30	8.28	Sunny	No	No	--	--	
Notes: 1. Water levels obtained from NOAA observatoin station 9439040 in Astoria, Oregon, using NAVD88 Datum (feet). Storm pipe outfall observations conducted by For George staff. DEQ's contractor assumed responsibility of maintaining the sorbet boom at the storm pipe outfall in September 2021.								

ATTACHMENT A

ATTACHMENT A

FIELD DOCUMENTATION

GDI Project No: BigBeams-1-01
 Site Name: 70 W Marine Drive
 GDI Personnel: ADD

on 012623 at 1058 am
 Note: Low Tide on 012523 at 1003 am. / Measurements to top of well.
 At time of measurements tide was coming in.

Well ID	Well Dia. (In.)	Water Level Gauging						Groundwater Sampling						Other Notes	
		Gauging Date	Gauging Time	Total Well Depth (feet BTOC)	Depth to Water (Feet BTOC)	Free Product?	NAPL Thickness (Feet)	Sampling Date	Sampling Time	Purge Volume (Gallons)	Sheen	Odor?	Number of Containers		Analyses Required
MW-1	2	012523	1046	19.2	9.85	No	Na	012523	1445	2/	ns	no	6	See COC	Very Slight Sheen at 2 gallons. Photo " 3.5 gal
MW-2	2	"	1105	19.0	12.0	No	Na	012623	1015	3.6/	ns	no	6	See COC	
MW-3	2	"	1045	18.6	7.56	No	Na	012523	1310	1.6/	ns	no	6	See COC	
MW-4	2	"	1057	18.8	10.7	No	Na	012623	1340	2 / 4	ns	so	6	See COC	
MW-5	2	"	1100	19.2	8.6	No	Na	012623	1545	2.5 / 5	ns	no	6	See COC	
MW-6	2	"	1051	25.5	10.65	No	Na	012623	1150	2.6 / 7	ns	no	6	See COC	
MW-7	2	"	1048	25.3	10.86	No	Na	012523	1650	2.6 /	ns	no	6	See COC	Very Slight Sheen Soak Displacement?
MW-8	2	"	1055	25.3	9.95	No	Na	012623	1750	2 / 7.2	SS	so	6	See COC	
OAS-1	3/4	"	1111	19.3	11.73	No	Na								
OAS-2	3/4	"	1112	19.6	11.73	No	Na								
OAS-3	3/4	"	1109	19.4	11.95	No	Na					no			
OAS-4	3/4	"	1107	19.6	12.05	No?	Na					no			Odor Moderate.
PAS-2	3/4	"	1115	18.0	11.7	No	Na								
		"													

Notes

Equipment Used: Solinst Interface Probe

Purging Method



Well Depth (Ft BGS):	19.2
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6.50

Purging Method

Notes:
Complete separate sheet for each sampled well.
Purge rate should be maintained below 200 mL/minute

GDI Project No: BigBeams-1-04 (Task 05 & Task 08)
 Site Name: Former Astoria Warehousing
 GDI Personnel: ADD
 Date: 012623
 WELL ID: MW-2
 Well Depth (ft BGS): 19.0

Approx 4hrs after High Tide.

Time	Purge Volume (Gallons)	Purge Rate (mL/Min)	Depth to Water (ft BTOC)	Drawdown (ft)	Temp. (oC)	D.O. (mg/L)	pH	ORP (mV)	Specific Conductance (uS/cm)	Turbidity (NTU)	Other Notes
0830	-	-	11.8*	-	-	-	-	-	-	-	*12' on 012523
0905	500ml	200	11.95	.15	-	-	-	-	-	-	YS9 Filled + Equilibrated
0910	700ml	"	"	-	14.04	1.79	6.52	-77	0.804	256	
0915	0.75	"	"	-	14.08	1.28	6.54	-85	0.804	208	
0920	1.	"	"	-	14.15	0.99	6.56	-90	0.806	138	
0925	1.3	"	12.0	0.05	14.23	0.96	6.57	-92	0.806	89.3	
0930	1.6	"	"	-	14.47	0.87	6.57	-95	0.801	46.7	
0935	1.8	"	"	-	14.28	0.74	6.58	-97	0.806	47.7	
0940	2.1	"	"	-	14.31	0.69	6.59	-99	0.804	42.0	
0945	2.3	"	"	-	14.43	0.60	6.59	-101	0.802	39.3	1
0950	2.6	"	"	-	14.42	0.60	6.59	-102	0.801	39.6	2
0955	2.9	"	12.05	0.05	14.47	0.79*	6.83*	-103	0.807	40.3	1*
1000	3.2	"	"	-	14.56	0.60	6.52	-99	0.800	38.7	
1005	3.4	"	"	-	14.75	0.53	6.58	-104	0.799	35.4	
1010	3.7	"	"	-	14.58	0.53	6.59	-105	0.802	35.2	Purge Volume achieved
Stabilization Parameters (3 consecutive readings)				≤0.3 feet (not mandatory)	3%	10% or 3 consecutive <0.5 mg/L	±0.1 units	±10 mV	3%	10% or 3 consecutive <5 NTU	Sample at 1015

Equipment Used:

Purging Method

Purge Volume = 3.6 gal

Notes:
 Complete separate sheet for each sampled well.
 Purge rate should be maintained below 200 mL/minute



Low-Flow Groundwater Sampling Data Sheet

GDI Project No: BigBeams-1-04 (Task 05 & Task 08)
 Site Name: Former Astoria Warehousing
 GDI Personnel: ADD
 Date: 012523
 WELL ID: MW-3
 Well Depth (ft BGS): 18.6

Tubing Placed at between 5-10 ft BGS

Time	Purge Volume (Gallons)	Purge Rate (mL/Min)	Depth to Water (ft BTOC)	Drawdown (ft)	Temp. (oC)	D.O. (mg/L)	pH	ORP (mV)	Specific Conductance (µS/cm)	Turbidity (NTU)	Other Notes
1215	—	—	7.55	+-.01	—	—	—	—	—	—	Initial Reading/Setup.
1225	500ml	150	7.59	.004	13.58	2.52	7.04	-77	0.477	1.35	YS9 filled
1235	0.5	"	"	—	13.7	1.74	6.91	-75	0.475	1.67	Drawdown equilibrated
1245	0.75	"	"	—	13.85	1.34	6.81	-73	0.473	2.11	1
1250	1	"	"	—	14.01	1.14	6.87	-77	0.470	251*	1*
1255	1.2	"	"	—	14.01	1.11	6.86	-78	0.469	251	2
1300	1.35	"	"	—	14.07	1.01	6.81	-76	0.468	235	3
1305	1.58	"	"	—	14.09	0.95	6.80	-77	0.467	209	Sample Reading Collected at 1310
Stabilization Parameters (3 consecutive readings)				≤0.3 feet (not mandatory)	3%	10% or 3 consecutive <0.5 mg/L	±0.1 units	±10 mV	3%	10% or 3 consecutive <5 NTU	

Equipment Used:

Purging Method

Notes:
 Complete separate sheet for each sampled well.
 Purge rate should be maintained below 200 mL/minute

GDI Project No: RigBeams-1-04 (Task 05 & Task 08)

Site Name: Former Astoria Warehousing

GDI Personnel: ADD

Date: 012623

WELL ID: MW-4

Well Depth
(Ft BGS): 18.8

Time	Purge Volume (Gallons)	Purge Rate (mL/Min)	Depth to Water (ft BTOC)	Drawdown (ft)	Temp. (oC)	D.O. (mg/L)	pH	ORP (mV)	Specific Conductance (µS/cm)	Turbidity (NTU)	Other Notes
1215	—	—	10.8	—	—	—	—	—	—	—	Well Opened / Initial
1255	—	—	11.3	0.5	—	—	—	—	—	—	HS9 Filled
1300	500 ml	175	11.35	0.05	12.4	1.25	6.25	-7	0.717	280	Slight to Moderate odor
1305	750 ml	11	11	—	12.52	0.78	6.29	-21	0.721	259	
1310	0.5	11	11	—	12.55	0.64	6.28	-27	0.725	338	
1315	0.8	11	11	—	12.6	0.57	6.3	-34	0.728	349	
1320	1	11	11	—	12.66	0.49	6.3	-38	0.731	355	1
1325	1.25	11	11	—	12.73	0.50	6.31	-42	0.727	351	2
1330	1.5	11	11	—	12.75	0.46	6.32	-45	0.722	350	3
1335	1.75	11	11	—	12.77	0.42	6.33	-47	0.720	351	Sample Reading Collected at 1340
Stabilization Parameters (3 consecutive readings)				≤0.3 feet (not mandatory)	3%	10% OF 3 consecutive <0.5 mg/L	±0.1 units	±10 mV	3%	10% OF 3 consecutive <5 NTU	

Equipment Used:	<u>Peristaltic Pump + Hauler</u>
Purging Method	
Purge Volume = approx 4 gallons	

Notes:
Complete separate sheet for each sampled well
Purge rate should be maintained below 200 mL/minute



Low-Flow Groundwater Sampling Data Sheet

GDI Project No. BigBeams-1-04 (Task 05 & Task 08)Site Name: Former Astoria WarehousingGDI Personnel: ADDDate: 012623WELL ID: MW-5Well Depth
(ft BGS): 19.2

Time	Purge Volume (Gallons)	Purge Rate (mL/Min)	Depth to Water (ft BTOC)	Drawdown (ft)	Temp. (oC)	D.O. (mg/L)	pH	ORP (mV)	Specific Conductance (µS/cm) mS	Turbidity (NTU)	Other Notes
1425	—	—	8.6	—	—	—	—	—	—	—	Initial Reading
1500	250 ml	200	8.65	.05	—	—	—	—	—	—	YS9 Filled 1
1505	0.3	"	"	—	13.85	0.92	6.47	-9	0.482	56.9	
1510	0.5	"	"	—	14.09	0.68	6.57	-39	0.484	51.4	
1515	0.8	"	"	—	14.24	0.51	6.62	-55	0.487	44.8	
1520	1	"	"	—	14.26	0.49	6.61	-58	0.485	44.1	
1525	1.3	"	8.75	.1	14.26	0.44	6.62	-62	0.422	46.8	1
1530	1.5	"	"	—	14.28	0.42	6.62	-64	0.482	46.7	2
1535	1.7	"	"	—	14.27	0.43	6.63	-65	0.480	42.0	3
1540	2	"	"	—	14.26	0.41	6.63	-67	0.479	40.1	Sample Reading
											Collected at 1545
Stabilization Parameters (3 consecutive readings)				≤0.3 feet (not mandatory)	3%	10% or 3 consecutive <0.5 mg/L	±0.1 units	±10 mV	3%	10% or 3 consecutive <5 NTU	

Equipment Used:

Purging Method

Purge Volume: Approx 5 gal

Notes:
Complete separate sheet for each sampled well.
Purge rate should be maintained below 200 mL/minute

CDI Project No. BlgBeams-1-04 (Task 05 & Task 08)
 Site Name: Former Astoria Warehousing
 CDI Personnel: ADD
 Date: 012623
 WELL ID: MW-6
 Well Depth (Ft BGS): 25.5

Low Tide at 1058am

+33
"

Time	Purge Volume (Gallons)	Purge Rate (mL/Min)	Depth to Water (ft BTOC)	Drawdown (ft)	Temp. (oC)	D.O. (mg/L)	pH	ORP (mV)	Specific Conductance (µS/cm)	Turbidity (NTU)	Other Notes
1045	-	-	10.45	-	-	-	-	-	-	-	10.65 on 012523
1100	250ml+	250	10.9	0.15	-	-	-	-	-	-	Y89 filled
1110	0.75	"	10.95	0.05	13.15	0.63	6.46	-75	0.858	40.1	
1115	1	"	-	-	13.21	0.57	6.51	-82	0.854	37.5	
1120	1.3	"	-	-	13.22	0.54	6.53	-87	0.854	32.0	
1125	1.5	"	-	-	13.27	0.51	6.55	-90	0.852	34.3	
1130	1.75	"	-	-	13.25	0.46	6.55	-92	0.852	35.5	1
1135	2	"	-	-	13.26	0.46	6.55	-93	0.856	35.2	2
1140	2.3	"	-	-	13.25	0.42	6.55	-94	0.854	36.9	3
1145	2.5	"	-	-	13.24	0.42	6.55	-95	0.854	36.1	Sample Reading Collected at 1150
Stabilization Parameters (3 consecutive readings)				<0.3 feet (not mandatory)	3%	10% or 3 consecutive <0.5 mg/L	±0.1 units	±10 mV	3%	10% or 3 consecutive <5 NTU	

Equipment Used: Peristaltic Pump + Hach
 Purging Method: Purge Volume = Approx 7gal

Notes:
 Complete separate sheet for each sampled well
 Purge rate should be maintained below 200 mL/minute



Low-Flow Groundwater Sampling Data Sheet

GDI Project No. BigBeams-1-04 (Task 05 & Task 08)

Site Name: Former Astoria Warehousing

GDI Personnel: ADD

Date: 012623

WELL ID: MW-7

Well Depth
(Ft BGS): 25.3

High Tide at approx 1550.

Time	Purge Volume (Gallons)	Purge Rate (mL/Min)	Depth to Water (ft BTOC)	Drawdown (ft)	Temp. (°C)	D.O. (mg/L)	pH	ORP (mV)	Specific Conductance (µS/cm)	Turbidity (NTU)	Other Notes
1510	—	—	10.15	+ .61	—	—	—	—	—	—	Initial Reading
1530	—	—	10.4	0.25	—	—	—	—	—	—	YS9 Filled/Equilibrated.
1535	0.25	175	"	—	13.32	0.76	6.32	-56	4.36	125	—
1540	0.46	"	"	—	13.34	0.67	6.33	-59	4.26	142	—
1545	0.69	"	"	—	13.36	0.61	6.35	-62	4.02*	145	1*
1550	0.92	"	10.35	+ 0.05	13.41*	0.59	6.38	-67	3.54*	153*	—
1555	1.1	"	"	—	13.36	0.65	6.40	-69	3.34	149	Tide on the way out.
1600	1.3	"	"	—	13.21	0.89	6.47	-73	2.85	140	—
1605	1.4	"	"	—	13.14	0.78	6.45	-75	2.62	133	—
1610	1.9	225	10.4	0.05	13.2	0.66	6.43	-76	2.38	126	—
1615	2.2	"	"	—	13.22	0.72	6.45	-79	2.17	119	—
1620	2.5	"	"	—	13.18	0.74	6.46	-80	2.07	110	Purge Volume achieved.
											Sample Collected at 1630
Stabilization Parameters (3 consecutive readings)				≤ 0.3 feet (not mandatory)	3%	10% or 3 consecutive < 0.5 mg/L	± 0.1 units	± 10 mV	3%	10% or 3 consecutive < 5 NTU	

Equipment Used:

Peristaltic Pump + Horiba

Purging Method

Purge Volume = 2.5 gall approx. Pump.

