

**SUBJECT**  
2024 Joslyn Groundwater Sampling Summary

**TO**  
Emily Bertolini, EGLE

**DATE**  
December 27, 2024

**DEPARTMENT**  
Environment

**PROJECT NUMBER**  
30214041

**COPIES TO**  
Brendan Mullen, RACER Trust  
Dave Favero, RACER Trust  
Jennifer Stanhope, USEPA  
Project File

**NAME**  
Tiffany Linder  
810-225-1928, [Tiffany.Linder@arcadis.com](mailto:Tiffany.Linder@arcadis.com)

---

Arcadis of Michigan, LLC (Arcadis) has prepared this memorandum (memo) on behalf of Revitalizing Auto Communities Environmental Response (RACER) Trust. Groundwater sampling activities were conducted by Arcadis at a vacant 0.455-acre parcel (Parcel ID 14-21-205-001) in the vicinity of the RACER Pontiac North Site in Pontiac, Michigan, currently owned by RACER Trust. The parcel (herein referred to as the Joslyn South Parcel or “Site”) is bounded to the west by Joslyn Avenue, north by Wesbrook Street, south by Lenox Avenue, and east by residential properties. This memo describes the groundwater monitoring conducted during the 2024 calendar year. The location of the Site and Site layout is shown in **Figures 1** and **2**, respectively.

The *2023 Joslyn South Parcel Groundwater Sampling Summary Report*, dated August 13, 2024, provided a comprehensive summary and evaluation of groundwater monitoring for the Site. Based on the comprehensive summary and evaluation, sampling of the three monitoring well locations along the eastern property boundary (JS-MW-06, JS-MW-16, and JS-MW-19), and closest to residential properties was recommended. Please refer to this report for more information. Monitoring was completed at those three monitoring wells on September 24, 2024. Monitoring activities included gauging the three monitoring well locations, followed by groundwater sample collection for volatile organic compound (VOC) laboratory analysis.

Groundwater monitoring, laboratory analytical results, and analytical trends are summarized in the following sections.

## Groundwater Sampling Activities

Prior to groundwater sampling, each of the three monitoring wells were gauged to the nearest 0.01 foot with an electronic water level meter. Refer to **Attachment 1** for the groundwater sampling logs and water levels recorded prior to sampling at the three wells. The groundwater samples were collected from the monitoring wells using low-flow sampling procedures (USEPA 2017), which is the United States Environmental Protection Agency (USEPA) Region V standard method for collecting low-stress/low-flow groundwater samples from monitoring wells.

During sampling, purge water was monitored for dissolved oxygen (DO), temperature, specific conductivity, turbidity, oxygen reduction potential (ORP), and pH. These water quality measurements were used to determine groundwater sample stability prior to collection of the groundwater samples. All groundwater sampling logs are provided in **Attachment 1**.

Groundwater samples were collected and submitted to Merit Laboratories, Inc. (Merit) in Lansing, Michigan for analysis of VOCs using USEPA Method 8260C.

## Groundwater Analytical Results

Monitoring wells sampled in 2024 included JS-MW-06, JS-MW-16, and JS-MW-19. These monitoring wells are located along the eastern property boundary and used to evaluate the potential for vapor intrusion (VI) at residential properties located east of the Site. Groundwater samples plus quality assurance quality control samples (QAQC) were collected and analyzed for VOCs from the three monitoring wells on September 24<sup>th</sup>, 2024.

Groundwater data collected were compared to Site-Specific Volatilization to Indoor Air Criteria (SSVIAC) obtained from the Michigan Department of Environment, Great Lakes and Energy (EGLE; April 2022) and Part 201 EGLE Clean-up Criteria (October 2023). The SSVIAC criteria utilized for comparison included residential criteria for basement scenario and nonresidential criteria for slab-on-grade building less than 50,000 square feet scenario. A summary of the groundwater analytical results compared to criteria for the three monitoring wells sampled in 2024 is provided as **Table 1** and **Figure 2**. A complete summary of 2023 groundwater analytical results is provided in the *2023 Joslyn South Parcel Groundwater Sampling Summary Report* (Arcadis 2024). The 2024 laboratory analytical reports are provided as **Attachment 2**. Trend graphs and Mann-Kendall stability analysis are provided in **Attachment 3** and discussed further in the section below.

Based on the 2024 groundwater analytical results collected the following was observed:

- Residential Drinking Water Criteria, Nonresidential Drinking Water Criteria, and Residential SSVIAC was exceeded in 1 of the 3 wells sampled in 2024. Benzene exceeded these criteria at JS-MW-16. A figure showing groundwater analytical results is provided in **Figure 2**.
- JS-MW-06 and JS-MW-19 were non-detect for all VOC compounds analyzed.

Other compounds that were detected in JS-MW-16 but did not exceed criteria include 1,2,3-trimethylbenzene, 1,2,4-trimethylbenzene, N-propylbenzene, xylene, and toluene.

## Groundwater Analytical Trends

Compounds historically exceeding criteria in groundwater at the Site include 1,2,3-trimethylbenzene (TMB), 1,2,4-TMB, 1,3,5-TMB, 1,2-dichloroethane (DCA), 2-Methylnaphthalene, benzene, ethylbenzene, isopropyl benzene, naphthalene, N-butylbenzene, N-propylbenzene, and total xylenes. Sitewide trends for these constituents were evaluated using Mann-Kendall statistical analysis as part of the *2023 Joslyn South Parcel Groundwater Sampling Summary Report*, dated August 13, 2024.

In 2024, Mann-Kendall analysis was completed for monitoring well JS-MW-06 for benzene and ethylbenzene; JS-MW-16 for 1,2-DCA and benzene; and JS-MW-19 for benzene (**Attachment 3**). The Mann-Kendall statistical trends are summarized on **Figure 3**.

Key findings of the trend analysis are summarized below:

- Concentrations of benzene and ethylbenzene at JS-MW-06 show a decreasing trend.
- Concentrations of 1,2-DCA and benzene at JS-MW-16 show no significant trend.
- Concentration of benzene at JS-MW-19 show a decreasing trend.

In summary, concentration of key constituents at JW-MW-06, JS-MW-16 and JS-MW-19 have shown variability but are statistically decreasing or stable.

Ms. Emily Bertolini  
EGLE  
December 27, 2024

Sampling of JW-MW-06, JS-MW-16 and JS-MW-19 and analysis of VOCs is proposed for September 2025 to continue to monitor groundwater concentration trends along the eastern property boundary of the Joslyn Street Site.

## References

- Arcadis 2024. 2023 Joslyn South Parcel Groundwater Sampling Summary Report, RACER Trust, Pontiac, Michigan, August 13, 2024.
- EGLE. 2022. SSVIAC for RACER PNC Joslyn South Parcel Property Table1: Residential Part 201 SSVIAC or Part 213 VIAP STTLs, April 21, 2022.
- U.S. Environmental Protection Agency (USEPA; Region I). 1996. Low-Stress (or Low-Flow) Purging and Sampling Procedure for the Collection of Groundwater Samples from Monitoring Wells – Revision 4. July 30, 1996; Revised September 19, 2017.

### Figures:

- Figure 1 – Site Layout Map
- Figure 2 – Joslyn South Parcel 2024 Groundwater Analytical Results
- Figure 3 – Groundwater Stability Analysis

### Tables:

- Table 1 – Summary of Groundwater Results

### Appendices:

- Attachment 1 – Groundwater Sampling Logs
- Attachment 2 – Analytical Laboratory Reports
- Attachment 3 – Mann-Kendall Analysis

# FIGURES





**LEGEND**

- ▲ MONITORING WELL
- MANHOLE
- ≡ CATCH BASIN
- EXCEEDS RESIDENTIAL JOSLYN SSVIAC IN 2024
- NO EXCEEDANCES OF JOSLYN SSVIAC IN 2024
- WATER
- GAS
- TELECOMMUNICATIONS
- STORM SEWER
- SANITARY SEWER
- - - HISTORIC SITE STRUCTURES
- ▭ PROPERTY BOUNDARY

< NOT DETECTED ABOVE THE LABORATORY REPORTING LIMIT

ft bgs FEET BELOW GROUND SURFACE

U COMPOUND WAS ANALYZED FOR BUT NOT DETECTED. THE ASSOCIATED VALUE IS THE COMPOUND QUANTITATION LIMIT.

BASE BASEMENT SCENARIO

NR NONRESIDENTIAL

RES RESIDENTIAL

SI SCREENED INTERVAL

SOG SLAB-ON-GRADE SCENARIO

SSVIAC SITE-SPECIFIC VOLATILIZATION TO INDOOR AIR CRITERIA

VOCs VOLATILE ORGANIC COMPOUNDS

<50k LESS THAN 50,000 SQUARE FEET

NOTES:

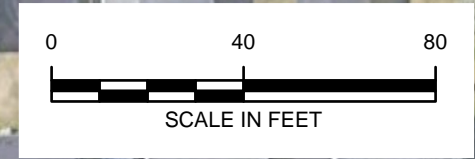
- ALL CONCENTRATIONS ARE PRESENTED IN MICROGRAMS PER LITER (UG/L)
- DUPLICATE ANALYSES ARE PRESENTED IN BRACKETS
- CRITERIA LISTED ARE FROM THE MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY (EGLE) CLEAN UP CRITERIA REQUIREMENTS TABLE 1: GROUNDWATER: RESIDENTIAL AND NONRESIDENTIAL, PART 201 GENERIC CLEANUP CRITERIA AND SCREENING LEVELS, OCTOBER 12, 2023.
- CRITERIA LISTED ARE FROM THE EGLE JOSLYN SITE-SPECIFIC CRITERIA EVALUATION DATED MAY 3, 2022.
- ANALYZED FOR FULL VOC SCAN; HOWEVER, ONLY SELECT CONSTITUENTS WHERE TRENDS ARE BEING TRACKED ARE DEPICTED ON THE FIGURE.

