November 21, 2022

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

Attention: Jeff Schatz

Quarterly Report
First 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 first 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.

ACTIVITIES COMPLETED DURING REPORTING PERIOD

In accordance with the Work Plan, NV5 completed the first round of pilot shutdown monitoring activities between October 3 and 18, 2022. A detailed description of monitoring activities completed during this reporting period is presented in the sections below.

SUB-SLAB VAPOR MONITORING

On October 4, 2022, 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 – October 2022

Sample I.D.	Date	Start/End Time	Initial/Final Vacuum (inHg)	Barometric Pressure (inHg)	Ambient Temperature (degrees Fahrenheit)
VP-1	10/04/22	1630/1636	30/4	30.10	~65
VP-2		1655/1701	30/4		~65
VP-3		1618/1624	30/4		~65
VP-4		1713/1721	30/4		~65

The sub-slab vapor sample chemical analytical results from the October 2022 monitoring event are discussed in the sections below and summarized in Table 1.

GROUNDWATER GAUGING AND SAMPLING

NV5 personnel accessed each monitoring well (MW-1 through MW-8) for gauging and sampling purposes. On October 3, 2022, NV5 gauged monitoring wells MW-1 through MW-8 in sequential fashion. NV5 collected depth to groundwater measurements from each well using an oil/water interface probe. The depth to groundwater measurements and groundwater elevations are summarized in Table 2. Free product was not observed in any of the wells during the October 2022 monitoring event. The calculated groundwater elevation data indicates 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 October 3, 2022, is shown on Figure 3.[2]

NV5 sampled monitoring wells MW-1, MW-2, and MW-6 through MW-8 on October 3 and 4, 2022, 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)
- 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 October 2022 monitoring event are discussed in the sections below and summarized in Table 4.

All sampling equipment used in the collection of groundwater samples was decontaminated prior to use. Decontamination was performed on all 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:

[2] Groundwater elevation contours for the October 2022 monitoring event were generated without MW-8 data, which may be erroneously high.

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 October 4, 2022, 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. Each sample was collected at the approximate same location of the previous indoor air samples collected for comparison purposes. Seven air samples were collected 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 – October 2022

Sample I.D.	Location Description	Date	Start/End Time	Initial/Final Barometric Pressure (inHg)	Initial/Final Ambient Temperature (degrees Fahrenheit)
Indoor-1	Office area	10/04/22 through 10/18/22	1742/1500	30.02/30.18	~65
Indoor-2	Office area		1747/1505		
Indoor-3	Warehouse		1800/1520		~54
Indoor-4	Warehouse		1805/1530		
Indoor-5	Shop area		1810/1525		
Indoor-6	Warehouse		1815/1510		
Indoor-7	Warehouse		1820/1515		
Background	Exterior		1825/1535		

The indoor air sample chemical analytical results from the October 2022 monitoring event are discussed in the sections below and summarized in Table 5.

RIVERBANK INSPECTION

On October 4, 2022, NV5 completed a visual inspection of the riverbank adjacent to the subject property at relatively low tide for evidence of groundwater seeps and petroleum-like sheens. The riverbank inspection was conducted from the top of the bank, generally coincident with low tide. The riverbank inspection was 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 inspections, including previous and more frequent inspections associated with apparent sheens previously originating from the storm line outfall, is presented in Table 6.

CHEMICAL ANALYTICAL RESULTS

SUB-SLAB VAPOR SAMPLES

The four sub-slab vapor samples (VP-1 through VP-4) collected in October 2022 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 the Attachment.

Gasoline-range hydrocarbons were detected in sub-slab vapor sample VP-3 at a concentration of 8,300 µg/m^3. This detection is substantially less than the DEQ *Vapor Intrusion into Building*s RBC for occupational receptors. 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 October 2022. Each of the detected concentrations of VOCs was substantially less than the corresponding DEQ *Vapor Intrusion into Building*s RBCs for occupational receptors.

GROUNDWATER SAMPLES

Groundwater samples collected during the October 2022 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 the Attachment.

Gasoline-range hydrocarbons were detected in the groundwater samples collected from monitoring wells MW-1 and MW-8 at concentrations of 18,200 µg/L and 16,000 µg/L, respectively. In addition, naphthalene was detected in the groundwater sample collected from monitoring well MW-1 at a concentration of 521 µg/L. 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 Building*s 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 October 2022 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 the Attachment.

Up to eight VOCs with DEQ-established screening levels were detected in the seven indoor air samples (Indoor-1 through Indoor-7). Chloroform was detected in four of the seven indoor air samples at concentrations slightly exceeding the DEQ *Inhalation* RBC for occupational receptors. However, chloroform is not a petroleum-related COC at the subject property and its detection is attributed to the use of municipal (treated) water for washing operations within subject property structure. Petroleum-related VOCs were not detected in the October 2022 indoor air samples at concentrations greater than the DEQ *Inhalation* RBCs for an occupational receptor.

Benzene, carbon tetrachloride, chloroform, ethylbenzene, toluene, and xylenes were also detected in the background sample (Background) collected from the exterior of the subject property structure in October 2022.

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 workers in two consecutive quarterly monitoring events.

Based on our review of the October 2022 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 a decreasing trend 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 concentrations exceed the applicable DEQ RBC for occupational workers in two consecutive quarterly monitoring events.

Based on our review of the October 2022 groundwater sample chemical analytical results, the detected concentrations of gasoline-range hydrocarbons and petroleum-related VOCs in groundwater samples collected from monitoring wells MW-2, MW-6, MW-7, and MW-8 were generally consistent with baseline values. The concentration of gasoline-range hydrocarbons detected in the groundwater sample collected from monitoring well MW-8 slightly exceeded the DEQ *Groundwater in Excavation* RBC for construction/excavation workers[3] but was less than the baseline value.

The detected concentrations of gasoline-range hydrocarbons and petroleum-related VOCs in the groundwater sample collected from monitoring well MW-1 were slightly elevated with respect to baseline values, and the detected concentrations of gasoline-range hydrocarbons and naphthalene slightly exceeded the corresponding DEQ *Groundwater in Excavation* RBCs for construction/excavation workers.[3] Forthcoming groundwater monitoring results (i.e., the second round of pilot shutdown monitoring scheduled for January 2023) will be evaluated to determine if rebound conditions are met, in accordance with the Work Plan.

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 is 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 workers in any single monitoring event.

Based on our review of the October 2022 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. 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 four of the indoor air samples at concentrations slightly exceeding the DEQ RBC for occupational workers. As noted earlier, the presence of chloroform is attributed to the use of municipal (treated) 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 first round of pilot shutdown monitoring conducted in October 2022 do not indicate a rebounding trend in sub-slab vapor, and DEQ RBCs were not exceeded in any sub-slab vapor samples collected.

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

- With the exception of slightly increased values of gasoline-range hydrocarbons and petroleum-related VOCs detected in monitoring well MW-1 relative to baseline values, the groundwater sampling results from the first round of pilot shutdown monitoring conducted in October 2022 do not indicate a rebounding trend in groundwater, and DEQ RBCs for occupational workers for volatilization pathways were not exceeded in any groundwater samples collected.
- The indoor air sampling results from the first round of pilot shutdown monitoring conducted in October 2022 exhibit similar results relative to prior sampling events, and DEQ RBCs were not exceeded in any indoor air samples collected except for chloroform, which appears to be present at an average concentration nearly identical to the RBC value and 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 second round of pilot shutdown monitoring (scheduled for January 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

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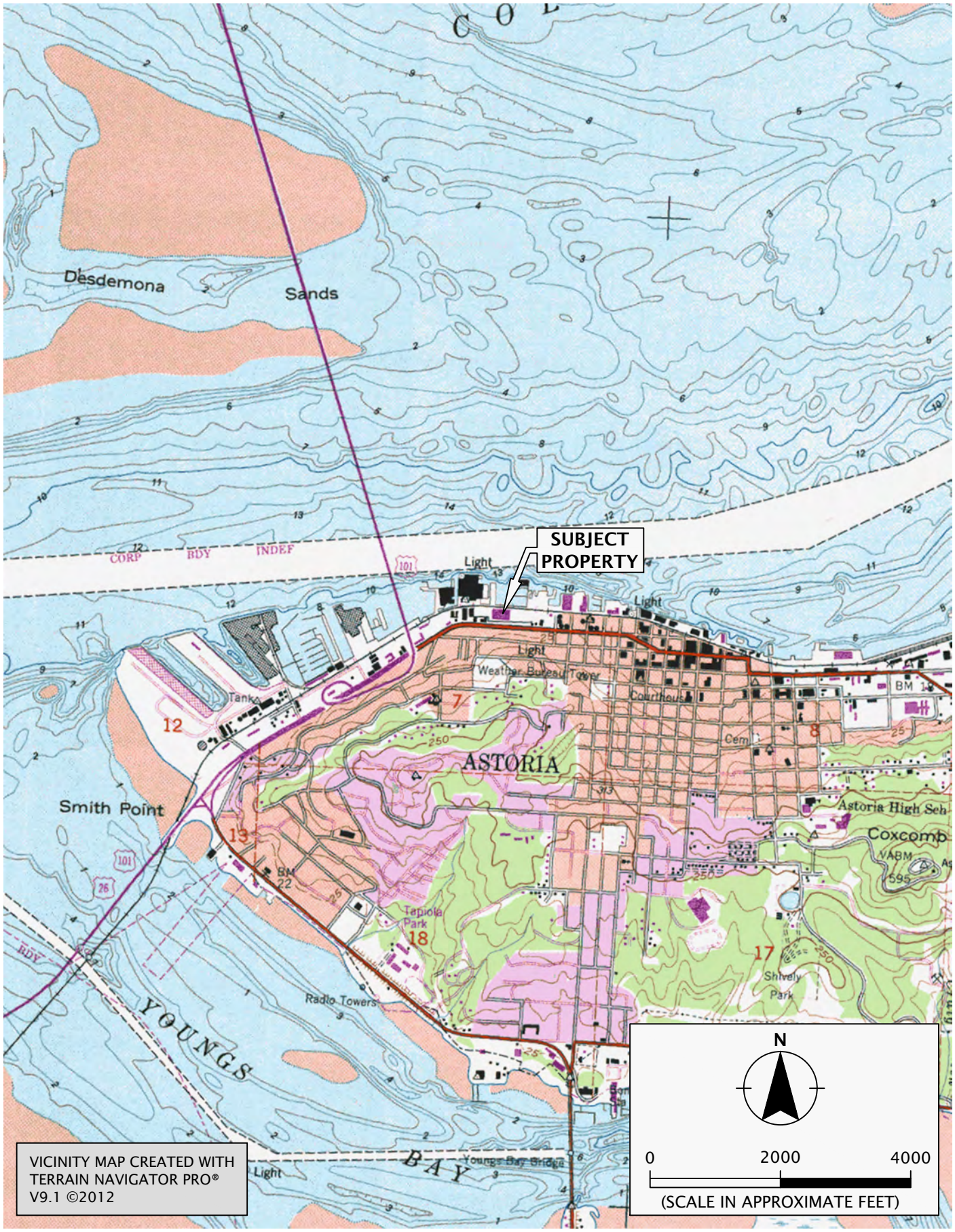
cc: Rebecca Digiustino, Oregon Department of Environmental Quality
Sarah Greenfield, Oregon Department of Environmental Quality
Chris Nemlowill, Blue Jump Suit LLC and AHI Cannery LLC
Al Jaques, CM Services Co.

EAH:MFC:kt
Attachments
One copy submitted
Document ID: BigBeams-1-04-05-112122-envlr.docx