Notes:
Complete separate sheet for each sampled well.
Purge rate should be maintained below 200 mL/minute

GDI Project No. BigBeams-1-04 (Task 05 & Task 08)

Site Name: Former Astoria Warehousing

GDI Personnel: ADG

Date: 012623

WELL ID: MW-8

Well Depth:
(ft BGS): 25.3

Time	Purge Volume (Gallons)	Purge Rate (mL/Min)	Depth to Water (ft BTOC)	Drawdown (ft)	Temp (oC)	D.O. (mg/L)	pH	ORP (mV)	Specific Conductance (µS/cm) MS	Turbidity (NTU)	Other Notes
1640	-	-	9.5	-	-	-	-	-	-	-	Initial reading
1710	-	225	10	0.5	-	-	-	-	-	-	YS9 Filled
1715	0.3	"	"	-	12.31	0.63	6.22	-8	0.639	242	
1720	0.5	"	"	-	12.29	0.66	6.24	-19	0.650	227	
1725	0.7	"	"	-	12.27	0.56	6.27	-29	0.662	229	
1730	0.9	"	"	-	12.25	0.52	6.27	-34	0.666	228	
1735	1.1	"	"	-	12.21	0.56	6.32	-39	0.674	231	1
1740	1.3	"	"	-	12.23	0.52	6.32	-40	0.678	229	2
1745	1.5	"	"	-	12.22	0.53	6.32	-41	0.677	231	3
											Sample Collected at 1750
Stabilization Parameters (3 consecutive readings)				<0.3 feet (not mandatory)	3%	10% or 3% oxygen <0.5 mg/L	±0.1 units	±10 mV	3%	10% or 3 consecutive <5 NTU	

Equipment Used:

Peristaltic Pump + HANNA

Purging Method

Purge Volume = 7.2 gal

Notes:

Complete separate sheet for each sampled well.
Purge rate should be maintained below 200 mL/minute.

GEODESIGN INC.

Date: 01/27/23

Weather: Overcast, Intermittent Rain

Barometric Pressure (inHG): 30.28

All Points are interior.

[illegible]

no NOAA verified water levels

[illegible]

Notes:

1 Water levels obtained from NOAA observation station 9439040 in Astoria, Oregon using NAVD88 Datum

INDOOR AIR SAMPLING DATA COLLECTION



Project No: BigBeams-1-04-05 (also see T08)

Site Address: 70 W Marine Drive, Astoria, Oregon

Site: Former Astoria Warehousing

Weather: Clear/Sunny at time of deployment.

Personnel: ADD

Start and End Barometric Pressure (inHg): 30.28 /

Sample ID	Radeillo ID	Start Date	Start Time	Starting Temp (°F)	End Date	End Time	End Temp (°F)	Notes
Indoor-1	PG604	012723	1235	54° → Cold Room	021023	1120	57°	
Indoor-2	PG605	"	1240		021023	1123		
Indoor-3	PG606	"	1245		"	1126		
Indoor-4	PG607	"	1250		"	1130		
Indoor-5	PG608	"	1255		"	1135		
Indoor-6	PG609	"	1300		"	1137		
Indoor-7	PG603	"	1305		"	1140		
Background	PG602	"	1315		"	1145		
Ext Temp				47°		Ext Temp.	48°	

ATTACHMENT B

ATTACHMENT B

CHEMICAL ANALYTICAL PROGRAM

GENERAL

Chain-of-custody procedures were followed during handling and transport of the sub-slab vapor, groundwater, and air samples to the analytical laboratories. The laboratories hold the samples in cold storage pending extraction and/or analysis. The analytical results, analytical methods reference, and laboratory QC records are included in this attachment. The analytical results are also summarized in the tables of this report.

REVIEW OF ANALYTICAL DATA

The analytical laboratories used for this project maintain internal quality assurance programs consisting of a combination of the following:

Blanks: Blanks are laboratory-prepared water samples that are free of contaminants. The blanks are carried through the analysis procedure along with the field samples to document that contaminants were not introduced to the samples during sample handling and analysis.

Surrogate Recoveries: Surrogates are organic compounds that are similar in nature to the analytes of concern but are not normally found in nature. The surrogates are added to QC and field samples prior to analysis. The percent recovery of the surrogate is calculated to demonstrate acceptable method performance.

Duplicates: Duplicates are obtained by splitting a sample into two parts. The two separate parts are carried through the analyses. The analytical results are then compared by calculating the RPD between the samples.

MS/MSD Recoveries: An MS sample is a sample that has been split into a second portion. The MSD is obtained by further splitting the MS sample. A known concentration of the analyte of interest is added to the MS and MSD samples. The analytical results for both samples are then compared for RPD and percent recovery to demonstrate acceptable method performance.

BS/BSD Recoveries: BS and BSD samples are obtained and analyzed in the same procedure as the MS/MSD samples; however, the laboratory blank sample is used to obtain the BS/BSD samples. The percent recovery and RPD of the known concentration of analyte of interest added to the BS/BSD sample is calculated after chemical analyses to demonstrate acceptable method performance.

SUMMARY OF ANALYTICAL DATA REVIEW

NV5 reviewed the attached analytical data reports for data quality exceptions and deviations from acceptable method performance criteria. Based on our review of the analytical reports, the analytical data appear acceptable for their intended use.

NV5 - Wilsonville, OR

Sample Delivery Group: L1580509
Samples Received: 01/31/2023
Project Number: BigBeams-1-04
Description:

Report To: Andre DeJonge
9450 SW Commerce Circle
Ste. 300
Wilsonville, OR 97070

Entire Report Reviewed By:



Brian Ford
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

Pace Analytical National12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

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¹ Cp
² Tc
³ Ss
⁴ Cn
⁵ Sr
⁶ Qc
⁷ Gl
⁸ Al
⁹ Sc

SAMPLE SUMMARY

VP-1 L1580509-01 Air

				Collected by AD	Collected date/time 01/27/23 10:46	Received date/time 01/31/23 09:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (MS) by Method TO-15	WG1997528	1	01/31/23 23:43	01/31/23 23:43	DAH	Mt. Juliet, TN
Volatile Organic Compounds (MS) by Method TO-15	WG1998787	1	02/03/23 02:11	02/03/23 02:11	CEP	Mt. Juliet, TN

VP-2 L1580509-02 Air

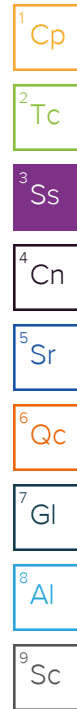
				Collected by AD	Collected date/time 01/27/23 10:59	Received date/time 01/31/23 09:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (MS) by Method TO-15	WG1997528	1	02/01/23 00:29	02/01/23 00:29	DAH	Mt. Juliet, TN

VP-3 L1580509-03 Air

				Collected by AD	Collected date/time 01/27/23 11:10	Received date/time 01/31/23 09:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (MS) by Method TO-15	WG1997528	1	02/01/23 01:16	02/01/23 01:16	DAH	Mt. Juliet, TN

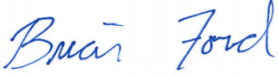
VP-4 L1580509-04 Air

				Collected by AD	Collected date/time 01/27/23 11:21	Received date/time 01/31/23 09:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (MS) by Method TO-15	WG1997528	1	02/01/23 02:02	02/01/23 02:02	DAH	Mt. Juliet, TN



CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



Brian Ford
Project Manager

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Volatile Organic Compounds (MS) by Method TO-15

Analyte	CAS #	Mol. Wt.	RDL1 ppbv	RDL2 ug/m3	Result ppbv	Result ug/m3	Qualifier	Dilution	Batch
Acetone	67-64-1	58.10	1.25	2.97	7.82	18.6		1	WG1997528
Allyl chloride	107-05-1	76.53	0.200	0.626	ND	ND		1	WG1997528
Benzene	71-43-2	78.10	0.200	0.639	ND	ND		1	WG1997528
Benzyl Chloride	100-44-7	127	0.200	1.04	ND	ND		1	WG1997528
Bromodichloromethane	75-27-4	164	0.200	1.34	ND	ND		1	WG1997528
Bromoform	75-25-2	253	0.600	6.21	ND	ND		1	WG1997528
Bromomethane	74-83-9	94.90	0.200	0.776	ND	ND		1	WG1997528
1,3-Butadiene	106-99-0	54.10	2.00	4.43	ND	ND		1	WG1997528
Carbon disulfide	75-15-0	76.10	0.200	0.622	ND	ND		1	WG1997528
Carbon tetrachloride	56-23-5	154	0.200	1.26	ND	ND		1	WG1997528
Chlorobenzene	108-90-7	113	0.200	0.924	ND	ND		1	WG1997528
Chloroethane	75-00-3	64.50	0.200	0.528	ND	ND		1	WG1997528
Chloroform	67-66-3	119	0.200	0.973	ND	ND		1	WG1997528
Chloromethane	74-87-3	50.50	0.200	0.413	ND	ND		1	WG1997528
2-Chlorotoluene	95-49-8	126	0.200	1.03	ND	ND		1	WG1997528
Cyclohexane	110-82-7	84.20	0.200	0.689	ND	ND		1	WG1997528
Dibromochloromethane	124-48-1	208	0.200	1.70	ND	ND		1	WG1997528
1,2-Dibromoethane	106-93-4	188	0.200	1.54	ND	ND		1	WG1997528
1,2-Dichlorobenzene	95-50-1	147	0.200	1.20	ND	ND		1	WG1997528
1,3-Dichlorobenzene	541-73-1	147	0.200	1.20	ND	ND		1	WG1997528
1,4-Dichlorobenzene	106-46-7	147	0.200	1.20	ND	ND		1	WG1997528
1,2-Dichloroethane	107-06-2	99	0.200	0.810	ND	ND		1	WG1997528
1,1-Dichloroethane	75-34-3	98	0.200	0.802	ND	ND		1	WG1997528
1,1-Dichloroethene	75-35-4	96.90	0.200	0.793	ND	ND		1	WG1997528
cis-1,2-Dichloroethene	156-59-2	96.90	0.200	0.793	ND	ND		1	WG1997528
trans-1,2-Dichloroethene	156-60-5	96.90	0.200	0.793	ND	ND		1	WG1997528
1,2-Dichloropropane	78-87-5	113	0.200	0.924	ND	ND		1	WG1997528
cis-1,3-Dichloropropene	10061-01-5	111	0.200	0.908	ND	ND		1	WG1997528
trans-1,3-Dichloropropene	10061-02-6	111	0.200	0.908	ND	ND		1	WG1997528
1,4-Dioxane	123-91-1	88.10	0.200	0.721	ND	ND		1	WG1997528
Ethanol	64-17-5	46.10	1.25	2.36	77.3	146		1	WG1997528
Ethylbenzene	100-41-4	106	0.200	0.867	ND	ND		1	WG1997528
4-Ethyltoluene	622-96-8	120	0.200	0.982	ND	ND		1	WG1997528
Trichlorofluoromethane	75-69-4	137.40	0.200	1.12	0.275	1.55		1	WG1997528
Dichlorodifluoromethane	75-71-8	120.92	0.200	0.989	0.421	2.08		1	WG1997528
1,1,2-Trichlorotrifluoroethane	76-13-1	187.40	0.200	1.53	ND	ND		1	WG1997528
1,2-Dichlorotetrafluoroethane	76-14-2	171	0.200	1.40	ND	ND		1	WG1997528
Heptane	142-82-5	100	0.200	0.818	ND	ND		1	WG1997528
Hexachloro-1,3-butadiene	87-68-3	261	0.630	6.73	ND	ND		1	WG1997528
n-Hexane	110-54-3	86.20	0.630	2.22	ND	ND		1	WG1997528
Isopropylbenzene	98-82-8	120.20	0.200	0.983	ND	ND		1	WG1997528
Methylene Chloride	75-09-2	84.90	0.200	0.694	ND	ND		1	WG1997528
Methyl Butyl Ketone	591-78-6	100	1.25	5.11	ND	ND		1	WG1997528
2-Butanone (MEK)	78-93-3	72.10	1.25	3.69	ND	ND		1	WG1997528
4-Methyl-2-pentanone (MIBK)	108-10-1	100.10	1.25	5.12	ND	ND		1	WG1997528
Methyl methacrylate	80-62-6	100.12	0.200	0.819	ND	ND		1	WG1997528
MTBE	1634-04-4	88.10	0.200	0.721	ND	ND		1	WG1997528
Naphthalene	91-20-3	128	0.630	3.30	ND	ND		1	WG1997528
2-Propanol	67-63-0	60.10	1.25	3.07	3.21	7.89		1	WG1997528
Propene	115-07-1	42.10	1.25	2.15	ND	ND		1	WG1997528
Styrene	100-42-5	104	0.200	0.851	ND	ND		1	WG1997528
1,1,2,2-Tetrachloroethane	79-34-5	168	0.200	1.37	ND	ND		1	WG1997528
Tetrachloroethylene	127-18-4	166	0.200	1.36	ND	ND		1	WG1998787
Tetrahydrofuran	109-99-9	72.10	0.200	0.590	ND	ND		1	WG1997528
Toluene	108-88-3	92.10	0.500	1.88	ND	ND		1	WG1997528
1,2,4-Trichlorobenzene	120-82-1	181	0.630	4.66	ND	ND		1	WG1997528

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Volatile Organic Compounds (MS) by Method TO-15

Analyte	CAS #	Mol. Wt.	RDL1 ppbv	RDL2 ug/m3	Result ppbv	Result ug/m3	Qualifier	Dilution	Batch
1,1,1-Trichloroethane	71-55-6	133	0.200	1.09	ND	ND		1	WG1997528
1,1,2-Trichloroethane	79-00-5	133	0.200	1.09	ND	ND		1	WG1997528
Trichloroethylene	79-01-6	131	0.200	1.07	0.908	4.86		1	WG1997528
1,2,4-Trimethylbenzene	95-63-6	120	0.200	0.982	ND	ND		1	WG1997528
1,3,5-Trimethylbenzene	108-67-8	120	0.200	0.982	ND	ND		1	WG1997528
2,2,4-Trimethylpentane	540-84-1	114.22	0.200	0.934	ND	ND		1	WG1997528
Vinyl chloride	75-01-4	62.50	0.200	0.511	ND	ND		1	WG1997528
Vinyl Bromide	593-60-2	106.95	0.200	0.875	ND	ND		1	WG1997528
Vinyl acetate	108-05-4	86.10	0.200	0.704	ND	ND		1	WG1997528
m&p-Xylene	1330-20-7	106	0.400	1.73	ND	ND		1	WG1997528
o-Xylene	95-47-6	106	0.200	0.867	ND	ND		1	WG1997528
TPH (GC/MS) Low Fraction	8006-61-9	101	200	826	ND	ND		1	WG1997528
(S) 1,4-Bromofluorobenzene	460-00-4	175	60.0-140		95.6				WG1997528
(S) 1,4-Bromofluorobenzene	460-00-4	175	60.0-140		99.8				WG1998787

