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Oregon Department of Environmental Quality
Northwest Region
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Attention: Sarah Greenfield

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

INTRODUCTION

NV5 is pleased to submit this quarterly report summarizing the results of the fifth 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 the proposed permanent cessation of the SVE system that was designed and installed at the subject property in general accordance with the PPA requirements.[1] DEQ approved the Work Plan on September 21, 2022. A detailed discussion of background information, rationale for implementing this scope of work, and identification of baseline conditions for the purposes of rebound evaluation is presented in the Work Plan.

[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

The first round of pilot shutdown monitoring (conducted in October 2022) is summarized in our report dated November 21, 2022. The second round of pilot shutdown monitoring (conducted in January 2023) is summarized in our report dated March 16, 2023. The third round of pilot shutdown monitoring (conducted in April 2023) is summarized in our report dated June 5, 2023. The fourth round of pilot shutdown monitoring (conducted in July 2023) is summarized in our report dated September 13, 2023. Based on correspondence from DEQ after the fourth round of pilot shutdown monitoring, DEQ proposed additional pilot shutdown monitoring. The fifth round of pilot shutdown monitoring was conducted in November 2023. The findings of the fifth round of pilot shutdown monitoring are presented below,

ACTIVITIES COMPLETED DURING REPORTING PERIOD

NV5 conducted the fifth round of pilot shutdown monitoring activities between November 27 and 29, 2023, in accordance with the Work Plan. A detailed description of monitoring activities completed during this reporting period is presented in the sections below.

SUB-SLAB VAPOR MONITORING

On November 28, 2023, NV5 personnel accessed and sampled the four sampling locations previously installed in the former can manufacturing warehouse and shop (VP-1 through VP-4; Figure 2). Specifically, each Vapor Pin® was sampled as follows:

- Accessed each Vapor Pin® 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 three 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 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 for November 2023

Sample I.D.	Date	Start/End Time	Initial/Final Vacuum (inHg)	Barometric Pressure (inHg)	Ambient Temperature (°F)
VP-1	11/28/23	11:49/11:56	30.0/4.0	30.17	~56
VP-2		12:07/12:13	29.0/4.0		
VP-3		12:21/12:31	30.0/4.0		
VP-4		15:13/15:18	30.0/4.0		

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

GROUNDWATER GAUGING AND SAMPLING

NV5 personnel accessed each monitoring and observation well (MW-1 through MW-8, OAS-1 through OAS-4, and PAS-2) for gauging and sampling purposes.[2] On November 27, 2023, NV5 gauged the monitoring and observation wells.[3] NV5 collected depth to groundwater measurements from each well using an oil/water interface probe. The depth to groundwater measurements and calculated groundwater elevations are summarized in Table 2. Free product was not observed in any of the wells during the November 2023 monitoring event. Groundwater elevations were calculated, based on surveyed top-of-casing elevations and depth to water measurements, for monitoring wells MW-1 through MW-8. The calculated groundwater elevation data indicate that shallow groundwater beneath the subject property generally flows north, which is consistent with previous findings. However, groundwater appears to have northwest and northeast components toward the shoreline that may be affected by tidal influences. Figure 3 shows a groundwater contour map using the calculated elevation data for monitoring wells MW-1 through MW-8 determined from the November 27, 2023, groundwater measurements.

NV5 sampled monitoring wells MW-1 through MW-8 on November 28, and 29, 2023, in general accordance with the groundwater sampling methodology previously employed at the subject property. Each well was purged in general accordance with the EPA-recommended low-flow purging and sampling procedure using a peristaltic pump connected to new, expendable HDPE and silicon tubing. Groundwater quality parameters were measured using a YSI 556 multiparameter system until the following groundwater parameters stabilized over three consecutive readings:

- pH: ±0.1 unit
- Conductivity: ±3 percent
- Temperature: ±3 percent

[2] Wells OAS-1 through OAS-4 and PAS-2 are within the shop area. Refer to Figure 3 of the Work Plan for locations.
[3] The sequence of gauging and sampling during groundwater monitoring generally progressed from the least-impacted to the most-impacted wells based on prior chemical analytical data.

- 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, NV5 collected a groundwater sample from each well into a laboratory-prepared container. 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 November 2023 monitoring event are discussed in the "Chemical Analytical Results" and "Data Evaluation" sections and are summarized in Table 4, which includes the results of prior groundwater sampling events for reference. Groundwater gauging and sampling field forms from the November 2023 event are presented in Attachment A.

Sampling equipment used in the collection of groundwater samples was decontaminated before use. Reusable sample processing equipment that came into contact with sampling media and the wells was also decontaminated before use. Decontamination was performed before each location was sampled using the following procedure:

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 November 29, 2023, following sub-slab vapor sampling, NV5 deployed eight air samplers at the subject property. Each air sampler consisted of a Radiello 130 passive air sampler and was deployed for approximately 14 days. For comparison purposes, each sample was collected at approximately the same location as the previously collected indoor air samples. Seven air samples were collected from inside the subject property structure and one background air sample was collected from the exterior of the subject property structure. The indoor air 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 a height of 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 for November/December 2023

Sample I.D.	Location Description	Date	Start/End Time	Initial/Final Barometric Pressure (inHg)	Initial/Final Ambient Temperature (°F)
Indoor-1	Office area	11/29/23 through 12/15/23	16:40/12:05	30.11/30.16	54/57 (indoor) 45/54 (outdoor)
Indoor-2	Office area		16:45/12:10		
Indoor-3	Warehouse		16:50/12:15		
Indoor-4	Warehouse		16:55/12:20		
Indoor-5	Shop area		17:00/12:25		
Indoor-6	Warehouse		17:05/12:30		
Indoor-7	Warehouse		17:10/12:35		
Background	Exterior		16:35/12:00		

The indoor air sample chemical analytical results from the November/December 2023 monitoring event are discussed in the "Chemical Analytical Results" and "Data Evaluation" sections and are summarized in Table 5. Indoor air sampling field forms from the November/December 2023 event are presented in Attachment A.

RIVERBANK OBSERVATIONS

NV5 conducted a series of visual observations of the riverbank adjacent to the subject property for evidence of groundwater seeps and petroleum-like sheens on November 28 and 29 and December 15, 2023. The riverbank observations were conducted from the top of the bank at relatively low tidal stages. The riverbank observations were conducted by walking the top of the shoreline along the subject property, allowing for visual observations of the slope of the riverbank, which generally consists of riprap. The pier on the northwest portion of the subject property has concrete walls along the bank of the river and the small bay to the east has a sandy shoreline on the south end along West Marine Drive.

Groundwater seeps and/or petroleum-like sheens were not observed during the November/December 2023 riverbank observations. A summary of the riverbank observations, including previous and more frequent observations associated with apparent sheens previously originating from the storm line outfall, is presented in Table 6. Riverbank field observation forms from the November/December 2023 event are presented in Attachment A.

CHEMICAL ANALYTICAL RESULTS

SUB-SLAB VAPOR SAMPLES

The four sub-slab vapor samples (VP-1 through VP-4) collected in November 2023 were submitted to Pace Analytical of Mount Juliet, Tennessee, for analysis for gasoline-range hydrocarbons and VOCs by EPA Method TO-15. A comparison of the sub-slab vapor sample chemical analytical results to applicable regulatory criteria (*Vapor Intrusion into Buildings* RBCs for occupational receptors) is discussed below and shown in Table 1, which also includes

previous sub-slab vapor analytical results.[4] At DEQ's request, Table 1 includes the June 2023 updated *Vapor Intrusion into Building*s RBCs for commercial workers. Since the sub-slab vapor samples collected for this project have historically been compared to the previous May 2018 RBCs that formed the basis of the PPA, it is NV5's opinion that the applicable RBCs for the *Vapor Intrusion into Building*s exposure pathway should remain the May 2018 V*apor Intrusion into Building*s RBCs for occupational receptors and not the June 2023 *Vapor Intrusion into Building*s RBCs for commercial workers (as these RBCs were not published before sampling began at the subject property). The June 2023 vapor intrusion RBCs should be used for reference purposes only as requested in DEQ's comment letter pertaining to the fourth round of pilot shutdown monitoring (conducted in July 2023), to determine if areas exceed hot spot levels. The chemical analytical program details, laboratory report, and chain-of-custody documentation are presented in Attachment B.

Gasoline-range hydrocarbons were not detected above the laboratory method reporting limits in sub-slab vapor samples VP-1 through VP-4. Several petroleum-related VOCs were detected in sub-slab vapor samples VP-1 through VP-4. However, each of the detected concentrations of VOCs was substantially less than the corresponding DEQ *Vapor Intrusion into Building*s RBC for occupational receptors and the June 2023 *Vapor Intrusion into Building*s RBCs.

GROUNDWATER SAMPLES

Groundwater samples collected during the November 2023 groundwater monitoring event were submitted to Pace Analytical of Mount Juliet, Tennessee, for analysis of gasoline-range hydrocarbons by Method NWTPH-Gx and RBDM VOCs (benzene, toluene, ethylbenzene, total xylenes, 1,2-dibromoethane, 1,2-dichloroethane, isopropylbenzene, MTBE, naphthalene, n-propylbenzene, 1,2,4-TMB and 1,3,5-TMB) 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.[5] In addition, Table 4 includes the updated RBCs for the *Vapor Intrusion into Building*s exposure pathway that were adopted by DEQ in June 2023. As described above, the groundwater samples collected for this project have been compared to the May 2018 *Vapor Intrusion into Building*s RBCs that formed the basis of the PPA. Therefore, it is NV5's opinion that the applicable RBCs for the *Vapor Intrusion into Building*s exposure pathway should remain the May 2018 *Vapor Intrusion into Building*s RBCs for occupational receptors and not the updated June 2023 *Vapor Intrusion into Building*s RBCs for commercial workers (as these RBCs were not published before sampling began at the subject property). The June 2023 *Vapor Intrusion into Building*s RBCs for commercial workers should be used for reference purposes only, and as requested in DEQ's comment letter pertaining to the fourth round of pilot shutdown monitoring (conducted in July 2023), to determine if areas exceed hot spot levels. The chemical analytical program details, laboratory report, and chain-of-custody documentation are presented in Attachment B.

Gasoline-range hydrocarbons were not detected in the groundwater samples collected from the monitoring wells at concentrations greater than the applicable RBCs, except for the groundwater

[4] In June 2023, DEQ published updated RBCs for vapor-intrusion exposure pathways for groundwater and soil gas. DEQ is applying the updated RBCs to existing cleanup sites on a case-by-case basis. For the purposes of consistency in this pilot shutdown data evaluation, the November 2023 results are compared to the earlier RBCs from May 2018.

samples collected from monitoring wells MW-4 and MW-8. Gasoline-range hydrocarbons were detected in the groundwater samples collected from monitoring wells MW-4 and MW-8 at concentrations of 19,000 µg/L and 34,000 µg/L, respectively, which exceed the corresponding DEQ *Groundwater in Excavation* RBCs for construction/excavation worker receptors. Groundwater concentrations exceeding the DEQ *Groundwater in Excavation* RBCs are being addressed by implementing the DEQ-approved CMMP prepared for the subject property.

VOCs were either not detected or were detected at concentrations less than applicable RBCs.

The November 2023 groundwater results were also compared to the June 2023 *Vapor Intrusion into Building*s RBCs for reference purposes. As shown on Table 4, gasoline-range hydrocarbons were detected at concentrations exceeding the *Groundwater Vapor Intrusion into Building*s RBC for the chronic exposure scenario for commercial receptors in the eight wells sampled. Exceedances are discussed further in the "Data Evaluation" section.

As shown on Table 4, one or more VOCs were detected at concentrations exceeding the *Vapor Intrusion into Building*s RBC for the chronic exposure scenario for commercial receptors in the following monitoring wells:

- MW-1: Benzene, ethylbenzene, and naphthalene
- MW-2: Benzene and ethylbenzene
- MW-4: Benzene, ethylbenzene, and naphthalene
- MW-6: Benzene and ethylbenzene
- MW-7: Benzene and ethylbenzene
- MW-8: Benzene, ethylbenzene, and naphthalene

Exceedances are discussed further in the "Data Evaluation" section.

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 the May 2018 DEQ *Inhalation* RBCs for occupational receptors. The indoor air sample chemical analytical results are compared to applicable regulatory criteria in the discussion below and in Table 5, which also includes previous indoor air analytical results. In addition, Table 5 includes the June 2023 updated RBCs for the *Inhalation of Indoor Air* exposure pathway. As shown on Table 5, the May 2018 *Inhalation of Indoor Air* RBCs for occupational receptors are the same as the June 2023 *Inhalation of Indoor Air* RBCs for commercial receptors, except for Freon 113 and TCE. The Freon 113 May 2018 *Inhalation of Indoor Air* RBC for occupational receptors is 130,000 µg/m^3 and the June 2023 TCE *Inhalation of Indoor Air* RBC for occupational receptors is 22,000 µg/m^3. The TCE May 2018 *Inhalation of Indoor Air* RBC for occupational receptors is 2.9 µg/m^3 and the June 2023 TCE *Inhalation of Indoor Air* RBC for commercial receptors is 3.0 µg/m^3. Freon 113 and TCE are not petroleum-related COCs at the subject property. The chemical analytical program details, laboratory report, and chain-of-custody documentation are presented in Attachment B.

Up to eight VOCs with established DEQ *Inhalation* RBCs for occupational/commercial receptors were detected in the seven indoor air samples (Indoor-1 through Indoor-7). Chloroform was detected in all seven of the indoor air samples at concentrations exceeding the DEQ *Inhalation* RBC for occupational/commercial receptors. However, chloroform is not a petroleum-related COC at the subject property and, as discussed on site with DEQ in January 2023, its detection is attributed to the use of municipal (chlorinated) water for washing operations within the subject property structure. Petroleum-related VOCs were not detected in the November/December 2023 indoor air samples at concentrations greater than the DEQ *Inhalation* RBCs for occupational/commercial receptors.

Benzene, carbon tetrachloride, toluene, and m,p-xylene were also detected in the background sample (Background) collected from the exterior of the subject property structure in November/December 2023.

DATA EVALUATION

SUB-SLAB VAPOR SAMPLES

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

Based on our review of the November 2023 sub-slab vapor sample chemical analytical results, the detected concentrations of gasoline-range hydrocarbons and petroleum-related VOCs in sub-slab vapor samples VP-1 through VP-4 continue to exhibit stable or decreasing trends relative to baseline values and were below all applicable DEQ RBCs. This stable/decreasing trend in sub-slab vapor concentrations has been demonstrated over five consecutive quarterly sampling events following SVE system cessation.

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 groundwater concentrations exceed the applicable DEQ RBCs for occupational receptors in two consecutive quarterly monitoring events.

A chart depicting the results of groundwater sampling results for all monitoring wells (for gasoline-range hydrocarbons) is presented in Attachment C. Additionally, a Mann-Kendall trend test was conducted to evaluate potential groundwater contaminant trends. Our review of the November 2023 groundwater sample chemical analytical results indicates the following:

- The detected concentrations of gasoline-range hydrocarbons and petroleum-related VOCs in the groundwater sample collected from monitoring well MW-1 decreased in comparison with the previous sampling events but remained greater than the baseline values. At DEQ's recommendation, a trend analysis was conducted using the Mann-Kendall trend test for gasoline-range hydrocarbons, benzene, ethylbenzene, naphthalene, toluene, and total xylenes using the respective groundwater analytical data collected since the January 2022 baseline monitoring event. Results of the trend analysis are summarized below.

  - Gasoline-range hydrocarbons: No trend established.
  - Benzene: No trend established.
  - Ethylbenzene: No trend established.
  - Naphthalene: No trend established.
  - Toluene: No trend established.
  - Total xylenes: Increasing contaminant trend.

  The detected concentrations of gasoline-range hydrocarbons and petroleum-related VOCs in the groundwater sample collected from monitoring well MW-1 were less than the corresponding DEQ *Groundwater in Excavation* RBCs for construction/excavation workers.[5] Comparing groundwater concentrations to the June 2023 updated RBCs, concentrations of gasoline-range hydrocarbons, benzene, ethylbenzene, and naphthalene exceeded the June 2023 RBCs for *Vapor Intrusion into Buildings* for commercial workers. However, corresponding sub-slab vapor and indoor air analytical results consistently indicate concentrations are less than the applicable May 2018 and June 2023 RBCs. Therefore, petroleum-related COCs do not pose an unacceptable vapor intrusion risk to subject property receptors.

- The detected concentrations of gasoline-range hydrocarbons in the groundwater sample collected from monitoring well MW-2 slightly increased from the previous sampling event but remained less than prior pilot shutdown sampling results, including the January 2022 baseline results. Petroleum-related VOC concentrations collected from monitoring well MW-2 decreased compared to prior sampling events including the January 2022 baseline results. Mann-Kendall tests were conducted for gasoline-range hydrocarbons, benzene, ethylbenzene, naphthalene, toluene, and total xylenes using the respective groundwater analytical data collected since the January 2022 baseline monitoring event. Results of the trend analysis are summarized below.

  - Gasoline-range hydrocarbons: Stable concentrations
  - Benzene: Stable concentrations
  - Ethylbenzene: Stable concentrations
  - Naphthalene: No trend established
  - Toluene: Stable concentrations
  - Total xylenes: Decreasing contaminant trend

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

In addition, the detected gasoline-range hydrocarbons and petroleum-related VOCs detected in the groundwater sample collected from monitoring well MW-2 were less than the January 2022 baseline concentrations and the corresponding DEQ *Groundwater in Excavation* RBCs for construction/excavation workers.[6] Comparing groundwater concentrations to the June 2023 updated RBCs, concentrations of gasoline-range hydrocarbons and benzene exceeded the June 2023 RBCs for *Vapor Intrusion into Buildings* for commercial workers. However, corresponding sub-slab vapor and indoor air analytical results consistently indicate concentrations are less than the applicable May 2018 and June 2023 RBCs. Therefore, petroleum-related COCs do not pose an unacceptable vapor intrusion risk to subject property receptors.

- The detected concentration of gasoline-range hydrocarbons collected from monitoring well MW-3 slightly increased compared to the April and July 2023 results. Results for petroleum-related VOCs indicated stable conditions, with slight concentration increases observed for MTBE, 1,2,4-TMB, 1,3,5-TMB, and total xylenes. Mann-Kendall trend tests were conducted for gasoline-range hydrocarbons, benzene, ethylbenzene, naphthalene, toluene, and total xylenes using the respective groundwater analytical data collected since the January 2022 baseline monitoring event. Results of the trend analysis are summarized below.

  - Gasoline-range hydrocarbons: Stable concentrations
  - Benzene: No trend established
  - Ethylbenzene: No trend established
  - Naphthalene: No trend established
  - Toluene: Stable concentrations
  - Total xylenes: No trend established

  As noted in the prior quarterly report, this well is near the most hydraulically up-gradient portion of the subject property and the varying concentrations in gasoline-range hydrocarbons may reflect an unstable plume from the neighboring Wild Willie's site (and/or other upgradient sites) across West Marine Drive from the subject property. Detected concentrations of COCs in monitoring well MW-3 were less than the respective DEQ *Groundwater in Excavation* RBCs for construction/excavation workers. Comparing groundwater concentrations to the June 2023 updated RBCs, concentrations of gasoline-range hydrocarbons exceeded the June 2023 RBCs for *Vapor Intrusion into Buildings* for commercial workers. However, corresponding sub-slab vapor and indoor air analytical results consistently indicate concentrations are less than the applicable May 2018 and June 2023 RBCs. Therefore, petroleum-related COCs do not pose an unacceptable vapor intrusion risk to subject property receptors.

- The detected concentrations of gasoline-range hydrocarbons, benzene, 1,2,4-TMB, 1,3,5-TMB, and total xylenes in the groundwater sample collected from monitoring well MW-4 increased compared to the July 2023 data but were less than the April 2023 sample results. Remaining petroleum-related VOCs decreased compared to the July 2023 sample results. Mann-Kendall trend tests were conducted for gasoline-range hydrocarbons, benzene,

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

ethylbenzene, naphthalene, toluene, and total xylenes using the respective groundwater analytical data collected since the January 2022 baseline monitoring event. Results of the trend analysis are summarized below.

- Gasoline-range hydrocarbons: Stable concentrations
- Benzene: Stable concentrations
- Ethylbenzene: No trend established
- Naphthalene: No trend established
- Toluene: Stable concentrations
- Total xylenes: Stable concentrations

The detected concentrations of gasoline-range hydrocarbons in the groundwater sample collected from monitoring well MW-4 were greater than the corresponding DEQ *Groundwater in Excavation* RBCs for construction/excavation workers.[7] Comparing groundwater concentrations to the June 2023 updated RBCs, concentrations of gasoline-range hydrocarbons, benzene, ethylbenzene, and naphthalene exceeded the June 2023 RBCs for *Vapor Intrusion into Buildings* for commercial workers. However, corresponding sub-slab vapor and indoor air analytical results consistently indicate concentrations are less than the applicable May 2018 and June 2023 RBCs. Therefore, petroleum-related COCs do not pose an unacceptable vapor intrusion risk to subject property receptors.

- The detected concentration of gasoline-range hydrocarbons in the groundwater sample collected from monitoring well MW-5 slightly increased relative to the July 2023 results. However, petroleum-related VOCs exhibited a slight decrease relative to the prior sampling event. Mann-Kendall trend tests were conducted for gasoline-range hydrocarbons, benzene, ethylbenzene, naphthalene, toluene, and total xylenes using the respective groundwater analytical data collected since the January 2022 baseline monitoring event. Results of the trend analysis are summarized below.

  - Gasoline-range hydrocarbons: No trend established
  - Benzene: No trend established
  - Ethylbenzene: No trend established
  - Naphthalene: No trend established
  - Toluene: No trend established
  - Total xylenes: No trend established

  Detected concentrations of COCs were less than the respective DEQ *Groundwater in Excavation* RBCs for construction/excavation workers. Comparing groundwater concentrations to the June 2023 updated RBCs, concentrations of gasoline-range hydrocarbons exceeded the June 2023 RBCs for *Vapor Intrusion into Buildings* for commercial workers. As of November 2023, the detected concentrations of gasoline-range hydrocarbons and petroleum-related VOCs have exceeded the baseline value for three consecutive events and technically qualify as a rebound condition. However, our review indicates that the rebound condition at MW-5 is marginal. This monitoring well is on the

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

most upgradient portion of the subject property and outside the ROI of the former SVE system. Additionally, corresponding sub-slab vapor and indoor air analytical results consistently indicate concentrations are less than the applicable May 2018 and June 2023 RBCs. Therefore, petroleum-related COCs do not pose an unacceptable vapor intrusion risk to subject property receptors.

- The detected concentration of gasoline-range hydrocarbons in the groundwater sample collected from monitoring well MW-6 increased slightly compared to the July 2023 sampling results and was slightly greater than the baseline value. However, the petroleum-related VOC concentrations decreased compared to the July 2023 results and decreased or remained stable to the three prior sampling events. Mann-Kendall trend tests were conducted for gasoline-range hydrocarbons, benzene, ethylbenzene, naphthalene, toluene, and total xylenes using the respective groundwater analytical data collected since the January 2022 baseline monitoring event. Results of the trend analysis are summarized below.

  - Gasoline-range hydrocarbons: No trend established
  - Benzene: Stable conditions
  - Ethylbenzene: No trend established
  - Naphthalene: Increasing contaminant trend
  - Toluene: Decreasing contaminant trend
  - Total xylenes: No trend established

  Detected concentrations of COCs were consistently less than the respective DEQ *Groundwater in Excavation* RBCs for construction/excavation workers. Comparing groundwater concentrations to the June 2023 updated RBCs, concentrations of gasoline-range hydrocarbons, benzene, and ethylbenzene exceeded the June 2023 RBCs for *Vapor Intrusion into Buildings* for commercial workers. The technical definition of rebound has been met at monitoring well MW-6; however, we categorize the rebound condition as marginal given the results over the past four monitoring events and the fact that this monitoring well previously exhibited some of the highest gasoline-range hydrocarbon concentrations before the implementation of SVE. Additionally, corresponding sub-slab vapor and indoor air analytical results consistently indicate concentrations are less than the applicable May 2018 and June 2023 RBCs. Therefore, petroleum-related COCs do not pose an unacceptable vapor intrusion risk to subject property receptors.

- The detected concentration of gasoline-range hydrocarbons for MW-7 increased compared to the July 2023 event but was less than the concentrations detected in April 2023. However, petroleum-related VOCs in the groundwater sample decreased or remained stable in comparison to the results from the three preceding sampling events was similar to the baseline results. Mann-Kendall trend testing was performed for gasoline-range hydrocarbons, benzene, ethylbenzene, naphthalene, toluene, and total xylenes using the respective groundwater analytical data collected since the January 2022 baseline monitoring event. Results of the trend analysis are summarized below.

  - Gasoline-range hydrocarbons: No trend established
  - Benzene: Stable conditions

- Ethylbenzene: No trend established
- Naphthalene: Stable conditions
- Toluene: No trend established
- Total xylenes: No trend established

Detected concentrations of COCs exceeded the respective DEQ *Groundwater in Excavation* RBCs for construction/excavation workers. Comparing groundwater concentrations to the June 2023 updated RBCs, concentrations of gasoline-range hydrocarbons, benzene, and ethylbenzene exceeded the June 2023 RBCs for *Vapor Intrusion into Buildings* for commercial workers. After an apparent spike in COC concentrations in January 2023, results from the last three monitoring events indicate decreasing or stable contaminant concentrations. These stable trends are confirmed by Mann-Kendall analysis of the gasoline-range hydrocarbons and petroleum-related VOCs. Additionally, corresponding sub-slab vapor and indoor air analytical results consistently indicate concentrations are less than the applicable May 2018 and June 2023 RBCs. Therefore, petroleum-related COCs do not pose an unacceptable vapor intrusion risk to subject property receptors.

- The detected concentration of gasoline-range hydrocarbons in the groundwater sample collected from monitoring well MW-8 increased compared to the July 2023 results and discontinued the decreasing trend relative to the three preceding results. Benzene concentrations decreased compared to previous results and remained less than baseline concentrations. Mann-Kendall trend tests were conducted for gasoline-range hydrocarbons, benzene, ethylbenzene, naphthalene, toluene, and total xylenes using the respective groundwater analytical data collected since the January 2022 baseline monitoring event. Results of the trend analysis are summarized below.

  - Gasoline-range hydrocarbons: No trend established
  - Benzene: Stable conditions
  - Ethylbenzene: No trend established
  - Naphthalene: Increasing contaminant trend
  - Toluene: No trend established
  - Total xylenes: No trend established

  Similar to prior events, the concentration of gasoline-range hydrocarbons detected in the groundwater sample collected from monitoring well MW-8 exceeded the DEQ *Groundwater in Excavation* RBC for construction/excavation workers.[5] Comparing groundwater concentrations to the June 2023 updated RBCs, concentrations of gasoline-range hydrocarbons, benzene, ethylbenzene, naphthalene, and total xylenes exceeded the June 2023 RBCs for *Vapor Intrusion into Buildings* for commercial workers. However, corresponding sub-slab vapor and indoor air analytical results consistently indicate concentrations are less than the applicable May 2018 and June 2023 RBCs. Therefore, petroleum-related COCs do not pose an unacceptable vapor intrusion risk to subject property receptors.

Mann-Kendall trend test results are presented in Attachment C. Further discussion of rebound conditions specific to groundwater samples (in accordance with the Work Plan) is presented in the "Conclusions" and "Recommendations" sections.

INDOOR AIR SAMPLES

To evaluate potential rebound conditions associated with SVE system cessation, the August 2021 sample results are used to represent baseline conditions. Regardless of the baseline values, indoor air data are used to confirm that indoor air concentrations are protective of occupational/commercial workers. As noted previously, the May 2018 and June 2023 indoor air RBCs are the same, except for the RBC for Freon 113. However, Freon 113 is not COC for the subject property; therefore, it is not evaluated further. The Work Plan states that contingency measures will be triggered if indoor air concentrations for site COCs exceed the applicable DEQ RBCs for occupational/commercial receptors in any single monitoring event.

Based on our review of the November/December 2023 indoor air sample chemical analytical results, the detected concentrations of petroleum-related VOCs in indoor air samples Indoor-1 through Indoor-7 were generally equal to or less than previously detected concentrations and below applicable DEQ RBCs. Several of the detected VOCs in indoor air samples (notably benzene) were also detected in the Background air sample. As described above, sub-slab vapor samples VP-1 through VP-4 generally exhibited stable or decreasing trends relative to baseline values and were below all applicable DEQ RBCs, indicating that vapors have not accumulated below the slab over the course of the pilot shutdown monitoring period at concentrations representing a potential indoor vapor intrusion risk.

Chloroform was detected in all the indoor air samples at concentrations greater than the DEQ RBCs for occupational/commercial receptors. As noted earlier, the presence of chloroform is attributed to the use of municipal (chlorinated) water for the periodic washing operations needed for the maintenance of brewing equipment used in the facility and is not a petroleum-related COC at the subject property.

CONCLUSIONS

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

- The sub-slab vapor sampling results from the fifth round of pilot shutdown monitoring conducted in November 2023 do not indicate a rebounding trend in sub-slab vapor, and DEQ RBCs (including the June 2023 updated RBCs) were not exceeded in any sub-slab vapor samples collected over the pilot shutdown monitoring period. The sub-slab vapor sampling results conducted over the pilot shutdown monitoring period exhibit downward or stable trends for petroleum-related site COCs. After five quarters of pilot shutdown monitoring, the sub-slab vapor sample results confirm that petroleum-related VOCs in groundwater are not partitioning to the vadose zone at or attenuate to concentrations that do not pose an unacceptable risk to subject property receptors.

- The groundwater sampling results from the fifth round of pilot shutdown monitoring conducted in November 2023 (which included sampling of all subject property monitoring wells) indicate that rebound (as technically defined in the Work Plan) has occurred in all monitoring wells on site. However, it is notable that the November 2023 groundwater sampling results consistently reveal a generally stable pattern of petroleum-range hydrocarbon detections in comparison to an initial increasing trend relative to baseline values. Moreover, DEQ's RBCs (the May 2018 values used throughout the project) for occupational receptors for volatilization pathways were not exceeded in any groundwater samples collected and the results of the sub-slab vapor sampling throughout the pilot shutdown monitoring period do not indicate a correlative increase in vapor concentrations as a result of increasing (or variable) COC concentrations in groundwater. As compared to DEQ's June 2023 updated and significantly reduced RBCs for vapor intrusion, gasoline-range hydrocarbons, benzene, ethylbenzene, naphthalene, and total xylenes have been detected in groundwater samples collected from one or more monitoring wells on site at concentrations exceeding the June 2023 RBCs for *Vapor Intrusion in Buildings* for commercial receptors. However, the results of sub-slab vapor and indoor air sampling conducted throughout the pilot shutdown monitoring period provide a more reliable (site-specific) metric to assess the volatilization pathway from groundwater, and those results indicate that the groundwater exceedances are not resulting in unacceptable risks to on-site workers, even when compared to the respective June 2023 RBCs. In addition, evidence of free product or groundwater seeps (i.e., with petroleum-like sheens) has not been observed during monitoring well gauging and riverbank observations conducted over the course of the pilot shutdown monitoring period.

- Based on the Mann-Kendall trend test, stable or decreasing trends were indicated in the following wells:

  - MW-2 (gasoline-range hydrocarbons, benzene, ethylbenzene, toluene, total xylenes)
  - MW-3 (gasoline-range hydrocarbons and toluene)
  - MW-4 (gasoline-range hydrocarbons, benzene, toluene, total xylenes)
  - MW-6 (benzene and toluene)
  - MW-7 (benzene and naphthalene)
  - MW-8 (benzene)

  An increasing trend was indicated in MW-1 for total xylenes, MW-6 for naphthalene, and MW-8 for naphthalene.

  A trend could not be established with the current dataset for the following wells and parameters:

  - MW-1 (gasoline-range hydrocarbons, benzene, ethylbenzene, naphthalene, and toluene)
  - MW-2 (naphthalene)
  - MW-3 (benzene, ethylbenzene, naphthalene, and total xylenes)
  - MW-4 (ethylbenzene and naphthalene)
  - MW-5 (gasoline-range hydrocarbons, benzene, ethylbenzene, naphthalene, toluene, and total xylenes)

- MW-6 (gasoline-range hydrocarbons, ethylbenzene, and total xylenes)
- MW-7 (gasoline-range hydrocarbons, ethylbenzene, toluene, and total xylenes)
- MW-8 (gasoline-range hydrocarbons, ethylbenzene, toluene, and total xylenes)

The trend evaluation indicates generally stable or decreasing trends in MW-2 and MW-4. A trend could not be established in the remaining wells based on the available dataset. We infer from the existing data that contaminant concentrations are likely stabilizing in MW-3 and MW-6 with two of the six parameters tested as stable with the remaining parameters not meeting the trend criteria of the Mann-Kendall trend test. All six parameters for MW-5 did not meet any of the trend criteria. However, MW-5 is most upgradient well and within the up-gradient groundwater plume originating from area(s) south of the subject property, where conditions may not be fully stable.

- The indoor air sampling results from the fifth round of pilot shutdown monitoring conducted in November/December 2023 exhibit comparable results relative to prior sampling events, and DEQ RBCs (for both May 2018 and June 2023) were not exceeded in any indoor air samples collected.

RECOMMENDATIONS

Based on the rebound criteria established in the Work Plan, it appears rebound, as defined in the Work Plan, has occurred in several groundwater monitoring wells. However, a correlative increase in sub-slab vapor COC concentrations has not been observed and site-related COCs have not been detected in sub-slab vapor or indoor air samples at concentrations exceeding DEQ RBCs (including the June 2023 updated RBCs). Rather, sub-slab vapor concentration trends over the course of the pilot shutdown monitoring period indicate steady or decreasing COC concentrations, with concentrations remaining well below DEQ's respective RBCs. In addition, the fifth quarter pilot shutdown monitoring event indicates generally stable to decreasing groundwater concentration trends in most of the subject property monitoring wells.

Over the course of the pilot shutdown monitoring period, there has been no indication of free-product buildup in any monitoring well and sheens have not been observed in seeps along the adjacent riverbank areas. Based on our review of the collective pilot shutdown monitoring data and as outlined in the rationale presented in our prior report dated September 13, 2023, we are not recommending the implementation of contingencies for the groundwater condition. Data collected over the course of the pilot shutdown monitoring program indicate that re-initiation of the SVE system (or other active remediation) is not required to maintain protective site conditions. The pilot shutdown monitoring program has demonstrated that cessation of the SVE system has not resulted in unacceptable concentrations of site-related COCs in sub-slab vapor or indoor air throughout the subject property, and groundwater concentrations exceeding DEQ's RBCs for construction/excavation workers is addressed through measures prescribed in the CMMP.

For the reasons stated herein, we recommend cessation of the pilot shutdown monitoring program and request DEQ initiate steps to issue a Certificate of Completion for the subject property.

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

Sincerely,

NV5

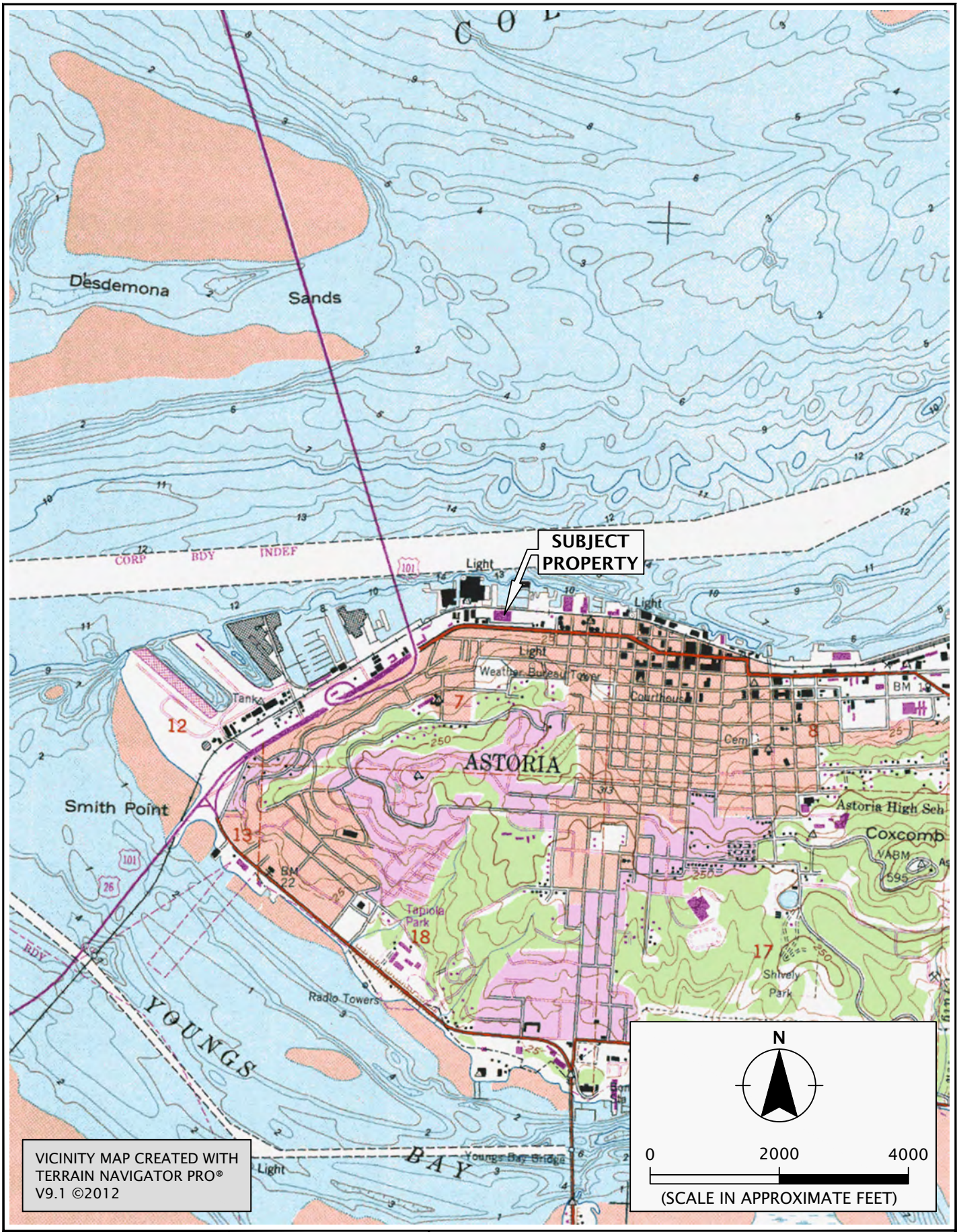
Joshua Rowe, R.G.
Project Manager

Mike F. Coenen, P.E.
Principal Engineer

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

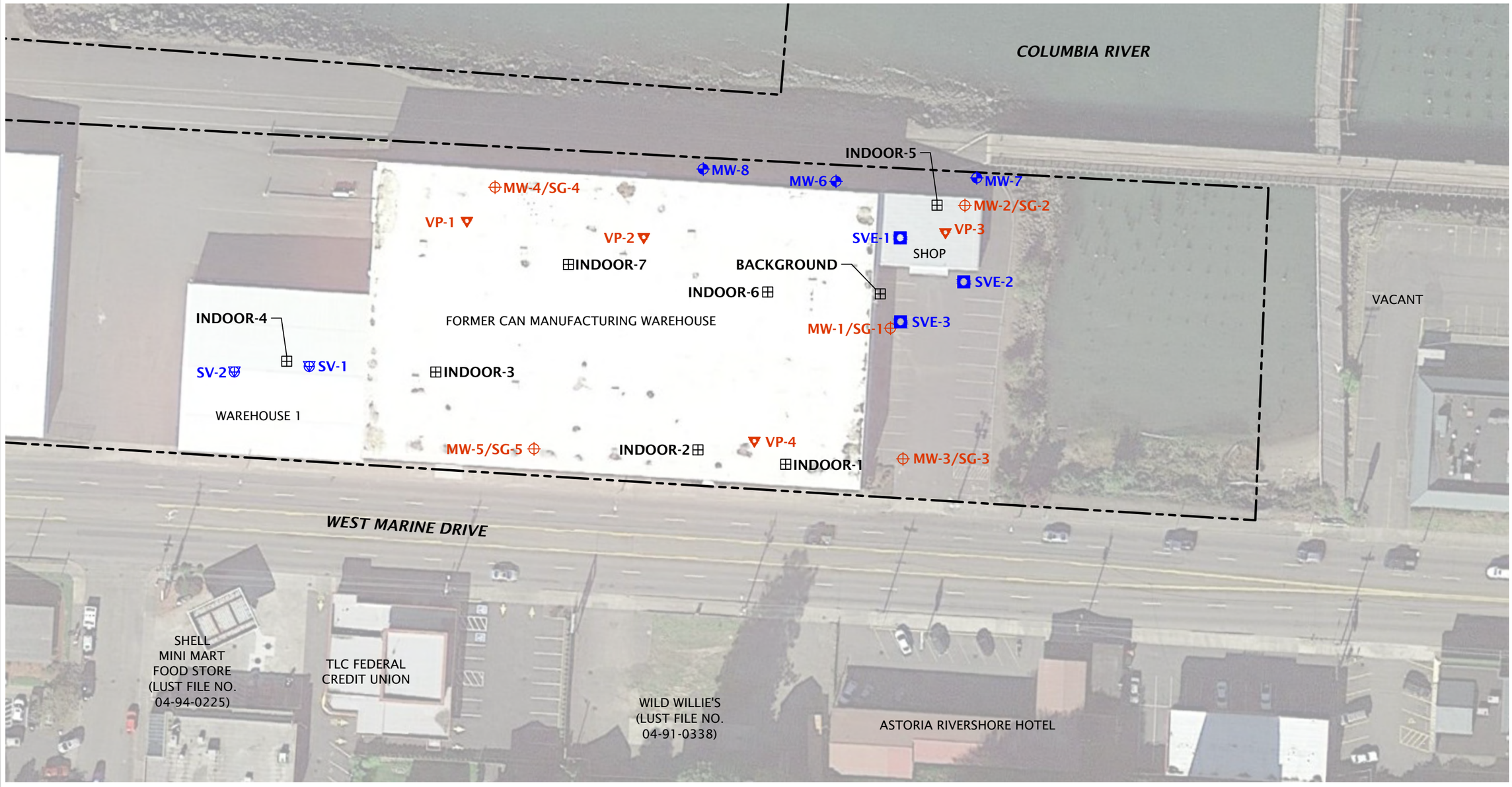
JJR:KRS:MFC:sn
Attachments
One copy submitted
Document ID: BigBeams-1-04-05-032024-envlr.docx

FIGURES



NV5	BIGBEAMS-1-04-05	**VICINITY MAP**	
	MARCH 2024	FORMER ASTORIA WAREHOUSING SITE ASTORIA, OR	**FIGURE 1**

Printed By: andy.day | Print Date: 3/14/2024 9:45:55 AM
File Name: \\nv5.com\shares\ORWIL\J\A-D\BigBeams\bigbeams-1\bigbeams-1-04\bigbeams-1-04-05- monitoring\Figures\CAD\PSMR\5th report\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

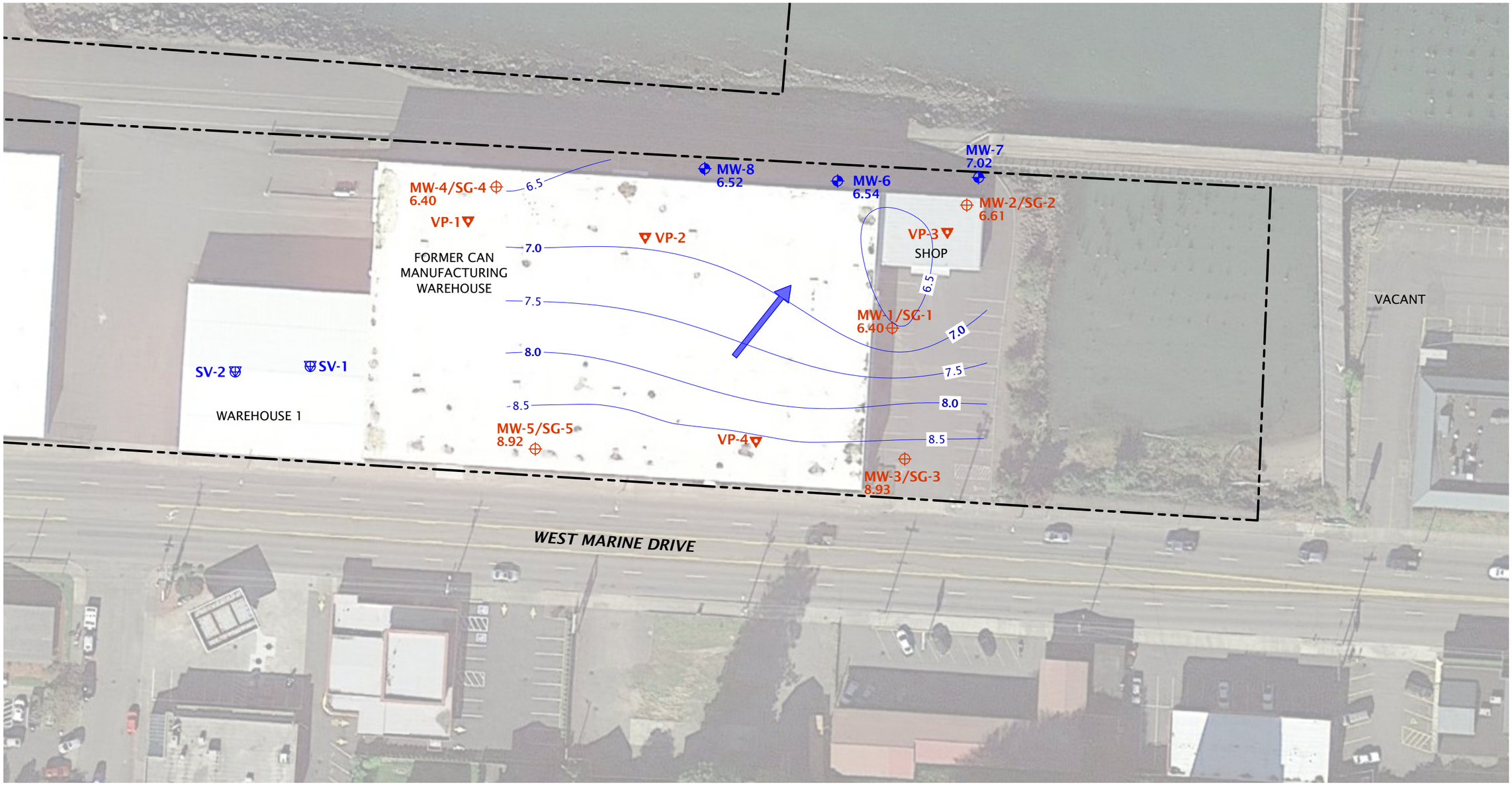
FIGURE 2

FORMER ASTORIA WAREHOUSING SITE
ASTORIA, OR

BIGBEAMS-1-04-05

MARCH 2024

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)
- 6.40 — GROUNDWATER ELEVATION IN FEET AS MEASURED ON NOVEMBER 27, 2023 (NAVD88 DATUM)
- 6.5 — GROUNDWATER ELEVATION CONTOUR AS MEASURED ON NOVEMBER 27, 2023 (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 - NOVEMBER 2023

FIGURE 3

FORMER ASTORIA WAREHOUSING SITE
ASTORIA, OR

BIGBEAMS-1-04-05

MARCH 2024

NV5

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	PID (ppm)	Gasoline-Range Hydrocarbons EPA Method TO-03/15 (µg/m³)	VOCs[1] EPA Method TO-15 (µg/m³)												
				Benzene	Ethylbenzene	iso-Propylbenzene	MTBE	Naphthalene	2-Propanol	Styrene	PCE	Toluene	TCE	1,2,4-TMB	1,3,5-TMB	m,p-Xylene	o-Xylene
VP-1	09/24/18	6.2	**18,000**	**79**	**360**	**30**	5.4 U	**43**	17 U	6.4 U	10 U	**6.4**	8.1 U	**690**	**150**	**640**	
	06/28/19	--	32,000 U	2.3 U	2.3 U	2.3 U	2.4 U	2.3 U	9.4 U	2.4 U	2.4 U	**4.9**	2.4 U	2.4 U	2.4 U	4.9 U	2.4 U
	12/17/20	0.2	500 U	3.9 U	5.3 U	6.0 U	18 U	--	**56**	5.2 U	8.3 U	4.6 U	6.6 U	6.0 U	6.0 U	5.3 U	5.3 U
	08/11/21	1.0	**2,610**	0.639 U	0.867 U	0.983 U	0.721 U	3.30 U	**6.59**	0.851 U	1.36 U	1.88 U	1.07 U	**4.06**	**1.12**	**1.78**	0.867 U
	10/04/22[2]	0.5	826 U	0.639 U	0.867 U	0.983 U	0.721 U	3.30 U	**21.8**	0.851 U	**1.78**	**4.18**	1.07 U	0.982 U	0.982 U	**2.43**	0.867 U
	01/27/23[3]	0.6	826 U	0.639 U	0.867 U	0.983 U	0.721 U	3.30 U	**7.89**	0.851 U	1.36 U	1.88 U	**4.86**	0.982 U	0.982 U	1.73 U	0.867 U
	04/26/23[4]	0.0	260 U	2.1 U	2.8 U	3.2 U	9.3 U	--	6.3 U	2.7 U	4.4 U	4.9 U	3.5 U	3.2 U	3.2 U	5.6 U	2.8 U
	07/27/23[5]	4.6	826 U	0.639 U	0.867 U	0.983 U	0.721 U	3.30 U	**36.1**	0.851 U	1.36 U	**4.29**	1.07 U	0.982 U	0.982 U	**1.76**	0.867 U
	11/28/23[6]	1.1	826 U	0.639 U	0.867 U	0.983 U	0.721 U	3.30 U	**13.3**	0.851 U	1.36 U	1.88 U	1.07 U	0.982 U	0.982 U	1.73 U	0.867 U
VP-2	09/24/18	2.8	**27,000**	**100**	**510**	**43**	5.1 U	**130**	17 U	6.0 U	9.6 U	**6.4**	7.6 U	**1,300**	**260**	**893**	
	06/28/19	--	33,000 U	2.4 U	2.4 U	2.4 U	2.4 U	2.3 U	**14**	2.4 U	2.4 U	**3.9**	2.4 U	2.4 U	2.4 U	5.0 U	2.4 U
	12/17/20	0.2	480 U	3.7 U	5.0 U	5.7 U	17 U	--	11 U	5.0 U	7.9 U	4.4 U	6.3 U	5.7 U	5.7 U	5.0 U	5.0 U
	08/11/21	1.2	826 U	0.639 U	0.867 U	0.983 U	0.721 U	3.30 U	**5.97**	0.851 U	**2.59**	1.88 U	1.07 U	**2.80**	**1.01**	1.73 U	0.867 U
	10/04/22[2]	0.6	826 U	0.639 U	**1.96**	0.983 U	0.721 U	3.30 U	**27.5**	0.851 U	**1.53**	**5.35**	1.07 U	**4.17**	**1.05**	**9.32**	**3.31**
	01/27/23[3]	2.6	826 U	0.639 U	0.867 U	0.983 U	0.721 U	3.30 U	**9.29**	0.851 U	**2.34**	1.88 U	**4.67**	0.982 U	0.982 U	1.73 U	0.867 U
	04/26/23[4]	0.1	270 U	2.1 U	2.9 U	3.3 U	9.7 U	--	6.6 U	2.8 U	**16**	5.0 U	3.6 U	3.3 U	3.3 U	5.8 U	2.9 U
	07/27/23[5]	2.9	826 U	0.639 U	**1.29**	0.983 U	0.721 U	3.30 U	**25.8**	0.851 U	1.36 U	**3.39**	1.07 U	**1.75**	0.982 U	**3.59**	**1.17**
	11/28/23[6]	0.8	826 U	0.639 U	0.867 U	0.983 U	0.721 U	3.30 U	**9.34**	0.851 U	1.36 U	**4.41**	1.07 U	**2.57**	0.982 U	**3.06**	0.867 U
VP-3	09/24/18	--	**61,000,000**	**650,000**	**210,000**	7,500 U	5,500 U	32,000 U	3.9 U	1.3 U	10,000 U	**5,800** CN, J	8,200 U	**20,000**	**11,000**	**267,000**	
	06/28/19	--	**58,000,000**	**530,000**	**67,000**	9,500 U	9,700 U	9,100 U	38,000 U	9,500 U	9,500 U	9,500 U	9,500 U	**13,000**	9,500 U	**120,000**	9,500 U
	12/17/20	873	**57,000,000**	**470,000**	**210,000**	**5,900**	2,300 U	--	6,400 U	2,800 U	4,400 U	**2,700**	3,500 U	**62,000**	**25,000**	**240,000**	**4,400**
	08/11/21	3.6	**24,400**	**130**	**67.6**	**10.2**	0.721 U	3.30 U	3.07 U	0.851 U	1.36 U	**3.44**	1.07 U	**395**	**154**	**156**	**6.46**
	10/04/22[2]	4.1	**8,300**	**6.13**	**5.29**	0.983 U	0.721 U	3.30 U	**11.4**	0.851 U	1.36 U	**7.31**	1.07 U	**8.00**	**4.46**	**14.4**	**2.39**
	01/27/23[3]	4.9	**1,600**	**0.760**	0.867 U	0.983 U	**1.83**	3.30 U	**69.8**	0.851 U	1.36 U	1.88 U	1.07 U	0.982 U	0.982 U	1.73 U	0.867 U
	04/26/23[4]	0.5	**1,100**	2.2 U	3.0 U	3.4 U	10 U	--	6.8 U	3.0 U	4.7 U	5.2 U	3.7 U	3.4 U	3.4 U	6.0 U	3.0 U
	07/27/23[5]	0.8	826 U	**1.03**	0.867 U	0.983 U	**1.11**	3.30 U	**31.5**	0.851 U	1.36 U	**2.81**	1.07 U	0.982 U	0.982 U	**1.96**	0.867 U
	11/28/23[6]	1.4	826 U	0.639 U	0.867 U	0.983 U	**1.16**	3.30 U	**6.37**	0.851 U	1.36 U	1.88 U	1.07 U	0.982 U	0.982 U	1.73 U	0.867 U
VP-4	09/24/18	235.0	**4,900,000**	**1,800**	**1,600**	380 U	280 U	1,600 U	750 U	320 U	520 U	290 U	410 U	**920**	**470**	**1,400**	
	06/28/19	--	**1,200,000**	130 U	130 U	130 U	130 U	130 U	520 U	130 U	130 U	130 U	130 U	130 U	130 U	270 U	130 U
	12/17/20	385.0	**6,100,000**	830 U	1,100 U	1,300 U	940 U	--	2,600 U	1,100 U	1,800 U	980 U	1,400 U	1,300 U	1,300 U	1,100 U	1,100 U
	08/11/21	3.4	**6,570**	**1.70**	0.867 U	0.983 U	**8.25**	3.30 U	**6.00**	0.851 U	**2.18**	1.88 U	1.07 U	**6.48**	**1.84**	1.73 U	0.867 U
	10/04/22[2]	1.9	826 U	0.639 U	**0.984**	0.983 U	0.721 U	3.30 U	**15.0**	0.851 U	1.36 U	**2.16**	1.07 U	**2.41**	0.98 U	**4.47**	**1.60**
	01/27/23[3]	5.9	826 U	0.639 U	0.867 U	0.983 U	**1.99**	3.30 U	**8.14**	0.851 U	**6.42**	1.88 U	1.07 U	0.982 U	0.982 U	1.73 U	0.867 U
	04/26/23[4]	9.7	280 U	2.2 U	3.0 U	3.3 U	9.8 U	--	6.7 U	2.9 U	**900**	5.1 U	**5.2**	3.3 U	3.3 U	5.9 U	3.0 U
	07/27/23[5]	4.1	16,500 U	12.8 U	17.3 U	19.7 U	14.4 U	66.0 U	**3,960**	17.0 U	27.2 U	37.7 U	21.4 U	19.6 U	19.6 U	34.7 U	17.3 U
	11/28/23[6]	4.7	826 U	0.639 U	0.867 U	0.983 U	**1.96**	3.30 U	**32.9**	0.851 U	1.36 U	1.88 U	1.07 U	0.982 U	0.982 U	1.73 U	0.867 U

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	PID (ppm)	Gasoline-Range Hydrocarbons EPA Method TO-03/15 (µg/m³)	VOCs[1] EPA Method TO-15 (µg/m³)												
				Benzene	Ethylbenzene	iso-Propylbenzene	MTBE	Naphthalene	2-Propanol	Styrene	PCE	Toluene	TCE	1,2,4-TMB	1,3,5-TMB	m,p-Xylene	o-Xylene
DEQ Generic RBCs[7]																	
Vapor Intrusion into Buildings																	
Occupational			1,700,000	1,600	4,900	1,800,000	47,000	360	NE	4,400,000	47,000	21,900,000	2,900	260,000	260,000	440,000	
DEQ Generic RBCs (Amended)[8]																	
Vapor Intrusion into Buildings																	
Commercial Worker—Chronic			40,000	52	160	58,000	1,600	12	29,000	150,000	1,600	730,000	100	8,800	8,800	15,000	
Commercial Worker—Acute			NE	2,900	2,200,000	NE	800,000	20,000	320,000	2,100,000	4,000	770,000	210	NE	NE	870,000	

Notes:
1. Only VOCs detected with regulatory screening values (DEQ's May 2018 RBCs) are listed. For a complete listing of VOCs, refer to the laboratory report in Attachment B.
2. First round of pilot shutdown monitoring (October 2022)
3. Second round of pilot shutdown monitoring (January 2023)
4. Third round of pilot shutdown monitoring (April 2023)
5. Fourth round of pilot shutdown monitoring (July 2023)
6. Fifth round of pilot shutdown monitoring (November 2023)
7. DEQ Generic RBCs dated May 2018.
8. DEQ Generic RBCs dated May 2018, amended June 2023. The updated RBCs are provided for reference purposes only.