FIGURES



NIV5	BIGBEAMS-1-04-05	**VICINITY MAP**
	NOVEMBER 2022	FORMER ASTORIA WAREHOUSING SITE ASTORIA, OR — **FIGURE 1**

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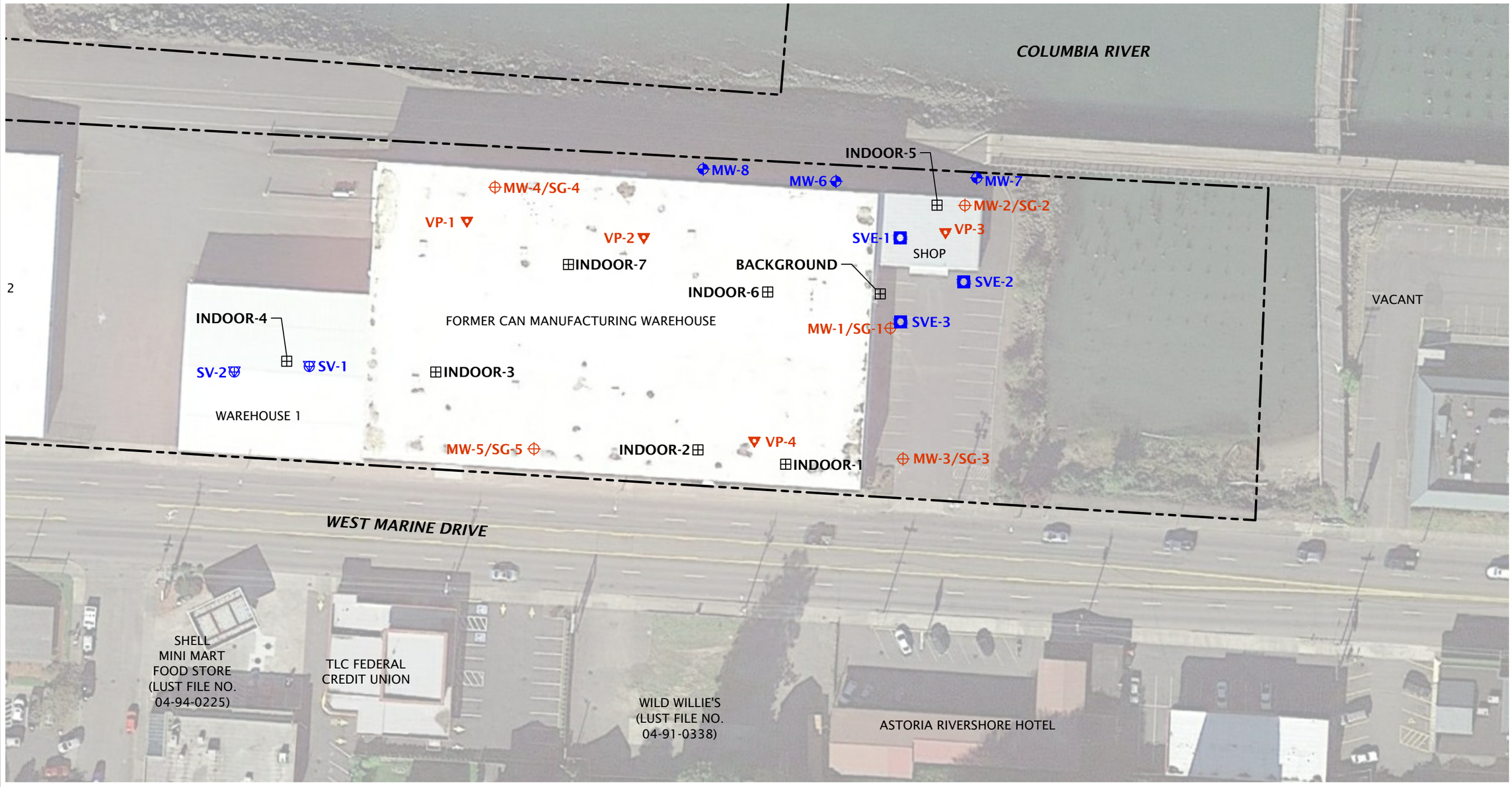
File Name: J:\A-D\BigBeams\BigBeams-1\BigBeams-1-04\BigBeams-1-04-05- Monitoring\Figures\CAD\PSMR\BigBeams-1-04-05-VM01.dwg | Layout: FIGURE 1



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

N

0 60 120

(SCALE IN FEET)

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

SITE PLAN

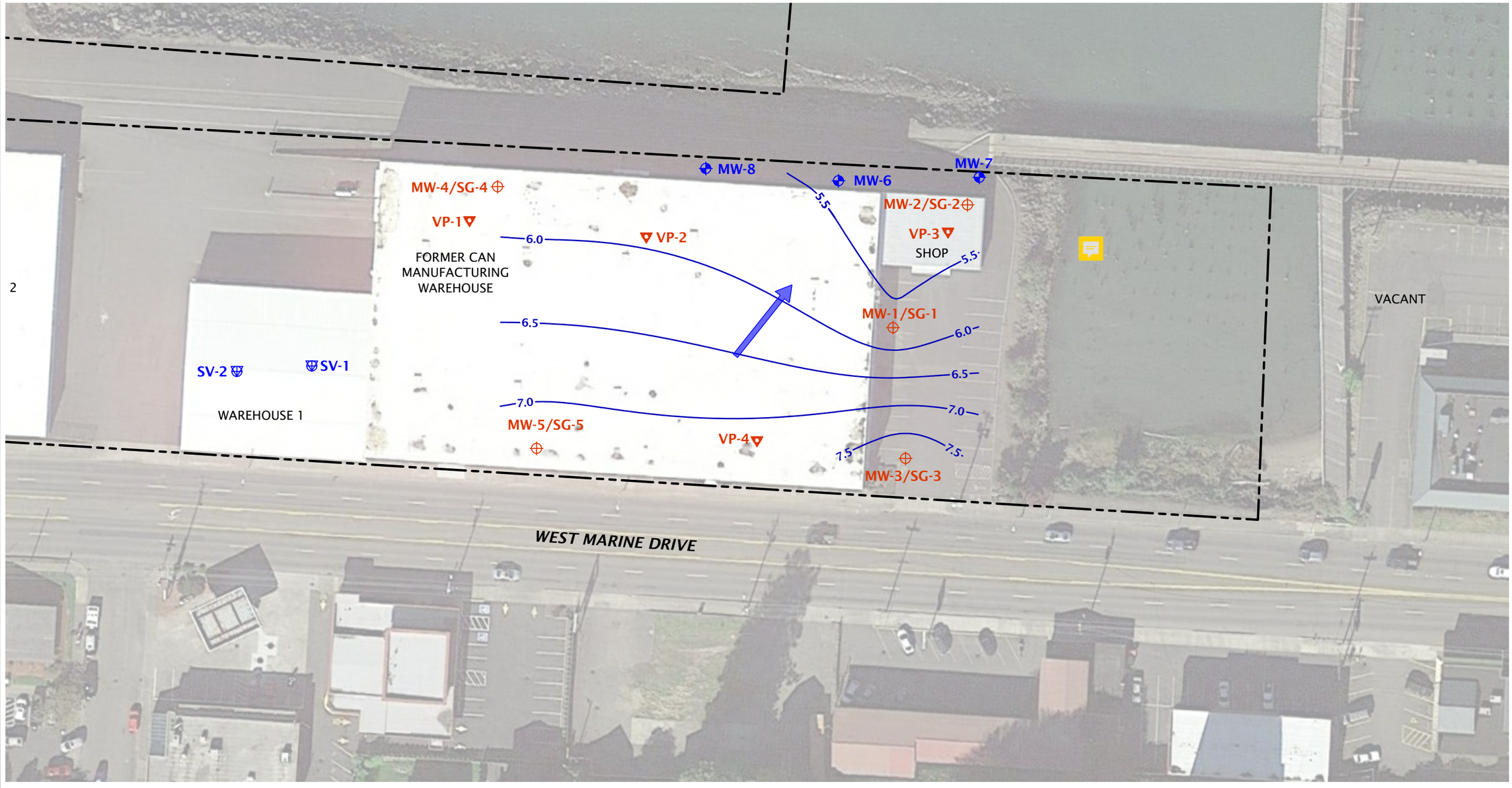
FIGURE 2

FORMER ASTORIA WAREHOUSING SITE
ASTORIA, OR

BIGBEAMS-1-04-05

NOVEMBER 2022

NV5



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 OCTOBER 3, 2022 (0.5-FOOT CONTOUR INTERVAL) NAVD88 DATUM
- GROUNDWATER FLOW DIRECTION

N

0 60 120

(SCALE IN FEET)

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

GROUNDWATER CONTOUR MAP - OCTOBER 2022

FIGURE 3

FORMER ASTORIA WAREHOUSING SITE
ASTORIA, OR

BIGBEAMS-1-04-05

NOVEMBER 2022

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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	Naphthalene	2-Propanol	Styrene	Toluene	1,2,4-TMB	1,3,5-TMB	m,p-Xylene	o-Xylene
VP-1	09/24/18	**18,000**	**79**	**360**	**30**	**43**	17 U	6.4 U	**6.4**	**690**	**150**	**640**	
	06/28/19	32,000 U	2.3 U	2.3 U	2.3 U	2.3 U	9.4 U	2.4 U	**4.9**	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	–	**56**	5.2 U	4.6 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	3.30 U	**6.59**	0.851 U	1.88 U	**4.06**	**1.12**	**1.78**	0.867 U
	10/4/22[3]	826 U	0.639 U	0.867 U	0.983 U	3.30 U	**21.8**	0.851 U	**4.18**	0.982 U	0.982 U	**2.43**	0.867 U
VP-2	09/24/18	**27,000**	**100**	**510**	**43**	**130**	17 U	6.0 U	**6.4**	**1,300**	**260**	**893**	
	06/28/19	33,000 U	2.4 U	2.4 U	2.4 U	2.3 U	**14**	2.4 U	**3.9**	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	–	11 U	5.0 U	4.4 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	3.30 U	**5.97**	0.851 U	1.88 U	**2.80**	**1.01**	1.73 U	0.867 U
	10/4/22[3]	826 U	0.639 U	**1.96**	0.983 U	3.30 U	**27.5**	0.851 U	**5.35**	**4.17**	**1.05**	**9.32**	**3.31**
VP-3	09/24/18	**61,000,000**	**650,000**	**210,000**	7,500 U	32,000 U	3.9 U	1.3 U	**5,800 CN, J**	**20,000**	**11,000**	**267,000**	
	06/28/19	**58,000,000**	**530,000**	**67,000**	9,500 U	9,100 U	38,000 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**	–	6,400 U	2,800 U	**2,700**	**62,000**	**25,000**	**240,000**	**4,400**
	08/11/21	**24,400**	**130**	**67.6**	**10.2**	3.30 U	3.07 U	0.851 U	**3.44**	**395**	**154**	**156**	**6.46**
	10/4/22[3]	**8,300**	**6.13**	**5.29**	0.983 U	3.30 U	**11.4**	0.851 U	**7.31**	**8.00**	**4.46**	**14.4**	**2.39**
VP-4	09/24/18	**4,900,000**	**1,800**	**1,600**	380 U	1,600 U	750 U	320 U	290 U	**920**	**470**	**1,400**	
	06/28/19	**1,200,000**	130 U	130 U	130 U	130 U	520 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	–	2,600 U	1,100 U	980 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	3.30 U	**6.00**	0.851 U	1.88 U	**6.48**	**1.84**	1.73 U	0.867 U
	10/4/22[3]	826 U	0.639 U	**0.984**	0.983 U	3.30 U	**15.0**	0.851 U	**2.16**	**2.41**	0.98 U	**4.47**	**1.60**
DEQ Generic RBCs[2]													
Vapor Intrusion into Buildings													
Occupational		1,700,000	1,600	4,900	1,800,000	360	NE	4,400,000	21,900,000	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 A.
2. DEQ Generic RBCs dated May 2018
3. First round of pilot shutdown monitoring (October 2022).
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
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

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
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

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
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

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
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

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
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
					01/04/22	10.61		No
OAS-2	NM	NM	19.6	10-20	12/11/19	12.31	NM	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

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
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

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	--
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	--
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	--	--	--	--	--	--	--
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	--	--	--	--	--	--	--
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	--	--	--	--	--	--	--
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	--
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	--
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	--
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.
--: 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**	**64.7**
	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**	**37.5**
	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**	**48.2**
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**	**347**
	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 U	**10.9**	**15.1 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**	**44.8**
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**	**2.99 J**
	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**	**1.60 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]	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**
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**	**138**	--	**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**	**1,220**
	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]	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**
MW-5	10/03/18	**6,010**	**167**	0.500 U	**14.3**	0.500 U	0.500 U	0.500 U	--	**88.2**	**49.0**	**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**	**13.0**
	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**	**16.5**
	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]	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**
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**	**171**	**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**	**32.0**	--	**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**	**49.5**
MW-7	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**
	06/25/20	**7,610**	**556**	--	--	--	0.630 U	0.409 U	--	**586**	**102**	--	**15.2**	**355**	**217**	**15.4**	--	**11.6**	**96.8**	**207**
	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**	**24.5**
	01/04/22	**3,060**	**178**	**5.43**	**5.71**	**0.552 J**	1.00 U	1.00 U	1.00 U	**70.3**	**42.8**	**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**	**17.6**
MW-8	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**	**5,020**
	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**	**1,560**
	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	**172.0 C3**	**197.0**	**25.40**	--	**989**	**296**	**1,530**
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

Notes:
1. DEQ Generic RBCs dated May 2018
2. First round of pilot shutdown monitoring (October 2022)
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**
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**
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**
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**
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**
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**

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-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**
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**
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 Inspection[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	--	
10/04/22	9:30	-0.07	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

ATTACHMENT

CHEMICAL ANALYTICAL PROGRAM

GENERAL

Chain-of-custody procedures were followed during handling and transport of the air, groundwater, and sub-slab vapor samples to the analytical laboratory. The laboratory holds 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.

ANALYTICAL REPORT

October 11, 2022

NV5 - Wilsonville, OR

Sample Delivery Group:	L1543682
Samples Received:	10/06/2022
Project Number:	BigBeams-1-04
Description:	
Site:	FORMER ASTORIA WATERHOUSE
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.