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

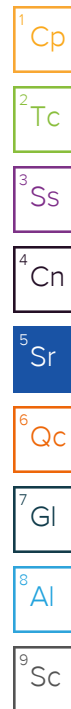
7Gl

8Al

9Sc

Volatile Organic Compounds (MS) by Method TO-15

Analyte	CAS #	Mol. Wt.	RDL1 ppbv	RDL2 ug/m3	Result ppbv	Result ug/m3	Qualifier	Dilution	Batch
Acetone	67-64-1	58.10	1.25	2.97	12.0	28.5		1	WG1997528
Allyl chloride	107-05-1	76.53	0.200	0.626	ND	ND		1	WG1997528
Benzene	71-43-2	78.10	0.200	0.639	ND	ND		1	WG1997528
Benzyl Chloride	100-44-7	127	0.200	1.04	ND	ND		1	WG1997528
Bromodichloromethane	75-27-4	164	0.200	1.34	ND	ND		1	WG1997528
Bromoform	75-25-2	253	0.600	6.21	ND	ND		1	WG1997528
Bromomethane	74-83-9	94.90	0.200	0.776	ND	ND		1	WG1997528
1,3-Butadiene	106-99-0	54.10	2.00	4.43	ND	ND		1	WG1997528
Carbon disulfide	75-15-0	76.10	0.200	0.622	ND	ND		1	WG1997528
Carbon tetrachloride	56-23-5	154	0.200	1.26	ND	ND		1	WG1997528
Chlorobenzene	108-90-7	113	0.200	0.924	ND	ND		1	WG1997528
Chloroethane	75-00-3	64.50	0.200	0.528	ND	ND		1	WG1997528
Chloroform	67-66-3	119	0.200	0.973	ND	ND		1	WG1997528
Chloromethane	74-87-3	50.50	0.200	0.413	ND	ND		1	WG1997528
2-Chlorotoluene	95-49-8	126	0.200	1.03	ND	ND		1	WG1997528
Cyclohexane	110-82-7	84.20	0.200	0.689	ND	ND		1	WG1997528
Dibromochloromethane	124-48-1	208	0.200	1.70	ND	ND		1	WG1997528
1,2-Dibromoethane	106-93-4	188	0.200	1.54	ND	ND		1	WG1997528
1,2-Dichlorobenzene	95-50-1	147	0.200	1.20	ND	ND		1	WG1997528
1,3-Dichlorobenzene	541-73-1	147	0.200	1.20	ND	ND		1	WG1997528
1,4-Dichlorobenzene	106-46-7	147	0.200	1.20	ND	ND		1	WG1997528
1,2-Dichloroethane	107-06-2	99	0.200	0.810	ND	ND		1	WG1997528
1,1-Dichloroethane	75-34-3	98	0.200	0.802	ND	ND		1	WG1997528
1,1-Dichloroethene	75-35-4	96.90	0.200	0.793	ND	ND		1	WG1997528
cis-1,2-Dichloroethene	156-59-2	96.90	0.200	0.793	ND	ND		1	WG1997528
trans-1,2-Dichloroethene	156-60-5	96.90	0.200	0.793	ND	ND		1	WG1997528
1,2-Dichloropropane	78-87-5	113	0.200	0.924	ND	ND		1	WG1997528
cis-1,3-Dichloropropene	10061-01-5	111	0.200	0.908	ND	ND		1	WG1997528
trans-1,3-Dichloropropene	10061-02-6	111	0.200	0.908	ND	ND		1	WG1997528
1,4-Dioxane	123-91-1	88.10	0.200	0.721	ND	ND		1	WG1997528
Ethanol	64-17-5	46.10	1.25	2.36	80.4	152		1	WG1997528
Ethylbenzene	100-41-4	106	0.200	0.867	ND	ND		1	WG1997528
4-Ethyltoluene	622-96-8	120	0.200	0.982	ND	ND		1	WG1997528
Trichlorofluoromethane	75-69-4	137.40	0.200	1.12	0.259	1.46		1	WG1997528
Dichlorodifluoromethane	75-71-8	120.92	0.200	0.989	0.381	1.88		1	WG1997528
1,1,2-Trichlorotrifluoroethane	76-13-1	187.40	0.200	1.53	ND	ND		1	WG1997528
1,2-Dichlorotetrafluoroethane	76-14-2	171	0.200	1.40	ND	ND		1	WG1997528
Heptane	142-82-5	100	0.200	0.818	ND	ND		1	WG1997528
Hexachloro-1,3-butadiene	87-68-3	261	0.630	6.73	ND	ND		1	WG1997528
n-Hexane	110-54-3	86.20	0.630	2.22	ND	ND		1	WG1997528
Isopropylbenzene	98-82-8	120.20	0.200	0.983	ND	ND		1	WG1997528
Methylene Chloride	75-09-2	84.90	0.200	0.694	ND	ND		1	WG1997528
Methyl Butyl Ketone	591-78-6	100	1.25	5.11	ND	ND		1	WG1997528
2-Butanone (MEK)	78-93-3	72.10	1.25	3.69	ND	ND		1	WG1997528
4-Methyl-2-pentanone (MIBK)	108-10-1	100.10	1.25	5.12	ND	ND		1	WG1997528
Methyl methacrylate	80-62-6	100.12	0.200	0.819	ND	ND		1	WG1997528
MTBE	1634-04-4	88.10	0.200	0.721	ND	ND		1	WG1997528
Naphthalene	91-20-3	128	0.630	3.30	ND	ND		1	WG1997528
2-Propanol	67-63-0	60.10	1.25	3.07	3.78	9.29		1	WG1997528
Propene	115-07-1	42.10	1.25	2.15	ND	ND		1	WG1997528
Styrene	100-42-5	104	0.200	0.851	ND	ND		1	WG1997528
1,1,2,2-Tetrachloroethane	79-34-5	168	0.200	1.37	ND	ND		1	WG1997528
Tetrachloroethylene	127-18-4	166	0.200	1.36	0.345	2.34		1	WG1997528
Tetrahydrofuran	109-99-9	72.10	0.200	0.590	ND	ND		1	WG1997528
Toluene	108-88-3	92.10	0.500	1.88	ND	ND		1	WG1997528
1,2,4-Trichlorobenzene	120-82-1	181	0.630	4.66	ND	ND		1	WG1997528



Volatile Organic Compounds (MS) by Method TO-15

Analyte	CAS #	Mol. Wt.	RDL1 ppbv	RDL2 ug/m3	Result ppbv	Result ug/m3	Qualifier	Dilution	Batch
1,1,1-Trichloroethane	71-55-6	133	0.200	1.09	ND	ND		1	WG1997528
1,1,2-Trichloroethane	79-00-5	133	0.200	1.09	ND	ND		1	WG1997528
Trichloroethylene	79-01-6	131	0.200	1.07	0.871	4.67		1	WG1997528
1,2,4-Trimethylbenzene	95-63-6	120	0.200	0.982	ND	ND		1	WG1997528
1,3,5-Trimethylbenzene	108-67-8	120	0.200	0.982	ND	ND		1	WG1997528
2,2,4-Trimethylpentane	540-84-1	114.22	0.200	0.934	ND	ND		1	WG1997528
Vinyl chloride	75-01-4	62.50	0.200	0.511	ND	ND		1	WG1997528
Vinyl Bromide	593-60-2	106.95	0.200	0.875	ND	ND		1	WG1997528
Vinyl acetate	108-05-4	86.10	0.200	0.704	ND	ND		1	WG1997528
m&p-Xylene	1330-20-7	106	0.400	1.73	ND	ND		1	WG1997528
o-Xylene	95-47-6	106	0.200	0.867	ND	ND		1	WG1997528
TPH (GC/MS) Low Fraction	8006-61-9	101	200	826	ND	ND		1	WG1997528
(S) 1,4-Bromofluorobenzene	460-00-4	175	60.0-140		92.3				WG1997528

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Volatile Organic Compounds (MS) by Method TO-15

Analyte	CAS #	Mol. Wt.	RDL1 ppbv	RDL2 ug/m3	Result ppbv	Result ug/m3	Qualifier	Dilution	Batch
Acetone	67-64-1	58.10	1.25	2.97	15.2	36.1		1	WG1997528
Allyl chloride	107-05-1	76.53	0.200	0.626	ND	ND		1	WG1997528
Benzene	71-43-2	78.10	0.200	0.639	0.238	0.760		1	WG1997528
Benzyl Chloride	100-44-7	127	0.200	1.04	ND	ND		1	WG1997528
Bromodichloromethane	75-27-4	164	0.200	1.34	ND	ND		1	WG1997528
Bromoform	75-25-2	253	0.600	6.21	ND	ND		1	WG1997528
Bromomethane	74-83-9	94.90	0.200	0.776	ND	ND		1	WG1997528
1,3-Butadiene	106-99-0	54.10	2.00	4.43	ND	ND		1	WG1997528
Carbon disulfide	75-15-0	76.10	0.200	0.622	ND	ND		1	WG1997528
Carbon tetrachloride	56-23-5	154	0.200	1.26	ND	ND		1	WG1997528
Chlorobenzene	108-90-7	113	0.200	0.924	ND	ND		1	WG1997528
Chloroethane	75-00-3	64.50	0.200	0.528	ND	ND		1	WG1997528
Chloroform	67-66-3	119	0.200	0.973	ND	ND		1	WG1997528
Chloromethane	74-87-3	50.50	0.200	0.413	ND	ND		1	WG1997528
2-Chlorotoluene	95-49-8	126	0.200	1.03	ND	ND		1	WG1997528
Cyclohexane	110-82-7	84.20	0.200	0.689	1.65	5.68		1	WG1997528
Dibromochloromethane	124-48-1	208	0.200	1.70	ND	ND		1	WG1997528
1,2-Dibromoethane	106-93-4	188	0.200	1.54	ND	ND		1	WG1997528
1,2-Dichlorobenzene	95-50-1	147	0.200	1.20	ND	ND		1	WG1997528
1,3-Dichlorobenzene	541-73-1	147	0.200	1.20	ND	ND		1	WG1997528
1,4-Dichlorobenzene	106-46-7	147	0.200	1.20	ND	ND		1	WG1997528
1,2-Dichloroethane	107-06-2	99	0.200	0.810	ND	ND		1	WG1997528
1,1-Dichloroethane	75-34-3	98	0.200	0.802	ND	ND		1	WG1997528
1,1-Dichloroethene	75-35-4	96.90	0.200	0.793	ND	ND		1	WG1997528
cis-1,2-Dichloroethene	156-59-2	96.90	0.200	0.793	ND	ND		1	WG1997528
trans-1,2-Dichloroethene	156-60-5	96.90	0.200	0.793	ND	ND		1	WG1997528
1,2-Dichloropropane	78-87-5	113	0.200	0.924	ND	ND		1	WG1997528
cis-1,3-Dichloropropene	10061-01-5	111	0.200	0.908	ND	ND		1	WG1997528
trans-1,3-Dichloropropene	10061-02-6	111	0.200	0.908	ND	ND		1	WG1997528
1,4-Dioxane	123-91-1	88.10	0.200	0.721	ND	ND		1	WG1997528
Ethanol	64-17-5	46.10	1.25	2.36	48.3	91.1		1	WG1997528
Ethylbenzene	100-41-4	106	0.200	0.867	ND	ND		1	WG1997528
4-Ethyltoluene	622-96-8	120	0.200	0.982	ND	ND		1	WG1997528
Trichlorofluoromethane	75-69-4	137.40	0.200	1.12	ND	ND		1	WG1997528
Dichlorodifluoromethane	75-71-8	120.92	0.200	0.989	0.351	1.74		1	WG1997528
1,1,2-Trichlorotrifluoroethane	76-13-1	187.40	0.200	1.53	ND	ND		1	WG1997528
1,2-Dichlorotetrafluoroethane	76-14-2	171	0.200	1.40	ND	ND		1	WG1997528
Heptane	142-82-5	100	0.200	0.818	ND	ND		1	WG1997528
Hexachloro-1,3-butadiene	87-68-3	261	0.630	6.73	ND	ND		1	WG1997528
n-Hexane	110-54-3	86.20	0.630	2.22	ND	ND		1	WG1997528
Isopropylbenzene	98-82-8	120.20	0.200	0.983	ND	ND		1	WG1997528
Methylene Chloride	75-09-2	84.90	0.200	0.694	ND	ND		1	WG1997528
Methyl Butyl Ketone	591-78-6	100	1.25	5.11	ND	ND		1	WG1997528
2-Butanone (MEK)	78-93-3	72.10	1.25	3.69	ND	ND		1	WG1997528
4-Methyl-2-pentanone (MIBK)	108-10-1	100.10	1.25	5.12	ND	ND		1	WG1997528
Methyl methacrylate	80-62-6	100.12	0.200	0.819	ND	ND		1	WG1997528
MTBE	1634-04-4	88.10	0.200	0.721	0.509	1.83		1	WG1997528
Naphthalene	91-20-3	128	0.630	3.30	ND	ND		1	WG1997528
2-Propanol	67-63-0	60.10	1.25	3.07	28.4	69.8		1	WG1997528
Propene	115-07-1	42.10	1.25	2.15	5.84	10.1		1	WG1997528
Styrene	100-42-5	104	0.200	0.851	ND	ND		1	WG1997528
1,1,2,2-Tetrachloroethane	79-34-5	168	0.200	1.37	ND	ND		1	WG1997528
Tetrachloroethylene	127-18-4	166	0.200	1.36	ND	ND		1	WG1997528
Tetrahydrofuran	109-99-9	72.10	0.200	0.590	ND	ND		1	WG1997528
Toluene	108-88-3	92.10	0.500	1.88	ND	ND		1	WG1997528
1,2,4-Trichlorobenzene	120-82-1	181	0.630	4.66	ND	ND		1	WG1997528

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Volatile Organic Compounds (MS) by Method TO-15

Analyte	CAS #	Mol. Wt.	RDL1 ppbv	RDL2 ug/m3	Result ppbv	Result ug/m3	Qualifier	Dilution	Batch
1,1,1-Trichloroethane	71-55-6	133	0.200	1.09	ND	ND		1	WG1997528
1,1,2-Trichloroethane	79-00-5	133	0.200	1.09	ND	ND		1	WG1997528
Trichloroethylene	79-01-6	131	0.200	1.07	ND	ND		1	WG1997528
1,2,4-Trimethylbenzene	95-63-6	120	0.200	0.982	ND	ND		1	WG1997528
1,3,5-Trimethylbenzene	108-67-8	120	0.200	0.982	ND	ND		1	WG1997528
2,2,4-Trimethylpentane	540-84-1	114.22	0.200	0.934	50.6	236		1	WG1997528
Vinyl chloride	75-01-4	62.50	0.200	0.511	ND	ND		1	WG1997528
Vinyl Bromide	593-60-2	106.95	0.200	0.875	ND	ND		1	WG1997528
Vinyl acetate	108-05-4	86.10	0.200	0.704	ND	ND		1	WG1997528
m&p-Xylene	1330-20-7	106	0.400	1.73	ND	ND		1	WG1997528
o-Xylene	95-47-6	106	0.200	0.867	ND	ND		1	WG1997528
TPH (GC/MS) Low Fraction	8006-61-9	101	200	826	388	1600		1	WG1997528
(S) 1,4-Bromofluorobenzene	460-00-4	175	60.0-140		96.6				WG1997528

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Volatile Organic Compounds (MS) by Method TO-15