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 (May 2018 values).
–: not analyzed

TABLE 2
Summary of Groundwater Elevation Data
Former Astoria Warehousing Site
70 West Marine Drive
Astoria, Oregon

Monitoring Well I.D.	Top of Casing Elevation (feet MSL)	Stickup (feet)	Well Depth (feet BGS)	Screened Interval (feet BGS)	Date Measured	Depth to Water (BTOC)	Groundwater Elevation (feet MSL)	Free Product (thickness in feet)
MW-1	16.45	-0.35	19.2	4 – 19	10/03/18	10.91	5.54	NM
					06/28/19	11.31	5.14	NM
					11/15/19	10.83	5.62	No
					12/07/19	10.84	5.61	NM
					12/16/19	10.34	6.11	No
					02/19/20	10.21	6.24	No
					02/19/20	10.20	6.25	No
					04/20/20	11.04	5.41	No
					04/28/20	10.44	6.01	No
					06/10/20	10.29	6.16	No
					06/25/20	10.50	5.95	No
					08/25/20	10.81	5.64	No
					08/26/20	10.94	5.51	No
					12/17/20	9.94	6.51	No
					12/18/20	10.00	6.45	No
					12/18/20	9.86	6.59	No
					12/18/20	9.90	6.55	No
					12/18/20	9.85	6.60	No
					01/15/21	8.94	7.51	No
					02/11/21	10.05	6.40	No
					03/02/21	9.46	6.99	No
					04/01/21	8.94	7.51	No
					05/04/21	10.90	5.55	No
					08/10/21	10.95	5.50	No
					08/11/21	10.89	5.56	No
					01/04/22	9.05	7.40	No
					10/03/22	10.90	5.55	No
					01/25/23	9.85	6.60	No
					04/27/23	10.35	6.10	No
					07/25/23	11.11	5.34	No
					11/27/23	10.05	6.40	No
MW-2	17.78	-0.55	19	4 – 19	10/03/18	12.38	5.40	NM
					06/28/19	13.01	4.77	NM
					11/15/19	12.25	5.53	No
					12/07/19	12.41	5.37	NM
					12/16/19	12.12	5.66	No
					02/19/20	12.07	5.71	No
					02/19/20	12.06	5.72	No
					04/20/20	12.82	4.96	No
					04/28/20	12.40	5.38	No
					04/28/20	12.55	5.23	No
					06/10/20	12.15	5.63	No
					06/25/20	12.11	5.67	No
					08/25/20	12.60	5.18	No
					08/26/20	12.54	5.24	No
					12/17/20	11.21	6.57	No
					12/18/20	11.78	6.00	No
					12/18/20	11.21	6.57	No
					12/18/20	11.15	6.63	No
					12/18/20	11.11	6.67	No
					01/15/21	10.70	7.08	No
					02/11/21	11.49	6.29	No
					03/02/21	11.57	6.21	No
					04/01/21	12.45	5.33	No
					05/04/21	12.82	4.96	No
					08/10/21	12.91	4.87	No
					08/11/21	12.28	5.50	No
					01/04/22	10.75	7.03	No
					10/03/22	12.50	5.28	No
					01/25/23	12.00	5.78	No
					04/27/23	12.30	5.48	No
					07/25/23	12.86	4.92	No
					11/27/23	11.17	6.61	No

TABLE 2
Summary of Groundwater Elevation Data
Former Astoria Warehousing Site
70 West Marine Drive
Astoria, Oregon

Monitoring Well I.D.	Top of Casing Elevation (feet MSL)	Stickup (feet)	Well Depth (feet BGS)	Screened Interval (feet BGS)	Date Measured	Depth to Water (BTOC)	Groundwater Elevation (feet MSL)	Free Product (thickness in feet)
MW-3	16.70	-0.33	18.6	4 – 19	10/03/18	8.79	7.91	NM
					06/28/19	8.67	8.03	NM
					11/15/19	8.21	8.49	No
					12/07/19	8.22	8.48	NM
					12/16/19	7.87	8.83	No
					02/19/20	7.56	9.14	No
					02/19/20	7.50	9.20	No
					04/20/20	8.10	8.60	No
					04/28/20	8.14	8.56	No
					06/10/20	8.18	8.52	No
					06/25/20	8.20	8.50	No
					08/25/20	8.76	7.94	No
					08/26/20	8.78	7.92	No
					12/17/20	7.61	9.09	No
					12/18/20	7.62	9.08	No
					12/18/20	7.65	9.05	No
					12/18/20	7.60	9.10	No
					12/18/20	7.60	9.10	No
					01/15/21	7.21	9.49	No
					02/11/21	7.54	9.16	No
					03/02/21	7.49	9.21	No
					04/01/21	7.78	8.92	No
					05/04/21	8.28	8.42	No
					08/10/21	8.87	7.83	No
					08/11/21	8.85	7.85	No
					01/04/22	7.10	9.60	No
					10/03/22	8.80	7.90	No
					01/25/23	7.56	9.14	No
					04/27/23	7.50	9.20	No
					07/25/23	8.72	7.98	No
					11/27/23	7.77	8.93	No
MW-4	17.7	-0.35	18.8	4 – 19	10/03/18	12.08	5.62	NM
					06/28/19	12.32	5.38	NM
					11/15/19	11.84	5.86	No
					12/07/19	11.90	5.80	NM
					12/16/19	11.53	6.17	No
					02/19/20	11.00	6.70	No
					02/19/20	10.99	6.71	No
					04/20/20	11.93	5.77	No
					04/28/20	11.81	5.89	No
					06/10/20	11.44	6.26	No
					06/25/20	11.70	6.00	No
					08/25/20	11.95	5.75	No
					08/26/20	12.00	5.70	No
					12/17/20	11.11	6.59	No
					12/18/20	12.17	5.53	No
					12/18/20	11.06	6.64	No
					12/18/20	10.97	6.73	No
					12/18/20	10.90	6.80	No
					01/15/21	10.09	7.61	No
					02/11/21	10.81	6.89	No
					03/02/21	8.68	9.02	No
					04/01/21	11.45	6.25	No
					05/04/21	11.85	5.85	No
					08/10/21	12.10	5.60	No
					08/11/21	12.10	5.60	No
					01/04/22	10.10	7.60	No
					10/03/22	12.00	5.70	No
					01/25/23	10.70	7.00	No
					04/27/23	11.20	6.50	No
					07/25/23	12.07	5.63	No
					11/27/23	11.30	6.40	No

TABLE 2
Summary of Groundwater Elevation Data
Former Astoria Warehousing Site
70 West Marine Drive
Astoria, Oregon

Monitoring Well I.D.	Top of Casing Elevation (feet MSL)	Stickup (feet)	Well Depth (feet BGS)	Screened Interval (feet BGS)	Date Measured	Depth to Water (BTOC)	Groundwater Elevation (feet MSL)	Free Product (thickness in feet)
MW-5	17.97	-0.35	19.2	4 – 19	10/03/18	10.24	7.73	NM
					06/28/19	9.79	8.18	NM
					11/15/19	9.54	8.43	No
					12/07/19	9.05	8.92	NM
					12/16/19	9.40	8.57	No
					02/19/20	8.50	9.47	No
					02/19/20	8.48	9.49	No
					04/20/20	9.24	8.73	No
					04/28/20	9.31	8.66	No
					06/10/20	Inaccessible		NA
					06/25/20	9.46	8.51	No
					08/25/20	10.10	7.87	No
					08/26/20	10.00	7.97	No
					12/17/20	9.10	8.87	No
					12/18/20	9.08	8.89	No
					12/18/20	9.10	8.87	No
					12/18/20	9.06	8.91	No
					12/18/20	9.04	8.93	No
					01/15/21	8.26	9.71	No
					02/11/21	8.62	9.35	No
					03/02/21	11.05	6.92	No
					04/01/21	8.26	9.71	No
					05/04/21	9.39	8.58	No
					08/10/21	10.08	7.89	No
					08/11/21	10.06	7.91	No
					01/04/22	8.40	9.57	No
					10/03/22	10.70	7.27	No
					01/25/23	8.60	9.37	No
					04/27/23	8.60	9.37	No
					07/25/23	9.89	8.08	No
					11/27/23	9.05	8.92	No
MW-6	17.14	-0.25	25.5	5 – 25	12/07/19	11.49	5.65	NM
					12/16/19	11.11	6.03	No
					02/19/20	11.00	6.14	No
					04/20/20	11.90	5.24	No
					04/28/20	11.60	5.54	No
					06/10/20	11.09	6.05	No
					06/25/20	11.50	5.64	No
					08/25/20	12.70	4.44	No
					08/26/20	11.70	5.44	No
					12/17/20	10.58	6.56	No
					12/18/20	10.73	6.41	No
					12/18/20	10.45	6.69	No
					12/18/20	10.45	6.69	No
					12/18/20	10.41	6.73	No
					01/15/21	9.64	7.50	No
					02/11/21	10.72	6.42	No
					03/02/21	10.91	6.23	No
					04/01/21	11.37	5.77	No
					05/04/21	11.75	5.39	No
					08/10/21	11.71	5.43	No
					08/11/21	11.65	5.49	No
					01/04/22	9.70	7.44	No
					10/03/22	11.70	5.44	No
					01/25/23	10.65	6.49	No
					04/27/23	11.20	5.94	No
					07/25/23	11.91	5.23	No
					11/27/23	10.60	6.54	No

TABLE 2
Summary of Groundwater Elevation Data
Former Astoria Warehousing Site
70 West Marine Drive
Astoria, Oregon

Monitoring Well I.D.	Top of Casing Elevation (feet MSL)	Stickup (feet)	Well Depth (feet BGS)	Screened Interval (feet BGS)	Date Measured	Depth to Water (BTOC)	Groundwater Elevation (feet MSL)	Free Product (thickness in feet)
MW-7	16.41	-0.25	25.3	5 – 25	12/07/19	10.20	6.21	NM
					12/16/19	10.99	5.42	No
					02/19/20	10.62	5.79	No
					02/19/20	10.60	5.81	No
					04/20/20	11.49	4.92	No
					04/28/20	11.58	4.83	No
					06/10/20	11.07	5.34	No
					06/25/20	11.59	4.82	No
					08/25/20	12.59	3.82	No
					08/26/20	11.20	5.21	No
					12/17/20	10.35	6.06	No
					12/18/20	10.61	5.80	No
					12/18/20	9.64	6.77	No
					12/18/20	9.41	7.00	No
					01/15/21	8.90	7.51	No
					02/11/21	9.89	6.52	No
					03/02/21	8.92	7.49	No
					04/01/21	11.23	5.18	No
					05/04/21	11.74	4.67	No
					08/10/21	11.28	5.13	No
					08/11/21	10.80	5.61	No
					01/04/22	9.30	7.11	No
					10/03/22	11.25	5.16	No
					01/25/23	10.86	5.55	No
					04/27/23	11.10	5.31	No
					07/25/23	11.64	4.77	No
					11/27/23	9.39	7.02	No
MW-8	16.62	-0.31	25.3	5 – 25	12/07/19	10.99	5.63	NM
					12/16/19	10.51	6.11	No
					02/19/20	10.25	6.37	No
					02/01/20	10.20	6.42	No
					04/20/20	11.19	5.43	No
					04/28/20	10.95	5.67	**0.02**
					04/28/20	11.03	5.59	No
					06/10/20	10.40	6.22	No
					06/25/20	10.45	6.17	No
					08/25/20	11.25	5.37	**0.20**
					08/26/20	11.15	5.47	No
					12/17/20	10.25	6.37	No
					12/18/20	10.14	6.48	No
					12/18/20	10.21	6.41	No
					12/18/20	9.88	6.74	No
					12/18/20	9.86	6.76	No
					01/15/21	8.94	7.68	No
					02/11/21	10.10	6.52	No
					03/02/21	10.31	6.31	No
					04/01/21	11.85	4.77	No
					05/04/21	11.18	5.44	No
					08/10/21	11.15	5.47	No
					01/04/22	9.10	7.52	No
					10/03/22	10.10	6.52	No
					01/25/23	9.95	6.67	No
					04/27/23	10.60	6.02	No
					07/25/23	11.27	5.35	No
					11/27/23	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
					01/25/23	11.70		No
					04/27/23	12.10		No
					07/25/23	12.85		No
					11/27/23	11.81		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
					01/25/23	11.73		No
					04/27/23	12.20		No
					07/25/23	12.86		No
					11/27/23	11.80		No
OAS-2	NM	NM	19.58	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
					01/25/23	11.73		No
					04/27/23	12.20		No
					07/25/23	12.85		No
					11/27/23	11.70		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)
OAS-3	NM	NM	19.4	10 – 20	12/11/19	12.50	NM	No
					04/20/20	12.47		**0.71**
					04/28/20	12.46		**0.49**
					04/28/20	12.61		No
					06/10/20	12.24		No
					06/29/20	12.65		**0.21**
					08/25/20	12.62		No
					08/26/20	12.78		No
					12/17/20	11.45		**0.25**
					12/18/20	11.90		No
					12/18/20	11.76		No
					12/18/20	11.61		No
					12/18/20	11.55		No
					01/15/21	10.96		No
					02/11/21	12.00		No
					03/02/21	11.80		No
					04/01/21	12.50		No
					05/04/21	12.75		No
					08/10/21	12.63		No
					01/04/22	10.70		No
					01/25/23	11.95		No
					04/27/23	12.40		No
					07/25/23	13.01		No
					11/27/23	11.95		No
OAS-4	NM	NM	19.6	10 – 20	12/11/19	12.53	NM	No
					04/20/20	12.80		No
					04/28/20	12.60		No
					04/28/20	12.71		No
					06/10/20	12.03		No
					06/29/20	12.70		No
					08/25/20	12.68		No
					08/26/20	12.18		No
					12/17/20	11.28		No
					12/18/20	11.95		No
					12/18/20	11.61		No
					12/18/20	11.60		No
					01/15/21	11.00		No
					02/11/21	12.05		No
					03/02/21	11.92		No
					04/01/21	12.65		No
					05/04/21	12.89		No
					08/10/21	12.70		No
					01/04/22	10.56		No
					01/25/23	12.05		No
					04/27/23	12.50		No
					07/25/23	13.10		No
					11/27/23	12.01		No

Notes:
Vertical datum is NAVD88.

TABLE 3
Summary of Groundwater Parameters in Monitoring Well Samples
Former Astoria Warehousing Site
70 West Marine Drive
Astoria, Oregon

Sample I.D.	Sample Date	Temperature (°F)	Dissolved Oxygen (mg/L)	pH	ORP (mV)	Specific Conductivity (µS/cm)	Turbidity (NTU)	Ferrous Iron (mg/L)
MW-1	10/03/18	61.7	0.19	6.42	-74.9	673	0.44	--
	11/15/19	60.8	0.30	6.54	-99.9	505	4.99	28.8
	06/25/20	59.1	0.86	6.44	-55.9	628	2.22	--
	08/11/21	63.2	0.18	6.58	-145.4	1,091	3.11	--
	01/04/22[1]	60.4	2.80	5.40	-95.0	1,900	--	--
	10/03/22	61.7	3.45	6.31	-119.5	970	2.40	--
	01/25/23	58.8	0.51	6.24	-59.0	697	53.0[2]	--
	04/28/23	59.6	0.55	7.61	-105.9	513	26.2	--
	07/26/23	61.2	0.53	6.36	-178.4	522	3.81	--
	11/29/23	58.8	0.42	7.79	-222.9	562	3.90	--
MW-2	10/03/18	60.2	0.23	6.55	-124.5	791	0.51	--
	11/15/19	59.5	0.41	6.61	-118.1	670	0.10	64.6
	06/25/20	58.8	0.36	6.56	-73.1	664	2.12	--
	08/11/21	64.3	0.15	6.51	-128.4	1,208	1.98	--
	01/05/22[1]	62.2	1.68	6.14	-131.1	1,760	--	--
	10/03/22	61.8	1.42	6.50	-145.5	1,279	2.70	--
	01/26/23	58.2	0.53	6.59	-105.0	802	35.2[2]	--
	04/27/23	59.5	0.73	9.36[3]	-57.8	547	0.1	--
	07/25/23	60.3	0.34	6.25	-188.5	563	0.39	--
	11/28/23	59.9	0.36	8.14	-182.1	550	0.75	--
MW-3	10/03/18	60.7	0.29	6.75	-49.5	427	0.28	--
	11/15/19	60.5	0.90	6.76	-81.5	444	7.54	13.1
	06/25/20	58.3	0.37	6.60	-38.6	380	5.45	--
	08/11/21	62.1	0.28	6.73	-101.9	924	1.85	--
	01/04/22[1]	57.9	3.10	6.20	-75.0	1,158	--	--
	10/03/22	--	--	--	--	--	--	--
	01/25/23	57.4	0.95	6.80	-77.0	467	209[2]	--
	04/27/23	55.0	0.99	9.55[3]	-87.9	401	45.4	--
	07/25/23	59.9	0.44	6.30	-168.1	414	53.4	--
	11/28/23	58.9	0.50	8.59	-160.9	376	15.94	--
MW-4	10/03/18	57.5	0.28	7.13	-62.0	362	0.30	--
	11/15/19	57.3	0.41	6.55	-110.5	440	0.53	53.8
	06/25/20	56.9	0.62	6.47	-56.6	488	8.72	--
	08/11/21	58.7	0.21	6.48	-121.4	831	4.67	--
	01/05/22[1]	57.1	2.29	5.67	-74.4	906	--	--
	10/03/22	--	--	--	--	--	--	--
	01/26/23	55.0	0.42	6.33	-47.0	720	351[2]	--
	04/28/23	56.1	0.97	7.94	-78.0	476	15.3	--
	07/26/23	56.7	0.56	6.44	-182.4	432	14.5	--
	11/29/23	56.7	0.34	7.10	-249.1	394	14.84	--
MW-5	10/03/18	60.7	0.26	6.99	-54.1	304	0.24	--
	11/15/19	60.6	0.34	6.55	-84.7	354	0.86	26.9
	06/25/20	58.8	0.17	6.56	-58.8	268	3.50	--
	08/11/21	61.4	0.39	6.51	-95.1	548	3.02	--
	01/04/22[1]	47.0	18.60	5.30	-26.5	12	--	--
	10/03/22	--	--	--	--	--	--	--
	01/26/23	57.7	0.41	6.63	-67.0	479	40.1[2]	--
	04/27/23	56.6	1.59	9.01[3]	-106.2	293	0.1	--
	07/25/23	58.7	0.47	5.85	-195.2	290	0.47	--
	11/28/23	60.8	0.59	8.05	-183.7	257	0.59	--
MW-6	12/07/19	57.0	0.38	6.55	-87.6	607	2.71	--
	06/25/20	58.0	0.16	6.56	-82.6	652	4.72	--
	08/11/21	61.0	0.21	6.50	-119.6	1,084	2.07	--
	01/04/22[1]	58.5	2.10	5.10	-23.4	1,997	--	--
	10/03/22	59.1	1.17	6.30	-119.2	940	2.80	--
	01/26/23	55.8	0.42	6.55	-95.0	854	36.1[2]	--
	04/27/23	56.0	0.65	8.58[3]	-71.0	499	0.10	--
	07/26/23	57.1	0.43	6.25	-187.1	542	3.42	--
	11/28/23	56.6	0.36	7.99	-190.6	521	1.70	--
MW-7	12/07/19	58.6	0.24	6.72	-105.2	672	2.29	--
	06/25/20	62.5	0.13	6.59	-99.8	691	9.58	--
	08/11/21	62.1	0.28	6.53	-134.6	1,329	1.47	--
	01/04/22[1]	57.6	1.29	5.00	-57.8	4,740	--	--
	10/04/22	62.9	0.61	6.49	-119.9	1,072	3.70	--
	01/25/23	55.7	0.74	6.46	-80.0	2,070	110[2]	--
	04/28/23	58.9	0.61	8.79[3]	-77.3	647	31.7	--
	07/26/23	62.5	0.36	6.43	-182.9	640	57.0	--
	11/29/23	58.8	0.45	7.72	-195.0	600	11.2	--

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-8	12/07/19	56.2	0.52	6.57	-86.2	587	3.67	--
	06/25/20	57.1	0.20	6.44	-72.5	535	3.79	--
	08/11/21	59.5	0.14	6.4	-123.2	926	2.52	--
	01/04/22[1]	58.0	4.00	4.80	-19.5	2,020	--	--
	10/04/22	58.4	0.68	6.39	-111.1	939	3.60	--
	01/26/23	54.0	0.53	6.32	-41.0	677	231[2]	--
	04/28/23	55.4	0.48	7.41	-105.7	443	8.16	--
	07/27/23	57.1	0.57	6.93	-183.1	479	1.97	--
	11/29/23	55.5	0.46	6.98	-244.2	473	3.87	--
PAS-2	12/07/19	59.9	0.38	6.86	-109.0	577	0.77	--

Notes:

1. Groundwater parameters measured during the January 2022 groundwater monitoring event indicate a possible malfunction of the YSI field meter and are therefore not necessarily considered representative of actual groundwater parameters. Parameters measured during this event were evaluated as relative values in the field to assess stabilization prior to sample collection only.

2. Turbidity observations during the January 2023 groundwater monitoring event indicate that the (rented) multi-parameter equipment retained residual solids within the flow cell from the onset of purging. Therefore, the noted turbidity values are not necessarily considered representative of actual groundwater parameters at the time of sample collection. Turbidity values measured during this event were evaluated as relative values in the field to assess stabilization prior to sample collection only.

3. pH observations during the April 2023 groundwater monitoring event indicate that the multi-parameter equipment may have been reading values higher than actual groundwater conditions. pH values measured during this event were evaluated as relative values in the field to assess stabilization prior to sample collection only.

--: not analyzed

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

Monitoring Well	Sample Date	Gasoline-Range Hydrocarbons Method NWTPH-Gx (µg/L)	VOCs EPA Methods 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	Styrene	Toluene	TCE	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**	0.500 U	**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**	5.00 U	**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**	0.819 U	**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**	10.0 U	**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**	1.00 U	**2.15**	1.00 U	**40.4**	**0.396 J**	**0.914 J**	**7.19**
	10/03/22[1]	**18,200**	**486**	**–**	**–**	**–**	1.26 U	0.819 U	–	**1,870**	**141**	**–**	1.01 U	**521 C3**	**351**	0.819 U	**24.0**	–	**–**	3.22 U	**7.80 J**	**48.2**
	01/25/23[2]	**16,900**	**458**	**–**	**–**	**–**	10.0 U	10.0 U	–	**2,460**	**120**	**–**	**4.58 J**	**431 C3**	**334 C3**	10.0 U	**20.6**	–	**–**	10.0 U	**7.25 J**	**64.5**
	04/28/23[3]	**16,600**	**369**	**31.3 J**	**16.3 J**	100 U	100 U	100 U	100 U	**2,900**	**112**	100 U	100 U	**816**	**379**	100 U	100 U	100 U	**459**	100 U	**10.9 J**	**97.7 J**
	07/26/23[4]	**21,200**	**533**	**27.8**	**21.4**	20 U	20 U	20 U	20 U	**3,950**	**198**	**4.22 J**	**7.62 J**	**1,050 C3**	**524**	20 U	**26.4**	20 U	**656**	**74.9**	**32.8**	**116**
	11/28/23[5]	**9,670**	**157**	**–**	**–**	–	20 U	20 U	–	**1,210**	**68.6**	**–**	**4.81 J**	**394**	**182**	–	20 U	–	**–**	20 U	**12.5 J**	**91.3**
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**	5.00 U	**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**	10.0 U	**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**	0.0819 U	**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**	10.0 U	**4.81 J**	–	–	10.0 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**	1.00 U	**7.58**	1.00 U	**16.8**	**14.6**	**15.8**	**40.9**
	10/03/22[1]	**3,720**	**184**	**–**	**–**	**–**	1.26 U	0.819 U	–	**60.5**	**29.1**	**–**	**11.7**	**19.1 C3, J**	**–**	0.819 U	**10.3**	–	**–**	**59.8**	**30.9**	**44.8**
	01/26/23[2]	**3,810 B**	**129**	**–**	**–**	**–**	10.0 U	10.0 U	–	**51.6**	**27.0**	**–**	**9.44 J**	**42.0 C3, J**	**53.1 C3**	10.0 U	**9.63 J**	–	**–**	**21.3**	**17.3**	**22.0 J**
	04/27/23[3]	**4,420**	**177**	**5.68 J**	**3.81 J**	10.0 U	10.0 U	10.0 U	10.0 U	**41.9**	**25.3**	10.0 U	**7.99 J**	**27.2 J**	**47.0**	10.0 U	**8.69 J**	10.0 U	**29.1**	**6.70 J**	**12.4**	**16.3 J**
	07/25/23[4]	**2,350**	**226**	**7.15**	**4.59**	**0.753 J**	1.00 U	1.00 U	1.00 U	**87.7**	**34.2**	**0.718 J**	**7.15**	**46.8 C3**	**61.8**	1.00 U	**9.88**	1.00 U	**59.6**	**14.2**	**22.1**	**34.2**
	11/28/23[5]	**2,420**	**89.7**	**–**	**–**	**–**	1.00 U	1.00 U	–	**18.6**	**29.7**	**–**	**5.06**	**11.8 C3**	**46.5**	–	**6.27**	–	**–**	**6.35**	**11.0**	**13.2**
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	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	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**	1.00 U	**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**	1.00 U	**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	1.00 U	1.00 U	**0.360 J**	1.00 U	**0.212 J**	**0.662 J**
	10/03/22[1]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
	01/25/23[2]	**1,400 B**	1.00 U	**–**	**–**	**–**	1.00 U	1.00 U	**–**	1.00 U	**0.122 J**	**–**	**1.27**	5.00 U, C3	1.00 U, C3	1.00 U	1.00 U	**–**	**–**	1.00 U	1.00 U	**0.190 J**
	04/27/23[3]	**502**	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	**2.57**	**4.02**	1.00 U	**1.39**	5.00 U	**0.984 J**	1.00 U	**0.626 J**	1.00 U	**0.682 J**	1.00 U	1.00 U	**1.44 J**
	07/25/23[4]	**143**	1.00 U	1.00 U	**0.25 J**	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	**2.23**	1.00 U	**2.22**	5.00 U	**4.33**	1.00 U	1.00 U	**4.00**	**0.392 J**	1.00 U	**0.195 J**	**0.48 J**
	11/28/23[5]	**780**	1.00 U	–	**–**	–	1.00 U	1.00 U	–	**0.171 J**	**5.74**	–	**4.71**	5.00 U, C3	**4.55**	–	1.00 U	**–**	**–**	**1.26**	**0.790 J**	**2.51 J**
MW-4	10/03/18	**6,080**	**133**	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	–	**168**	**18.7**	**3.99**	**6.45**	**33.0**	**65.0**	0.500 U	**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**	25.0 U	**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**	1.64 U	**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**	20.0 U	**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**	10.0 U	**43.8**	10.0 U	**381**	**805**	**238**	**3,880**
	10/03/22[1]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
	01/26/23[2]	**38,000**	**1,180**	**–**	**–**	**–**	20.0 U	20.0 U	**–**	**750**	**46.0**	**–**	20.0 U	**169 C3**	**115 C3**	20.0 U	**119**	**–**	**–**	**1,350**	**384**	**9,260**
	04/28/23[3]	**21,500**	**822**	**9.07 J**	**8.66 J**	20.0 U	20.0 U	20.0 U	20.0 U	**858**	**72.5**	**11.5 J**	20.0 U	**393**	**202**	20.0 U	**69.9**	20.0 U	**471**	**1,050**	**253**	**3,950**
	07/26/23[4]	**16,000**	**465**	**19.5**	**13.0**	**1.04**	1.00 U	1.00 U	1.00 U	**1,220**	**120**	**4.66**	**2.22**	**450 C3**	**290**	1.00 U	**70.0**	1.00 U	**469**	**489**	**65.3**	**1,320**
	11/29/23[5]	**19,000**	**500**	**–**	**–**	**–**	**0.18 J**	1.00 U	–	**648**	**71.3**	**–**	**2.12**	**298**	**208**	–	**31.4**	–	**–**	**621**	**176**	**2,640**
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**	0.500 U	**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	10.0 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**	0.0819 U	**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**	1.00 U	**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**	1.00 U	**0.685 J**	1.00 U	**0.873 J**	1.00 U	**0.615 J**	**2.07 J**
	10/03/22[1]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
	01/26/23[2]	**1,580**	**1.70**	**–**	**–**	**–**	1.00 U	1.00 U	**–**	**2.53**	**10.6**	**–**	**9.42**	5.00 U, C3	**37.7 C3**	1.00 U	1.00 U	**–**	**–**	1.00 U	**0.511 J**	**1.73 J**
	04/27/23[3]	**2,670**	**2.29**	**19.5**	**14.2**	**0.483 J**	1.00 U	1.00 U	1.00 U	**17.5**	**16.0**	**1.54**	**5.59**	**7.59**	**76.8**	1.00 U	**1.09**	1.00 U	**4.02**	**0.341 J**	**0.538 J**	**2.64 J**
	07/25/23[4]	**2,390 Q**	**24.5**	**21.1**	**17.0**	**0.644 J**	1.00 U	1.00 U	1.00 U	**151**	**43.6**	1.00 U	**1.94**	**21.0 C3**	**122**	1.00 U	**8.16**	1.00 U	**15.9**	**1.53**	**1.41**	**14.4**
	11/28/23[5]	**3,890**	**6.91**	**–**	**–**	**–**	1.00 U	1.00 U	–	**7.08**	**17.4**	–	**0.396 J**	**2.7 C3, J**	**55.6**	–	**1.73**	–	**–**	**1.16**	**0.733 J**	**4.63**
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**	10.0 U	**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**	0.4 U	**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**	5.00 U	**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**	1.00 U	**8.31**	1.00 U	**23.8**	**12.2**	**9.66**	**21.4**
	10/03/22[1]	**2,930**	**96.7**	**–**	**–**	**–**	0.630 U	0.409 U	–	**90.8**	**22.2**	**–**	**19.9**	**18.8 C3, J**	**41.6**	0.409 U	**7.21**	–	**–**	**18.1**	**19.7**	**49.5**
	01/26/23[2]	**4,860**	**363**	**–**	**–**	**–**	5.00 U	5.00 U	–	**166**	**32.4**	**–**	**6.60**	**33.0 C3**	**73.1 C3**	5.00 U	**15.6**	–	**–**	**32.7**	**33.9**	**88.4**
	04/27/23[3]	**3,720**	**276**	**4.15 J**	**3.34 J**	5.00 U	5.00 U	5.00 U	5.00 U	**139**	**22.3**	**0.620 J**	**9.60**	**47.5**	**65.9**	5.00 U	**6.44**	5.00 U	**57.1**	**31.3**	**30.0**	**65.1**
	07/26/23[4]	**1,740**	**146**	**4.62**	**3.37**	**0.608 J**	1.00 U	1.00 U	1.00 U	**131**	**25.0**	**0.820 J**	**15.0**	**49.3 C3**	**58.2**	1.00 U	**5.46**	1.00 U	**65.4**	**20.2**	**32.2**	**53.9**
	11/28/23[5]	**2,340**	**102**	**–**	**–**	**–**	1.00 U	1.00 U	–	**79.7**	**22.2**	**–**	**8.19**	**30.3 C3**	**49.9**	–	**5.17**	–	**–**	**15.8**	**32.2**	**35.0**
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**	1.00 U	**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**	0.409 U	**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**	5.00 U	**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**	1.00 U	**6.26**	1.00 U	**23.0**	**0.437 J**	**3.00**	**12.8**
	10/04/22[1]	**5,470**	**69.5**	**–**	**–**	**–**	0.630 U	0.409 U	–	**37.0**	**56.0**	**–**	**4.70 J**	**26.5 C3**	**125**	0.409 U	**6.09**	–	**–**	1.61 U	**4.260 J**	**17.6**
	01/25/23[2]	**10,600**	**887**	**–**	**–**	**–**	5.00 U	5.00 U	–	**729**	**124**	**–**	**6.83**	**63.5 C3**	**317 C3**	5.00 U	**30.1**	–	**–**	**14.1**	**11.1**	**167**
	04/28/23[3]	**10,600**	**357**	**19.8**	**14.8**	**1.46 J**	5.00 U	5.00 U	5.00 U	**227**	**148**	**1.89 J**	**7.07**	**16.3 J**	**465**	5.00 U	**24.5**	5.00 U	**28.9**	**6.36**	**13.4**	**62.0**
	07/26/23[4]	**6,140**	**235**	**20.3**	**16.3**	**1.31**	1.00 U	1.00 U	1.00 U	**82.5**	**166**	**0.871 J**	**7.33**	**18.0 C3**	**347**	1.00 U	**23.7**	1.00 U	**35.4**	**12.2**	**6.28**	**71.6**
	11/28/23[5]	**8,690**	**152**	**–**	**–**	**–**	1.00 U	1.00 U	–	**36.2**	**142**	**–**	**6.12**	**13.9**	**385**	–	**18.4**	–	**–**	**10.6**	**9.05**	**30.8**
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**	1.00 U	**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**	2.05 U	**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**	25.0 U	**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**	1.00 U	**30.0**	1.00 U	**444**	**1,320**	**196**	**1,620**
	10/04/22[1]	**16,000**	**1,490**	–	–	–	3.15 U	2.05 U	–	**465**	**68.8**	–	2.53 U	**172 C3**	**197**	2.05 U	**25.40**	–	–	**989**	**296**	**1,530**
	01/26/23[2]	**34,500**	**1,250**	–	–	–	25.0 U	25.0 U	–	**1,020**	**95.1**	–	**4.12 J**	**231 C3**	**233 C3**	25.0 U	**45.9**	–	–	**2,210**	**582**	**4,370**
	04/28/23[3]	**28,300**	**1,770**	**25.2**	**18.5 J**	25.0 U	25.0 U	25.0 U	25.0 U	**961**	**96.6**	**37.3**	**3.67 J**	**504**	**273**	25.0 U	**41.9**	25.0 U	**695**	**2,570**	**681**	**3,690**
	07/27/23[4]	**16,200**	**1,970 Q**	**21.4**	**15.5**	**0.971 J**	1.00 U	1.00 U	1.00 U	**590**	**115**	**6.63**	**6.81**	**294 C3**	**261**	**0.648 J**	**50.5**	1.00 U	**374**	**1,150 Q**	**343**	**1,430**
	11/29/23[5]	**34,000**	**756**	**–**	**–**	**–**	1.00 U	1.00 U	–	**925**	**92.8 J**	**–**	1.00 U	**457 J**	**198**	**–**	1.00 U	–	**–**	**2,230**	**588**	**4,100**
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**	1.00 U	**16.0**	–	–	10.0 U	**28.8**	**49.0**

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

DEQ Generic RBCs[6]																				
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	>S	20,000	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	>S	3,700	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	170,000	220,000	430	NE	6,300	7,500	23,000
DEQ Generic RBCs (Amended)[7]																				
Vapor Intrusion into Buildings																				
Commercial Worker - Chronic	520	12	NE	NE	NE	1.5	18	1,800	31	22,000	NE	3,200	50	22,000	84,000	150,000	13	NE	2,400	1,700	3,300
Commercial Worker - Acute	NE	650	NE	NE	NE	NE	NE	NE	420,000	NE	NE	1,600,000	83,000	NE	1,200,000	160,000	27	NE	NE	NE	200,000

Notes:
1. First round of pilot shutdown monitoring (October 2022)
2. Second round of pilot shutdown monitoring (January 2023)
3. Third round of pilot shutdown monitoring (April 2023)
4. Fourth round of pilot shutdown monitoring (July 2023)
5. Fifth round of pilot shutdown monitoring (November 2023)
6. DEQ Generic RBCs dated May 2018.
7. DEQ Generic RBCs dated May 2018, amended June 2023. The updated RBCs are provided for reference.

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.
Q: Sample was prepared and/or analyzed one day past holding time as defined in this method. Concentrations should be considered biased low.
>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 (May 2018 values).
--: 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[2]	ND	ND	0.069	ND	0.91	0.3[2]	4.8[2]	0.69	0.073	0.63	0.046 U	1.5	0.38[2]	2.8	0.67
	11/06/19 to 11/15/19	0.90	–	0.23	0.19	0.15 U	0.10 U	1.7	–	–	0.13 U	0.13 U	2.5	0.11 U	–	–	5.7	1.6
	11/18/20 to 12/02/20	0.69	–	0.47	0.28	0.10 U	0.082	2.0	–	–	0.17	0.087 U	26	0.074 U	–	–	8.1	2.5
	08/12/21 to 08/26/21	0.37	–	0.34	0.86	0.098 U	0.065 U	0.60	–	–	0.20	0.084 U	1.2	0.072 U	–	–	2.3	0.86
	10/04/22 to 10/18/22	0.42	–	0.24	0.68	0.098 U	0.065 U	0.59	–	–	0.22	0.085 U	1.7	0.072 U	–	–	2.0	0.94
	01/27/23 to 02/10/23	0.81	–	0.37	1.3	0.098 U	0.065 U	0.42	–	–	0.18	0.084 U	1.6	0.072 U	–	–	1.3	0.61
	04/26/23 to 05/10/23	0.25 U	–	0.32	0.64	0.098 U	0.065 U	0.24	–	–	0.082 U	0.085 U	0.65	0.072 U	–	–	0.77	0.36
	07/27/23 to 08/10/23	0.29	–	0.28	0.45	0.099 U	0.066 U	0.25	–	–	0.090	0.086 U	0.54	0.073 U	–	–	0.86	0.38
	11/29/23 to 12/15/23	0.30	–	0.27	1.3	0.086 U	0.057 U	0.20	–	–	0.086	–	0.56	–	–	–	0.56	0.25
Indoor-2	06/29/19 to 07/13/19	0.72	ND	ND	ND	ND	ND	0.97	ND	ND	0.65	0.074	0.61	0.046 U	1.1	ND	2.4	0.64
	11/06/19 to 11/15/19	1.0	–	0.24	0.24	0.15 U	0.10 U	1.9	–	–	0.13 U	0.13 U	2.7	0.11 U	–	–	6.2	1.7
	11/18/20 to 12/02/20	0.73	–	0.51	0.27	0.10 U	0.082	1.7	–	–	0.15	0.087 U	24	0.074 U	–	–	6.8	2.1
	08/12/21 to 08/26/21	0.33 J	–	0.29 J	0.73 J	0.098 U	0.065 U	0.47 J	–	–	0.17 J	0.084 U	1.2 J	0.072 U	–	–	1.7 J	0.64 J
	10/04/22 to 10/18/22	0.46	–	0.28	0.71	0.098 U	0.065 U	0.50	–	–	0.19	0.085 U	1.5	0.072 U	–	–	1.6	0.76
	01/27/23 to 02/10/23	0.78	–	0.34	1.2	0.098 U	0.065 U	0.36	–	–	0.15	0.084 U	1.6	0.072 U	–	–	1.1	0.54
	04/26/23 to 05/10/23	0.25 U	–	0.31	0.58	0.098 U	0.065 U	0.23	–	–	0.082 U	0.085 U	0.63	0.072 U	–	–	0.77	0.36
	07/27/23 to 08/10/23	0.30	–	0.30	0.46	0.099 U	0.066 U	0.23	–	–	0.083 U	0.086 U	0.52	0.073 U	–	–	0.81	0.34
	11/29/23 to 12/15/23	0.27	–	0.23	1.1	0.086 U	0.057 U	0.16	–	–	0.072 U	–	0.48	–	–	–	0.48	0.22
Indoor-3	06/29/19 to 07/13/19	0.23	ND	0.4*	ND	ND	ND	0.23	ND	ND	0.17	0.063	1.2	0.046 U	0.58	ND	1.5	0.35
	11/06/19 to 11/15/19	0.42	–	0.24	0.10 U	0.15 U	0.10 U	0.80	–	–	0.13 U	0.13 U	1.3	0.11 U	–	–	2.8	0.84
	11/18/20 to 12/02/20	0.50	–	0.24	0.071 U	0.10 U	0.069 U	2.3	–	–	0.087 U	0.092	56	0.096	–	–	8.8	2.6
	08/12/21 to 08/26/21	0.32	–	0.22	0.65	0.098 U	0.064 U	0.57	–	–	0.20	0.084 U	1.2	0.072 U	–	–	2.2	0.77
	10/04/22 to 10/18/22	0.43	–	0.23	0.57	0.098 U	0.065 U	0.49	–	–	0.13	0.085 U	1.2	0.072 U	–	–	1.8	0.79
	01/27/23 to 02/10/23	0.68	–	0.23	0.78	0.098 U	0.065 U	0.34	–	–	0.12	0.084 U	1.1	0.072 U	–	–	1.2	0.49
	04/26/23 to 05/10/23	0.25	–	0.27	0.62	0.098 U	0.065 U	0.25	–	–	0.082 U	0.085 U	0.37	0.072 U	–	–	0.82	0.33
	07/27/23 to 08/10/23	0.29	–	0.20	0.41	0.099 U	0.066 U	0.21	–	–	0.083 U	0.086 U	0.49	0.073 U	–	–	0.74	0.32
	11/29/23 to 12/15/23	0.27	–	0.17	0.81	0.086 U	0.057 U	0.23	–	–	0.072 U	–	0.4	–	–	–	0.74	0.32
Indoor-4	06/29/19 to 07/13/19	0.21	ND	0.492	ND	ND	ND	0.18	ND	ND	0.14	0.054	1.1	0.046 U	0.45	ND	1.3	0.28
	11/06/19 to 11/15/19	0.42	–	0.25	0.10 U	0.15 U	0.10 U	0.63	–	–	0.13 U	0.13 U	1.2	0.11 U	–	–	2.2	0.67
	11/18/20 to 12/02/20	0.52	–	0.26	0.071 U	0.10 U	0.069 U	2.1	–	–	0.087 U	0.091	67	0.11	–	–	7.6	2.3
	08/12/21 to 08/26/21	0.31	–	0.17	0.44	0.098 U	0.065 U	0.56	–	–	0.20	0.084 U	1.3	0.072 U	–	–	2.2	0.76
	10/04/22 to 10/18/22	0.41	–	0.20	0.46	0.098 U	0.065 U	0.84	–	–	0.17	0.085 U	1.8	0.072 U	–	–	3.2	1.6
	01/27/23 to 02/10/23	0.73	–	0.23	0.71	0.098 U	0.065 U	0.87	–	–	0.30	0.13	2.2	0.072 U	–	–	3.4	1.8
	04/26/23 to 05/10/23	0.27	–	0.26	0.42	0.098 U	0.065 U	0.62	–	–	0.18	0.085 U	1.0	0.072 U	–	–	2.4	1.3
	07/27/23 to 08/10/23	0.35	–	0.24	0.34	0.099 U	0.066 U	0.70	–	–	0.13	0.086 U	0.96	0.073 U	–	–	2.9	1.6
	11/29/23 to 12/15/23	0.4	–	0.22	0.97	0.086 U	0.057 U	0.82	–	–	0.25	–	1.00	–	–	–	2.9	1.6

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-5	06/29/19 to 07/13/19	**0.79**	ND	**0.432**	ND	ND	ND	**1.3**	**0.29**[2]	ND	**0.23**	**0.098**	**2.5**	0.046 U	**1.4**	ND	**3.8**	**1.8**
	11/06/19 to 11/15/19	**0.46**	–	**0.20**	0.10 U	0.15 U	0.10 U	**0.65**	–	–	0.13 U	0.13 U	**1.4**	0.11 U	–	–	**2.3**	**0.69**
	11/18/20 to 12/02/20	**0.57**	–	**0.27**	0.071 U	0.10 U	0.069 U	**0.84**	–	–	0.087 U	0.090 U	**26**	0.077 U	–	–	**3.1**	**0.94**
	08/12/21 to 08/26/21	**0.32**	–	**0.27**	**0.61**	0.097 U	0.064 U	**0.64**	–	–	**0.22**	0.084 U	**1.5**	0.072 U	–	–	**2.6**	**0.88**
	10/04/22 to 10/18/22	**0.40**	–	**0.22**	**0.36**	0.098 U	0.065 U	**0.19**	–	–	0.082 U	0.085 U	**0.74**	0.072 U	–	–	**0.63**	**0.26**
	01/27/23 to 02/10/23	**0.76**	–	**0.27**	**0.72**	0.098 U	0.065 U	**0.23**	–	–	**0.14**	0.084 U	**1.1**	0.072 U	–	–	**0.74**	**0.33**
	04/26/23 to 05/10/23	**0.26**	–	**0.30**	**0.49**	0.098 U	0.065 U	**0.15**	–	–	0.082 U	0.085 U	**0.26**	0.072 U	–	–	**0.50**	**0.16**
	07/27/23 to 08/10/23	**0.31**	–	**0.20**	**0.45**	0.099 U	0.067 U	**0.14**	–	–	**0.13**	0.085 U	**0.37**	0.073 U	–	–	**0.46**	**0.20**
	11/29/23 to 12/15/23	**0.27**	–	**0.19**	**0.62**	0.086 U	0.057 U	**0.13**	–	–	**0.074**	–	**0.33**	–	–	–	**0.39**	**0.17**
Indoor-6	06/29/19 to 07/13/19	**0.35**	ND	**0.382**	ND	ND	ND	**0.44**	ND	ND	**0.23**	**0.11**	**1.6**	0.046 U	**1.1**	ND	**2.2**	**0.69**
	11/06/19 to 11/15/19	**0.47**	–	**0.23**	0.10 U	0.15 U	0.10 U	**0.82**	–	–	0.13 U	0.13 U	**1.5**	0.11 U	–	–	**2.9**	**0.88**
	11/18/20 to 12/02/20	**0.49**	–	**0.25**	0.071 U	0.10 U	0.069 U	**1.2**	–	–	0.087 U	0.090 U	**35**	0.077 U	–	–	**4.5**	**1.4**
	08/12/21 to 08/26/21	**0.33**	–	**0.21**	**0.63**	0.098 U	0.065 U	**0.69**	–	–	**0.22**	0.084 U	**1.3**	0.072 U	–	–	**2.8**	**1.0**
	10/04/22 to 10/18/22	**0.40**	–	**0.22**	**0.58**	0.098 U	0.065 U	**0.27**	–	–	**0.10**	0.085 U	**0.76**	0.072 U	–	–	**0.94**	**0.42**
	01/27/23 to 02/10/23	**0.65**	–	**0.22**	**0.81**	0.098 U	0.065 U	**0.27**	–	–	**0.12**	0.084 U	**1.0**	0.072 U	–	–	**0.90**	**0.39**
	04/26/23 to 05/10/23	0.25 U	–	**0.24**	**0.55**	0.098 U	0.065 U	**0.14**	–	–	0.082 U	0.085 U	**0.26**	0.072 U	–	–	**0.47**	**0.19**
	07/27/23 to 08/10/23	**0.30**	–	**0.18**	**0.51**	0.099 U	0.066 U	**0.15**	–	–	**0.11**	0.085 U	**0.47**	0.073 U	–	–	**0.56**	**0.24**
	11/29/23 to 12/15/23	**0.35**	–	**0.23**	**1**	0.086 U	0.057 U	**0.18**	–	–	**0.082**	–	**0.42**	–	–	–	**0.57**	**0.25**
Indoor-7	06/29/19 to 07/13/19	**0.24**	ND	**0.482**	ND	ND	ND	**0.22**	**0.27***	ND	**0.14**	**0.058**	**0.96**	0.046 U	**0.44**	**1**[2]	**1.2**	**0.32**
	11/06/19 to 11/15/19	**0.46**	–	**0.26**	0.10 U	0.15 U	0.10 U	**0.87**	–	–	0.13 U	0.13 U	**1.5**	0.11 U	–	–	**3.1**	**0.92**
	11/18/20 to 12/02/20	**0.50**	–	**0.24**	0.071 U	0.10 U	0.069 U	**2.6**	–	–	**0.089**	**0.12**	**60**	0.077 U	–	–	**10**	**3.0**
	08/12/21 to 08/26/21	**0.30**	–	**0.22**	**0.62**	0.098 U	0.065 U	**0.52**	–	–	**0.16**	0.084 U	**1.1**	0.072 U	–	–	**2.0**	**0.68**
	10/04/22 to 10/18/22	**0.39**	–	**0.20**	**0.50**	0.098 U	0.065 U	**0.41**	–	–	**0.10**	0.085 U	**1.0**	0.072 U	–	–	**1.5**	**0.64**
	01/27/23 to 02/10/23	**0.68**	–	**0.21**	**0.76**	0.098 U	0.065 U	**0.31**	–	–	**0.12**	0.084 U	**1.1**	0.072 U	–	–	**1.0**	**0.46**
	04/26/23 to 05/10/23	0.25 U	–	**0.24**	**0.55**	0.098 U	0.065 U	**0.21**	–	–	0.082 U	0.085 U	**0.38**	0.072 U	–	–	**0.68**	**0.28**
	07/27/23 to 08/10/23	**0.29**	–	**0.21**	**0.42**	0.099 U	0.066 U	**0.17**	–	–	0.083 U	0.085 U	**0.46**	0.073 U	–	–	**0.60**	**0.25**
	11/29/23 to 12/15/23	**0.27**	–	**0.18**	**0.84**	0.086 U	0.057 U	**0.19**	–	–	0.072 U	–	**0.40**	–	–	–	**0.59**	**0.26**
Background	11/06/19 to 11/15/19	**0.40**	–	**0.26**	0.10 U	0.15 U	0.10 U	0.11 U	–	–	0.13 U	0.13 U	**0.49**	0.11 U	–	–	**0.27**	0.12 U
	11/18/20 to 12/02/20	**0.50**	–	**0.32**	0.071 U	0.10 U	0.069 U	**0.14**	–	–	0.087 U	0.090 U	**1.5**	0.077 U	–	–	**0.41**	**0.14**
	08/12/21 to 08/26/21	**0.27**	–	**0.20**	0.066 U	0.097 U	0.064 U	**0.12**	–	–	0.081 U	0.084 U	**0.45**	0.072 U	–	–	**0.45**	**0.15**
	10/04/22 to 10/18/22	**0.45**	–	**0.26**	**0.094**	0.098 U	0.065 U	**0.17**	–	–	0.082 U	0.085 U	**0.89**	0.072 U	–	–	**0.52**	**0.21**
	01/27/23 to 02/10/23	**0.67**	–	**0.29**	0.066 U	0.098 U	0.065 U	**0.11**	–	–	0.082 U	0.084 U	**0.71**	0.072 U	–	–	**0.33**	**0.13**
	04/26/23 to 05/10/23	0.25 U	–	**0.25**	**0.067**	0.098 U	0.065 U	0.074 U	–	–	0.082 U	0.085 U	**0.20**	0.073 U	–	–	**0.14**	0.077 U
	07/27/23 to 08/10/23	**0.34**	–	**0.22**	**0.087**	0.099 U	0.066 U	**0.078**	–	–	0.083 U	0.085 U	**0.32**	0.073 U	–	–	**0.31**	**0.11**
	11/29/23 to 12/15/23	**0.27**	–	**0.20**	0.058 U	0.086 U	0.057 U	0.064 U	–	–	0.072 U	–	**0.27**	–	–	–	**0.14**	0.068 U

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
DEQ Generic RBCs[3]																		
Inhalation of Indoor Air																		
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	
DEQ Generic RBCs[4]																		
Inhalation of Indoor Air																		
Chronic		1.6	22	2.0	0.53	1.1	0.47	4.9	22,000	1,200	4,400	47	22,000	3.0	260	260	440	
Acute		87	12,000	5,700	1,500	36,000	NE	66,000	NE	6,300	63,000	120	23,000	6.3	NE	NE	26,000	

Notes:
1. Only VOCs detected with regulatory screening values (DEQ's May 2018 RBCs)are listed. For a complete listing of VOCs, refer to the laboratory report in Attachment A.
2. 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.
3. DEQ Generic RBCs dated May 2018
4. DEQ Generic RBCs dated May 2018, amended June 2023. The updated RBCs are provided for reference.
J: The identification of the analyte is acceptable; the reported value is an estimate.
ND: not detected at concentrations greater than the reporting or detection limit shown
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 6
Riverbank Observations
Former Astoria Warehousing Site
70 West Marine Drive
Astoria, Oregon

Date	Time	Station Water Level During Observations[1]	Weather	Groundwater Seep Evaluation		Storm Pipe Outfall		Remarks
				Seeps Present?	Sheen?	Flow Present?	Sheen?	
2019 – 2020 Observations								
12/06/19	11:00	2.28	Sunny	No	No	--	--	
02/19/20	12:20	3.16	Sunny	No	No	--	--	
04/20/20	13:30	1.20	Sunny	No	No	--	--	
08/26/20	10:00	0.38	Sunny	No	No	--	--	
12/18/20	09:30	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	09:30	7.89	Sunny	Yes	Yes	--	--	
04/09/21	08:51	7.20	Sunny	At storm pipe	Yes	Yes	Yes	Changed sorbent pads
04/12/21	08:20	7.40	Sunny	At storm pipe	Yes	Yes	Yes	Changed sorbent pads
04/13/21	08:00	6.64	Sunny	At storm pipe	Yes	Yes	Yes	Increase in sheen
04/14/21	08:03	6.30	Sunny	At storm pipe	Yes	Yes	Yes	Decrease in sheen
04/15/21	08:05	6.08	Sunny	At storm pipe	Yes	Yes	Yes	Changed sorbent pads
04/16/21	08:04	5.40	Sunny	At storm pipe	Yes	Yes	Yes	Changed sorbent pads
04/19/21	09:04	4.60	Overcast	At storm pipe	Yes	Yes	Yes	
04/20/21	09:53	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	09:14	9.64	Sunny	At storm pipe	Yes	Yes	Yes	High flow from pipe
04/30/21	08:20	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	08:00	4.42	Cloudy	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	07:28	4.98	Sunny	No	--	No	--	
08/11/21	10:30	8.63	Sunny	Yes	Yes	--	--	
08/12/21	09:30	7.14	Sunny	Yes	Yes	No	--	
08/17/21	07:29	3.17	Cloudy	No	--	No	--	
08/24/21	07:29	6.31	Cloudy	No	--	No	--	
08/26/21	10:00	7.20	Partly sunny	Yes	Yes	No	--	
08/31/21	07:28	2.46	Cloudy	--	--	Yes	Yes	
09/07/21	07:29	7.79	Sunny	No	--	No	--	
09/14/21	07:30	0.37	Sunny	No	--	No	--	
09/21/21	07:29	7.28	Sunny	No	--	No	--	
09/28/21	07:28	1.40	Rainy	At storm pipe	Yes	Yes	Yes	High flow from pipe
10/05/21	07:28	8.62	Rainy	At storm pipe	Yes	Yes	Yes	High flow from pipe
10/12/21	07:28	-0.82	Cloudy	No	--	No	--	
10/19/21	07:28	7.97	Partly sunny	No	--	No	--	
10/26/21	07:29	2.07	Rainy	At storm pipe	Yes	Yes	Yes	High flow from pipe
11/02/21	07:30	7.68	Cloudy	No	--	No	--	Outlet plugged
11/09/21	07:29	0.43	Rainy	No	--	Yes	No	
11/16/21	07:29	7.80	Partly sunny	At storm pipe	Yes	No	--	
11/23/21	07:30	2.02	Rainy	No	--	Yes	No	High flow from pipe
11/30/21	07:30	5.11	Rainy	No	--	Yes	No	

TABLE 6
Riverbank Observations
Former Astoria Warehousing Site
70 West Marine Drive
Astoria, Oregon

Date	Time	Station Water Level During Observations[1]	Weather	Groundwater Seep Evaluation		Storm Pipe Outfall		Remarks
				Seeps Present?	Sheen?	Flow Present?	Sheen?	
12/07/21	07:30	1.55	Rainy	No	--	Yes	No	
12/14/21	07:30	7.02	Cloudy	No	--	No	--	
12/21/21	07:30	3.68	Cloudy	Yes	No	Yes	No	
12/28/21	07:31	3.36	Cloudy	No	--	No	--	
2022 Observations								
01/04/22	07:33	3.60	Cloudy	No	--	No	--	
01/11/22	07:33	8.20	Rainy	No	--	Yes	No	
01/18/22	07:29	3.80	Cloudy	No	--	No	--	
01/25/22	07:29	7.50	Sunny	No	--	No	--	
10/04/22	09:30	-0.07	Sunny	No	--	No	--	
2023 Observations								
01/25/23	10:15	6.50	Cloudy	No	No	--	--	
01/25/23	12:00	8.40	Partly sunny	No	No	--	--	
01/25/23	14:30	5.71	Sunny	No	No	--	--	
01/26/23	10:00	4.76	Cloudy	No	No	--	--	
01/26/23	16:30	3.42	Cloudy	No	No	--	--	
01/27/23	10:00	4.11	Sunny	No	No	--	--	
01/27/23	12:30	8.28	Sunny	No	No	--	--	
04/27/23	10:10	4.97	Partly sunny	No	No	--	--	
04/28/23	17:10	4.93	Partly sunny	No	No	--	--	
07/25/23	08:30	5.04	Cloudy	No	No	--	--	
07/26/23	09:00	4.55	Sunny	No	No	--	--	
11/28/23	09:00	7.41	Sunny	No	No	--	--	
11/29/23	09:00	7.03	Sunny	No	No	--	--	
12/15/23	13:30	6.53	Sunny	No	No	--	--	

Notes:
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.
1. Water levels obtained from NOAA observatoin station 9439040 in Astoria, Oregon, using NAVD88 (feet).
--: not analyzed

ATTACHMENT A

ATTACHMENT A

FIELD DOCUMENTATION

NV5

SUB-SLAB VAPOR SAMPLING DATA COLLECTION

November 28, 2023

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

Site Name Former Astoria Warehousing

Site Address 70 W Marine Drive, Astoria, Oregon

NV5 Personnel ADD

Weather Ext - Clear - Sunny / 40's · Int - 56°

Barometric Pressure (inHg): ~30.17

Probe I.D.	Canister I.D.	Manifold I.D.	PID Reading (ppm)	Purge Rate (mL/min)	Purge Volume (mL)	Start Vacuum (inHg)	End Vacuum (inHg)	Start Time	End Time	Notes/Leak Check Used
VP-1	010591	007041	1.01	100	300	30+	4	1149	1156	Isopropyl Alcohol / 70%
VP-2	007902	010367	0.8	100	300	29	4	1207	1213	"
VP-3	023687	006437	1.4	100	300	30+	4	1221	1231	"
VP-4	028397	014228	4.7	100	300	30	4*	1513	1518	"
										~

* VP-4 was inundated with water but valve appeared to be dry.
* Approximate
* During Caustic Cycle / Vat cleaning activities

NV5

SUB-SLAB VAPOR SAMPLING DATA COLLECTION

November 28, 2023

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

Site Name Former Astoria Warehousing

Site Address 70 W Marine Drive, Astoria, Oregon

NV5 Personnel ADD

Weather Ext - Clear - Sunny / 40's · Int - 56°

Barometric Pressure (inHg): ~30.17

Probe I.D.	Canister I.D.	Manifold I.D.	PID Reading (ppm)	Purge Rate (mL/min)	Purge Volume (mL)	Start Vacuum (inHg)	End Vacuum (inHg)	Start Time	End Time	Notes/Leak Check Used
VP-1	010591	007041	1.01	100	300	30+	4	1149	1156	Isopropyl Alcohol / 70%
VP-2	007902	010367	0.8	100	300	29	4	1207	1213	"
VP-3	023687	006437	1.4	100	300	30+	4	1221	1231	"
VP-4	028397	014228	4.7	100	300	30	4*	1513	1518	"
										~

* VP-4 was inundated with water but valve appeared to be dry.
* Approximate
* During Caustic Cycle / Vat cleaning activities

NV5

Groundwater Monitoring Data Sheet - Summary Information

Project No. BigBeams 1-01

Site Name Former Astoria Warehousing

NVS Personnel CDD

On November 27, 2023 / On November 28... / November 29

High Tide: 1225 pm

Low Tide: 741 pm

Well I.D.	Well Diameter (Inches)	Water Level Gauging						Groundwater Sampling							Other Notes
		Gauging Date	Gauging Time	Total Well Depth (feet BTOC)	Depth to Water (feet BTOC)	Free Product?	NAPL Thickness (feet)	Sampling Date	Sampling Time	Purge Volume (gallons)	Sheen	Odor?	Number of Containers	Analysis Required	
MW 1	2	112723	1358	25.5	10.05	No	NA							SEE COC	
MW 2	2	"	1350	19.0	11.17	No	NA							SEE COC	
#1 MW 3	2	"	1345	18.6	7.77	No	NA							SEE COC	
MW 4	2	"	1401	18.8	11.30	No	NA							SEE COC	
MW 5	2	"	1347	19.0	9.05	No	NA							SEE COC	
MW 6	2	"	1354	18.8	10.60	No	NA							SEE COC	
MW 7	2	"	1355	25.3	9.39	No	NA							SEE COC	
MW 8	2	"	1407	25.3	10.10	No	NA							SEE COC	SORBENT SOCK CONDITION (NOTE REPLACEMENT IF SATURATED)
OAS 1	3/4	"	1410	19.3	11.80	NA	NA								
OAS 2	3/4	"	1412	19.6	11.70	"	"								
OAS 3	3/4	"	1415	19.4	11.95	"	"								
OAS 4	3/4	"	1418	19.6	12.01	"	"								
PAS 1	3/4	"	1420	18.0	11.81	"	"								
						"	"								

Notes

Equipment Used:

Purging Method

Sampling Order "clean to dirty" MW 3, MW 5, MW 2, MW 6, MW 7, MW 1, MW 4, MW 8

X X X X X / / /

NV5

Low-Flow Groundwater Sampling Data Sheet

Project No. BigBeams-1-04 (Task 05 & Task 08)
Site Name Former Astoria Warehousing
NV5 Personnel ADD
Date 112923
Well I.D. MW-8
Well Depth (ft BGS) 25.3

High Tide: 1339
Low Tide: 2105

Time	Purge Volume (gallons)	Purge Rate (mL/min)	Depth to Water (Feet BTOC)	Drawdown (feet)	Temp. (oC)	D.O. (mg/L)	pH	ORP (mV)	Specific Conductance (µS/cm)	Turbidity (NTU)	Other Notes
1405	-	-	10.11	-	-	-	-	-	-	-	Initial.
1425	-	-	10.03	-.08	-	-	-	-	-	-	Sock Removed/Equilibrated
1431	-	225	10.12	-.09	-	-	-	-	-	-	YSI Filled.
1435	.25	175	-	-	12.98	5.75	6.11	279.4	416	12.99	Purge Rate set
1510	2	"	[redacted]	-	13.06	0.69	6.78	252.6	458	7.00	
1520	2.5	"	-	-	13.07	0.50	6.93	246.5	468	6.93*	1
1525	2.75	"	-	-	13.07	0.50	6.96	245.0	470	4.98	1
1530	3.00	"	-	-	13.06	0.48	6.97	244.9	471	3.71	2
1535	3.25	"	-	-	13.04	0.46	6.98	244.2	473	3.87	3
1540	3.5	"	-	-	-	-	-	-	-	-	Sample Collected.
Stabilization Parameters (3 consecutive readings)				<0.3 feet (not mandatory)	3%	10% or 3 consecutive <0.5 mg/L	±0.1 units	±10 mV	3%	10% or 3 consecutive <5 NTU	

Equipment Used:
YSI/Peristaltic Pump/Water Level Meter

Purging Method
3 Consecutive Readings/3gls purged

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

6 at 1540

NV5

Low-Flow Groundwater Sampling Data Sheet

Project No. BigBeams-I-04 (Task 05 & Task 08)
Site Name Former Astoria Warehousing
NV5 Personnel ADD
Date 112923
Well I.D. MW-4
Well Depth (ft BGS) 18.8

High Tide: 1339
Low Tide: 2105

Time	Purge Volume (gallons)	Purge Rate (mL/min)	Depth to Water (feet BTOC)	Drawdown (feet)	Temp. (oC)	D.O. (mg/L)	pH	ORP (mV)	Specific Conductance (µS/cm)	Turbidity (NTU)	Other Notes
1230	-	-	11.24	-	-	-	-	-	-	-	Initial
1245	-	175	11.80	.56	-	-	-	-	-	-	YSI Filled
1305	1	"	11.77	+.03	13.71	0.74 *	6.75	263.1	398	18.82 *	-
1325	2	"	11.76	-.01	13.72	0.45	6.97	254.1	398	15.78	1
1330	2.25	"	11.74	-.02	13.71	0.40	7.05	250.9	395	14.69	2
1335	2.5	"	"	-	13.70	0.34	7.10	249.1	394	14.84	3
1345	3	"	11.72	.02	-	-	-	-	-	-	Sample Collected.
Stabilization Parameters (3 consecutive readings)				<0.3 feet (not mandatory)	3%	10% or 3 consecutive <0.5 mg/L	±0.1 units	±10 mV	3%	10% or 3 consecutive <5 NTU	

Equipment Used: PSH / Water Level Meter / Peristaltic Pump

Purging Method: 3 Consecutive Readings / 3 gals purged.