JS-MW-16					
SI: 11 - 16 ft bgs					
Date Collected	3/9/2023	6/22/2023	9/5/2023	12/18/2023	9/24/2024
VOCs					
1,2,4-Trimethylbenzene	2	13	22	21	11
1,2-Dichloroethane	12	3	1	1	< 1 U
Benzene	4	3	2	3	7
Ethylbenzene	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U

JS-MW-19					
SI: 12 - 17 ft bgs					
Date Collected	3/9/2023	6/20/2023	9/25/2023	12/15/2023	9/24/2024
VOCs					
1,2,4-Trimethylbenzene	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [ < 1 U]
1,2-Dichloroethane	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [ < 1 U]
Benzene	< 1 U	4	3	< 1 U	< 1 U [ < 1 U]
Ethylbenzene	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [ < 1 U]

JS-MW-06			
SI: 9-14 ft bgs			
Date Collected	6/19/2023	12/14/2023	9/24/2024
VOCs			
1,2,4-Trimethylbenzene	20	17	< 1 U
1,2-Dichloroethane	< 1 U	< 1 U	< 1 U
Benzene	< 1 U	< 1 U	< 1 U
Ethylbenzene	16	14	< 1 U

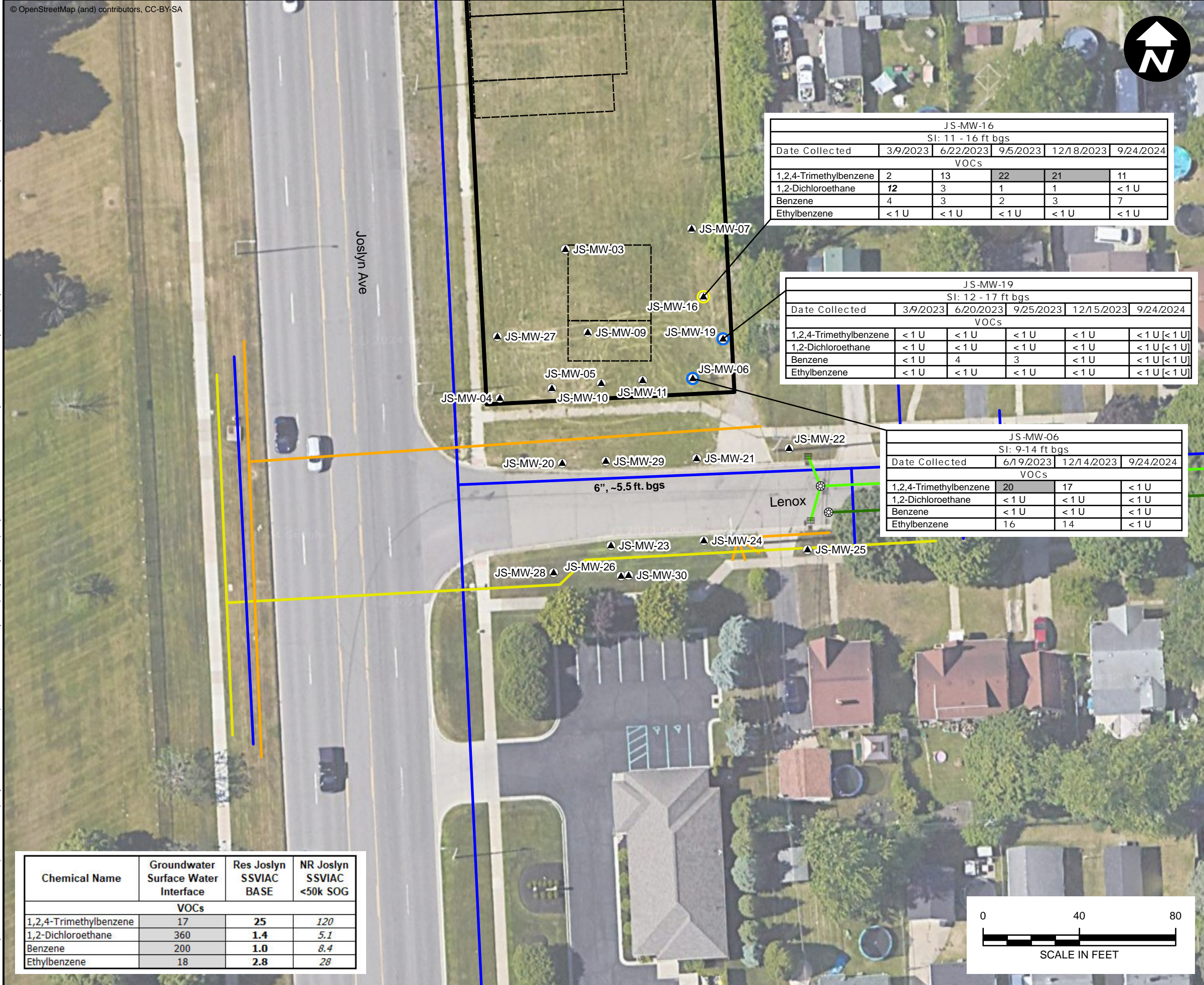
Chemical Name	Groundwater Surface Water Interface	Res Joslyn SSVIAC BASE	NR Joslyn SSVIAC <50k SOG
VOCs			
1,2,4-Trimethylbenzene		25	120
1,2-Dichloroethane	360	1.4	5.1
Benzene	200	1.0	8.4
Ethylbenzene	18	2.8	28

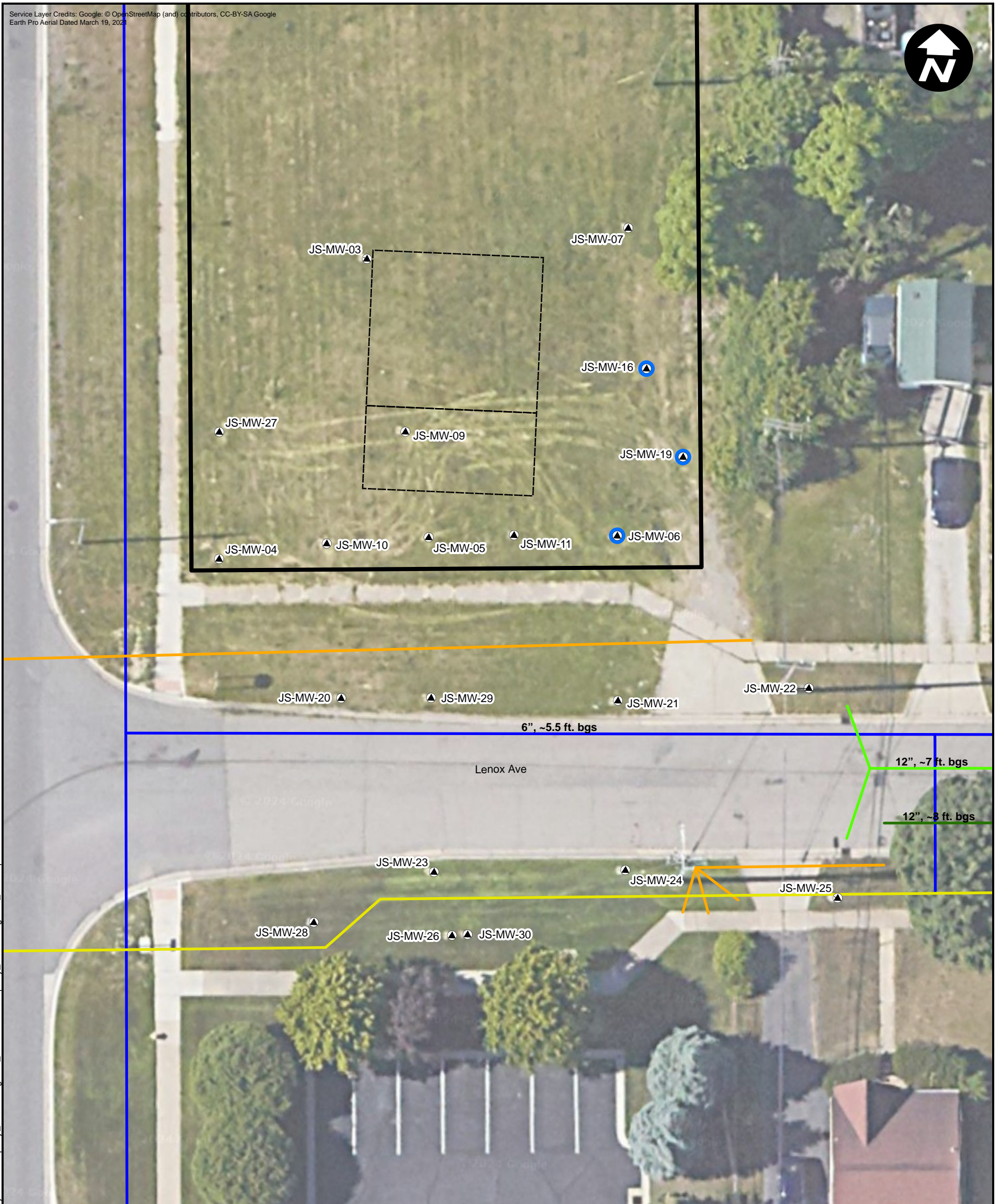


RACER TRUST  
 PONTIAC NORTH CAMPUS  
 PONTIAC, MICHIGAN

**JOSLYN SOUTH PARCEL  
 2024 GROUNDWATER  
 ANALYTICAL RESULTS**

FIGURE  
**2**





CITY: NOVI, MI DIV: ENV DB: TRY PIC: J. Barrett PM: T. Linder TM: L. Crisp TR: PROJECT NUMBER: 30214041 PLOTTED: 12/18/2024 3:43 PM BY: TYarborough D:\GIS\Project Files\Motors\Liquidation\Company\Pontiac\NorthCampus\Documents\Joslyn\Property\LenoxProperty\_MonitoringPlan\_2023.aprx