Analyte	CAS #	Mol. Wt.	RDL1 ppbv	RDL2 ug/m3	Result ppbv	Result ug/m3	Qualifier	Dilution	Batch
Acetone	67-64-1	58.10	1.25	2.97	11.7	27.8		1	WG1997528
Allyl chloride	107-05-1	76.53	0.200	0.626	ND	ND		1	WG1997528
Benzene	71-43-2	78.10	0.200	0.639	ND	ND		1	WG1997528
Benzyl Chloride	100-44-7	127	0.200	1.04	ND	ND		1	WG1997528
Bromodichloromethane	75-27-4	164	0.200	1.34	ND	ND		1	WG1997528
Bromoform	75-25-2	253	0.600	6.21	ND	ND		1	WG1997528
Bromomethane	74-83-9	94.90	0.200	0.776	ND	ND		1	WG1997528
1,3-Butadiene	106-99-0	54.10	2.00	4.43	ND	ND		1	WG1997528
Carbon disulfide	75-15-0	76.10	0.200	0.622	ND	ND		1	WG1997528
Carbon tetrachloride	56-23-5	154	0.200	1.26	ND	ND		1	WG1997528
Chlorobenzene	108-90-7	113	0.200	0.924	ND	ND		1	WG1997528
Chloroethane	75-00-3	64.50	0.200	0.528	ND	ND		1	WG1997528
Chloroform	67-66-3	119	0.200	0.973	ND	ND		1	WG1997528
Chloromethane	74-87-3	50.50	0.200	0.413	ND	ND		1	WG1997528
2-Chlorotoluene	95-49-8	126	0.200	1.03	ND	ND		1	WG1997528
Cyclohexane	110-82-7	84.20	0.200	0.689	ND	ND		1	WG1997528
Dibromochloromethane	124-48-1	208	0.200	1.70	ND	ND		1	WG1997528
1,2-Dibromoethane	106-93-4	188	0.200	1.54	ND	ND		1	WG1997528
1,2-Dichlorobenzene	95-50-1	147	0.200	1.20	ND	ND		1	WG1997528
1,3-Dichlorobenzene	541-73-1	147	0.200	1.20	ND	ND		1	WG1997528
1,4-Dichlorobenzene	106-46-7	147	0.200	1.20	ND	ND		1	WG1997528
1,2-Dichloroethane	107-06-2	99	0.200	0.810	ND	ND		1	WG1997528
1,1-Dichloroethane	75-34-3	98	0.200	0.802	ND	ND		1	WG1997528
1,1-Dichloroethene	75-35-4	96.90	0.200	0.793	ND	ND		1	WG1997528
cis-1,2-Dichloroethene	156-59-2	96.90	0.200	0.793	ND	ND		1	WG1997528
trans-1,2-Dichloroethene	156-60-5	96.90	0.200	0.793	ND	ND		1	WG1997528
1,2-Dichloropropane	78-87-5	113	0.200	0.924	ND	ND		1	WG1997528
cis-1,3-Dichloropropene	10061-01-5	111	0.200	0.908	ND	ND		1	WG1997528
trans-1,3-Dichloropropene	10061-02-6	111	0.200	0.908	ND	ND		1	WG1997528
1,4-Dioxane	123-91-1	88.10	0.200	0.721	ND	ND		1	WG1997528
Ethanol	64-17-5	46.10	1.25	2.36	115	217	E	1	WG1997528
Ethylbenzene	100-41-4	106	0.200	0.867	ND	ND		1	WG1997528
4-Ethyltoluene	622-96-8	120	0.200	0.982	ND	ND		1	WG1997528
Trichlorofluoromethane	75-69-4	137.40	0.200	1.12	ND	ND		1	WG1997528
Dichlorodifluoromethane	75-71-8	120.92	0.200	0.989	0.466	2.30		1	WG1997528
1,1,2-Trichlorotrifluoroethane	76-13-1	187.40	0.200	1.53	ND	ND		1	WG1997528
1,2-Dichlorotetrafluoroethane	76-14-2	171	0.200	1.40	ND	ND		1	WG1997528
Heptane	142-82-5	100	0.200	0.818	ND	ND		1	WG1997528
Hexachloro-1,3-butadiene	87-68-3	261	0.630	6.73	ND	ND		1	WG1997528
n-Hexane	110-54-3	86.20	0.630	2.22	ND	ND		1	WG1997528
Isopropylbenzene	98-82-8	120.20	0.200	0.983	ND	ND		1	WG1997528
Methylene Chloride	75-09-2	84.90	0.200	0.694	ND	ND		1	WG1997528
Methyl Butyl Ketone	591-78-6	100	1.25	5.11	ND	ND		1	WG1997528
2-Butanone (MEK)	78-93-3	72.10	1.25	3.69	ND	ND		1	WG1997528
4-Methyl-2-pentanone (MIBK)	108-10-1	100.10	1.25	5.12	ND	ND		1	WG1997528
Methyl methacrylate	80-62-6	100.12	0.200	0.819	ND	ND		1	WG1997528
MTBE	1634-04-4	88.10	0.200	0.721	0.551	1.99		1	WG1997528
Naphthalene	91-20-3	128	0.630	3.30	ND	ND		1	WG1997528
2-Propanol	67-63-0	60.10	1.25	3.07	3.31	8.14		1	WG1997528
Propene	115-07-1	42.10	1.25	2.15	ND	ND		1	WG1997528
Styrene	100-42-5	104	0.200	0.851	ND	ND		1	WG1997528
1,1,2,2-Tetrachloroethane	79-34-5	168	0.200	1.37	ND	ND		1	WG1997528
Tetrachloroethylene	127-18-4	166	0.200	1.36	0.945	6.42		1	WG1997528
Tetrahydrofuran	109-99-9	72.10	0.200	0.590	ND	ND		1	WG1997528
Toluene	108-88-3	92.10	0.500	1.88	ND	ND		1	WG1997528
1,2,4-Trichlorobenzene	120-82-1	181	0.630	4.66	ND	ND		1	WG1997528

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Volatile Organic Compounds (MS) by Method TO-15

Analyte	CAS #	Mol. Wt.	RDL1 ppbv	RDL2 ug/m3	Result ppbv	Result ug/m3	Qualifier	Dilution	Batch
1,1,1-Trichloroethane	71-55-6	133	0.200	1.09	ND	ND		1	WG1997528
1,1,2-Trichloroethane	79-00-5	133	0.200	1.09	ND	ND		1	WG1997528
Trichloroethylene	79-01-6	131	0.200	1.07	ND	ND		1	WG1997528
1,2,4-Trimethylbenzene	95-63-6	120	0.200	0.982	ND	ND		1	WG1997528
1,3,5-Trimethylbenzene	108-67-8	120	0.200	0.982	ND	ND		1	WG1997528
2,2,4-Trimethylpentane	540-84-1	114.22	0.200	0.934	0.807	3.77		1	WG1997528
Vinyl chloride	75-01-4	62.50	0.200	0.511	ND	ND		1	WG1997528
Vinyl Bromide	593-60-2	106.95	0.200	0.875	ND	ND		1	WG1997528
Vinyl acetate	108-05-4	86.10	0.200	0.704	ND	ND		1	WG1997528
m&p-Xylene	1330-20-7	106	0.400	1.73	ND	ND		1	WG1997528
o-Xylene	95-47-6	106	0.200	0.867	ND	ND		1	WG1997528
TPH (GC/MS) Low Fraction	8006-61-9	101	200	826	ND	ND		1	WG1997528
(S) 1,4-Bromofluorobenzene	460-00-4	175	60.0-140		95.4				WG1997528

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3886452-2 01/31/23 10:30

Analyte	MB Result ppbv	MB Qualifier	MB MDL ppbv	MB RDL ppbv
Acetone	U		0.584	1.25
Allyl Chloride	U		0.114	0.200
Benzene	U		0.0715	0.200
Benzyl Chloride	U		0.0598	0.200
Bromodichloromethane	U		0.0702	0.200
Bromoform	U		0.0732	0.600
Bromomethane	U		0.0982	0.200
1,3-Butadiene	U		0.104	2.00
Carbon disulfide	U		0.102	0.200
Carbon tetrachloride	U		0.0732	0.200
Chlorobenzene	U		0.0832	0.200
Chloroethane	U		0.0996	0.200
Chloroform	U		0.0717	0.200
Chloromethane	U		0.103	0.200
2-Chlorotoluene	U		0.0828	0.200
Cyclohexane	U		0.0753	0.200
Dibromochloromethane	U		0.0727	0.200
1,2-Dibromoethane	U		0.0721	0.200
1,2-Dichlorobenzene	U		0.128	0.200
1,3-Dichlorobenzene	U		0.182	0.200
1,4-Dichlorobenzene	U		0.0557	0.200
1,2-Dichloroethane	U		0.0700	0.200
1,1-Dichloroethane	U		0.0723	0.200
1,1-Dichloroethene	U		0.0762	0.200
cis-1,2-Dichloroethene	U		0.0784	0.200
trans-1,2-Dichloroethene	U		0.0673	0.200
1,2-Dichloropropane	U		0.0760	0.200
cis-1,3-Dichloropropene	U		0.0689	0.200
trans-1,3-Dichloropropene	U		0.0728	0.200
1,4-Dioxane	U		0.0833	0.200
Ethanol	U		0.265	1.25
Ethylbenzene	U		0.0835	0.200
4-Ethyltoluene	U		0.0783	0.200
Trichlorofluoromethane	U		0.0819	0.200
Dichlorodifluoromethane	U		0.137	0.200
1,1,2-Trichlorotrifluoroethane	U		0.0793	0.200
1,2-Dichlorotetrafluoroethane	U		0.0890	0.200
Heptane	U		0.104	0.200
Hexachloro-1,3-butadiene	U		0.105	0.630
n-Hexane	U		0.206	0.630

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3886452-2 01/31/23 10:30

Analyte	MB Result ppbv	MB Qualifier	MB MDL ppbv	MB RDL ppbv
Isopropylbenzene	U		0.0777	0.200
Methylene Chloride	U		0.0979	0.200
Methyl Butyl Ketone	U		0.133	1.25
2-Butanone (MEK)	U		0.0814	1.25
4-Methyl-2-pentanone (MIBK)	U		0.0765	1.25
Methyl Methacrylate	U		0.0876	0.200
MTBE	U		0.0647	0.200
Naphthalene	U		0.350	0.630
2-Propanol	U		0.264	1.25
Propene	0.165	U	0.0932	1.25
Styrene	U		0.0788	0.200
1,1,2,2-Tetrachloroethane	U		0.0743	0.200
Tetrachloroethylene	U		0.0814	0.200
Tetrahydrofuran	U		0.0734	0.200
Toluene	U		0.0870	0.500
1,2,4-Trichlorobenzene	U		0.148	0.630
1,1,1-Trichloroethane	U		0.0736	0.200
1,1,2-Trichloroethane	U		0.0775	0.200
Trichloroethylene	U		0.0680	0.200
1,2,4-Trimethylbenzene	U		0.0764	0.200
1,3,5-Trimethylbenzene	U		0.0779	0.200
2,2,4-Trimethylpentane	U		0.133	0.200
Vinyl chloride	U		0.0949	0.200
Vinyl Bromide	U		0.0852	0.200
Vinyl acetate	U		0.116	0.200
m&p-Xylene	U		0.135	0.400
o-Xylene	U		0.0828	0.200
TPH (GC/MS) Low Fraction	U		39.7	200
(S) 1,4-Bromofluorobenzene	93.2			60.0-140

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3886452-1 01/31/23 09:43 • (LCSD) R3886452-3 01/31/23 11:18

Analyte	Spike Amount ppbv	LCS Result ppbv	LCSD Result ppbv	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Acetone	3.75	4.40	4.50	117	120	70.0-130			2.25	25
Allyl Chloride	3.75	4.73	4.07	126	109	70.0-130			15.0	25
Benzene	3.75	4.38	4.37	117	117	70.0-130			0.229	25
Benzyl Chloride	3.75	4.22	4.20	113	112	70.0-152			0.475	25

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3886452-1 01/31/23 09:43 • (LCSD) R3886452-3 01/31/23 11:18

Analyte	Spike Amount ppbv	LCS Result ppbv	LCSD Result ppbv	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Bromodichloromethane	3.75	4.52	4.55	121	121	70.0-130			0.662	25
Bromoform	3.75	4.49	4.55	120	121	70.0-130			1.33	25
Bromomethane	3.75	4.59	4.60	122	123	70.0-130			0.218	25
1,3-Butadiene	3.75	4.39	4.58	117	122	70.0-130			4.24	25
Carbon disulfide	3.75	4.38	3.97	117	106	70.0-130			9.82	25
Carbon tetrachloride	3.75	4.48	4.50	119	120	70.0-130			0.445	25
Chlorobenzene	3.75	4.54	4.52	121	121	70.0-130			0.442	25
Chloroethane	3.75	4.51	4.56	120	122	70.0-130			1.10	25
Chloroform	3.75	4.43	4.57	118	122	70.0-130			3.11	25
Chloromethane	3.75	4.42	4.41	118	118	70.0-130			0.227	25
2-Chlorotoluene	3.75	4.36	4.37	116	117	70.0-130			0.229	25
Cyclohexane	3.75	4.43	4.59	118	122	70.0-130			3.55	25
Dibromochloromethane	3.75	4.50	4.57	120	122	70.0-130			1.54	25
1,2-Dibromoethane	3.75	4.52	4.55	121	121	70.0-130			0.662	25
1,2-Dichlorobenzene	3.75	4.47	4.42	119	118	70.0-130			1.12	25
1,3-Dichlorobenzene	3.75	4.48	4.38	119	117	70.0-130			2.26	25
1,4-Dichlorobenzene	3.75	4.40	4.42	117	118	70.0-130			0.454	25
1,2-Dichloroethane	3.75	4.39	4.42	117	118	70.0-130			0.681	25
1,1-Dichloroethane	3.75	4.44	4.48	118	119	70.0-130			0.897	25
1,1-Dichloroethene	3.75	4.37	4.52	117	121	70.0-130			3.37	25
cis-1,2-Dichloroethene	3.75	4.44	4.48	118	119	70.0-130			0.897	25
trans-1,2-Dichloroethene	3.75	4.42	4.43	118	118	70.0-130			0.226	25
1,2-Dichloropropane	3.75	4.54	4.55	121	121	70.0-130			0.220	25
cis-1,3-Dichloropropene	3.75	4.39	4.43	117	118	70.0-130			0.907	25
trans-1,3-Dichloropropene	3.75	4.42	4.47	118	119	70.0-130			1.12	25
1,4-Dioxane	3.75	4.37	4.15	117	111	70.0-140			5.16	25
Ethanol	3.75	3.95	4.02	105	107	55.0-148			1.76	25
Ethylbenzene	3.75	4.49	4.47	120	119	70.0-130			0.446	25
4-Ethyltoluene	3.75	4.38	4.39	117	117	70.0-130			0.228	25
Trichlorofluoromethane	3.75	4.45	4.60	119	123	70.0-130			3.31	25
Dichlorodifluoromethane	3.75	4.19	4.28	112	114	64.0-139			2.13	25
1,1,2-Trichlorotrifluoroethane	3.75	4.46	4.43	119	118	70.0-130			0.675	25
1,2-Dichlorotetrafluoroethane	3.75	4.47	4.63	119	123	70.0-130			3.52	25
Heptane	3.75	4.41	4.53	118	121	70.0-130			2.68	25
Hexachloro-1,3-butadiene	3.75	4.46	4.41	119	118	70.0-151			1.13	25
n-Hexane	3.75	4.38	4.43	117	118	70.0-130			1.14	25
Isopropylbenzene	3.75	4.55	4.56	121	122	70.0-130			0.220	25
Methylene Chloride	3.75	4.39	4.49	117	120	70.0-130			2.25	25
Methyl Butyl Ketone	3.75	4.18	4.00	111	107	70.0-149			4.40	25
Methyl Ethyl Ketone	3.75	4.35	4.42	116	118	70.0-130			1.60	25

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3886452-1 01/31/23 09:43 • (LCSD) R3886452-3 01/31/23 11:18

Analyte	Spike Amount ppbv	LCS Result ppbv	LCSD Result ppbv	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
4-Methyl-2-pentanone (MIBK)	3.75	4.53	4.45	121	119	70.0-139			1.78	25
Methyl Methacrylate	3.75	4.40	4.19	117	112	70.0-130			4.89	25
MTBE	3.75	4.42	4.37	118	117	70.0-130			1.14	25
Naphthalene	3.75	4.23	4.17	113	111	70.0-159			1.43	25
2-Propanol	3.75	4.27	4.50	114	120	70.0-139			5.25	25
Propene	3.75	4.16	4.18	111	111	64.0-144			0.480	25
Styrene	3.75	4.41	4.50	118	120	70.0-130			2.02	25
1,1,2,2-Tetrachloroethane	3.75	4.46	4.47	119	119	70.0-130			0.224	25
Tetrachloroethylene	3.75	4.61	4.63	123	123	70.0-130			0.433	25
Tetrahydrofuran	3.75	4.44	4.55	118	121	70.0-137			2.45	25
Toluene	3.75	4.01	4.05	107	108	70.0-130			0.993	25
1,2,4-Trichlorobenzene	3.75	4.34	4.44	116	118	70.0-160			2.28	25
1,1,1-Trichloroethane	3.75	4.49	4.52	120	121	70.0-130			0.666	25
1,1,2-Trichloroethane	3.75	4.41	4.45	118	119	70.0-130			0.903	25
Trichloroethylene	3.75	4.52	4.44	121	118	70.0-130			1.79	25
1,2,4-Trimethylbenzene	3.75	4.47	4.34	119	116	70.0-130			2.95	25
1,3,5-Trimethylbenzene	3.75	4.45	4.35	119	116	70.0-130			2.27	25
2,2,4-Trimethylpentane	3.75	4.45	4.57	119	122	70.0-130			2.66	25
Vinyl chloride	3.75	4.47	4.70	119	125	70.0-130			5.02	25
Vinyl Bromide	3.75	4.49	4.63	120	123	70.0-130			3.07	25
Vinyl acetate	3.75	4.50	4.53	120	121	70.0-130			0.664	25
m&p-Xylene	7.50	8.65	8.73	115	116	70.0-130			0.921	25
o-Xylene	3.75	4.42	4.48	118	119	70.0-130			1.35	25
TPH (GC/MS) Low Fraction	203	229	229	113	113	70.0-130			0.000	25
(S) 1,4-Bromofluorobenzene				97.5	98.3	60.0-140				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3887253-3 02/02/23 10:21

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	ppbv		ppbv	ppbv
Tetrachloroethylene	U		0.0814	0.200
(S) 1,4-Bromofluorobenzene	98.1			60.0-140

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3887253-1 02/02/23 09:01 • (LCSD) R3887253-2 02/02/23 09:42

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	ppbv	ppbv	ppbv	%	%	%			%	%
Tetrachloroethylene	3.75	4.17	4.17	111	111	70.0-130			0.000	25
(S) 1,4-Bromofluorobenzene				99.0	98.9	60.0-140				

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

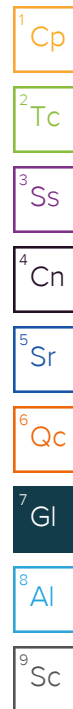
The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J	The identification of the analyte is acceptable; the reported value is an estimate.