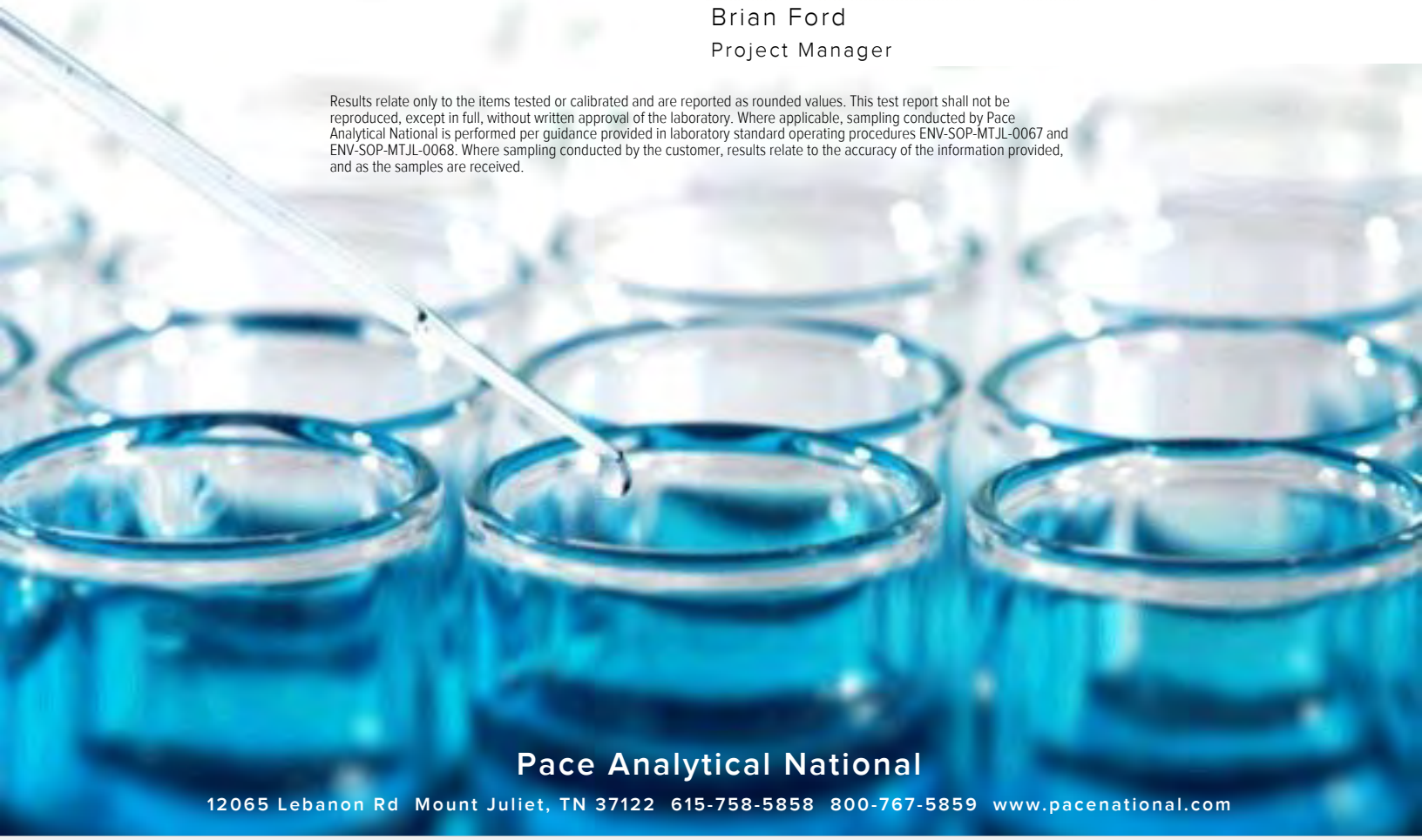

TABLE OF CONTENTS

VP-3(100422) L1543682-01 Air

Collected by: Andre DeJonge | Collected date/time: 10/04/22 16:24 | Received date/time: 10/06/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (MS) by Method TO-15	WG1939864	1	10/09/22 23:36	10/09/22 23:36	FKG	Mt. Juliet, TN
Volatile Organic Compounds (MS) by Method TO-15	WG1940193	10	10/10/22 23:51	10/10/22 23:51	SDS	Mt. Juliet, TN

VP-1(100422) L1543682-02 Air

Collected by: Andre DeJonge | Collected date/time: 10/04/22 16:36 | Received date/time: 10/06/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (MS) by Method TO-15	WG1939864	1	10/10/22 00:07	10/10/22 00:07	FKG	Mt. Juliet, TN

VP-2(100422) L1543682-03 Air

Collected by: Andre DeJonge | Collected date/time: 10/04/22 17:01 | Received date/time: 10/06/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (MS) by Method TO-15	WG1939864	1	10/10/22 00:38	10/10/22 00:38	FKG	Mt. Juliet, TN

VP-1(100422) L1543682-04 Air

Collected by: Andre DeJonge | Collected date/time: 10/04/22 17:21 | Received date/time: 10/06/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (MS) by Method TO-15	WG1939864	1	10/10/22 01:08	10/10/22 01:08	FKG	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

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	ND	ND		1	WG1939864
Allyl chloride	107-05-1	76.53	0.200	0.626	ND	ND		1	WG1939864
Benzene	71-43-2	78.10	0.200	0.639	1.92	6.13		1	WG1939864
Benzyl Chloride	100-44-7	127	0.200	1.04	ND	ND		1	WG1939864
Bromodichloromethane	75-27-4	164	0.200	1.34	ND	ND		1	WG1939864
Bromoform	75-25-2	253	0.600	6.21	ND	ND		1	WG1939864
Bromomethane	74-83-9	94.90	0.200	0.776	ND	ND		1	WG1939864
1,3-Butadiene	106-99-0	54.10	2.00	4.43	ND	ND		1	WG1939864
Carbon disulfide	75-15-0	76.10	0.200	0.622	0.557	1.73		1	WG1939864
Carbon tetrachloride	56-23-5	154	0.200	1.26	ND	ND		1	WG1939864
Chlorobenzene	108-90-7	113	0.200	0.924	ND	ND		1	WG1939864
Chloroethane	75-00-3	64.50	0.200	0.528	ND	ND		1	WG1939864
Chloroform	67-66-3	119	0.200	0.973	ND	ND		1	WG1939864
Chloromethane	74-87-3	50.50	0.200	0.413	0.346	0.715		1	WG1939864
2-Chlorotoluene	95-49-8	126	0.200	1.03	ND	ND		1	WG1939864
Cyclohexane	110-82-7	84.20	0.200	0.689	19.3	66.5		1	WG1939864
Dibromochloromethane	124-48-1	208	0.200	1.70	ND	ND		1	WG1939864
1,2-Dibromoethane	106-93-4	188	0.200	1.54	ND	ND		1	WG1939864
1,2-Dichlorobenzene	95-50-1	147	0.200	1.20	ND	ND		1	WG1939864
1,3-Dichlorobenzene	541-73-1	147	0.200	1.20	ND	ND		1	WG1939864
1,4-Dichlorobenzene	106-46-7	147	0.200	1.20	ND	ND		1	WG1939864
1,2-Dichloroethane	107-06-2	99	0.200	0.810	ND	ND		1	WG1939864
1,1-Dichloroethane	75-34-3	98	0.200	0.802	ND	ND		1	WG1939864
1,1-Dichloroethene	75-35-4	96.90	0.200	0.793	ND	ND		1	WG1939864
cis-1,2-Dichloroethene	156-59-2	96.90	0.200	0.793	ND	ND		1	WG1939864
trans-1,2-Dichloroethene	156-60-5	96.90	0.200	0.793	ND	ND		1	WG1939864
1,2-Dichloropropane	78-87-5	113	0.200	0.924	ND	ND		1	WG1939864
cis-1,3-Dichloropropene	10061-01-5	111	0.200	0.908	ND	ND		1	WG1939864
trans-1,3-Dichloropropene	10061-02-6	111	0.200	0.908	ND	ND		1	WG1939864
1,4-Dioxane	123-91-1	88.10	0.200	0.721	ND	ND		1	WG1939864
Ethanol	64-17-5	46.10	1.25	2.36	35.1	66.2		1	WG1939864
Ethylbenzene	100-41-4	106	0.200	0.867	1.22	5.29		1	WG1939864
4-Ethyltoluene	622-96-8	120	0.200	0.982	0.338	1.66		1	WG1939864
Trichlorofluoromethane	75-69-4	137.40	0.200	1.12	ND	ND		1	WG1939864
Dichlorodifluoromethane	75-71-8	120.92	0.200	0.989	0.502	2.48		1	WG1939864
1,1,2-Trichlorotrifluoroethane	76-13-1	187.40	0.200	1.53	ND	ND		1	WG1939864
1,2-Dichlorotetrafluoroethane	76-14-2	171	0.200	1.40	ND	ND		1	WG1939864
Heptane	142-82-5	100	0.200	0.818	ND	ND		1	WG1939864
Hexachloro-1,3-butadiene	87-68-3	261	0.630	6.73	ND	ND		1	WG1939864
n-Hexane	110-54-3	86.20	0.630	2.22	4.32	15.2		1	WG1939864
Isopropylbenzene	98-82-8	120.20	0.200	0.983	ND	ND		1	WG1939864
Methylene Chloride	75-09-2	84.90	0.200	0.694	ND	ND		1	WG1939864
Methyl Butyl Ketone	591-78-6	100	1.25	5.11	ND	ND		1	WG1939864
2-Butanone (MEK)	78-93-3	72.10	1.25	3.69	ND	ND		1	WG1939864
4-Methyl-2-pentanone (MIBK)	108-10-1	100.10	1.25	5.12	ND	ND		1	WG1939864
Methyl methacrylate	80-62-6	100.12	0.200	0.819	ND	ND		1	WG1939864
MTBE	1634-04-4	88.10	0.200	0.721	ND	ND		1	WG1939864
Naphthalene	91-20-3	128	0.630	3.30	ND	ND		1	WG1939864
2-Propanol	67-63-0	60.10	1.25	3.07	4.63	11.4		1	WG1939864
Propene	115-07-1	42.10	1.25	2.15	24.7	42.5		1	WG1939864
Styrene	100-42-5	104	0.200	0.851	ND	ND		1	WG1939864
1,1,2,2-Tetrachloroethane	79-34-5	168	0.200	1.37	ND	ND		1	WG1939864
Tetrachloroethylene	127-18-4	166	0.200	1.36	ND	ND		1	WG1939864
Tetrahydrofuran	109-99-9	72.10	0.200	0.590	ND	ND		1	WG1939864
Toluene	108-88-3	92.10	0.500	1.88	1.94	7.31		1	WG1939864
1,2,4-Trichlorobenzene	120-82-1	181	0.630	4.66	ND	ND		1	WG1939864

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	WG1939864
1,1,2-Trichloroethane	79-00-5	133	0.200	1.09	ND	ND		1	WG1939864
Trichloroethylene	79-01-6	131	0.200	1.07	ND	ND		1	WG1939864
1,2,4-Trimethylbenzene	95-63-6	120	0.200	0.982	1.63	8.00		1	WG1939864
1,3,5-Trimethylbenzene	108-67-8	120	0.200	0.982	0.908	4.46		1	WG1939864
2,2,4-Trimethylpentane	540-84-1	114.22	2.00	9.34	280	1310		10	WG1940193
Vinyl chloride	75-01-4	62.50	0.200	0.511	ND	ND		1	WG1939864
Vinyl Bromide	593-60-2	106.95	0.200	0.875	ND	ND		1	WG1939864
Vinyl acetate	108-05-4	86.10	0.200	0.704	ND	ND		1	WG1939864
m&p-Xylene	1330-20-7	106	0.400	1.73	3.32	14.4		1	WG1939864
o-Xylene	95-47-6	106	0.200	0.867	0.552	2.39		1	WG1939864
TPH (GC/MS) Low Fraction	8006-61-9	101	200	826	2010	8300		1	WG1939864
(S) 1,4-Bromofluorobenzene	*460-00-4*	*175*	*60.0-140*		*107*				WG1939864
(S) 1,4-Bromofluorobenzene	*460-00-4*	*175*	*60.0-140*		*89.6*				WG1940193

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	5.51	13.1		1	WG1939864
Allyl chloride	107-05-1	76.53	0.200	0.626	ND	ND		1	WG1939864
Benzene	71-43-2	78.10	0.200	0.639	ND	ND		1	WG1939864
Benzyl Chloride	100-44-7	127	0.200	1.04	ND	ND		1	WG1939864
Bromodichloromethane	75-27-4	164	0.200	1.34	ND	ND		1	WG1939864
Bromoform	75-25-2	253	0.600	6.21	ND	ND		1	WG1939864
Bromomethane	74-83-9	94.90	0.200	0.776	ND	ND		1	WG1939864
1,3-Butadiene	106-99-0	54.10	2.00	4.43	ND	ND		1	WG1939864
Carbon disulfide	75-15-0	76.10	0.200	0.622	ND	ND		1	WG1939864
Carbon tetrachloride	56-23-5	154	0.200	1.26	ND	ND		1	WG1939864
Chlorobenzene	108-90-7	113	0.200	0.924	ND	ND		1	WG1939864
Chloroethane	75-00-3	64.50	0.200	0.528	ND	ND		1	WG1939864
Chloroform	67-66-3	119	0.200	0.973	ND	ND		1	WG1939864
Chloromethane	74-87-3	50.50	0.200	0.413	ND	ND		1	WG1939864
2-Chlorotoluene	95-49-8	126	0.200	1.03	ND	ND		1	WG1939864
Cyclohexane	110-82-7	84.20	0.200	0.689	ND	ND		1	WG1939864
Dibromochloromethane	124-48-1	208	0.200	1.70	ND	ND		1	WG1939864
1,2-Dibromoethane	106-93-4	188	0.200	1.54	ND	ND		1	WG1939864
1,2-Dichlorobenzene	95-50-1	147	0.200	1.20	ND	ND		1	WG1939864
1,3-Dichlorobenzene	541-73-1	147	0.200	1.20	ND	ND		1	WG1939864
1,4-Dichlorobenzene	106-46-7	147	0.200	1.20	ND	ND		1	WG1939864
1,2-Dichloroethane	107-06-2	99	0.200	0.810	ND	ND		1	WG1939864
1,1-Dichloroethane	75-34-3	98	0.200	0.802	ND	ND		1	WG1939864
1,1-Dichloroethene	75-35-4	96.90	0.200	0.793	ND	ND		1	WG1939864
cis-1,2-Dichloroethene	156-59-2	96.90	0.200	0.793	ND	ND		1	WG1939864
trans-1,2-Dichloroethene	156-60-5	96.90	0.200	0.793	ND	ND		1	WG1939864
1,2-Dichloropropane	78-87-5	113	0.200	0.924	ND	ND		1	WG1939864
cis-1,3-Dichloropropene	10061-01-5	111	0.200	0.908	ND	ND		1	WG1939864
trans-1,3-Dichloropropene	10061-02-6	111	0.200	0.908	ND	ND		1	WG1939864
1,4-Dioxane	123-91-1	88.10	0.200	0.721	ND	ND		1	WG1939864
Ethanol	64-17-5	46.10	1.25	2.36	38.9	73.3		1	WG1939864
Ethylbenzene	100-41-4	106	0.200	0.867	ND	ND		1	WG1939864
4-Ethyltoluene	622-96-8	120	0.200	0.982	ND	ND		1	WG1939864
Trichlorofluoromethane	75-69-4	137.40	0.200	1.12	0.246	1.38		1	WG1939864
Dichlorodifluoromethane	75-71-8	120.92	0.200	0.989	0.503	2.49		1	WG1939864
1,1,2-Trichlorotrifluoroethane	76-13-1	187.40	0.200	1.53	ND	ND		1	WG1939864
1,2-Dichlorotetrafluoroethane	76-14-2	171	0.200	1.40	ND	ND		1	WG1939864
Heptane	142-82-5	100	0.200	0.818	ND	ND		1	WG1939864
Hexachloro-1,3-butadiene	87-68-3	261	0.630	6.73	ND	ND		1	WG1939864
n-Hexane	110-54-3	86.20	0.630	2.22	ND	ND		1	WG1939864
Isopropylbenzene	98-82-8	120.20	0.200	0.983	ND	ND		1	WG1939864
Methylene Chloride	75-09-2	84.90	0.200	0.694	0.311	1.08		1	WG1939864
Methyl Butyl Ketone	591-78-6	100	1.25	5.11	ND	ND		1	WG1939864
2-Butanone (MEK)	78-93-3	72.10	1.25	3.69	ND	ND		1	WG1939864
4-Methyl-2-pentanone (MIBK)	108-10-1	100.10	1.25	5.12	ND	ND		1	WG1939864
Methyl methacrylate	80-62-6	100.12	0.200	0.819	ND	ND		1	WG1939864
MTBE	1634-04-4	88.10	0.200	0.721	ND	ND		1	WG1939864
Naphthalene	91-20-3	128	0.630	3.30	ND	ND		1	WG1939864
2-Propanol	67-63-0	60.10	1.25	3.07	8.88	21.8		1	WG1939864
Propene	115-07-1	42.10	1.25	2.15	ND	ND		1	WG1939864
Styrene	100-42-5	104	0.200	0.851	ND	ND		1	WG1939864
1,1,2,2-Tetrachloroethane	79-34-5	168	0.200	1.37	ND	ND		1	WG1939864
Tetrachloroethylene	127-18-4	166	0.200	1.36	0.262	1.78		1	WG1939864
Tetrahydrofuran	109-99-9	72.10	0.200	0.590	ND	ND		1	WG1939864
Toluene	108-88-3	92.10	0.500	1.88	1.11	4.18		1	WG1939864
1,2,4-Trichlorobenzene	120-82-1	181	0.630	4.66	ND	ND		1	WG1939864