**LEGEND**

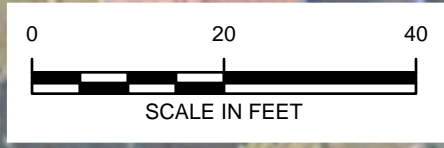
EXISTING MONITORING WELL	STORM SEWER
DECREASING, STABLE, OR NO SIGNIFICANT TREND OBSERVED	SANITARY SEWER
WATER	HISTORIC SITE STRUCTURES
GAS	PROPERTY BOUNDARY
TELECOMMUNICATIONS	

ft bgs - FEET BELOW GROUND SURFACE

EGLE - MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY

NOTES:

1. MANN-KENDALL TREND ANALYSIS CONDUCTED WHEN AT LEAST FIVE SAMPLES AND 50% DETECTED VALUES ARE AVAILABLE IN BENZENE, ETHYLBENZENE, OR 1,2-DICHLOROETHANE.
2. ALL DATA COLLECTED FROM 2021-2024 IS SHOWN FOR SELECT WELLS SAMPLED.
3. ANALYTICAL DATA COMPARED AGAINST EGLE PART 201 GROUNDWATER SURFACE WATER INTERFACE, RESIDENTIAL JOSLYN SITE SPECIFIC VOLATILIZATION TO INDOOR AIR CRITERIA (SSVIAC) FOR BASEMENT SCENARIO AND NONRESIDENTIAL SSVIAC FOR <50,000 SQUARE FEET SLAB-ON-GRADE SCENARIO.
4. ANALYTICAL DATA AVAILABLE IN TABLE 1, TREND RESULTS SUMMARIZED IN APPENDIX C.



RACER TRUST  
PONTIAC NORTH CAMPUS  
PONTIAC, MICHIGAN

**GROUNDWATER STABILITY ANALYSIS**

# TABLES

Table 1  
 Summary of Monitoring Well Analytical Results for Select Wells  
 Joslyn South Parcel  
 RACER Trust Pontiac North Campus



Chemical Name	Units	Groundwater Surface Water Interface	Residential Drinking Water	Nonresidential Drinking Water	Res Joslyn SSVIAC BASE	NR Joslyn SSVIAC <50k SOG	Location ID	JS-MW-06	JS-MW-06	JS-MW-06	JS-MW-16	JS-MW-16	JS-MW-16	JS-MW-16	JS-MW-16	JS-MW-19	JS-MW-19	JS-MW-19	JS-MW-19	JS-MW-19
								Date Collected	6/19/2023	12/14/2023	9/24/2024	3/9/2023	6/22/2023	9/25/2023	12/18/2023	9/24/2024	3/9/2023	6/20/2023	9/25/2023	12/15/2023
<b>VOCs</b>																				
1,1,1,2-Tetrachloroethane	ug/L	--	77	320	--	--		< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,1,1-Trichloroethane	ug/L	89	200	200	--	--		< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,1,2,2-Tetrachloroethane	ug/L	78	8.5	35.0	--	--		< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,1,2-Trichloroethane	ug/L	330	5.0	5.0	--	--		< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,1-Dichloroethane	ug/L	740	880	2,500	4.7	40		< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,1-Dichloroethene	ug/L	130	7.0	7.0	--	--		< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,2,3-Trichlorobenzene	ug/L	--	--	--	--	--		< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,2,3-Trichloropropane	ug/L	--	42	120	--	--		< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,2,3-Trimethylbenzene	ug/L	--	--	--	43	150		2	< 1 U	< 1 U	2	3	3	4	6	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,2,4-Trichlorobenzene	ug/L	99	70	70	--	--		< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,2,4-Trimethylbenzene	ug/L	17	63	63	25	120		20	17	< 1 U	2	13	22	21	11	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,2-Dibromo-3-chloropropane (DBCP)	ug/L	--	0.2	0.2	--	--		< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,2-Dibromoethane (Ethylene dibromide)	ug/L	5.7	0.05	0.05	0.13	0.39		< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,2-Dichlorobenzene	ug/L	13	600	600	--	--		< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,2-Dichloroethane	ug/L	360	5.0	5.0	1.4	5.1		< 1 U	< 1 U	< 1 U	12	3	1	1	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,2-Dichloropropane	ug/L	230	5.0	5.0	--	--		< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,3,5-Trimethylbenzene	ug/L	45	72	72	18	110		< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,3-Dichlorobenzene	ug/L	28	6.6	19.0	--	--		< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,4-Dichlorobenzene	ug/L	17	75	75	--	--		< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	2,200	13,000	38,000	2,600	12,000		< 25 U	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U
2-Hexanone	ug/L	--	1,000	2,900	--	--		< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U
2-Methylnaphthalene	ug/L	19	260	750	66	110		< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
2-Phenylbutane (sec-Butylbenzene)	ug/L	--	80	230	270	400		< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	1	1	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	--	1,800	5,200	200	5,000		< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U
Acetone	ug/L	1,700	730	2,100	50,000	200,000		< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U
Acrylonitrile	ug/L	2.0	3	11.0	--	--		< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
Benzene	ug/L	200	5.0	5.0	1.0	8.4		< 1 U	< 1 U	< 1 U	4	3	2	3	7	< 1 U	4	3	< 1 U	< 1 U
Bromobenzene	ug/L	--	18	50	--	--		< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Bromodichloromethane	ug/L	--	80	80	--	--		< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Bromoform	ug/L	--	80	80	--	--		< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Bromomethane (Methyl bromide)	ug/L	5.0	10	29	--	--		< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Carbon disulfide	ug/L	--	800	2,300	--	--		< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Carbon tetrachloride	ug/L	38	5.0	5.0	--	--		< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Chlorobenzene	ug/L	25	100	100	--	--		< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Chlorobromomethane	ug/L	--	--	--	--	--		< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Chloroethane	ug/L	1,100	430	1,700	--	--		< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Chloroform (Trichloromethane)	ug/L	350	80	80	--	--		< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Chloromethane (Methyl chloride)	ug/L	--	260	1,100	--	--		< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
cis-1,2-Dichloroethene	ug/L	620	70	70	--	--		< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	2	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
cis-1,3-Dichloropropene	ug/L	--	--	--	--	--		< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Cymene (p-Isopropyltoluene)	ug/L	--	--	--	--	--		< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Dibromochloromethane	ug/L	--	80	80	--	--		< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Dibromomethane	ug/L	--	80	230	--	--		< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Dichlorodifluoromethane (CFC-12)	ug/L	--	1,700	4,800	--	--		< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Ethyl ether	ug/L	--	10	10	--	--		< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U
Ethylbenzene	ug/L	18	74	74	2.8	28		16	14	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Hexachloroethane	ug/L	6.7	7.3	21.0	--	--		< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U

Table 1  
 Summary of Monitoring Well Analytical Results for Select Wells  
 Joslyn South Parcel  
 RACER Trust Pontiac North Campus