ACCREDITATIONS & LOCATIONS

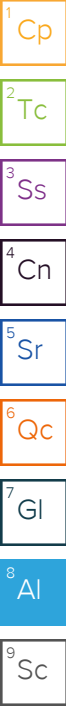
Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey--NELAP	TN002
California	2932	New Mexico ¹	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio--VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1 6}	KY90010	South Carolina	84004002
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1 4}	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas ⁵	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA -- ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA -- ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA--Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.



[illegible]



ANALYTICAL REPORT

February 07, 2023

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

NV5 - Wilsonville, OR

Sample Delivery Group: L1580521
Samples Received: 01/30/2023
Project Number: BigBeams-1-04
Description:

Report To: Andre DeJonge
9450 SW Commerce Circle
Ste. 300
Wilsonville, OR 97070

Entire Report Reviewed By:

Brian Ford

Brian Ford
Project Manager

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Pace Analytical National

12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

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¹ Cp
² Tc
³ Ss
⁴ Cn
⁵ Sr
⁶ Qc
⁷ Gl
⁸ Al
⁹ Sc

SAMPLE SUMMARY

MW-3(012523) L1580521-01 GW

				Collected by ADD	Collected date/time 01/25/23 13:10	Received date/time 01/30/23 09:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1998833	10	02/02/23 21:10	02/02/23 21:10	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1998045	1	02/01/23 15:45	02/01/23 15:45	DWR	Mt. Juliet, TN

MW-1(012523) L1580521-02 GW

				Collected by ADD	Collected date/time 01/25/23 14:45	Received date/time 01/30/23 09:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1998833	5	02/02/23 20:26	02/02/23 20:26	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1998045	10	02/01/23 17:10	02/01/23 17:10	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG2001366	100	02/07/23 10:41	02/07/23 10:41	ADM	Mt. Juliet, TN

MW-7(012523) L1580521-03 GW

				Collected by ADD	Collected date/time 01/25/23 16:30	Received date/time 01/30/23 09:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1998833	5	02/02/23 20:48	02/02/23 20:48	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1998045	5	02/01/23 17:29	02/01/23 17:29	DWR	Mt. Juliet, TN

MW-2(012523) L1580521-04 GW

				Collected by ADD	Collected date/time 01/26/23 10:15	Received date/time 01/30/23 09:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1998833	10	02/02/23 21:32	02/02/23 21:32	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1998045	10	02/01/23 17:50	02/01/23 17:50	DWR	Mt. Juliet, TN

MW-6(012523) L1580521-05 GW

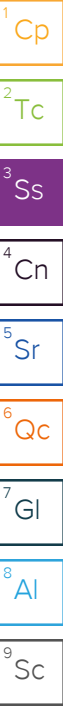
				Collected by ADD	Collected date/time 01/26/23 11:50	Received date/time 01/30/23 09:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1998833	10	02/02/23 21:54	02/02/23 21:54	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1998045	5	02/01/23 18:11	02/01/23 18:11	DWR	Mt. Juliet, TN

MW-4(012523) L1580521-06 GW

				Collected by ADD	Collected date/time 01/26/23 13:40	Received date/time 01/30/23 09:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1998833	10	02/02/23 22:16	02/02/23 22:16	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1998045	20	02/01/23 18:32	02/01/23 18:32	DWR	Mt. Juliet, TN

MW-5(012523) L1580521-07 GW

				Collected by ADD	Collected date/time 01/26/23 15:45	Received date/time 01/30/23 09:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1998833	1	02/02/23 17:10	02/02/23 17:10	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1998045	1	02/01/23 16:06	02/01/23 16:06	DWR	Mt. Juliet, TN



SAMPLE SUMMARY

MW-8(012523) L1580521-08 GW

Collected by
ADD

Collected date/time
01/26/23 17:50

Received date/time
01/30/23 09:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1998833	25	02/02/23 23:22	02/02/23 23:22	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1998045	25	02/01/23 18:53	02/01/23 18:53	DWR	Mt. Juliet, TN

¹Cp ${}^2\text{Tc}$ 3S_1 ${}^4\text{Cn}$ ${}^5\text{Sr}$ ${}^6\text{Qc}$ ${}^7\text{Gf}$ ${}^8\text{Al}$ ${}^9\text{Sc}$

CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



Brian Ford
Project Manager

- ¹ Cp
- ² Tc
- ³ Ss
- ⁴ Cn
- ⁵ Sr
- ⁶ Qc
- ⁷ Gl
- ⁸ Al
- ⁹ Sc

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	1400	<u>B</u>	316	1000	10	02/02/2023 21:10	WG1998833
(S) a,a,a-Trifluorotoluene(FID)	98.4			78.0-120		02/02/2023 21:10	WG1998833

Sample Narrative:

L1580521-01 WG1998833: Lowest possible dilution due to sample foaming.

Volatile Organic Compounds (GC/MS) by Method 8260D

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Benzene	U		0.0941	1.00	1	02/01/2023 15:45	WG1998045
Ethylbenzene	U		0.137	1.00	1	02/01/2023 15:45	WG1998045
Toluene	U		0.278	1.00	1	02/01/2023 15:45	WG1998045
Xylenes, Total	0.190	<u>J</u>	0.174	3.00	1	02/01/2023 15:45	WG1998045
Methyl tert-butyl ether	1.27		0.101	1.00	1	02/01/2023 15:45	WG1998045
Naphthalene	U	<u>C3</u>	1.00	5.00	1	02/01/2023 15:45	WG1998045
1,2-Dibromoethane	U		0.126	1.00	1	02/01/2023 15:45	WG1998045
1,2-Dichloroethane	U		0.0819	1.00	1	02/01/2023 15:45	WG1998045
Isopropylbenzene	0.122	<u>J</u>	0.105	1.00	1	02/01/2023 15:45	WG1998045
n-Propylbenzene	U	<u>C3</u>	0.0993	1.00	1	02/01/2023 15:45	WG1998045
1,2,4-Trimethylbenzene	U		0.322	1.00	1	02/01/2023 15:45	WG1998045
1,3,5-Trimethylbenzene	U		0.104	1.00	1	02/01/2023 15:45	WG1998045
(S) Toluene-d8	109			80.0-120		02/01/2023 15:45	WG1998045
(S) 4-Bromofluorobenzene	102			77.0-126		02/01/2023 15:45	WG1998045
(S) 1,2-Dichloroethane-d4	95.4			70.0-130		02/01/2023 15:45	WG1998045

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	16900		158	500	5	02/02/2023 20:26	WG1998833
(S) a,a,a-Trifluorotoluene(FID)	85.9			78.0-120		02/02/2023 20:26	WG1998833

Volatile Organic Compounds (GC/MS) by Method 8260D

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Benzene	458		0.941	10.0	10	02/01/2023 17:10	WG1998045
Ethylbenzene	2460		13.7	100	100	02/07/2023 10:41	WG2001366
Toluene	20.6		2.78	10.0	10	02/01/2023 17:10	WG1998045
Xylenes, Total	64.5		1.74	30.0	10	02/01/2023 17:10	WG1998045
Methyl tert-butyl ether	4.58	<u>J</u>	1.01	10.0	10	02/01/2023 17:10	WG1998045
Naphthalene	431	<u>C3</u>	10.0	50.0	10	02/01/2023 17:10	WG1998045
1,2-Dibromoethane	U		1.26	10.0	10	02/01/2023 17:10	WG1998045
1,2-Dichloroethane	U		0.819	10.0	10	02/01/2023 17:10	WG1998045
Isopropylbenzene	120		1.05	10.0	10	02/01/2023 17:10	WG1998045
n-Propylbenzene	334	<u>C3</u>	0.993	10.0	10	02/01/2023 17:10	WG1998045
1,2,4-Trimethylbenzene	U		3.22	10.0	10	02/01/2023 17:10	WG1998045
1,3,5-Trimethylbenzene	7.25	<u>J</u>	1.04	10.0	10	02/01/2023 17:10	WG1998045
(S) Toluene-d8	103			80.0-120		02/01/2023 17:10	WG1998045
(S) Toluene-d8	104			80.0-120		02/07/2023 10:41	WG2001366
(S) 4-Bromofluorobenzene	98.9			77.0-126		02/01/2023 17:10	WG1998045
(S) 4-Bromofluorobenzene	95.4			77.0-126		02/07/2023 10:41	WG2001366
(S) 1,2-Dichloroethane-d4	91.5			70.0-130		02/01/2023 17:10	WG1998045
(S) 1,2-Dichloroethane-d4	102			70.0-130		02/07/2023 10:41	WG2001366

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	10600		158	500	5	02/02/2023 20:48	WG1998833
(S) a,a,a-Trifluorotoluene(FID)	91.9			78.0-120		02/02/2023 20:48	WG1998833

Volatile Organic Compounds (GC/MS) by Method 8260D

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Benzene	887		0.471	5.00	5	02/01/2023 17:29	WG1998045
Ethylbenzene	729		0.685	5.00	5	02/01/2023 17:29	WG1998045
Toluene	30.1		1.39	5.00	5	02/01/2023 17:29	WG1998045
Xylenes, Total	167		0.870	15.0	5	02/01/2023 17:29	WG1998045
Methyl tert-butyl ether	6.83		0.505	5.00	5	02/01/2023 17:29	WG1998045
Naphthalene	63.5	C3	5.00	25.0	5	02/01/2023 17:29	WG1998045
1,2-Dibromoethane	U		0.630	5.00	5	02/01/2023 17:29	WG1998045
1,2-Dichloroethane	U		0.409	5.00	5	02/01/2023 17:29	WG1998045
Isopropylbenzene	124		0.525	5.00	5	02/01/2023 17:29	WG1998045
n-Propylbenzene	317	C3	0.497	5.00	5	02/01/2023 17:29	WG1998045
1,2,4-Trimethylbenzene	14.1		1.61	5.00	5	02/01/2023 17:29	WG1998045
1,3,5-Trimethylbenzene	11.1		0.520	5.00	5	02/01/2023 17:29	WG1998045
(S) Toluene-d8	103			80.0-120		02/01/2023 17:29	WG1998045
(S) 4-Bromofluorobenzene	96.8			77.0-126		02/01/2023 17:29	WG1998045
(S) 1,2-Dichloroethane-d4	88.6			70.0-130		02/01/2023 17:29	WG1998045

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	3810	<u>B</u>	316	1000	10	02/02/2023 21:32	WG1998833
(S) a,a,a-Trifluorotoluene(FID)	98.1			78.0-120		02/02/2023 21:32	WG1998833

Volatile Organic Compounds (GC/MS) by Method 8260D

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Benzene	129		0.941	10.0	10	02/01/2023 17:50	WG1998045
Ethylbenzene	51.6		1.37	10.0	10	02/01/2023 17:50	WG1998045
Toluene	9.63	<u>J</u>	2.78	10.0	10	02/01/2023 17:50	WG1998045
Xylenes, Total	22.0	<u>J</u>	1.74	30.0	10	02/01/2023 17:50	WG1998045
Methyl tert-butyl ether	9.44	<u>J</u>	1.01	10.0	10	02/01/2023 17:50	WG1998045
Naphthalene	42.0	<u>C3 J</u>	10.0	50.0	10	02/01/2023 17:50	WG1998045
1,2-Dibromoethane	U		1.26	10.0	10	02/01/2023 17:50	WG1998045
1,2-Dichloroethane	U		0.819	10.0	10	02/01/2023 17:50	WG1998045
Isopropylbenzene	27.0		1.05	10.0	10	02/01/2023 17:50	WG1998045
n-Propylbenzene	53.1	<u>C3</u>	0.993	10.0	10	02/01/2023 17:50	WG1998045
1,2,4-Trimethylbenzene	21.3		3.22	10.0	10	02/01/2023 17:50	WG1998045
1,3,5-Trimethylbenzene	17.3		1.04	10.0	10	02/01/2023 17:50	WG1998045
(S) Toluene-d8	106			80.0-120		02/01/2023 17:50	WG1998045
(S) 4-Bromofluorobenzene	100			77.0-126		02/01/2023 17:50	WG1998045
(S) 1,2-Dichloroethane-d4	89.3			70.0-130		02/01/2023 17:50	WG1998045

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	4860	<u>B</u>	316	1000	10	02/02/2023 21:54	WG1998833
(S) a,a,a-Trifluorotoluene(FID)	97.3			78.0-120		02/02/2023 21:54	WG1998833

Volatile Organic Compounds (GC/MS) by Method 8260D

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Benzene	363		0.471	5.00	5	02/01/2023 18:11	WG1998045
Ethylbenzene	166		0.685	5.00	5	02/01/2023 18:11	WG1998045
Toluene	15.6		1.39	5.00	5	02/01/2023 18:11	WG1998045
Xylenes, Total	88.4		0.870	15.0	5	02/01/2023 18:11	WG1998045
Methyl tert-butyl ether	6.60		0.505	5.00	5	02/01/2023 18:11	WG1998045
Naphthalene	33.0	<u>C3</u>	5.00	25.0	5	02/01/2023 18:11	WG1998045
1,2-Dibromoethane	U		0.630	5.00	5	02/01/2023 18:11	WG1998045
1,2-Dichloroethane	U		0.409	5.00	5	02/01/2023 18:11	WG1998045
Isopropylbenzene	32.4		0.525	5.00	5	02/01/2023 18:11	WG1998045
n-Propylbenzene	73.1	<u>C3</u>	0.497	5.00	5	02/01/2023 18:11	WG1998045
1,2,4-Trimethylbenzene	32.7		1.61	5.00	5	02/01/2023 18:11	WG1998045
1,3,5-Trimethylbenzene	33.9		0.520	5.00	5	02/01/2023 18:11	WG1998045
(S) Toluene-d8	104			80.0-120		02/01/2023 18:11	WG1998045
(S) 4-Bromofluorobenzene	100			77.0-126		02/01/2023 18:11	WG1998045
(S) 1,2-Dichloroethane-d4	90.6			70.0-130		02/01/2023 18:11	WG1998045