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	WG1939864
1,1,2-Trichloroethane	79-00-5	133	0.200	1.09	ND	ND		1	WG1939864
Trichloroethylene	79-01-6	131	0.200	1.07	ND	ND		1	WG1939864
1,2,4-Trimethylbenzene	95-63-6	120	0.200	0.982	ND	ND		1	WG1939864
1,3,5-Trimethylbenzene	108-67-8	120	0.200	0.982	ND	ND		1	WG1939864
2,2,4-Trimethylpentane	540-84-1	114.22	0.200	0.934	ND	ND		1	WG1939864
Vinyl chloride	75-01-4	62.50	0.200	0.511	ND	ND		1	WG1939864
Vinyl Bromide	593-60-2	106.95	0.200	0.875	ND	ND		1	WG1939864
Vinyl acetate	108-05-4	86.10	0.200	0.704	ND	ND		1	WG1939864
m&p-Xylene	1330-20-7	106	0.400	1.73	0.561	2.43		1	WG1939864
o-Xylene	95-47-6	106	0.200	0.867	ND	ND		1	WG1939864
TPH (GC/MS) Low Fraction	8006-61-9	101	200	826	ND	ND		1	WG1939864
(S) 1,4-Bromofluorobenzene	*460-00-4*	*175*	*60.0-140*		*96.9*				WG1939864

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	8.02	19.1		1	WG1939864
Allyl chloride	107-05-1	76.53	0.200	0.626	ND	ND		1	WG1939864
Benzene	71-43-2	78.10	0.200	0.639	ND	ND		1	WG1939864
Benzyl Chloride	100-44-7	127	0.200	1.04	ND	ND		1	WG1939864
Bromodichloromethane	75-27-4	164	0.200	1.34	ND	ND		1	WG1939864
Bromoform	75-25-2	253	0.600	6.21	ND	ND		1	WG1939864
Bromomethane	74-83-9	94.90	0.200	0.776	ND	ND		1	WG1939864
1,3-Butadiene	106-99-0	54.10	2.00	4.43	ND	ND		1	WG1939864
Carbon disulfide	75-15-0	76.10	0.200	0.622	ND	ND		1	WG1939864
Carbon tetrachloride	56-23-5	154	0.200	1.26	ND	ND		1	WG1939864
Chlorobenzene	108-90-7	113	0.200	0.924	ND	ND		1	WG1939864
Chloroethane	75-00-3	64.50	0.200	0.528	ND	ND		1	WG1939864
Chloroform	67-66-3	119	0.200	0.973	0.308	1.50		1	WG1939864
Chloromethane	74-87-3	50.50	0.200	0.413	ND	ND		1	WG1939864
2-Chlorotoluene	95-49-8	126	0.200	1.03	ND	ND		1	WG1939864
Cyclohexane	110-82-7	84.20	0.200	0.689	ND	ND		1	WG1939864
Dibromochloromethane	124-48-1	208	0.200	1.70	ND	ND		1	WG1939864
1,2-Dibromoethane	106-93-4	188	0.200	1.54	ND	ND		1	WG1939864
1,2-Dichlorobenzene	95-50-1	147	0.200	1.20	ND	ND		1	WG1939864
1,3-Dichlorobenzene	541-73-1	147	0.200	1.20	ND	ND		1	WG1939864
1,4-Dichlorobenzene	106-46-7	147	0.200	1.20	ND	ND		1	WG1939864
1,2-Dichloroethane	107-06-2	99	0.200	0.810	ND	ND		1	WG1939864
1,1-Dichloroethane	75-34-3	98	0.200	0.802	ND	ND		1	WG1939864
1,1-Dichloroethene	75-35-4	96.90	0.200	0.793	ND	ND		1	WG1939864
cis-1,2-Dichloroethene	156-59-2	96.90	0.200	0.793	ND	ND		1	WG1939864
trans-1,2-Dichloroethene	156-60-5	96.90	0.200	0.793	ND	ND		1	WG1939864
1,2-Dichloropropane	78-87-5	113	0.200	0.924	ND	ND		1	WG1939864
cis-1,3-Dichloropropene	10061-01-5	111	0.200	0.908	ND	ND		1	WG1939864
trans-1,3-Dichloropropene	10061-02-6	111	0.200	0.908	ND	ND		1	WG1939864
1,4-Dioxane	123-91-1	88.10	0.200	0.721	ND	ND		1	WG1939864
Ethanol	64-17-5	46.10	1.25	2.36	34.8	65.6		1	WG1939864
Ethylbenzene	100-41-4	106	0.200	0.867	0.452	1.96		1	WG1939864
4-Ethyltoluene	622-96-8	120	0.200	0.982	0.253	1.24		1	WG1939864
Trichlorofluoromethane	75-69-4	137.40	0.200	1.12	0.241	1.35		1	WG1939864
Dichlorodifluoromethane	75-71-8	120.92	0.200	0.989	0.506	2.50		1	WG1939864
1,1,2-Trichlorotrifluoroethane	76-13-1	187.40	0.200	1.53	ND	ND		1	WG1939864
1,2-Dichlorotetrafluoroethane	76-14-2	171	0.200	1.40	ND	ND		1	WG1939864
Heptane	142-82-5	100	0.200	0.818	ND	ND		1	WG1939864
Hexachloro-1,3-butadiene	87-68-3	261	0.630	6.73	ND	ND		1	WG1939864
n-Hexane	110-54-3	86.20	0.630	2.22	ND	ND		1	WG1939864
Isopropylbenzene	98-82-8	120.20	0.200	0.983	ND	ND		1	WG1939864
Methylene Chloride	75-09-2	84.90	0.200	0.694	ND	ND		1	WG1939864
Methyl Butyl Ketone	591-78-6	100	1.25	5.11	ND	ND		1	WG1939864
2-Butanone (MEK)	78-93-3	72.10	1.25	3.69	ND	ND		1	WG1939864
4-Methyl-2-pentanone (MIBK)	108-10-1	100.10	1.25	5.12	ND	ND		1	WG1939864
Methyl methacrylate	80-62-6	100.12	0.200	0.819	ND	ND		1	WG1939864
MTBE	1634-04-4	88.10	0.200	0.721	ND	ND		1	WG1939864
Naphthalene	91-20-3	128	0.630	3.30	ND	ND		1	WG1939864
2-Propanol	67-63-0	60.10	1.25	3.07	11.2	27.5		1	WG1939864
Propene	115-07-1	42.10	1.25	2.15	ND	ND		1	WG1939864
Styrene	100-42-5	104	0.200	0.851	ND	ND		1	WG1939864
1,1,2,2-Tetrachloroethane	79-34-5	168	0.200	1.37	ND	ND		1	WG1939864
Tetrachloroethylene	127-18-4	166	0.200	1.36	0.225	1.53		1	WG1939864
Tetrahydrofuran	109-99-9	72.10	0.200	0.590	ND	ND		1	WG1939864
Toluene	108-88-3	92.10	0.500	1.88	1.42	5.35		1	WG1939864
1,2,4-Trichlorobenzene	120-82-1	181	0.630	4.66	ND	ND		1	WG1939864

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	WG1939864
1,1,2-Trichloroethane	79-00-5	133	0.200	1.09	ND	ND		1	WG1939864
Trichloroethylene	79-01-6	131	0.200	1.07	ND	ND		1	WG1939864
1,2,4-Trimethylbenzene	95-63-6	120	0.200	0.982	0.849	4.17		1	WG1939864
1,3,5-Trimethylbenzene	108-67-8	120	0.200	0.982	0.213	1.05		1	WG1939864
2,2,4-Trimethylpentane	540-84-1	114.22	0.200	0.934	ND	ND		1	WG1939864
Vinyl chloride	75-01-4	62.50	0.200	0.511	ND	ND		1	WG1939864
Vinyl Bromide	593-60-2	106.95	0.200	0.875	ND	ND		1	WG1939864
Vinyl acetate	108-05-4	86.10	0.200	0.704	ND	ND		1	WG1939864
m&p-Xylene	1330-20-7	106	0.400	1.73	2.15	9.32		1	WG1939864
o-Xylene	95-47-6	106	0.200	0.867	0.763	3.31		1	WG1939864
TPH (GC/MS) Low Fraction	8006-61-9	101	200	826	ND	ND		1	WG1939864
(S) 1,4-Bromofluorobenzene	*460-00-4*	*175*	*60.0-140*		*97.8*				WG1939864

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	14.7	34.9		1	WG1939864
Allyl chloride	107-05-1	76.53	0.200	0.626	ND	ND		1	WG1939864
Benzene	71-43-2	78.10	0.200	0.639	ND	ND		1	WG1939864
Benzyl Chloride	100-44-7	127	0.200	1.04	ND	ND		1	WG1939864
Bromodichloromethane	75-27-4	164	0.200	1.34	ND	ND		1	WG1939864
Bromoform	75-25-2	253	0.600	6.21	ND	ND		1	WG1939864
Bromomethane	74-83-9	94.90	0.200	0.776	ND	ND		1	WG1939864
1,3-Butadiene	106-99-0	54.10	2.00	4.43	ND	ND		1	WG1939864
Carbon disulfide	75-15-0	76.10	0.200	0.622	ND	ND		1	WG1939864
Carbon tetrachloride	56-23-5	154	0.200	1.26	ND	ND		1	WG1939864
Chlorobenzene	108-90-7	113	0.200	0.924	ND	ND		1	WG1939864
Chloroethane	75-00-3	64.50	0.200	0.528	ND	ND		1	WG1939864
Chloroform	67-66-3	119	0.200	0.973	0.447	2.18		1	WG1939864
Chloromethane	74-87-3	50.50	0.200	0.413	ND	ND		1	WG1939864
2-Chlorotoluene	95-49-8	126	0.200	1.03	ND	ND		1	WG1939864
Cyclohexane	110-82-7	84.20	0.200	0.689	0.651	2.24		1	WG1939864
Dibromochloromethane	124-48-1	208	0.200	1.70	ND	ND		1	WG1939864
1,2-Dibromoethane	106-93-4	188	0.200	1.54	ND	ND		1	WG1939864
1,2-Dichlorobenzene	95-50-1	147	0.200	1.20	ND	ND		1	WG1939864
1,3-Dichlorobenzene	541-73-1	147	0.200	1.20	ND	ND		1	WG1939864
1,4-Dichlorobenzene	106-46-7	147	0.200	1.20	ND	ND		1	WG1939864
1,2-Dichloroethane	107-06-2	99	0.200	0.810	ND	ND		1	WG1939864
1,1-Dichloroethane	75-34-3	98	0.200	0.802	ND	ND		1	WG1939864
1,1-Dichloroethene	75-35-4	96.90	0.200	0.793	ND	ND		1	WG1939864
cis-1,2-Dichloroethene	156-59-2	96.90	0.200	0.793	ND	ND		1	WG1939864
trans-1,2-Dichloroethene	156-60-5	96.90	0.200	0.793	ND	ND		1	WG1939864
1,2-Dichloropropane	78-87-5	113	0.200	0.924	ND	ND		1	WG1939864
cis-1,3-Dichloropropene	10061-01-5	111	0.200	0.908	ND	ND		1	WG1939864
trans-1,3-Dichloropropene	10061-02-6	111	0.200	0.908	ND	ND		1	WG1939864
1,4-Dioxane	123-91-1	88.10	0.200	0.721	ND	ND		1	WG1939864
Ethanol	64-17-5	46.10	1.25	2.36	665	1250	E	1	WG1939864
Ethylbenzene	100-41-4	106	0.200	0.867	0.227	0.984		1	WG1939864
4-Ethyltoluene	622-96-8	120	0.200	0.982	ND	ND		1	WG1939864
Trichlorofluoromethane	75-69-4	137.40	0.200	1.12	ND	ND		1	WG1939864
Dichlorodifluoromethane	75-71-8	120.92	0.200	0.989	ND	ND		1	WG1939864
1,1,2-Trichlorotrifluoroethane	76-13-1	187.40	0.200	1.53	ND	ND		1	WG1939864
1,2-Dichlorotetrafluoroethane	76-14-2	171	0.200	1.40	ND	ND		1	WG1939864
Heptane	142-82-5	100	0.200	0.818	ND	ND		1	WG1939864
Hexachloro-1,3-butadiene	87-68-3	261	0.630	6.73	ND	ND		1	WG1939864
n-Hexane	110-54-3	86.20	0.630	2.22	ND	ND		1	WG1939864
Isopropylbenzene	98-82-8	120.20	0.200	0.983	ND	ND		1	WG1939864
Methylene Chloride	75-09-2	84.90	0.200	0.694	ND	ND		1	WG1939864
Methyl Butyl Ketone	591-78-6	100	1.25	5.11	ND	ND		1	WG1939864
2-Butanone (MEK)	78-93-3	72.10	1.25	3.69	ND	ND		1	WG1939864
4-Methyl-2-pentanone (MIBK)	108-10-1	100.10	1.25	5.12	ND	ND		1	WG1939864
Methyl methacrylate	80-62-6	100.12	0.200	0.819	ND	ND		1	WG1939864
MTBE	1634-04-4	88.10	0.200	0.721	ND	ND		1	WG1939864
Naphthalene	91-20-3	128	0.630	3.30	ND	ND		1	WG1939864
2-Propanol	67-63-0	60.10	1.25	3.07	6.11	15.0		1	WG1939864
Propene	115-07-1	42.10	1.25	2.15	ND	ND		1	WG1939864
Styrene	100-42-5	104	0.200	0.851	ND	ND		1	WG1939864
1,1,2,2-Tetrachloroethane	79-34-5	168	0.200	1.37	ND	ND		1	WG1939864
Tetrachloroethylene	127-18-4	166	0.200	1.36	ND	ND		1	WG1939864
Tetrahydrofuran	109-99-9	72.10	0.200	0.590	ND	ND		1	WG1939864
Toluene	108-88-3	92.10	0.500	1.88	0.574	2.16		1	WG1939864
1,2,4-Trichlorobenzene	120-82-1	181	0.630	4.66	ND	ND		1	WG1939864