Chemical Name	Units	Groundwater Surface Water Interface	Residential Drinking Water	Nonresidential Drinking Water	Res Joslyn SSVIAC BASE	NR Joslyn SSVIAC <50k SOG	Location ID	JS-MW-06	JS-MW-06	JS-MW-06	JS-MW-16	JS-MW-16	JS-MW-16	JS-MW-16	JS-MW-16	JS-MW-19	JS-MW-19	JS-MW-19	JS-MW-19	JS-MW-19	
								Date Collected	6/19/2023	12/14/2023	9/24/2024	3/9/2023	6/22/2023	9/25/2023	12/18/2023	9/24/2024	3/9/2023	6/20/2023	9/25/2023	12/15/2023	9/24/2024
Iodomethane	ug/L	--	--	--	--	--		< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Isopropyl benzene	ug/L	28	800	2,300	0.60	6.7		< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
m&p-Xylene	ug/L	--	--	--	--	--		26	17	< 2 U	5	15	10	19	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
Methyl tert butyl ether (MTBE)	ug/L	7,100	40	40	250	810		< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Methylene chloride	ug/L	1,500	5.0	5.0	--	--		< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Naphthalene	ug/L	11	520	1,500	4.2	12		< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
N-Butylbenzene	ug/L	--	80	230	44	360		< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
N-Propylbenzene	ug/L	--	80	230	43	970		3	3	< 1 U	< 1 U	5	9	9	8	2	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
o-Xylene	ug/L	--	--	--	--	--		< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Styrene	ug/L	80	100	100	33	170		< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
tert-Butylbenzene	ug/L	--	80	230	0.077	0.71		< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Tetrachloroethene	ug/L	60	5.0	5.0	--	--		< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Tetrahydrofuran	ug/L	11,000	95	270	--	--		< 90 U	< 90 U	< 90 U	< 90 U	< 90 U	< 90 U	< 90 U	< 90 U	< 90 U	< 90 U	< 90 U	< 90 U	< 90 U	< 90 U
Toluene	ug/L	270	790	790	300	6,600		< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	1	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
trans-1,2-Dichloroethene	ug/L	1,500	100	100	--	--		< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
trans-1,3-Dichloropropene	ug/L	--	--	--	--	--		< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
trans-1,4-Dichloro-2-butene	ug/L	--	--	--	--	--		< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Trichloroethene	ug/L	200	5.0	5.0	--	--		< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	1	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Trichlorofluoromethane (CFC-11)	ug/L	--	2,600	7,300	--	--		< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Vinyl chloride	ug/L	13	2.0	2.0	--	--		< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Xylene, Total	ug/L	49	280	280	75	410		26	17	< 2 U	5	15	10	10	19	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U

**Table 1**  
**Summary of Monitoring Well Analytical Results for Select Wells**  
**Joslyn South Parcel**  
**RACER Trust Pontiac North Campus**

**Notes:**

- 1) Criteria listed are from the Michigan Department of Environment, Great Lakes, and Energy (EGLE) Clean Up Criteria Requirements Table 1: Groundwater: Residential and Nonresidential, Part 201 Generic Cleanup Criteria and Screening Levels, October 12, 2023.
- 2) Criteria listed are from the EGLE Joslyn Site-Specific Criteria Evaluation dated May 3, 2022.
- 3) Nonresidential SSVIAC was calculated from the Residential EGLE site-specific criteria.
- 4) Grey shaded values denotes exceedance and/or equal to Michigan Groundwater Surface Water Interface criteria
- 5) Yellow highlighted values denotes exceedance and/or equal to Michigan Residential Drinking Water criteria
- 6) Orange highlighted values denotes exceedance and/or equal to Nonresidential Drinking Water criteria
- 7) Values in bold denotes exceedance and/or equal to Residential Joslyn site-specific volatilization to indoor air criteria
- 8) Italicized values denotes exceedance and/or equal to Nonresidential Joslyn site-specific volatilization to indoor air criteria <50k - Basement scenario
- 9) Duplicate analyses are presented in brackets.
- 10) Samples were analyzed by EPA Method SW5030C/8260C

**Abbreviations:**

<	Not detected above the laboratory reporting limit
ug/L	Micrograms per liter
U	Compound was analyzed for but not detected. The associated value is the compound quantitation limit.
BASE	Basement scenario
NA	Not Analyzed
NR	Nonresidential
RES	Residential
SOG	Slab-On-Grade scenario
SSVIAC	Site-specific volatilization to indoor air criteria
VOCs	Volatile Organic Compounds
<50k	Less than 50,000 square feet

# **Attachment 1**

## **Groundwater Sampling Logs**

# Groundwater Sampling Form



<b>Project Number</b>	30214041	<b>Well ID</b>	JS-MW-06	<b>Date</b>	9/24/2024
<b>Project Name/Location</b>	RACER Pontiac North Campus 2024		<b>Weather(°F)</b>	64.9 degrees F and Cloudy. The wind is blowing E at 6.9 mph.	
<b>Measuring Pt. Description</b>	Top of Inner Casing	<b>MP Elevation</b>	NA	<b>Casing Diameter (in)</b>	2
				<b>Well Casing Material</b>	PVC
<b>Static Water Level (ft-bmp)</b>	11.83	<b>Total Depth (ft-bmp)</b>	13.9	<b>Water Column (ft)</b>	2.07
				<b>Gallons in Well</b>	0.34
<b>Purge Start</b>	12:24	<b>Pump Intake (ft-bmp)</b>	13	<b>Purge Method</b>	Low-Flow
				<b>Purge Equipment</b>	Peristaltic
<b>Purge End</b>	12:50	<b>Volumes Purged</b>	1.76	<b>Sample ID</b>	NA
				<b>Sampled by</b>	Garrett Link
<b>Sample Time</b>	14:10	<b>Gallons Purged</b>	0.60	<b>Replicate/ Code No.</b>	NA
				<b>Sample Type</b>	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
12:26	0	0	115	12.19	0.00	7.15	1.12	0.25	3.61	17.7	51.3	Clear	None
12:31	5	5	115	12.41	0.15	7.16	1.13	0.02	1.09	17.7	49	Clear	None
12:36	5	10	115	12.53	0.30	7.18	1.13	0.4	1.01	17.9	47.2	Clear	None
12:41	5	15	115	12.80	0.45	7.18	1.12	5.65	0.77	18.4	44.4	Clear	None
12:46	5	20	115	13.67	0.60	7.15	1.15	23.3	0.52	17	41.5	Clear	None

Constituent Sampled	Container	Number	Preservative
VOC's - 8260	40 mL VOA	3	HCL

**Comments:** Went dry at 12:50

**Well Casing Volume Conversion**

Well diameter (inches) = gallons per foot  
 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47  
 1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

**Well Information**

Well Location: <u>Joslyn South Parcel</u>	Well Locked at Arrival: <u>No</u>
Condition of Well: <u>Good</u>	Well Locked at Departure: <u>No</u>
Well Completion: <u>Flushmount</u>	Key Number To Well: <u>NA</u>

ft-bmp = feet below measuring point  
 in = inches  
 ft = feet  
 mL/min = milliliters per minute  
 mS/cm = milliSiemens per centimeter  
 NTU = Nephelometric Turbidity Unit  
 mg/L = milligrams per liter

mV = milliv

# Groundwater Sampling Form



<b>Project Number</b>	30214041	<b>Well ID</b>	JS-MW-16	<b>Date</b>	9/24/2024
<b>Project Name/Location</b>	RACER Pontiac North Campus 2024		<b>Weather(°F)</b>	61.0 degrees F and Fog/Mist. The wind is blowing E at 3.4 mph.	
<b>Measuring Pt. Description</b>	Top of Inner Casing	<b>MP Elevation</b>	NA	<b>Casing Diameter (in)</b>	2
				<b>Well Casing Material</b>	PVC
<b>Static Water Level (ft-bmp)</b>	11.83	<b>Total Depth (ft-bmp)</b>	15.86	<b>Water Column (ft)</b>	4.03
				<b>Gallons in Well</b>	0.65
<b>Purge Start</b>	09:48	<b>Pump Intake (ft-bmp)</b>	13.25	<b>Purge Method</b>	Low-Flow
				<b>Purge Equipment</b>	Peristaltic
<b>Purge End</b>	10:28	<b>Volumes Purged</b>	1.62	<b>Sample ID</b>	JS-MW-16_GW-092424
				<b>Sampled by</b>	Garrett Link
<b>Sample Time</b>	10:20	<b>Gallons Purged</b>	1.05	<b>Replicate/ Code No.</b>	JS-MW-16_GW-092424
				<b>Sample Type</b>	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
09:50	0	0	140	11.83	0.00	7.03	0.82	2	2.87	15.9	-29.8	Clear	Medium
09:55	5	5	135	12.16	0.18	7.07	0.79	3.18	0.27	16	-78.2	Clear	Medium
10:00	5	10	135	12.20	0.35	7.11	0.79	0.77	0.43	16.2	-96.6	Clear	Medium
10:05	5	15	115	12.24	0.53	7.1	0.79	0.02	0.24	16.3	-106	Clear	Medium
10:10	5	20	115	12.28	0.70	7.08	0.78	0.02	0.18	16.2	-113	Clear	Medium
10:15	5	25	115	12.33	0.88	7.09	0.78	0.02	0.12	16.3	-119.3	Clear	Medium
10:20	5	30	115	12.36	1.05	7.09	0.78	0.02	0.12	16.4	-121.9	Clear	Medium

<b>Constituent Sampled</b>	<b>Container</b>	<b>Number</b>	<b>Preservative</b>
VOCs	40 mL Glass	9	HCL

**Comments:** Well purge stable per Arcadis TGI - 3 consecutive readings <0.5 mg/L DO

**Well Casing Volume Conversion**

Well diameter (inches) = gallons per foot      1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47  
 1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