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	38000		316	1000	10	02/02/2023 22:16	WG1998833
(S) a,a,a-Trifluorotoluene(FID)	93.3			78.0-120		02/02/2023 22:16	WG1998833

Volatile Organic Compounds (GC/MS) by Method 8260D

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Benzene	1180		1.88	20.0	20	02/01/2023 18:32	WG1998045
Ethylbenzene	750		2.74	20.0	20	02/01/2023 18:32	WG1998045
Toluene	119		5.56	20.0	20	02/01/2023 18:32	WG1998045
Xylenes, Total	9260		3.48	60.0	20	02/01/2023 18:32	WG1998045
Methyl tert-butyl ether	U		2.02	20.0	20	02/01/2023 18:32	WG1998045
Naphthalene	169	C3	20.0	100	20	02/01/2023 18:32	WG1998045
1,2-Dibromoethane	U		2.52	20.0	20	02/01/2023 18:32	WG1998045
1,2-Dichloroethane	U		1.64	20.0	20	02/01/2023 18:32	WG1998045
Isopropylbenzene	46.0		2.10	20.0	20	02/01/2023 18:32	WG1998045
n-Propylbenzene	115	C3	1.99	20.0	20	02/01/2023 18:32	WG1998045
1,2,4-Trimethylbenzene	1350		6.44	20.0	20	02/01/2023 18:32	WG1998045
1,3,5-Trimethylbenzene	384		2.08	20.0	20	02/01/2023 18:32	WG1998045
(S) Toluene-d8	102			80.0-120		02/01/2023 18:32	WG1998045
(S) 4-Bromofluorobenzene	102			77.0-126		02/01/2023 18:32	WG1998045
(S) 1,2-Dichloroethane-d4	88.2			70.0-130		02/01/2023 18:32	WG1998045

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	1580		31.6	100	1	02/02/2023 17:10	WG1998833
(S) a,a,a-Trifluorotoluene(FID)	104			78.0-120		02/02/2023 17:10	WG1998833

Volatile Organic Compounds (GC/MS) by Method 8260D

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Benzene	1.70		0.0941	1.00	1	02/01/2023 16:06	WG1998045
Ethylbenzene	2.53		0.137	1.00	1	02/01/2023 16:06	WG1998045
Toluene	U		0.278	1.00	1	02/01/2023 16:06	WG1998045
Xylenes, Total	1.73	<u>J</u>	0.174	3.00	1	02/01/2023 16:06	WG1998045
Methyl tert-butyl ether	9.42		0.101	1.00	1	02/01/2023 16:06	WG1998045
Naphthalene	U	<u>C3</u>	1.00	5.00	1	02/01/2023 16:06	WG1998045
1,2-Dibromoethane	U		0.126	1.00	1	02/01/2023 16:06	WG1998045
1,2-Dichloroethane	U		0.0819	1.00	1	02/01/2023 16:06	WG1998045
Isopropylbenzene	10.6		0.105	1.00	1	02/01/2023 16:06	WG1998045
n-Propylbenzene	37.7	<u>C3</u>	0.0993	1.00	1	02/01/2023 16:06	WG1998045
1,2,4-Trimethylbenzene	U		0.322	1.00	1	02/01/2023 16:06	WG1998045
1,3,5-Trimethylbenzene	0.511	<u>J</u>	0.104	1.00	1	02/01/2023 16:06	WG1998045
(S) Toluene-d8	97.2			80.0-120		02/01/2023 16:06	WG1998045
(S) 4-Bromofluorobenzene	95.6			77.0-126		02/01/2023 16:06	WG1998045
(S) 1,2-Dichloroethane-d4	96.0			70.0-130		02/01/2023 16:06	WG1998045

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	34500		790	2500	25	02/02/2023 23:22	WG1998833
(S) a,a,a-Trifluorotoluene(FID)	97.6			78.0-120		02/02/2023 23:22	WG1998833

Volatile Organic Compounds (GC/MS) by Method 8260D

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Benzene	1250		2.35	25.0	25	02/01/2023 18:53	WG1998045
Ethylbenzene	1020		3.43	25.0	25	02/01/2023 18:53	WG1998045
Toluene	45.9		6.95	25.0	25	02/01/2023 18:53	WG1998045
Xylenes, Total	4370		4.35	75.0	25	02/01/2023 18:53	WG1998045
Methyl tert-butyl ether	4.12	J	2.53	25.0	25	02/01/2023 18:53	WG1998045
Naphthalene	231	C3	25.0	125	25	02/01/2023 18:53	WG1998045
1,2-Dibromoethane	U		3.15	25.0	25	02/01/2023 18:53	WG1998045
1,2-Dichloroethane	U		2.05	25.0	25	02/01/2023 18:53	WG1998045
Isopropylbenzene	95.1		2.63	25.0	25	02/01/2023 18:53	WG1998045
n-Propylbenzene	233	C3	2.48	25.0	25	02/01/2023 18:53	WG1998045
1,2,4-Trimethylbenzene	2210		8.05	25.0	25	02/01/2023 18:53	WG1998045
1,3,5-Trimethylbenzene	582		2.60	25.0	25	02/01/2023 18:53	WG1998045
(S) Toluene-d8	106			80.0-120		02/01/2023 18:53	WG1998045
(S) 4-Bromofluorobenzene	103			77.0-126		02/01/2023 18:53	WG1998045
(S) 1,2-Dichloroethane-d4	91.9			70.0-130		02/01/2023 18:53	WG1998045

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3887626-2 02/02/23 14:07

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Gasoline Range Organics-NWTPH	54.6	J	31.6	100
(S) a,a,a-Trifluorotoluene(FID)	98.9			78.0-120

Laboratory Control Sample (LCS)

(LCS) R3887626-1 02/02/23 12:38

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Gasoline Range Organics-NWTPH	5500	6270	114	70.0-124	
(S) a,a,a-Trifluorotoluene(FID)			106	78.0-120	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3886498-3 02/01/23 10:45

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Benzene	U		0.0941	1.00
Ethylbenzene	U		0.137	1.00
Toluene	U		0.278	1.00
Xylenes, Total	U		0.174	3.00
Methyl tert-butyl ether	U		0.101	1.00
Naphthalene	U		1.00	5.00
1,2-Dibromoethane	U		0.126	1.00
1,2-Dichloroethane	U		0.0819	1.00
Isopropylbenzene	U		0.105	1.00
n-Propylbenzene	U		0.0993	1.00
1,2,4-Trimethylbenzene	U		0.322	1.00
1,3,5-Trimethylbenzene	U		0.104	1.00
(S) Toluene-d8	108			80.0-120
(S) 4-Bromofluorobenzene	101			77.0-126
(S) 1,2-Dichloroethane-d4	95.6			70.0-130

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3886498-1 02/01/23 08:59 • (LCSD) R3886498-2 02/01/23 09:20

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	5.00	4.98	4.70	99.6	94.0	70.0-123			5.79	20
Ethylbenzene	5.00	5.04	4.61	101	92.2	79.0-123			8.91	20
Toluene	5.00	4.76	4.56	95.2	91.2	79.0-120			4.29	20
Xylenes, Total	15.0	14.9	14.3	99.3	95.3	79.0-123			4.11	20
Methyl tert-butyl ether	5.00	5.34	5.17	107	103	68.0-125			3.24	20
Naphthalene	5.00	3.09	3.60	61.8	72.0	54.0-135			15.2	20
1,2-Dibromoethane	5.00	4.69	4.74	93.8	94.8	80.0-122			1.06	20
1,2-Dichloroethane	5.00	5.06	4.91	101	98.2	70.0-128			3.01	20
Isopropylbenzene	5.00	4.74	4.71	94.8	94.2	76.0-127			0.635	20
n-Propylbenzene	5.00	3.97	4.07	79.4	81.4	77.0-124			2.49	20
1,2,4-Trimethylbenzene	5.00	4.24	4.18	84.8	83.6	76.0-121			1.43	20
1,3,5-Trimethylbenzene	5.00	4.15	3.98	83.0	79.6	76.0-122			4.18	20
(S) Toluene-d8				103	101	80.0-120				
(S) 4-Bromofluorobenzene				99.4	98.4	77.0-126				
(S) 1,2-Dichloroethane-d4				101	103	70.0-130				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3888191-3 02/07/23 09:42

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Ethylbenzene	U		0.137	1.00
(S) Toluene-d8	103			80.0-120
(S) 4-Bromofluorobenzene	93.9			77.0-126
(S) 1,2-Dichloroethane-d4	102			70.0-130

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3888191-1 02/07/23 08:38 • (LCSD) R3888191-2 02/07/23 09:00

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Ethylbenzene	5.00	4.73	4.40	94.6	88.0	79.0-123			7.23	20
(S) Toluene-d8				103	105	80.0-120				
(S) 4-Bromofluorobenzene				96.3	98.2	77.0-126				
(S) 1,2-Dichloroethane-d4				106	102	70.0-130				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

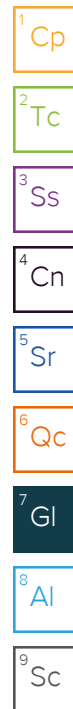
The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
B	The same analyte is found in the associated blank.
C3	The reported concentration is an estimate. The continuing calibration standard associated with this data responded low. Method sensitivity check is acceptable.
J	The identification of the analyte is acceptable; the reported value is an estimate.



ACCREDITATIONS & LOCATIONS

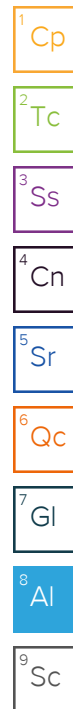
Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey--NELAP	TN002
California	2932	New Mexico ¹	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio--VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1 6}	KY90010	South Carolina	84004002
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1 4}	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas ⁵	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA -- ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA -- ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA--Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.



Company Name/Address:

NV5 - Wilsonville, OR

9450 SW Commerce Circle

Ste. 300

Wilsonville, OR 97070

Billing Information:

Accounts Payable

9450 SW Commerce Circle

Ste. 300

Wilsonville, OR 97070

Email To: Andre.DeJonge@nv5.com

Report to:

Andre DeJonge

Project Description:

Annual Monitoring

City/State

Astoria, OR

Please Circle:

(PT) MT CT ET

Phone: 503-968-8787

Client Project #

BigBeams-1-04

Lab Project #

GEODESPOR-BIGB104

Collected by (print):

Andre DeJonge

Site/Facility ID #

Fort George Brewery

P.O. #

Collected by (signature):

[Signature]

Rush? (Lab MUST Be Notified)

Same Day

Five Day

Next Day

5 Day (Rad Only)

Two Day

10 Day (Rad Only)

Three Day

Quote #

Immediately

Packed on Ice N Y

Date Results Needed

No. of Cntrs

Sample ID

Comp/Grab

Matrix *

Depth

Date

Time

mw-3 (012523)

mw-1 (012523)

mw-7 (012523)

mw-2 (012623)

mw-6 (012623)

mw-4 (012623)

mw-5 (012623)

mw-8 (012623)

GW

GW

GW

GW

GW

GW

GW

GW

12523

12523

12523

12623

12623

12623

12623

12623

1316

1445

1630

1015

1150

1340

1545

1750

6

6

6

6

6

6

6

6

X

X

X

X

X

X

X

X

Matrix:

SS - Soil

AIR - Air

F - Filter

GW - Groundwater

B - Bioassay

WW - WasteWater

DW - Drinking Water

OT - Other

Remarks:

Samples returned via:

UPS FedEx Courier

Tracking #

626 6531 2668

Relinquished by: (Signature)

Date: 01-29-23

Relinquished by: (Signature)

Date:

Relinquished by: (Signature)

Date:

Received by: (Signature)

Received by: (Signature)

Received for lab by: (Signature)

Trip Blank Received: Yes/No

2 No/MeoH

TBR

Temp: °C

21.40=2.1

Date:

1-30-23

Time:

9:48 AM

Condition:

NCF / OK

Analysis / Container / Preservative

Chain of Custody Page 1 of 1

MT JULIET, TN

1206S Lebanon Rd Mount Juliet, TN 37122
Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at: <https://info.pacelabs.com/hubs/pas-standard-terms.pdf>

SDG # L 1580521
H054

Acctnum: GEODESPOR
Template: T223041
Prelogin: P975330
PM: 110 - Brian Ford
PB:

Shipped Via:

Remarks	Sample # (lab only)
	01
	02
	03
	04
	05
	06
	07
	08

Sample Receipt Checklist

COC Seal Present/Intact: ☒ Y ☐ N
 COC Signed/Accurate: ☒ Y ☐ N
 Bottles arrive intact: ☒ Y ☐ N
 Correct bottles used: ☒ Y ☐ N
 Sufficient volume sent: ☒ Y ☐ N
 If Applicable
 VOA Zero Headspace: ☒ Y ☐ N
 Preservation Correct/Checked: ☒ Y ☐ N
 RAD Screen <0.5 mR/hr: ☒ Y ☐ N

NWTPHGX 40mlAmb HCl
RBDM VOCs 8260 40mlAmb-HCl

pH _____ Temp _____
Flow _____ Other _____

Temp: °C
21.40=2.1

Date: 1-30-23
Time: 9:48 AM

If preservation required by Login: Date/Time

Hold: Condition: NCF / OK

2/28/2023

Mr. Erik Hedberg
NV5, Inc. Company
9450 SW Commerce Circle
Suite 300
Wilsonville OR 97070

Project Name: Former Astoria Warehousing
Project #: BigBeams-1-04
Workorder #: 2302327

Dear Mr. Erik Hedberg

The following report includes the data for the above referenced project for sample(s) received on 2/14/2023 at Eurofins Air Toxics LLC.

The data and associated QC analyzed by Passive S.E. RAD130/SKC are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics LLC. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Monica Tran at 916-985-1000 if you have any questions regarding the data in this report.

Regards,



Monica Tran
Project Manager

WORK ORDER #: 2302327

Work Order Summary

CLIENT:	Mr. Erik Hedberg NV5, Inc. Company 9450 SW Commerce Circle Suite 300 Wilsonville, OR 97070	BILL TO:	Mr. Erik Hedberg NV5, Inc. Company 9450 SW Commerce Circle Suite 300 Wilsonville, OR 97070
PHONE:	503-968-8787	P.O. #	BigBeams-1-04
FAX:		PROJECT #	BigBeams-1-04 Former Astoria
DATE RECEIVED:	02/14/2023	CONTACT:	Warehousing Monica Traff
DATE COMPLETED:	02/28/2023		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>
01A	Background	Passive S.E. RAD130/SKC
02A	Indoor - 1	Passive S.E. RAD130/SKC
03A	Indoor - 2	Passive S.E. RAD130/SKC
04A	Indoor - 3	Passive S.E. RAD130/SKC
05A	Indoor - 4	Passive S.E. RAD130/SKC
06A	Indoor - 5	Passive S.E. RAD130/SKC
07A	Indoor - 6	Passive S.E. RAD130/SKC
08A	Indoor - 7	Passive S.E. RAD130/SKC
09A	Lab Blank	Passive S.E. RAD130/SKC
10A	CCV	Passive S.E. RAD130/SKC
11A	LCS	Passive S.E. RAD130/SKC
11AA	LCSD	Passive S.E. RAD130/SKC

CERTIFIED BY:



Technical Director

DATE: 02/28/23

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP – 209222, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP – T104704434-22-18, UT NELAP – CA009332022-14, VA NELAP - 12240, WA NELAP - C935

Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)

Accreditation number: CA300005-017, Effective date: 10/18/2022, Expiration date: 10/17/2023.