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

6 @ 1345

NVS

Low-Flow Groundwater Sampling Data Sheet

Project No. BigBeams-1-04 (Task 05 & Task 08)
Site Name Former Astoria Warehousing
NVS Personnel ADD
Date 112923
Well I.D. MW-1
Well Depth (ft BGS) 19.2

High Tide: 1339
Low Tide: 2105

Time	Purge Volume (gallons)	Purge Rate (mL/min)	Depth to Water (Feet BTOC)	Drawdown (feet)	Temp. (oC)	D.O (mg/L)	pH	ORP (mV)	Specific Conductance (µS/cm)	Turbidity (NTU)	Other Notes
1033	-	-	10.31	-	-	-	-	-	-	-	Initial
1055	-	175	10.34	.03	-	-	-	-	-	-	YSI Filled.
1125	1.5	"	"	-	14.76	0.74	7.78	223.5	520	4.45	
1145	2	"	10.31	+.02	14.81	0.50 *	7.80	222.6	549	3.85	1
1150	2.25	"	"	-	14.84	0.47	7.78	223.2	553	4.03	2
1155	2.5	"	"	-	14.91	0.42	7.79	222.9	562	3.90	3
1200	2.75	"	10.30	+.01	-	-	-	-	-	-	Sample Collected.
Stabilization Parameters (3 consecutive readings)				<0.3 feet (not mandatory)	3%	10% or 3 consecutive <0.5 mg/L	±0.1 units	±10 mV	3%	10% or 3 consecutive <5 NTU	

Equipment Used:
YSI / Peristaltic Pump / Water Level Meter

Purging Method
3 Consecutive Readings.

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

6@1200

NV5

Low-Flow Groundwater Sampling Data Sheet

Project No. BigBeams-1-04 (Task 05 & Task 08)
Site Name Former Astoria Warehousing
NV5 Personnel ADD
Date 112923
Well I.D. MW-7
Well Depth (ft BGS) 25.3

Time	Purge Volume (gallons)	Purge Rate (mL/min)	Depth to Water (feet BTOC)	Drawdown (feet)	Temp. (oC)	D.O. (mg/L)	pH	ORP (mV)	Specific Conductance (µS/cm)	Turbidity (NTU)	Other Notes
1615	-	-	10.19	-	-	-	-	-	-	-	Initial.
1625	-	175	10.55	.36	-	-	-	-	-	-	YSI filled
1643	1	"	10.64	.09	14.82	2.55	7.60	207.6	590	12.32	
1705	2	"	10.67	.03	14.34	0.50	7.68	197.9	599	10.38	1
1710	2.25	"	"	-	14.88	0.48	7.71	196.1	599	10.21	2
1715	2.5	"	10.75	.08	14.87	0.45	7.72	195	600	11.15	3
1720	2.75	-	10.77	.02	-	-	-	-	-	-	Sample Collected
Stabilization Parameters (3 consecutive readings)				<0.3 feet (not mandatory)	3%	10% or 3 consecutive <0.5 mg/L	±0.1 units	±10 mV	3%	10% or 3 consecutive <5 NTU	

Equipment Used:
YSI / Peristaltic Pump / Water Level Meter

Purging Method
3 Consecutive Readings

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

6 @ 1720

NV5

Low-Flow Groundwater Sampling Data Sheet

Project No. BigBeams-1-04 (Task 05 & Task 08)
Site Name Former Astoria Warehousing
NV5 Personnel ADD
Date 112823
Well I.D MW-6
Well Depth (ft BGS) 25.5

High Tide: 1302
Low Tide: 2024

Time	Purge Volume (gallons)	Purge Rate (mL/min)	Depth to Water (Feet BTOC)	Drawdown (feet)	Temp. (oC)	D.O. (mg/L)	pH	ORP (mV)	Specific Conductance (µS/cm)	Turbidity (NTU)	Other Notes
1445	-	-	10.55	-	-	-	-	-	-	-	For tubing Measurement.
1515	-	175	10.70	.15	-	-	-	-	-	-	YSI Filled.
1530	1	"	"	-	13.67	0.61	7.96	195.4	516	2.34	
1535	1.25	"	"	-	13.67	0.50 *	7.95	194.3	518	1.92	1
1540	1.5	"	"	-	13.65	0.42	7.97	192.5	520	2.04	2
1545	1.75	"	"	-	13.65	0.36	7.99	190.6	521	1.70	3
1550	2	"	"	-	-	-	-	-	-	-	Sample Collected.
Stabilization Parameters (3 consecutive readings)				<0.3 feet (not mandatory)	3%	10% or 3 consecutive <0.5 mg/L	±0.1 units	±10 mV	3%	10% or 3 consecutive <5 NTU	

Equipment Used:
Peristaltic Pump | YSI | Water Level Meter.

Purging Method
3 Consecutive Readings.

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

6 @ 1550

NV5

Low-Flow Groundwater Sampling Data Sheet

Project No. BigBeams-1-04 (Task 05 & Task 08)
Site Name Former Astoria Warehousing
NV5 Personnel ADD
Date 112823
Well I.D. MW-2
Well Depth (ft BGS) 19.0

High Tide: 1302
Low Tide: 2024

Time	Purge Volume (gallons)	Purge Rate (mL/min)	Depth to Water (feet BTOC)	Drawdown (feet)	Temp. (oC)	D.O. (mg/L)	pH	ORP (mV)	Specific Conductance (µS/cm)	Turbidity (NTU)	Other Notes
1326	-	-	11.15	-	-	-	-	-	-	-	For tubing Measurements
1340	-	175	11.19	0.04	-	-	-	-	-	-	YSI Filled.
1359	1	"	"	-	15.52	0.55	8.07	190.2	541	1.00	1
1405	1.25	"	"	-	15.50	0.49	8.10	186.7	547	1.12*	1
1410	1.5	"	"	-	15.47	0.42	8.13	183.9	548	1.07	2
1415	1.75	"	"	-	15.51	0.36	8.14	182.1	550	0.75	3
1420	2	"	"	-	-	-	-	-	-	-	Sample Collected.
Stabilization Parameters (3 consecutive readings)				<0.3 feet (not mandatory)	3%	10% or 3 consecutive <0.5 mg/L	±0.1 units	±10 mV	3%	10% or 3 consecutive <5 NTU	

Equipment Used:
Water Level Meter / YSI / Peristaltic Pump.

Purging Method
3 Consecutive Readings

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

6 at 1420

NV5

Low-Flow Groundwater Sampling Data Sheet

Project No. BigBeams-1-04 (Task 05 & Task 08)
Site Name Former Astoria Warehousing
NV5 Personnel ADD
Date 112823
Well I.D. MW-5
Well Depth (ft BGS) 19.2

Time	Purge Volume (gallons)	Purge Rate (mL/min)	Depth to Water (Feet BTOC)	Drawdown (feet)	Temp. (oC)	D.O. (mg/L)	pH	ORP (mV)	Specific Conductance (µS/cm)	Turbidity (NTU)	Other Notes
1130	-	-	9.05	-	-	-	-	-	-	-	Tag Tubing Measurement
1140	-	200	9.10	.05	-	-	-	-	-	-	4S9 Pump Placed.
1149	.5	175	"	-	15.95	4.03	7.92	194.5	252	2.16	
1155	.75	"	"	-	15.96	2.65	7.93	193.2	252	2.48	
1200	1	"	"	-	15.96	2.35	7.98	190.6	252	2.5	
1206	1.25	"	"	-	15.96	1.68	7.97	189.0	253	2.35	
1220	2	"	"	-	15.95	1.29	8.01	186.7	254	1.40	
1230	2.5	"	"	-	15.93	0.82	8.03	185.1	256	0.63	
1240	3	"	"	-	15.90	0.66	8.03	184.6	256	0.60	
1243	3.25	"	"	-	15.90	0.62	8.03	184.4	257	0.63	
1246	3.5	"	"	-	15.90	0.61	8.04	184.0	257	0.61	
1249	3.75	"	"	-	15.97	0.59	8.05	183.7	257	0.59	
1255	4	-	-	-	-	-	-	-	-	-	Sample Collected.
Stabilization Parameters (3 consecutive readings)				<0.3 feet (not mandatory)	3%	10% or 3 consecutive <0.5 mg/L	±0.1 units	±10 mV	3%	10% or 3 consecutive <5 NTU	

Equipment Used:
4S9 / Peristaltic Pump / Water Level Meter

Purging Method
3 Gallons + 3 Consecutive Readings.

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

6 @ 1255

NV5

Low-Flow Groundwater Sampling Data Sheet

Project No. BigBeams-1-04 (Task 05 & Task 08)
Site Name Former Astoria Warehousing
NV5 Personnel ADD
Date 11/28/23
Well I.D. MW-3
Well Depth (ft BGS) 18.6 * Approx 12' of tubing.

Low Tide: 07:12am
High Tide: 13:02 pm

Time	Purge Volume (gallons)	Purge Rate (mL/min)	Depth to Water (Feet BTOC)	Drawdown (feet)	Temp (oC)	D.O. (mg/L)	pH	ORP (mV)	Specific Conductance (µS/cm)	Turbidity (NTU)	Other Notes
0920 *	—	—	7.85'	—	—	—	—	—	—	—	For Tubing Measurement
0945	—	150	7.89'	.04	13.18	3.25	8.44	191.0	362	35.66	YSI Filled.
0959	.5	"	"	—	14.68	1.27	8.51	172.6	373	41.26	1
1005	.79	"	"	—	15.03	1.10	8.53	170.0	374	39.96	2
1010	1	"	"	—	14.97	0.97	8.57	167.8	375	30.73*	1
1020	1.5	"	"	—	14.97	0.69	8.56	166.1	376	17.9	1
1025	1.75	"	"	—	14.92	0.66	8.58	164.0	376	15.74*	1
1030	2	"	"	—	14.97	0.52	8.58	162.7	377	16.12	1
1033	2.25	"	"	—	15.01	0.52	8.58	161.6	377	16.03	2
1036	2.5	"	"	—	14.97	0.50	8.59	160.9	376	15.94	3
1040	2.75	-	-	-	-	-	-	-	-	-	Sample Collected
Stabilization Parameters (3 consecutive readings)				<0.3 feet (not mandatory)	3%	10% or 3 consecutive <0.5 mg/L	±0.1 units	±10 mV	3%	10% or 3 consecutive <5 NTU	

Equipment Used:
Peristaltic Pump / Water Level Meter / YSI

Purging Method
YSI - 3 consecutive.

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

6 at 1040

NV5

INDOOR AIR SAMPLING DATA COLLECTION

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

Site Name Former Astoria Warehousing

Site Address 70 W Marine Drive, Astoria, Oregon

NV5 Personnel : ADD

Weather : Overcast/40's · Interior 53°

Start and End Barometric Pressure (inHg): 30.11 (Start) / 30.16 (end)

Sample I.D.	Radeillo I.D.	Start Date	Start Time	Starting Temperature (°F)	End Date	End Time	End Temperature (°F)	Notes
Indoor-1	TMO 29	112923	1640		121523	1205		
Indoor-2	TMO 28	"	1645		"	1210		
Indoor-3	TMO 27	"	1650	Int. 54°	"	1215	Int. 57°	
Indoor-4	TMO 26	"	1655		"	1220		
Indoor-5	TMO 25	"	1700		"	1225		Petroleum products in area.
Indoor-6	TMO 23	"	1705		"	1230		
Indoor-7	TMO 22	"	1710		"	1235		
Background	TMO 30	"	1635	Ext. 45°	"	1200	Ext. 54°	
				→	17 Days			

TABLE 2
Riverbank Observations
Former Astoria Warehousing Site
70 West Marine Drive
Astoria, Oregon

Date	Time	Columbia River Water Level During Inspection*	Time from Low Tide	Weather	Groundwater Seeps?	Petroleum-like sheen?
112823	0900	7.412'	+1.45 hrs	Clear. 50's	na	na
112923	0930	7.028'	+1.50 hrs	Clear. 50's	na	na
121523	1330	6.533'	+4.00 hrs	Clear. 40's	na	na.

Notes:

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

ATTACHMENT B

ATTACHMENT B

CHEMICAL ANALYTICAL PROGRAM

GENERAL

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

REVIEW OF ANALYTICAL DATA

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

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

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

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

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

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

SUMMARY OF ANALYTICAL DATA REVIEW

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

ANALYTICAL REPORT

December 12, 2023

NV5 - Wilsonville, OR

Sample Delivery Group:	L1683453
Samples Received:	12/01/2023
Project Number:	BigBeams-1-04task 10
Description:	Former Astoria Warehouse

Report To:

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

Entire Report Reviewed By:

Brian Ford
Project Manager

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MW-3 L1683453-01 GW

Collected by: Andre DeJonge | Collected date/time: 11/28/23 10:40 | Received date/time: 12/01/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method NWTPHGX	WG2183524	1	12/06/23 15:17	12/06/23 15:17	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG2185343	1	12/08/23 13:47	12/08/23 13:47	JCP	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG2186391	1	12/10/23 17:25	12/10/23 17:25	ACG	Mt. Juliet, TN

MW-5 L1683453-02 GW

Collected by: Andre DeJonge | Collected date/time: 11/28/23 12:55 | Received date/time: 12/01/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method NWTPHGX	WG2183524	5	12/06/23 19:46	12/06/23 19:46	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG2185343	1	12/08/23 14:08	12/08/23 14:08	JCP	Mt. Juliet, TN

MW-2 L1683453-03 GW

Collected by: Andre DeJonge | Collected date/time: 11/28/23 14:20 | Received date/time: 12/01/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method NWTPHGX	WG2183524	1	12/06/23 15:41	12/06/23 15:41	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG2185343	1	12/08/23 14:29	12/08/23 14:29	JCP	Mt. Juliet, TN

MW-6 L1683453-04 GW

Collected by: Andre DeJonge | Collected date/time: 11/28/23 15:50 | Received date/time: 12/01/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method NWTPHGX	WG2183524	1	12/06/23 16:06	12/06/23 16:06	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG2185343	1	12/08/23 14:50	12/08/23 14:50	JCP	Mt. Juliet, TN

MW-7 L1683453-05 GW

Collected by: Andre DeJonge | Collected date/time: 11/28/23 17:20 | Received date/time: 12/01/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method NWTPHGX	WG2183524	5	12/06/23 20:36	12/06/23 20:36	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG2184854	1	12/07/23 14:30	12/07/23 14:30	ADM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG2185833	10	12/09/23 12:51	12/09/23 12:51	JAH	Mt. Juliet, TN

MW-1 L1683453-06 GW

Collected by: Andre DeJonge | Collected date/time: 11/29/23 12:00 | Received date/time: 12/01/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method NWTPHGX	WG2183524	20	12/06/23 20:11	12/06/23 20:11	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG2185343	20	12/08/23 15:32	12/08/23 15:32	JCP	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG2186391	20	12/10/23 19:08	12/10/23 19:08	ACG	Mt. Juliet, TN

MW-4 L1683453-07 GW

Collected by: Andre DeJonge | Collected date/time: 11/29/23 13:45 | Received date/time: 12/01/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method NWTPHGX	WG2183524	5	12/06/23 19:22	12/06/23 19:22	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG2185343	1	12/08/23 15:11	12/08/23 15:11	JCP	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG2186391	20	12/10/23 19:28	12/10/23 19:28	ACG	Mt. Juliet, TN

MW-8 L1683453-08 GW

Collected by: Andre DeJonge
Collected date/time: 11/29/23 15:40
Received date/time: 12/01/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method NWTPHGX	WG2183524	5	12/06/23 21:00	12/06/23 21:00	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG2185343	100	12/08/23 15:54	12/08/23 15:54	JCP	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG2186391	100	12/10/23 19:48	12/10/23 19:48	ACG	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	780		31.6	100	1	12/06/2023 15:17	WG2183524
(S) a,a,a-Trifluorotoluene(FID)	*93.7*			*78.0-120*		*12/06/2023 15:17*	WG2183524

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

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Benzene	U		0.0941	1.00	1	12/10/2023 17:25	WG2186391
Ethylbenzene	0.171	J	0.137	1.00	1	12/08/2023 13:47	WG2185343
Toluene	U		0.278	1.00	1	12/08/2023 13:47	WG2185343
Xylenes, Total	2.51	J	0.174	3.00	1	12/08/2023 13:47	WG2185343
Methyl tert-butyl ether	4.71		0.101	1.00	1	12/08/2023 13:47	WG2185343
Naphthalene	U	C3	1.00	5.00	1	12/08/2023 13:47	WG2185343
1,2-Dibromoethane	U		0.126	1.00	1	12/08/2023 13:47	WG2185343
1,2-Dichloroethane	U		0.0819	1.00	1	12/08/2023 13:47	WG2185343
Isopropylbenzene	5.74		0.105	1.00	1	12/08/2023 13:47	WG2185343
n-Propylbenzene	4.55		0.0993	1.00	1	12/08/2023 13:47	WG2185343
1,2,4-Trimethylbenzene	1.26		0.322	1.00	1	12/08/2023 13:47	WG2185343
1,3,5-Trimethylbenzene	0.790	J	0.104	1.00	1	12/08/2023 13:47	WG2185343
(S) Toluene-d8	*115*			*80.0-120*		*12/08/2023 13:47*	WG2185343
(S) Toluene-d8	*114*			*80.0-120*		*12/10/2023 17:25*	WG2186391
(S) 4-Bromofluorobenzene	*113*			*77.0-126*		*12/08/2023 13:47*	WG2185343
(S) 4-Bromofluorobenzene	*92.3*			*77.0-126*		*12/10/2023 17:25*	WG2186391
(S) 1,2-Dichloroethane-d4	*101*			*70.0-130*		*12/08/2023 13:47*	WG2185343
(S) 1,2-Dichloroethane-d4	*102*			*70.0-130*		*12/10/2023 17:25*	WG2186391

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	3890		158	500	5	12/06/2023 19:46	WG2183524
(S) a,a,a-Trifluorotoluene(FID)	*94.5*			*78.0-120*		*12/06/2023 19:46*	WG2183524

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	6.91		0.0941	1.00	1	12/08/2023 14:08	WG2185343
Ethylbenzene	7.08		0.137	1.00	1	12/08/2023 14:08	WG2185343
Toluene	1.73		0.278	1.00	1	12/08/2023 14:08	WG2185343
Xylenes, Total	4.63		0.174	3.00	1	12/08/2023 14:08	WG2185343
Methyl tert-butyl ether	0.396	J	0.101	1.00	1	12/08/2023 14:08	WG2185343
Naphthalene	2.69	C3 J	1.00	5.00	1	12/08/2023 14:08	WG2185343
1,2-Dibromoethane	U		0.126	1.00	1	12/08/2023 14:08	WG2185343
1,2-Dichloroethane	U		0.0819	1.00	1	12/08/2023 14:08	WG2185343
Isopropylbenzene	17.4		0.105	1.00	1	12/08/2023 14:08	WG2185343
n-Propylbenzene	55.6		0.0993	1.00	1	12/08/2023 14:08	WG2185343
1,2,4-Trimethylbenzene	1.16		0.322	1.00	1	12/08/2023 14:08	WG2185343
1,3,5-Trimethylbenzene	0.733	J	0.104	1.00	1	12/08/2023 14:08	WG2185343
(S) Toluene-d8	*106*			*80.0-120*		*12/08/2023 14:08*	WG2185343
(S) 4-Bromofluorobenzene	*109*			*77.0-126*		*12/08/2023 14:08*	WG2185343
(S) 1,2-Dichloroethane-d4	*99.7*			*70.0-130*		*12/08/2023 14:08*	WG2185343

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	2420		31.6	100	1	12/06/2023 15:41	WG2183524
(S) a,a,a-Trifluorotoluene(FID)	*93.7*			*78.0-120*		*12/06/2023 15:41*	WG2183524

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	89.7		0.0941	1.00	1	12/08/2023 14:29	WG2185343
Ethylbenzene	18.6		0.137	1.00	1	12/08/2023 14:29	WG2185343
Toluene	6.27		0.278	1.00	1	12/08/2023 14:29	WG2185343
Xylenes, Total	13.2		0.174	3.00	1	12/08/2023 14:29	WG2185343
Methyl tert-butyl ether	5.06		0.101	1.00	1	12/08/2023 14:29	WG2185343
Naphthalene	11.8	C3	1.00	5.00	1	12/08/2023 14:29	WG2185343
1,2-Dibromoethane	U		0.126	1.00	1	12/08/2023 14:29	WG2185343
1,2-Dichloroethane	U		0.0819	1.00	1	12/08/2023 14:29	WG2185343
Isopropylbenzene	29.7		0.105	1.00	1	12/08/2023 14:29	WG2185343
n-Propylbenzene	46.5		0.0993	1.00	1	12/08/2023 14:29	WG2185343
1,2,4-Trimethylbenzene	6.35		0.322	1.00	1	12/08/2023 14:29	WG2185343
1,3,5-Trimethylbenzene	11.0		0.104	1.00	1	12/08/2023 14:29	WG2185343
(S) Toluene-d8	*114*			*80.0-120*		*12/08/2023 14:29*	WG2185343
(S) 4-Bromofluorobenzene	*115*			*77.0-126*		*12/08/2023 14:29*	WG2185343
(S) 1,2-Dichloroethane-d4	*97.0*			*70.0-130*		*12/08/2023 14:29*	WG2185343

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	2340		31.6	100	1	12/06/2023 16:06	WG2183524
(S) a,a,a-Trifluorotoluene(FID)	*94.0*			*78.0-120*		*12/06/2023 16:06*	WG2183524

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	102		0.0941	1.00	1	12/08/2023 14:50	WG2185343
Ethylbenzene	79.7		0.137	1.00	1	12/08/2023 14:50	WG2185343
Toluene	5.17		0.278	1.00	1	12/08/2023 14:50	WG2185343
Xylenes, Total	35.0		0.174	3.00	1	12/08/2023 14:50	WG2185343
Methyl tert-butyl ether	8.19		0.101	1.00	1	12/08/2023 14:50	WG2185343
Naphthalene	30.3	C3	1.00	5.00	1	12/08/2023 14:50	WG2185343
1,2-Dibromoethane	U		0.126	1.00	1	12/08/2023 14:50	WG2185343
1,2-Dichloroethane	U		0.0819	1.00	1	12/08/2023 14:50	WG2185343
Isopropylbenzene	22.2		0.105	1.00	1	12/08/2023 14:50	WG2185343
n-Propylbenzene	49.9		0.0993	1.00	1	12/08/2023 14:50	WG2185343
1,2,4-Trimethylbenzene	15.8		0.322	1.00	1	12/08/2023 14:50	WG2185343
1,3,5-Trimethylbenzene	32.2		0.104	1.00	1	12/08/2023 14:50	WG2185343
(S) Toluene-d8	*112*			*80.0-120*		*12/08/2023 14:50*	WG2185343
(S) 4-Bromofluorobenzene	*112*			*77.0-126*		*12/08/2023 14:50*	WG2185343
(S) 1,2-Dichloroethane-d4	*95.4*			*70.0-130*		*12/08/2023 14:50*	WG2185343

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	8690		158	500	5	12/06/2023 20:36	WG2183524
(S) a,a,a-Trifluorotoluene(FID)	*92.1*			*78.0-120*		*12/06/2023 20:36*	WG2183524

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	152		0.0941	1.00	1	12/07/2023 14:30	WG2184854
Ethylbenzene	36.2		0.137	1.00	1	12/07/2023 14:30	WG2184854
Toluene	18.4		0.278	1.00	1	12/07/2023 14:30	WG2184854
Xylenes, Total	30.8		0.174	3.00	1	12/07/2023 14:30	WG2184854
Methyl tert-butyl ether	6.12		0.101	1.00	1	12/07/2023 14:30	WG2184854
Naphthalene	13.9		1.00	5.00	1	12/07/2023 14:30	WG2184854
1,2-Dibromoethane	U		0.126	1.00	1	12/07/2023 14:30	WG2184854
1,2-Dichloroethane	U		0.0819	1.00	1	12/07/2023 14:30	WG2184854
Isopropylbenzene	142		0.105	1.00	1	12/07/2023 14:30	WG2184854
n-Propylbenzene	385		0.993	10.0	10	12/09/2023 12:51	WG2185833
1,2,4-Trimethylbenzene	10.6		0.322	1.00	1	12/07/2023 14:30	WG2184854
1,3,5-Trimethylbenzene	9.05		0.104	1.00	1	12/07/2023 14:30	WG2184854
(S) Toluene-d8	*100*			*80.0-120*		*12/07/2023 14:30*	WG2184854
(S) Toluene-d8	*89.9*			*80.0-120*		*12/09/2023 12:51*	WG2185833
(S) 4-Bromofluorobenzene	*99.4*			*77.0-126*		*12/07/2023 14:30*	WG2184854
(S) 4-Bromofluorobenzene	*97.4*			*77.0-126*		*12/09/2023 12:51*	WG2185833
(S) 1,2-Dichloroethane-d4	*111*			*70.0-130*		*12/07/2023 14:30*	WG2184854
(S) 1,2-Dichloroethane-d4	*104*			*70.0-130*		*12/09/2023 12:51*	WG2185833

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	9670		632	2000	20	12/06/2023 20:11	WG2183524
(S) a,a,a-Trifluorotoluene(FID)	*88.4*			*78.0-120*		*12/06/2023 20:11*	WG2183524

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	157		1.88	20.0	20	12/08/2023 15:32	WG2185343
Ethylbenzene	1210		2.74	20.0	20	12/08/2023 15:32	WG2185343
Toluene	U		5.56	20.0	20	12/08/2023 15:32	WG2185343
Xylenes, Total	91.3		3.48	60.0	20	12/08/2023 15:32	WG2185343
Methyl tert-butyl ether	4.81	J	2.02	20.0	20	12/08/2023 15:32	WG2185343
Naphthalene	394		20.0	100	20	12/10/2023 19:08	WG2186391
1,2-Dibromoethane	U		2.52	20.0	20	12/08/2023 15:32	WG2185343
1,2-Dichloroethane	U		1.64	20.0	20	12/08/2023 15:32	WG2185343
Isopropylbenzene	68.6		2.10	20.0	20	12/08/2023 15:32	WG2185343
n-Propylbenzene	182		1.99	20.0	20	12/08/2023 15:32	WG2185343
1,2,4-Trimethylbenzene	U		6.44	20.0	20	12/10/2023 19:08	WG2186391
1,3,5-Trimethylbenzene	12.5	J	2.08	20.0	20	12/08/2023 15:32	WG2185343
(S) Toluene-d8	*116*			*80.0-120*		*12/08/2023 15:32*	WG2185343
(S) Toluene-d8	*106*			*80.0-120*		*12/10/2023 19:08*	WG2186391
(S) 4-Bromofluorobenzene	*116*			*77.0-126*		*12/08/2023 15:32*	WG2185343
(S) 4-Bromofluorobenzene	*91.1*			*77.0-126*		*12/10/2023 19:08*	WG2186391
(S) 1,2-Dichloroethane-d4	*97.9*			*70.0-130*		*12/08/2023 15:32*	WG2185343
(S) 1,2-Dichloroethane-d4	*102*			*70.0-130*		*12/10/2023 19:08*	WG2186391

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	19000		158	500	5	12/06/2023 19:22	WG2183524
(S) a,a,a-Trifluorotoluene(FID)	*90.5*			*78.0-120*		*12/06/2023 19:22*	WG2183524

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	500		1.88	20.0	20	12/10/2023 19:28	WG2186391
Ethylbenzene	648		2.74	20.0	20	12/10/2023 19:28	WG2186391
Toluene	31.4		0.278	1.00	1	12/08/2023 15:11	WG2185343
Xylenes, Total	2640		3.48	60.0	20	12/10/2023 19:28	WG2186391
Methyl tert-butyl ether	2.12		0.101	1.00	1	12/08/2023 15:11	WG2185343
Naphthalene	298		20.0	100	20	12/10/2023 19:28	WG2186391
1,2-Dibromoethane	0.180	J	0.126	1.00	1	12/08/2023 15:11	WG2185343
1,2-Dichloroethane	U		0.0819	1.00	1	12/08/2023 15:11	WG2185343
Isopropylbenzene	71.3		0.105	1.00	1	12/08/2023 15:11	WG2185343
n-Propylbenzene	208		1.99	20.0	20	12/10/2023 19:28	WG2186391
1,2,4-Trimethylbenzene	621		6.44	20.0	20	12/10/2023 19:28	WG2186391
1,3,5-Trimethylbenzene	176		0.104	1.00	1	12/08/2023 15:11	WG2185343
(S) Toluene-d8	*92.5*			*80.0-120*		*12/08/2023 15:11*	WG2185343
(S) Toluene-d8	*112*			*80.0-120*		*12/10/2023 19:28*	WG2186391
(S) 4-Bromofluorobenzene	*98.9*			*77.0-126*		*12/08/2023 15:11*	WG2185343
(S) 4-Bromofluorobenzene	*97.6*			*77.0-126*		*12/10/2023 19:28*	WG2186391
(S) 1,2-Dichloroethane-d4	*99.7*			*70.0-130*		*12/08/2023 15:11*	WG2185343
(S) 1,2-Dichloroethane-d4	*102*			*70.0-130*		*12/10/2023 19:28*	WG2186391

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	34000		158	500	5	12/06/2023 21:00	WG2183524
(S) a,a,a-Trifluorotoluene(FID)	*95.7*			*78.0-120*		*12/06/2023 21:00*	WG2183524

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	756		9.41	100	100	12/08/2023 15:54	WG2185343
Ethylbenzene	925		13.7	100	100	12/08/2023 15:54	WG2185343
Toluene	U		27.8	100	100	12/08/2023 15:54	WG2185343
Xylenes, Total	4100		17.4	300	100	12/08/2023 15:54	WG2185343
Methyl tert-butyl ether	U		10.1	100	100	12/08/2023 15:54	WG2185343
Naphthalene	457	J	100	500	100	12/10/2023 19:48	WG2186391
1,2-Dibromoethane	U		12.6	100	100	12/08/2023 15:54	WG2185343
1,2-Dichloroethane	U		8.19	100	100	12/08/2023 15:54	WG2185343
Isopropylbenzene	92.8	J	10.5	100	100	12/08/2023 15:54	WG2185343
n-Propylbenzene	198		9.93	100	100	12/08/2023 15:54	WG2185343
1,2,4-Trimethylbenzene	2230		32.2	100	100	12/08/2023 15:54	WG2185343
1,3,5-Trimethylbenzene	588		10.4	100	100	12/08/2023 15:54	WG2185343
(S) Toluene-d8	*116*			*80.0-120*		*12/08/2023 15:54*	WG2185343
(S) Toluene-d8	*110*			*80.0-120*		*12/10/2023 19:48*	WG2186391
(S) 4-Bromofluorobenzene	*114*			*77.0-126*		*12/08/2023 15:54*	WG2185343
(S) 4-Bromofluorobenzene	*91.9*			*77.0-126*		*12/10/2023 19:48*	WG2186391
(S) 1,2-Dichloroethane-d4	*102*			*70.0-130*		*12/08/2023 15:54*	WG2185343
(S) 1,2-Dichloroethane-d4	*102*			*70.0-130*		*12/10/2023 19:48*	WG2186391

Method Blank (MB)

(MB) R4009287-2 12/06/23 12:26

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)	*90.6*			*78.0-120*

Laboratory Control Sample (LCS)

(LCS) R4009287-1 12/06/23 11:37

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Gasoline Range Organics-NWTPH	5500	6010	109	70.0-124	
(S) a,a,a-Trifluorotoluene(FID)			*93.2*	*78.0-120*	

L1683370-16 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1683370-16 12/06/23 14:52 • (MS) R4009287-3 12/06/23 21:25 • (MSD) R4009287-4 12/06/23 21:49

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Gasoline Range Organics-NWTPH	11000	80.3	13300	12900	120	117	1	10.0-155	E	E	3.05	21
(S) a,a,a-Trifluorotoluene(FID)					*97.1*	*96.1*		*78.0-120*				

Method Blank (MB)

(MB) R4009922-3 12/07/23 11:13

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
1,2,4-Trimethylbenzene	U		0.322	1.00
1,3,5-Trimethylbenzene	U		0.104	1.00
(S) Toluene-d8	*105*			*80.0-120*
(S) 4-Bromofluorobenzene	*103*			*77.0-126*
(S) 1,2-Dichloroethane-d4	*103*			*70.0-130*

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

(LCS) R4009922-1 12/07/23 10:15 • (LCSD) R4009922-2 12/07/23 10:34

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	5.00	4.79	4.91	95.8	98.2	70.0-123			2.47	20
Ethylbenzene	5.00	4.89	4.87	97.8	97.4	79.0-123			0.410	20
Toluene	5.00	4.82	4.93	96.4	98.6	79.0-120			2.26	20
Xylenes, Total	15.0	14.1	14.1	94.0	94.0	79.0-123			0.000	20
Methyl tert-butyl ether	5.00	4.88	5.29	97.6	106	68.0-125			8.06	20
Naphthalene	5.00	4.79	4.74	95.8	94.8	54.0-135			1.05	20
1,2-Dibromoethane	5.00	5.15	5.31	103	106	80.0-122			3.06	20
1,2-Dichloroethane	5.00	5.46	5.43	109	109	70.0-128			0.551	20
Isopropylbenzene	5.00	4.79	4.79	95.8	95.8	76.0-127			0.000	20
1,2,4-Trimethylbenzene	5.00	4.76	4.93	95.2	98.6	76.0-121			3.51	20
1,3,5-Trimethylbenzene	5.00	4.98	4.88	99.6	97.6	76.0-122			2.03	20
(S) Toluene-d8				*98.4*	*104*	*80.0-120*				
(S) 4-Bromofluorobenzene				*101*	*99.0*	*77.0-126*				
(S) 1,2-Dichloroethane-d4				*114*	*114*	*70.0-130*				

L1684454-08 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1684454-08 12/07/23 16:43 • (MS) R4009922-4 12/07/23 20:52 • (MSD) R4009922-5 12/07/23 21:11

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Benzene	5.00	U	5.03	4.99	101	99.8	1	17.0-158			0.798	27
Ethylbenzene	5.00	U	5.13	4.83	103	96.6	1	30.0-155			6.02	27
Toluene	5.00	U	5.03	5.00	101	100	1	26.0-154			0.598	28
Xylenes, Total	15.0	U	15.3	14.2	102	94.7	1	29.0-154			7.46	28
Methyl tert-butyl ether	5.00	U	4.78	4.59	95.6	91.8	1	28.0-150			4.06	29
Naphthalene	5.00	U	3.83	3.83	76.6	76.6	1	12.0-156			0.000	35
1,2-Dibromoethane	5.00	U	4.73	4.56	94.6	91.2	1	34.0-147			3.66	27
1,2-Dichloroethane	5.00	U	4.98	4.76	99.6	95.2	1	29.0-151			4.52	27
Isopropylbenzene	5.00	U	5.25	4.98	105	99.6	1	28.0-157			5.28	27
1,2,4-Trimethylbenzene	5.00	U	5.22	4.98	104	99.6	1	26.0-154			4.71	27
1,3,5-Trimethylbenzene	5.00	U	5.12	5.15	102	103	1	28.0-153			0.584	27
(S) Toluene-d8					*104*	*102*		*80.0-120*				
(S) 4-Bromofluorobenzene					*106*	*99.2*		*77.0-126*				
(S) 1,2-Dichloroethane-d4					*104*	*100*		*70.0-130*				

Method Blank (MB)

(MB) R4010309-3 12/08/23 08:51

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	*115*			*80.0-120*
(S) 4-Bromofluorobenzene	*116*			*77.0-126*
(S) 1,2-Dichloroethane-d4	*108*			*70.0-130*

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

(LCS) R4010309-1 12/08/23 07:47 • (LCSD) R4010309-2 12/08/23 08:08

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	5.00	4.80	5.08	96.0	102	70.0-123			5.67	20
Ethylbenzene	5.00	4.99	5.32	99.8	106	79.0-123			6.40	20
Toluene	5.00	5.12	5.38	102	108	79.0-120			4.95	20
Xylenes, Total	15.0	15.1	15.9	101	106	79.0-123			5.16	20
Methyl tert-butyl ether	5.00	4.81	4.90	96.2	98.0	68.0-125			1.85	20
Naphthalene	5.00	3.76	4.14	75.2	82.8	54.0-135			9.62	20
1,2-Dibromoethane	5.00	4.97	5.01	99.4	100	80.0-122			0.802	20
1,2-Dichloroethane	5.00	5.00	4.99	100	99.8	70.0-128			0.200	20
Isopropylbenzene	5.00	5.06	5.30	101	106	76.0-127			4.63	20
n-Propylbenzene	5.00	4.81	4.86	96.2	97.2	77.0-124			1.03	20
1,2,4-Trimethylbenzene	5.00	4.84	5.14	96.8	103	76.0-121			6.01	20
1,3,5-Trimethylbenzene	5.00	5.00	5.07	100	101	76.0-122			1.39	20
(S) Toluene-d8				*110*	*112*	*80.0-120*				
(S) 4-Bromofluorobenzene				*110*	*110*	*77.0-126*				
(S) 1,2-Dichloroethane-d4				*103*	*104*	*70.0-130*				

Method Blank (MB)

(MB) R4010338-4 12/08/23 13:48

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	ug/l		ug/l	ug/l
n-Propylbenzene	U		0.0993	1.00
(S) Toluene-d8	*97.3*			*80.0-120*
(S) 4-Bromofluorobenzene	*98.9*			*77.0-126*
(S) 1,2-Dichloroethane-d4	*101*			*70.0-130*

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

(LCS) R4010338-1 12/08/23 12:23 • (LCSD) R4010338-2 12/08/23 12:44

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	ug/l	ug/l	ug/l	%	%	%			%	%
n-Propylbenzene	5.00	5.26	5.28	105	106	77.0-124			0.380	20
(S) Toluene-d8				*93.9*	*92.4*	*80.0-120*				
(S) 4-Bromofluorobenzene				*94.2*	*97.9*	*77.0-126*				
(S) 1,2-Dichloroethane-d4				*94.4*	*100*	*70.0-130*				

Method Blank (MB)

(MB) R4010679-4 12/10/23 13:00

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
Xylenes, Total	U		0.174	3.00
Naphthalene	U		1.00	5.00
n-Propylbenzene	U		0.0993	1.00
1,2,4-Trimethylbenzene	U		0.322	1.00
(S) Toluene-d8	*111*			*80.0-120*
(S) 4-Bromofluorobenzene	*91.2*			*77.0-126*
(S) 1,2-Dichloroethane-d4	*103*			*70.0-130*

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

(LCS) R4010679-1 12/10/23 11:38 • (LCSD) R4010679-2 12/10/23 11:58

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 %
Benzene	5.00	5.28	5.68	106	114	70.0-123			7.30	20
Ethylbenzene	5.00	5.66	5.88	113	118	79.0-123			3.81	20
Xylenes, Total	15.0	16.0	17.2	107	115	79.0-123			7.23	20
Naphthalene	5.00	4.45	4.79	89.0	95.8	54.0-135			7.36	20
n-Propylbenzene	5.00	4.69	4.96	93.8	99.2	77.0-124			5.60	20
1,2,4-Trimethylbenzene	5.00	4.81	5.07	96.2	101	76.0-121			5.26	20
(S) Toluene-d8				*111*	*109*	*80.0-120*				
(S) 4-Bromofluorobenzene				*96.2*	*93.1*	*77.0-126*				
(S) 1,2-Dichloroethane-d4				*103*	*102*	*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.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
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.

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 Name/Address:
NV5 - Wilsonville, OR

9450 SW Commerce Circle
Ste. 300
Wilsonville, OR 97070

Billing Information:
Accounts Payable
9450 SW Commerce Circle
Ste. 300
Wilsonville, OR 97070

Pres Chk

Report to: Andre DeJonge

Email To: Andre.DeJonge@nv5.com;Erik.Hedberg@nv5.co

Project Description: Former Astoria Warehouse.

City/State Collected:

Please Circle: (PT) MT CT ET

Phone: 503-968-8787

Client Project # BigBeams-1-04task 10

Lab Project # GEODESPOR-BIGB104

Collected by (print): Andre DeJonge

Site/Facility ID #

P.O. #

Collected by (signature): Immediately Packed on Ice N ___ Y ✓

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

Quote #

Date Results Needed

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	NWTPHGX 40mlAmb HCl	VOCs RBDM 8260 40mlAmb-HCl	Remarks	Sample # (lab only)
MW-3	—	GW	—	112823	1040	6	X	X		-01
MW-5	—	"	—	"	1255	6	X	X		-02
MW-2	—	"	—	"	1420	6	X	X		-03
MW-6	—	"	—	"	1550	6	X	X		-04
MW-7	—	"	—	112823	1720	6	X	X		-05
MW-1	—	"	—	112923	1200	6	X	X		-06
MW-4	—	"	—	"	1345	6	X	X		-07
MW-8	—	"	—	112923	1540	6	X	X		-08
—	—	"	—	—	—	—	—	—		

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

SDG # L1683453
E046

Acctnum: GEODESPOR
Template: T241226
Prelogin: P1035328
PM: 110 - Brian Ford
PB: BW 11/6

Shipped Via: FedEX Ground

* 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 # 6648 4315 8572

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: Yes / No HCl / MeoH TBR	If preservation required by Login: Date/Time
	11/30/23				
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: 0.5+0=0.5 °C Bottles Received: 48	
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 12.1.23 Time: 0900	Hold: Condition: NCF / OK

ANALYTICAL REPORT

December 12, 2023

NV5 - Wilsonville, OR

Sample Delivery Group:	L1683248
Samples Received:	12/01/2023
Project Number:	BigBeams-1-04task 10
Description:	

Report To:

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

Entire Report Reviewed By:

Brian Ford
Project Manager

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VP-1 L1683248-01 Air

Collected by: Andre D. DeJonge | Collected date/time: 11/28/23 11:56 | Received date/time: 12/01/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (MS) by Method TO-15	WG2184843	1	12/07/23 14:22	12/07/23 14:22	DAH	Mt. Juliet, TN

VP-2 L1683248-02 Air

Collected by: Andre D. DeJonge | Collected date/time: 11/28/23 12:13 | Received date/time: 12/01/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (MS) by Method TO-15	WG2184843	1	12/07/23 15:01	12/07/23 15:01	DAH	Mt. Juliet, TN
Volatile Organic Compounds (MS) by Method TO-15	WG2185936	10	12/08/23 17:21	12/08/23 17:21	DAH	Mt. Juliet, TN

VP-3 L1683248-03 Air

Collected by: Andre D. DeJonge | Collected date/time: 11/28/23 12:31 | Received date/time: 12/01/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (MS) by Method TO-15	WG2184843	1	12/07/23 15:40	12/07/23 15:40	DAH	Mt. Juliet, TN

VP-4 L1683248-04 Air

Collected by: Andre D. DeJonge | Collected date/time: 11/28/23 15:18 | Received date/time: 12/01/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (MS) by Method TO-15	WG2184843	1	12/07/23 16:18	12/07/23 16:18	DAH	Mt. Juliet, TN

CASE NARRATIVE

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

Brian Ford
Project Manager

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	19.6	46.6		1	WG2184843
Allyl chloride	107-05-1	76.53	0.200	0.626	ND	ND		1	WG2184843
Benzene	71-43-2	78.10	0.200	0.639	ND	ND		1	WG2184843
Benzyl Chloride	100-44-7	127	0.200	1.04	ND	ND		1	WG2184843
Bromodichloromethane	75-27-4	164	0.200	1.34	ND	ND		1	WG2184843
Bromoform	75-25-2	253	0.600	6.21	ND	ND		1	WG2184843
Bromomethane	74-83-9	94.90	0.200	0.776	ND	ND		1	WG2184843
1,3-Butadiene	106-99-0	54.10	2.00	4.43	ND	ND		1	WG2184843
Carbon disulfide	75-15-0	76.10	0.200	0.622	1.09	3.39		1	WG2184843
Carbon tetrachloride	56-23-5	154	0.200	1.26	ND	ND		1	WG2184843
Chlorobenzene	108-90-7	113	0.200	0.924	ND	ND		1	WG2184843
Chloroethane	75-00-3	64.50	0.200	0.528	ND	ND		1	WG2184843
Chloroform	67-66-3	119	0.200	0.973	ND	ND		1	WG2184843
Chloromethane	74-87-3	50.50	0.200	0.413	0.428	0.884		1	WG2184843
2-Chlorotoluene	95-49-8	126	0.200	1.03	ND	ND		1	WG2184843
Cyclohexane	110-82-7	84.20	0.200	0.689	ND	ND		1	WG2184843
Dibromochloromethane	124-48-1	208	0.200	1.70	ND	ND		1	WG2184843
1,2-Dibromoethane	106-93-4	188	0.200	1.54	ND	ND		1	WG2184843
1,2-Dichlorobenzene	95-50-1	147	0.200	1.20	ND	ND		1	WG2184843
1,3-Dichlorobenzene	541-73-1	147	0.200	1.20	ND	ND		1	WG2184843
1,4-Dichlorobenzene	106-46-7	147	0.200	1.20	ND	ND		1	WG2184843
1,2-Dichloroethane	107-06-2	99	0.200	0.810	ND	ND		1	WG2184843
1,1-Dichloroethane	75-34-3	98	0.200	0.802	ND	ND		1	WG2184843
1,1-Dichloroethene	75-35-4	96.90	0.200	0.793	ND	ND		1	WG2184843
cis-1,2-Dichloroethene	156-59-2	96.90	0.200	0.793	ND	ND		1	WG2184843
trans-1,2-Dichloroethene	156-60-5	96.90	0.200	0.793	ND	ND		1	WG2184843
1,2-Dichloropropane	78-87-5	113	0.200	0.924	ND	ND		1	WG2184843
cis-1,3-Dichloropropene	10061-01-5	111	0.200	0.908	ND	ND		1	WG2184843
trans-1,3-Dichloropropene	10061-02-6	111	0.200	0.908	ND	ND		1	WG2184843
1,4-Dioxane	123-91-1	88.10	0.630	2.27	ND	ND		1	WG2184843
Ethanol	64-17-5	46.10	2.50	4.71	163	307	E	1	WG2184843
Ethylbenzene	100-41-4	106	0.200	0.867	ND	ND		1	WG2184843
4-Ethyltoluene	622-96-8	120	0.200	0.982	ND	ND		1	WG2184843
Trichlorofluoromethane	75-69-4	137.40	0.200	1.12	0.230	1.29		1	WG2184843
Dichlorodifluoromethane	75-71-8	120.92	0.200	0.989	0.321	1.59		1	WG2184843
1,1,2-Trichlorotrifluoroethane	76-13-1	187.40	0.200	1.53	ND	ND		1	WG2184843
1,2-Dichlorotetrafluoroethane	76-14-2	171	0.200	1.40	ND	ND		1	WG2184843
Heptane	142-82-5	100	0.200	0.818	ND	ND		1	WG2184843
Hexachloro-1,3-butadiene	87-68-3	261	0.630	6.73	ND	ND		1	WG2184843
n-Hexane	110-54-3	86.20	0.630	2.22	ND	ND		1	WG2184843
Isopropylbenzene	98-82-8	120.20	0.200	0.983	ND	ND		1	WG2184843
Methylene Chloride	75-09-2	84.90	0.200	0.694	0.336	1.17		1	WG2184843
Methyl Butyl Ketone	591-78-6	100	1.25	5.11	ND	ND		1	WG2184843
2-Butanone (MEK)	78-93-3	72.10	1.25	3.69	2.82	8.32		1	WG2184843
4-Methyl-2-pentanone (MIBK)	108-10-1	100.10	1.25	5.12	ND	ND		1	WG2184843
Methyl methacrylate	80-62-6	100.12	0.200	0.819	ND	ND		1	WG2184843
MTBE	1634-04-4	88.10	0.200	0.721	ND	ND		1	WG2184843
Naphthalene	91-20-3	128	0.630	3.30	ND	ND		1	WG2184843
2-Propanol	67-63-0	60.10	1.25	3.07	5.42	13.3		1	WG2184843
Propene	115-07-1	42.10	1.25	2.15	ND	ND		1	WG2184843
Styrene	100-42-5	104	0.200	0.851	ND	ND		1	WG2184843
1,1,2,2-Tetrachloroethane	79-34-5	168	0.200	1.37	ND	ND		1	WG2184843
Tetrachloroethylene	127-18-4	166	0.200	1.36	ND	ND		1	WG2184843
Tetrahydrofuran	109-99-9	72.10	0.200	0.590	ND	ND		1	WG2184843
Toluene	108-88-3	92.10	0.500	1.88	ND	ND		1	WG2184843
1,2,4-Trichlorobenzene	120-82-1	181	0.630	4.66	ND	ND		1	WG2184843