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	WG1939864
1,1,2-Trichloroethane	79-00-5	133	0.200	1.09	ND	ND		1	WG1939864
Trichloroethylene	79-01-6	131	0.200	1.07	ND	ND		1	WG1939864
1,2,4-Trimethylbenzene	95-63-6	120	0.200	0.982	0.491	2.41		1	WG1939864
1,3,5-Trimethylbenzene	108-67-8	120	0.200	0.982	ND	ND		1	WG1939864
2,2,4-Trimethylpentane	540-84-1	114.22	0.200	0.934	4.00	18.7		1	WG1939864
Vinyl chloride	75-01-4	62.50	0.200	0.511	ND	ND		1	WG1939864
Vinyl Bromide	593-60-2	106.95	0.200	0.875	ND	ND		1	WG1939864
Vinyl acetate	108-05-4	86.10	0.200	0.704	ND	ND		1	WG1939864
m&p-Xylene	1330-20-7	106	0.400	1.73	1.03	4.47		1	WG1939864
o-Xylene	95-47-6	106	0.200	0.867	0.368	1.60		1	WG1939864
TPH (GC/MS) Low Fraction	8006-61-9	101	200	826	ND	ND		1	WG1939864
(S) 1,4-Bromofluorobenzene	*460-00-4*	*175*	*60.0-140*		*98.1*				WG1939864

Method Blank (MB)

(MB) R3846577-2 10/09/22 11:49

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

Method Blank (MB)

(MB) R3846577-2 10/09/22 11:49

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	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	64.6	J	39.7	200
(S) 1,4-Bromofluorobenzene	*98.6*			*60.0-140*

Laboratory Control Sample (LCS)

(LCS) R3846577-1 10/09/22 11:18

Analyte	Spike Amount ppbv	LCS Result ppbv	LCS Rec. %	Rec. Limits %	LCS Qualifier
Acetone	3.75	3.97	106	70.0-130	
Allyl Chloride	3.75	4.11	110	70.0-130	
Benzene	3.75	3.90	104	70.0-130	
Benzyl Chloride	3.75	4.58	122	70.0-152	

Laboratory Control Sample (LCS)

(LCS) R3846577-1 10/09/22 11:18

Analyte	Spike Amount ppbv	LCS Result ppbv	LCS Rec. %	Rec. Limits %	LCS Qualifier
Bromodichloromethane	3.75	3.96	106	70.0-130	
Bromoform	3.75	4.13	110	70.0-130	
Bromomethane	3.75	4.04	108	70.0-130	
1,3-Butadiene	3.75	4.10	109	70.0-130	
Carbon disulfide	3.75	4.25	113	70.0-130	
Carbon tetrachloride	3.75	4.02	107	70.0-130	
Chlorobenzene	3.75	3.94	105	70.0-130	
Chloroethane	3.75	4.10	109	70.0-130	
Chloroform	3.75	3.94	105	70.0-130	
Chloromethane	3.75	3.94	105	70.0-130	
2-Chlorotoluene	3.75	3.97	106	70.0-130	
Cyclohexane	3.75	3.90	104	70.0-130	
Dibromochloromethane	3.75	4.00	107	70.0-130	
1,2-Dibromoethane	3.75	3.93	105	70.0-130	
1,2-Dichlorobenzene	3.75	4.11	110	70.0-130	
1,3-Dichlorobenzene	3.75	4.18	111	70.0-130	
1,4-Dichlorobenzene	3.75	4.29	114	70.0-130	
1,2-Dichloroethane	3.75	3.99	106	70.0-130	
1,1-Dichloroethane	3.75	3.89	104	70.0-130	
1,1-Dichloroethene	3.75	4.23	113	70.0-130	
cis-1,2-Dichloroethene	3.75	3.97	106	70.0-130	
trans-1,2-Dichloroethene	3.75	4.11	110	70.0-130	
1,2-Dichloropropane	3.75	3.90	104	70.0-130	
cis-1,3-Dichloropropene	3.75	3.95	105	70.0-130	
trans-1,3-Dichloropropene	3.75	3.95	105	70.0-130	
1,4-Dioxane	3.75	3.95	105	70.0-140	
Ethanol	3.75	4.01	107	55.0-148	
Ethylbenzene	3.75	4.00	107	70.0-130	
4-Ethyltoluene	3.75	4.09	109	70.0-130	
Trichlorofluoromethane	3.75	4.10	109	70.0-130	
Dichlorodifluoromethane	3.75	4.18	111	64.0-139	
1,1,2-Trichlorotrifluoroethane	3.75	4.15	111	70.0-130	
1,2-Dichlorotetrafluoroethane	3.75	3.99	106	70.0-130	
Heptane	3.75	3.97	106	70.0-130	
Hexachloro-1,3-butadiene	3.75	3.92	105	70.0-151	
n-Hexane	3.75	3.98	106	70.0-130	
Isopropylbenzene	3.75	4.03	107	70.0-130	
Methylene Chloride	3.75	4.11	110	70.0-130	
Methyl Butyl Ketone	3.75	4.03	107	70.0-149	
Methyl Ethyl Ketone	3.75	3.88	103	70.0-130	

Laboratory Control Sample (LCS)

(LCS) R3846577-1 10/09/22 11:18

Analyte	Spike Amount ppbv	LCS Result ppbv	LCS Rec. %	Rec. Limits %	LCS Qualifier
4-Methyl-2-pentanone (MIBK)	3.75	4.06	108	70.0-139	
Methyl Methacrylate	3.75	3.98	106	70.0-130	
MTBE	3.75	3.92	105	70.0-130	
Naphthalene	3.75	4.43	118	70.0-159	
2-Propanol	3.75	4.10	109	70.0-139	
Propene	3.75	3.88	103	64.0-144	
Styrene	3.75	4.02	107	70.0-130	
1,1,2,2-Tetrachloroethane	3.75	4.09	109	70.0-130	
Tetrachloroethylene	3.75	3.77	101	70.0-130	
Tetrahydrofuran	3.75	3.88	103	70.0-137	
Toluene	3.75	3.92	105	70.0-130	
1,2,4-Trichlorobenzene	3.75	4.18	111	70.0-160	
1,1,1-Trichloroethane	3.75	3.96	106	70.0-130	
1,1,2-Trichloroethane	3.75	3.86	103	70.0-130	
Trichloroethylene	3.75	3.94	105	70.0-130	
1,2,4-Trimethylbenzene	3.75	4.18	111	70.0-130	
1,3,5-Trimethylbenzene	3.75	4.07	109	70.0-130	
2,2,4-Trimethylpentane	3.75	3.91	104	70.0-130	
Vinyl chloride	3.75	4.09	109	70.0-130	
Vinyl Bromide	3.75	4.17	111	70.0-130	
Vinyl acetate	3.75	4.08	109	70.0-130	
m&p-Xylene	7.50	8.18	109	70.0-130	
o-Xylene	3.75	4.11	110	70.0-130	
TPH (GC/MS) Low Fraction	203	255	126	70.0-130	
(S) 1,4-Bromofluorobenzene			*100*	*60.0-140*	

Method Blank (MB)

(MB) R3846604-3 10/10/22 10:29

Analyte	MB Result ppbv	MB Qualifier	MB MDL ppbv	MB RDL ppbv
2,2,4-Trimethylpentane	U		0.133	0.200
(S) 1,4-Bromofluorobenzene	*88.3*			*60.0-140*

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

(LCS) R3846604-1 10/10/22 09:03 • (LCSD) R3846604-2 10/10/22 09:47

Analyte	Spike Amount ppbv	LCS Result ppbv	LCSD Result ppbv	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
2,2,4-Trimethylpentane	3.75	3.62	3.70	96.5	98.7	70.0-130			2.19	25
(S) 1,4-Bromofluorobenzene				*91.2*	*92.0*	*60.0-140*				

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.

Company Name/Address:
NV5 - Wilsonville, OR

9450 SW Commerce Circle

Ste. 300

Billing Information:
Accounts Payable
9450 SW Commerce Circle

Ste. 300
Wilsonville, OR 97070

Report To:
Andre DeJonge

Email To:
Andre.DeJonge@nv5.com

Project Description:

City/State Collected: 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 #
Former Astoria Warehouse

P.O. #

Collected by (signature):

Rush? (Lab MUST Be Notified)
___ Same Day ___ Three Day
___ Next Day ___ Five Day
___ Two Day

Date Results Needed

Sample ID	Can #	Flow Cont. #	Collection Date	Collection Time	Canister Pressure/Vacuum Initial	Canister Pressure/Vacuum Final	Analysis: VOCs/GRO TO-15 Summa	Rem./Contaminant	Sample # (lab only)
VP-3(100422)	10574	11295	100422	1624	30 hg	4 hg	X		-01
VP-1(100422)	8949	10942	100422	1636	30 hg	4 hg	X		-02
VP-2(100422)	21939	12587	100422	1701	30 hg	4 hg	X		-03
VP-1 (100422)	11998	12572	100422	1721	30 hg	4 hg	X		-04

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
RAD Screen <0.5 mR/hr: __Y __N
If Applicable
VOA Zero Headspace: __Y __N
Pres.Correct/Check: __Y __N
+1 empty

Chain of Custody Page 1 of 1

Pace
PEOPLE ADVANCING SCIENCE
MT JULIET, TN
12065 Lebanon Road Mt Juliet, TN 37122
Phone: 615-758-5858 Alt: 800-767-5859
Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at: https://info.pacelabs.com/hubfs/pas-standard-terms.pdf

SDG # L1543662
A151

Acctnum: **GEODESPOR**
Template: **T217105**
Prelogin: **P954169**
PM: 110 - Brian Ford
PB: CK-09/27/22
Shipped Via: **FedEx 2nd Day**

Remarks:

Samples returned via:
__ UPS __ FedEx __ Courier __ _____

Tracking # 5349 7836 4264

Hold #

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
	100522				
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 10/6/22	Time: 900

Condition: (lab use only)

COC Seal Intact: ___Y ___N ___NA

NCF:

ANALYTICAL REPORT

October 20, 2022

NV5 - Wilsonville, OR

Sample Delivery Group:	L1543761
Samples Received:	10/06/2022
Project Number:	BigBeams-1-04
Description:	
Site:	FORMER ASTORIA WAREHOUSE
Report To:	Andre DeJonge 9450 SW Commerce Circle Ste. 300 Wilsonville, OR 97070

Entire Report Reviewed By:

Brian Ford

Project Manager

Pace Analytical National

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

TABLE OF CONTENTS

MW-2(100322) L1543761-01 GW

Collected by: Andre DeJonge | Collected date/time: 10/03/22 15:55 | Received date/time: 10/06/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1941639	1	10/14/22 00:00	10/14/22 00:00	BAM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1940778	10	10/11/22 16:23	10/11/22 16:23	JAH	Mt. Juliet, TN

MW-6(100322) L1543761-02 GW

Collected by: Andre DeJonge | Collected date/time: 10/03/22 17:45 | Received date/time: 10/06/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1941639	10	10/14/22 00:22	10/14/22 00:22	BAM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1940778	5	10/11/22 16:45	10/11/22 16:45	JAH	Mt. Juliet, TN