**Well Information**

Well Location: <u>Joslyn South Parcel</u>	Well Locked at Arrival: <u>Yes</u>
Condition of Well: <u>Good condition</u>	Well Locked at Departure: <u>Yes</u>
Well Completion: <u>Flush mount</u>	Key Number To Well: <u>NA</u>

ft-bmp = feet below measuring point  
 in = inches  
 ft = feet  
 mL/min = milliliters per minute  
 mS/cm = milliSiemens per centimeter  
 NTU = Nephelometric Turbidity Unit  
 mg/L = milligrams per liter

mV = milliv

# Groundwater Sampling Form



<b>Project Number</b>	30214041	<b>Well ID</b>	JS-MW-19	<b>Date</b>	9/24/2024
<b>Project Name/Location</b>	RACER Pontiac North Campus 2024		<b>Weather(°F)</b>	63.0 degrees F and Fog/Mist. The wind is blowing E/NE at 4.7 mph.	
<b>Measuring Pt. Description</b>	Top of Inner Casing	<b>MP Elevation</b>	NA	<b>Casing Diameter (in)</b>	2
				<b>Well Casing Material</b>	PVC
<b>Static Water Level (ft-bmp)</b>	11.44	<b>Total Depth (ft-bmp)</b>	16.69	<b>Water Column (ft)</b>	5.25
				<b>Gallons in Well</b>	0.85
<b>Purge Start</b>	10:51	<b>Pump Intake (ft-bmp)</b>	14.25	<b>Purge Method</b>	Low-Flow
				<b>Purge Equipment</b>	Peristaltic
<b>Purge End</b>	11:52	<b>Volumes Purged</b>	1.76	<b>Sample ID</b>	JS-MW-19_GW-092424
				<b>Sampled by</b>	Garrett Link
<b>Sample Time</b>	11:45	<b>Gallons Purged</b>	1.5	<b>Replicate/ Code No.</b>	DUP-01_GW-092424
				<b>Sample Type</b>	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
10:55	0	0	115	11.60	0.00	7.13	1.11	35.4	0.76	16.5	-2.2	Clear	Mild
11:00	5	5	115	11.62	0.15	7.13	1.11	30	0.45	16.1	-14.9	Clear	Mild
11:05	5	10	115	11.62	0.30	7.16	1.11	26.8	0.53	16.7	-26	Clear	Mild
11:10	5	15	115	11.62	0.45	7.14	1.11	19.2	0.37	16.7	-29.4	Clear	Mild
11:15	5	20	115	11.65	0.60	7.14	1.11	9.3	0.34	16.8	-33	Clear	Mild
11:20	5	25	115	11.65	0.75	7.14	1.11	7.61	0.32	16.7	-36.4	Clear	Mild
11:25	5	30	115	11.65	0.90	7.14	1.11	5.08	0.31	16.7	-41.4	Clear	Mild
11:30	5	35	115	11.65	1.05	7.14	1.11	5.18	0.48	16.9	-46	Clear	Mild
11:35	5	40	115	11.65	1.20	7.14	1.1	4.92	0.38	16.6	-51.8	Clear	Mild
11:40	5	45	115	11.65	1.35	7.14	1.11	2.1	0.36	16.6	-54.4	Clear	Mild
11:45	5	50	115	11.65	1.50	7.14	1.11	1.37	0.32	16.4	-57.6	Clear	Mild

<b>Constituent Sampled</b>	<b>Container</b>	<b>Number</b>	<b>Preservative</b>
VOCs	40 mL Glass	6	HCL

**Comments:**

**Well Casing Volume Conversion**  
 Well diameter (inches) = gallons per foot      1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47  
 1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

**Well Information**

Well Location: <u>Joslyn South Parcel</u>	Well Locked at Arrival: <u>No</u>
Condition of Well: <u>Missing lock, Missing bolts</u>	Well Locked at Departure: <u>No</u>
Well Completion: <u>Flush mount</u>	Key Number To Well: <u>NA</u>

ft-bmp = feet below measuring point  
 in = inches  
 ft = feet  
 mL/min = milliliters per minute  
 mS/cm = milliSiemens per centimeter  
 NTU = Nephelometric Turbidity Unit  
 mg/L = milligrams per liter  
 mV = milliv

# **Attachment 2**

**Analytical Laboratory Reports**



# Analytical Laboratory Report

Report ID: S66800.01(01)  
Generated on 10/03/2024

Report to

Attention: Lexi Nickerson  
Arcadis US, Inc.  
28550 Cabot Drive  
Suite 500  
Novi, MI 48377

Phone: C: 248-994-1734 FAX:  
Email: Alexis.Nickerson@arcadis.com

Report produced by

Merit Laboratories, Inc.  
2680 East Lansing Drive  
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Contacts for report questions:  
John Lavery (johnlavery@meritlabs.com)  
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S66800.01-S66800.08  
Project: RACER - PNC / 30214041.00005  
Collected Date(s): 09/23/2024 - 09/24/2024  
Submitted Date/Time: 09/27/2024 14:40  
Sampled by: Garrett Link  
P.O. #: 30214041.00005

Table of Contents

- Cover Page (Page 1)
- General Report Notes (Page 2)
- Report Narrative (Page 2)
- Laboratory Accreditations (Page 3)
- Qualifier Descriptions (Page 3)
- Glossary of Abbreviations (Page 3)
- Method Summary (Page 4)
- Sample Summary (Page 5)

Maya Murshak  
Technical Director



# Analytical Laboratory Report

## General Report Notes

---

Analytical results relate only to the samples tested, in the condition received by the laboratory.

Methods may be modified for improved performance.

Results reported on a dry weight basis where applicable.

'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).

When MDL results are provided, then 'Not detected' indicates that parameter was not found at a level equal to or greater than the MDL.

40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile, and 2-chloroethylvinyl ether need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.

QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.

Starred (\*) analytes are not NY NELAP accredited.

Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.

Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.

Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)

PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the

FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."

Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.

Wisconsin PFAs analysis: MDL = LOD; RL = LOQ. LOD and LOQ are adjusted for dilution.

All accreditations/certifications held by this laboratory are listed on page 3. Not all accreditations/certifications are applicable to this report.

For a specific list of accredited analytes, please feel free to contact the laboratory or visit <https://www.meritlabs.com/certifications>.

## Report Narrative

---

There is no additional narrative for this analytical report



# Analytical Laboratory Report

## Laboratory Accreditations (For Reference Only)

Authority	Accreditation ID
Michigan DEQ	#9956
DOD ELAP & ISO/IEC 17025:2017	#69699 PJLA Testing
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Pennsylvania DEP	#68-05884
Wisconsin DNR	FID# 399147320

## Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
o	Associated EIS outside of control limits
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
q	Qualifier ion ratio outside of control limits
x	Preserved from bulk sample

## Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched



# Analytical Laboratory Report

## Method Summary

Method	Version
N/A	Not Applicable
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003



# Analytical Laboratory Report

## Sample Summary (8 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S66800.01	MWF16-16-22_GW-092324	Groundwater	09/23/24 15:50
S66800.02	JS-MW-16_GW-092424	Groundwater	09/24/24 10:20
S66800.03	JS-MW-16_GW-092424 MS	Groundwater	09/24/24 10:20
S66800.04	JS-MW-16_GW-092424 MSD	Groundwater	09/24/24 10:20
S66800.05	JS-MW-19_GW-092424	Groundwater	09/24/24 11:45
S66800.06	JS-MW-06_GW-092424	Groundwater	09/24/24 14:10
S66800.07	DUP-01_GW-092424	Groundwater	09/24/24 00:01
S66800.08	Trip Blank	Water	09/24/24 00:01



# Analytical Laboratory Report

Lab Sample ID: S66800.01

Sample Tag: MWF16-16-22\_GW-092324

Collected Date/Time: 09/23/2024 15:50

Matrix: Groundwater

COC Reference: 153343

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40mL Glass	HCL	Yes	4.6	IR

Other / Misc.

Method: , Run Date: 10/03/24 12:00, Analyst: JRM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Hold until notified*	Completed				1		



# Analytical Laboratory Report

Lab Sample ID: S66800.02

Sample Tag: JS-MW-16\_GW-092424

Collected Date/Time: 09/24/2024 10:20

Matrix: Groundwater

COC Reference: 153343

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40mL Glass	HCL	Yes	4.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	10/03/24 11:05	NDK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 10/03/24 04:01, Analyst: ACK

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	7	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	1	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



# Analytical Laboratory Report

Lab Sample ID: S66800.02 (continued)

Sample Tag: JS-MW-16\_GW-092424

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 10/03/24 04:01, Analyst: ACK (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	19	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	8	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	11	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	6	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



# Analytical Laboratory Report

Lab Sample ID: S66800.03

Sample Tag: JS-MW-16\_GW-092424 MS

Collected Date/Time: 09/24/2024 10:20

Matrix: Groundwater

COC Reference: 153343

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40mL Glass	HCL	Yes	4.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	10/03/24 11:05	NDK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 10/03/24 01:16, Analyst: ACK