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	WG2184843
1,1,2-Trichloroethane	79-00-5	133	0.200	1.09	ND	ND		1	WG2184843
Trichloroethylene	79-01-6	131	0.200	1.07	ND	ND		1	WG2184843
1,2,4-Trimethylbenzene	95-63-6	120	0.200	0.982	ND	ND		1	WG2184843
1,3,5-Trimethylbenzene	108-67-8	120	0.200	0.982	ND	ND		1	WG2184843
2,2,4-Trimethylpentane	540-84-1	114.22	0.200	0.934	ND	ND		1	WG2184843
Vinyl chloride	75-01-4	62.50	0.200	0.511	ND	ND		1	WG2184843
Vinyl Bromide	593-60-2	106.95	0.200	0.875	ND	ND		1	WG2184843
Vinyl acetate	108-05-4	86.10	0.630	2.22	ND	ND		1	WG2184843
m&p-Xylene	1330-20-7	106	0.400	1.73	ND	ND		1	WG2184843
o-Xylene	95-47-6	106	0.200	0.867	ND	ND		1	WG2184843
TPH (GC/MS) Low Fraction	8006-61-9	101	200	826	ND	ND		1	WG2184843
(S) 1,4-Bromofluorobenzene	*460-00-4*	*175*	*60.0-140*		*101*				WG2184843

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	42.1	100		1	WG2184843
Allyl chloride	107-05-1	76.53	0.200	0.626	ND	ND		1	WG2184843
Benzene	71-43-2	78.10	0.200	0.639	ND	ND		1	WG2184843
Benzyl Chloride	100-44-7	127	0.200	1.04	ND	ND		1	WG2184843
Bromodichloromethane	75-27-4	164	0.200	1.34	ND	ND		1	WG2184843
Bromoform	75-25-2	253	0.600	6.21	ND	ND		1	WG2184843
Bromomethane	74-83-9	94.90	0.200	0.776	ND	ND		1	WG2184843
1,3-Butadiene	106-99-0	54.10	2.00	4.43	ND	ND		1	WG2184843
Carbon disulfide	75-15-0	76.10	2.00	6.22	229	713		10	WG2185936
Carbon tetrachloride	56-23-5	154	0.200	1.26	ND	ND		1	WG2184843
Chlorobenzene	108-90-7	113	0.200	0.924	ND	ND		1	WG2184843
Chloroethane	75-00-3	64.50	0.200	0.528	ND	ND		1	WG2184843
Chloroform	67-66-3	119	0.200	0.973	ND	ND		1	WG2184843
Chloromethane	74-87-3	50.50	0.200	0.413	ND	ND		1	WG2184843
2-Chlorotoluene	95-49-8	126	0.200	1.03	ND	ND		1	WG2184843
Cyclohexane	110-82-7	84.20	0.200	0.689	ND	ND		1	WG2184843
Dibromochloromethane	124-48-1	208	0.200	1.70	ND	ND		1	WG2184843
1,2-Dibromoethane	106-93-4	188	0.200	1.54	ND	ND		1	WG2184843
1,2-Dichlorobenzene	95-50-1	147	0.200	1.20	ND	ND		1	WG2184843
1,3-Dichlorobenzene	541-73-1	147	0.200	1.20	ND	ND		1	WG2184843
1,4-Dichlorobenzene	106-46-7	147	0.200	1.20	ND	ND		1	WG2184843
1,2-Dichloroethane	107-06-2	99	0.200	0.810	ND	ND		1	WG2184843
1,1-Dichloroethane	75-34-3	98	0.200	0.802	ND	ND		1	WG2184843
1,1-Dichloroethene	75-35-4	96.90	0.200	0.793	ND	ND		1	WG2184843
cis-1,2-Dichloroethene	156-59-2	96.90	0.200	0.793	ND	ND		1	WG2184843
trans-1,2-Dichloroethene	156-60-5	96.90	0.200	0.793	ND	ND		1	WG2184843
1,2-Dichloropropane	78-87-5	113	0.200	0.924	ND	ND		1	WG2184843
cis-1,3-Dichloropropene	10061-01-5	111	0.200	0.908	ND	ND		1	WG2184843
trans-1,3-Dichloropropene	10061-02-6	111	0.200	0.908	ND	ND		1	WG2184843
1,4-Dioxane	123-91-1	88.10	0.630	2.27	ND	ND		1	WG2184843
Ethanol	64-17-5	46.10	2.50	4.71	205	387	E	1	WG2184843
Ethylbenzene	100-41-4	106	0.200	0.867	ND	ND		1	WG2184843
4-Ethyltoluene	622-96-8	120	0.200	0.982	ND	ND		1	WG2184843
Trichlorofluoromethane	75-69-4	137.40	0.200	1.12	0.207	1.16		1	WG2184843
Dichlorodifluoromethane	75-71-8	120.92	0.200	0.989	ND	ND		1	WG2184843
1,1,2-Trichlorotrifluoroethane	76-13-1	187.40	0.200	1.53	ND	ND		1	WG2184843
1,2-Dichlorotetrafluoroethane	76-14-2	171	0.200	1.40	ND	ND		1	WG2184843
Heptane	142-82-5	100	0.200	0.818	ND	ND		1	WG2184843
Hexachloro-1,3-butadiene	87-68-3	261	0.630	6.73	ND	ND		1	WG2184843
n-Hexane	110-54-3	86.20	0.630	2.22	ND	ND		1	WG2184843
Isopropylbenzene	98-82-8	120.20	0.200	0.983	ND	ND		1	WG2184843
Methylene Chloride	75-09-2	84.90	0.200	0.694	0.346	1.20		1	WG2184843
Methyl Butyl Ketone	591-78-6	100	1.25	5.11	ND	ND		1	WG2184843
2-Butanone (MEK)	78-93-3	72.10	1.25	3.69	4.82	14.2		1	WG2184843
4-Methyl-2-pentanone (MIBK)	108-10-1	100.10	1.25	5.12	ND	ND		1	WG2184843
Methyl methacrylate	80-62-6	100.12	0.200	0.819	ND	ND		1	WG2184843
MTBE	1634-04-4	88.10	0.200	0.721	ND	ND		1	WG2184843
Naphthalene	91-20-3	128	0.630	3.30	ND	ND		1	WG2184843
2-Propanol	67-63-0	60.10	1.25	3.07	3.80	9.34		1	WG2184843
Propene	115-07-1	42.10	1.25	2.15	ND	ND		1	WG2184843
Styrene	100-42-5	104	0.200	0.851	ND	ND		1	WG2184843
1,1,2,2-Tetrachloroethane	79-34-5	168	0.200	1.37	ND	ND		1	WG2184843
Tetrachloroethylene	127-18-4	166	0.200	1.36	ND	ND		1	WG2184843
Tetrahydrofuran	109-99-9	72.10	0.200	0.590	ND	ND		1	WG2184843
Toluene	108-88-3	92.10	0.500	1.88	1.17	4.41		1	WG2184843
1,2,4-Trichlorobenzene	120-82-1	181	0.630	4.66	ND	ND		1	WG2184843

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	WG2184843
1,1,2-Trichloroethane	79-00-5	133	0.200	1.09	ND	ND		1	WG2184843
Trichloroethylene	79-01-6	131	0.200	1.07	ND	ND		1	WG2184843
1,2,4-Trimethylbenzene	95-63-6	120	0.200	0.982	0.524	2.57		1	WG2184843
1,3,5-Trimethylbenzene	108-67-8	120	0.200	0.982	ND	ND		1	WG2184843
2,2,4-Trimethylpentane	540-84-1	114.22	0.200	0.934	ND	ND		1	WG2184843
Vinyl chloride	75-01-4	62.50	0.200	0.511	ND	ND		1	WG2184843
Vinyl Bromide	593-60-2	106.95	0.200	0.875	ND	ND		1	WG2184843
Vinyl acetate	108-05-4	86.10	0.630	2.22	ND	ND		1	WG2184843
m&p-Xylene	1330-20-7	106	0.400	1.73	0.705	3.06		1	WG2184843
o-Xylene	95-47-6	106	0.200	0.867	ND	ND		1	WG2184843
TPH (GC/MS) Low Fraction	8006-61-9	101	200	826	ND	ND		1	WG2184843
(S) 1,4-Bromofluorobenzene	*460-00-4*	*175*	*60.0-140*		*104*				WG2184843
(S) 1,4-Bromofluorobenzene	*460-00-4*	*175*	*60.0-140*		*98.9*				WG2185936

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	6.60	15.7		1	WG2184843
Allyl chloride	107-05-1	76.53	0.200	0.626	ND	ND		1	WG2184843
Benzene	71-43-2	78.10	0.200	0.639	ND	ND		1	WG2184843
Benzyl Chloride	100-44-7	127	0.200	1.04	ND	ND		1	WG2184843
Bromodichloromethane	75-27-4	164	0.200	1.34	ND	ND		1	WG2184843
Bromoform	75-25-2	253	0.600	6.21	ND	ND		1	WG2184843
Bromomethane	74-83-9	94.90	0.200	0.776	ND	ND		1	WG2184843
1,3-Butadiene	106-99-0	54.10	2.00	4.43	ND	ND		1	WG2184843
Carbon disulfide	75-15-0	76.10	0.200	0.622	0.555	1.73		1	WG2184843
Carbon tetrachloride	56-23-5	154	0.200	1.26	ND	ND		1	WG2184843
Chlorobenzene	108-90-7	113	0.200	0.924	ND	ND		1	WG2184843
Chloroethane	75-00-3	64.50	0.200	0.528	ND	ND		1	WG2184843
Chloroform	67-66-3	119	0.200	0.973	ND	ND		1	WG2184843
Chloromethane	74-87-3	50.50	0.200	0.413	ND	ND		1	WG2184843
2-Chlorotoluene	95-49-8	126	0.200	1.03	ND	ND		1	WG2184843
Cyclohexane	110-82-7	84.20	0.200	0.689	0.776	2.67		1	WG2184843
Dibromochloromethane	124-48-1	208	0.200	1.70	ND	ND		1	WG2184843
1,2-Dibromoethane	106-93-4	188	0.200	1.54	ND	ND		1	WG2184843
1,2-Dichlorobenzene	95-50-1	147	0.200	1.20	ND	ND		1	WG2184843
1,3-Dichlorobenzene	541-73-1	147	0.200	1.20	ND	ND		1	WG2184843
1,4-Dichlorobenzene	106-46-7	147	0.200	1.20	ND	ND		1	WG2184843
1,2-Dichloroethane	107-06-2	99	0.200	0.810	ND	ND		1	WG2184843
1,1-Dichloroethane	75-34-3	98	0.200	0.802	ND	ND		1	WG2184843
1,1-Dichloroethene	75-35-4	96.90	0.200	0.793	ND	ND		1	WG2184843
cis-1,2-Dichloroethene	156-59-2	96.90	0.200	0.793	ND	ND		1	WG2184843
trans-1,2-Dichloroethene	156-60-5	96.90	0.200	0.793	ND	ND		1	WG2184843
1,2-Dichloropropane	78-87-5	113	0.200	0.924	ND	ND		1	WG2184843
cis-1,3-Dichloropropene	10061-01-5	111	0.200	0.908	ND	ND		1	WG2184843
trans-1,3-Dichloropropene	10061-02-6	111	0.200	0.908	ND	ND		1	WG2184843
1,4-Dioxane	123-91-1	88.10	0.630	2.27	ND	ND		1	WG2184843
Ethanol	64-17-5	46.10	2.50	4.71	97.9	185		1	WG2184843
Ethylbenzene	100-41-4	106	0.200	0.867	ND	ND		1	WG2184843
4-Ethyltoluene	622-96-8	120	0.200	0.982	ND	ND		1	WG2184843
Trichlorofluoromethane	75-69-4	137.40	0.200	1.12	ND	ND		1	WG2184843
Dichlorodifluoromethane	75-71-8	120.92	0.200	0.989	0.224	1.11		1	WG2184843
1,1,2-Trichlorotrifluoroethane	76-13-1	187.40	0.200	1.53	ND	ND		1	WG2184843
1,2-Dichlorotetrafluoroethane	76-14-2	171	0.200	1.40	ND	ND		1	WG2184843
Heptane	142-82-5	100	0.200	0.818	ND	ND		1	WG2184843
Hexachloro-1,3-butadiene	87-68-3	261	0.630	6.73	ND	ND		1	WG2184843
n-Hexane	110-54-3	86.20	0.630	2.22	ND	ND		1	WG2184843
Isopropylbenzene	98-82-8	120.20	0.200	0.983	ND	ND		1	WG2184843
Methylene Chloride	75-09-2	84.90	0.200	0.694	0.315	1.09		1	WG2184843
Methyl Butyl Ketone	591-78-6	100	1.25	5.11	ND	ND		1	WG2184843
2-Butanone (MEK)	78-93-3	72.10	1.25	3.69	ND	ND		1	WG2184843
4-Methyl-2-pentanone (MIBK)	108-10-1	100.10	1.25	5.12	ND	ND		1	WG2184843
Methyl methacrylate	80-62-6	100.12	0.200	0.819	ND	ND		1	WG2184843
MTBE	1634-04-4	88.10	0.200	0.721	0.321	1.16		1	WG2184843
Naphthalene	91-20-3	128	0.630	3.30	ND	ND		1	WG2184843
2-Propanol	67-63-0	60.10	1.25	3.07	2.59	6.37		1	WG2184843
Propene	115-07-1	42.10	1.25	2.15	ND	ND		1	WG2184843
Styrene	100-42-5	104	0.200	0.851	ND	ND		1	WG2184843
1,1,2,2-Tetrachloroethane	79-34-5	168	0.200	1.37	ND	ND		1	WG2184843
Tetrachloroethylene	127-18-4	166	0.200	1.36	ND	ND		1	WG2184843
Tetrahydrofuran	109-99-9	72.10	0.200	0.590	ND	ND		1	WG2184843
Toluene	108-88-3	92.10	0.500	1.88	ND	ND		1	WG2184843
1,2,4-Trichlorobenzene	120-82-1	181	0.630	4.66	ND	ND		1	WG2184843

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	WG2184843
1,1,2-Trichloroethane	79-00-5	133	0.200	1.09	ND	ND		1	WG2184843
Trichloroethylene	79-01-6	131	0.200	1.07	ND	ND		1	WG2184843
1,2,4-Trimethylbenzene	95-63-6	120	0.200	0.982	ND	ND		1	WG2184843
1,3,5-Trimethylbenzene	108-67-8	120	0.200	0.982	ND	ND		1	WG2184843
2,2,4-Trimethylpentane	540-84-1	114.22	0.200	0.934	5.56	26.0		1	WG2184843
Vinyl chloride	75-01-4	62.50	0.200	0.511	ND	ND		1	WG2184843
Vinyl Bromide	593-60-2	106.95	0.200	0.875	ND	ND		1	WG2184843
Vinyl acetate	108-05-4	86.10	0.630	2.22	ND	ND		1	WG2184843
m&p-Xylene	1330-20-7	106	0.400	1.73	ND	ND		1	WG2184843
o-Xylene	95-47-6	106	0.200	0.867	ND	ND		1	WG2184843
TPH (GC/MS) Low Fraction	8006-61-9	101	200	826	ND	ND		1	WG2184843
(S) 1,4-Bromofluorobenzene	*460-00-4*	*175*	*60.0-140*		*100*				WG2184843

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	6.52	15.5		1	WG2184843
Allyl chloride	107-05-1	76.53	0.200	0.626	ND	ND		1	WG2184843
Benzene	71-43-2	78.10	0.200	0.639	ND	ND		1	WG2184843
Benzyl Chloride	100-44-7	127	0.200	1.04	ND	ND		1	WG2184843
Bromodichloromethane	75-27-4	164	0.200	1.34	ND	ND		1	WG2184843
Bromoform	75-25-2	253	0.600	6.21	ND	ND		1	WG2184843
Bromomethane	74-83-9	94.90	0.200	0.776	ND	ND		1	WG2184843
1,3-Butadiene	106-99-0	54.10	2.00	4.43	ND	ND		1	WG2184843
Carbon disulfide	75-15-0	76.10	0.200	0.622	ND	ND		1	WG2184843
Carbon tetrachloride	56-23-5	154	0.200	1.26	ND	ND		1	WG2184843
Chlorobenzene	108-90-7	113	0.200	0.924	ND	ND		1	WG2184843
Chloroethane	75-00-3	64.50	0.200	0.528	ND	ND		1	WG2184843
Chloroform	67-66-3	119	0.200	0.973	ND	ND		1	WG2184843
Chloromethane	74-87-3	50.50	0.200	0.413	ND	ND		1	WG2184843
2-Chlorotoluene	95-49-8	126	0.200	1.03	ND	ND		1	WG2184843
Cyclohexane	110-82-7	84.20	0.200	0.689	ND	ND		1	WG2184843
Dibromochloromethane	124-48-1	208	0.200	1.70	ND	ND		1	WG2184843
1,2-Dibromoethane	106-93-4	188	0.200	1.54	ND	ND		1	WG2184843
1,2-Dichlorobenzene	95-50-1	147	0.200	1.20	ND	ND		1	WG2184843
1,3-Dichlorobenzene	541-73-1	147	0.200	1.20	ND	ND		1	WG2184843
1,4-Dichlorobenzene	106-46-7	147	0.200	1.20	ND	ND		1	WG2184843
1,2-Dichloroethane	107-06-2	99	0.200	0.810	ND	ND		1	WG2184843
1,1-Dichloroethane	75-34-3	98	0.200	0.802	ND	ND		1	WG2184843
1,1-Dichloroethene	75-35-4	96.90	0.200	0.793	ND	ND		1	WG2184843
cis-1,2-Dichloroethene	156-59-2	96.90	0.200	0.793	ND	ND		1	WG2184843
trans-1,2-Dichloroethene	156-60-5	96.90	0.200	0.793	ND	ND		1	WG2184843
1,2-Dichloropropane	78-87-5	113	0.200	0.924	ND	ND		1	WG2184843
cis-1,3-Dichloropropene	10061-01-5	111	0.200	0.908	ND	ND		1	WG2184843
trans-1,3-Dichloropropene	10061-02-6	111	0.200	0.908	ND	ND		1	WG2184843
1,4-Dioxane	123-91-1	88.10	0.630	2.27	ND	ND		1	WG2184843
Ethanol	64-17-5	46.10	2.50	4.71	132	249	E	1	WG2184843
Ethylbenzene	100-41-4	106	0.200	0.867	ND	ND		1	WG2184843
4-Ethyltoluene	622-96-8	120	0.200	0.982	ND	ND		1	WG2184843
Trichlorofluoromethane	75-69-4	137.40	0.200	1.12	ND	ND		1	WG2184843
Dichlorodifluoromethane	75-71-8	120.92	0.200	0.989	0.276	1.36		1	WG2184843
1,1,2-Trichlorotrifluoroethane	76-13-1	187.40	0.200	1.53	ND	ND		1	WG2184843
1,2-Dichlorotetrafluoroethane	76-14-2	171	0.200	1.40	ND	ND		1	WG2184843
Heptane	142-82-5	100	0.200	0.818	ND	ND		1	WG2184843
Hexachloro-1,3-butadiene	87-68-3	261	0.630	6.73	ND	ND		1	WG2184843
n-Hexane	110-54-3	86.20	0.630	2.22	ND	ND		1	WG2184843
Isopropylbenzene	98-82-8	120.20	0.200	0.983	ND	ND		1	WG2184843
Methylene Chloride	75-09-2	84.90	0.200	0.694	1.35	4.69		1	WG2184843
Methyl Butyl Ketone	591-78-6	100	1.25	5.11	ND	ND		1	WG2184843
2-Butanone (MEK)	78-93-3	72.10	1.25	3.69	ND	ND		1	WG2184843
4-Methyl-2-pentanone (MIBK)	108-10-1	100.10	1.25	5.12	ND	ND		1	WG2184843
Methyl methacrylate	80-62-6	100.12	0.200	0.819	ND	ND		1	WG2184843
MTBE	1634-04-4	88.10	0.200	0.721	0.545	1.96		1	WG2184843
Naphthalene	91-20-3	128	0.630	3.30	ND	ND		1	WG2184843
2-Propanol	67-63-0	60.10	1.25	3.07	13.4	32.9		1	WG2184843
Propene	115-07-1	42.10	1.25	2.15	ND	ND		1	WG2184843
Styrene	100-42-5	104	0.200	0.851	ND	ND		1	WG2184843
1,1,2,2-Tetrachloroethane	79-34-5	168	0.200	1.37	ND	ND		1	WG2184843
Tetrachloroethylene	127-18-4	166	0.200	1.36	ND	ND		1	WG2184843
Tetrahydrofuran	109-99-9	72.10	0.200	0.590	ND	ND		1	WG2184843
Toluene	108-88-3	92.10	0.500	1.88	ND	ND		1	WG2184843
1,2,4-Trichlorobenzene	120-82-1	181	0.630	4.66	ND	ND		1	WG2184843

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	WG2184843
1,1,2-Trichloroethane	79-00-5	133	0.200	1.09	ND	ND		1	WG2184843
Trichloroethylene	79-01-6	131	0.200	1.07	ND	ND		1	WG2184843
1,2,4-Trimethylbenzene	95-63-6	120	0.200	0.982	ND	ND		1	WG2184843
1,3,5-Trimethylbenzene	108-67-8	120	0.200	0.982	ND	ND		1	WG2184843
2,2,4-Trimethylpentane	540-84-1	114.22	0.200	0.934	0.681	3.18		1	WG2184843
Vinyl chloride	75-01-4	62.50	0.200	0.511	ND	ND		1	WG2184843
Vinyl Bromide	593-60-2	106.95	0.200	0.875	ND	ND		1	WG2184843
Vinyl acetate	108-05-4	86.10	0.630	2.22	ND	ND		1	WG2184843
m&p-Xylene	1330-20-7	106	0.400	1.73	ND	ND		1	WG2184843
o-Xylene	95-47-6	106	0.200	0.867	ND	ND		1	WG2184843
TPH (GC/MS) Low Fraction	8006-61-9	101	200	826	ND	ND		1	WG2184843
(S) 1,4-Bromofluorobenzene	*460-00-4*	*175*	*60.0-140*		*99.2*				WG2184843

Method Blank (MB)

(MB) R4009527-3 12/07/23 09:52

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	0.630
Ethanol	0.892	J	0.265	2.50
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) R4009527-3 12/07/23 09:52

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	0.630
m&p-Xylene	U		0.135	0.400
o-Xylene	U		0.0828	0.200
TPH (GC/MS) Low Fraction	U		39.7	200
(S) 1,4-Bromofluorobenzene	*99.6*			*60.0-140*

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

(LCS) R4009527-1 12/07/23 08:34 • (LCSD) R4009527-2 12/07/23 09:14

Analyte	Spike Amount ppbv	LCS Result ppbv	LCSD Result ppbv	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Acetone	3.75	4.09	4.00	109	107	70.0-130			2.22	25
Allyl chloride	3.75	3.99	3.88	106	103	70.0-130			2.80	25
Benzene	3.75	4.03	3.86	107	103	70.0-130			4.31	25
Benzyl Chloride	3.75	4.39	4.06	117	108	70.0-152			7.81	25

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

(LCS) R4009527-1 12/07/23 08:34 • (LCSD) R4009527-2 12/07/23 09:14

Analyte	Spike Amount ppbv	LCS Result ppbv	LCSD Result ppbv	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Bromodichloromethane	3.75	4.14	4.03	110	107	70.0-130			2.69	25
Bromoform	3.75	4.11	4.05	110	108	70.0-130			1.47	25
Bromomethane	3.75	4.23	4.16	113	111	70.0-130			1.67	25
1,3-Butadiene	3.75	4.08	4.05	109	108	70.0-130			0.738	25
Carbon disulfide	3.75	4.38	4.37	117	117	70.0-130			0.229	25
Carbon tetrachloride	3.75	4.14	4.06	110	108	70.0-130			1.95	25
Chlorobenzene	3.75	4.26	4.13	114	110	70.0-130			3.10	25
Chloroethane	3.75	3.85	3.80	103	101	70.0-130			1.31	25
Chloroform	3.75	4.18	4.13	111	110	70.0-130			1.20	25
Chloromethane	3.75	4.58	3.70	122	98.7	70.0-130			21.3	25
2-Chlorotoluene	3.75	4.25	4.14	113	110	70.0-130			2.62	25
Cyclohexane	3.75	4.08	4.05	109	108	70.0-130			0.738	25
Dibromochloromethane	3.75	4.24	4.09	113	109	70.0-130			3.60	25
1,2-Dibromoethane	3.75	4.31	4.14	115	110	70.0-130			4.02	25
1,2-Dichlorobenzene	3.75	4.21	3.88	112	103	70.0-130			8.16	25
1,3-Dichlorobenzene	3.75	4.20	3.92	112	105	70.0-130			6.90	25
1,4-Dichlorobenzene	3.75	4.14	3.90	110	104	70.0-130			5.97	25
1,2-Dichloroethane	3.75	4.05	3.96	108	106	70.0-130			2.25	25
1,1-Dichloroethane	3.75	4.15	4.07	111	109	70.0-130			1.95	25
1,1-Dichloroethene	3.75	4.09	4.01	109	107	70.0-130			1.98	25
cis-1,2-Dichloroethene	3.75	4.08	4.08	109	109	70.0-130			0.000	25
trans-1,2-Dichloroethene	3.75	4.12	4.08	110	109	70.0-130			0.976	25
1,2-Dichloropropane	3.75	4.04	3.89	108	104	70.0-130			3.78	25
cis-1,3-Dichloropropene	3.75	4.19	4.04	112	108	70.0-130			3.65	25
trans-1,3-Dichloropropene	3.75	4.19	4.02	112	107	70.0-130			4.14	25
1,4-Dioxane	3.75	4.03	3.97	107	106	70.0-140			1.50	25
Ethanol	3.75	4.26	4.21	114	112	55.0-148			1.18	25
Ethylbenzene	3.75	4.23	4.19	113	112	70.0-130			0.950	25
4-Ethyltoluene	3.75	4.35	4.28	116	114	70.0-130			1.62	25
Trichlorofluoromethane	3.75	4.77	4.01	127	107	70.0-130			17.3	25
Dichlorodifluoromethane	3.75	4.58	4.03	122	107	64.0-139			12.8	25
1,1,2-Trichlorotrifluoroethane	3.75	4.09	4.02	109	107	70.0-130			1.73	25
1,2-Dichlorotetrafluoroethane	3.75	4.56	3.95	122	105	70.0-130			14.3	25
Heptane	3.75	3.95	3.79	105	101	70.0-130			4.13	25
Hexachloro-1,3-butadiene	3.75	3.48	3.21	92.8	85.6	70.0-151			8.07	25
n-Hexane	3.75	4.20	4.11	112	110	70.0-130			2.17	25
Isopropylbenzene	3.75	4.36	4.32	116	115	70.0-130			0.922	25
Methylene Chloride	3.75	3.96	3.91	106	104	70.0-130			1.27	25
Methyl Butyl Ketone	3.75	4.11	3.90	110	104	70.0-149			5.24	25
2-Butanone (MEK)	3.75	4.02	3.96	107	106	70.0-130			1.50	25

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

(LCS) R4009527-1 12/07/23 08:34 • (LCSD) R4009527-2 12/07/23 09:14

Analyte	Spike Amount ppbv	LCS Result ppbv	LCSD Result ppbv	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
4-Methyl-2-pentanone (MIBK)	3.75	4.25	4.05	113	108	70.0-139			4.82	25
Methyl methacrylate	3.75	4.10	3.97	109	106	70.0-130			3.22	25
MTBE	3.75	4.11	4.09	110	109	70.0-130			0.488	25
Naphthalene	3.75	3.89	3.66	104	97.6	70.0-159			6.09	25
2-Propanol	3.75	4.00	3.90	107	104	70.0-139			2.53	25
Propene	3.75	4.51	3.80	120	101	64.0-144			17.1	25
Styrene	3.75	4.30	4.26	115	114	70.0-130			0.935	25
1,1,2,2-Tetrachloroethane	3.75	4.17	4.06	111	108	70.0-130			2.67	25
Tetrachloroethylene	3.75	4.14	3.94	110	105	70.0-130			4.95	25
Tetrahydrofuran	3.75	4.18	4.10	111	109	70.0-137			1.93	25
Toluene	3.75	4.17	4.02	111	107	70.0-130			3.66	25
1,2,4-Trichlorobenzene	3.75	3.44	3.24	91.7	86.4	70.0-160			5.99	25
1,1,1-Trichloroethane	3.75	4.11	4.05	110	108	70.0-130			1.47	25
1,1,2-Trichloroethane	3.75	4.20	4.03	112	107	70.0-130			4.13	25
Trichloroethylene	3.75	4.09	3.94	109	105	70.0-130			3.74	25
1,2,4-Trimethylbenzene	3.75	4.41	4.08	118	109	70.0-130			7.77	25
1,3,5-Trimethylbenzene	3.75	4.26	4.00	114	107	70.0-130			6.30	25
2,2,4-Trimethylpentane	3.75	4.30	4.25	115	113	70.0-130			1.17	25
Vinyl chloride	3.75	4.14	4.10	110	109	70.0-130			0.971	25
Vinyl Bromide	3.75	4.24	3.84	113	102	70.0-130			9.90	25
Vinyl acetate	3.75	4.03	3.87	107	103	70.0-130			4.05	25
m&p-Xylene	7.50	8.75	8.67	117	116	70.0-130			0.918	25
o-Xylene	3.75	4.28	4.28	114	114	70.0-130			0.000	25
TPH (GC/MS) Low Fraction	188	176	175	93.6	93.1	70.0-130			0.570	25
(S) 1,4-Bromofluorobenzene				*98.7*	*99.9*	*60.0-140*				

Method Blank (MB)

(MB) R4010224-3 12/08/23 11:27

Analyte	MB Result ppbv	MB Qualifier	MB MDL ppbv	MB RDL ppbv
Carbon disulfide	U		0.102	0.200
(S) 1,4-Bromofluorobenzene	*99.4*			*60.0-140*

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

(LCS) R4010224-1 12/08/23 07:51 • (LCSD) R4010224-2 12/08/23 08:33

Analyte	Spike Amount ppbv	LCS Result ppbv	LCSD Result ppbv	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Carbon disulfide	3.75	3.79	3.69	101	98.4	70.0-130			2.67	25
(S) 1,4-Bromofluorobenzene				*99.7*	*100*	*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	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.

D106

Pace® Location Requested (City/State):

Air CHAIN-OF-CUSTODY Analytical Request Document

Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevant fields

LAB USE ONLY- Affix Workorder/Login Label Here

Scan QR code for instructions

Company Name: **NV5 - Wilsonville, OR**

Street Address: **9450 SW Commerce Circle**

City, State Zip:

Customer Project #: **BigBeams-1-04task 10**

Project Name:

Site Collection Info/Facility ID (as applicable): **GEODESPOR-BIGB104**

Time Zone Collected: [ ] AK [✓] PT [ ] MT [ ] CT [ ] ET

Contact/Report To: **Andre DeJonge**

Phone #: **503-968-8787**

E-Mail: **Andre.DeJonge@nv5.com;Erik.Hedberg@nv5.com**

Cc E-Mail: erik.hedberg@nv5.com

Invoice to:

Invoice E-Mail: geoaccounting@nv5.com

Purchase Order # (if applicable):

Quote #:

State origin of sample(s): Oregon

Data Deliverables: [✓] Level II [ ] Level III [ ] Level IV [ ] EQUIS [ ] Other

Regulatory Program (CAA, RCRA, etc.) as applicable:

Rush (Pre-approval required): 2 Day 3 day 5 day Other

Permit # as applicable:

Date Results Requested:

Units for Reporting: (ug/m³) PPBV mg/m³ PPMV

* Matrix Codes (Insert in Matrix box below): Ambient (A), Indoor (I), Soil Vapor (SV), Other (O)

Customer Sample ID	Matrix *	Summa Canister ID	Flow Controller ID	Begin Collection Date	Begin Collection Time	End Collection Date	End Collection Time	Canister Pressure / Vacuum: Start Pressure / Vacuum (in Hg)	Canister Pressure / Vacuum: End Pressure / Vacuum (in Hg)	PUF / FILTER: Duration (minutes)	PUF / FILTER: Flow Rate m³/min or L/min	PUF / FILTER: Total Volume Sampled m³ or L	Analyses Requested: VOCs/GRO TO-15 Summa	Lab Use Only: Sample Comment
VP-1	SV	10591	7041	11/28/23	1149	11/28/23	1156	30	4				X	01
VP-2	SV	7902	10367	"	1207	"	1213	29	4				X	02
VP-3	SV	23687	6437	"	1221	"	1231	30	4				X	Flow Controller error. 03
VP-4	SV	28397	1428	"	1513	"	1518	30	4				X	04

Sample Receipt Checklist

COC Seal Present/Intact: Y N — Airs

COC Signed/Accurate: Y N — Size: ✓1L 6L 1.4L

Bottles arrive intact: Y N — Tage Color: G M P B

Correct bottles used: Y N — Tubing Shunt

T/P#:

Customer Remarks / Special Conditions / Possible Hazards:

VP3 Flow Controller may have not worked properly, and may have stuck at 5 hg.

Collected By:

Printed Name: Andre DeJonge

Signature:

Relinquished by/Company: (Signature) NV5 — Date/Time: 113023

Received by/Company: (Signature)

Relinquished by/Company: (Signature) — Date/Time:

Received by/Company: (Signature)

Relinquished by/Company: (Signature) — Date/Time:

Received by/Company: (Signature)

Relinquished by/Company: (Signature) — Date/Time:

Received by/Company: (Signature) — Date/Time: 12/01/23 0900

Additional Instructions from Pace®:

Coolers: Thermometer ID: Correction Factor (°C): Obs. Temp. (°C): Corrected Temp. (°C):

Date/Time:

Date/Time:

Date/Time:

Tracking Number:

Delivered by: In-Person Courier FedEX UPS Other

Proj. Manager: 110 - Brian Ford

AcctNum / Client ID: GEODESPOR

Table #:

Profile / Template: T241225

Prelog / Bottle Ord. ID: P1037022

U603248

Page: 1 of: 1

Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace® Terms and Conditions found at https://www.pacelabs.com/resource-library/resource/pace-terms-and-conditions/

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1/5/2024
Mr. Kyle Sattler
NV5, Inc. Company
9450 SW Commerce Circle
Suite 300
Wilsonville OR 97070

Project Name: Former Astoria Warehousing
Project #: BigBeams-1-04-05
Workorder #: 2312505

Dear Mr. Kyle Sattler

The following report includes the data for the above referenced project for sample(s) received on 12/20/2023 at Eurofins Air Toxics LLC.

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

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

Regards,

Monica Tran

Project Manager

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WORK ORDER #: 2312505

Work Order Summary

CLIENT:	Mr. Kyle Sattler NV5, Inc. Company 9450 SW Commerce Circle Suite 300 Wilsonville, OR 97070	**BILL TO:**	Accounts Payable 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:	12/20/2023	**CONTACT:**	Monica Tran
DATE COMPLETED:	01/05/2024		

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: 01/05/24

Technical Director

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP – 209222, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP – T104704434-22-18, UT NELAP – CA009332022-14, VA NELAP - 12240, WA ELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program) CA300005-017
Eurofins Environment Testing Northern California, LLC certifies that the test results contained in this report meet all requirements of the 2016 TNI Standard.

LABORATORY NARRATIVE
RAD130 Passive SE by Mod EPA TO-17
NV5, Inc. Company
Workorder# 2312505

Eight Radiello 130 (Solvent) samples were received on December 20, 2023. The laboratory analyzed the charcoal sorbent bed of the passive sampler following modified method EPA TO-17. The VOCs were chemically extracted using carbon disulfide and an aliquot of the extract was injected into a GC/MS for identification and quantification of volatile organic compounds (VOCs).

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

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

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

Receiving Notes

The Chain of Custody (COC) was not relinquished properly. A time was not provided by the field sampler.

Analytical Notes

The uptake rates were corrected based on average field temperatures if provided. In the absence of

field temperatures, the uptake rates determined at 25 deg C were used.

To calculate ug/m3 concentrations in the Lab Blank, a sampling duration of 22765 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.

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#: 2312505-01A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.43	390	170
Hexane	0.10	0.066	0.42	0.28
Ethyl Acetate	0.40	0.22	48	27
2-Butanone (Methyl Ethyl Ketone)	0.20	0.11	18	10
Chloroform	0.10	0.058	2.2	1.3
Cyclohexane	0.10	0.081	0.21	0.17
Carbon Tetrachloride	0.10	0.066	0.41	0.27
Benzene	0.40	0.22	0.55	0.30
Heptane	0.10	0.076	0.21	0.16
Toluene	0.10	0.059	0.94	0.56
Ethyl Benzene	0.10	0.064	0.31	0.20
m,p-Xylene	0.10	0.063	0.90	0.56
o-Xylene	0.10	0.068	0.37	0.25
Styrene	0.10	0.072	0.12	0.086

Client Sample ID: Indoor 2

Lab ID#: 2312505-02A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.43	320	140
Hexane	0.10	0.066	0.36	0.24
Ethyl Acetate	0.40	0.22	41	23
2-Butanone (Methyl Ethyl Ketone)	0.20	0.11	15	8.6
Chloroform	0.10	0.058	1.9	1.1
Cyclohexane	0.10	0.081	0.18	0.14
Carbon Tetrachloride	0.10	0.066	0.35	0.23
Benzene	0.40	0.22	0.50	0.27
Heptane	0.10	0.076	0.18	0.13
Toluene	0.10	0.059	0.80	0.48
Ethyl Benzene	0.10	0.064	0.25	0.16
m,p-Xylene	0.10	0.063	0.76	0.48
o-Xylene	0.10	0.068	0.32	0.22

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

Client Sample ID: Indoor 3

Lab ID#: 2312505-03A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.43	150	66
Hexane	0.10	0.066	0.51	0.34
Ethyl Acetate	0.40	0.22	48	27
2-Butanone (Methyl Ethyl Ketone)	0.20	0.11	16	9.2
Chloroform	0.10	0.058	1.4	0.81
Cyclohexane	0.10	0.081	0.18	0.15
Carbon Tetrachloride	0.10	0.066	0.26	0.17
Benzene	0.40	0.22	0.49	0.27
Heptane	0.10	0.076	0.19	0.15
Toluene	0.10	0.059	0.68	0.40
Tetrachloroethene	0.10	0.074	0.24	0.18
Ethyl Benzene	0.10	0.064	0.36	0.23
m,p-Xylene	0.10	0.063	1.2	0.74
o-Xylene	0.10	0.068	0.47	0.32

Client Sample ID: Indoor 4

Lab ID#: 2312505-04A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.43	190	81
Hexane	0.10	0.066	0.71	0.47
Ethyl Acetate	0.40	0.22	30	17
2-Butanone (Methyl Ethyl Ketone)	0.20	0.11	40	22
Chloroform	0.10	0.058	1.6	0.97
Cyclohexane	0.10	0.081	0.22	0.18
Carbon Tetrachloride	0.10	0.066	0.34	0.22
Benzene	0.40	0.22	0.72	0.40
Heptane	0.10	0.076	0.44	0.34
Toluene	0.10	0.059	1.8	1.0
Tetrachloroethene	0.10	0.074	0.22	0.16
Ethyl Benzene	0.10	0.064	1.3	0.82
m,p-Xylene	0.10	0.063	4.7	2.9
o-Xylene	0.10	0.068	2.4	1.6

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

Client Sample ID: Indoor 4

Lab ID#: 2312505-04A

Styrene	0.10	0.072	0.35	0.25

Client Sample ID: Indoor 5

Lab ID#: 2312505-05A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.43	100	43
Hexane	0.10	0.066	0.41	0.28
Ethyl Acetate	0.40	0.22	46	26
2-Butanone (Methyl Ethyl Ketone)	0.20	0.11	14	8.0
Chloroform	0.10	0.058	1.1	0.62
Cyclohexane	0.10	0.081	0.19	0.15
Carbon Tetrachloride	0.10	0.066	0.29	0.19
Benzene	0.40	0.22	0.49	0.27
Heptane	0.10	0.076	0.22	0.17
Toluene	0.10	0.059	0.56	0.33
Ethyl Benzene	0.10	0.064	0.20	0.13
m,p-Xylene	0.10	0.063	0.62	0.39
o-Xylene	0.10	0.068	0.25	0.17
Styrene	0.10	0.072	0.10	0.074

Client Sample ID: Indoor 6

Lab ID#: 2312505-06A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.43	200	88
Hexane	0.10	0.066	0.64	0.43
Ethyl Acetate	0.40	0.22	91	51
2-Butanone (Methyl Ethyl Ketone)	0.20	0.11	26	14
Chloroform	0.10	0.058	1.7	1.0
Cyclohexane	0.10	0.081	0.23	0.19
Carbon Tetrachloride	0.10	0.066	0.35	0.23
Benzene	0.40	0.22	0.64	0.35
Heptane	0.10	0.076	0.22	0.16

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

Client Sample ID: Indoor 6

Lab ID#: 2312505-06A

Toluene	0.10	0.059	0.70	0.42
Tetrachloroethene	0.10	0.074	0.16	0.12
Ethyl Benzene	0.10	0.064	0.28	0.18
m,p-Xylene	0.10	0.063	0.90	0.57
o-Xylene	0.10	0.068	0.37	0.25
Styrene	0.10	0.072	0.11	0.082

Client Sample ID: Indoor 7

Lab ID#: 2312505-07A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.43	180	79
Hexane	0.10	0.066	0.54	0.36
Ethyl Acetate	0.40	0.22	54	30
2-Butanone (Methyl Ethyl Ketone)	0.20	0.11	17	9.6
Chloroform	0.10	0.058	1.4	0.84
Cyclohexane	0.10	0.081	0.17	0.14
Carbon Tetrachloride	0.10	0.066	0.27	0.18
Benzene	0.40	0.22	0.50	0.27
Heptane	0.10	0.076	0.19	0.14
Toluene	0.10	0.059	0.68	0.40
Tetrachloroethene	0.10	0.074	0.19	0.14
Ethyl Benzene	0.10	0.064	0.29	0.19
m,p-Xylene	0.10	0.063	0.95	0.59
o-Xylene	0.10	0.068	0.38	0.26

Client Sample ID: Background

Lab ID#: 2312505-08A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.43	1.5	0.65
Hexane	0.10	0.066	0.16	0.10
Ethyl Acetate	0.40	0.22	2.0	1.1
2-Butanone (Methyl Ethyl Ketone)	0.20	0.11	1.1	0.62

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

Client Sample ID: Background

Lab ID#: 2312505-08A

Carbon Tetrachloride	0.10	0.066	0.30	0.20
Benzene	0.40	0.22	0.49	0.27
Heptane	0.10	0.076	0.11	0.081
Toluene	0.10	0.059	0.45	0.27
m,p-Xylene	0.10	0.063	0.23	0.14

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Client Sample ID: Indoor 1

Lab ID#: 2312505-01A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18122712sim**	**Date of Collection: 12/15/23 12:05:00 P**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/27/23 01:09 PM**	
		Date of Extraction: 12/27/23	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.43	390	170
Methyl tert-butyl ether	0.10	0.068	Not Detected	Not Detected
Hexane	0.10	0.066	0.42	0.28
Ethyl Acetate	0.40	0.22	48	27
2-Butanone (Methyl Ethyl Ketone)	0.20	0.11	18	10
Chloroform	0.10	0.058	2.2	1.3
1,1,1-Trichloroethane	0.10	0.071	Not Detected	Not Detected
Cyclohexane	0.10	0.081	0.21	0.17
Carbon Tetrachloride	0.10	0.066	0.41	0.27
Benzene	0.40	0.22	0.55	0.30
1,2-Dichloroethane	0.10	0.057	Not Detected	Not Detected
Heptane	0.10	0.076	0.21	0.16
Trichloroethene	0.10	0.064	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.13	Not Detected	Not Detected
Toluene	0.10	0.059	0.94	0.56
Tetrachloroethene	0.10	0.074	Not Detected	Not Detected
Chlorobenzene	0.10	0.064	Not Detected	Not Detected
Ethyl Benzene	0.10	0.064	0.31	0.20
m,p-Xylene	0.10	0.063	0.90	0.56
o-Xylene	0.10	0.068	0.37	0.25
Styrene	0.10	0.072	0.12	0.086
Propylbenzene	0.10	0.077	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.086	Not Detected	Not Detected
Naphthalene	0.10	0.18	Not Detected	Not Detected

Temperature = 77.0F , duration time = 22765 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130

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Client Sample ID: Indoor 2

Lab ID#: 2312505-02A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18122713sim**	**Date of Collection: 12/15/23 12:10:00 P**
Dil. Factor:	**1.00**	**Date of Analysis: 12/27/23 01:36 PM**
		Date of Extraction: 12/27/23

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.43	320	140
Methyl tert-butyl ether	0.10	0.068	Not Detected	Not Detected
Hexane	0.10	0.066	0.36	0.24
Ethyl Acetate	0.40	0.22	41	23
2-Butanone (Methyl Ethyl Ketone)	0.20	0.11	15	8.6
Chloroform	0.10	0.058	1.9	1.1
1,1,1-Trichloroethane	0.10	0.071	Not Detected	Not Detected
Cyclohexane	0.10	0.081	0.18	0.14
Carbon Tetrachloride	0.10	0.066	0.35	0.23
Benzene	0.40	0.22	0.50	0.27
1,2-Dichloroethane	0.10	0.057	Not Detected	Not Detected
Heptane	0.10	0.076	0.18	0.13
Trichloroethene	0.10	0.064	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.13	Not Detected	Not Detected
Toluene	0.10	0.059	0.80	0.48
Tetrachloroethene	0.10	0.074	Not Detected	Not Detected
Chlorobenzene	0.10	0.064	Not Detected	Not Detected
Ethyl Benzene	0.10	0.064	0.25	0.16
m,p-Xylene	0.10	0.063	0.76	0.48
o-Xylene	0.10	0.068	0.32	0.22
Styrene	0.10	0.072	Not Detected	Not Detected
Propylbenzene	0.10	0.077	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.086	Not Detected	Not Detected
Naphthalene	0.10	0.18	Not Detected	Not Detected

Temperature = 77.0F , duration time = 22765 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130

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Client Sample ID: Indoor 3

Lab ID#: 2312505-03A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18122714sim**	**Date of Collection: 12/15/23 12:15:00 P**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/27/23 02:04 PM**	
		Date of Extraction: 12/27/23	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.43	150	66
Methyl tert-butyl ether	0.10	0.068	Not Detected	Not Detected
Hexane	0.10	0.066	0.51	0.34
Ethyl Acetate	0.40	0.22	48	27
2-Butanone (Methyl Ethyl Ketone)	0.20	0.11	16	9.2
Chloroform	0.10	0.058	1.4	0.81
1,1,1-Trichloroethane	0.10	0.071	Not Detected	Not Detected
Cyclohexane	0.10	0.081	0.18	0.15
Carbon Tetrachloride	0.10	0.066	0.26	0.17
Benzene	0.40	0.22	0.49	0.27
1,2-Dichloroethane	0.10	0.057	Not Detected	Not Detected
Heptane	0.10	0.076	0.19	0.15
Trichloroethene	0.10	0.064	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.13	Not Detected	Not Detected
Toluene	0.10	0.059	0.68	0.40
Tetrachloroethene	0.10	0.074	0.24	0.18
Chlorobenzene	0.10	0.064	Not Detected	Not Detected
Ethyl Benzene	0.10	0.064	0.36	0.23
m,p-Xylene	0.10	0.063	1.2	0.74
o-Xylene	0.10	0.068	0.47	0.32
Styrene	0.10	0.072	Not Detected	Not Detected
Propylbenzene	0.10	0.077	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.086	Not Detected	Not Detected
Naphthalene	0.10	0.18	Not Detected	Not Detected

Temperature = 77.0F , duration time = 22765 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	103	70-130

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Client Sample ID: Indoor 4

Lab ID#: 2312505-04A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18122715sim**	**Date of Collection: 12/15/23 12:20:00 P**
Dil. Factor:	**1.00**	**Date of Analysis: 12/27/23 02:32 PM**
		Date of Extraction: 12/27/23

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.43	190	81
Methyl tert-butyl ether	0.10	0.068	Not Detected	Not Detected
Hexane	0.10	0.066	0.71	0.47
Ethyl Acetate	0.40	0.22	30	17
2-Butanone (Methyl Ethyl Ketone)	0.20	0.11	40	22
Chloroform	0.10	0.058	1.6	0.97
1,1,1-Trichloroethane	0.10	0.071	Not Detected	Not Detected
Cyclohexane	0.10	0.081	0.22	0.18
Carbon Tetrachloride	0.10	0.066	0.34	0.22
Benzene	0.40	0.22	0.72	0.40
1,2-Dichloroethane	0.10	0.057	Not Detected	Not Detected
Heptane	0.10	0.076	0.44	0.34
Trichloroethene	0.10	0.064	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.13	Not Detected	Not Detected
Toluene	0.10	0.059	1.8	1.0
Tetrachloroethene	0.10	0.074	0.22	0.16
Chlorobenzene	0.10	0.064	Not Detected	Not Detected
Ethyl Benzene	0.10	0.064	1.3	0.82
m,p-Xylene	0.10	0.063	4.7	2.9
o-Xylene	0.10	0.068	2.4	1.6
Styrene	0.10	0.072	0.35	0.25
Propylbenzene	0.10	0.077	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.086	Not Detected	Not Detected
Naphthalene	0.10	0.18	Not Detected	Not Detected

Temperature = 77.0F , duration time = 22765 minutes.

Container Type: Radiello 130 (Solvent)

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

eurofins | Air Toxics

Client Sample ID: Indoor 5

Lab ID#: 2312505-05A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18122716sim**	**Date of Collection: 12/15/23 12:25:00 P**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/27/23 02:59 PM**	
		Date of Extraction: 12/27/23	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.43	100	43
Methyl tert-butyl ether	0.10	0.068	Not Detected	Not Detected
Hexane	0.10	0.066	0.41	0.28
Ethyl Acetate	0.40	0.22	46	26
2-Butanone (Methyl Ethyl Ketone)	0.20	0.11	14	8.0
Chloroform	0.10	0.058	1.1	0.62
1,1,1-Trichloroethane	0.10	0.071	Not Detected	Not Detected
Cyclohexane	0.10	0.081	0.19	0.15
Carbon Tetrachloride	0.10	0.066	0.29	0.19
Benzene	0.40	0.22	0.49	0.27
1,2-Dichloroethane	0.10	0.057	Not Detected	Not Detected
Heptane	0.10	0.076	0.22	0.17
Trichloroethene	0.10	0.064	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.13	Not Detected	Not Detected
Toluene	0.10	0.059	0.56	0.33
Tetrachloroethene	0.10	0.074	Not Detected	Not Detected
Chlorobenzene	0.10	0.064	Not Detected	Not Detected
Ethyl Benzene	0.10	0.064	0.20	0.13
m,p-Xylene	0.10	0.063	0.62	0.39
o-Xylene	0.10	0.068	0.25	0.17
Styrene	0.10	0.072	0.10	0.074
Propylbenzene	0.10	0.077	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.086	Not Detected	Not Detected
Naphthalene	0.10	0.18	Not Detected	Not Detected

Temperature = 77.0F , duration time = 22765 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130

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Client Sample ID: Indoor 6

Lab ID#: 2312505-06A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18122717sim**	**Date of Collection: 12/15/23 12:30:00 P**
Dil. Factor:	**1.00**	**Date of Analysis: 12/27/23 03:27 PM**
		Date of Extraction: 12/27/23

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.43	200	88
Methyl tert-butyl ether	0.10	0.068	Not Detected	Not Detected
Hexane	0.10	0.066	0.64	0.43
Ethyl Acetate	0.40	0.22	91	51
2-Butanone (Methyl Ethyl Ketone)	0.20	0.11	26	14
Chloroform	0.10	0.058	1.7	1.0
1,1,1-Trichloroethane	0.10	0.071	Not Detected	Not Detected
Cyclohexane	0.10	0.081	0.23	0.19
Carbon Tetrachloride	0.10	0.066	0.35	0.23
Benzene	0.40	0.22	0.64	0.35
1,2-Dichloroethane	0.10	0.057	Not Detected	Not Detected
Heptane	0.10	0.076	0.22	0.16
Trichloroethene	0.10	0.064	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.13	Not Detected	Not Detected
Toluene	0.10	0.059	0.70	0.42
Tetrachloroethene	0.10	0.074	0.16	0.12
Chlorobenzene	0.10	0.064	Not Detected	Not Detected
Ethyl Benzene	0.10	0.064	0.28	0.18
m,p-Xylene	0.10	0.063	0.90	0.57
o-Xylene	0.10	0.068	0.37	0.25
Styrene	0.10	0.072	0.11	0.082
Propylbenzene	0.10	0.077	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.086	Not Detected	Not Detected
Naphthalene	0.10	0.18	Not Detected	Not Detected

Temperature = 77.0F , duration time = 22765 minutes.

Container Type: Radiello 130 (Solvent)

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

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Client Sample ID: Indoor 7

Lab ID#: 2312505-07A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18122718sim**	**Date of Collection: 12/15/23 12:35:00 P**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/27/23 03:54 PM**	
		Date of Extraction: 12/27/23	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.43	180	79
Methyl tert-butyl ether	0.10	0.068	Not Detected	Not Detected
Hexane	0.10	0.066	0.54	0.36
Ethyl Acetate	0.40	0.22	54	30
2-Butanone (Methyl Ethyl Ketone)	0.20	0.11	17	9.6
Chloroform	0.10	0.058	1.4	0.84
1,1,1-Trichloroethane	0.10	0.071	Not Detected	Not Detected
Cyclohexane	0.10	0.081	0.17	0.14
Carbon Tetrachloride	0.10	0.066	0.27	0.18
Benzene	0.40	0.22	0.50	0.27
1,2-Dichloroethane	0.10	0.057	Not Detected	Not Detected
Heptane	0.10	0.076	0.19	0.14
Trichloroethene	0.10	0.064	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.13	Not Detected	Not Detected
Toluene	0.10	0.059	0.68	0.40
Tetrachloroethene	0.10	0.074	0.19	0.14
Chlorobenzene	0.10	0.064	Not Detected	Not Detected
Ethyl Benzene	0.10	0.064	0.29	0.19
m,p-Xylene	0.10	0.063	0.95	0.59
o-Xylene	0.10	0.068	0.38	0.26
Styrene	0.10	0.072	Not Detected	Not Detected
Propylbenzene	0.10	0.077	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.086	Not Detected	Not Detected
Naphthalene	0.10	0.18	Not Detected	Not Detected

Temperature = 77.0F , duration time = 22765 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130

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Client Sample ID: Background

Lab ID#: 2312505-08A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18122719sim**	**Date of Collection: 12/15/23 12:00:00 P**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/27/23 04:22 PM**	
		Date of Extraction: 12/27/23	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.43	1.5	0.65
Methyl tert-butyl ether	0.10	0.068	Not Detected	Not Detected
Hexane	0.10	0.066	0.16	0.10
Ethyl Acetate	0.40	0.22	2.0	1.1
2-Butanone (Methyl Ethyl Ketone)	0.20	0.11	1.1	0.62
Chloroform	0.10	0.058	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.071	Not Detected	Not Detected
Cyclohexane	0.10	0.081	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.066	0.30	0.20
Benzene	0.40	0.22	0.49	0.27
1,2-Dichloroethane	0.10	0.057	Not Detected	Not Detected
Heptane	0.10	0.076	0.11	0.081
Trichloroethene	0.10	0.064	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.13	Not Detected	Not Detected
Toluene	0.10	0.059	0.45	0.27
Tetrachloroethene	0.10	0.074	Not Detected	Not Detected
Chlorobenzene	0.10	0.064	Not Detected	Not Detected
Ethyl Benzene	0.10	0.064	Not Detected	Not Detected
m,p-Xylene	0.10	0.063	0.23	0.14
o-Xylene	0.10	0.068	Not Detected	Not Detected
Styrene	0.10	0.072	Not Detected	Not Detected
Propylbenzene	0.10	0.077	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.086	Not Detected	Not Detected
Naphthalene	0.10	0.18	Not Detected	Not Detected

Temperature = 77.0F , duration time = 22765 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	101	70-130

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Client Sample ID: Lab Blank

Lab ID#: 2312505-09A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18122710sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/27/23 11:52 AM**	
		Date of Extraction: 12/27/23	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.43	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.068	Not Detected	Not Detected
Hexane	0.10	0.066	Not Detected	Not Detected
Ethyl Acetate	0.40	0.22	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.11	Not Detected	Not Detected
Chloroform	0.10	0.058	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.071	Not Detected	Not Detected
Cyclohexane	0.10	0.081	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.066	Not Detected	Not Detected
Benzene	0.40	0.22	Not Detected	Not Detected
1,2-Dichloroethane	0.10	0.057	Not Detected	Not Detected
Heptane	0.10	0.076	Not Detected	Not Detected
Trichloroethene	0.10	0.064	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.13	Not Detected	Not Detected
Toluene	0.10	0.059	Not Detected	Not Detected
Tetrachloroethene	0.10	0.074	Not Detected	Not Detected
Chlorobenzene	0.10	0.064	Not Detected	Not Detected
Ethyl Benzene	0.10	0.064	Not Detected	Not Detected
m,p-Xylene	0.10	0.063	Not Detected	Not Detected
o-Xylene	0.10	0.068	Not Detected	Not Detected
Styrene	0.10	0.072	Not Detected	Not Detected
Propylbenzene	0.10	0.077	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.086	Not Detected	Not Detected
Naphthalene	0.10	0.18	Not Detected	Not Detected

Temperature = 77.0F , duration time = 22765 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	101	70-130

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Client Sample ID: CCV

Lab ID#: 2312505-10A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18122705sim**	**Date of Collection: NA**
Dil. Factor:	**1.00**	**Date of Analysis: 12/27/23 09:18 AM**
		Date of Extraction: NA

Compound	%Recovery
Ethanol	117
Methyl tert-butyl ether	96
Hexane	92
Ethyl Acetate	94
2-Butanone (Methyl Ethyl Ketone)	95
Chloroform	97
1,1,1-Trichloroethane	94
Cyclohexane	94
Carbon Tetrachloride	97
Benzene	98
1,2-Dichloroethane	95
Heptane	95
Trichloroethene	97
4-Methyl-2-pentanone	97
Toluene	97
Tetrachloroethene	100
Chlorobenzene	99
Ethyl Benzene	97
m,p-Xylene	89
o-Xylene	97
Styrene	96
Propylbenzene	95
1,4-Dichlorobenzene	95
Naphthalene	77

Container Type: NA - Not Applicable

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

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Client Sample ID: LCS

Lab ID#: 2312505-11A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18122707sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/27/23 10:14 AM**	
		Date of Extraction: 12/27/23	

Compound	%Recovery	Method Limits
Ethanol	41 Q	50-130
Methyl tert-butyl ether	98	70-130
Hexane	96	70-130
Ethyl Acetate	93	70-130
2-Butanone (Methyl Ethyl Ketone)	84	70-130
Chloroform	93	70-130
1,1,1-Trichloroethane	97	70-130
Cyclohexane	102	70-130
Carbon Tetrachloride	99	70-130
Benzene	95	70-130
1,2-Dichloroethane	93	70-130
Heptane	100	70-130
Trichloroethene	98	70-130
4-Methyl-2-pentanone	95	70-130
Toluene	93	70-130
Tetrachloroethene	96	70-130
Chlorobenzene	89	70-130
Ethyl Benzene	95	70-130
m,p-Xylene	84	70-130
o-Xylene	85	70-130
Styrene	54	20-100
Propylbenzene	96	70-130
1,4-Dichlorobenzene	70	50-110
Naphthalene	9.5	5-80

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130

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Client Sample ID: LCSD

Lab ID#: 2312505-11AA

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18122708sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/27/23 10:57 AM**	
		Date of Extraction: 12/27/23	

Compound	%Recovery	Method Limits
Ethanol	48 Q	50-130
Methyl tert-butyl ether	105	70-130
Hexane	100	70-130
Ethyl Acetate	99	70-130
2-Butanone (Methyl Ethyl Ketone)	90	70-130
Chloroform	97	70-130
1,1,1-Trichloroethane	101	70-130
Cyclohexane	104	70-130
Carbon Tetrachloride	101	70-130
Benzene	98	70-130
1,2-Dichloroethane	96	70-130
Heptane	101	70-130
Trichloroethene	100	70-130
4-Methyl-2-pentanone	96	70-130
Toluene	94	70-130
Tetrachloroethene	96	70-130
Chlorobenzene	89	70-130
Ethyl Benzene	95	70-130
m,p-Xylene	83	70-130
o-Xylene	85	70-130
Styrene	53	20-100
Propylbenzene	95	70-130
1,4-Dichlorobenzene	69	50-110
Naphthalene	9.0	5-80

Q = Exceeds Quality Control limits.