MW-1(100322) L1543761-03 GW

Collected by: Andre DeJonge | Collected date/time: 10/03/22 14:30 | Received date/time: 10/06/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1941639	5	10/14/22 00:44	10/14/22 00:44	BAM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1940778	10	10/11/22 17:07	10/11/22 17:07	JAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1941590	100	10/12/22 23:24	10/12/22 23:24	ACG	Mt. Juliet, TN

MW-7(100322) L1543761-04 GW

Collected by: Andre DeJonge | Collected date/time: 10/03/22 12:00 | Received date/time: 10/06/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1941639	1	10/14/22 01:06	10/14/22 01:06	BAM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1940778	5	10/11/22 17:29	10/11/22 17:29	JAH	Mt. Juliet, TN

MW-8(100322) L1543761-05 GW

Collected by: Andre DeJonge | Collected date/time: 10/03/22 13:30 | Received date/time: 10/06/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1941639	1	10/14/22 01:28	10/14/22 01:28	GLN	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1940778	25	10/11/22 17:51	10/11/22 17:51	JAH	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

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	3720		31.6	100	1	10/14/2022 00:00	WG1941639
(S) a,a,a-Trifluorotoluene(FID)	*89.1*			*78.0-120*		*10/14/2022 00:00*	WG1941639

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	184		0.941	10.0	10	10/11/2022 16:23	WG1940778
Ethylbenzene	60.5		1.37	10.0	10	10/11/2022 16:23	WG1940778
Toluene	10.3		2.78	10.0	10	10/11/2022 16:23	WG1940778
Xylenes, Total	44.8		1.74	30.0	10	10/11/2022 16:23	WG1940778
Methyl tert-butyl ether	11.7		1.01	10.0	10	10/11/2022 16:23	WG1940778
Naphthalene	19.1	C3 J	10.0	50.0	10	10/11/2022 16:23	WG1940778
1,2-Dibromoethane	U		1.26	10.0	10	10/11/2022 16:23	WG1940778
1,2-Dichloroethane	U		0.819	10.0	10	10/11/2022 16:23	WG1940778
Isopropylbenzene	29.1		1.05	10.0	10	10/11/2022 16:23	WG1940778
n-Propylbenzene	61.2		0.993	10.0	10	10/11/2022 16:23	WG1940778
1,2,4-Trimethylbenzene	59.8		3.22	10.0	10	10/11/2022 16:23	WG1940778
1,3,5-Trimethylbenzene	30.9		1.04	10.0	10	10/11/2022 16:23	WG1940778
(S) Toluene-d8	*101*			*80.0-120*		*10/11/2022 16:23*	WG1940778
(S) 4-Bromofluorobenzene	*108*			*77.0-126*		*10/11/2022 16:23*	WG1940778
(S) 1,2-Dichloroethane-d4	*109*			*70.0-130*		*10/11/2022 16:23*	WG1940778

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	2930		316	1000	10	10/14/2022 00:22	WG1941639
(S) a,a,a-Trifluorotoluene(FID)	*108*			*78.0-120*		*10/14/2022 00:22*	WG1941639

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	96.7		0.471	5.00	5	10/11/2022 16:45	WG1940778
Ethylbenzene	90.8		0.685	5.00	5	10/11/2022 16:45	WG1940778
Toluene	7.21		1.39	5.00	5	10/11/2022 16:45	WG1940778
Xylenes, Total	49.5		0.870	15.0	5	10/11/2022 16:45	WG1940778
Methyl tert-butyl ether	19.9		0.505	5.00	5	10/11/2022 16:45	WG1940778
Naphthalene	18.8	C3 J	5.00	25.0	5	10/11/2022 16:45	WG1940778
1,2-Dibromoethane	U		0.630	5.00	5	10/11/2022 16:45	WG1940778
1,2-Dichloroethane	U		0.409	5.00	5	10/11/2022 16:45	WG1940778
Isopropylbenzene	22.2		0.525	5.00	5	10/11/2022 16:45	WG1940778
n-Propylbenzene	41.6		0.497	5.00	5	10/11/2022 16:45	WG1940778
1,2,4-Trimethylbenzene	18.1		1.61	5.00	5	10/11/2022 16:45	WG1940778
1,3,5-Trimethylbenzene	19.7		0.520	5.00	5	10/11/2022 16:45	WG1940778
(S) Toluene-d8	*105*			*80.0-120*		*10/11/2022 16:45*	WG1940778
(S) 4-Bromofluorobenzene	*116*			*77.0-126*		*10/11/2022 16:45*	WG1940778
(S) 1,2-Dichloroethane-d4	*111*			*70.0-130*		*10/11/2022 16:45*	WG1940778

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	18200		158	500	5	10/14/2022 00:44	WG1941639
(S) a,a,a-Trifluorotoluene(FID)	*91.8*			*78.0-120*		*10/14/2022 00:44*	WG1941639

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	486		0.941	10.0	10	10/11/2022 17:07	WG1940778
Ethylbenzene	1870		13.7	100	100	10/12/2022 23:24	WG1941590
Toluene	24.0		2.78	10.0	10	10/11/2022 17:07	WG1940778
Xylenes, Total	48.2		1.74	30.0	10	10/11/2022 17:07	WG1940778
Methyl tert-butyl ether	U		1.01	10.0	10	10/11/2022 17:07	WG1940778
Naphthalene	521	C3	10.0	50.0	10	10/11/2022 17:07	WG1940778
1,2-Dibromoethane	U		1.26	10.0	10	10/11/2022 17:07	WG1940778
1,2-Dichloroethane	U		0.819	10.0	10	10/11/2022 17:07	WG1940778
Isopropylbenzene	141		1.05	10.0	10	10/11/2022 17:07	WG1940778
n-Propylbenzene	351		0.993	10.0	10	10/11/2022 17:07	WG1940778
1,2,4-Trimethylbenzene	U		3.22	10.0	10	10/11/2022 17:07	WG1940778
1,3,5-Trimethylbenzene	7.80	J	1.04	10.0	10	10/11/2022 17:07	WG1940778
(S) Toluene-d8	*116*			*80.0-120*		*10/11/2022 17:07*	WG1940778
(S) Toluene-d8	*105*			*80.0-120*		*10/12/2022 23:24*	WG1941590
(S) 4-Bromofluorobenzene	*130*	J1		*77.0-126*		*10/11/2022 17:07*	WG1940778
(S) 4-Bromofluorobenzene	*103*			*77.0-126*		*10/12/2022 23:24*	WG1941590
(S) 1,2-Dichloroethane-d4	*104*			*70.0-130*		*10/11/2022 17:07*	WG1940778
(S) 1,2-Dichloroethane-d4	*116*			*70.0-130*		*10/12/2022 23:24*	WG1941590

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	5470		31.6	100	1	10/14/2022 01:06	WG1941639
(S) a,a,a-Trifluorotoluene(FID)	*84.3*			*78.0-120*		*10/14/2022 01:06*	WG1941639

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	69.5		0.471	5.00	5	10/11/2022 17:29	WG1940778
Ethylbenzene	37.0		0.685	5.00	5	10/11/2022 17:29	WG1940778
Toluene	6.09		1.39	5.00	5	10/11/2022 17:29	WG1940778
Xylenes, Total	17.6		0.870	15.0	5	10/11/2022 17:29	WG1940778
Methyl tert-butyl ether	4.70	J	0.505	5.00	5	10/11/2022 17:29	WG1940778
Naphthalene	26.5	C3	5.00	25.0	5	10/11/2022 17:29	WG1940778
1,2-Dibromoethane	U		0.630	5.00	5	10/11/2022 17:29	WG1940778
1,2-Dichloroethane	U		0.409	5.00	5	10/11/2022 17:29	WG1940778
Isopropylbenzene	56.0		0.525	5.00	5	10/11/2022 17:29	WG1940778
n-Propylbenzene	125		0.497	5.00	5	10/11/2022 17:29	WG1940778
1,2,4-Trimethylbenzene	U		1.61	5.00	5	10/11/2022 17:29	WG1940778
1,3,5-Trimethylbenzene	4.26	J	0.520	5.00	5	10/11/2022 17:29	WG1940778
(S) Toluene-d8	*100*			*80.0-120*		*10/11/2022 17:29*	WG1940778
(S) 4-Bromofluorobenzene	*116*			*77.0-126*		*10/11/2022 17:29*	WG1940778
(S) 1,2-Dichloroethane-d4	*107*			*70.0-130*		*10/11/2022 17:29*	WG1940778

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	16000	E	31.6	100	1	10/14/2022 01:28	WG1941639
(S) a,a,a-Trifluorotoluene(FID)	*73.0*	J2		*78.0-120*		*10/14/2022 01:28*	WG1941639

Sample Narrative:

L1543761-05 WG1941639: Surrogate failure due to matrix interference

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	1490		2.35	25.0	25	10/11/2022 17:51	WG1940778
Ethylbenzene	465		3.43	25.0	25	10/11/2022 17:51	WG1940778
Toluene	25.4		6.95	25.0	25	10/11/2022 17:51	WG1940778
Xylenes, Total	1530		4.35	75.0	25	10/11/2022 17:51	WG1940778
Methyl tert-butyl ether	U		2.53	25.0	25	10/11/2022 17:51	WG1940778
Naphthalene	172	C3	25.0	125	25	10/11/2022 17:51	WG1940778
1,2-Dibromoethane	U		3.15	25.0	25	10/11/2022 17:51	WG1940778
1,2-Dichloroethane	U		2.05	25.0	25	10/11/2022 17:51	WG1940778
Isopropylbenzene	68.8		2.63	25.0	25	10/11/2022 17:51	WG1940778
n-Propylbenzene	197		2.48	25.0	25	10/11/2022 17:51	WG1940778
1,2,4-Trimethylbenzene	989		8.05	25.0	25	10/11/2022 17:51	WG1940778
1,3,5-Trimethylbenzene	296		2.60	25.0	25	10/11/2022 17:51	WG1940778
(S) Toluene-d8	*103*			*80.0-120*		*10/11/2022 17:51*	WG1940778
(S) 4-Bromofluorobenzene	*110*			*77.0-126*		*10/11/2022 17:51*	WG1940778
(S) 1,2-Dichloroethane-d4	*107*			*70.0-130*		*10/11/2022 17:51*	WG1940778

Method Blank (MB)

(MB) R3848707-2 10/13/22 22:49

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Gasoline Range Organics-NWTPH	U		31.6	100
(S) a,a,a-Trifluorotoluene(FID)	*107*			*78.0-120*

Laboratory Control Sample (LCS)

(LCS) R3848707-1 10/13/22 21:14

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Gasoline Range Organics-NWTPH	5500	5820	106	70.0-124	
(S) a,a,a-Trifluorotoluene(FID)			*101*	*78.0-120*	

Method Blank (MB)

(MB) R3847660-2 10/11/22 12:12

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	*104*			*80.0-120*
(S) 4-Bromofluorobenzene	*112*			*77.0-126*
(S) 1,2-Dichloroethane-d4	*110*			*70.0-130*

Laboratory Control Sample (LCS)

(LCS) R3847660-1 10/11/22 10:46

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Benzene	5.00	5.39	108	70.0-123	
Ethylbenzene	5.00	5.27	105	79.0-123	
Toluene	5.00	4.85	97.0	79.0-120	
Xylenes, Total	15.0	15.1	101	79.0-123	
Methyl tert-butyl ether	5.00	5.46	109	68.0-125	
Naphthalene	5.00	3.83	76.6	54.0-135	
1,2-Dibromoethane	5.00	5.10	102	80.0-122	
1,2-Dichloroethane	5.00	5.40	108	70.0-128	
Isopropylbenzene	5.00	4.89	97.8	76.0-127	
n-Propylbenzene	5.00	4.89	97.8	77.0-124	
1,2,4-Trimethylbenzene	5.00	5.05	101	76.0-121	
1,3,5-Trimethylbenzene	5.00	5.11	102	76.0-122	
(S) Toluene-d8			*99.9*	*80.0-120*	
(S) 4-Bromofluorobenzene			*109*	*77.0-126*	
(S) 1,2-Dichloroethane-d4			*111*	*70.0-130*	

Method Blank (MB)

(MB) R3847989-4 10/12/22 18:00

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Ethylbenzene	U		0.137	1.00
(S) Toluene-d8	*109*			*80.0-120*
(S) 4-Bromofluorobenzene	*102*			*77.0-126*
(S) 1,2-Dichloroethane-d4	*119*			*70.0-130*

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

(LCS) R3847989-1 10/12/22 16:37 • (LCSD) R3847989-2 10/12/22 16:58

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	4.74	4.53	94.8	90.6	79.0-123			4.53	20
(S) Toluene-d8				*105*	*105*	*80.0-120*				
(S) 4-Bromofluorobenzene				*105*	*107*	*77.0-126*				
(S) 1,2-Dichloroethane-d4				*118*	*118*	*70.0-130*				

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
C3	The reported concentration is an estimate. The continuing calibration standard associated with this data responded low. Method sensitivity check is acceptable.
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.
J1	Surrogate recovery limits have been exceeded; values are outside upper control limits.
J2	Surrogate recovery limits have been exceeded; values are outside lower control limits.

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	LAO000356
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 [redacted]/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

Pres Chk

Analysis / Container / Preservative

Chain of Custody Page 1 of 1

Pace
PEOPLE ADVANCING SCIENCE

MT JULIET, TN

12065 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/hubfs/pas-standard-terms.pdf

Report to: Andre DeJonge

Email To: Andre.DeJonge@nv5.com

Project Description:

City/State Collected: Astoria, OR.