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	57	10		ug/L	1	60-29-7	1
Acetone	61	50		ug/L	1	67-64-1	1
Methyl iodide	56	1		ug/L	1	74-88-4	1
Carbon disulfide	52	5		ug/L	1	75-15-0	1
tert-Methyl butyl ether (MTBE)	57	5		ug/L	1	1634-04-4	1
Acrylonitrile	59	2		ug/L	1	107-13-1	1
2-Butanone (MEK)	46	25		ug/L	1	78-93-3	1
Dichlorodifluoromethane	47	5		ug/L	1	75-71-8	1
Chloromethane	48	5		ug/L	1	74-87-3	1
Vinyl chloride	49	1		ug/L	1	75-01-4	1
Bromomethane	51	5		ug/L	1	74-83-9	1
Chloroethane	50	5		ug/L	1	75-00-3	1
Trichlorofluoromethane	47	1		ug/L	1	75-69-4	1
1,1-Dichloroethene	47	1		ug/L	1	75-35-4	1
Methylene chloride	57	5		ug/L	1	75-09-2	1
trans-1,2-Dichloroethene	54	1		ug/L	1	156-60-5	1
1,1-Dichloroethane	56	1		ug/L	1	75-34-3	1
cis-1,2-Dichloroethene	56	1		ug/L	1	156-59-2	1
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	1
Chloroform	58	1		ug/L	1	67-66-3	1
Bromochloromethane	57	1		ug/L	1	74-97-5	1
1,1,1-Trichloroethane	55	1		ug/L	1	71-55-6	1
4-Methyl-2-pentanone (MIBK)	54	50		ug/L	1	108-10-1	1
2-Hexanone	53	50		ug/L	1	591-78-6	1
Carbon tetrachloride	53	1		ug/L	1	56-23-5	1
Benzene	62	1		ug/L	1	71-43-2	1
1,2-Dichloroethane	57	1		ug/L	1	107-06-2	1
Trichloroethene	54	1		ug/L	1	79-01-6	1
1,2-Dichloropropane	58	1		ug/L	1	78-87-5	1
Bromodichloromethane	57	1		ug/L	1	75-27-4	1
Dibromomethane	56	5		ug/L	1	74-95-3	1
cis-1,3-Dichloropropene	57	1		ug/L	1	10061-01-5	1
Toluene	57	1		ug/L	1	108-88-3	1
trans-1,3-Dichloropropene	58	1		ug/L	1	10061-02-6	1
1,1,2-Trichloroethane	57	1		ug/L	1	79-00-5	1
Tetrachloroethene	53	1		ug/L	1	127-18-4	1

1-Spiked at 50 ug/L



# Analytical Laboratory Report

Lab Sample ID: S66800.03 (continued)

Sample Tag: JS-MW-16\_GW-092424 MS

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 10/03/24 01:16, Analyst: ACK (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
trans-1,4-Dichloro-2-butene	57	1		ug/L	1	110-57-6	1
Dibromochloromethane	59	5		ug/L	1	124-48-1	1
1,2-Dibromoethane	58	1		ug/L	1	106-93-4	1
Chlorobenzene	57	1		ug/L	1	108-90-7	1
1,1,1,2-Tetrachloroethane	59	1		ug/L	1	630-20-6	1
Ethylbenzene	58	1		ug/L	1	100-41-4	1
p,m-Xylene*	133	2		ug/L	1		1
o-Xylene	58	1		ug/L	1	95-47-6	1
Styrene	58	1		ug/L	1	100-42-5	1
Isopropylbenzene	61	5		ug/L	1	98-82-8	1
Bromoform	58	1		ug/L	1	75-25-2	1
1,1,2,2-Tetrachloroethane	58	1		ug/L	1	79-34-5	1
1,2,3-Trichloropropane	57	1		ug/L	1	96-18-4	1
n-Propylbenzene	65	1		ug/L	1	103-65-1	1
Bromobenzene	57	1		ug/L	1	108-86-1	1
1,3,5-Trimethylbenzene	58	1		ug/L	1	108-67-8	1
tert-Butylbenzene	58	1		ug/L	1	98-06-6	1
1,2,4-Trimethylbenzene	69	1		ug/L	1	95-63-6	1
sec-Butylbenzene	55	1		ug/L	1	135-98-8	1
p-Isopropyltoluene	60	5		ug/L	1	99-87-6	1
1,3-Dichlorobenzene	56	1		ug/L	1	541-73-1	1
1,4-Dichlorobenzene	56	1		ug/L	1	106-46-7	1
1,2-Dichlorobenzene	56	1		ug/L	1	95-50-1	1
1,2,3-Trimethylbenzene	64	1		ug/L	1	526-73-8	1
n-Butylbenzene	55	1		ug/L	1	104-51-8	1
Hexachloroethane	58	5		ug/L	1	67-72-1	1
1,2-Dibromo-3-chloropropane	58	5		ug/L	1	96-12-8	1
1,2,4-Trichlorobenzene	58	5		ug/L	1	120-82-1	1
1,2,3-Trichlorobenzene	58	5		ug/L	1	87-61-6	1
Naphthalene	64	5		ug/L	1	91-20-3	1
2-Methylnaphthalene	66	5		ug/L	1	91-57-6	1

1-Spiked at 50 ug/L



# Analytical Laboratory Report

Lab Sample ID: S66800.04

Sample Tag: JS-MW-16\_GW-092424 MSD

Collected Date/Time: 09/24/2024 10:20

Matrix: Groundwater

COC Reference: 153343

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40mL Glass	HCL	Yes	4.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	10/03/24 11:05	NDK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 10/03/24 01:39, Analyst: ACK

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	56	10		ug/L	1	60-29-7	1
Acetone	52	50		ug/L	1	67-64-1	1
Methyl iodide	50	1		ug/L	1	74-88-4	1
Carbon disulfide	49	5		ug/L	1	75-15-0	1
tert-Methyl butyl ether (MTBE)	53	5		ug/L	1	1634-04-4	1
Acrylonitrile	54	2		ug/L	1	107-13-1	1
2-Butanone (MEK)	43	25		ug/L	1	78-93-3	1
Dichlorodifluoromethane	45	5		ug/L	1	75-71-8	1
Chloromethane	51	5		ug/L	1	74-87-3	1
Vinyl chloride	50	1		ug/L	1	75-01-4	1
Bromomethane	52	5		ug/L	1	74-83-9	1
Chloroethane	51	5		ug/L	1	75-00-3	1
Trichlorofluoromethane	46	1		ug/L	1	75-69-4	1
1,1-Dichloroethene	42	1		ug/L	1	75-35-4	1
Methylene chloride	52	5		ug/L	1	75-09-2	1
trans-1,2-Dichloroethene	51	1		ug/L	1	156-60-5	1
1,1-Dichloroethane	53	1		ug/L	1	75-34-3	1
cis-1,2-Dichloroethene	52	1		ug/L	1	156-59-2	1
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	1
Chloroform	54	1		ug/L	1	67-66-3	1
Bromochloromethane	53	1		ug/L	1	74-97-5	1
1,1,1-Trichloroethane	50	1		ug/L	1	71-55-6	1
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	1
2-Hexanone	Not detected	50		ug/L	1	591-78-6	1
Carbon tetrachloride	48	1		ug/L	1	56-23-5	1
Benzene	58	1		ug/L	1	71-43-2	1
1,2-Dichloroethane	53	1		ug/L	1	107-06-2	1
Trichloroethene	51	1		ug/L	1	79-01-6	1
1,2-Dichloropropane	54	1		ug/L	1	78-87-5	1
Bromodichloromethane	54	1		ug/L	1	75-27-4	1
Dibromomethane	52	5		ug/L	1	74-95-3	1
cis-1,3-Dichloropropene	53	1		ug/L	1	10061-01-5	1
Toluene	54	1		ug/L	1	108-88-3	1
trans-1,3-Dichloropropene	53	1		ug/L	1	10061-02-6	1
1,1,2-Trichloroethane	53	1		ug/L	1	79-00-5	1
Tetrachloroethene	50	1		ug/L	1	127-18-4	1

1-Spiked at 50 ug/L



# Analytical Laboratory Report

Lab Sample ID: S66800.04 (continued)  
Sample Tag: JS-MW-16\_GW-092424 MSD

**Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 10/03/24 01:39, Analyst: ACK (continued)**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
trans-1,4-Dichloro-2-butene	50	1		ug/L	1	110-57-6	1
Dibromochloromethane	55	5		ug/L	1	124-48-1	1
1,2-Dibromoethane	54	1		ug/L	1	106-93-4	1
Chlorobenzene	53	1		ug/L	1	108-90-7	1
1,1,1,2-Tetrachloroethane	55	1		ug/L	1	630-20-6	1
Ethylbenzene	54	1		ug/L	1	100-41-4	1
p,m-Xylene*	126	2		ug/L	1		1
o-Xylene	54	1		ug/L	1	95-47-6	1
Styrene	55	1		ug/L	1	100-42-5	1
Isopropylbenzene	58	5		ug/L	1	98-82-8	1
Bromoform	53	1		ug/L	1	75-25-2	1
1,1,2,2-Tetrachloroethane	53	1		ug/L	1	79-34-5	1
1,2,3-Trichloropropane	53	1		ug/L	1	96-18-4	1
n-Propylbenzene	62	1		ug/L	1	103-65-1	1
Bromobenzene	54	1		ug/L	1	108-86-1	1
1,3,5-Trimethylbenzene	55	1		ug/L	1	108-67-8	1
tert-Butylbenzene	55	1		ug/L	1	98-06-6	1
1,2,4-Trimethylbenzene	65	1		ug/L	1	95-63-6	1
sec-Butylbenzene	53	1		ug/L	1	135-98-8	1
p-Isopropyltoluene	58	5		ug/L	1	99-87-6	1
1,3-Dichlorobenzene	53	1		ug/L	1	541-73-1	1
1,4-Dichlorobenzene	53	1		ug/L	1	106-46-7	1
1,2-Dichlorobenzene	53	1		ug/L	1	95-50-1	1
1,2,3-Trimethylbenzene	61	1		ug/L	1	526-73-8	1
n-Butylbenzene	52	1		ug/L	1	104-51-8	1
Hexachloroethane	55	5		ug/L	1	67-72-1	1
1,2-Dibromo-3-chloropropane	52	5		ug/L	1	96-12-8	1
1,2,4-Trichlorobenzene	55	5		ug/L	1	120-82-1	1
1,2,3-Trichlorobenzene	55	5		ug/L	1	87-61-6	1
Naphthalene	61	5		ug/L	1	91-20-3	1
2-Methylnaphthalene	63	5		ug/L	1	91-57-6	1