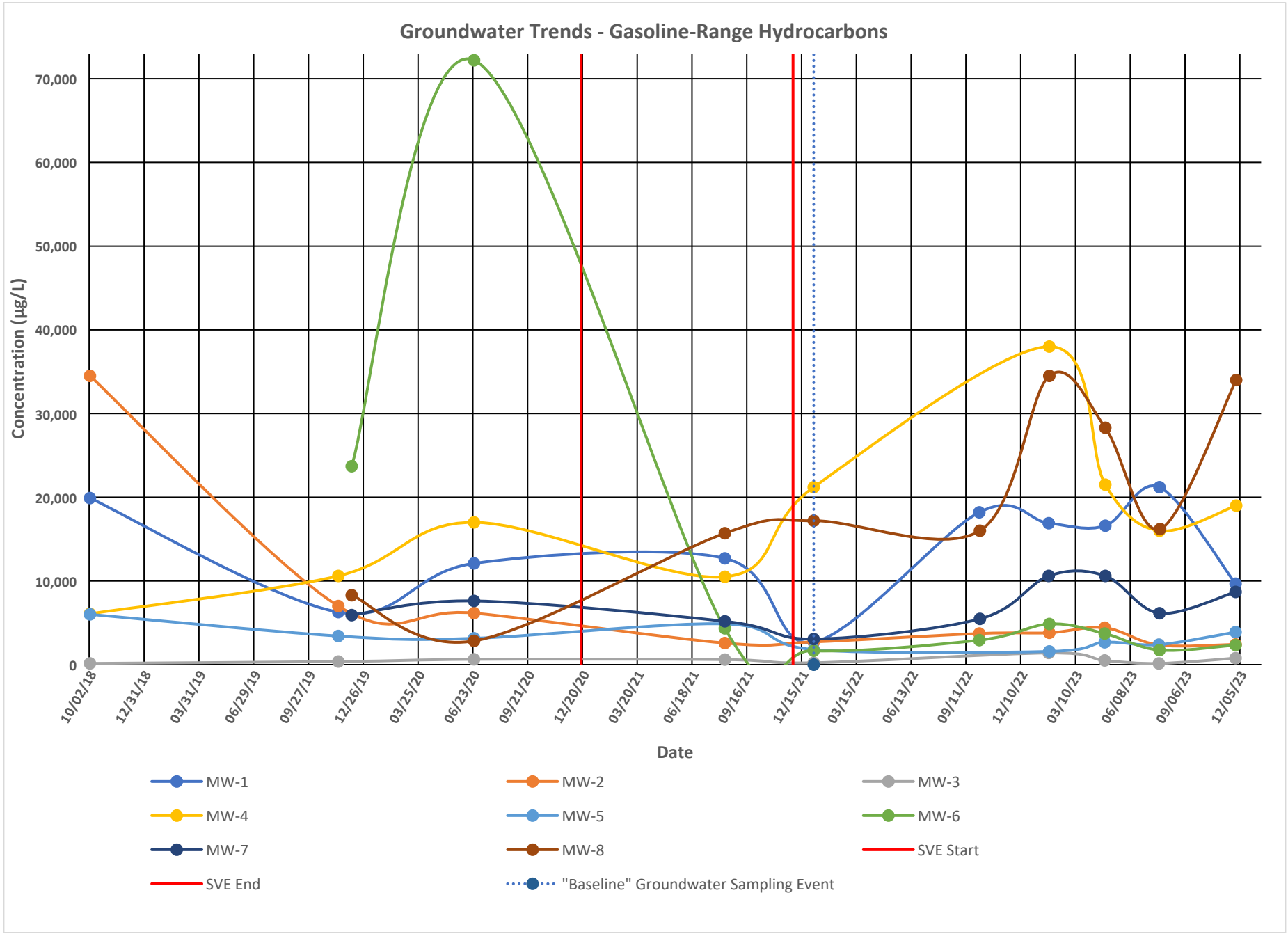
Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	103	70-130

ATTACHMENT C

ATTACHMENT C

GROUNDWATER CONCENTRATION TRENDS

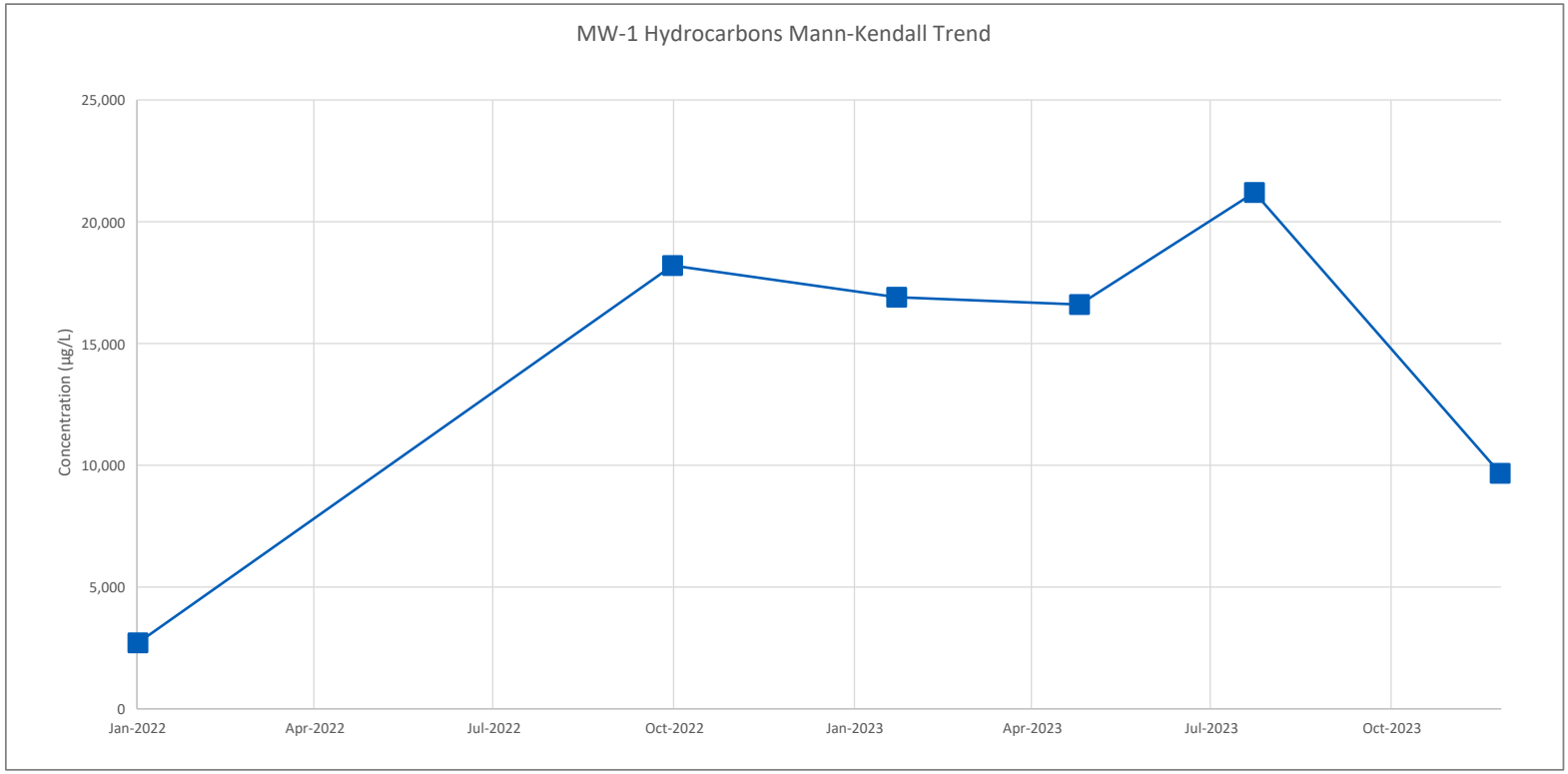

Groundwater Trends - Gasoline-Range Hydrocarbons
Concentration (µg/L)
70,000
60,000
50,000
40,000
30,000
20,000
10,000
0
10/02/18
12/31/18
03/31/19
06/29/19
09/27/19
12/26/19
03/25/20
06/23/20
09/21/20
12/20/20
03/20/21
06/18/21
09/16/21
12/15/21
03/15/22
06/13/22
09/11/22
12/10/22
03/10/23
06/08/23
09/06/23
12/05/23
Date
MW-1
MW-2
MW-3
MW-4
MW-5
MW-6
MW-7
MW-8
SVE Start
SVE End
"Baseline" Groundwater Sampling Event

Data Set ID:	MW-1 Hydrocarbons	
Units:	µg/L	
Event #	Date	Value
1	**01/04/2022**	**2710**
2	**10/03/2022**	**18200**
3	**01/25/2023**	**16900**
4	**04/28/2023**	**16600**
5	**07/26/2023**	**21200**
6	**11/28/2023**	9670

Mann-Kendall Results	
n:	6
S:	1
SES:	5.32
Z:	0.00
Confidence Factor:	50%
Coefficient of Variation:	0.48
Conclusion:	More Data Needed

Mann-Kendall	Statistical Confidence	Trend Conclusion
S > 0	≥ 90%	Increasing
S > 0	< 90%	More Data Needed
S ≤ 0	< 90% and COV ≥ 1	More Data Needed
S ≤ 0	< 90% COV < 1	Stable
S < 0	≥ 90%	Decreasing

Trend Threshold:	90%

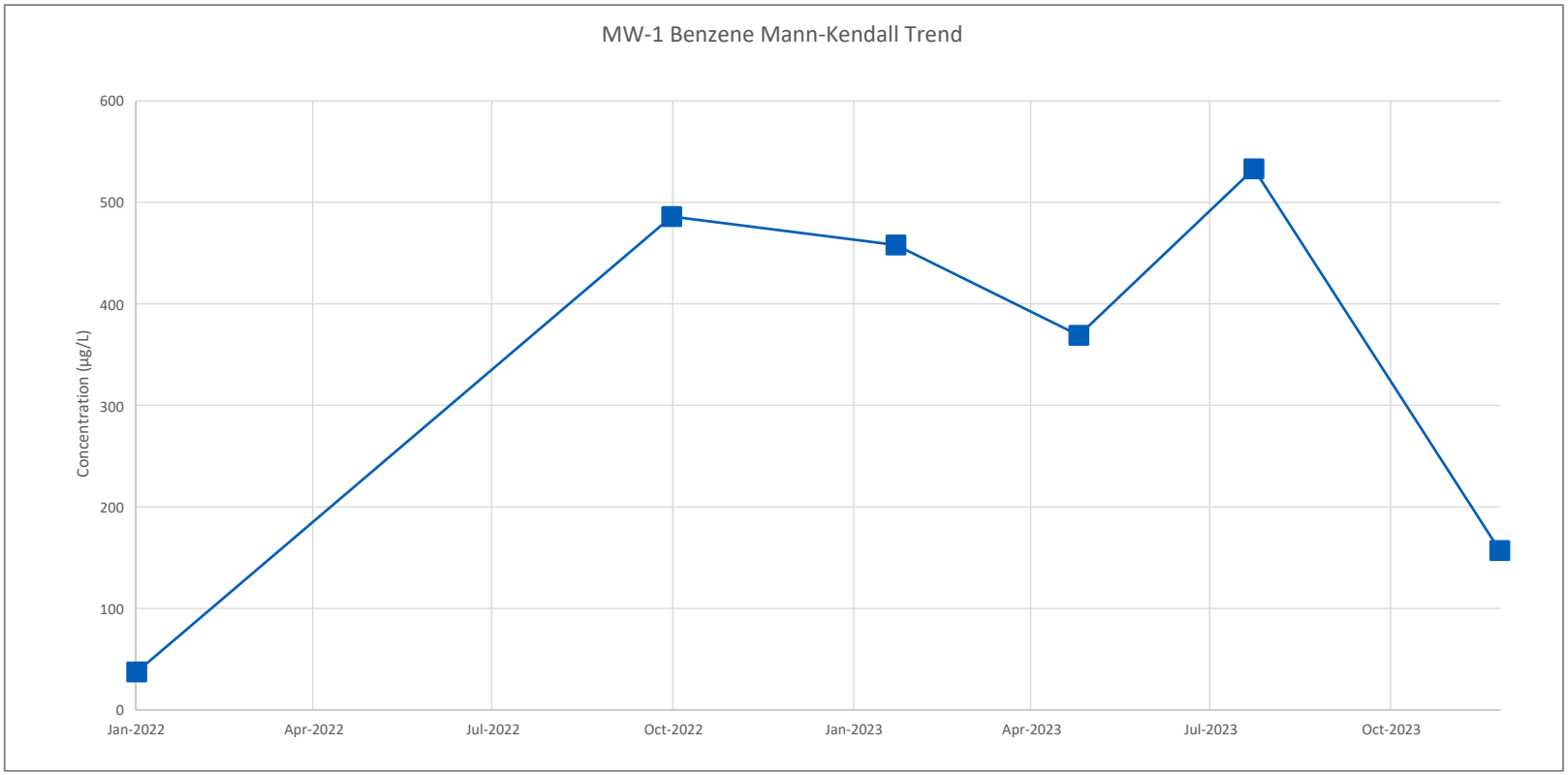


Data Set ID:	MW-1 Benzene	
Units:	µg/L	
Event #	Date	Value
1	01/04/2022	37.4
2	10/03/2022	486.0
3	01/25/2023	458.0
4	04/28/2023	369.0
5	07/26/2023	533.0
6	11/28/2023	157.0

Mann-Kendall Results	
n:	6
S:	1
SES:	5.32
Z:	0.00
Confidence Factor:	50%
Coefficient of Variation:	0.59
Conclusion:	More Data Needed

Mann-Kendall	Statistical Confidence	Trend Conclusion
S > 0	≥ 90%	Increasing
S > 0	< 90%	More Data Needed
S ≤ 0	< 90% and COV ≥ 1	More Data Needed
S ≤ 0	< 90% COV < 1	Stable
S < 0	≥ 90%	Decreasing

Trend Threshold:	90%

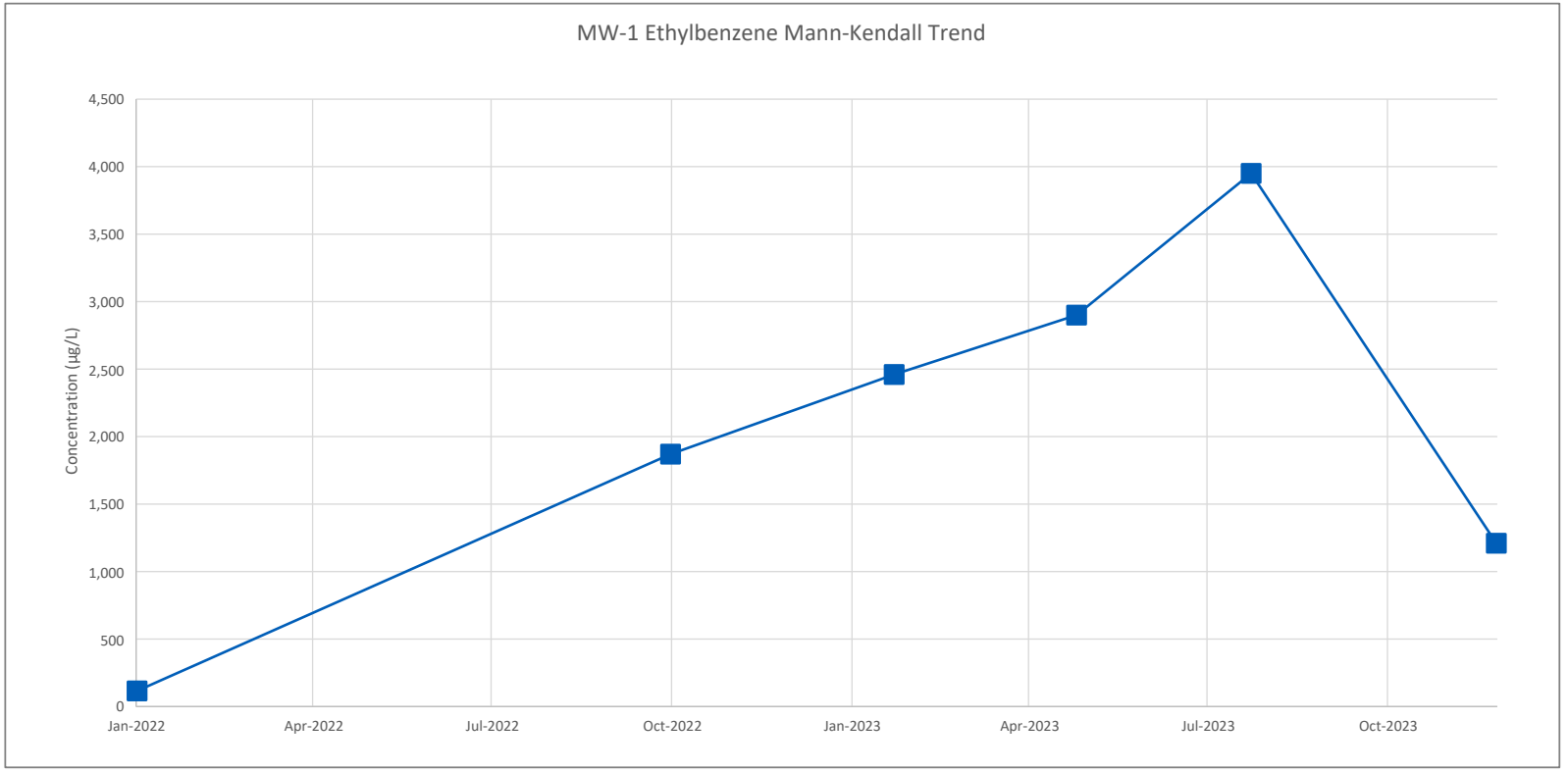


Data Set ID:	MW-1 Ethylbenzene	
Units:	µg/L	
Event #	Date	Value
1	01/04/2022	116
2	10/03/2022	1870
3	01/25/2023	2460
4	04/28/2023	2900
5	07/26/2023	3950
6	11/28/2023	1210

Mann-Kendall Results	
n:	6
S:	7
SES:	5.32
Z:	1.13
Confidence Factor:	86%
Coefficient of Variation:	0.64
Conclusion:	More Data Needed

Mann-Kendall	Statistical Confidence	Trend Conclusion
S > 0	≥ 90%	Increasing
S > 0	< 90%	More Data Needed
S ≤ 0	< 90% and COV ≥ 1	More Data Needed
S ≤ 0	< 90% COV < 1	Stable
S < 0	≥ 90%	Decreasing

Trend Threshold:	90%

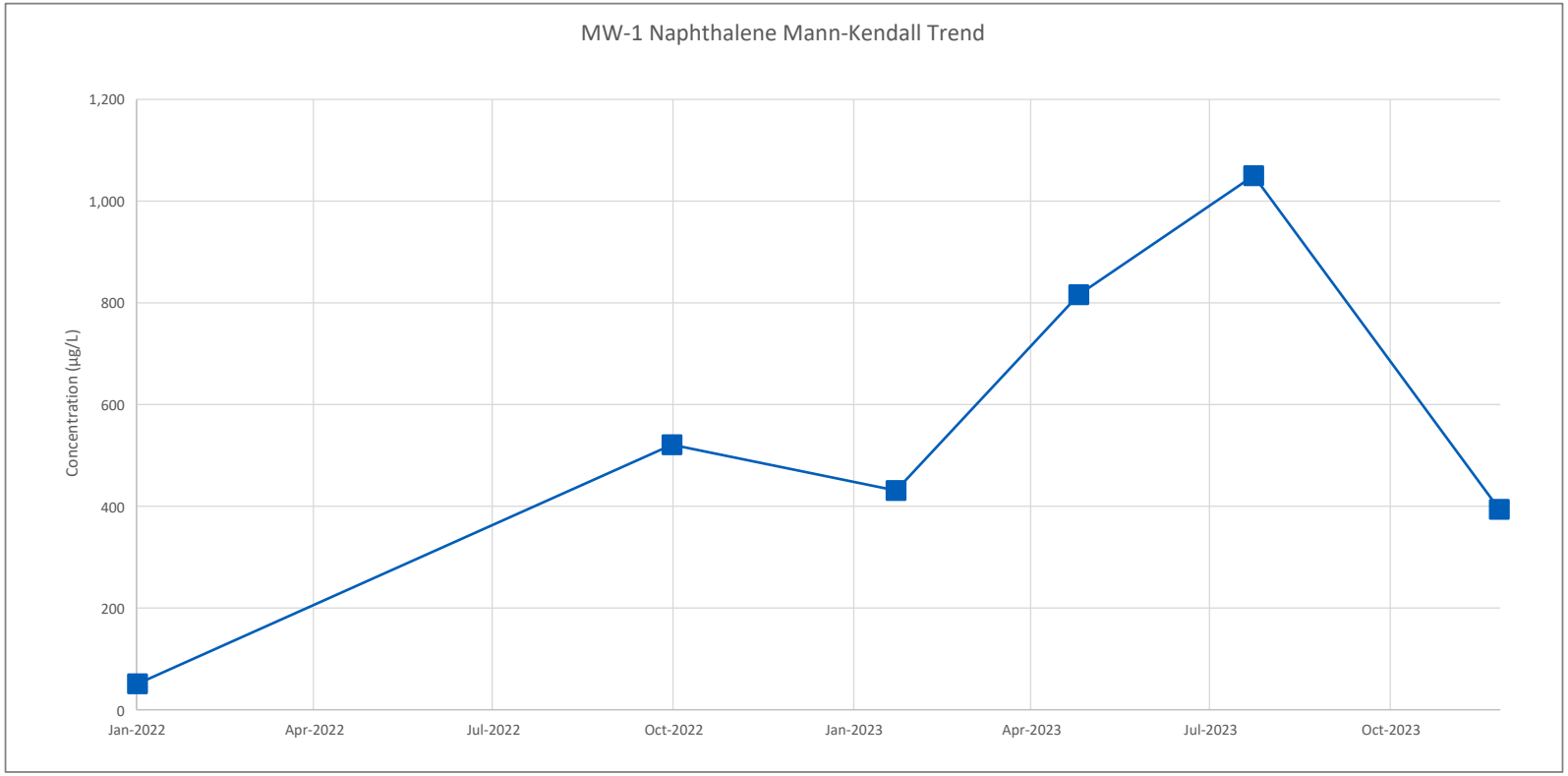


Data Set ID:	MW-1 Naphthalene	
Units:	µg/L	
Event #	Date	Value
1	**01/04/2022**	51.0
2	**10/03/2022**	521
3	**01/25/2023**	431
4	**04/28/2023**	816
5	**07/26/2023**	1050
6	**11/28/2023**	394

Mann-Kendall Results	
n:	6
S:	5
SES:	5.32
Z:	0.75
Confidence Factor:	77%
Coefficient of Variation:	0.64
Conclusion:	More Data Needed

Mann-Kendall	Statistical Confidence	Trend Conclusion
S > 0	≥ 90%	Increasing
S > 0	< 90%	More Data Needed
S ≤ 0	< 90% and COV ≥ 1	More Data Needed
S ≤ 0	< 90% COV < 1	Stable
S < 0	≥ 90%	Decreasing

Trend Threshold:	90%

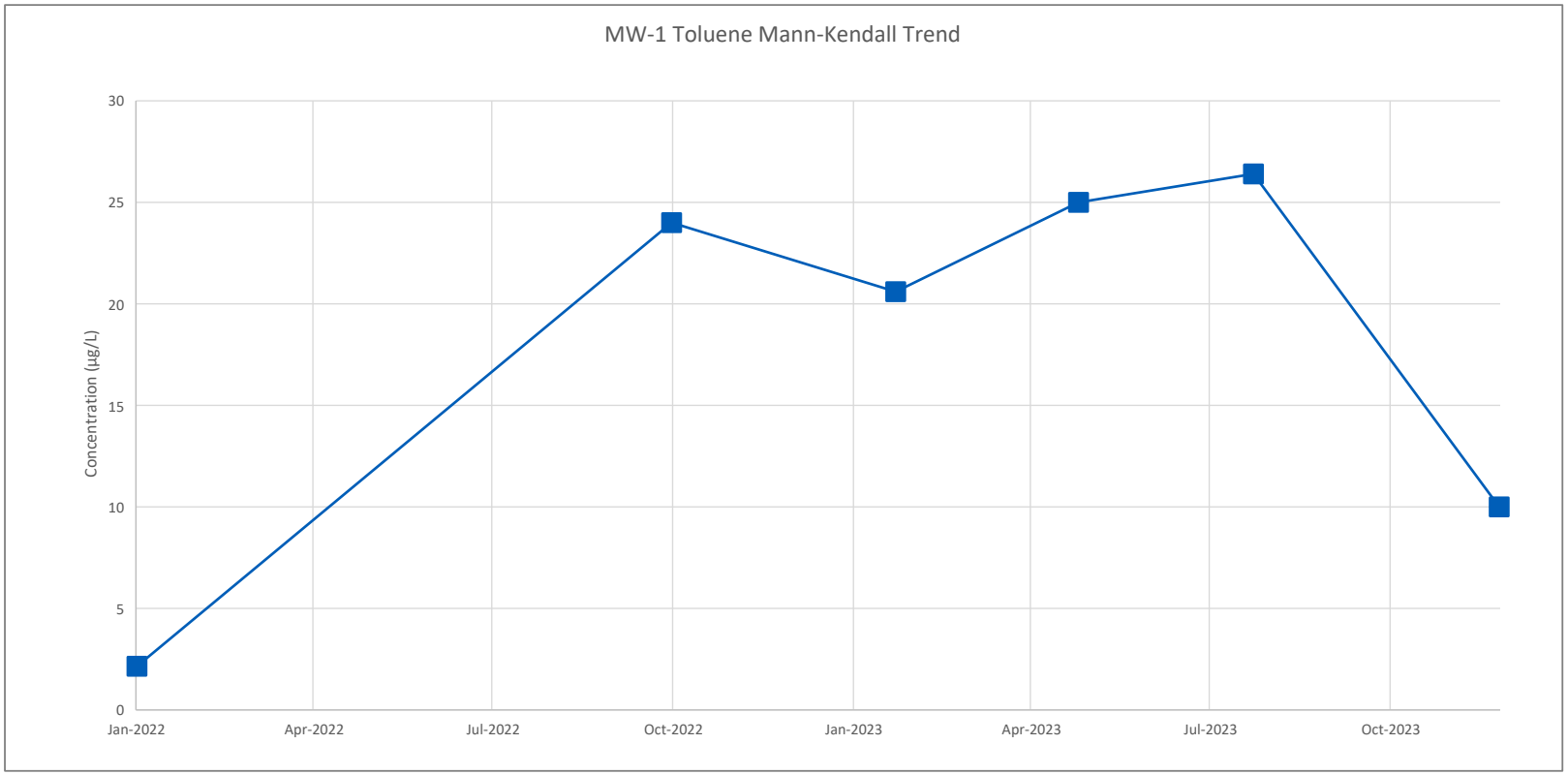


Data Set ID:	MW-1 Toluene	
Units:	µg/L	
Event #	Date	Value
1	01/04/2022	2.2
2	10/03/2022	24.0
3	01/25/2023	20.6
4	04/28/2023	25.0
5	07/26/2023	26.4
6	11/28/2023	10.0

Mann-Kendall Results	
n:	6
S:	5
SES:	5.32
Z:	0.75
Confidence Factor:	77%
Coefficient of Variation:	0.54
Conclusion:	More Data Needed

Mann-Kendall	Statistical Confidence	Trend Conclusion
S > 0	≥ 90%	Increasing
S > 0	< 90%	More Data Needed
S ≤ 0	< 90% and COV ≥ 1	More Data Needed
S ≤ 0	< 90% COV < 1	Stable
S < 0	≥ 90%	Decreasing

Trend Threshold:	90%

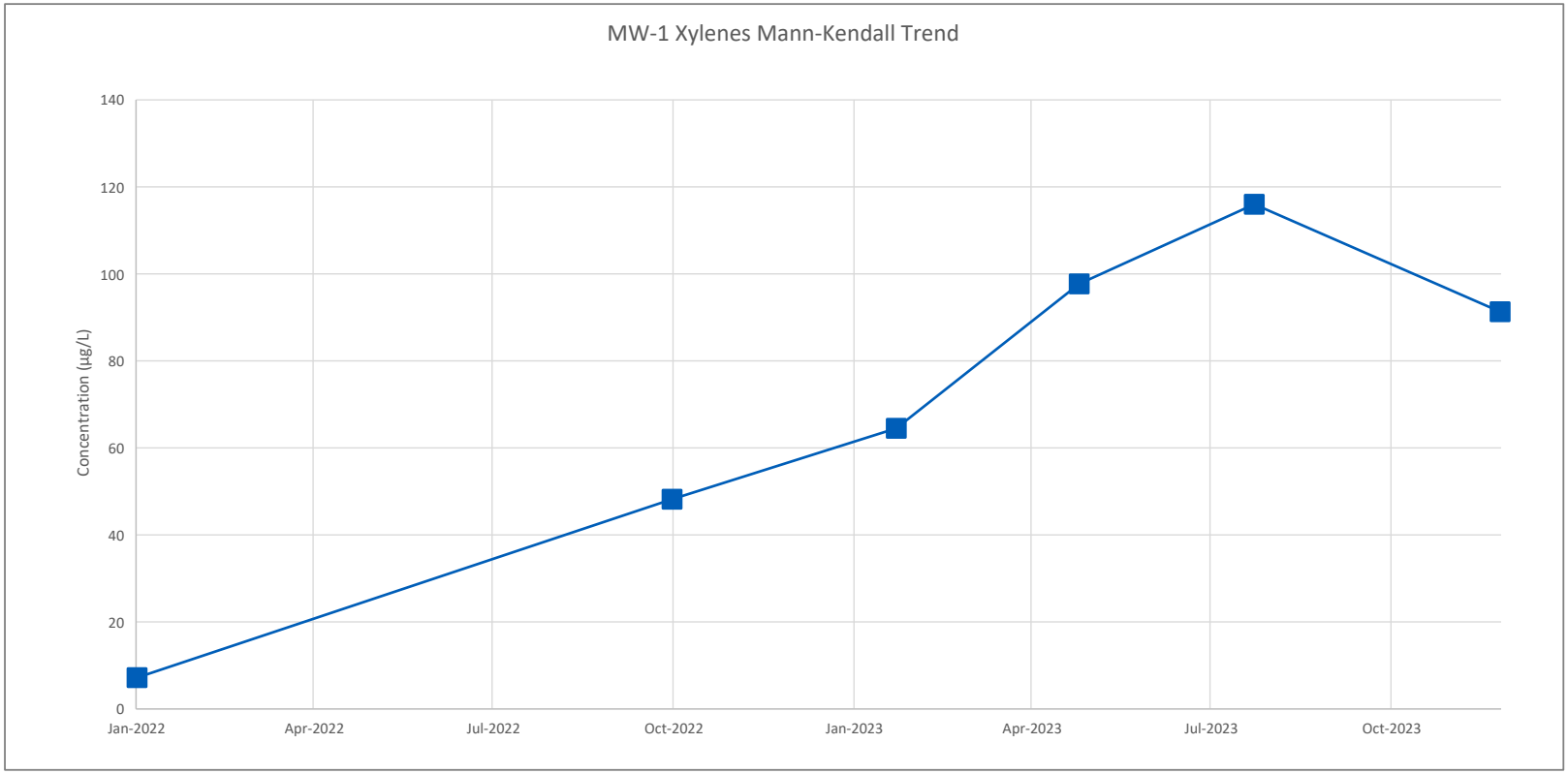


Data Set ID:	MW-1 Xylenes	
Units:	µg/L	
Event #	Date	Value
1	01/04/2022	7.2
2	10/03/2022	48.2
3	01/25/2023	64.5
4	04/28/2023	97.7
5	07/26/2023	116.0
6	11/28/2023	91.3

Mann-Kendall Results	
n:	6
S:	11
SES:	5.32
Z:	1.88
Confidence Factor:	97%
Coefficient of Variation:	0.56
Conclusion:	Increasing Trend

Trend Threshold:	90%

Mann-Kendall	Statistical Confidence	Trend Conclusion
S > 0	≥ 90%	Increasing
S > 0	< 90%	More Data Needed
S ≤ 0	< 90% and COV ≥ 1	More Data Needed
S ≤ 0	< 90% COV < 1	Stable
S < 0	≥ 90%	Decreasing

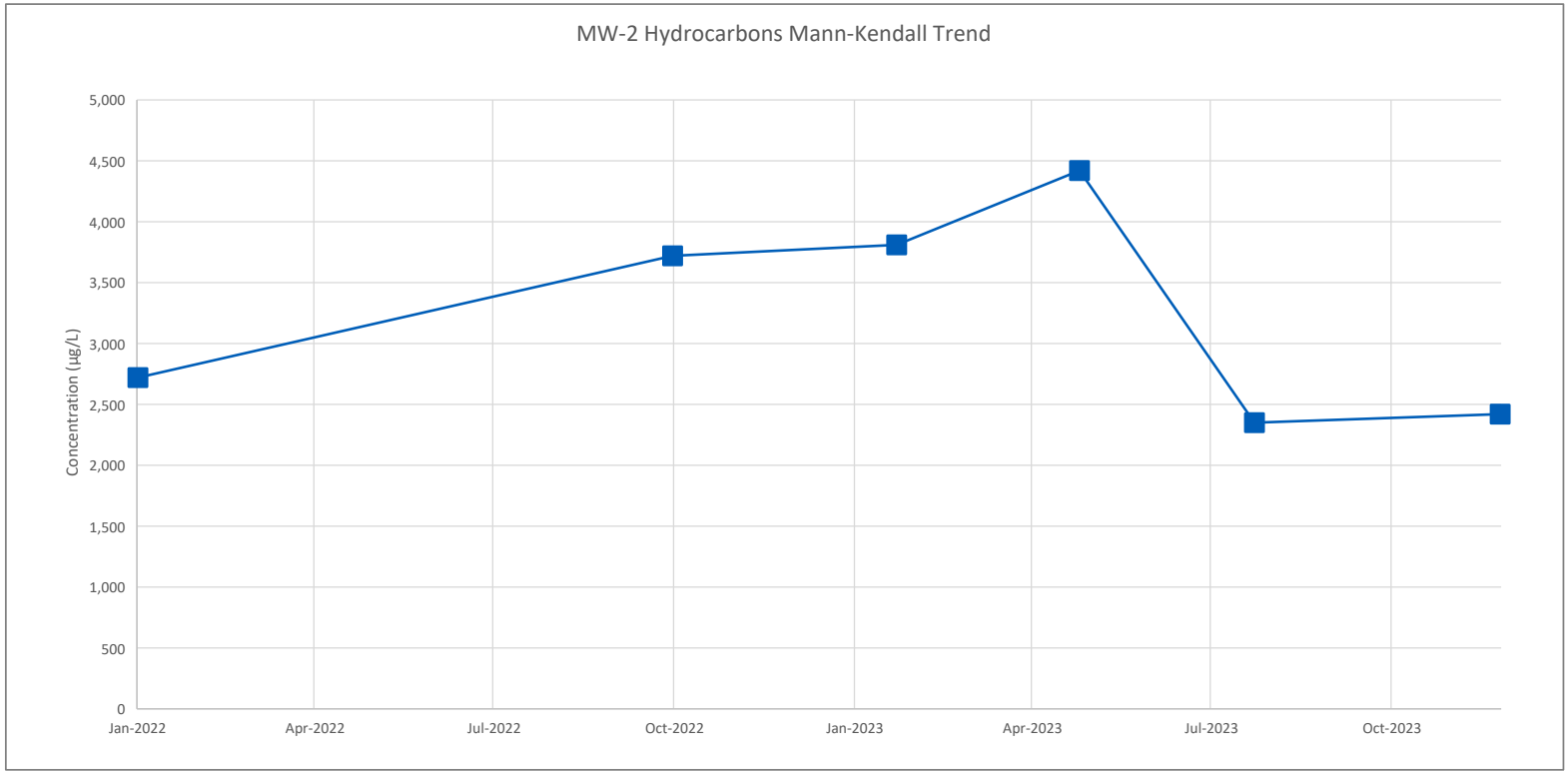


Data Set ID:	MW-2 Hydrocarbons	
Units:	µg/L	
Event #	Date	Value
1	**01/04/2022**	**2720**
2	**10/03/2022**	**3720**
3	**01/25/2023**	**3810**
4	**04/28/2023**	**4420**
5	**07/26/2023**	**2350**
6	**11/28/2023**	2420

Mann-Kendall Results	
n:	6
S:	-1
SES:	5.32
Z:	0.00
Confidence Factor:	50%
Coefficient of Variation:	0.26
Conclusion:	Stable

Trend Threshold:	90%

Mann-Kendall	Statistical Confidence	Trend Conclusion
S > 0	≥ 90%	Increasing
S > 0	< 90%	More Data Needed
S ≤ 0	< 90% and COV ≥ 1	More Data Needed
S ≤ 0	< 90% COV < 1	Stable
S < 0	≥ 90%	Decreasing

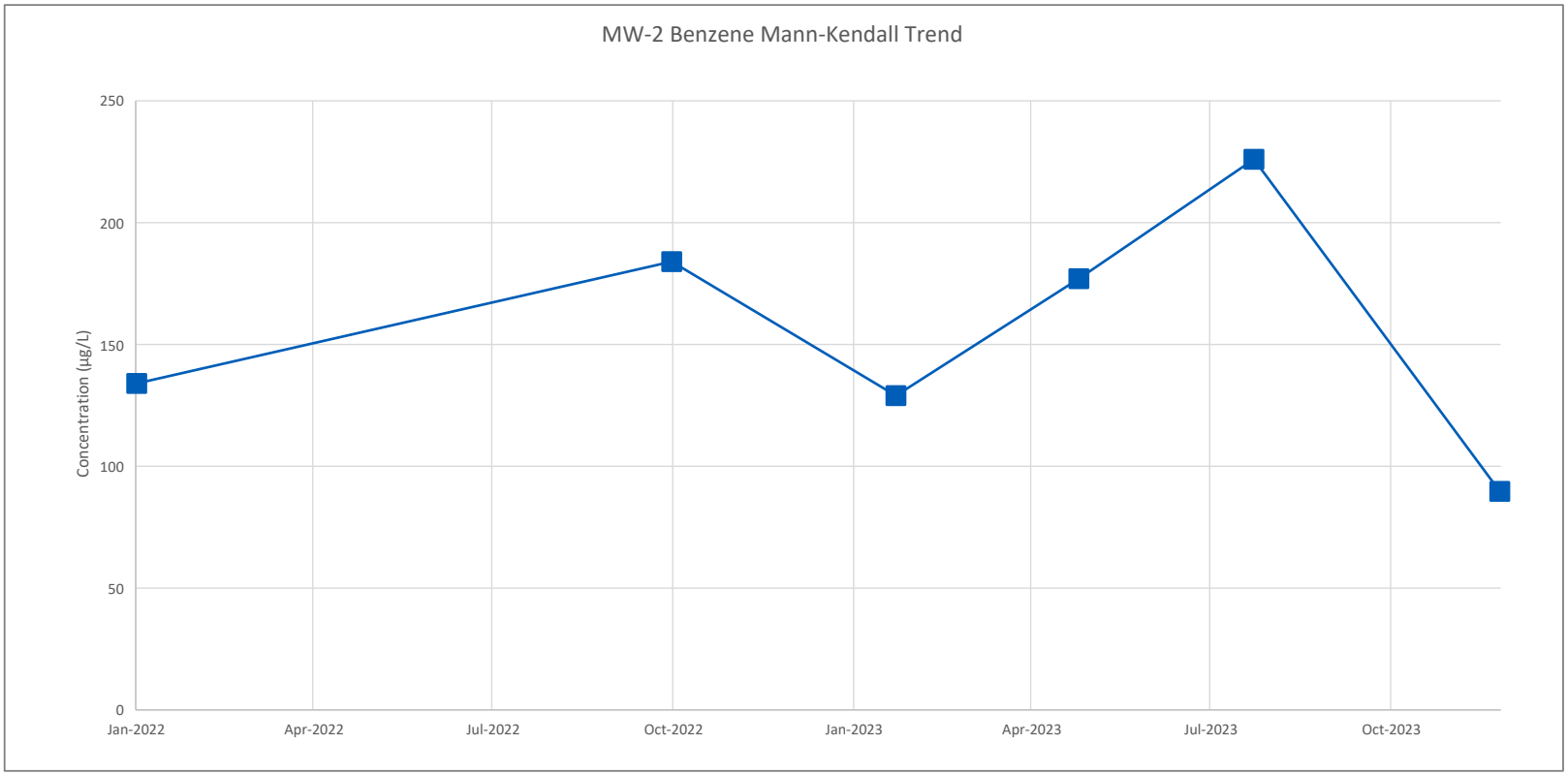


Data Set ID:	MW-2 Benzene	
Units:	µg/L	
Event #	Date	Value
1	01/04/2022	134.0
2	10/03/2022	184.0
3	01/25/2023	129.0
4	04/28/2023	177.0
5	07/26/2023	226.0
6	11/28/2023	89.7

Mann-Kendall Results	
n:	6
S:	-1
SES:	5.32
Z:	0.00
Confidence Factor:	50%
Coefficient of Variation:	0.31
Conclusion:	Stable

Trend Threshold:	90%

Mann-Kendall	Statistical Confidence	Trend Conclusion
S > 0	≥ 90%	Increasing
S > 0	< 90%	More Data Needed
S ≤ 0	< 90% and COV ≥ 1	More Data Needed
S ≤ 0	< 90% COV < 1	Stable
S < 0	≥ 90%	Decreasing

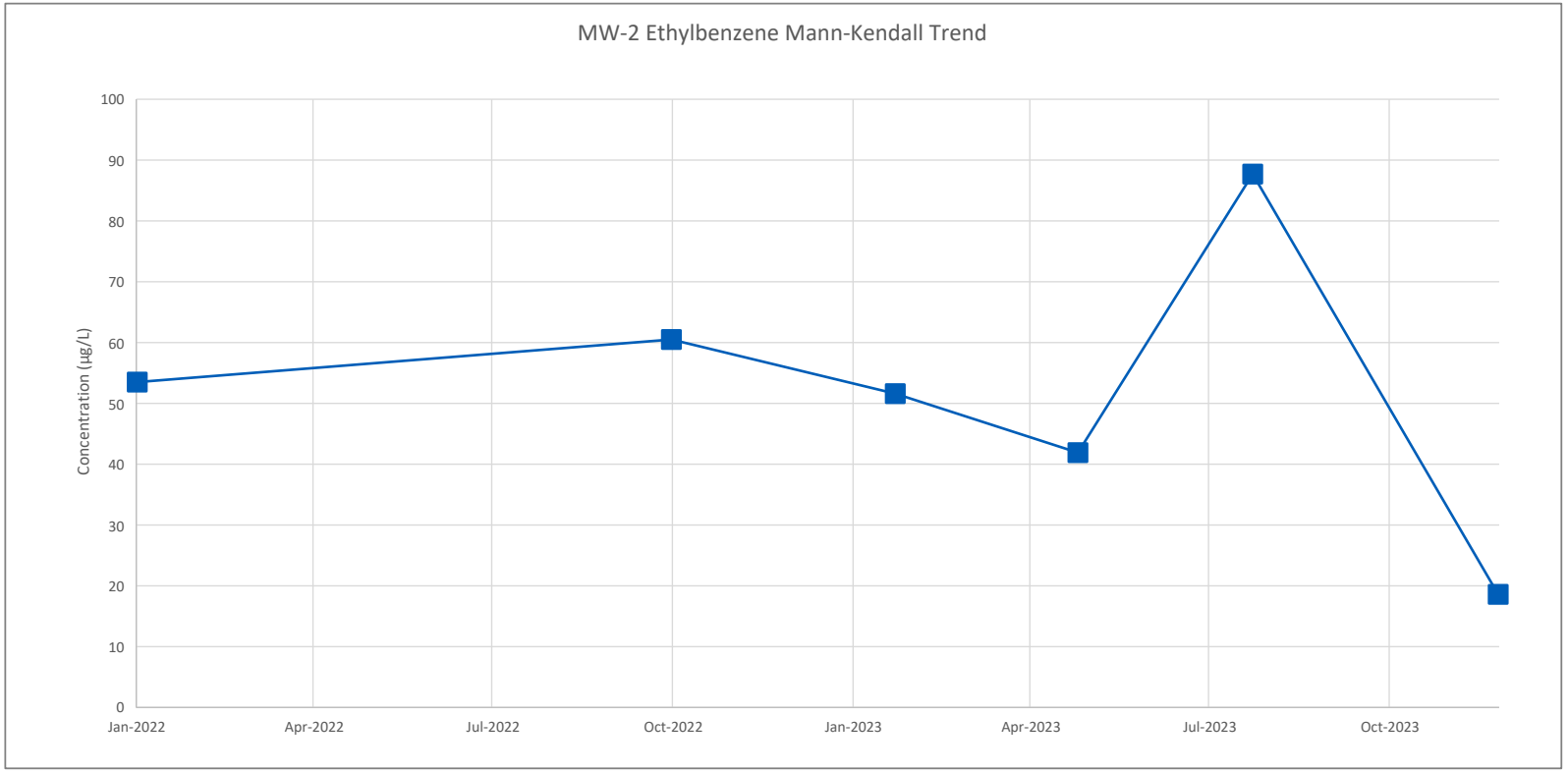


Data Set ID:	MW-2 Ethylbenzene	
Units:	µg/L	
Event #	Date	Value
1	01/04/2022	53.5
2	10/03/2022	60.5
3	01/25/2023	51.6
4	04/28/2023	41.9
5	07/26/2023	87.7
6	11/28/2023	18.6

Mann-Kendall Results	
n:	6
S:	-5
SES:	5.32
Z:	-0.75
Confidence Factor:	77%
Coefficient of Variation:	0.43
Conclusion:	Stable

Mann-Kendall	Statistical Confidence	Trend Conclusion
S > 0	≥ 90%	Increasing
S > 0	< 90%	More Data Needed
S ≤ 0	< 90% and COV ≥ 1	More Data Needed
S ≤ 0	< 90% COV < 1	Stable
S < 0	≥ 90%	Decreasing

Trend Threshold:	90%

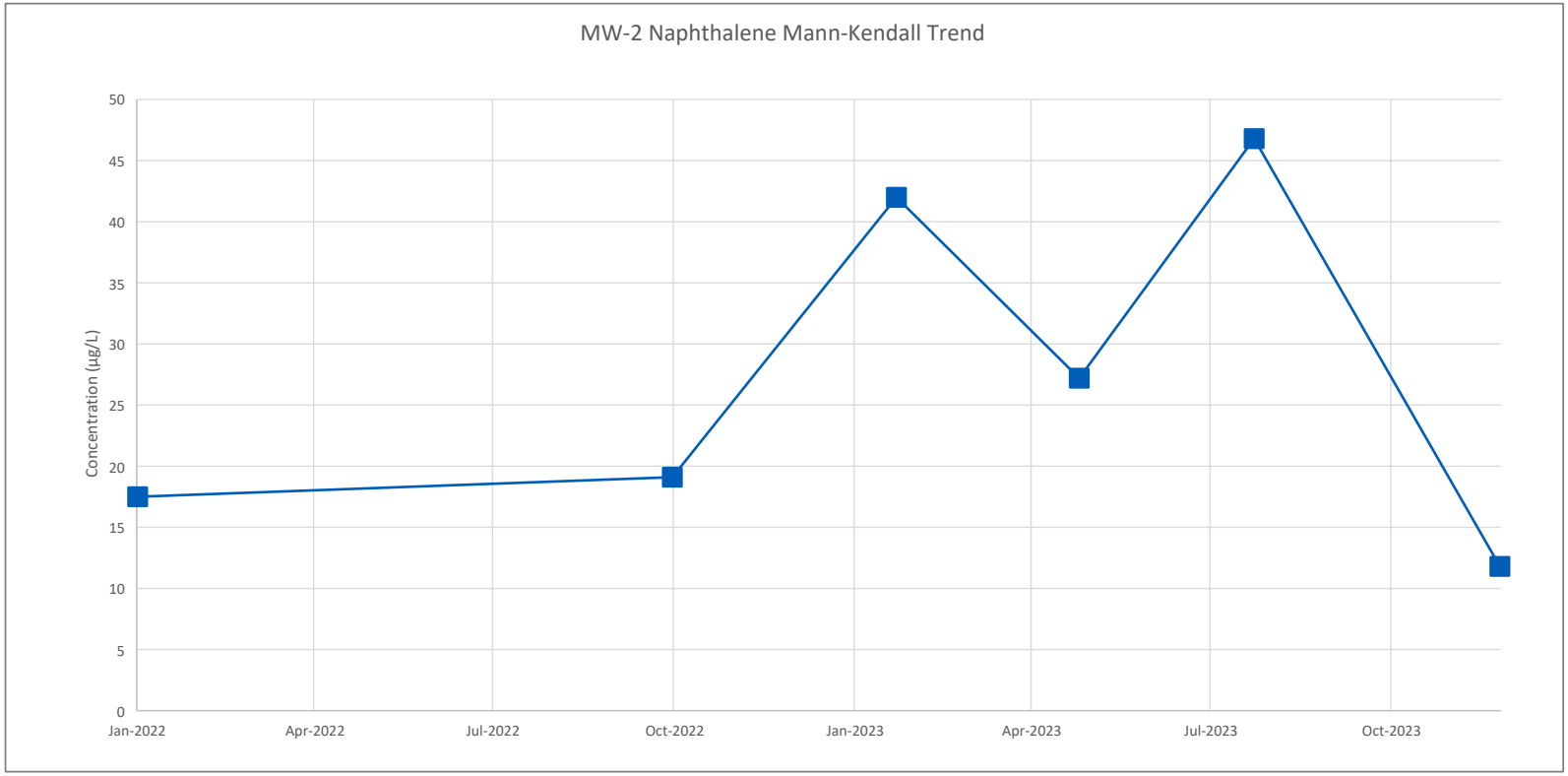


Data Set ID:	MW-2 Naphthalene	
Units:	µg/L	
Event #	Date	Value
1	**01/04/2022**	17.5
2	**10/03/2022**	19.1
3	**01/25/2023**	42.0
4	**04/28/2023**	27.2
5	**07/26/2023**	46.8
6	**11/28/2023**	11.8

Mann-Kendall Results	
n:	6
S:	3
SES:	5.32
Z:	0.38
Confidence Factor:	64%
Coefficient of Variation:	0.52
Conclusion:	More Data Needed

Mann-Kendall	Statistical Confidence	Trend Conclusion
S > 0	≥ 90%	Increasing
S > 0	< 90%	More Data Needed
S ≤ 0	< 90% and COV ≥ 1	More Data Needed
S ≤ 0	< 90% COV < 1	Stable
S < 0	≥ 90%	Decreasing

Trend Threshold:	90%

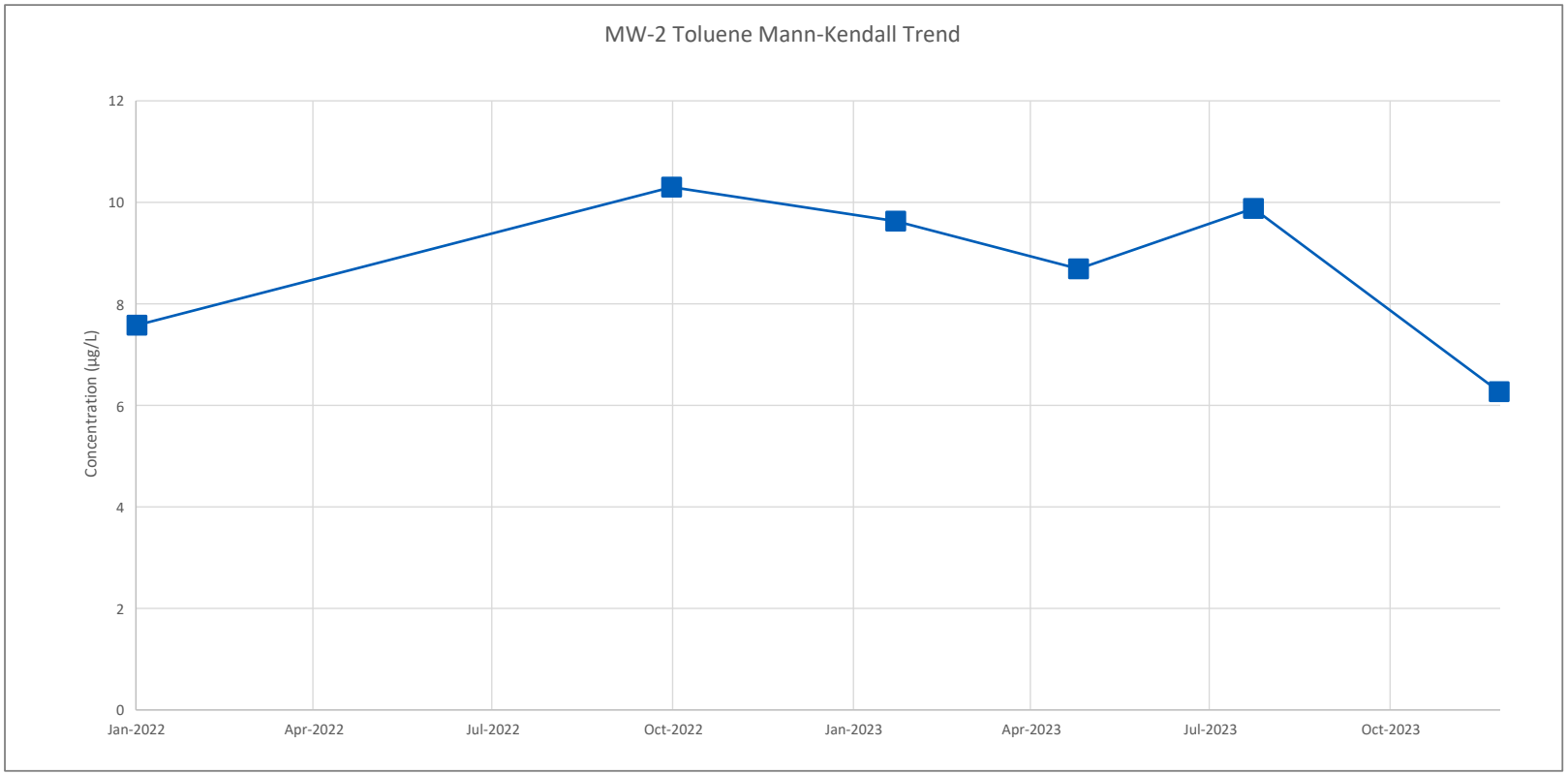


Data Set ID:	MW-2 Toluene	
Units:	µg/L	
Event #	Date	Value
1	01/04/2022	7.6
2	10/03/2022	10.3
3	01/25/2023	9.6
4	04/28/2023	8.7
5	07/26/2023	9.9
6	11/28/2023	6.3