Eurofins Air Toxics, LLC certifies that the test results contained in this report meet all requirements of the NELAC standards

This report shall not be reproduced, except in full, without the written approval of Eurofins Air Toxics, LLC.

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630

(916) 985-1000 . (800) 985-5955 . FAX (916) 351-8279

LABORATORY NARRATIVE
RAD130 Passive SE by Mod EPA TO-17
NV5, Inc. Company
Workorder# 2302327

Eight Radiello 130 (Solvent) samples were received on February 14, 2023. The laboratory analyzed the charcoal sorbent bed of the passive sampler following modified method EPA TO-17. The VOCs were chemically extracted using carbon disulfide and an aliquot of the extract was injected into a GC/MS for identification and quantification of volatile organic compounds (VOCs).

The mass of each target compound adsorbed by the sampler was converted to units of concentration using the sample deployment time and the sampling rate for each VOC. If sampling rates were calculated by the lab or the manufacturer, the concentration result has been flagged as an estimated value. Results are not corrected for desorption efficiency.

The reference method used for this procedure is EPA TO-17, which describes the collection of VOCs in ambient air using sorbents and analysis by GC/MS. Because TO-17 describes active sample collection using a pump and thermal desorption as the preparation step, several modifications are required. Modifications to TO-17 are listed in the table below:

Requirement	TO-17	ATL Modifications
Sample Collection	Pump pulls measured air volume through sorbent tube	VOCs in air adsorbed onto sorbent bed passively through diffusion
Sample Preparation	Thermal extraction	Solvent extraction
Sorbent tube conditioning	Condition newly packed tubes prior to use	Charcoal-based sorbent is a single use media and conditioning is conducted by vendor.
Instrumentation	Thermal desorption introduction system	Liquid injection introduction system
Internal Standard	Gas-phase internal standard introduced on the tube or focusing trap during analysis	Liquid-phase internal standard introduced on the tube at the time of extraction
Media and sample storage	<4 deg C, 30 days	Media shelf life is determined by vendor; sample hold-time is 6 months for the RAD130 and WMS. Sample preservation requirements are storage in a cool, solvent-free refrigerator and optional use of ice during shipping.
Internal Standard Recovery	+/-40% of daily CCV area	-50% to +100% of daily CCV area

Receiving Notes

Samples Background, Indoor - 1, Indoor - 2, Indoor - 3, Indoor - 4, Indoor - 5, Indoor - 6 and Indoor - 7 did not arrive in an approved sample container according to Method Mod TO-17. The integrity of the samples may have been compromised. The client was notified and the analysis proceeded.

Analytical Notes

The uptake rates were corrected based on average field temperatures if provided. In the absence of field temperatures, the uptake rates determined at 25 deg C were used.

To calculate ug/m3 concentrations in the Lab Blank, a sampling duration of 20085 minutes was applied. The assumed temperature used for the uptake rate is listed on the data page. If the field temperatures were provided, the rate was adjusted in the same manner as the field samples.

Definition of Data Qualifying Flags

Ten qualifiers may have been used on the data analysis sheets and indicate as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit.

UJ- Non-detected compound associated with low bias in the CCV

N - The identification is based on presumptive evidence.

C - Estimated concentration due to calculated sampling rate

CN - See case narrative explanation.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

Summary of Detected Compounds VOCS BY PASSIVE SAMPLER - GC/MS

Client Sample ID: Background

Lab ID#: 2302327-01A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.49	2.8	1.4
Hexane	0.10	0.075	0.31	0.23
Ethyl Acetate	0.40	0.26	1.6	1.0
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	1.8	1.1
Cyclohexane	0.10	0.092	0.12	0.11
Carbon Tetrachloride	0.10	0.074	0.39	0.29
Benzene	0.40	0.25	1.1	0.67
Heptane	0.10	0.086	0.62	0.53
4-Methyl-2-pentanone	0.20	0.15	0.35	0.26
Toluene	0.10	0.067	1.0	0.71
Ethyl Benzene	0.10	0.073	0.15	0.11
m,p-Xylene	0.10	0.071	0.46	0.33
o-Xylene	0.10	0.077	0.18	0.13

Client Sample ID: Indoor - 1

Lab ID#: 2302327-02A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.49	1300 E	630 E
Hexane	0.10	0.075	0.82	0.62
Ethyl Acetate	0.40	0.26	60	38
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	28	18
Chloroform	0.10	0.066	2.0	1.3
Cyclohexane	0.10	0.092	0.40	0.37
Carbon Tetrachloride	0.10	0.074	0.50	0.37
Benzene	0.40	0.25	1.3	0.81
Heptane	0.10	0.086	1.2	1.0
4-Methyl-2-pentanone	0.20	0.15	0.84	0.62
Toluene	0.10	0.067	2.4	1.6
Ethyl Benzene	0.10	0.073	0.57	0.42
m,p-Xylene	0.10	0.071	1.8	1.3
o-Xylene	0.10	0.076	0.80	0.61
Styrene	0.10	0.082	0.22	0.18

Summary of Detected Compounds VOCS BY PASSIVE SAMPLER - GC/MS

Client Sample ID: Indoor - 2

Lab ID#: 2302327-03A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.49	1100 E	540 E
Hexane	0.10	0.075	0.71	0.54
Ethyl Acetate	0.40	0.26	52	33
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	25	16
Chloroform	0.10	0.066	1.7	1.2
Cyclohexane	0.10	0.092	0.36	0.33
Carbon Tetrachloride	0.10	0.074	0.46	0.34
Benzene	0.40	0.25	1.2	0.78
Heptane	0.10	0.086	1.2	0.99
4-Methyl-2-pentanone	0.20	0.15	0.76	0.56
Toluene	0.10	0.067	2.3	1.6
Ethyl Benzene	0.10	0.073	0.49	0.36
m,p-Xylene	0.10	0.071	1.6	1.1
o-Xylene	0.10	0.077	0.70	0.54
Styrene	0.10	0.082	0.19	0.15

Client Sample ID: Indoor - 3

Lab ID#: 2302327-04A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.49	480 E	230 E
Hexane	0.10	0.075	0.97	0.73
Ethyl Acetate	0.40	0.26	58	37
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	20	13
Chloroform	0.10	0.066	1.2	0.78
Cyclohexane	0.10	0.092	0.37	0.34
Carbon Tetrachloride	0.10	0.074	0.31	0.23
Benzene	0.40	0.25	1.1	0.68
Heptane	0.10	0.086	0.99	0.85
4-Methyl-2-pentanone	0.20	0.15	0.69	0.51
Toluene	0.10	0.067	1.6	1.1
Ethyl Benzene	0.10	0.073	0.46	0.34
m,p-Xylene	0.10	0.071	1.6	1.2

Summary of Detected Compounds VOCS BY PASSIVE SAMPLER - GC/MS

Client Sample ID: Indoor - 3

Lab ID#: 2302327-04A

o-Xylene	0.10	0.077	0.64	0.49
Styrene	0.10	0.082	0.14	0.12

Client Sample ID: Indoor - 4

Lab ID#: 2302327-05A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.49	290	140
Hexane	0.10	0.075	1.0	0.77
Ethyl Acetate	0.40	0.26	26	16
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	29	18
Chloroform	0.10	0.066	1.1	0.71
Cyclohexane	0.10	0.092	0.49	0.45
Carbon Tetrachloride	0.10	0.074	0.31	0.23
Benzene	0.40	0.25	1.2	0.73
Heptane	0.10	0.086	1.1	0.93
4-Methyl-2-pentanone	0.20	0.15	0.78	0.58
Toluene	0.10	0.067	3.3	2.2
Tetrachloroethene	0.10	0.084	0.15	0.13
Ethyl Benzene	0.10	0.073	1.2	0.87
m,p-Xylene	0.10	0.071	4.8	3.4
o-Xylene	0.10	0.077	2.4	1.8
Styrene	0.10	0.082	0.37	0.30
Propylbenzene	0.10	0.087	0.12	0.10

Client Sample ID: Indoor - 5

Lab ID#: 2302327-06A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.49	400 E	200 E
Hexane	0.10	0.075	0.82	0.62
Ethyl Acetate	0.40	0.26	62	40
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	13	8.4
Chloroform	0.10	0.066	1.1	0.72

Summary of Detected Compounds VOCS BY PASSIVE SAMPLER - GC/MS

Client Sample ID: Indoor - 5

Lab ID#: 2302327-06A

Cyclohexane	0.10	0.092	0.34	0.32
Carbon Tetrachloride	0.10	0.074	0.37	0.27
Benzene	0.40	0.25	1.2	0.76
Heptane	0.10	0.086	1.1	0.98
4-Methyl-2-pentanone	0.20	0.15	0.73	0.54
Toluene	0.10	0.067	1.6	1.1
Ethyl Benzene	0.10	0.073	0.31	0.23
m,p-Xylene	0.10	0.071	1.0	0.74
o-Xylene	0.10	0.077	0.43	0.33
Styrene	0.10	0.082	0.16	0.14

Client Sample ID: Indoor - 6

Lab ID#: 2302327-07A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.49	490 E	240 E
Hexane	0.10	0.075	0.91	0.69
Ethyl Acetate	0.40	0.26	65	41
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	18	11
Chloroform	0.10	0.066	1.2	0.81
Cyclohexane	0.10	0.092	0.36	0.33
Carbon Tetrachloride	0.10	0.074	0.29	0.22
Benzene	0.40	0.25	1.0	0.65
Heptane	0.10	0.086	0.86	0.74
4-Methyl-2-pentanone	0.20	0.15	0.60	0.44
Toluene	0.10	0.067	1.5	1.0
Ethyl Benzene	0.10	0.073	0.37	0.27
m,p-Xylene	0.10	0.071	1.3	0.90
o-Xylene	0.10	0.077	0.51	0.39
Styrene	0.10	0.082	0.14	0.12

Client Sample ID: Indoor - 7

Lab ID#: 2302327-08A

Summary of Detected Compounds VOCS BY PASSIVE SAMPLER - GC/MS

Client Sample ID: Indoor - 7

Lab ID#: 2302327-08A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.49	550 E	270 E
Hexane	0.10	0.076	0.92	0.70
Ethyl Acetate	0.40	0.26	56	36
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	18	11
Chloroform	0.10	0.066	1.1	0.76
Cyclohexane	0.10	0.092	0.36	0.33
Carbon Tetrachloride	0.10	0.074	0.28	0.21
Benzene	0.40	0.25	1.1	0.68
Heptane	0.10	0.086	1.0	0.90
4-Methyl-2-pentanone	0.20	0.15	0.68	0.51
Toluene	0.10	0.067	1.7	1.1
Ethyl Benzene	0.10	0.073	0.42	0.31
m,p-Xylene	0.10	0.071	1.5	1.0
o-Xylene	0.10	0.077	0.60	0.46
Styrene	0.10	0.082	0.14	0.12



Air Toxics

Client Sample ID: Background

Lab ID#: 2302327-01A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	c022415sim	Date of Collection: 2/10/23 11:45:00 AM
Dil. Factor:	1.00	Date of Analysis: 2/24/23 02:21 PM
		Date of Extraction: 2/24/23

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.49	2.8	1.4
Methyl tert-butyl ether	0.10	0.077	Not Detected	Not Detected
Hexane	0.10	0.075	0.31	0.23
Ethyl Acetate	0.40	0.26	1.6	1.0
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	1.8	1.1
Chloroform	0.10	0.066	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.080	Not Detected	Not Detected
Cyclohexane	0.10	0.092	0.12	0.11
Carbon Tetrachloride	0.10	0.074	0.39	0.29
Benzene	0.40	0.25	1.1	0.67
1,2-Dichloroethane	0.10	0.065	Not Detected	Not Detected
Heptane	0.10	0.086	0.62	0.53
Trichloroethene	0.10	0.072	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.15	0.35	0.26
Toluene	0.10	0.067	1.0	0.71
Tetrachloroethene	0.10	0.084	Not Detected	Not Detected
Chlorobenzene	0.10	0.073	Not Detected	Not Detected
Ethyl Benzene	0.10	0.073	0.15	0.11
m,p-Xylene	0.10	0.071	0.46	0.33
o-Xylene	0.10	0.077	0.18	0.13
Styrene	0.10	0.082	Not Detected	Not Detected
Propylbenzene	0.10	0.087	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.098	Not Detected	Not Detected
Naphthalene	0.10	0.20	Not Detected	Not Detected

Temperature = 77.0F , duration time = 20070 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	106	70-130



Air Toxics

Client Sample ID: Indoor - 1

Lab ID#: 2302327-02A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name: c022416sim
Dil. Factor: 1.00

Date of Collection: 2/10/23 11:20:00 AM
Date of Analysis: 2/24/23 02:47 PM
Date of Extraction: 2/24/23

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.49	1300 E	630 E
Methyl tert-butyl ether	0.10	0.076	Not Detected	Not Detected
Hexane	0.10	0.075	0.82	0.62
Ethyl Acetate	0.40	0.26	60	38
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	28	18
Chloroform	0.10	0.066	2.0	1.3
1,1,1-Trichloroethane	0.10	0.080	Not Detected	Not Detected
Cyclohexane	0.10	0.092	0.40	0.37
Carbon Tetrachloride	0.10	0.074	0.50	0.37
Benzene	0.40	0.25	1.3	0.81
1,2-Dichloroethane	0.10	0.065	Not Detected	Not Detected
Heptane	0.10	0.086	1.2	1.0
Trichloroethene	0.10	0.072	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.15	0.84	0.62
Toluene	0.10	0.067	2.4	1.6
Tetrachloroethene	0.10	0.084	Not Detected	Not Detected
Chlorobenzene	0.10	0.073	Not Detected	Not Detected
Ethyl Benzene	0.10	0.073	0.57	0.42
m,p-Xylene	0.10	0.071	1.8	1.3
o-Xylene	0.10	0.076	0.80	0.61
Styrene	0.10	0.082	0.22	0.18
Propylbenzene	0.10	0.087	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.098	Not Detected	Not Detected
Naphthalene	0.10	0.20	Not Detected	Not Detected

E = Exceeds instrument calibration range.

Temperature = 77.0F , duration time = 20085 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	105	70-130



Air Toxics

Client Sample ID: Indoor - 2

Lab ID#: 2302327-03A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name: c022417sim
Dil. Factor: 1.00

Date of Collection: 2/10/23 11:23:00 AM
Date of Analysis: 2/24/23 03:14 PM
Date of Extraction: 2/24/23

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.49	1100 E	540 E
Methyl tert-butyl ether	0.10	0.077	Not Detected	Not Detected
Hexane	0.10	0.075	0.71	0.54
Ethyl Acetate	0.40	0.26	52	33
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	25	16
Chloroform	0.10	0.066	1.7	1.2
1,1,1-Trichloroethane	0.10	0.080	Not Detected	Not Detected
Cyclohexane	0.10	0.092	0.36	0.33
Carbon Tetrachloride	0.10	0.074	0.46	0.34
Benzene	0.40	0.25	1.2	0.78
1,2-Dichloroethane	0.10	0.065	Not Detected	Not Detected
Heptane	0.10	0.086	1.2	0.99
Trichloroethene	0.10	0.072	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.15	0.76	0.56
Toluene	0.10	0.067	2.3	1.6
Tetrachloroethene	0.10	0.084	Not Detected	Not Detected
Chlorobenzene	0.10	0.073	Not Detected	Not Detected
Ethyl Benzene	0.10	0.073	0.49	0.36
m,p-Xylene	0.10	0.071	1.6	1.1
o-Xylene	0.10	0.077	0.70	0.54
Styrene	0.10	0.082	0.19	0.15
Propylbenzene	0.10	0.087	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.098	Not Detected	Not Detected
Naphthalene	0.10	0.20	Not Detected	Not Detected

E = Exceeds instrument calibration range.