Please Circle: (PT) MT CT ET

Phone: 503-968-8787

Client Project #: BigBeams-1-04

Lab Project #: GEODESPOR-BIGB104

SDG # 1543761

C148

Collected by (print): Andre DeJonge

Site/Facility ID #: Former Astoria Warehouse

P.O. #

Acctnum: GEODESPOR
Template: T217107
Prelogin: P954171
PM: 110 - Brian Ford
PB:
Shipped Via:

Collected by (signature): [signature]

Immediately Packed on Ice N ___ Y ✓

Quote #

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Date Results Needed

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	NWTPHGX 40mlAmb HCl	VOCs RBDM 8260D 40mlAmb-HCl								Remarks	Sample # (lab only)
MW-2 (100322)	Grab	GW	–	100322	1555	6	X	X									-01
MW-6 (100322)	"	GW	–	100322	1745	6	X	X									-02
MW-1 (100322)	"	GW	–	100322	1430	6	X	X									-03
MW-7 (100422)	"	GW	–	100422	1200	6	X	X								Time on Bag.	-04
MW-3 (100422)	"	GW	–	100422	1330	6	X	X									-05
		GW															
		GW															
		GW															
		GW															
		GW															

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other________

Remarks:

pH ______ Temp ______
Flow ______ Other ______

Samples returned via:
__ UPS __ FedEx __ Courier ______

Tracking # unreadable

Sample Receipt Checklist
COC Seal Present/Intact: __NP __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

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received:	
[signature]	100522			(Yes) / No (HCL) / MeoH TBR 1	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: 1.2+0=1.2 °C	Bottles Received: 30
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature) [signature]	Date: 10/06/22	Time: 0900

If preservation required by Login: Date/Time

Hold:

Condition: NCF / (OK)

eurofins | Air Toxics

11/4/2022
Mr. Erik Hedberg
NV5, Inc. Company
9450 SW Commerce Circle
Suite 300
Wilsonville OR 97070

Project Name: Former Astoria Warehousing
Project #: BigBeams-1-04-05
Workorder #: 2210630

Dear Mr. Erik Hedberg

The following report includes the data for the above referenced project for sample(s) received on 10/25/2022 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

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WORK ORDER #: 2210630

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-1-04-05 Former Astoria Warehousing
DATE RECEIVED:	10/25/2022	**CONTACT:**	Monica Tran
DATE COMPLETED:	11/03/2022		

FRACTION #	NAME	TEST
01A	Indoor-1	Passive S.E. RAD130/SKC
02A	Indoor-2	Passive S.E. RAD130/SKC
03A	Indoor-3	Passive S.E. RAD130/SKC
04A	Indoor-4	Passive S.E. RAD130/SKC
05A	Indoor-5	Passive S.E. RAD130/SKC
06A	Indoor-6	Passive S.E. RAD130/SKC
07A	Indoor-7	Passive S.E. RAD130/SKC
08A	Background	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: Heidi Hayes DATE: 11/03/22

Technical Director

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209221, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-21-17, UT NELAP – CA009332021-13, VA NELAP - 10615, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005-015, Effective date: 10/18/2021, Expiration date: 10/17/2022.
Eurofins Air Toxics, LLC certifies that the test results contained in this report meet all requirements of the NELAC standards

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# 2210630

Eight Radiello 130 (Solvent) samples were received on October 25, 2022. 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

There were no receiving discrepancies.

Analytical Notes

The glass stoppered storage vial containing the charcoal cartridge for sample Indoor-2 was found to be chipped upon inspection at the time of sample extraction. The chip in the base of the storage vial may

have allowed the ingress of air during transport to the laboratory and sample storage. The client was notified and detected results were qualified with a J flag to indicate estimated concentration.

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 20005 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.

All Quality Control Limit exceedances and affected sample results are noted by flags. Each flag is defined at the bottom of this Case Narrative and on each Sample Result Summary page. Target compound non-detects in the samples that are associated with high bias in QC analyses have not been flagged.

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

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

Client Sample ID: Indoor-1

Lab ID#: 2210630-01A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.49	230	110
Hexane	0.10	0.076	0.51	0.38
Ethyl Acetate	0.40	0.26	85	54
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	16	10
Chloroform	0.10	0.067	1.0	0.68
Cyclohexane	0.10	0.093	0.24	0.22
Carbon Tetrachloride	0.10	0.075	0.32	0.24
Benzene	0.40	0.25	0.67	0.42
Heptane	0.10	0.086	0.30	0.25
4-Methyl-2-pentanone	0.20	0.15	0.25	0.19
Toluene	0.10	0.068	2.5	1.7
Ethyl Benzene	0.10	0.074	0.80	0.59
m,p-Xylene	0.10	0.071	2.7	2.0
o-Xylene	0.10	0.077	1.2	0.94
Styrene	0.10	0.082	0.27	0.22
Propylbenzene	0.10	0.088	0.10	0.088

Client Sample ID: Indoor-2

Lab ID#: 2210630-02A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.49	220	110
Hexane	0.10	0.076	0.57	0.43
Ethyl Acetate	0.40	0.26	85	54
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	15	9.3
Chloroform	0.10	0.067	1.1	0.71
Cyclohexane	0.10	0.093	0.26	0.24
Carbon Tetrachloride	0.10	0.075	0.38	0.28
Benzene	0.40	0.25	0.74	0.46
Heptane	0.10	0.086	0.32	0.28
4-Methyl-2-pentanone	0.20	0.15	0.26	0.20
Toluene	0.10	0.068	2.3	1.5
Ethyl Benzene	0.10	0.074	0.68	0.50

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

Client Sample ID: Indoor-2

Lab ID#: 2210630-02A

m,p-Xylene	0.10	0.071	2.3	1.6
o-Xylene	0.10	0.077	0.99	0.76
Styrene	0.10	0.082	0.23	0.19

Client Sample ID: Indoor-3

Lab ID#: 2210630-03A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.49	140	68
Hexane	0.10	0.076	0.81	0.62
Ethyl Acetate	0.40	0.26	110	73
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	13	8.1
Chloroform	0.10	0.067	0.86	0.57
Cyclohexane	0.10	0.092	0.27	0.25
Carbon Tetrachloride	0.10	0.075	0.31	0.23
Benzene	0.40	0.25	0.69	0.43
Heptane	0.10	0.086	0.31	0.27
4-Methyl-2-pentanone	0.20	0.15	0.30	0.22
Toluene	0.10	0.068	1.7	1.2
Ethyl Benzene	0.10	0.074	0.66	0.49
m,p-Xylene	0.10	0.071	2.5	1.8
o-Xylene	0.10	0.077	1.0	0.79
Styrene	0.10	0.082	0.16	0.13
Propylbenzene	0.10	0.088	0.14	0.13

Client Sample ID: Indoor-4

Lab ID#: 2210630-04A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.49	160	78
Hexane	0.10	0.076	0.83	0.63
Ethyl Acetate	0.40	0.26	34	22
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	22	14
Chloroform	0.10	0.067	0.69	0.46

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

Client Sample ID: Indoor-4

Lab ID#: 2210630-04A

Cyclohexane	0.10	0.092	0.27	0.25
Carbon Tetrachloride	0.10	0.075	0.27	0.20
Benzene	0.40	0.25	0.66	0.41
Heptane	0.10	0.086	0.53	0.46
4-Methyl-2-pentanone	0.20	0.15	0.36	0.27
Toluene	0.10	0.068	2.6	1.8
Ethyl Benzene	0.10	0.074	1.1	0.84
m,p-Xylene	0.10	0.071	4.5	3.2
o-Xylene	0.10	0.077	2.1	1.6
Styrene	0.10	0.082	0.21	0.17

Client Sample ID: Indoor-5

Lab ID#: 2210630-05A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.49	57	28
Hexane	0.10	0.076	0.65	0.49
Ethyl Acetate	0.40	0.26	170	110
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	3.9	2.5
Chloroform	0.10	0.067	0.54	0.36
Cyclohexane	0.10	0.093	0.25	0.23
Carbon Tetrachloride	0.10	0.075	0.30	0.22
Benzene	0.40	0.25	0.64	0.40
Heptane	0.10	0.086	0.29	0.25
Toluene	0.10	0.068	1.1	0.74
Ethyl Benzene	0.10	0.074	0.26	0.19
m,p-Xylene	0.10	0.071	0.88	0.63
o-Xylene	0.10	0.077	0.34	0.26

Client Sample ID: Indoor-6

Lab ID#: 2210630-06A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.49	130	64

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

Client Sample ID: Indoor-6

Lab ID#: 2210630-06A

Hexane	0.10	0.076	0.62	0.47
Ethyl Acetate	0.40	0.26	150	96
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	8.6	5.4
Chloroform	0.10	0.067	0.86	0.58
Cyclohexane	0.10	0.093	0.19	0.18
Carbon Tetrachloride	0.10	0.075	0.29	0.22
Benzene	0.40	0.25	0.64	0.40
Heptane	0.10	0.086	0.22	0.19
4-Methyl-2-pentanone	0.20	0.15	0.28	0.21
Toluene	0.10	0.068	1.1	0.76
Ethyl Benzene	0.10	0.074	0.37	0.27
m,p-Xylene	0.10	0.072	1.3	0.94
o-Xylene	0.10	0.077	0.54	0.42
Styrene	0.10	0.082	0.13	0.10

Client Sample ID: Indoor-7

Lab ID#: 2210630-07A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.49	110	54
Hexane	0.10	0.076	0.76	0.58
Ethyl Acetate	0.40	0.26	100	64
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	10	6.3
Chloroform	0.10	0.067	0.75	0.50
Cyclohexane	0.10	0.093	0.26	0.24
Carbon Tetrachloride	0.10	0.075	0.27	0.20
Benzene	0.40	0.25	0.62	0.39
Heptane	0.10	0.086	0.29	0.25
4-Methyl-2-pentanone	0.20	0.15	0.27	0.20
Toluene	0.10	0.068	1.5	1.0
Ethyl Benzene	0.10	0.074	0.55	0.41
m,p-Xylene	0.10	0.072	2.1	1.5
o-Xylene	0.10	0.077	0.82	0.64
Styrene	0.10	0.082	0.12	0.10
Propylbenzene	0.10	0.088	0.13	0.11

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

Client Sample ID: Background

Lab ID#: 2210630-08A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.49	11	5.3
Hexane	0.10	0.076	0.37	0.28
Ethyl Acetate	0.40	0.26	8.1	5.2
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.68	0.43
Chloroform	0.10	0.067	0.14	0.094
Cyclohexane	0.10	0.093	0.18	0.16
Carbon Tetrachloride	0.10	0.075	0.35	0.26
Benzene	0.40	0.25	0.72	0.45
Heptane	0.10	0.086	0.32	0.27
Toluene	0.10	0.068	1.3	0.89
Ethyl Benzene	0.10	0.074	0.23	0.17
m,p-Xylene	0.10	0.071	0.73	0.52
o-Xylene	0.10	0.077	0.27	0.21

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Client Sample ID: Indoor-1

Lab ID#: 2210630-01A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18102606sim**	**Date of Collection: 10/18/22 3:00:00 PM**
Dil. Factor:	**1.00**	**Date of Analysis: 10/26/22 11:54 AM**
		Date of Extraction: 10/26/22

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.49	230	110
Methyl tert-butyl ether	0.10	0.077	Not Detected	Not Detected
Hexane	0.10	0.076	0.51	0.38
Ethyl Acetate	0.40	0.26	85	54
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	16	10
Chloroform	0.10	0.067	1.0	0.68
1,1,1-Trichloroethane	0.10	0.081	Not Detected	Not Detected
Cyclohexane	0.10	0.093	0.24	0.22
Carbon Tetrachloride	0.10	0.075	0.32	0.24
Benzene	0.40	0.25	0.67	0.42
1,2-Dichloroethane	0.10	0.065	Not Detected	Not Detected
Heptane	0.10	0.086	0.30	0.25
Trichloroethene	0.10	0.072	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.15	0.25	0.19
Toluene	0.10	0.068	2.5	1.7
Tetrachloroethene	0.10	0.085	Not Detected	Not Detected
Chlorobenzene	0.10	0.074	Not Detected	Not Detected
Ethyl Benzene	0.10	0.074	0.80	0.59
m,p-Xylene	0.10	0.071	2.7	2.0
o-Xylene	0.10	0.077	1.2	0.94
Styrene	0.10	0.082	0.27	0.22
Propylbenzene	0.10	0.088	0.10	0.088
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 = 19998 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	94	70-130

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Client Sample ID: Indoor-2

Lab ID#: 2210630-02A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18102607sim**	**Date of Collection: 10/18/22 3:05:00 PM**
Dil. Factor:	**1.00**	**Date of Analysis: 10/26/22 12:21 PM**
		Date of Extraction: 10/26/22

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.49	220	110
Methyl tert-butyl ether	0.10	0.077	Not Detected	Not Detected
Hexane	0.10	0.076	0.57	0.43
Ethyl Acetate	0.40	0.26	85	54
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	15	9.3
Chloroform	0.10	0.067	1.1	0.71
1,1,1-Trichloroethane	0.10	0.081	Not Detected	Not Detected
Cyclohexane	0.10	0.093	0.26	0.24
Carbon Tetrachloride	0.10	0.075	0.38	0.28
Benzene	0.40	0.25	0.74	0.46
1,2-Dichloroethane	0.10	0.065	Not Detected	Not Detected
Heptane	0.10	0.086	0.32	0.28
Trichloroethene	0.10	0.072	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.15	0.26	0.20
Toluene	0.10	0.068	2.3	1.5
Tetrachloroethene	0.10	0.085	Not Detected	Not Detected
Chlorobenzene	0.10	0.074	Not Detected	Not Detected
Ethyl Benzene	0.10	0.074	0.68	0.50
m,p-Xylene	0.10	0.071	2.3	1.6
o-Xylene	0.10	0.077	0.99	0.76
Styrene	0.10	0.082	0.23	0.19
Propylbenzene	0.10	0.088	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 = 19998 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	95	70-130