Mann-Kendall Results	
n:	6
S:	-3
SES:	5.32
Z:	-0.38
Confidence Factor:	64%
Coefficient of Variation:	0.18
Conclusion:	Stable

Mann-Kendall	Statistical Confidence	Trend Conclusion
S > 0	≥ 90%	Increasing
S > 0	< 90%	More Data Needed
S ≤ 0	< 90% and COV ≥ 1	More Data Needed
S ≤ 0	< 90% COV < 1	Stable
S < 0	≥ 90%	Decreasing

Trend Threshold:	90%

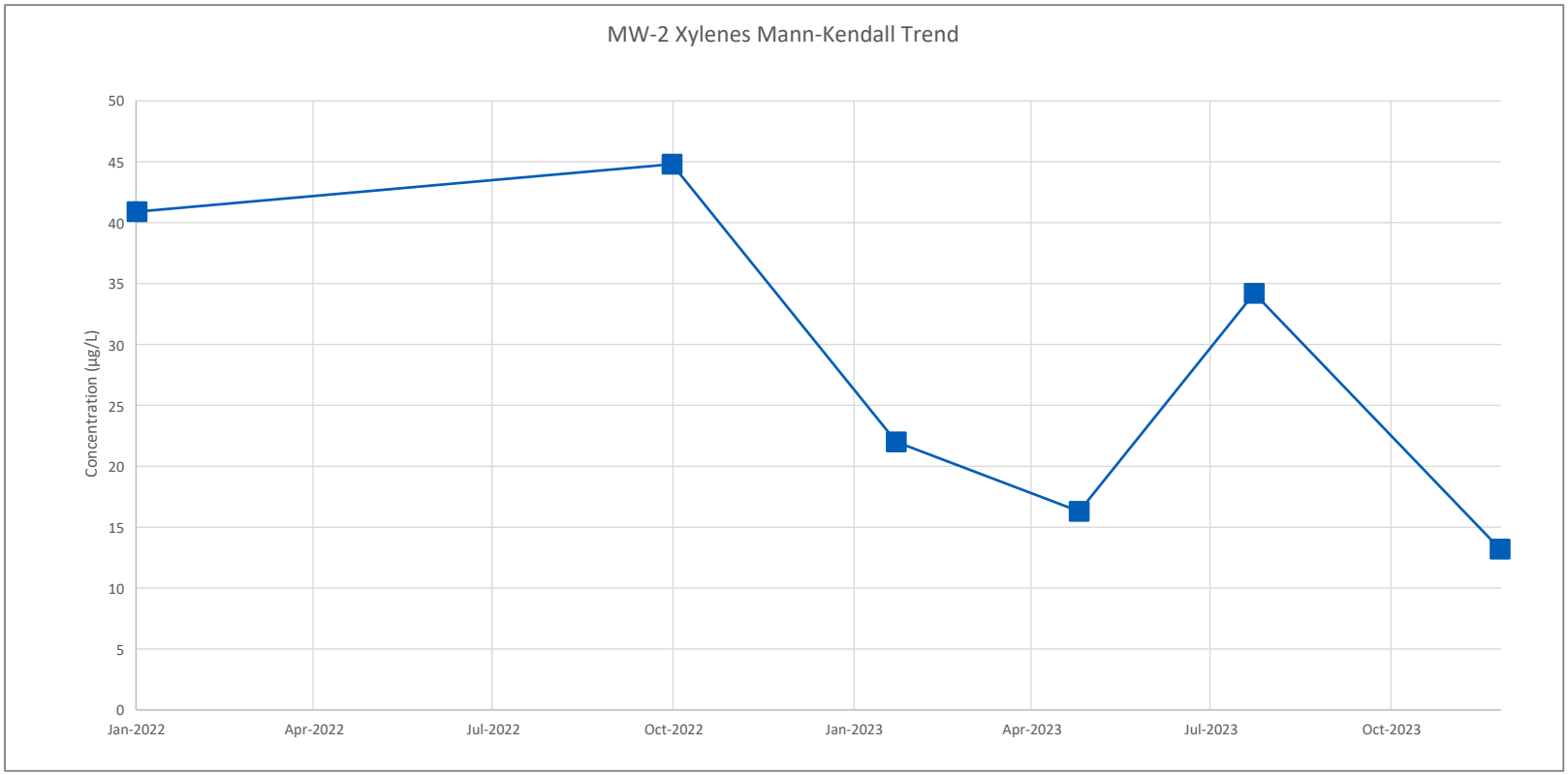


Data Set ID:	MW-2 Xylenes	
Units:	µg/L	
Event #	Date	Value
1	**01/04/2022**	**40.9**
2	**10/03/2022**	**44.8**
3	**01/25/2023**	**22.0**
4	**04/28/2023**	**16.3**
5	**07/26/2023**	**34.2**
6	**11/28/2023**	13.2

Mann-Kendall Results	
n:	6
S:	-9
SES:	5.32
Z:	-1.50
Confidence Factor:	93%
Coefficient of Variation:	0.46
Conclusion:	Decreasing Trend

Trend Threshold:	90%

Mann-Kendall	Statistical Confidence	Trend Conclusion
S > 0	≥ 90%	Increasing
S > 0	< 90%	More Data Needed
S ≤ 0	< 90% and COV ≥ 1	More Data Needed
S ≤ 0	< 90% COV < 1	Stable
S < 0	≥ 90%	Decreasing

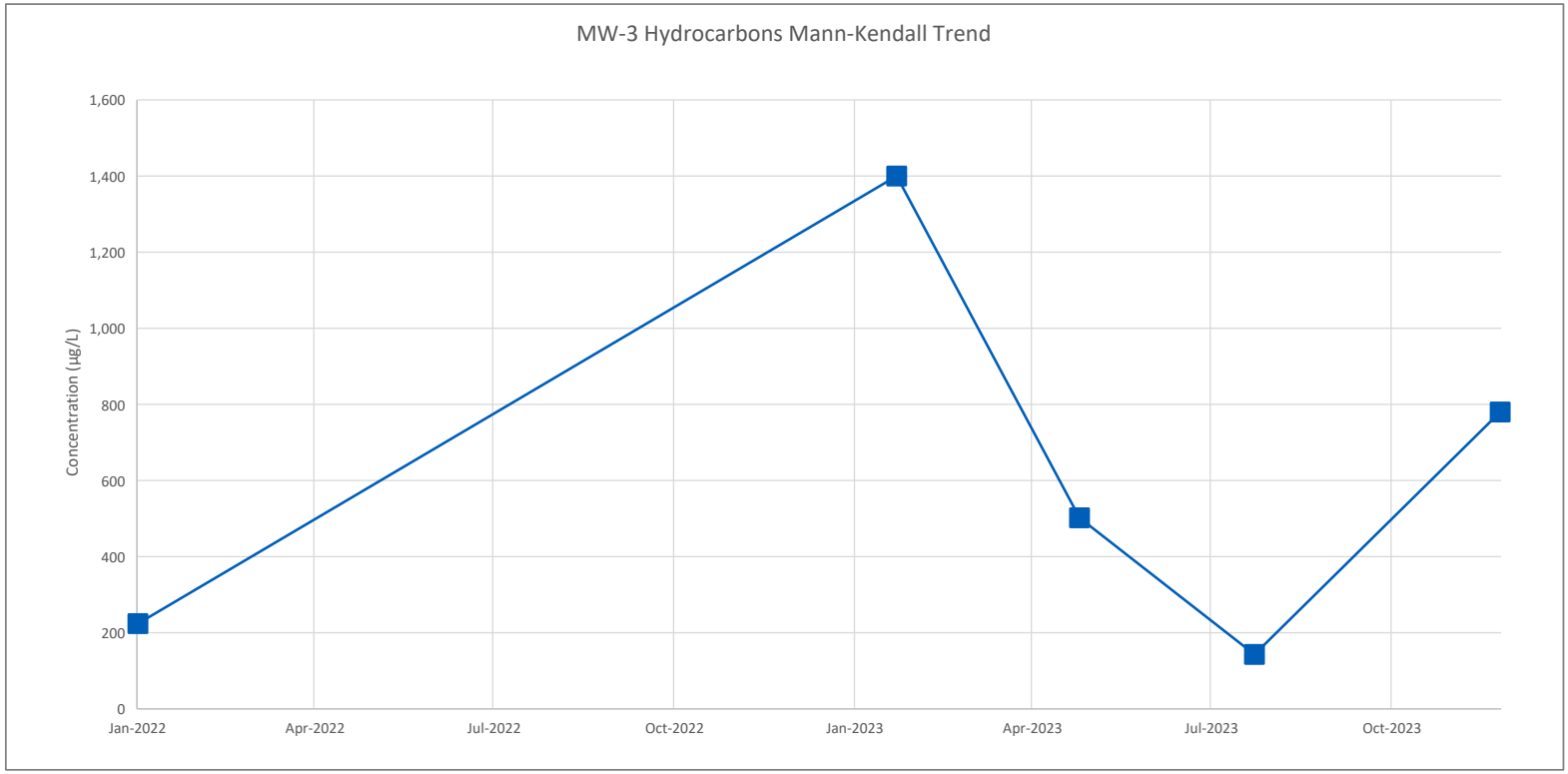


Data Set ID:	MW-3 Hydrocarbons	
Units:	µg/L	
Event #	Date	Value
1	01/04/2022	224
2	01/25/2023	1400
3	04/28/2023	502
4	07/26/2023	143
5	11/28/2023	780

Mann-Kendall Results	
n:	5
S:	0
SES:	4.08
Z:	0.00
Confidence Factor:	41%
Coefficient of Variation:	0.83
Conclusion:	Stable

Mann-Kendall	Statistical Confidence	Trend Conclusion
S > 0	≥ 90%	Increasing
S > 0	< 90%	More Data Needed
S ≤ 0	< 90% and COV ≥ 1	More Data Needed
S ≤ 0	< 90% COV < 1	Stable
S < 0	≥ 90%	Decreasing

Trend Threshold:	90%

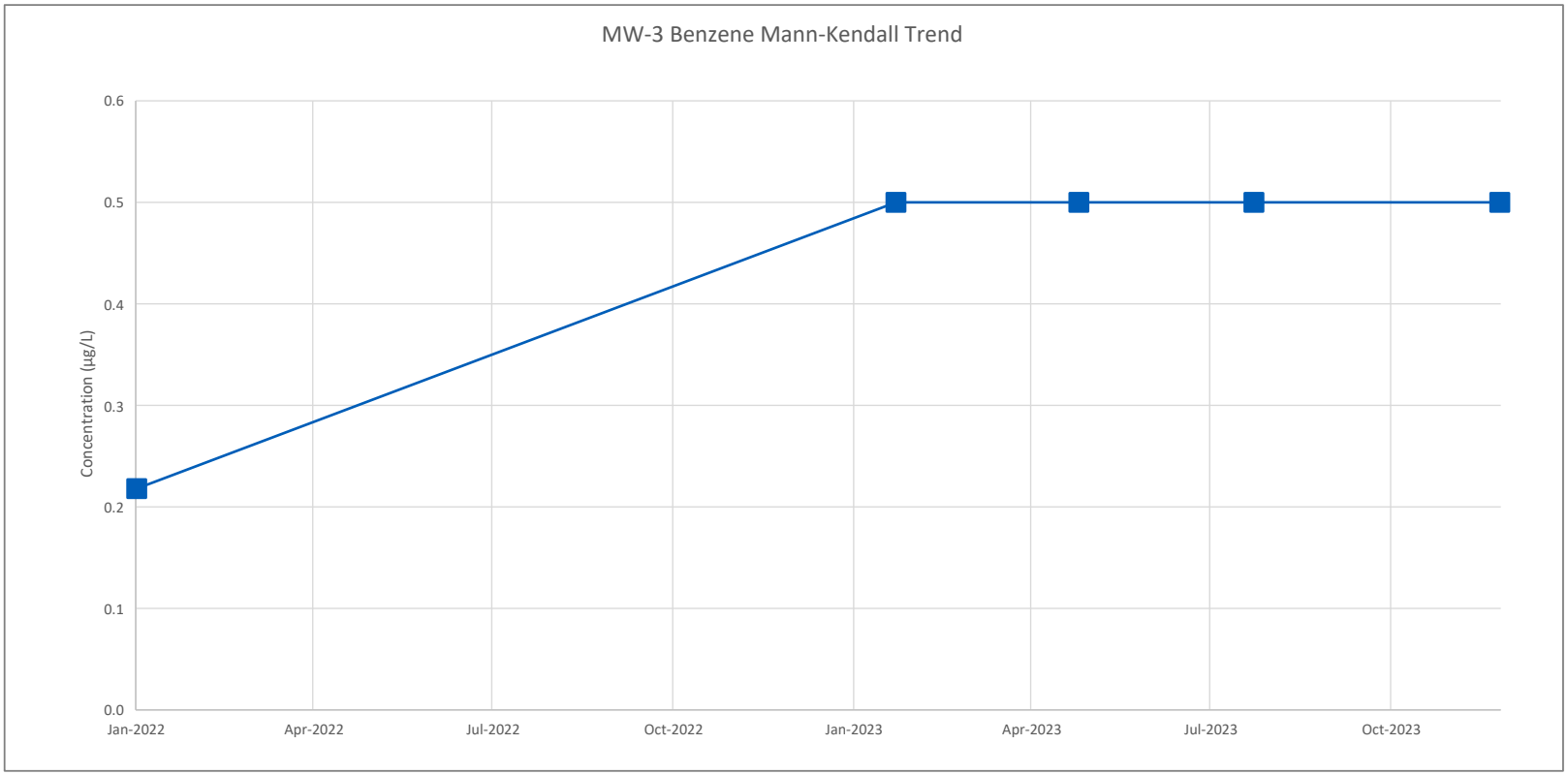


Data Set ID:	MW-3 Benzene	
Units:	µg/L	
Event #	Date	Value
1	01/04/2022	0.22
2	01/25/2023	0.50
3	04/28/2023	0.50
4	07/26/2023	0.50
5	11/28/2023	0.50

Mann-Kendall Results	
n:	5
S:	4
SES:	2.83
Z:	1.06
Confidence Factor:	76%
Coefficient of Variation:	0.28
Conclusion:	More Data Needed

Mann-Kendall	Statistical Confidence	Trend Conclusion
S > 0	≥ 90%	Increasing
S > 0	< 90%	More Data Needed
S ≤ 0	< 90% and COV ≥ 1	More Data Needed
S ≤ 0	< 90% COV < 1	Stable
S < 0	≥ 90%	Decreasing

Trend Threshold:	90%

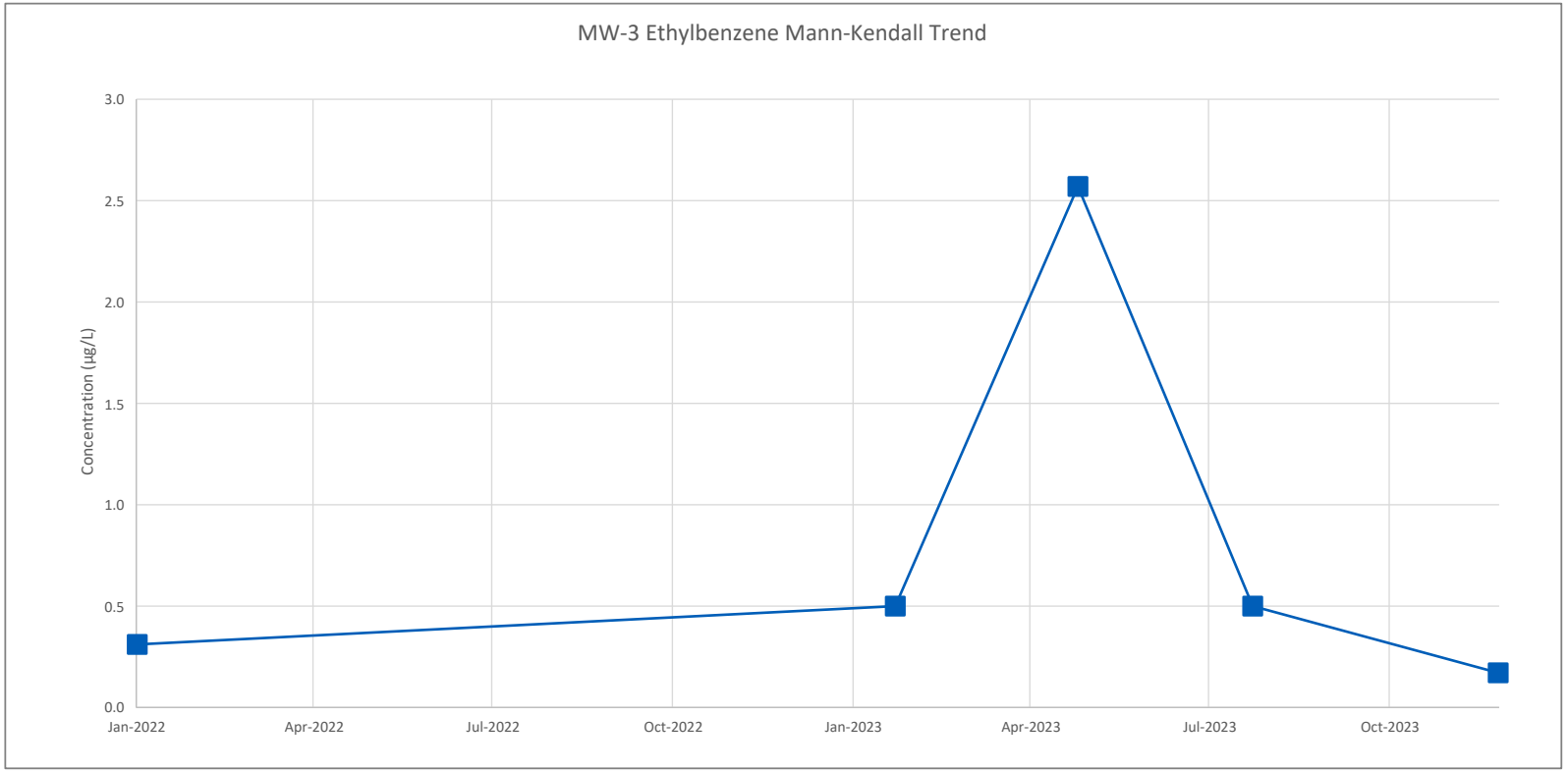


Data Set ID:	MW-3 Ethylbenzene	
Units:	µg/L	
Event #	Date	Value
1	01/04/2022	0.31
2	01/25/2023	0.50
3	04/28/2023	2.57
4	07/26/2023	0.50
5	11/28/2023	0.17

Mann-Kendall Results	
n:	5
S:	-1
SES:	3.96
Z:	0.00
Confidence Factor:	50%
Coefficient of Variation:	1.23
Conclusion:	More Data Needed

Mann-Kendall	Statistical Confidence	Trend Conclusion
S > 0	≥ 90%	Increasing
S > 0	< 90%	More Data Needed
S ≤ 0	< 90% and COV ≥ 1	More Data Needed
S ≤ 0	< 90% COV < 1	Stable
S < 0	≥ 90%	Decreasing

Trend Threshold:	90%

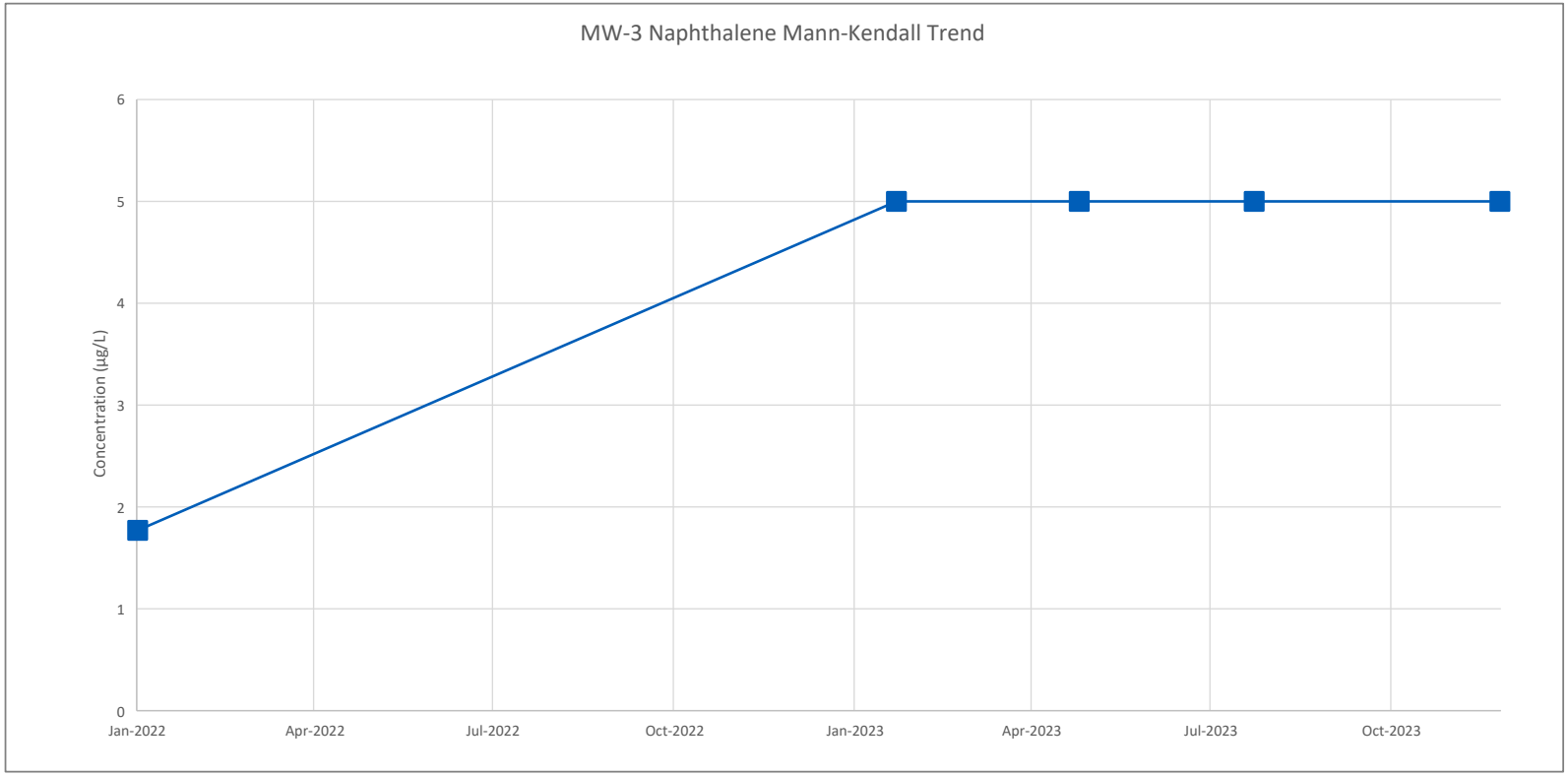


Data Set ID:	MW-3 Naphthalene	
Units:	µg/L	
Event #	Date	Value
1	**01/04/2022**	1.77
2	**01/25/2023**	5.0
3	**04/28/2023**	5.0
4	**07/26/2023**	5.0
5	**11/28/2023**	5.0

Mann-Kendall Results	
n:	5
S:	4
SES:	2.83
Z:	1.06
Confidence Factor:	76%
Coefficient of Variation:	0.33
Conclusion:	More Data Needed

Mann-Kendall	Statistical Confidence	Trend Conclusion
S > 0	≥ 90%	Increasing
S > 0	< 90%	More Data Needed
S ≤ 0	< 90% and COV ≥ 1	More Data Needed
S ≤ 0	< 90% COV < 1	Stable
S < 0	≥ 90%	Decreasing

Trend Threshold:	90%

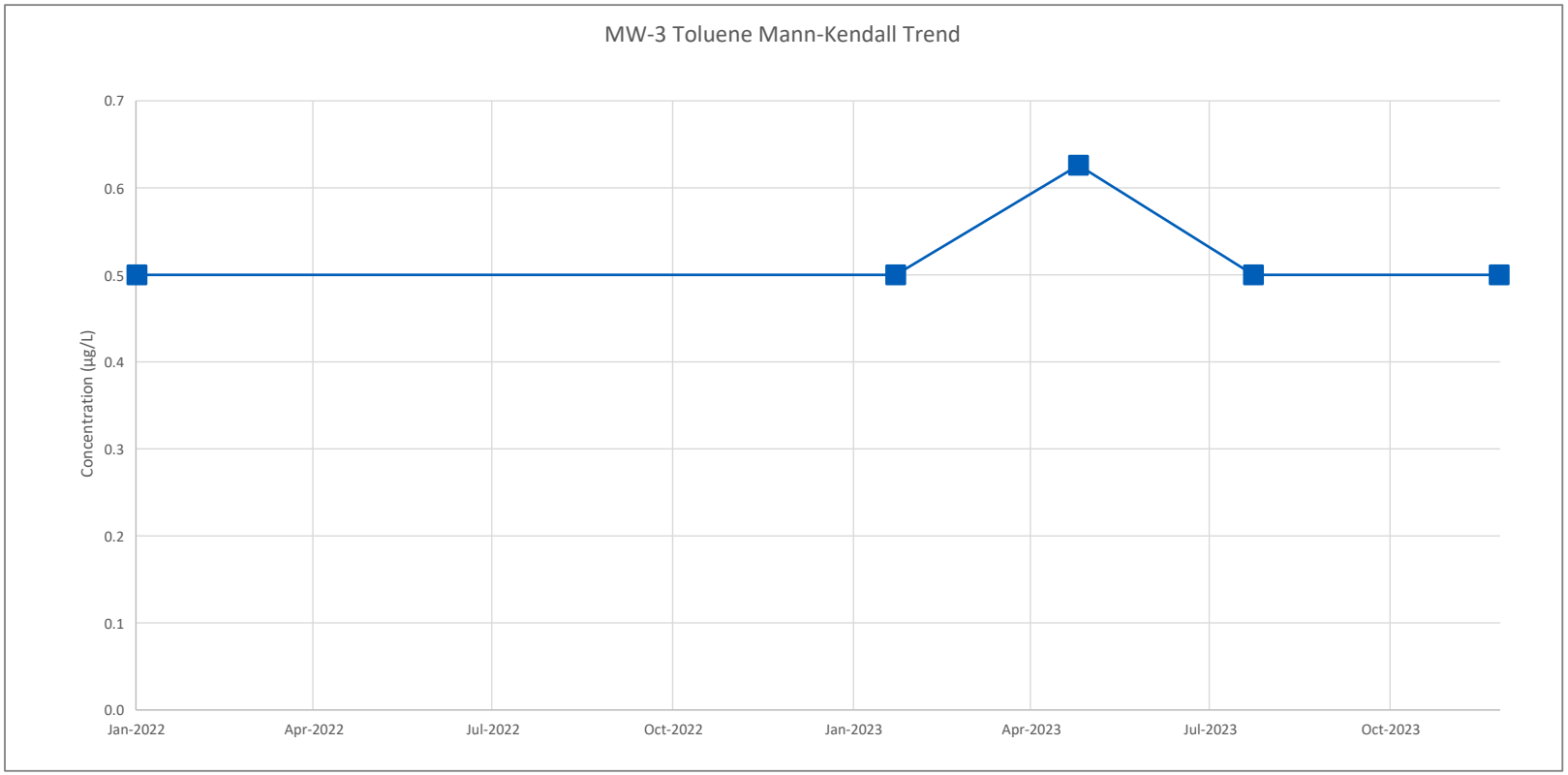


Data Set ID:	MW-3 Toluene	
Units:	µg/L	
Event #	Date	Value
1	01/04/2022	0.50
2	01/25/2023	0.50
3	04/28/2023	0.63
4	07/26/2023	0.50
5	11/28/2023	0.50

Mann-Kendall Results	
n:	5
S:	0
SES:	2.83
Z:	0.00
Confidence Factor:	41%
Coefficient of Variation:	0.11
Conclusion:	Stable

Mann-Kendall	Statistical Confidence	Trend Conclusion
S > 0	≥ 90%	Increasing
S > 0	< 90%	More Data Needed
S ≤ 0	< 90% and COV ≥ 1	More Data Needed
S ≤ 0	< 90% COV < 1	Stable
S < 0	≥ 90%	Decreasing

Trend Threshold:	90%

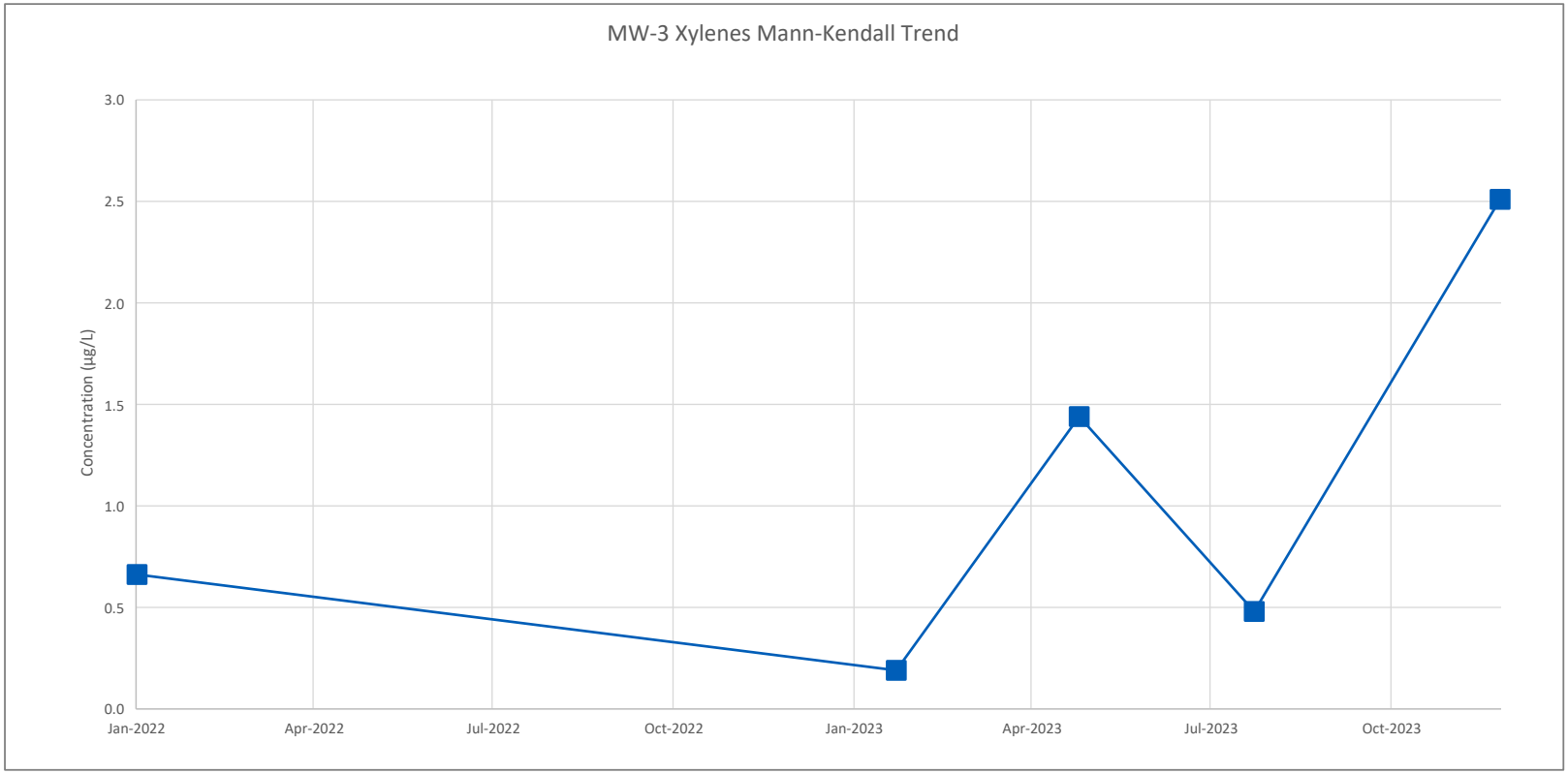


Data Set ID:	MW-3 Xylenes	
Units:	µg/L	
Event #	Date	Value
1	01/04/2022	0.66
2	01/25/2023	0.19
3	04/28/2023	1.44
4	07/26/2023	0.48
5	11/28/2023	2.51

Mann-Kendall Results	
n:	5
S:	4
SES:	4.08
Z:	0.73
Confidence Factor:	76%
Coefficient of Variation:	0.89
Conclusion:	More Data Needed

Mann-Kendall	Statistical Confidence	Trend Conclusion
S > 0	≥ 90%	Increasing
S > 0	< 90%	More Data Needed
S ≤ 0	< 90% and COV ≥ 1	More Data Needed
S ≤ 0	< 90% COV < 1	Stable
S < 0	≥ 90%	Decreasing

Trend Threshold:	90%

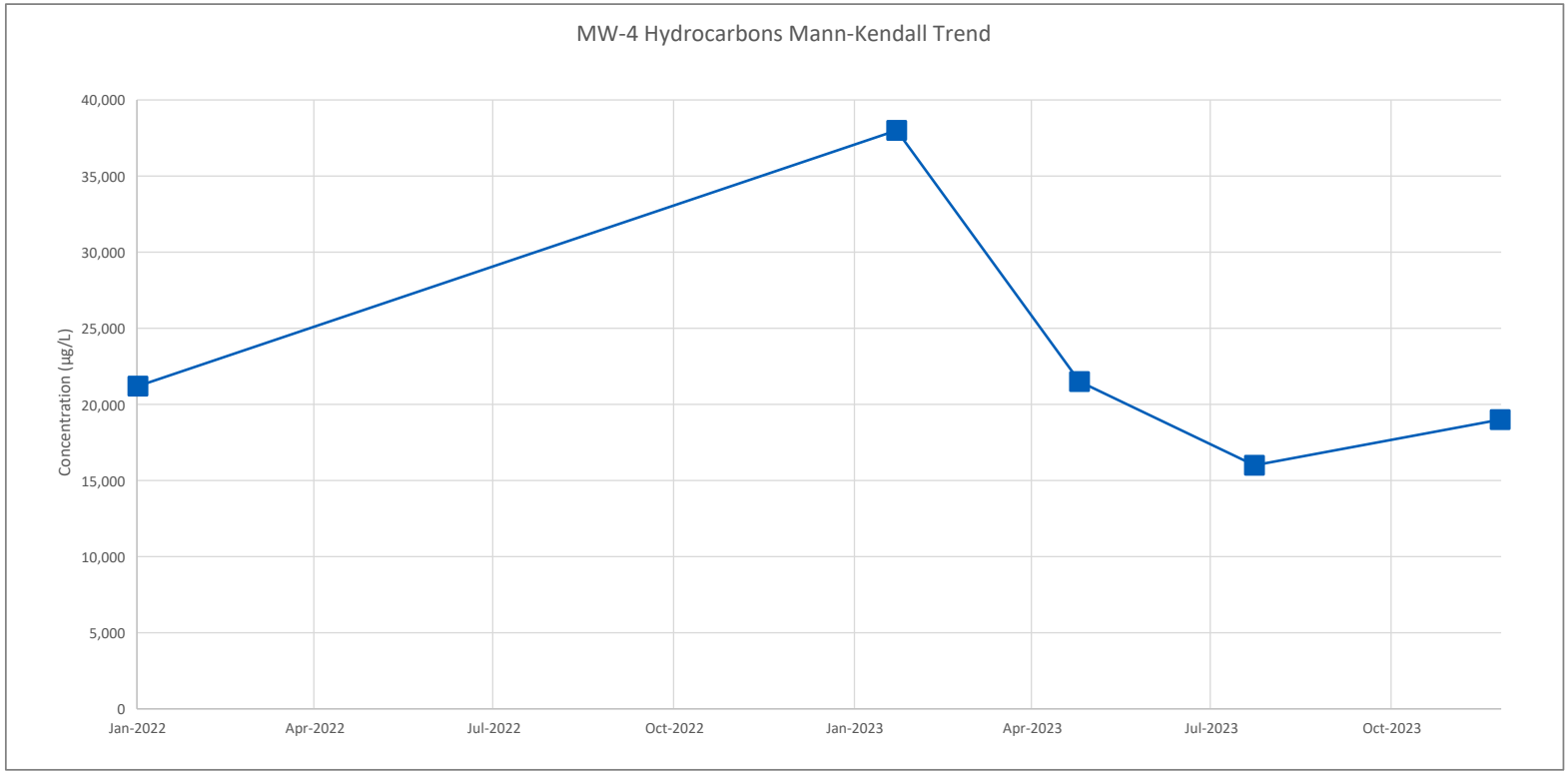


Data Set ID:	MW-4 Hydrocarbons	
Units:	µg/L	
Event #	Date	Value
1	01/04/2022	21200
2	01/25/2023	38000
3	04/28/2023	21500
4	07/26/2023	16000
5	11/28/2023	19000

Mann-Kendall Results	
n:	5
S:	-4
SES:	4.08
Z:	-0.73
Confidence Factor:	76%
Coefficient of Variation:	0.37
Conclusion:	Stable

Trend Threshold:	90%

Mann-Kendall	Statistical Confidence	Trend Conclusion
S > 0	≥ 90%	Increasing
S > 0	< 90%	More Data Needed
S ≤ 0	< 90% and COV ≥ 1	More Data Needed
S ≤ 0	< 90% COV < 1	Stable
S < 0	≥ 90%	Decreasing

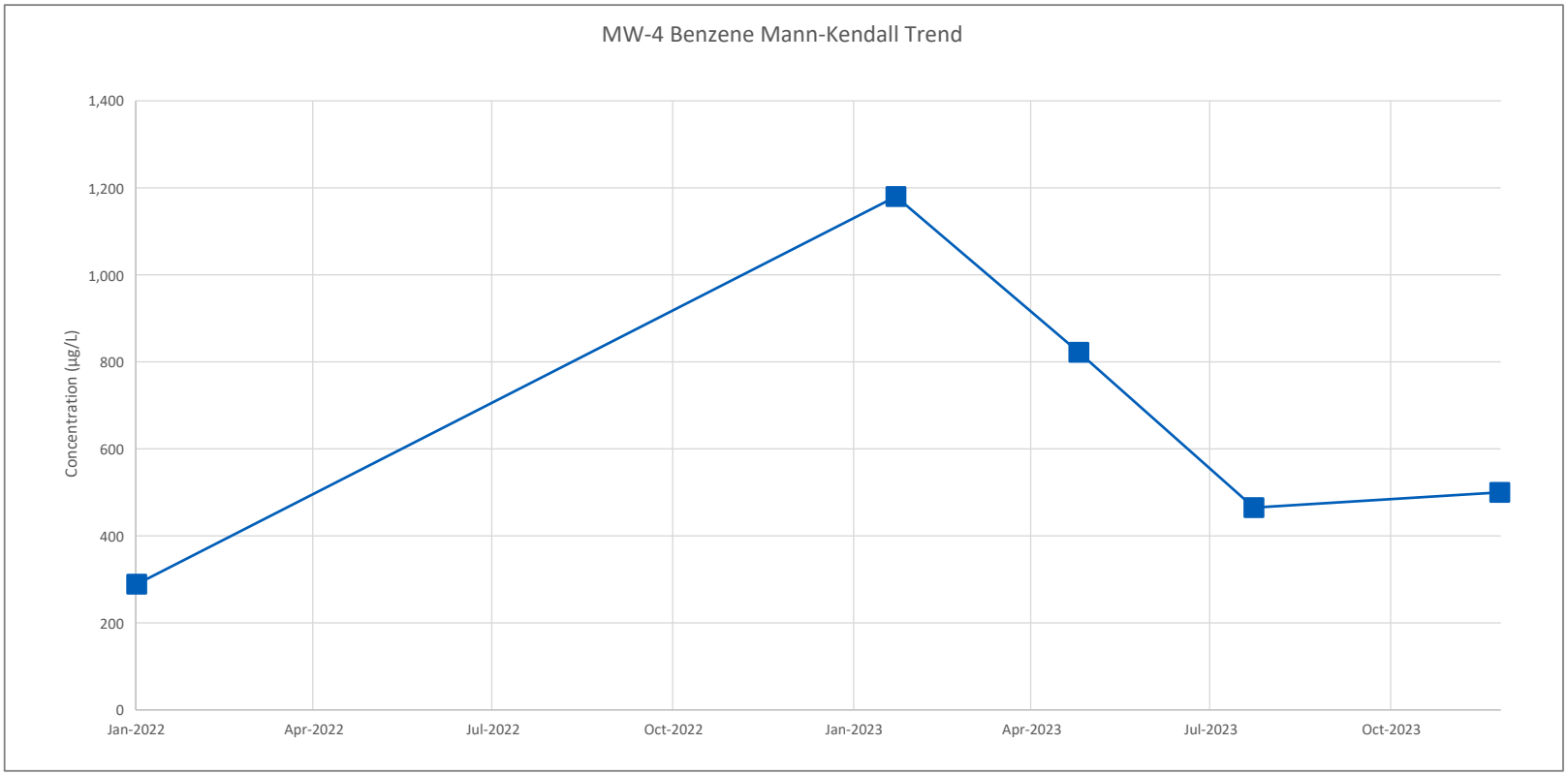


Data Set ID:	MW-4 Benzene	
Units:	µg/L	
Event #	Date	Value
1	01/04/2022	289
2	01/25/2023	1180
3	04/28/2023	822
4	07/26/2023	465
5	11/28/2023	500

Mann-Kendall Results	
n:	5
S:	0
SES:	4.08
Z:	0.00
Confidence Factor:	41%
Coefficient of Variation:	0.54
Conclusion:	Stable

Mann-Kendall	Statistical Confidence	Trend Conclusion
S > 0	≥ 90%	Increasing
S > 0	< 90%	More Data Needed
S ≤ 0	< 90% and COV ≥ 1	More Data Needed
S ≤ 0	< 90% COV < 1	Stable
S < 0	≥ 90%	Decreasing

Trend Threshold:	90%

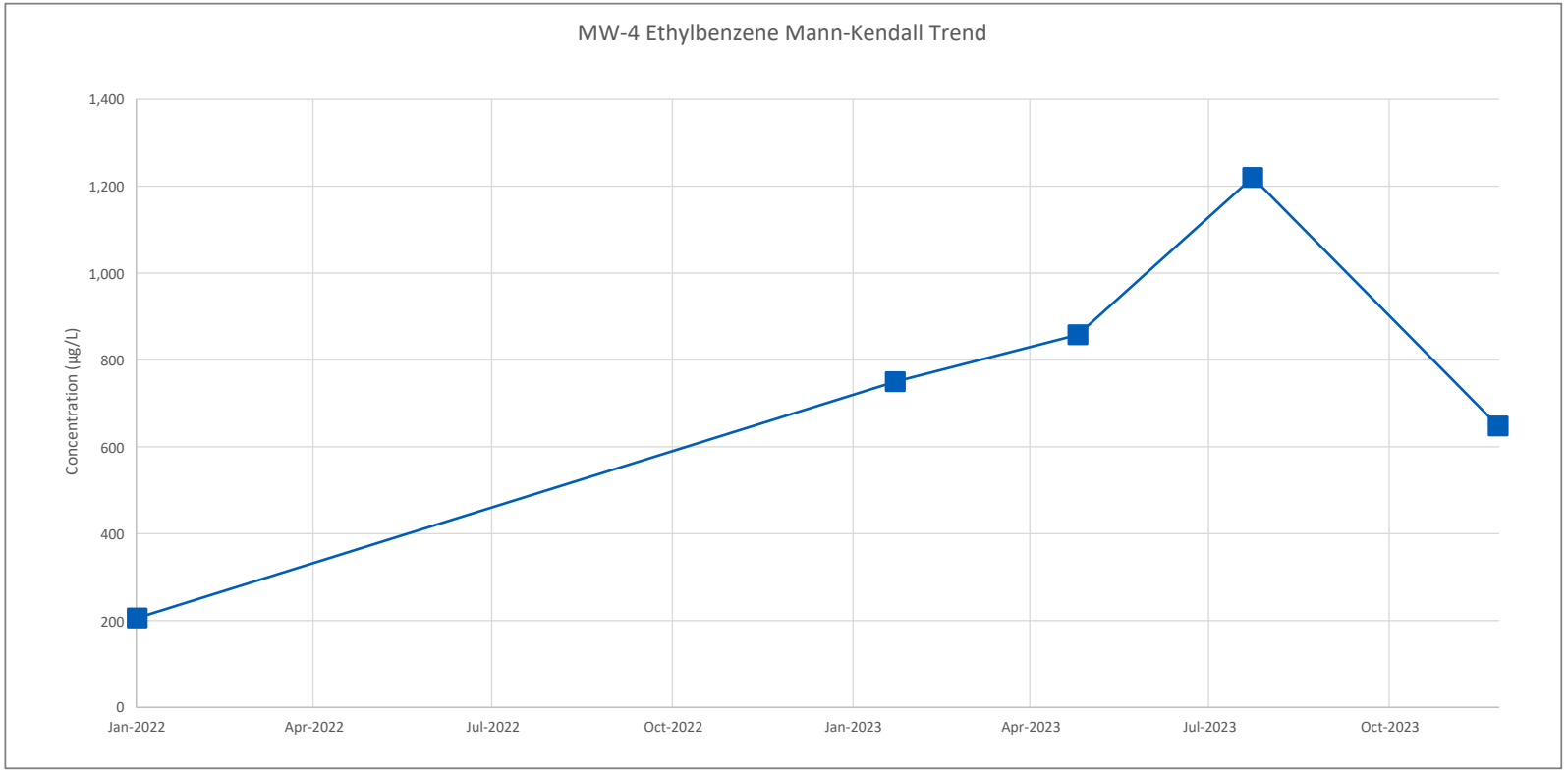


Data Set ID:	MW-4 Ethylbenzene	
Units:	µg/L	
Event #	Date	Value
1	01/04/2022	206
2	01/25/2023	750
3	04/28/2023	858
4	07/26/2023	1220
5	11/28/2023	648

Mann-Kendall Results	
n:	5
S:	4
SES:	4.08
Z:	0.73
Confidence Factor:	76%
Coefficient of Variation:	0.50
Conclusion:	More Data Needed

Mann-Kendall	Statistical Confidence	Trend Conclusion
S > 0	≥ 90%	Increasing
S > 0	< 90%	More Data Needed
S ≤ 0	< 90% and COV ≥ 1	More Data Needed
S ≤ 0	< 90% COV < 1	Stable
S < 0	≥ 90%	Decreasing

Trend Threshold:	90%

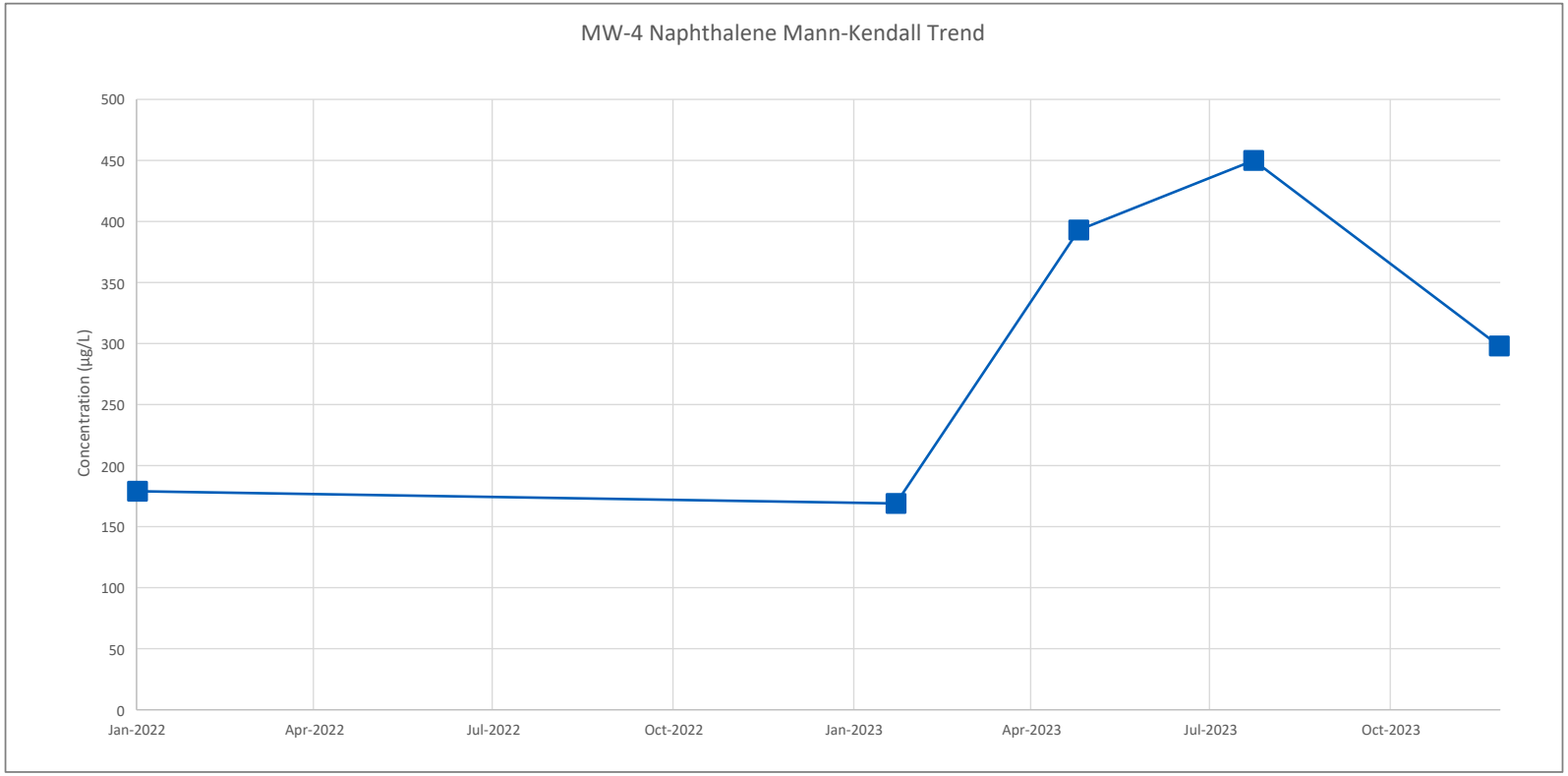


Data Set ID:	MW-4 Naphthalene	
Units:	µg/L	
Event #	Date	Value
1	**01/04/2022**	179.00
2	**01/25/2023**	169.0
3	**04/28/2023**	393.0
4	**07/26/2023**	450.0
5	**11/28/2023**	298.0

Mann-Kendall Results	
n:	5
S:	4
SES:	4.08
Z:	0.73
Confidence Factor:	76%
Coefficient of Variation:	0.42
Conclusion:	More Data Needed

Mann-Kendall	Statistical Confidence	Trend Conclusion
S > 0	≥ 90%	Increasing
S > 0	< 90%	More Data Needed
S ≤ 0	< 90% and COV ≥ 1	More Data Needed
S ≤ 0	< 90% COV < 1	Stable
S < 0	≥ 90%	Decreasing

Trend Threshold:	90%

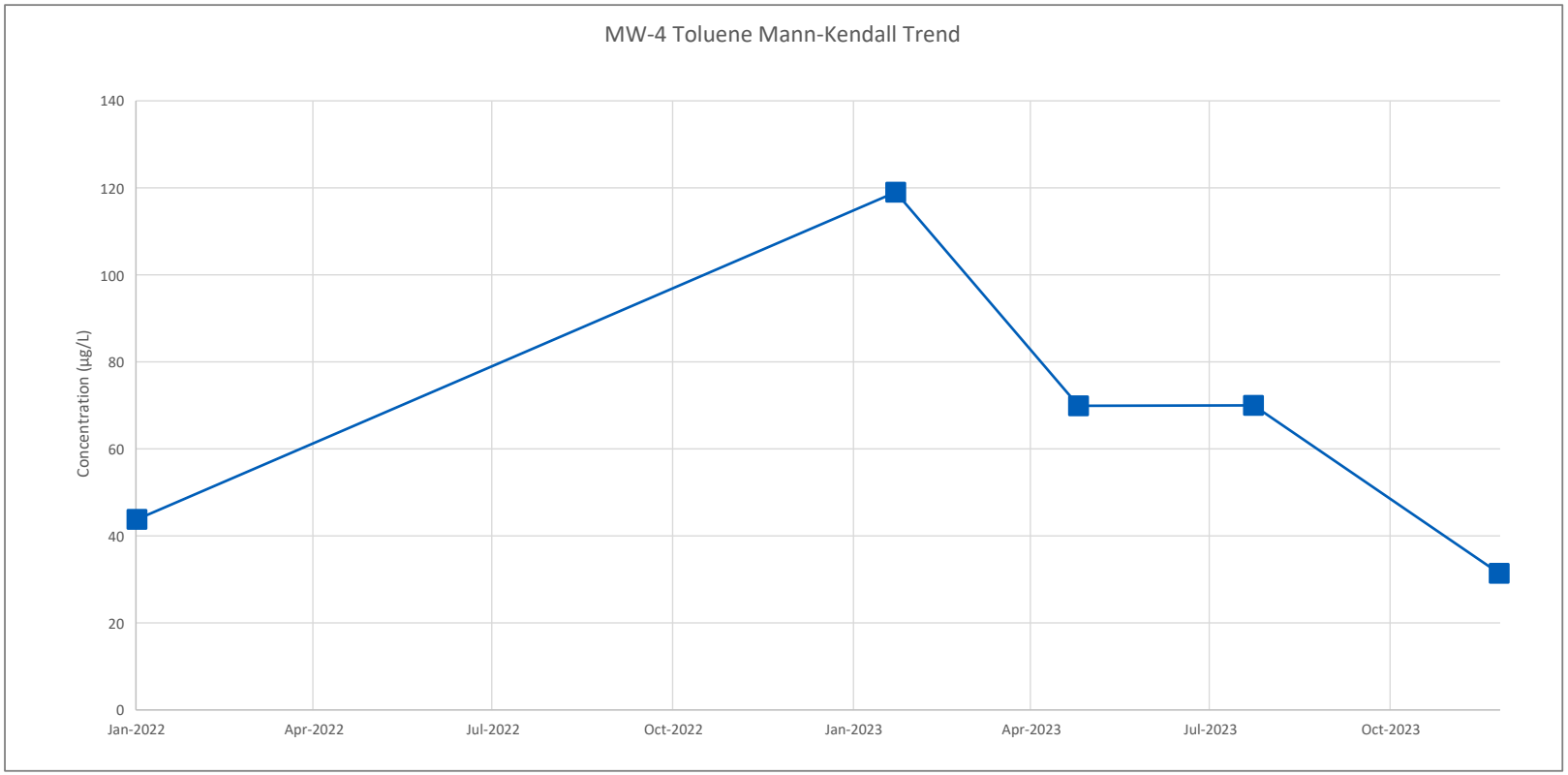


Data Set ID:	MW-4 Toluene	
Units:	µg/L	
Event #	Date	Value
1	01/04/2022	43.8
2	01/25/2023	119.0
3	04/28/2023	69.9
4	07/26/2023	70.0
5	11/28/2023	31.4

Mann-Kendall Results	
n:	5
S:	-2
SES:	4.08
Z:	-0.24
Confidence Factor:	59%
Coefficient of Variation:	0.50
Conclusion:	Stable

Trend Threshold:	90%

Mann-Kendall	Statistical Confidence	Trend Conclusion
S > 0	≥ 90%	Increasing
S > 0	< 90%	More Data Needed
S ≤ 0	< 90% and COV ≥ 1	More Data Needed
S ≤ 0	< 90% COV < 1	Stable
S < 0	≥ 90%	Decreasing