Temperature = 77.0F , duration time = 20083 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	105	70-130



Air Toxics

Client Sample ID: Indoor - 3

Lab ID#: 2302327-04A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name: c022418sim
Dil. Factor: 1.00

Date of Collection: 2/10/23 11:26:00 AM
Date of Analysis: 2/24/23 03:41 PM
Date of Extraction: 2/24/23

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.49	480 E	230 E
Methyl tert-butyl ether	0.10	0.077	Not Detected	Not Detected
Hexane	0.10	0.075	0.97	0.73
Ethyl Acetate	0.40	0.26	58	37
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	20	13
Chloroform	0.10	0.066	1.2	0.78
1,1,1-Trichloroethane	0.10	0.080	Not Detected	Not Detected
Cyclohexane	0.10	0.092	0.37	0.34
Carbon Tetrachloride	0.10	0.074	0.31	0.23
Benzene	0.40	0.25	1.1	0.68
1,2-Dichloroethane	0.10	0.065	Not Detected	Not Detected
Heptane	0.10	0.086	0.99	0.85
Trichloroethene	0.10	0.072	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.15	0.69	0.51
Toluene	0.10	0.067	1.6	1.1
Tetrachloroethene	0.10	0.084	Not Detected	Not Detected
Chlorobenzene	0.10	0.073	Not Detected	Not Detected
Ethyl Benzene	0.10	0.073	0.46	0.34
m,p-Xylene	0.10	0.071	1.6	1.2
o-Xylene	0.10	0.077	0.64	0.49
Styrene	0.10	0.082	0.14	0.12
Propylbenzene	0.10	0.087	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.098	Not Detected	Not Detected
Naphthalene	0.10	0.20	Not Detected	Not Detected

E = Exceeds instrument calibration range.

Temperature = 77.0F , duration time = 20076 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	104	70-130



Air Toxics

Client Sample ID: Indoor - 4

Lab ID#: 2302327-05A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name: c022419sim
Dil. Factor: 1.00

Date of Collection: 2/10/23 11:30:00 AM
Date of Analysis: 2/24/23 04:08 PM
Date of Extraction: 2/24/23

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.49	290	140
Methyl tert-butyl ether	0.10	0.077	Not Detected	Not Detected
Hexane	0.10	0.075	1.0	0.77
Ethyl Acetate	0.40	0.26	26	16
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	29	18
Chloroform	0.10	0.066	1.1	0.71
1,1,1-Trichloroethane	0.10	0.080	Not Detected	Not Detected
Cyclohexane	0.10	0.092	0.49	0.45
Carbon Tetrachloride	0.10	0.074	0.31	0.23
Benzene	0.40	0.25	1.2	0.73
1,2-Dichloroethane	0.10	0.065	Not Detected	Not Detected
Heptane	0.10	0.086	1.1	0.93
Trichloroethene	0.10	0.072	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.15	0.78	0.58
Toluene	0.10	0.067	3.3	2.2
Tetrachloroethene	0.10	0.084	0.15	0.13
Chlorobenzene	0.10	0.073	Not Detected	Not Detected
Ethyl Benzene	0.10	0.073	1.2	0.87
m,p-Xylene	0.10	0.071	4.8	3.4
o-Xylene	0.10	0.077	2.4	1.8
Styrene	0.10	0.082	0.37	0.30
Propylbenzene	0.10	0.087	0.12	0.10
1,4-Dichlorobenzene	0.10	0.098	Not Detected	Not Detected
Naphthalene	0.10	0.20	Not Detected	Not Detected

Temperature = 77.0F , duration time = 20075 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	105	70-130



Air Toxics

Client Sample ID: Indoor - 5

Lab ID#: 2302327-06A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name: c022420sim
Dil. Factor: 1.00

Date of Collection: 2/10/23 11:35:00 AM
Date of Analysis: 2/24/23 04:35 PM
Date of Extraction: 2/24/23

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.49	400 E	200 E
Methyl tert-butyl ether	0.10	0.077	Not Detected	Not Detected
Hexane	0.10	0.075	0.82	0.62
Ethyl Acetate	0.40	0.26	62	40
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	13	8.4
Chloroform	0.10	0.066	1.1	0.72
1,1,1-Trichloroethane	0.10	0.080	Not Detected	Not Detected
Cyclohexane	0.10	0.092	0.34	0.32
Carbon Tetrachloride	0.10	0.074	0.37	0.27
Benzene	0.40	0.25	1.2	0.76
1,2-Dichloroethane	0.10	0.065	Not Detected	Not Detected
Heptane	0.10	0.086	1.1	0.98
Trichloroethene	0.10	0.072	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.15	0.73	0.54
Toluene	0.10	0.067	1.6	1.1
Tetrachloroethene	0.10	0.084	Not Detected	Not Detected
Chlorobenzene	0.10	0.073	Not Detected	Not Detected
Ethyl Benzene	0.10	0.073	0.31	0.23
m,p-Xylene	0.10	0.071	1.0	0.74
o-Xylene	0.10	0.077	0.43	0.33
Styrene	0.10	0.082	0.16	0.14
Propylbenzene	0.10	0.087	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.098	Not Detected	Not Detected
Naphthalene	0.10	0.20	Not Detected	Not Detected

E = Exceeds instrument calibration range.

Temperature = 77.0F , duration time = 20075 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	104	70-130



Air Toxics

Client Sample ID: Indoor - 6

Lab ID#: 2302327-07A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name: c022421sim
Dil. Factor: 1.00

Date of Collection: 2/10/23 11:37:00 AM
Date of Analysis: 2/24/23 05:01 PM
Date of Extraction: 2/24/23

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.49	490 E	240 E
Methyl tert-butyl ether	0.10	0.077	Not Detected	Not Detected
Hexane	0.10	0.075	0.91	0.69
Ethyl Acetate	0.40	0.26	65	41
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	18	11
Chloroform	0.10	0.066	1.2	0.81
1,1,1-Trichloroethane	0.10	0.080	Not Detected	Not Detected
Cyclohexane	0.10	0.092	0.36	0.33
Carbon Tetrachloride	0.10	0.074	0.29	0.22
Benzene	0.40	0.25	1.0	0.65
1,2-Dichloroethane	0.10	0.065	Not Detected	Not Detected
Heptane	0.10	0.086	0.86	0.74
Trichloroethene	0.10	0.072	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.15	0.60	0.44
Toluene	0.10	0.067	1.5	1.0
Tetrachloroethene	0.10	0.084	Not Detected	Not Detected
Chlorobenzene	0.10	0.073	Not Detected	Not Detected
Ethyl Benzene	0.10	0.073	0.37	0.27
m,p-Xylene	0.10	0.071	1.3	0.90
o-Xylene	0.10	0.077	0.51	0.39
Styrene	0.10	0.082	0.14	0.12
Propylbenzene	0.10	0.087	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.098	Not Detected	Not Detected
Naphthalene	0.10	0.20	Not Detected	Not Detected

E = Exceeds instrument calibration range.

Temperature = 77.0F , duration time = 20072 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	104	70-130



Air Toxics

Client Sample ID: Indoor - 7

Lab ID#: 2302327-08A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name: c022422sim
Dil. Factor: 1.00

Date of Collection: 2/10/23 11:40:00 AM
Date of Analysis: 2/24/23 05:29 PM
Date of Extraction: 2/24/23

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.49	550 E	270 E
Methyl tert-butyl ether	0.10	0.077	Not Detected	Not Detected
Hexane	0.10	0.076	0.92	0.70
Ethyl Acetate	0.40	0.26	56	36
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	18	11
Chloroform	0.10	0.066	1.1	0.76
1,1,1-Trichloroethane	0.10	0.080	Not Detected	Not Detected
Cyclohexane	0.10	0.092	0.36	0.33
Carbon Tetrachloride	0.10	0.074	0.28	0.21
Benzene	0.40	0.25	1.1	0.68
1,2-Dichloroethane	0.10	0.065	Not Detected	Not Detected
Heptane	0.10	0.086	1.0	0.90
Trichloroethene	0.10	0.072	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.15	0.68	0.51
Toluene	0.10	0.067	1.7	1.1
Tetrachloroethene	0.10	0.084	Not Detected	Not Detected
Chlorobenzene	0.10	0.073	Not Detected	Not Detected
Ethyl Benzene	0.10	0.073	0.42	0.31
m,p-Xylene	0.10	0.071	1.5	1.0
o-Xylene	0.10	0.077	0.60	0.46
Styrene	0.10	0.082	0.14	0.12
Propylbenzene	0.10	0.087	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.098	Not Detected	Not Detected
Naphthalene	0.10	0.20	Not Detected	Not Detected

E = Exceeds instrument calibration range.

Temperature = 77.0F , duration time = 20065 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	104	70-130



Air Toxics

Client Sample ID: Lab Blank

Lab ID#: 2302327-09A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	c022414sim	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 2/24/23 01:44 PM
		Date of Extraction: 2/24/23

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.49	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.076	Not Detected	Not Detected
Hexane	0.10	0.075	Not Detected	Not Detected
Ethyl Acetate	0.40	0.26	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	Not Detected	Not Detected
Chloroform	0.10	0.066	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.080	Not Detected	Not Detected
Cyclohexane	0.10	0.092	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.074	Not Detected	Not Detected
Benzene	0.40	0.25	Not Detected	Not Detected
1,2-Dichloroethane	0.10	0.065	Not Detected	Not Detected
Heptane	0.10	0.086	Not Detected	Not Detected
Trichloroethene	0.10	0.072	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.15	Not Detected	Not Detected
Toluene	0.10	0.067	Not Detected	Not Detected
Tetrachloroethene	0.10	0.084	Not Detected	Not Detected
Chlorobenzene	0.10	0.073	Not Detected	Not Detected
Ethyl Benzene	0.10	0.073	Not Detected	Not Detected
m,p-Xylene	0.10	0.071	Not Detected	Not Detected
o-Xylene	0.10	0.076	Not Detected	Not Detected
Styrene	0.10	0.082	Not Detected	Not Detected
Propylbenzene	0.10	0.087	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.098	Not Detected	Not Detected
Naphthalene	0.10	0.20	Not Detected	Not Detected

Temperature = 77.0F , duration time = 20085 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	104	70-130



Air Toxics

Client Sample ID: CCV

Lab ID#: 2302327-10A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	c022410sim	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 2/24/23 11:39 AM
		Date of Extraction: NA

Compound	%Recovery
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Ethanol	117
Methyl tert-butyl ether	123
Hexane	115
Ethyl Acetate	118
2-Butanone (Methyl Ethyl Ketone)	120
Chloroform	125
1,1,1-Trichloroethane	120
Cyclohexane	114
Carbon Tetrachloride	119
Benzene	112
1,2-Dichloroethane	124
Heptane	114
Trichloroethene	117
4-Methyl-2-pentanone	113
Toluene	103
Tetrachloroethene	112
Chlorobenzene	117
Ethyl Benzene	112
m,p-Xylene	112
o-Xylene	114
Styrene	114
Propylbenzene	119
1,4-Dichlorobenzene	112
Naphthalene	113

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	106	70-130



Air Toxics

Client Sample ID: LCS

Lab ID#: 2302327-11A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name: c022412sim
Dil. Factor: 1.00

Date of Collection: NA
Date of Analysis: 2/24/23 12:38 PM
Date of Extraction: 2/24/23

Compound	%Recovery	Method Limits
Ethanol	94	50-130
Methyl tert-butyl ether	130	70-130
Hexane	123	70-130
Ethyl Acetate	120	70-130
2-Butanone (Methyl Ethyl Ketone)	115	70-130
Chloroform	127	70-130
1,1,1-Trichloroethane	111	70-130
Cyclohexane	106	70-130
Carbon Tetrachloride	108	70-130
Benzene	100	70-130
1,2-Dichloroethane	111	70-130
Heptane	105	70-130
Trichloroethene	104	70-130
4-Methyl-2-pentanone	95	70-130
Toluene	90	70-130
Tetrachloroethene	98	70-130
Chlorobenzene	97	70-130
Ethyl Benzene	101	70-130
m,p-Xylene	98	70-130
o-Xylene	96	70-130
Styrene	73	20-100
Propylbenzene	108	70-130
1,4-Dichlorobenzene	86	50-110
Naphthalene	23	5-80

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	104	70-130



Air Toxics

Client Sample ID: LCSD

Lab ID#: 2302327-11AA

VOCS BY PASSIVE SAMPLER - GC/MS

File Name: c022413sim
Dil. Factor: 1.00

Date of Collection: NA
Date of Analysis: 2/24/23 01:06 PM
Date of Extraction: 2/24/23

Compound	%Recovery	Method Limits
Ethanol	75	50-130
Methyl tert-butyl ether	121	70-130
Hexane	118	70-130
Ethyl Acetate	114	70-130
2-Butanone (Methyl Ethyl Ketone)	109	70-130
Chloroform	120	70-130
1,1,1-Trichloroethane	107	70-130
Cyclohexane	103	70-130
Carbon Tetrachloride	105	70-130
Benzene	97	70-130
1,2-Dichloroethane	106	70-130
Heptane	104	70-130
Trichloroethene	103	70-130
4-Methyl-2-pentanone	96	70-130
Toluene	90	70-130
Tetrachloroethene	99	70-130
Chlorobenzene	95	70-130
Ethyl Benzene	98	70-130
m,p-Xylene	97	70-130
o-Xylene	94	70-130
Styrene	71	20-100
Propylbenzene	106	70-130
1,4-Dichlorobenzene	85	50-110
Naphthalene	22	5-80

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	105	70-130

ACRONYMS AND ABBREVIATIONS

ACRONYMS AND ABBREVIATIONS

BGS	below ground surface
BS	blank spike
BSD	blank spike duplicate
BTOC	below top of casing
CMMP	Contaminated Media Management Plan
COC	chemical of concern or contaminant of concern
DEQ	Oregon Department of Environmental Quality
ECSI	Environmental Cleanup Site Information
EPA	U.S. Environmental Protection Agency
eV	electronvolt
HDPE	high-density polyethylene
I.D.	identification
inHg	inches of mercury
LUST	Leaking Underground Storage Tank
mg/L	milligrams per liter
mL/min	milliliters per minute
MS	matrix spike
MSD	matrix spike duplicate
MSL	mean sea level
MTBE	methyl tertiary butyl ether
mV	millivolts
NA	not applicable
NAVD	North American Vertical Datum
ND	not detected
NE	not established
ng/sample	nanograms per sample
NM	not measured
NOAA	National Oceanic and Atmospheric Administration
not detected	compound not detected at a concentration equal to or greater than the laboratory method reporting limit or reporting detection limit
NTU	nephelometric turbidity unit
ORP	oxidation reduction potential
PCE	tetrachloroethene
PFA	perfluoroalkoxy
PID	photoionization detector
PPA	Prospective Purchaser Agreement
QC	quality control
RBC	risk-based concentration
RBDM	<i>Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites</i>
RPD	relative percent difference
SVE	soil vapor extraction
TCE	trichloroethene
TMB	trimethylbenzene

µg/L	micrograms per liter
µg/m ³	micrograms per cubic meter
µS/cm	microSiemens per centimeter
VOC	volatile organic compound