1-Spiked at 50 ug/L



# Analytical Laboratory Report

Lab Sample ID: S66800.05

Sample Tag: JS-MW-19\_GW-092424

Collected Date/Time: 09/24/2024 11:45

Matrix: Groundwater

COC Reference: 153343

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40mL Glass	HCL	Yes	4.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	10/03/24 11:05	NDK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 10/02/24 15:54, Analyst: ACK

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



# Analytical Laboratory Report

Lab Sample ID: S66800.05 (continued)

Sample Tag: JS-MW-19\_GW-092424

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 10/02/24 15:54, Analyst: ACK (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



# Analytical Laboratory Report

Lab Sample ID: S66800.06

Sample Tag: JS-MW-06\_GW-092424

Collected Date/Time: 09/24/2024 14:10

Matrix: Groundwater

COC Reference: 153343

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40mL Glass	HCL	Yes	4.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	10/03/24 11:05	NDK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 10/02/24 16:17, Analyst: ACK

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



# Analytical Laboratory Report

Lab Sample ID: S66800.06 (continued)

Sample Tag: JS-MW-06\_GW-092424

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 10/02/24 16:17, Analyst: ACK (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



# Analytical Laboratory Report

Lab Sample ID: S66800.07

Sample Tag: DUP-01\_GW-092424

Collected Date/Time: 09/24/2024 00:01

Matrix: Groundwater

COC Reference: 153343

### Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40mL Glass	HCL	Yes	4.6	IR

### Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	10/03/24 11:05	NDK	

### Organics - Volatiles

**Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 10/02/24 16:40, Analyst: ACK**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



# Analytical Laboratory Report

Lab Sample ID: S66800.07 (continued)

Sample Tag: DUP-01\_GW-092424

**Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 10/02/24 16:40, Analyst: ACK (continued)**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



# Analytical Laboratory Report

Lab Sample ID: S66800.08

Sample Tag: Trip Blank

Collected Date/Time: 09/24/2024 00:01

Matrix: Water

COC Reference: 153343

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40mL Glass	HCL	Yes	4.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	10/03/24 11:05	NDK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 10/02/24 15:30, Analyst: ACK

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



# Analytical Laboratory Report

Lab Sample ID: S66800.08 (continued)

Sample Tag: Trip Blank

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 10/02/24 15:30, Analyst: ACK (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

# Merit Laboratories Login Checklist

Lab Set ID:S66800

Client:ARCADIS\_NOVI (Arcadis US, Inc.)

Project: RACER - PNC / 30214041.00005

Submitted:09/27/2024 14:40 Login User: MMC

Attention: Lexi Nickerson

Address: Arcadis US, Inc.  
28550 Cabot Drive  
Suite 500  
Novi, MI 48377

Phone: C: 248-994-1734 FAX:

Email: Alexis.Nickerson@arcadis.com

Selection	Description	Note
<b>Sample Receiving</b>		
01.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Samples are received at 4C +/- 2C Thermometer # IR 4.6
02.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Received on ice/ cooling process begun
03.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Samples shipped
04.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Samples left in 24 hr. drop box
05.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Are there custody seals/tape or is the drop box locked
<b>Chain of Custody</b>		
06.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	COC adequately filled out
07.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	COC signed and relinquished to the lab
08.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Sample tag on bottles match COC
09.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Subcontracting needed? Subcontracted to:
<b>Preservation</b>		
10.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Do sample have correct chemical preservation
11.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Completed pH checks on preserved samples? (no VOAs)
12.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Did any samples need to be preserved in the lab?
<b>Bottle Conditions</b>		
13.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	All bottles intact
14.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Appropriate analytical bottles are used
15.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Merit bottles used
16.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Sufficient sample volume received
17.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Samples require laboratory filtration
18.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Samples submitted within holding time
19.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Do water VOC, TOX, DO or Alkalinity bottles contain

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: \_\_\_\_\_ Date: \_\_\_\_\_



# **Attachment 3**

**Mann-Kendall Analysis**

**Attachment 3**  
**Summary Statistics and Trend Results 2024**  
**RACER PNC Joslyn**  
**Pontiac, Michigan**



Well ID	Constituent	Date Range	Figure	FOD	Detected Results Summary <sup>1</sup>					Mann-Kendall Test <sup>2</sup>			
					Range	Mean	Median	SD	CV	Result <sup>4</sup>	MK Result Note	P-Value	S Value
JS-MW-06	Benzene	05/21 - 09/24	C-3	3 / 6	3 - 19	13.3	18	9	0.68	DWN	5	0.048	-10
JS-MW-06	Ethylbenzene	05/21 - 09/24	C-4	5 / 6	14 - 488	207	69	239	1.15	DWN	5	0.008	-13
JS-MW-16	1,2-Dichloroethane	12/21 - 09/24	C-9	7 / 9	1 - 13	5.4	3	5.3	0.98	NST	--	0.179	-10
JS-MW-16	Benzene	12/21 - 09/24	C-10	8 / 9	2 - 7	4.3	3.5	2.1	0.49	NST	--	0.272	7
JS-MW-19	Benzene	12/21 - 09/24	C-11	6 / 9	3 - 18	8	4.5	6.7	0.84	DWN	--	0.006	-24

**Abbreviations:**

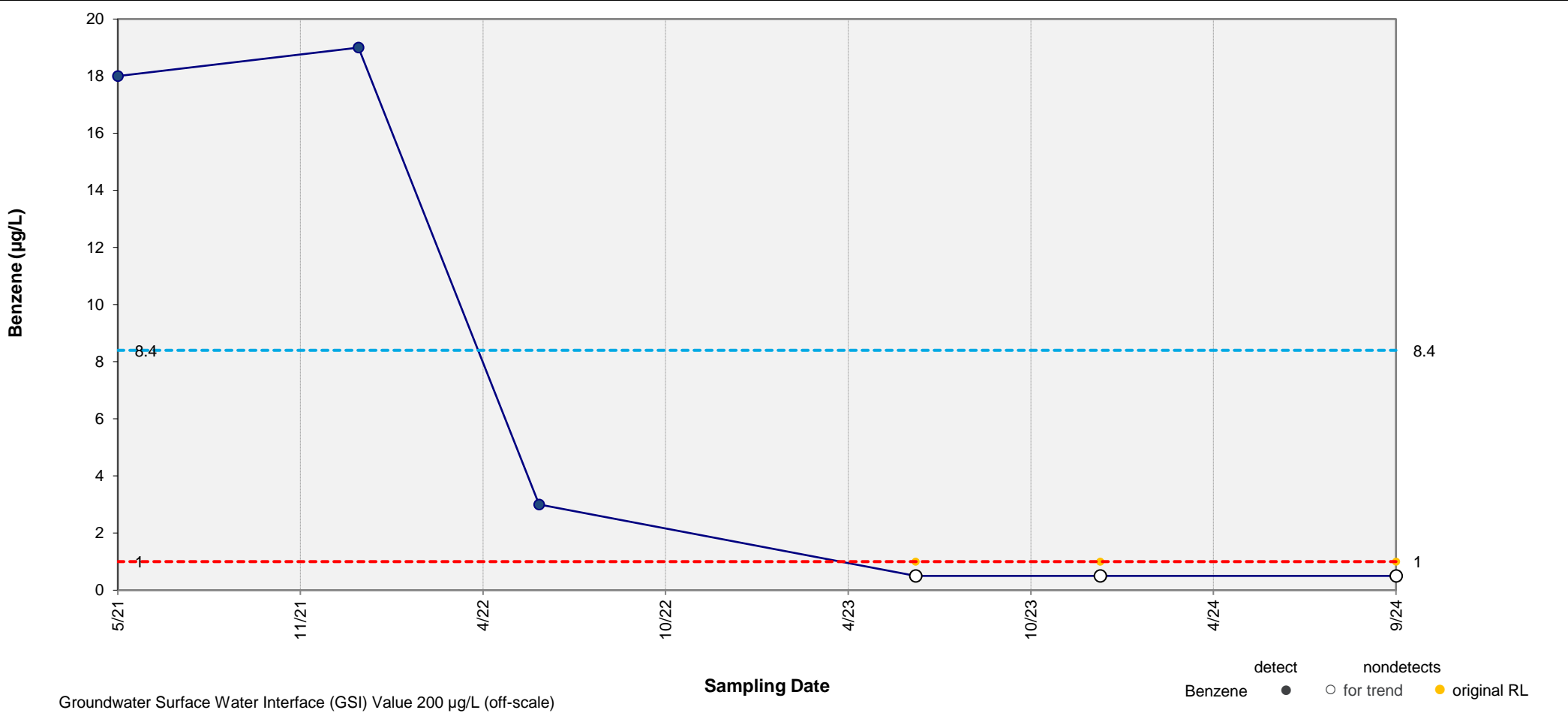
-- = not applicable	mean = arithmetic mean	NST = no significant trend
CV = coefficient of variation (SD / mean)	MK = Mann-Kendall	NT = no trend
FOD = frequency of detection (# detects / # samples)	SD = standard deviation	DWN = downward trend
		UP = upward trend

**Notes:**

- All analytical results are in µg/L.
- Trend results are presented when at least five samples and 50% detected values are available.
- Non-detects were assigned a common value less than the minimum detected value, equal to half the minimum reporting limit (RL) in the dataset (USEPA, 2009).  
If half the minimum RL was greater than the minimum detected value, then half the minimum detect was assigned.
- Statistically significant trend defined as having p-value ≤ 0.05, or 95% confidence.
- MK and Sen's Trend results for datasets with fewer than 8 samples may not be reliable and should be treated with caution.