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Client Sample ID: Indoor-3

Lab ID#: 2210630-03A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18102608sim**	**Date of Collection: 10/18/22 3:20:00 PM**
Dil. Factor:	**1.00**	**Date of Analysis: 10/26/22 12:47 PM**
		Date of Extraction: 10/26/22

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.49	140	68
Methyl tert-butyl ether	0.10	0.077	Not Detected	Not Detected
Hexane	0.10	0.076	0.81	0.62
Ethyl Acetate	0.40	0.26	110	73
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	13	8.1
Chloroform	0.10	0.067	0.86	0.57
1,1,1-Trichloroethane	0.10	0.081	Not Detected	Not Detected
Cyclohexane	0.10	0.092	0.27	0.25
Carbon Tetrachloride	0.10	0.075	0.31	0.23
Benzene	0.40	0.25	0.69	0.43
1,2-Dichloroethane	0.10	0.065	Not Detected	Not Detected
Heptane	0.10	0.086	0.31	0.27
Trichloroethene	0.10	0.072	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.15	0.30	0.22
Toluene	0.10	0.068	1.7	1.2
Tetrachloroethene	0.10	0.085	Not Detected	Not Detected
Chlorobenzene	0.10	0.074	Not Detected	Not Detected
Ethyl Benzene	0.10	0.074	0.66	0.49
m,p-Xylene	0.10	0.071	2.5	1.8
o-Xylene	0.10	0.077	1.0	0.79
Styrene	0.10	0.082	0.16	0.13
Propylbenzene	0.10	0.088	0.14	0.13
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 = 20000 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	96	70-130

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Client Sample ID: Indoor-4

Lab ID#: 2210630-04A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18102609sim**	**Date of Collection: 10/18/22 3:30:00 PM**
Dil. Factor:	**1.00**	**Date of Analysis: 10/26/22 01:14 PM**
		Date of Extraction: 10/26/22

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.49	160	78
Methyl tert-butyl ether	0.10	0.077	Not Detected	Not Detected
Hexane	0.10	0.076	0.83	0.63
Ethyl Acetate	0.40	0.26	34	22
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	22	14
Chloroform	0.10	0.067	0.69	0.46
1,1,1-Trichloroethane	0.10	0.081	Not Detected	Not Detected
Cyclohexane	0.10	0.092	0.27	0.25
Carbon Tetrachloride	0.10	0.075	0.27	0.20
Benzene	0.40	0.25	0.66	0.41
1,2-Dichloroethane	0.10	0.065	Not Detected	Not Detected
Heptane	0.10	0.086	0.53	0.46
Trichloroethene	0.10	0.072	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.15	0.36	0.27
Toluene	0.10	0.068	2.6	1.8
Tetrachloroethene	0.10	0.085	Not Detected	Not Detected
Chlorobenzene	0.10	0.074	Not Detected	Not Detected
Ethyl Benzene	0.10	0.074	1.1	0.84
m,p-Xylene	0.10	0.071	4.5	3.2
o-Xylene	0.10	0.077	2.1	1.6
Styrene	0.10	0.082	0.21	0.17
Propylbenzene	0.10	0.088	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 = 20005 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	95	70-130

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Client Sample ID: Indoor-5

Lab ID#: 2210630-05A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18102610sim**	**Date of Collection: 10/18/22 3:25:00 PM**
Dil. Factor:	**1.00**	**Date of Analysis: 10/26/22 01:40 PM**
		Date of Extraction: 10/26/22

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.49	57	28
Methyl tert-butyl ether	0.10	0.077	Not Detected	Not Detected
Hexane	0.10	0.076	0.65	0.49
Ethyl Acetate	0.40	0.26	170	110
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	3.9	2.5
Chloroform	0.10	0.067	0.54	0.36
1,1,1-Trichloroethane	0.10	0.081	Not Detected	Not Detected
Cyclohexane	0.10	0.093	0.25	0.23
Carbon Tetrachloride	0.10	0.075	0.30	0.22
Benzene	0.40	0.25	0.64	0.40
1,2-Dichloroethane	0.10	0.065	Not Detected	Not Detected
Heptane	0.10	0.086	0.29	0.25
Trichloroethene	0.10	0.072	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.15	Not Detected	Not Detected
Toluene	0.10	0.068	1.1	0.74
Tetrachloroethene	0.10	0.085	Not Detected	Not Detected
Chlorobenzene	0.10	0.074	Not Detected	Not Detected
Ethyl Benzene	0.10	0.074	0.26	0.19
m,p-Xylene	0.10	0.071	0.88	0.63
o-Xylene	0.10	0.077	0.34	0.26
Styrene	0.10	0.082	Not Detected	Not Detected
Propylbenzene	0.10	0.088	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 = 19995 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	95	70-130

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Client Sample ID: Indoor-6

Lab ID#: 2210630-06A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18102611sim**	**Date of Collection: 10/18/22 3:10:00 PM**
Dil. Factor:	**1.00**	**Date of Analysis: 10/26/22 02:06 PM**
		Date of Extraction: 10/26/22

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.49	130	64
Methyl tert-butyl ether	0.10	0.077	Not Detected	Not Detected
Hexane	0.10	0.076	0.62	0.47
Ethyl Acetate	0.40	0.26	150	96
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	8.6	5.4
Chloroform	0.10	0.067	0.86	0.58
1,1,1-Trichloroethane	0.10	0.081	Not Detected	Not Detected
Cyclohexane	0.10	0.093	0.19	0.18
Carbon Tetrachloride	0.10	0.075	0.29	0.22
Benzene	0.40	0.25	0.64	0.40
1,2-Dichloroethane	0.10	0.065	Not Detected	Not Detected
Heptane	0.10	0.086	0.22	0.19
Trichloroethene	0.10	0.072	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.15	0.28	0.21
Toluene	0.10	0.068	1.1	0.76
Tetrachloroethene	0.10	0.085	Not Detected	Not Detected
Chlorobenzene	0.10	0.074	Not Detected	Not Detected
Ethyl Benzene	0.10	0.074	0.37	0.27
m,p-Xylene	0.10	0.072	1.3	0.94
o-Xylene	0.10	0.077	0.54	0.42
Styrene	0.10	0.082	0.13	0.10
Propylbenzene	0.10	0.088	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 = 19975 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	95	70-130

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Client Sample ID: Indoor-7

Lab ID#: 2210630-07A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18102612sim**	**Date of Collection: 10/18/22 3:15:00 PM**
Dil. Factor:	**1.00**	**Date of Analysis: 10/26/22 02:33 PM**
		Date of Extraction: 10/26/22

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.49	110	54
Methyl tert-butyl ether	0.10	0.077	Not Detected	Not Detected
Hexane	0.10	0.076	0.76	0.58
Ethyl Acetate	0.40	0.26	100	64
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	10	6.3
Chloroform	0.10	0.067	0.75	0.50
1,1,1-Trichloroethane	0.10	0.081	Not Detected	Not Detected
Cyclohexane	0.10	0.093	0.26	0.24
Carbon Tetrachloride	0.10	0.075	0.27	0.20
Benzene	0.40	0.25	0.62	0.39
1,2-Dichloroethane	0.10	0.065	Not Detected	Not Detected
Heptane	0.10	0.086	0.29	0.25
Trichloroethene	0.10	0.072	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.15	0.27	0.20
Toluene	0.10	0.068	1.5	1.0
Tetrachloroethene	0.10	0.085	Not Detected	Not Detected
Chlorobenzene	0.10	0.074	Not Detected	Not Detected
Ethyl Benzene	0.10	0.074	0.55	0.41
m,p-Xylene	0.10	0.072	2.1	1.5
o-Xylene	0.10	0.077	0.82	0.64
Styrene	0.10	0.082	0.12	0.10
Propylbenzene	0.10	0.088	0.13	0.11
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 = 19975 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	94	70-130

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Client Sample ID: Background

Lab ID#: 2210630-08A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18102613sim**	**Date of Collection: 10/18/22 3:35:00 PM**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/26/22 03:00 PM**	
		Date of Extraction: 10/26/22	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.49	11	5.3
Methyl tert-butyl ether	0.10	0.077	Not Detected	Not Detected
Hexane	0.10	0.076	0.37	0.28
Ethyl Acetate	0.40	0.26	8.1	5.2
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.68	0.43
Chloroform	0.10	0.067	0.14	0.094
1,1,1-Trichloroethane	0.10	0.081	Not Detected	Not Detected
Cyclohexane	0.10	0.093	0.18	0.16
Carbon Tetrachloride	0.10	0.075	0.35	0.26
Benzene	0.40	0.25	0.72	0.45
1,2-Dichloroethane	0.10	0.065	Not Detected	Not Detected
Heptane	0.10	0.086	0.32	0.27
Trichloroethene	0.10	0.072	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.15	Not Detected	Not Detected
Toluene	0.10	0.068	1.3	0.89
Tetrachloroethene	0.10	0.085	Not Detected	Not Detected
Chlorobenzene	0.10	0.074	Not Detected	Not Detected
Ethyl Benzene	0.10	0.074	0.23	0.17
m,p-Xylene	0.10	0.071	0.73	0.52
o-Xylene	0.10	0.077	0.27	0.21
Styrene	0.10	0.082	Not Detected	Not Detected
Propylbenzene	0.10	0.088	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 = 19990 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	95	70-130

eurofins | Air Toxics

Client Sample ID: Lab Blank

Lab ID#: 2210630-09A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18102605sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/26/22 11:00 AM**	
		Date of Extraction: 10/26/22	

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	0.077	Not Detected	Not Detected
Hexane	0.10	0.076	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	0.067	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.081	Not Detected	Not Detected
Cyclohexane	0.10	0.092	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.075	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	0.068	Not Detected	Not Detected
Tetrachloroethene	0.10	0.085	Not Detected	Not Detected
Chlorobenzene	0.10	0.074	Not Detected	Not Detected
Ethyl Benzene	0.10	0.074	Not Detected	Not Detected
m,p-Xylene	0.10	0.071	Not Detected	Not Detected
o-Xylene	0.10	0.077	Not Detected	Not Detected
Styrene	0.10	0.082	Not Detected	Not Detected
Propylbenzene	0.10	0.088	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 = 20005 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	93	70-130

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Client Sample ID: CCV

Lab ID#: 2210630-10A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18102602sim**	**Date of Collection: NA**
Dil. Factor:	**1.00**	**Date of Analysis: 10/26/22 09:30 AM**
		Date of Extraction: NA

Compound	%Recovery
Ethanol	89
Methyl tert-butyl ether	108
Hexane	101
Ethyl Acetate	105
2-Butanone (Methyl Ethyl Ketone)	107
Chloroform	104
1,1,1-Trichloroethane	101
Cyclohexane	95
Carbon Tetrachloride	101
Benzene	96
1,2-Dichloroethane	100
Heptane	97
Trichloroethene	98
4-Methyl-2-pentanone	96
Toluene	95
Tetrachloroethene	95
Chlorobenzene	94
Ethyl Benzene	94
m,p-Xylene	92
o-Xylene	94
Styrene	90
Propylbenzene	92
1,4-Dichlorobenzene	90
Naphthalene	86

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130

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Client Sample ID: LCS

Lab ID#: 2210630-11A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18102603sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/26/22 10:06 AM**	
		Date of Extraction: 10/26/22	

Compound	%Recovery	Method Limits
Ethanol	91	50-130
Methyl tert-butyl ether	137 Q	70-130
Hexane	128	70-130
Ethyl Acetate	129	70-130
2-Butanone (Methyl Ethyl Ketone)	128	70-130
Chloroform	128	70-130
1,1,1-Trichloroethane	124	70-130
Cyclohexane	122	70-130
Carbon Tetrachloride	122	70-130
Benzene	112	70-130
1,2-Dichloroethane	120	70-130
Heptane	118	70-130
Trichloroethene	116	70-130
4-Methyl-2-pentanone	114	70-130
Toluene	109	70-130
Tetrachloroethene	106	70-130
Chlorobenzene	105	70-130
Ethyl Benzene	108	70-130
m,p-Xylene	102	70-130
o-Xylene	102	70-130
Styrene	80	20-100
Propylbenzene	105	70-130
1,4-Dichlorobenzene	90	50-110
Naphthalene	28	5-80

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	95	70-130

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Client Sample ID: LCSD

Lab ID#: 2210630-11AA

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18102604sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/26/22 10:33 AM**	
		Date of Extraction: 10/26/22	

Compound	%Recovery	Method Limits
Ethanol	99	50-130
Methyl tert-butyl ether	138 Q	70-130
Hexane	130	70-130
Ethyl Acetate	133 Q	70-130
2-Butanone (Methyl Ethyl Ketone)	129	70-130
Chloroform	130	70-130
1,1,1-Trichloroethane	123	70-130
Cyclohexane	122	70-130
Carbon Tetrachloride	123	70-130
Benzene	113	70-130
1,2-Dichloroethane	121	70-130
Heptane	119	70-130
Trichloroethene	118	70-130
4-Methyl-2-pentanone	114	70-130
Toluene	110	70-130
Tetrachloroethene	107	70-130
Chlorobenzene	105	70-130
Ethyl Benzene	108	70-130
m,p-Xylene	103	70-130
o-Xylene	101	70-130
Styrene	80	20-100
Propylbenzene	107	70-130
1,4-Dichlorobenzene	90	50-110
Naphthalene	29	5-80

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	95	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
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	*Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites*
RPD	relative percent difference
SVE	soil vapor extraction
TCE	trichloroethene
TMB	trimethylbenzene
µg/L	micrograms per liter

µg/m³	micrograms per cubic meter
µS/cm	microSiemens per centimeter
VOC	volatile organic compound