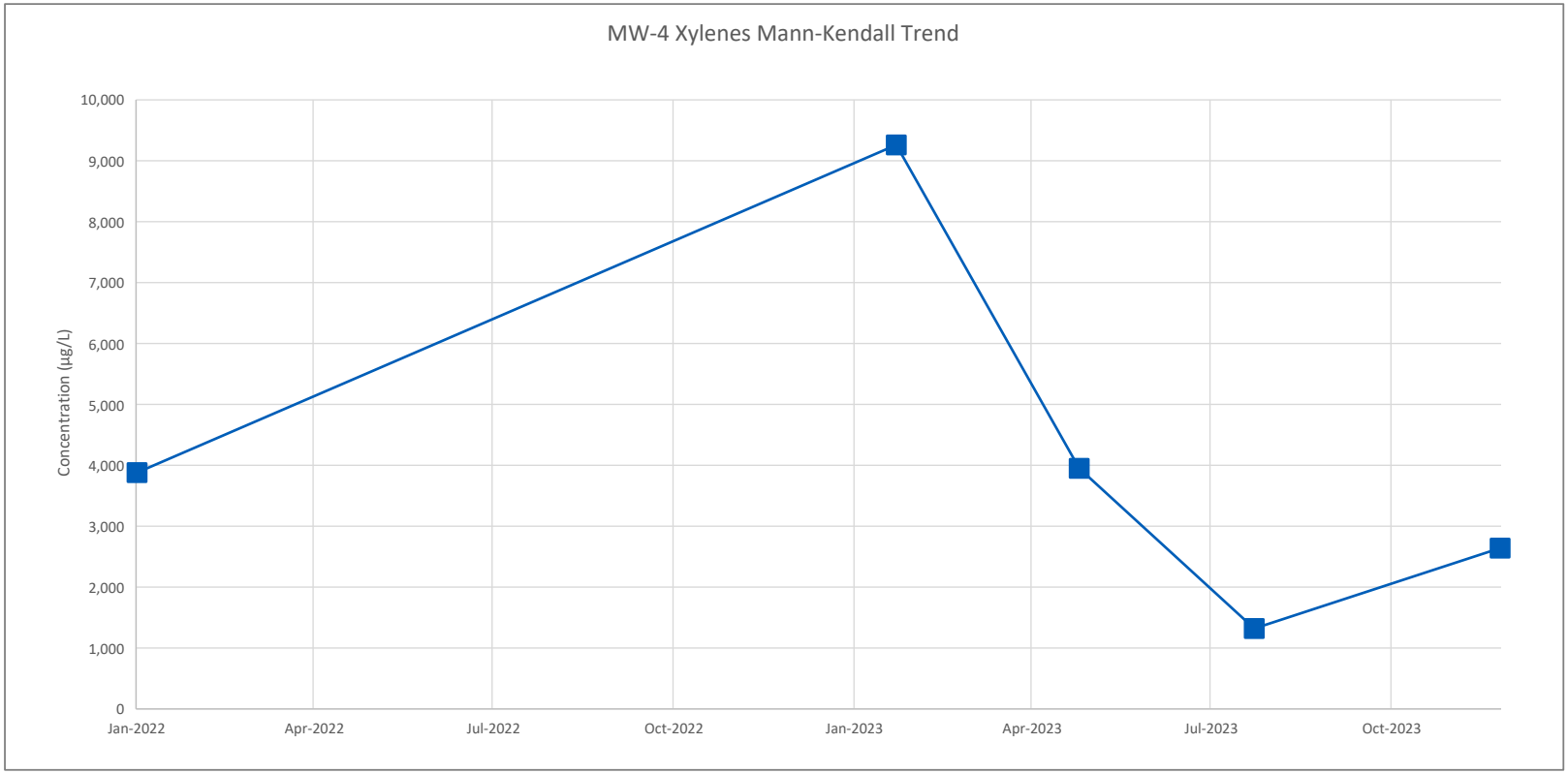


Data Set ID:	MW-4 Xylenes	
Units:	µg/L	
Event #	Date	Value
1	01/04/2022	3880
2	01/25/2023	9260
3	04/28/2023	3950
4	07/26/2023	1320
5	11/28/2023	2640

Mann-Kendall Results	
n:	5
S:	-4
SES:	4.08
Z:	-0.73
Confidence Factor:	76%
Coefficient of Variation:	0.72
Conclusion:	Stable

Mann-Kendall	Statistical Confidence	Trend Conclusion
S > 0	≥ 90%	Increasing
S > 0	< 90%	More Data Needed
S ≤ 0	< 90% and COV ≥ 1	More Data Needed
S ≤ 0	< 90% COV < 1	Stable
S < 0	≥ 90%	Decreasing

Trend Threshold:	90%

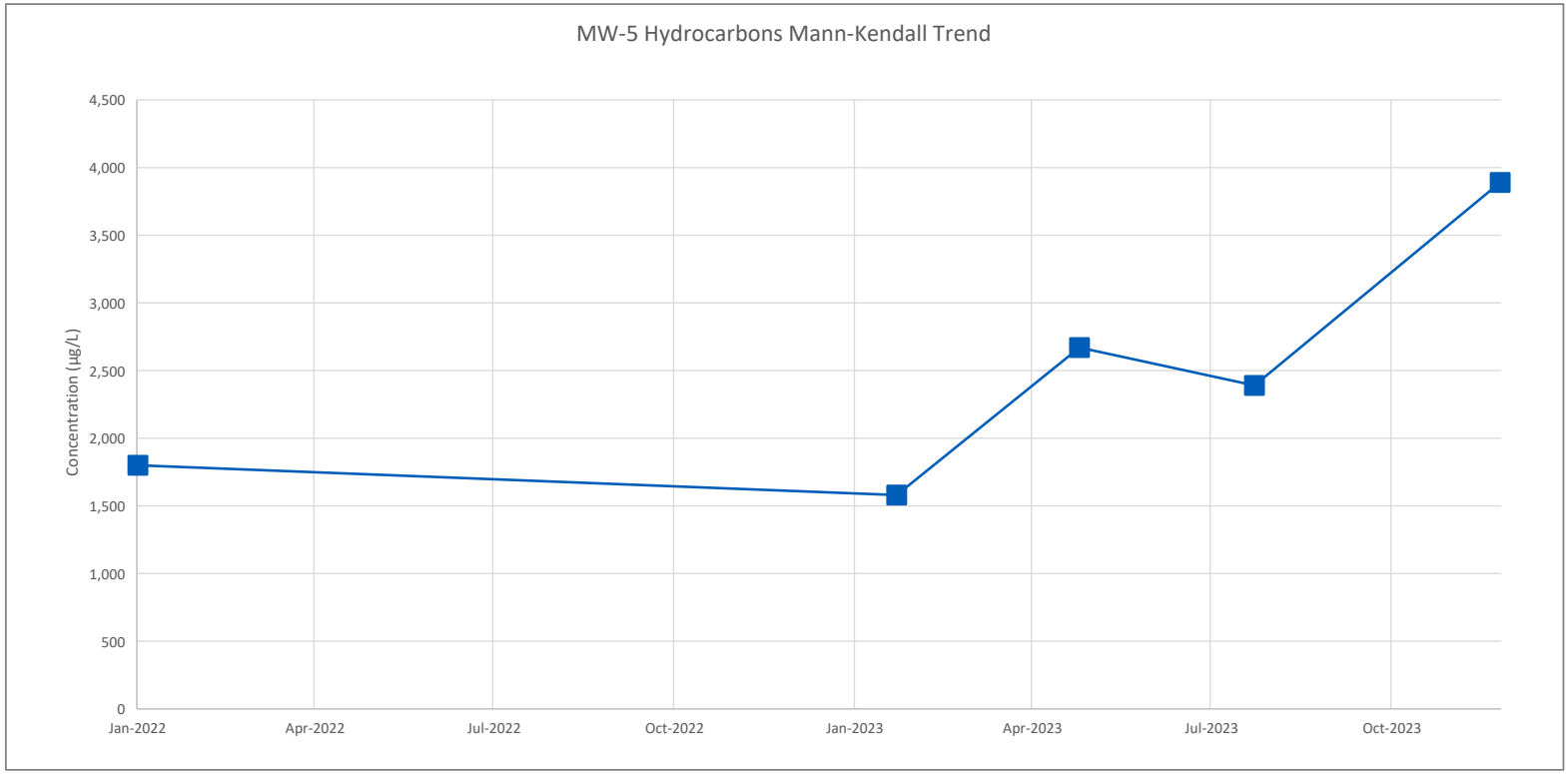


Data Set ID:	MW-5 Hydrocarbons	
Units:	µg/L	
Event #	Date	Value
1	01/04/2022	1800
2	01/25/2023	1580
3	04/28/2023	2670
4	07/26/2023	2390
5	11/28/2023	3890

Mann-Kendall Results	
n:	5
S:	6
SES:	4.08
Z:	1.22
Confidence Factor:	88%
Coefficient of Variation:	0.37
Conclusion:	More Data Needed

Mann-Kendall	Statistical Confidence	Trend Conclusion
S > 0	≥ 90%	Increasing
S > 0	< 90%	More Data Needed
S ≤ 0	< 90% and COV ≥ 1	More Data Needed
S ≤ 0	< 90% COV < 1	Stable
S < 0	≥ 90%	Decreasing

Trend Threshold:	90%

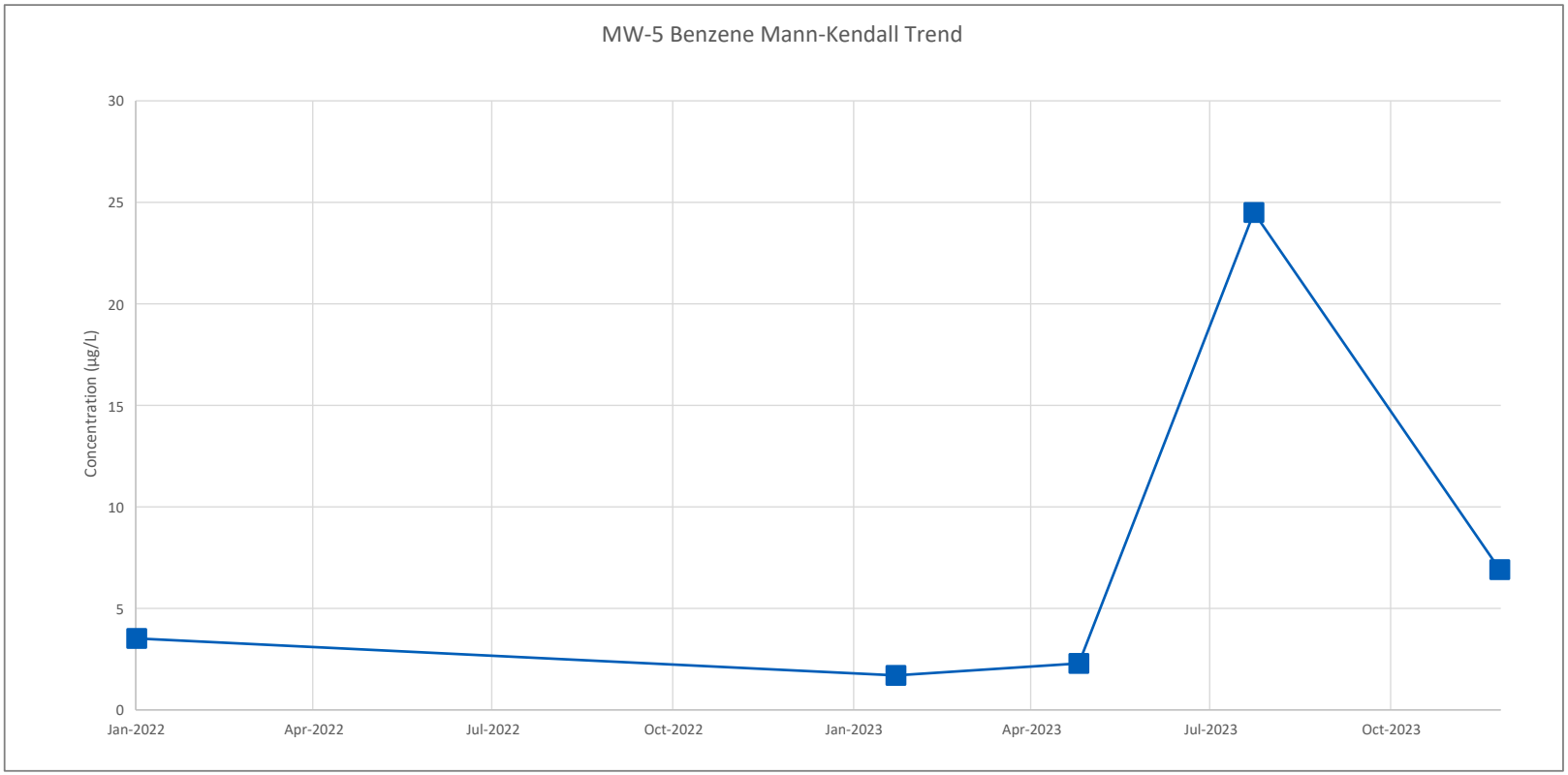


Data Set ID:	MW-5 Benzene	
Units:	µg/L	
Event #	Date	Value
1	01/04/2022	3.5
2	01/25/2023	1.7
3	04/28/2023	2.3
4	07/26/2023	24.5
5	11/28/2023	6.9

Mann-Kendall Results	
n:	5
S:	4
SES:	4.08
Z:	0.73
Confidence Factor:	76%
Coefficient of Variation:	1.23
Conclusion:	More Data Needed

Mann-Kendall	Statistical Confidence	Trend Conclusion
S > 0	≥ 90%	Increasing
S > 0	< 90%	More Data Needed
S ≤ 0	< 90% and COV ≥ 1	More Data Needed
S ≤ 0	< 90% COV < 1	Stable
S < 0	≥ 90%	Decreasing

Trend Threshold:	90%

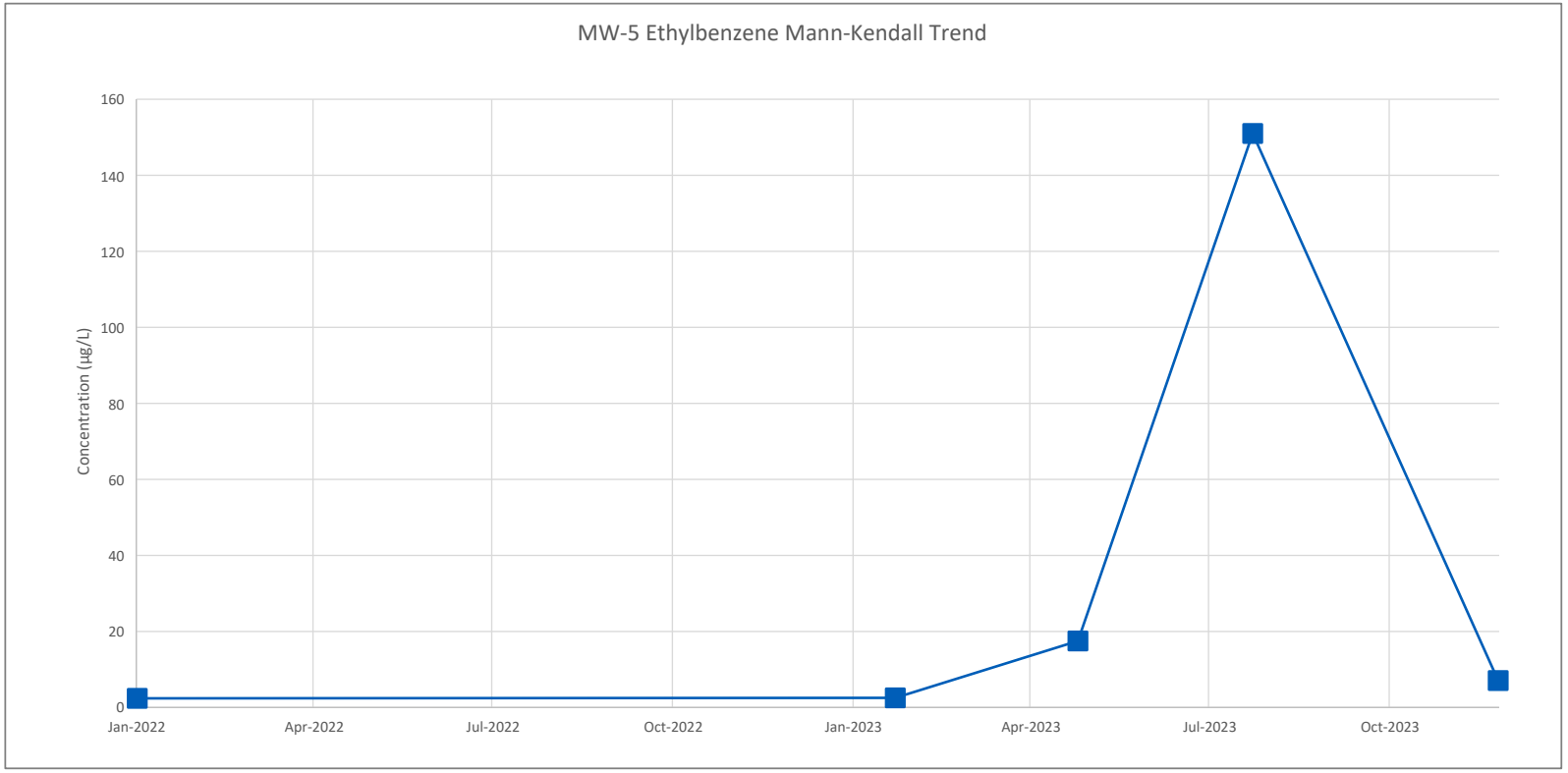


Data Set ID:	MW-5 Ethylbenzene	
Units:	µg/L	
Event #	Date	Value
1	01/04/2022	2.4
2	01/25/2023	2.5
3	04/28/2023	17.5
4	07/26/2023	151.0
5	11/28/2023	7.1

Mann-Kendall Results	
n:	5
S:	6
SES:	4.08
Z:	1.22
Confidence Factor:	88%
Coefficient of Variation:	1.79
Conclusion:	More Data Needed

Mann-Kendall	Statistical Confidence	Trend Conclusion
S > 0	≥ 90%	Increasing
S > 0	< 90%	More Data Needed
S ≤ 0	< 90% and COV ≥ 1	More Data Needed
S ≤ 0	< 90% COV < 1	Stable
S < 0	≥ 90%	Decreasing

Trend Threshold:	90%

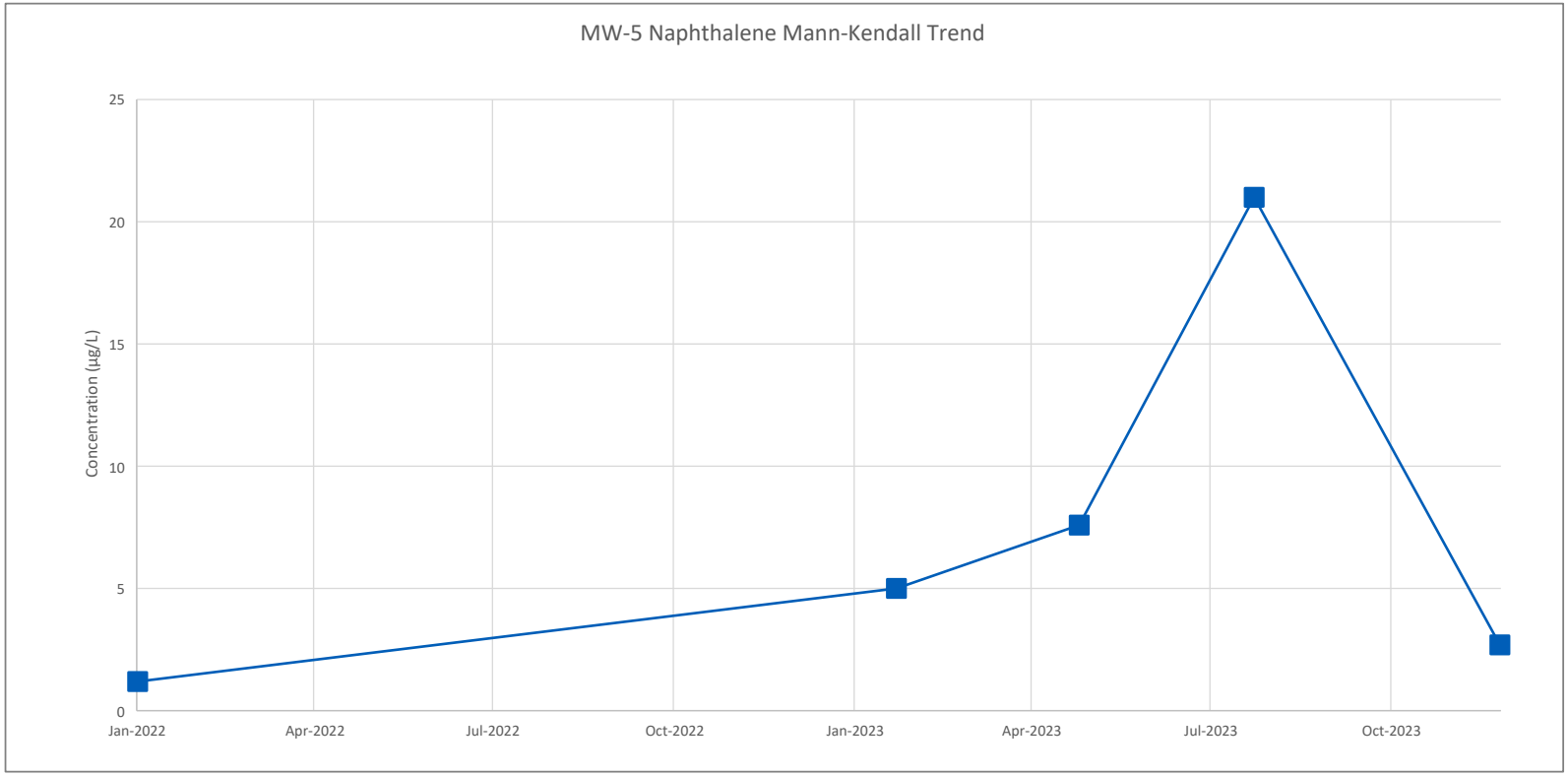


Data Set ID:	MW-5 Naphthalene	
Units:	µg/L	
Event #	Date	Value
1	**01/04/2022**	1.19
2	**01/25/2023**	5.0
3	**04/28/2023**	7.59
4	**07/26/2023**	21.0
5	**11/28/2023**	2.7

Mann-Kendall Results	
n:	5
S:	4
SES:	4.08
Z:	0.73
Confidence Factor:	76%
Coefficient of Variation:	1.06
Conclusion:	More Data Needed

Mann-Kendall	Statistical Confidence	Trend Conclusion
S > 0	≥ 90%	Increasing
S > 0	< 90%	More Data Needed
S ≤ 0	< 90% and COV ≥ 1	More Data Needed
S ≤ 0	< 90% COV < 1	Stable
S < 0	≥ 90%	Decreasing

Trend Threshold:	90%

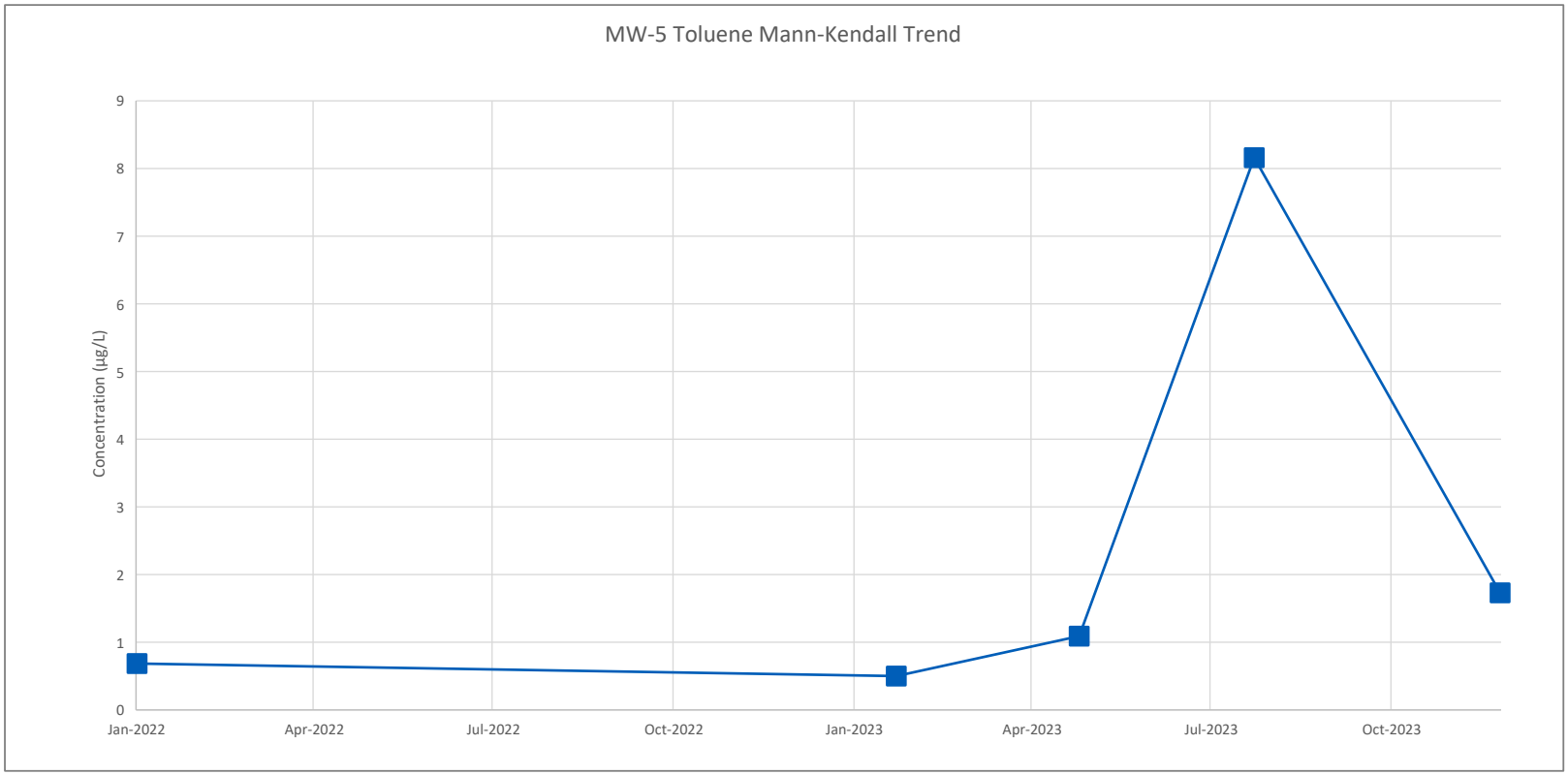


Data Set ID:	MW-5 Toluene	
Units:	µg/L	
Event #	Date	Value
1	01/04/2022	0.7
2	01/25/2023	0.5
3	04/28/2023	1.1
4	07/26/2023	8.2
5	11/28/2023	1.7

Mann-Kendall Results	
n:	5
S:	6
SES:	4.08
Z:	1.22
Confidence Factor:	88%
Coefficient of Variation:	1.33
Conclusion:	More Data Needed

Mann-Kendall	Statistical Confidence	Trend Conclusion
S > 0	≥ 90%	Increasing
S > 0	< 90%	More Data Needed
S ≤ 0	< 90% and COV ≥ 1	More Data Needed
S ≤ 0	< 90% COV < 1	Stable
S < 0	≥ 90%	Decreasing

Trend Threshold:	90%

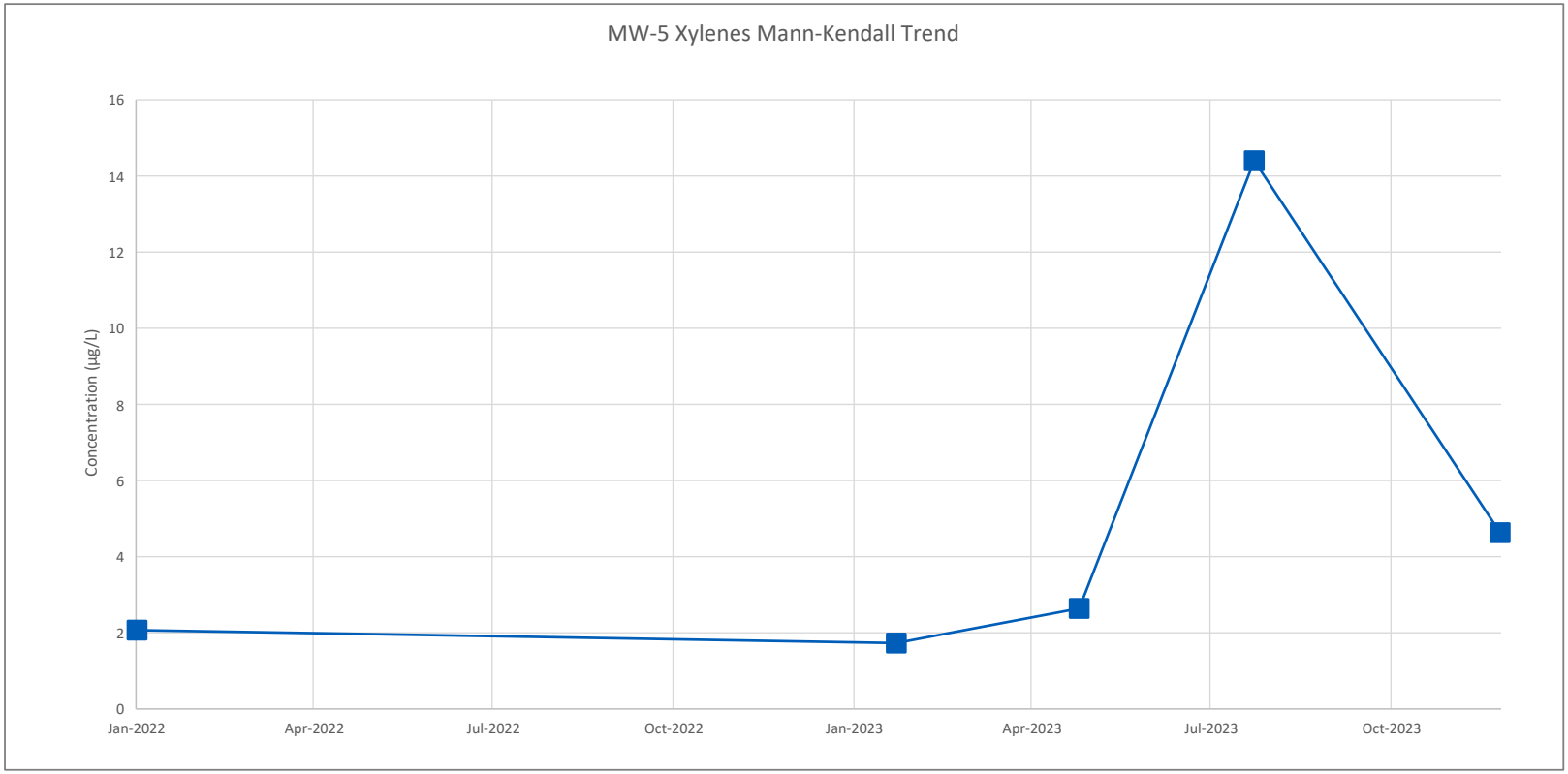


Data Set ID:	MW-5 Xylenes	
Units:	µg/L	
Event #	Date	Value
1	01/04/2022	2.1
2	01/25/2023	1.7
3	04/28/2023	2.6
4	07/26/2023	14.4
5	11/28/2023	4.6

Mann-Kendall Results	
n:	5
S:	6
SES:	4.08
Z:	1.22
Confidence Factor:	88%
Coefficient of Variation:	1.04
Conclusion:	More Data Needed

Mann-Kendall	Statistical Confidence	Trend Conclusion
S > 0	≥ 90%	Increasing
S > 0	< 90%	More Data Needed
S ≤ 0	< 90% and COV ≥ 1	More Data Needed
S ≤ 0	< 90% COV < 1	Stable
S < 0	≥ 90%	Decreasing

Trend Threshold:	90%

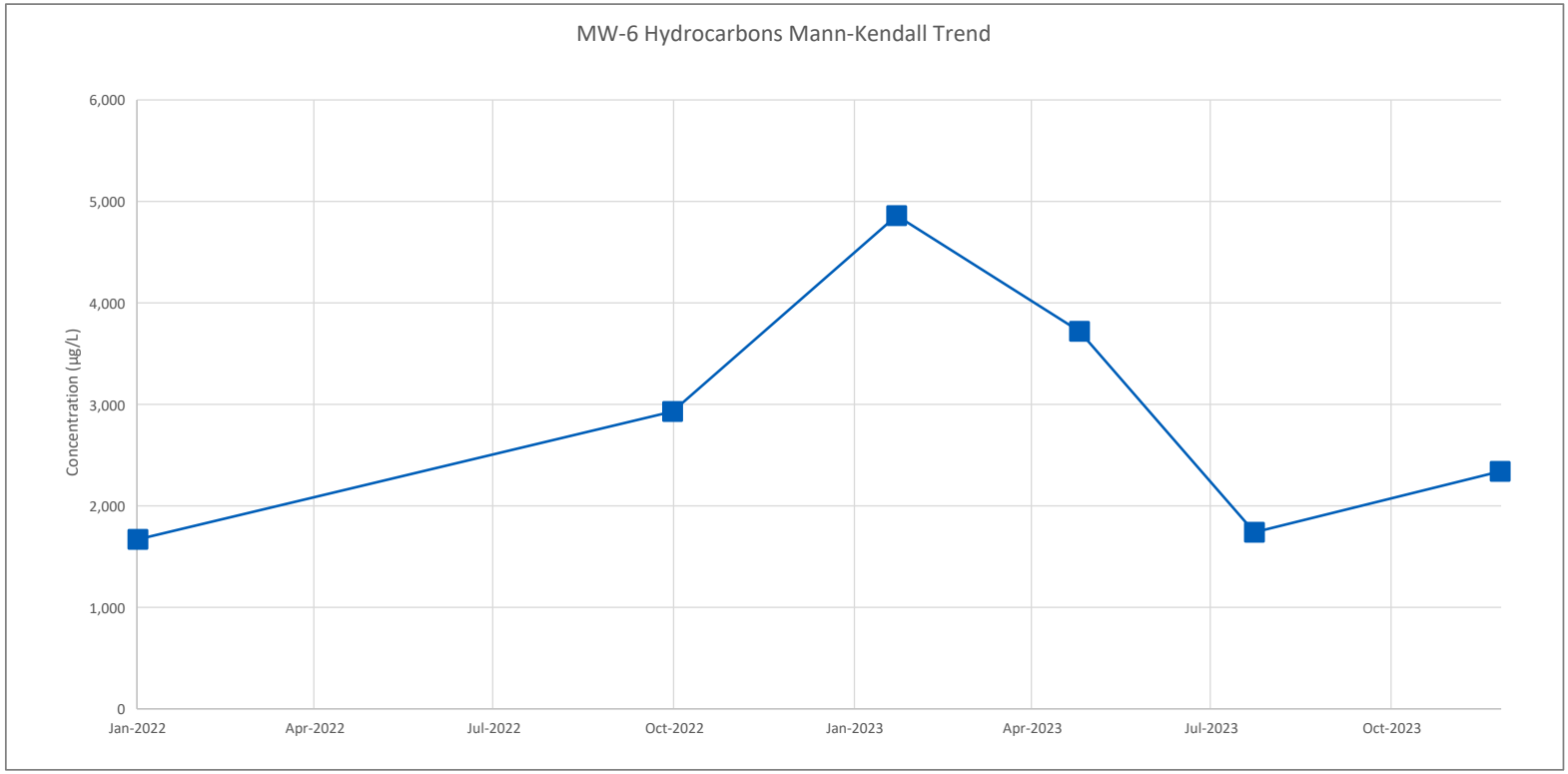


Data Set ID:	MW-6 Hydrocarbons	
Units:	µg/L	
Event #	Date	Value
1	**01/04/2022**	**1670**
2	**10/03/2022**	**2930**
3	**01/25/2023**	**4860**
4	**04/28/2023**	**3720**
5	**07/26/2023**	**1740**
6	**11/28/2023**	2340

Mann-Kendall Results	
n:	6
S:	1
SES:	5.32
Z:	0.00
Confidence Factor:	50%
Coefficient of Variation:	0.43
Conclusion:	More Data Needed

Trend Threshold:	90%

Mann-Kendall	Statistical Confidence	Trend Conclusion
S > 0	≥ 90%	Increasing
S > 0	< 90%	More Data Needed
S ≤ 0	< 90% and COV ≥ 1	More Data Needed
S ≤ 0	< 90% COV < 1	Stable
S < 0	≥ 90%	Decreasing

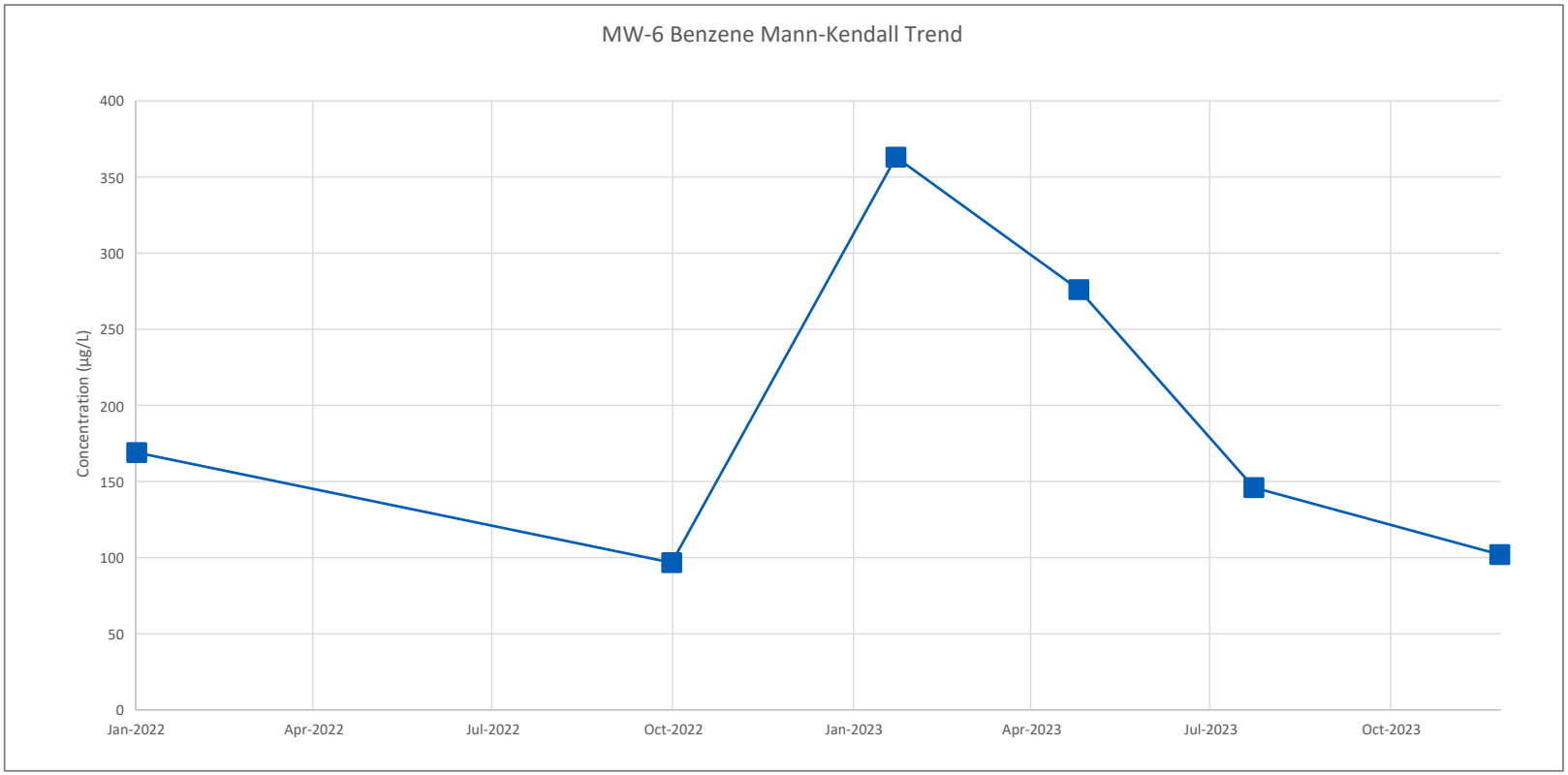


Data Set ID:	MW-6 Benzene	
Units:	µg/L	
Event #	Date	Value
1	01/04/2022	169.0
2	10/03/2022	96.7
3	01/25/2023	363.0
4	04/28/2023	276.0
5	07/26/2023	146.0
6	11/28/2023	102.0

Mann-Kendall Results	
n:	6
S:	-3
SES:	5.32
Z:	-0.38
Confidence Factor:	64%
Coefficient of Variation:	0.55
Conclusion:	Stable

Trend Threshold:	90%

Mann-Kendall	Statistical Confidence	Trend Conclusion
S > 0	≥ 90%	Increasing
S > 0	< 90%	More Data Needed
S ≤ 0	< 90% and COV ≥ 1	More Data Needed
S ≤ 0	< 90% COV < 1	Stable
S < 0	≥ 90%	Decreasing

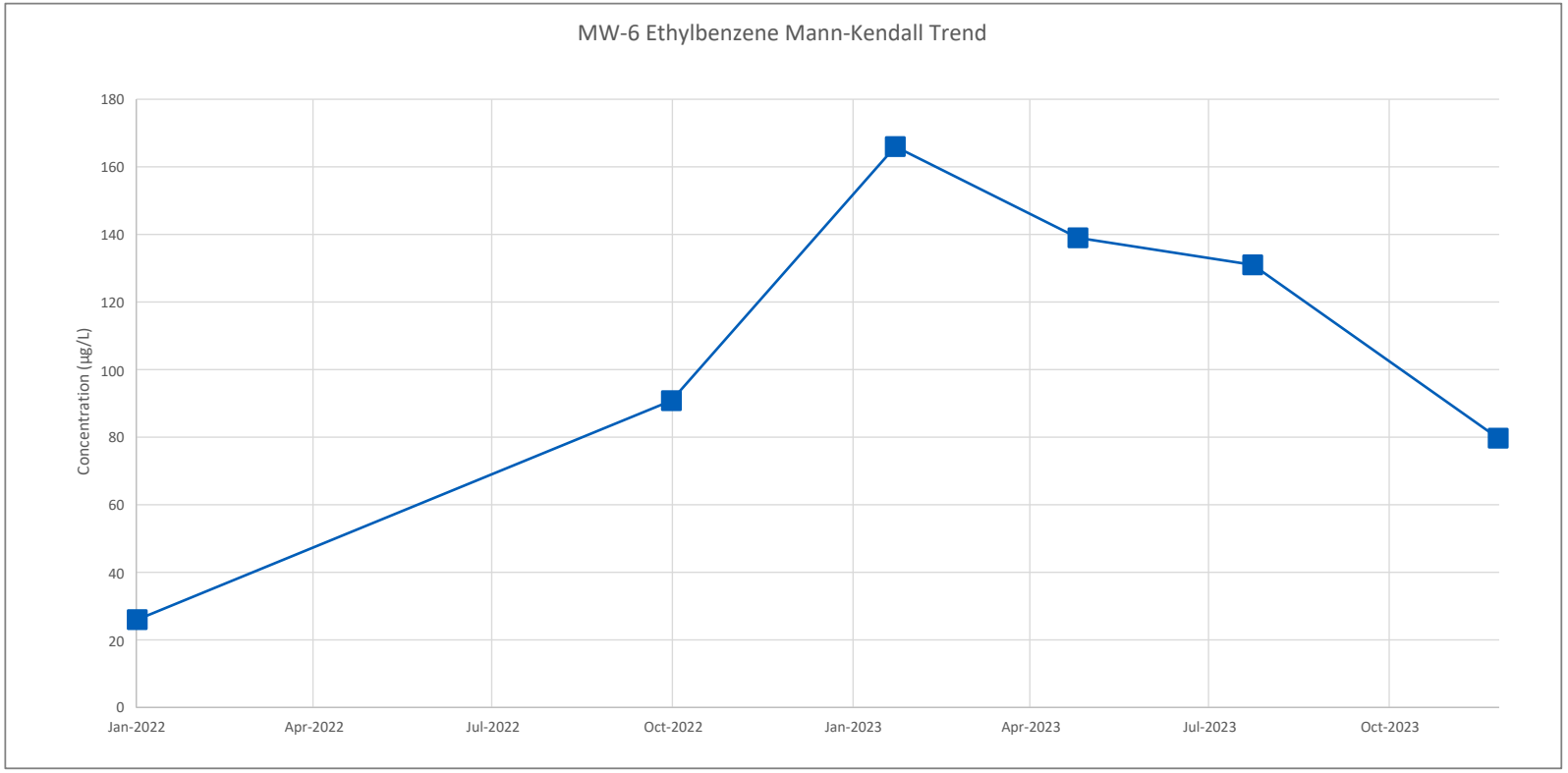


Data Set ID:	MW-6 Ethylbenzene	
Units:	µg/L	
Event #	Date	Value
1	01/04/2022	26.0
2	10/03/2022	90.8
3	01/25/2023	166.0
4	04/28/2023	139.0
5	07/26/2023	131.0
6	11/28/2023	79.7

Mann-Kendall Results	
n:	6
S:	1
SES:	5.32
Z:	0.00
Confidence Factor:	50%
Coefficient of Variation:	0.48
Conclusion:	More Data Needed

Mann-Kendall	Statistical Confidence	Trend Conclusion
S > 0	≥ 90%	Increasing
S > 0	< 90%	More Data Needed
S ≤ 0	< 90% and COV ≥ 1	More Data Needed
S ≤ 0	< 90% COV < 1	Stable
S < 0	≥ 90%	Decreasing

Trend Threshold:	90%

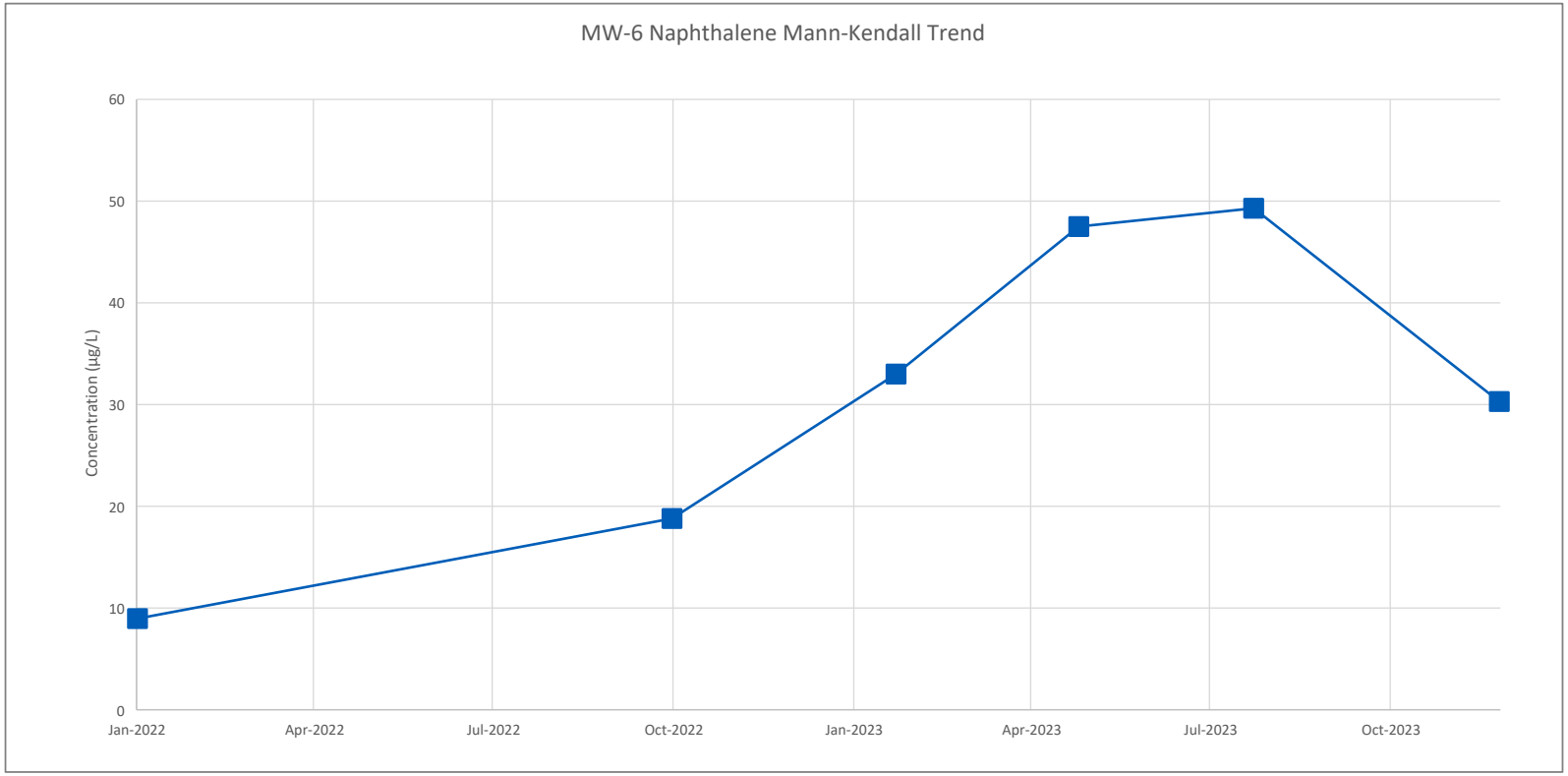


Data Set ID:	MW-6 Naphthalene	
Units:	µg/L	
Event #	Date	Value
1	**01/04/2022**	8.96
2	**10/03/2022**	18.8
3	**01/25/2023**	33.00
4	**04/28/2023**	47.5
5	**07/26/2023**	49.3
6	**11/28/2023**	30.3

Mann-Kendall Results	
n:	6
S:	9
SES:	5.32
Z:	1.50
Confidence Factor:	93%
Coefficient of Variation:	0.50
Conclusion:	Increasing Trend

Mann-Kendall	Statistical Confidence	Trend Conclusion
S > 0	≥ 90%	Increasing
S > 0	< 90%	More Data Needed
S ≤ 0	< 90% and COV ≥ 1	More Data Needed
S ≤ 0	< 90% COV < 1	Stable
S < 0	≥ 90%	Decreasing

Trend Threshold:	90%

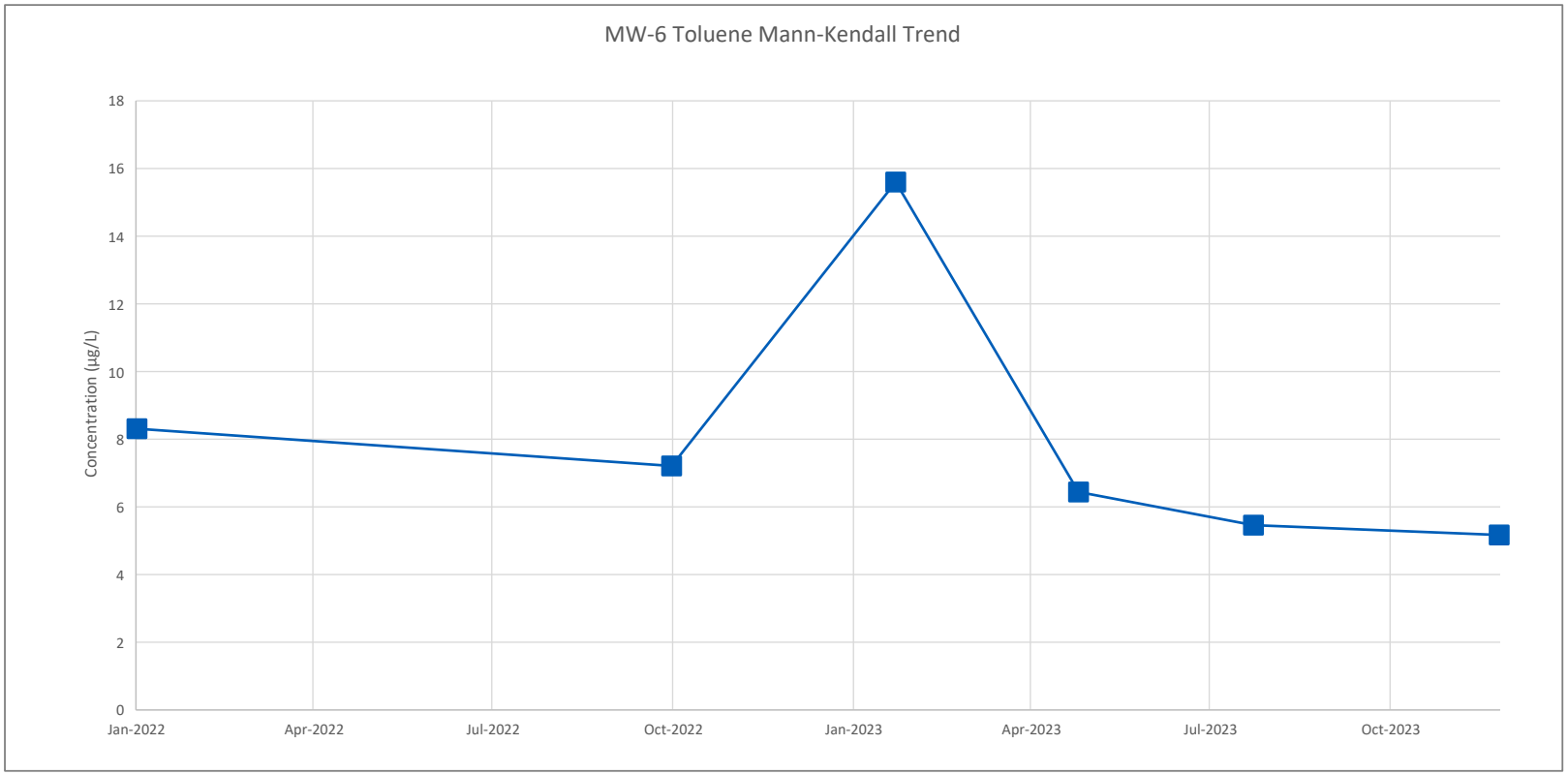


Data Set ID:	MW-6 Toluene	
Units:	µg/L	
Event #	Date	Value
1	01/04/2022	8.3
2	10/03/2022	7.2
3	01/25/2023	15.6
4	04/28/2023	6.4
5	07/26/2023	5.5
6	11/28/2023	5.2

Mann-Kendall Results	
n:	6
S:	-11
SES:	5.32
Z:	-1.88
Confidence Factor:	97%
Coefficient of Variation:	0.48
Conclusion:	Decreasing Trend

Trend Threshold:	90%

Mann-Kendall	Statistical Confidence	Trend Conclusion
S > 0	≥ 90%	Increasing
S > 0	< 90%	More Data Needed
S ≤ 0	< 90% and COV ≥ 1	More Data Needed
S ≤ 0	< 90% COV < 1	Stable
S < 0	≥ 90%	Decreasing

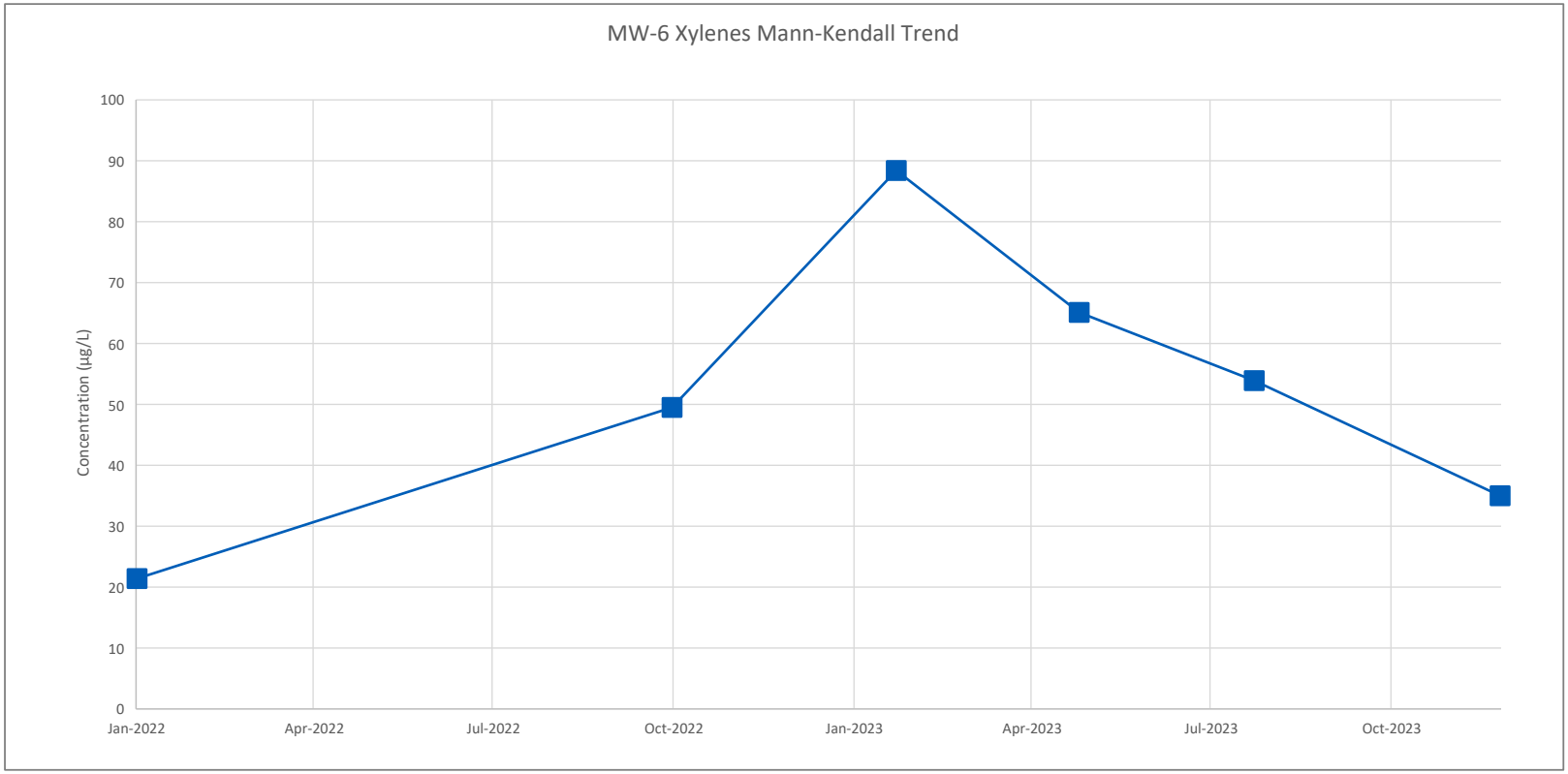


Data Set ID:	MW-6 Xylenes	
Units:	µg/L	
Event #	Date	Value
1	01/04/2022	21.4
2	10/03/2022	49.5
3	01/25/2023	88.4
4	04/28/2023	65.1
5	07/26/2023	53.9
6	11/28/2023	35.0

Mann-Kendall Results	
n:	6
S:	1
SES:	5.32
Z:	0.00
Confidence Factor:	50%
Coefficient of Variation:	0.45
Conclusion:	More Data Needed

Mann-Kendall	Statistical Confidence	Trend Conclusion
S > 0	≥ 90%	Increasing
S > 0	< 90%	More Data Needed
S ≤ 0	< 90% and COV ≥ 1	More Data Needed
S ≤ 0	< 90% COV < 1	Stable
S < 0	≥ 90%	Decreasing

Trend Threshold:	90%

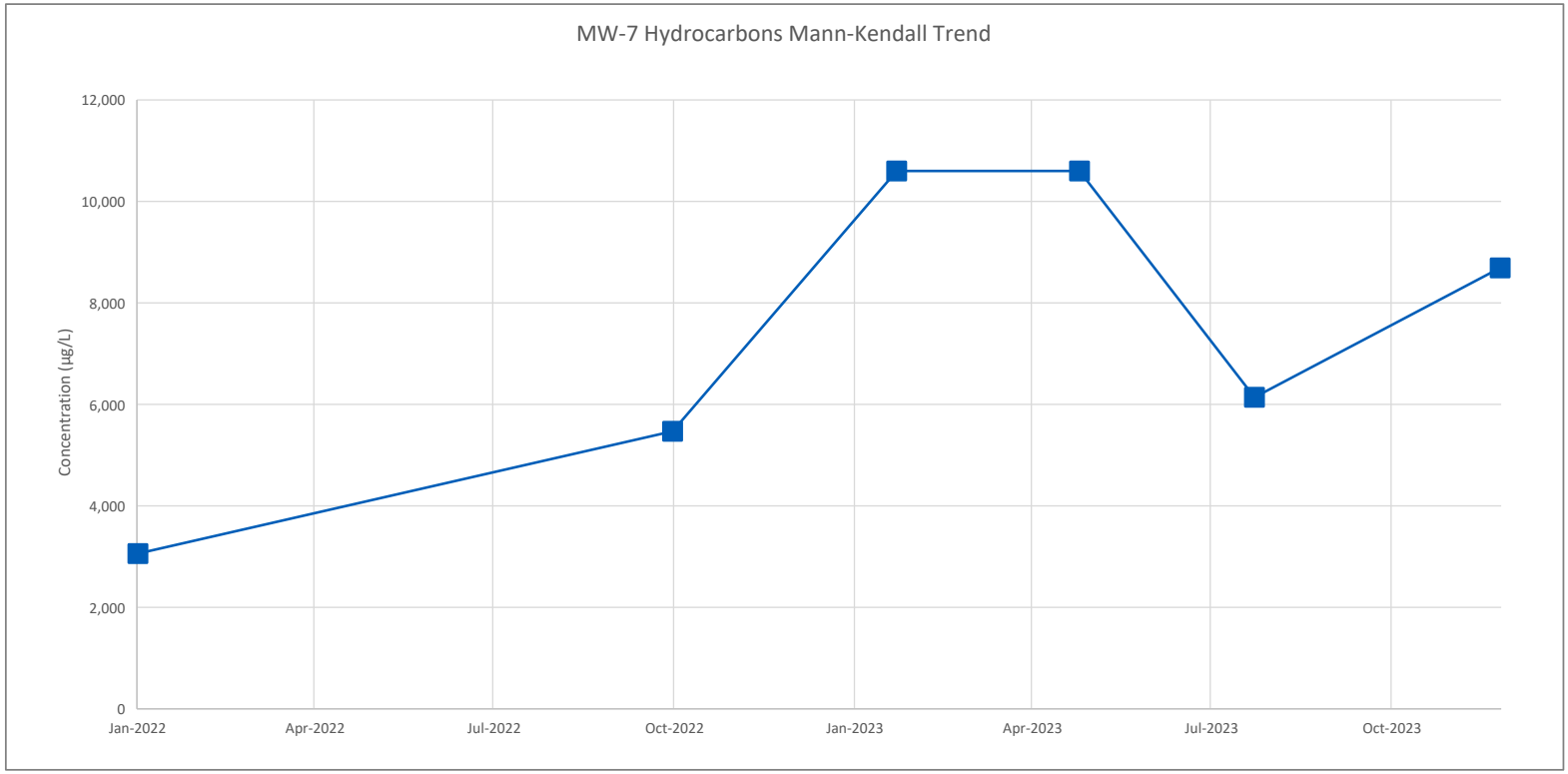


Data Set ID:	MW-7 Hydrocarbons	
Units:	µg/L	
Event #	Date	Value
1	**01/04/2022**	**3060**
2	**10/03/2022**	**5470**
3	**01/25/2023**	**10600**
4	**04/28/2023**	**10600**
5	**07/26/2023**	**6140**
6	**11/28/2023**	8690

Mann-Kendall Results	
n:	6
S:	6
SES:	5.23
Z:	0.96
Confidence Factor:	81%
Coefficient of Variation:	0.41
Conclusion:	More Data Needed

Trend Threshold:	90%

Mann-Kendall	Statistical Confidence	Trend Conclusion
S > 0	≥ 90%	Increasing
S > 0	< 90%	More Data Needed
S ≤ 0	< 90% and COV ≥ 1	More Data Needed
S ≤ 0	< 90% COV < 1	Stable
S < 0	≥ 90%	Decreasing

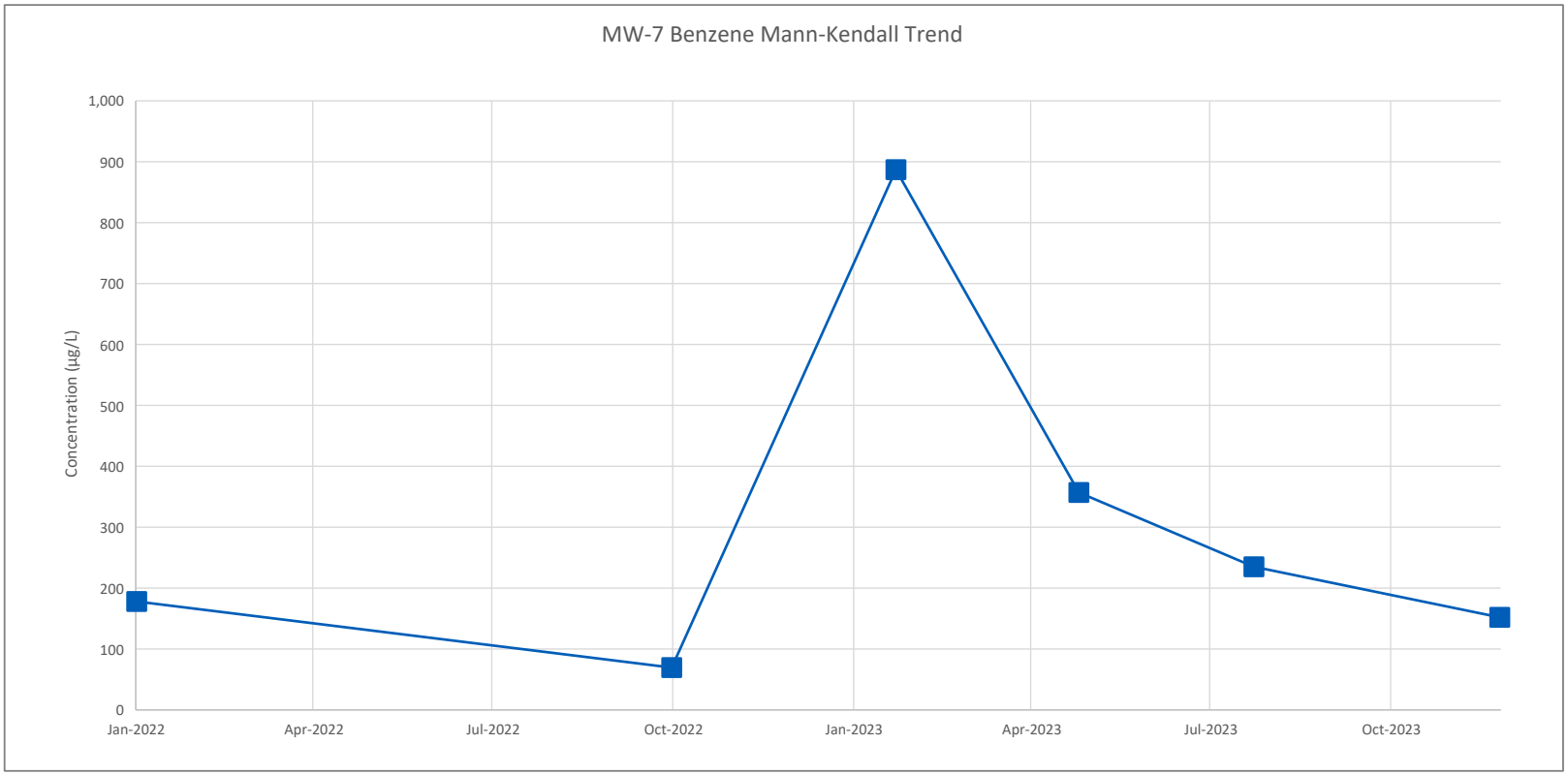


Data Set ID:	MW-7 Benzene	
Units:	µg/L	
Event #	Date	Value
1	01/04/2022	178.0
2	10/03/2022	69.5
3	01/25/2023	887.0
4	04/28/2023	357.0
5	07/26/2023	235.0
6	11/28/2023	152.0

Mann-Kendall Results	
n:	6
S:	-1
SES:	5.32
Z:	0.00
Confidence Factor:	50%
Coefficient of Variation:	0.95
Conclusion:	Stable

Mann-Kendall	Statistical Confidence	Trend Conclusion
S > 0	≥ 90%	Increasing
S > 0	< 90%	More Data Needed
S ≤ 0	< 90% and COV ≥ 1	More Data Needed
S ≤ 0	< 90% COV < 1	Stable
S < 0	≥ 90%	Decreasing

Trend Threshold:	90%

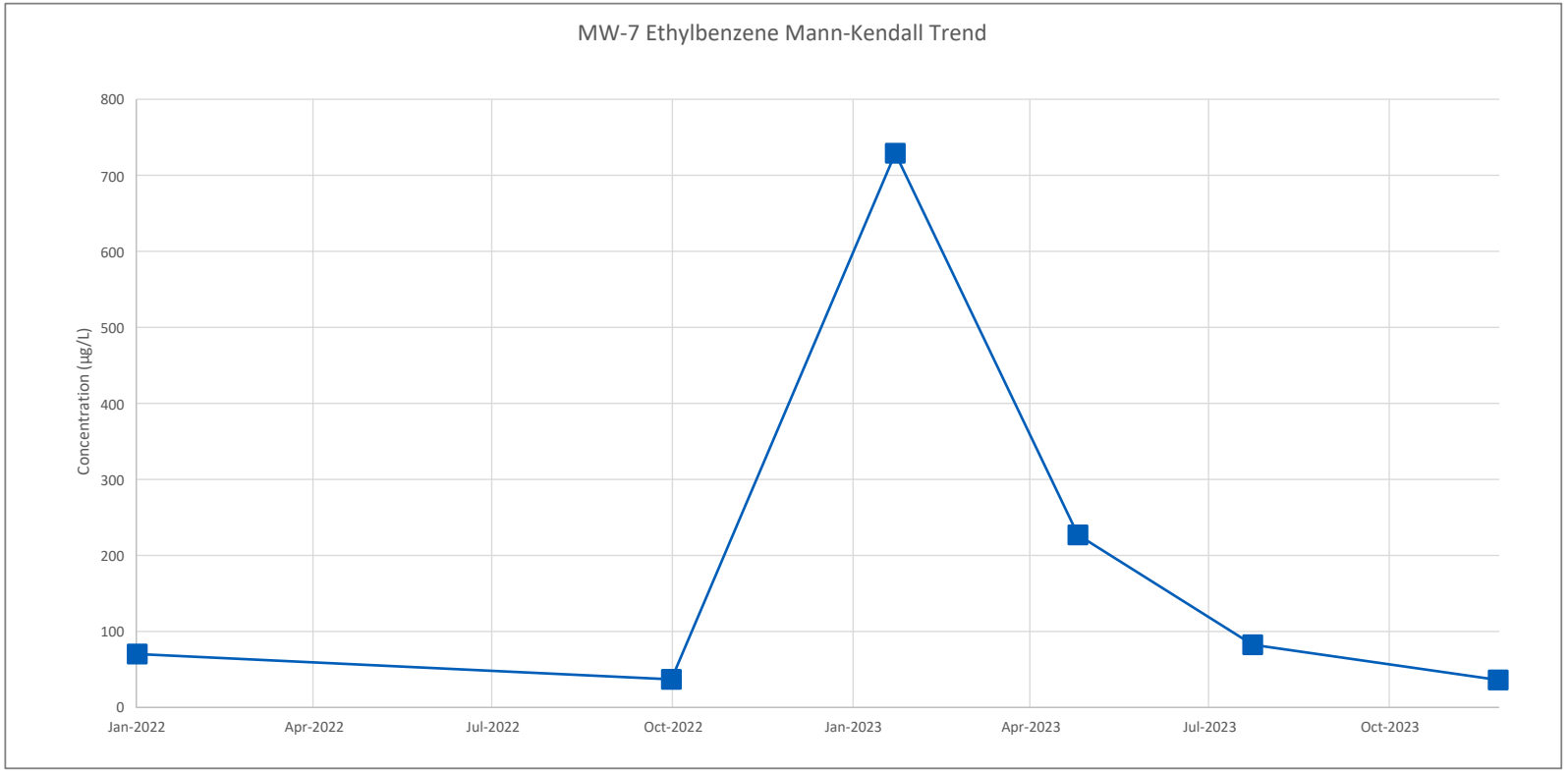


Data Set ID:	MW-7 Ethylbenzene	
Units:	µg/L	
Event #	Date	Value
1	01/04/2022	70.3
2	10/03/2022	37.0
3	01/25/2023	729.0
4	04/28/2023	227.0
5	07/26/2023	82.5
6	11/28/2023	36.2

Mann-Kendall Results	
n:	6
S:	-3
SES:	5.32
Z:	-0.38
Confidence Factor:	64%
Coefficient of Variation:	1.37
Conclusion:	More Data Needed

Trend Threshold:	90%

Mann-Kendall	Statistical Confidence	Trend Conclusion
S > 0	≥ 90%	Increasing
S > 0	< 90%	More Data Needed
S ≤ 0	< 90% and COV ≥ 1	More Data Needed
S ≤ 0	< 90% COV < 1	Stable
S < 0	≥ 90%	Decreasing

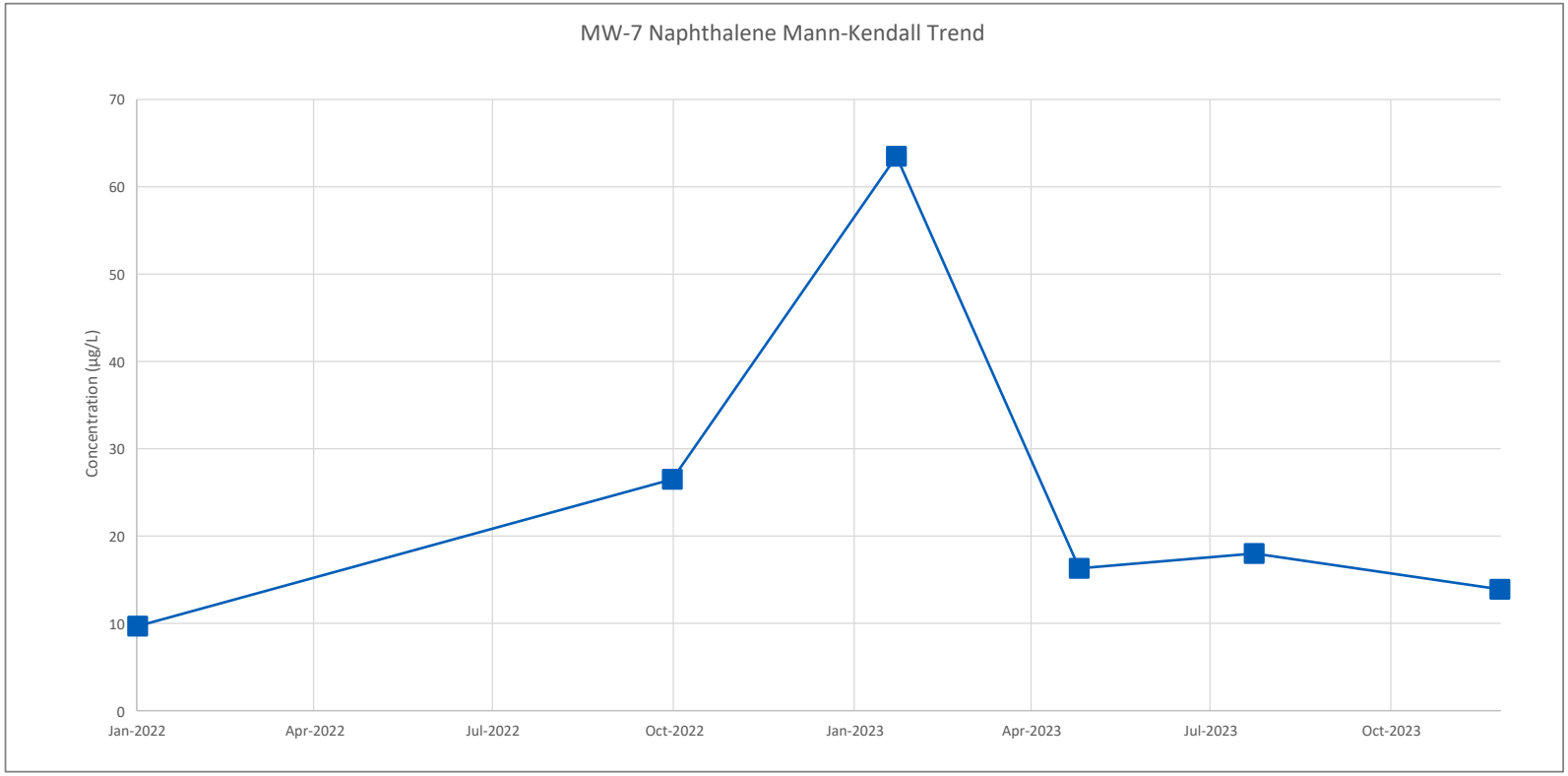


Data Set ID:	MW-7 Naphthalene	
Units:	µg/L	
Event #	Date	Value
1	**01/04/2022**	9.68
2	**10/03/2022**	26.5
3	**01/25/2023**	63.50
4	**04/28/2023**	16.3
5	**07/26/2023**	18.0
6	**11/28/2023**	13.9

Mann-Kendall Results	
n:	6
S:	-1
SES:	5.32
Z:	0.00
Confidence Factor:	50%
Coefficient of Variation:	0.80
Conclusion:	Stable

Mann-Kendall	Statistical Confidence	Trend Conclusion
S > 0	≥ 90%	Increasing
S > 0	< 90%	More Data Needed
S ≤ 0	< 90% and COV ≥ 1	More Data Needed
S ≤ 0	< 90% COV < 1	Stable
S < 0	≥ 90%	Decreasing

Trend Threshold:	90%

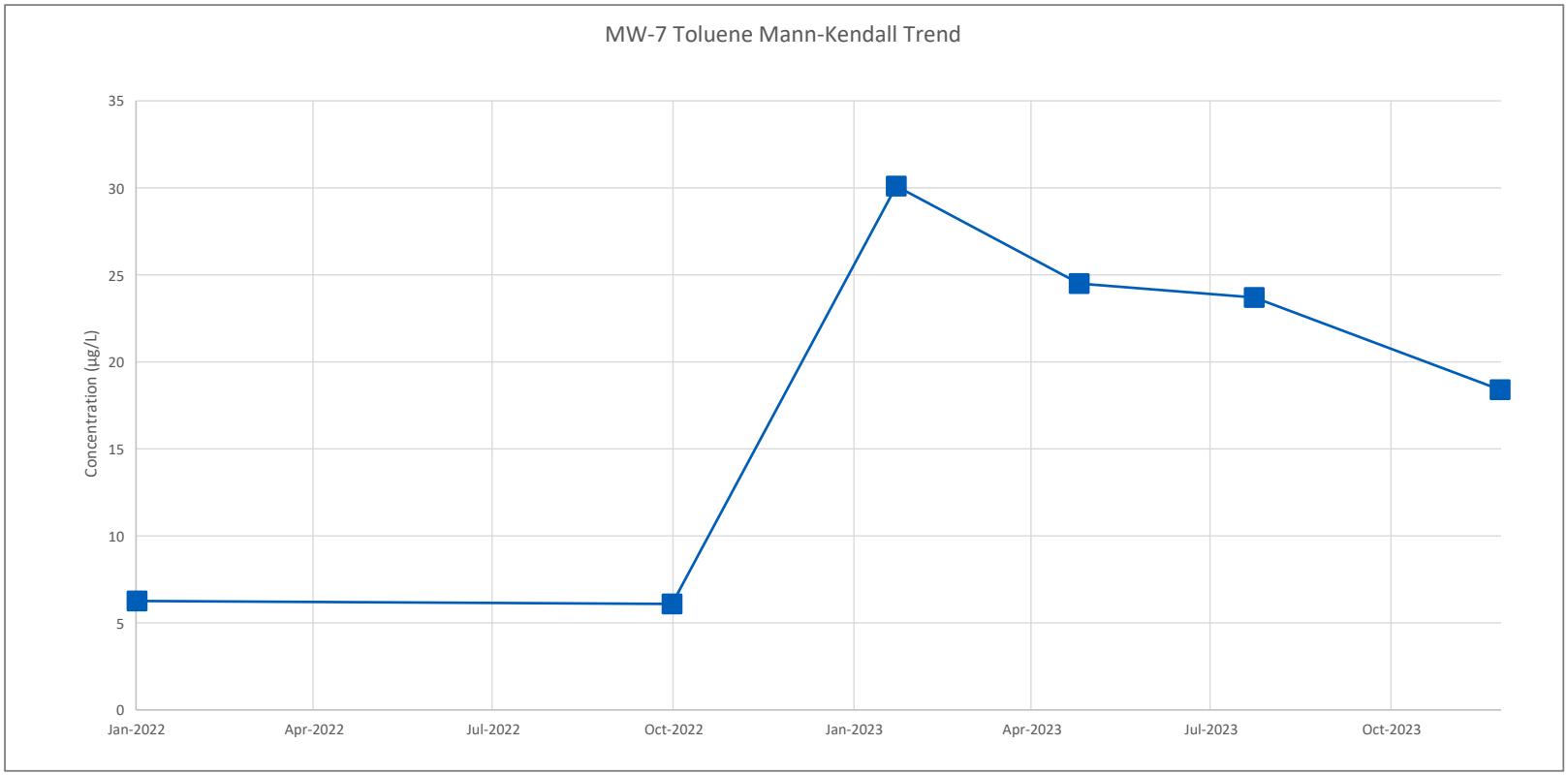


Data Set ID:	MW-7 Toluene	
Units:	µg/L	
Event #	Date	Value
1	01/04/2022	6.3
2	10/03/2022	6.1
3	01/25/2023	30.1
4	04/28/2023	24.5
5	07/26/2023	23.7
6	11/28/2023	18.4

Mann-Kendall Results	
n:	6
S:	1
SES:	5.32
Z:	0.00
Confidence Factor:	50%
Coefficient of Variation:	0.55
Conclusion:	More Data Needed

Mann-Kendall	Statistical Confidence	Trend Conclusion
S > 0	≥ 90%	Increasing
S > 0	< 90%	More Data Needed
S ≤ 0	< 90% and COV ≥ 1	More Data Needed
S ≤ 0	< 90% COV < 1	Stable
S < 0	≥ 90%	Decreasing

Trend Threshold:	90%

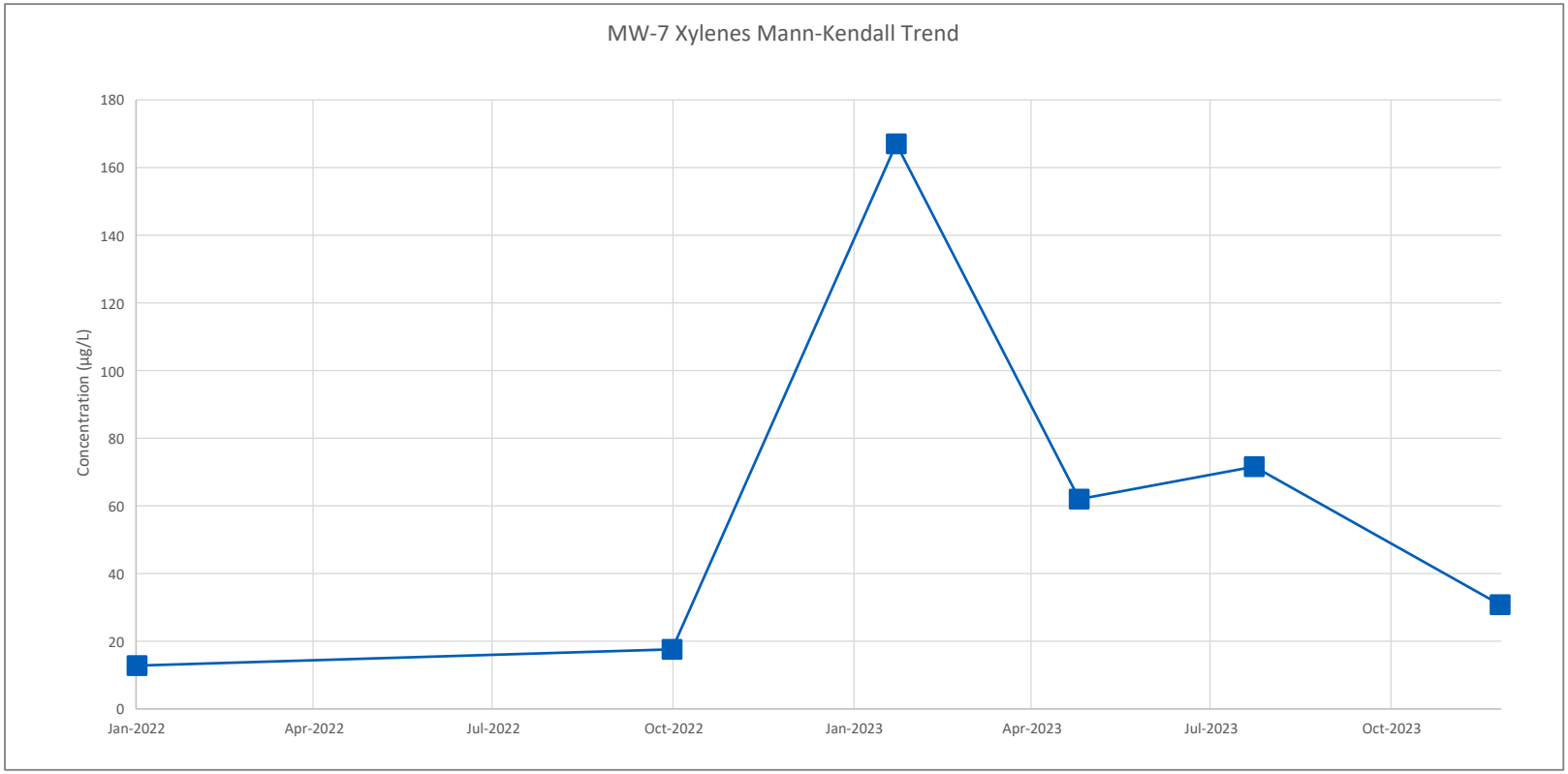


Data Set ID:	MW-7 Xylenes	
Units:	µg/L	
Event #	Date	Value
1	01/04/2022	12.8
2	10/03/2022	17.6
3	01/25/2023	167.0
4	04/28/2023	62.0
5	07/26/2023	71.6
6	11/28/2023	30.8

Mann-Kendall Results	
n:	6
S:	5
SES:	5.32
Z:	0.75
Confidence Factor:	77%
Coefficient of Variation:	0.95
Conclusion:	More Data Needed

Trend Threshold:	90%

Mann-Kendall	Statistical Confidence	Trend Conclusion
S > 0	≥ 90%	Increasing
S > 0	< 90%	More Data Needed
S ≤ 0	< 90% and COV ≥ 1	More Data Needed
S ≤ 0	< 90% COV < 1	Stable
S < 0	≥ 90%	Decreasing

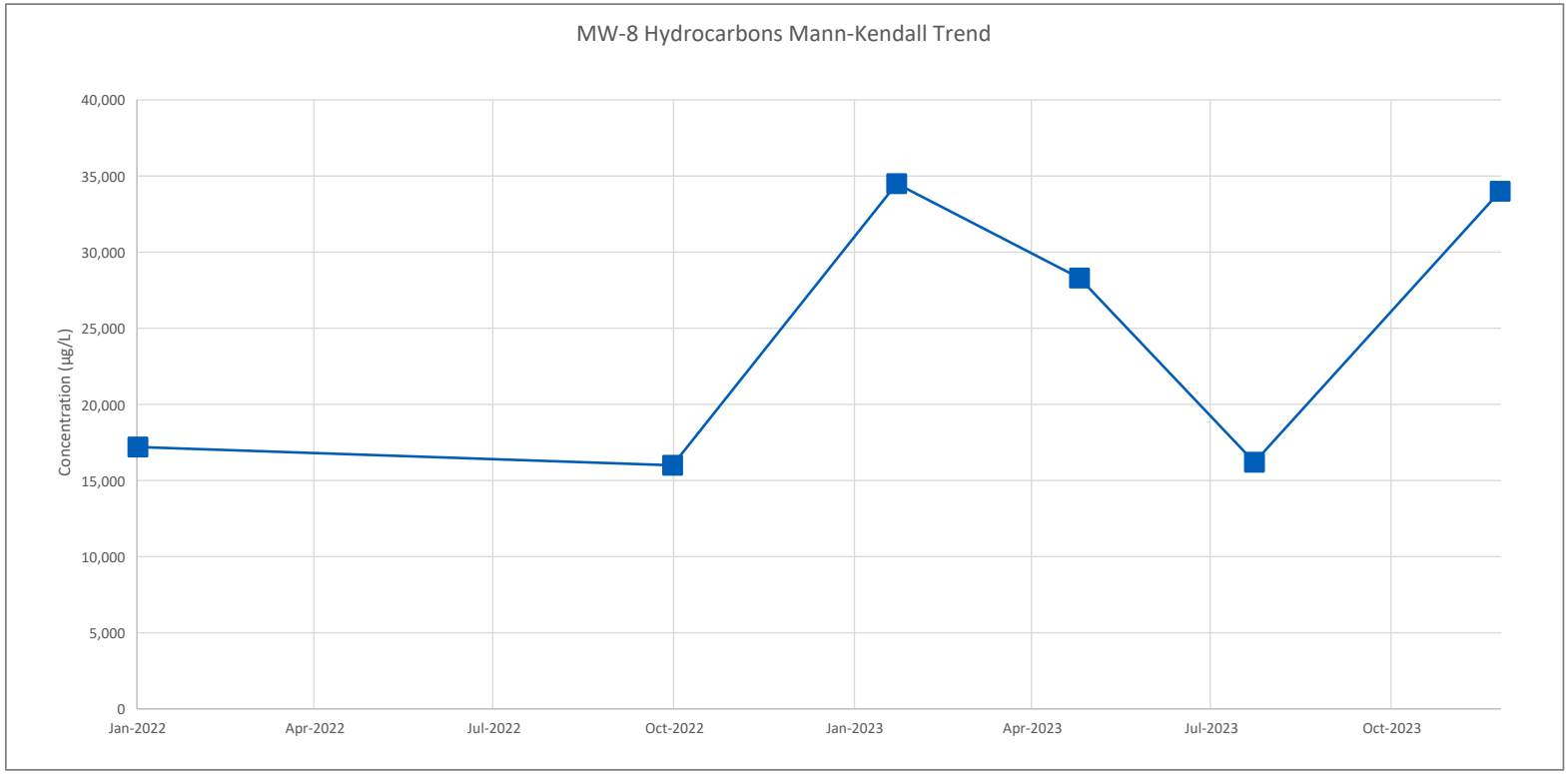


Data Set ID:	MW-8 Hydrocarbons	
Units:	µg/L	
Event #	Date	Value
1	**01/04/2022**	**17200**
2	**10/03/2022**	**16000**
3	**01/25/2023**	**34500**
4	**04/28/2023**	**28300**
5	**07/26/2023**	**16200**
6	**11/28/2023**	34000

Mann-Kendall Results	
n:	6
S:	3
SES:	5.32
Z:	0.38
Confidence Factor:	64%
Coefficient of Variation:	0.37
Conclusion:	More Data Needed

Trend Threshold:	90%

Mann-Kendall	Statistical Confidence	Trend Conclusion
S > 0	≥ 90%	Increasing
S > 0	< 90%	More Data Needed
S ≤ 0	< 90% and COV ≥ 1	More Data Needed
S ≤ 0	< 90% COV < 1	Stable
S < 0	≥ 90%	Decreasing

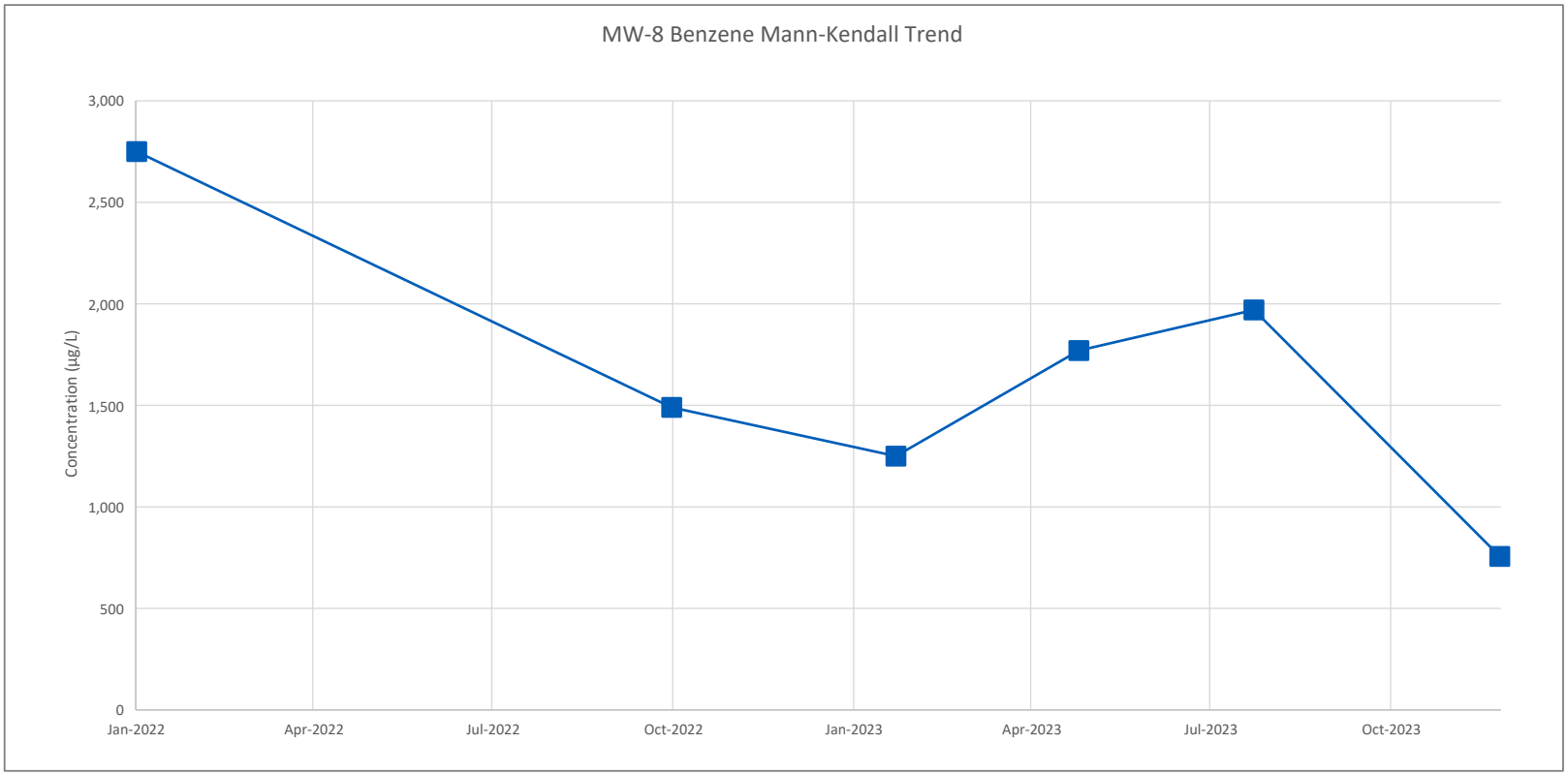


Data Set ID:	MW-8 Benzene	
Units:	µg/L	
Event #	Date	Value
1	01/04/2022	2750
2	10/03/2022	1490
3	01/25/2023	1250
4	04/28/2023	1770
5	07/26/2023	1970
6	11/28/2023	756

Mann-Kendall Results	
n:	6
S:	-5
SES:	5.32
Z:	-0.75
Confidence Factor:	77%
Coefficient of Variation:	0.41
Conclusion:	Stable

Mann-Kendall	Statistical Confidence	Trend Conclusion
S > 0	≥ 90%	Increasing
S > 0	< 90%	More Data Needed
S ≤ 0	< 90% and COV ≥ 1	More Data Needed
S ≤ 0	< 90% COV < 1	Stable
S < 0	≥ 90%	Decreasing

Trend Threshold:	90%

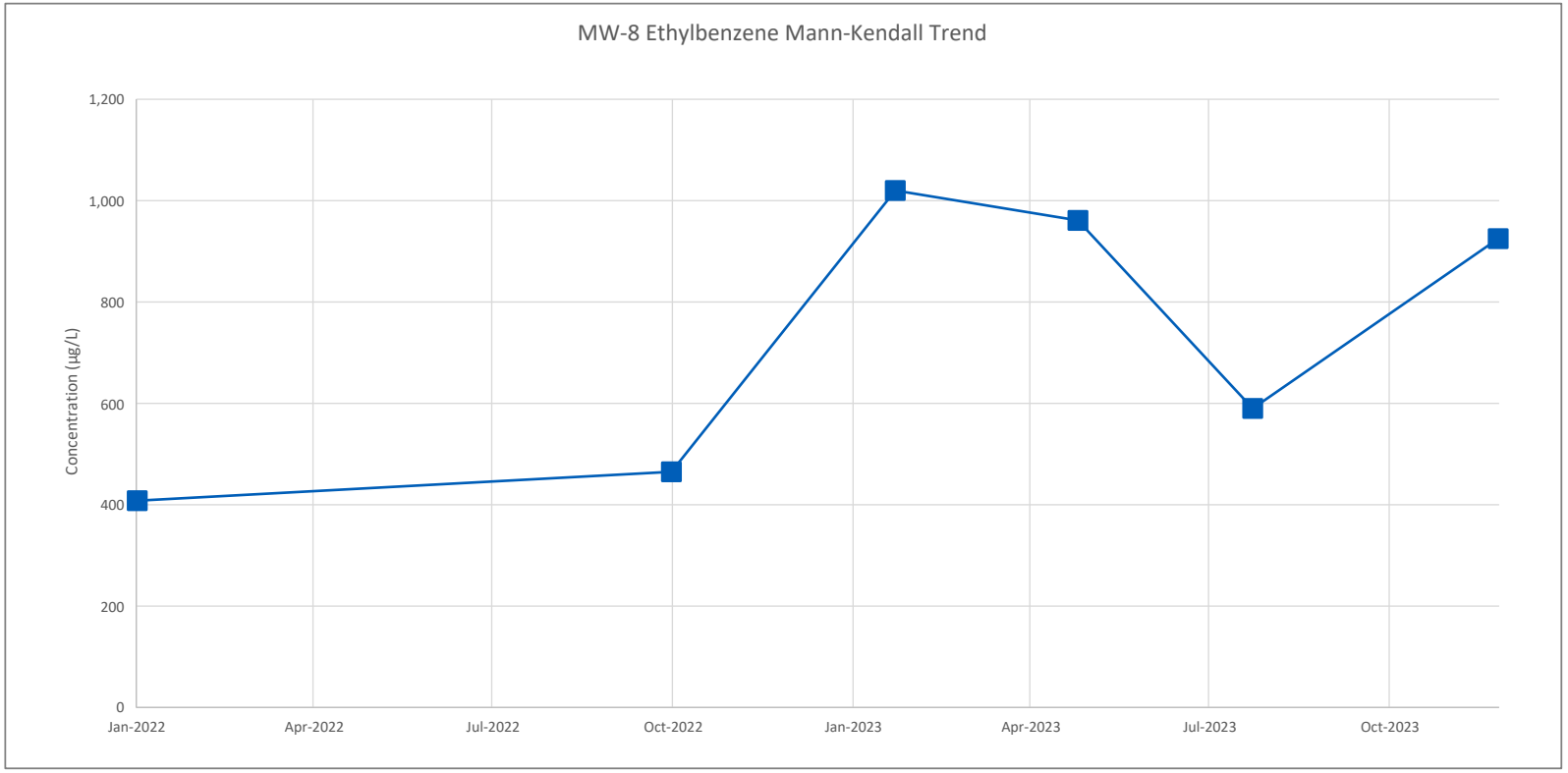


Data Set ID:	MW-8 Ethylbenzene	
Units:	µg/L	
Event #	Date	Value
1	01/04/2022	408
2	10/03/2022	465
3	01/25/2023	1020
4	04/28/2023	961
5	07/26/2023	590
6	11/28/2023	925

Mann-Kendall Results	
n:	6
S:	5
SES:	5.32
Z:	0.75
Confidence Factor:	77%
Coefficient of Variation:	0.37
Conclusion:	More Data Needed

Mann-Kendall	Statistical Confidence	Trend Conclusion
S > 0	≥ 90%	Increasing
S > 0	< 90%	More Data Needed
S ≤ 0	< 90% and COV ≥ 1	More Data Needed
S ≤ 0	< 90% COV < 1	Stable
S < 0	≥ 90%	Decreasing

Trend Threshold:	90%

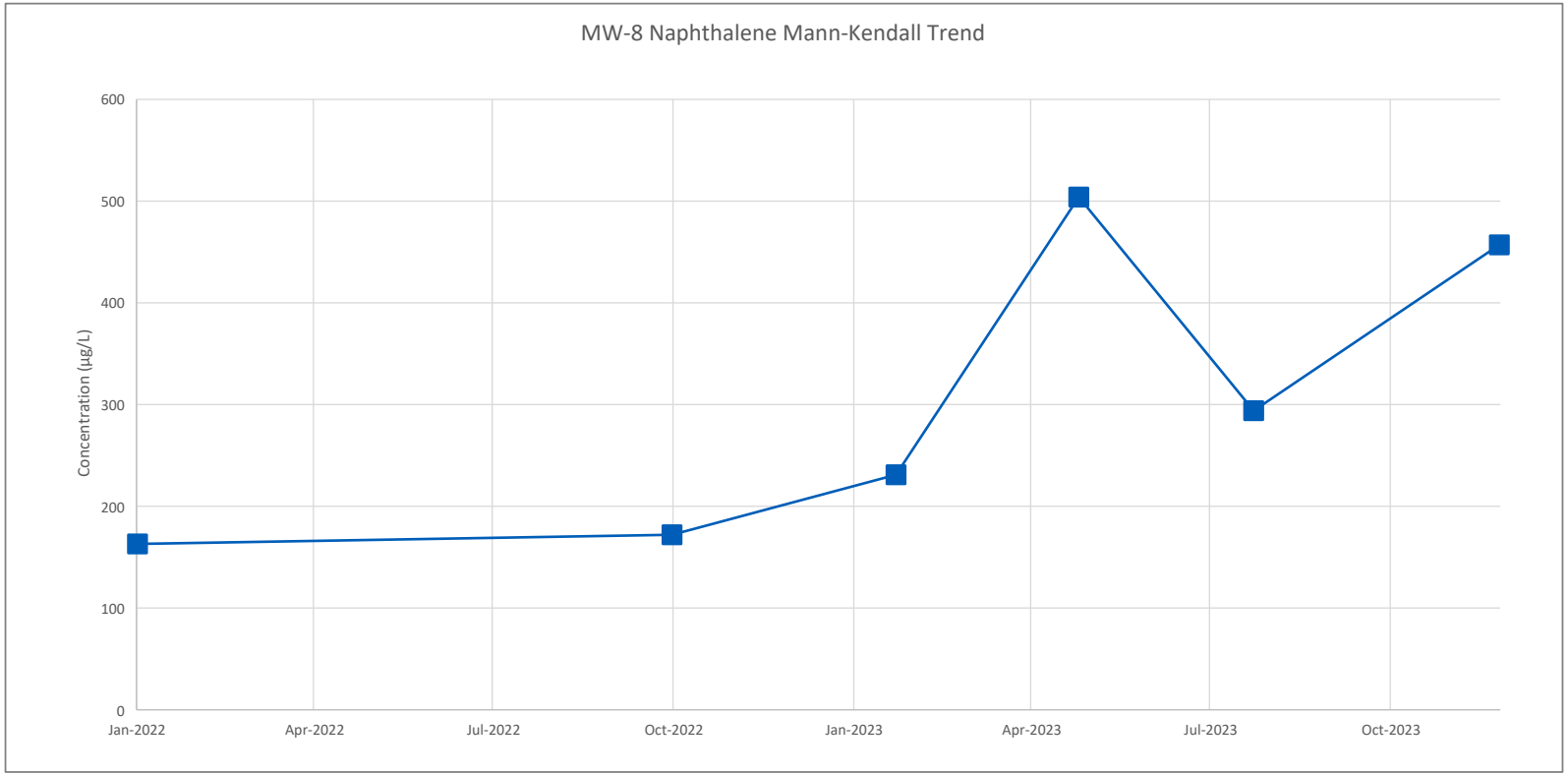


Data Set ID:	MW-8 Naphthalene	
Units:	µg/L	
Event #	Date	Value
1	**01/04/2022**	163.00
2	**10/03/2022**	172.0
3	**01/25/2023**	231.00
4	**04/28/2023**	504.0
5	**07/26/2023**	294.0
6	**11/28/2023**	457.0

Mann-Kendall Results	
n:	6
S:	11
SES:	5.32
Z:	1.88
Confidence Factor:	97%
Coefficient of Variation:	0.48
Conclusion:	Increasing Trend

Mann-Kendall	Statistical Confidence	Trend Conclusion
S > 0	≥ 90%	Increasing
S > 0	< 90%	More Data Needed
S ≤ 0	< 90% and COV ≥ 1	More Data Needed
S ≤ 0	< 90% COV < 1	Stable
S < 0	≥ 90%	Decreasing

Trend Threshold:	90%

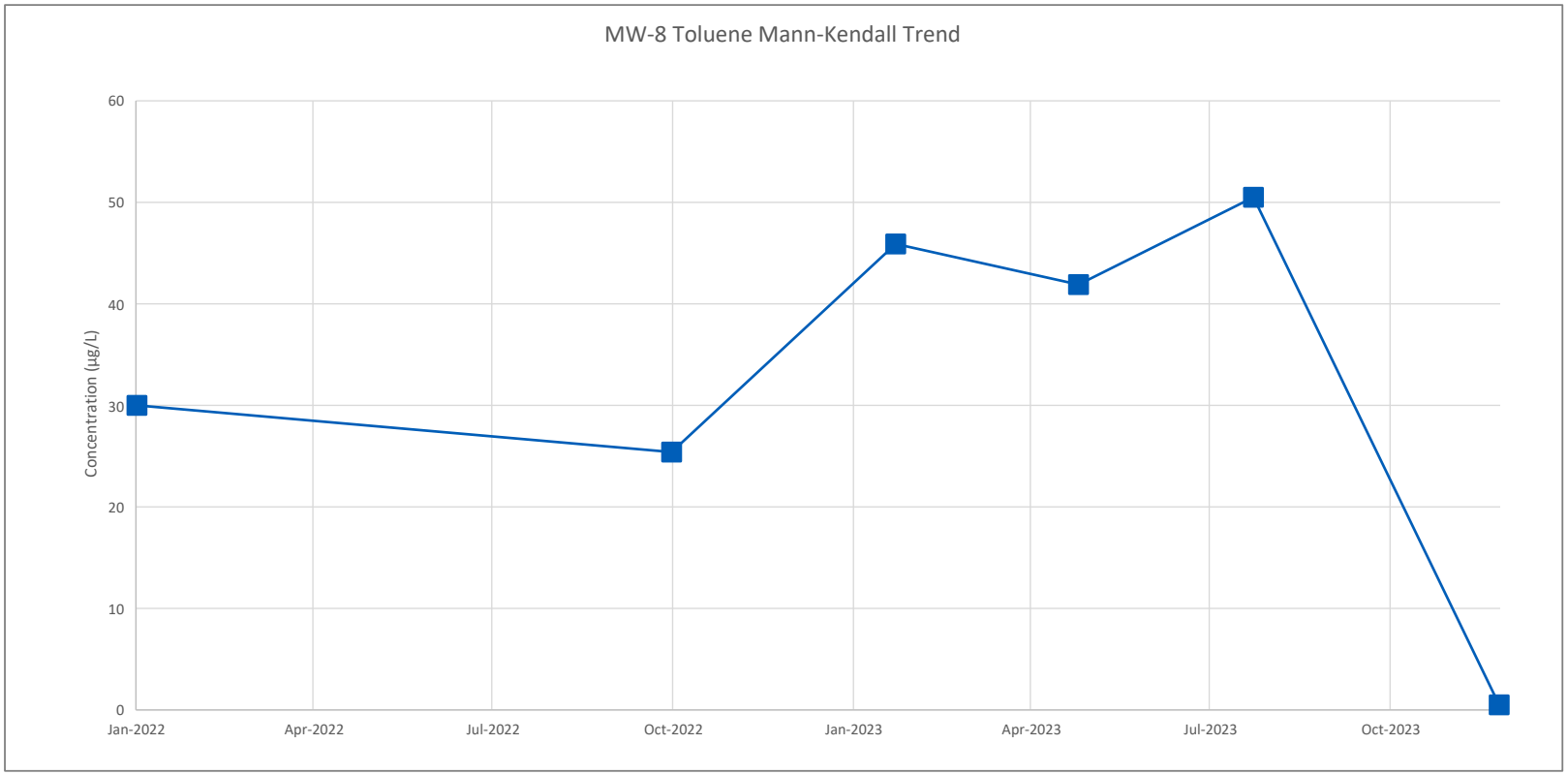


Data Set ID:	MW-8 Toluene	
Units:	µg/L	
Event #	Date	Value
1	01/04/2022	30.0
2	10/03/2022	25.4
3	01/25/2023	45.9
4	04/28/2023	41.9
5	07/26/2023	50.5
6	11/28/2023	0.5

Mann-Kendall Results	
n:	6
S:	1
SES:	5.32
Z:	0.00
Confidence Factor:	50%
Coefficient of Variation:	0.57
Conclusion:	More Data Needed

Trend Threshold:	90%

Mann-Kendall	Statistical Confidence	Trend Conclusion
S > 0	≥ 90%	Increasing
S > 0	< 90%	More Data Needed
S ≤ 0	< 90% and COV ≥ 1	More Data Needed
S ≤ 0	< 90% COV < 1	Stable
S < 0	≥ 90%	Decreasing

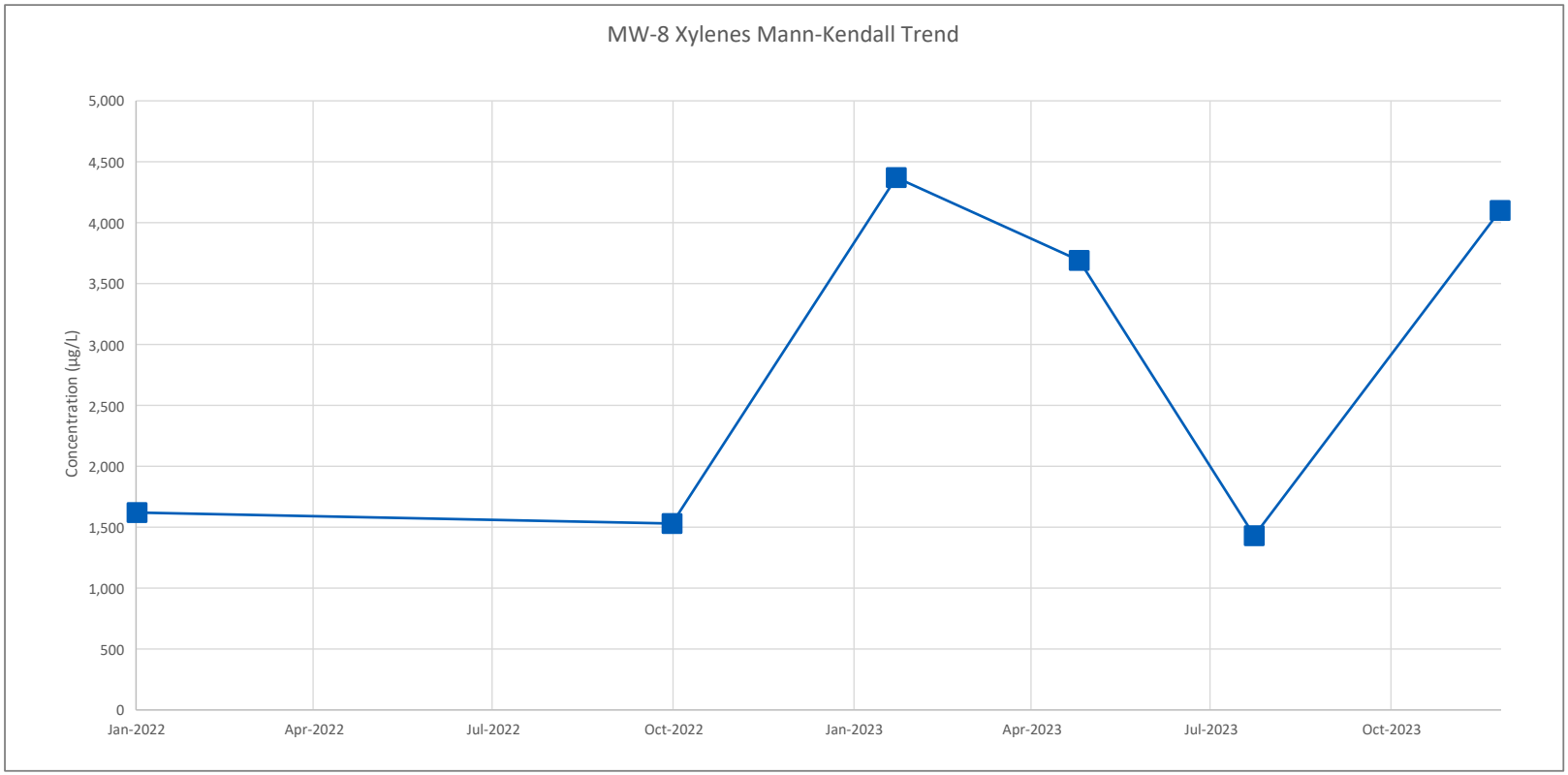


Data Set ID:	MW-8 Xylenes	
Units:	µg/L	
Event #	Date	Value
1	01/04/2022	1620
2	10/03/2022	1530
3	01/25/2023	4370
4	04/28/2023	3690
5	07/26/2023	1430
6	11/28/2023	4100

Mann-Kendall Results	
n:	6
S:	1
SES:	5.32
Z:	0.00
Confidence Factor:	50%
Coefficient of Variation:	0.50
Conclusion:	More Data Needed

Trend Threshold:	90%

Mann-Kendall	Statistical Confidence	Trend Conclusion
S > 0	≥ 90%	Increasing
S > 0	< 90%	More Data Needed
S ≤ 0	< 90% and COV ≥ 1	More Data Needed
S ≤ 0	< 90% COV < 1	Stable
S < 0	≥ 90%	Decreasing



ACRONYMS AND ABBREVIATIONS

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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
°F	degrees Fahrenheit
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
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
ppm	parts per million
QC	quality control
RBC	risk-based concentration
RBDM	*Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites*
ROI	radius of influence
RPD	relative percent difference
SVE	soil vapor extraction
TCE	trichloroethene

TMB	trimethylbenzene
µg/L	micrograms per liter
µg/m^3	micrograms per cubic meter
µS/cm	microSiemens per centimeter
VOC	volatile organic compound
Work Plan	Soil Vapor Extraction System Pilot Shutdown Work Plan