**Reference:**

USEPA. 2009. Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities. Unified Guidance. EPA/530/R-09/007, 2009.



Res Joslyn SSVIAC Base Value 1.0 µg/L

NR Joslyn SSVIAC <50k SOG Value 8.4 µg/L

**Results of Mann-Kendall Test for Trend:**

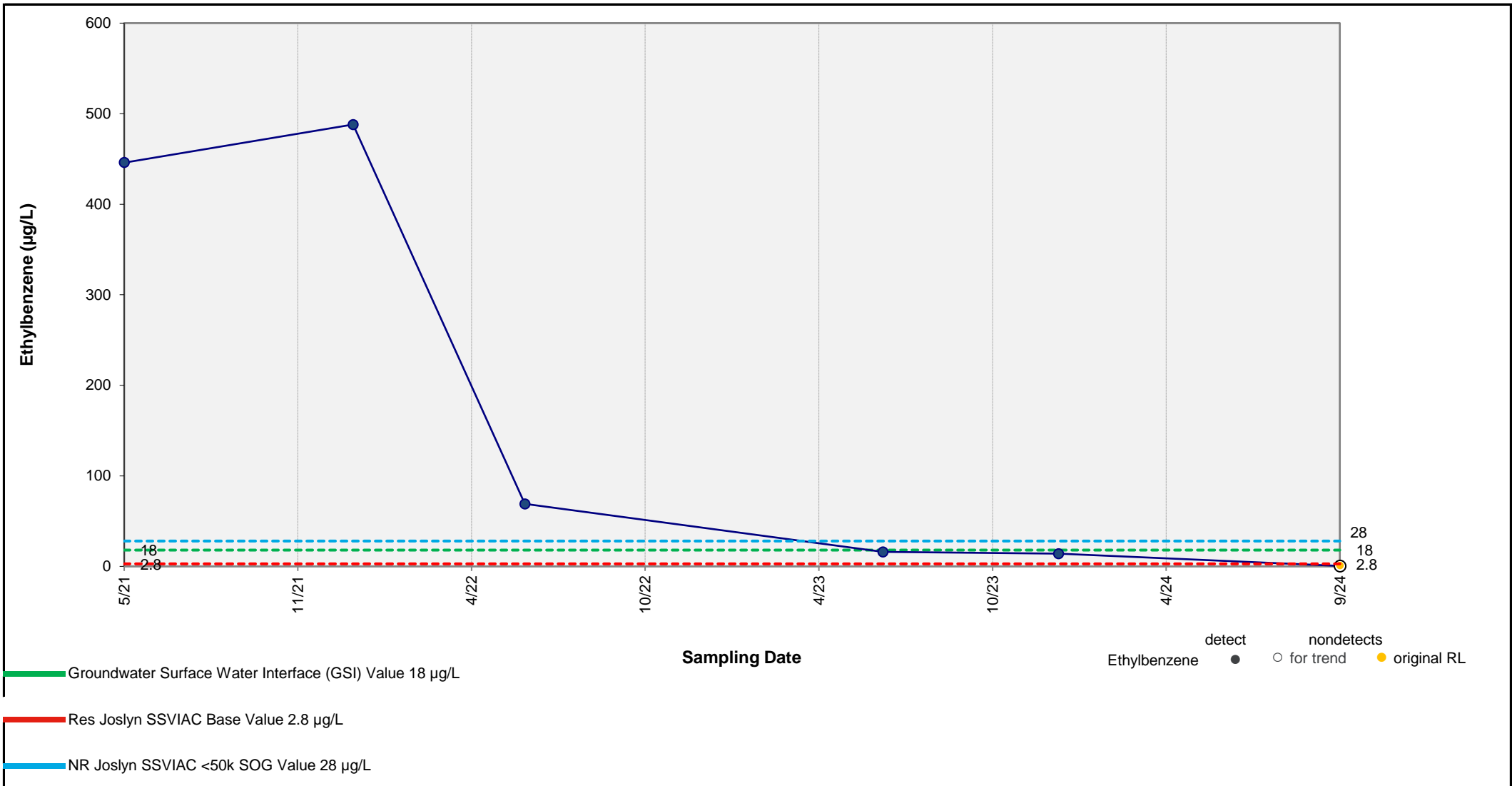
**DECREASING TREND**

p value =  Note: p value < 0.05 indicates a statistically significant trend (95% confidence level).



**Concentration vs. Time Plot – Benzene in Well JS-MW-06**  
RACER PNC (Joslyn)

**Figure 3-1**



**Results of Mann-Kendall Test for Trend:**

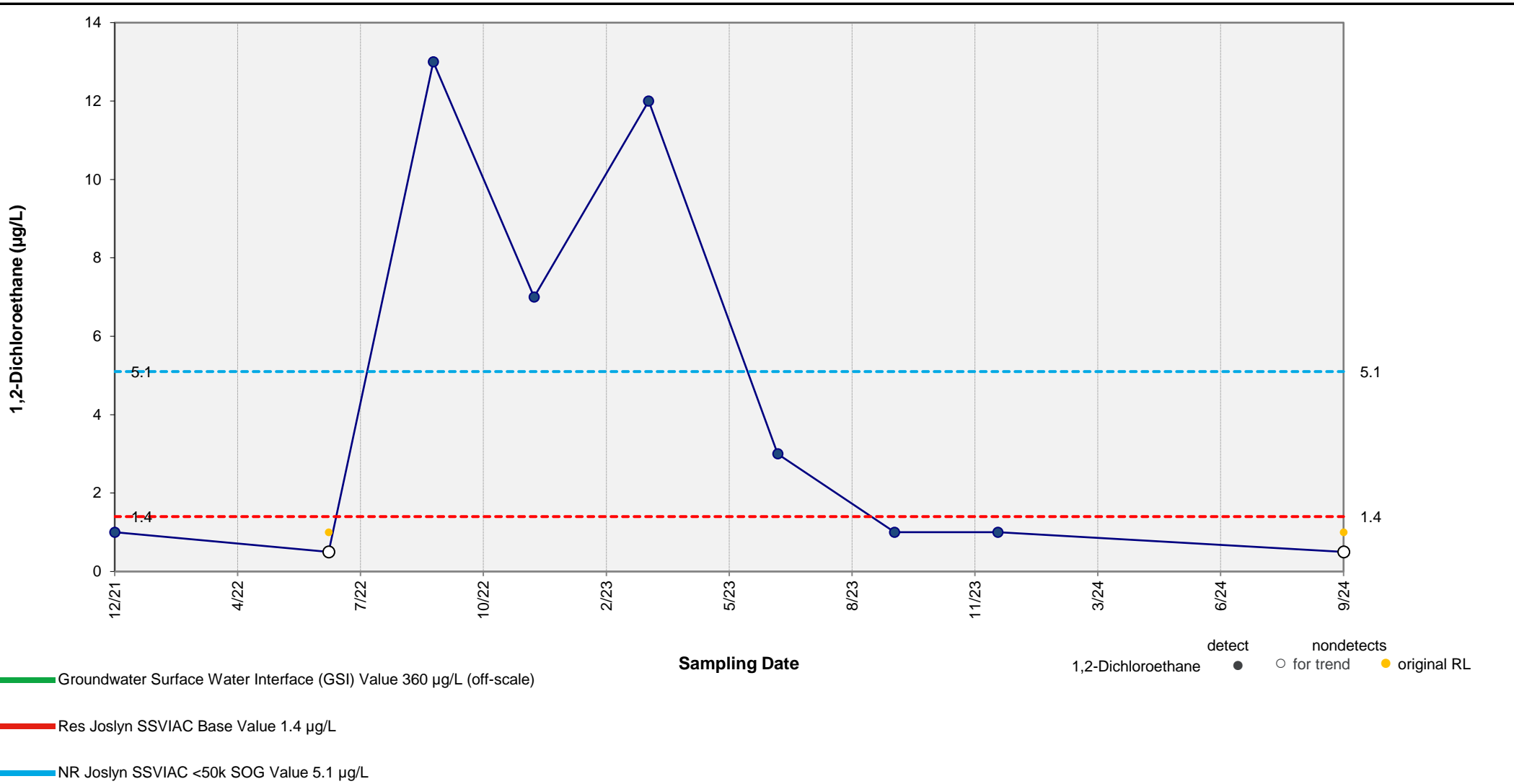
**DECREASING TREND**

p value =  Note: p value < 0.05 indicates a statistically significant trend (95% confidence level).



**Concentration vs. Time Plot – Ethylbenzene in Well JS-MW-06**  
RACER PNC (Joslyn)

**Figure 3-2**



Groundwater Surface Water Interface (GSI) Value 360 µg/L (off-scale)

Res Joslyn SSVIAC Base Value 1.4 µg/L

NR Joslyn SSVIAC <50k SOG Value 5.1 µg/L

**Results of Mann-Kendall Test for Trend:**

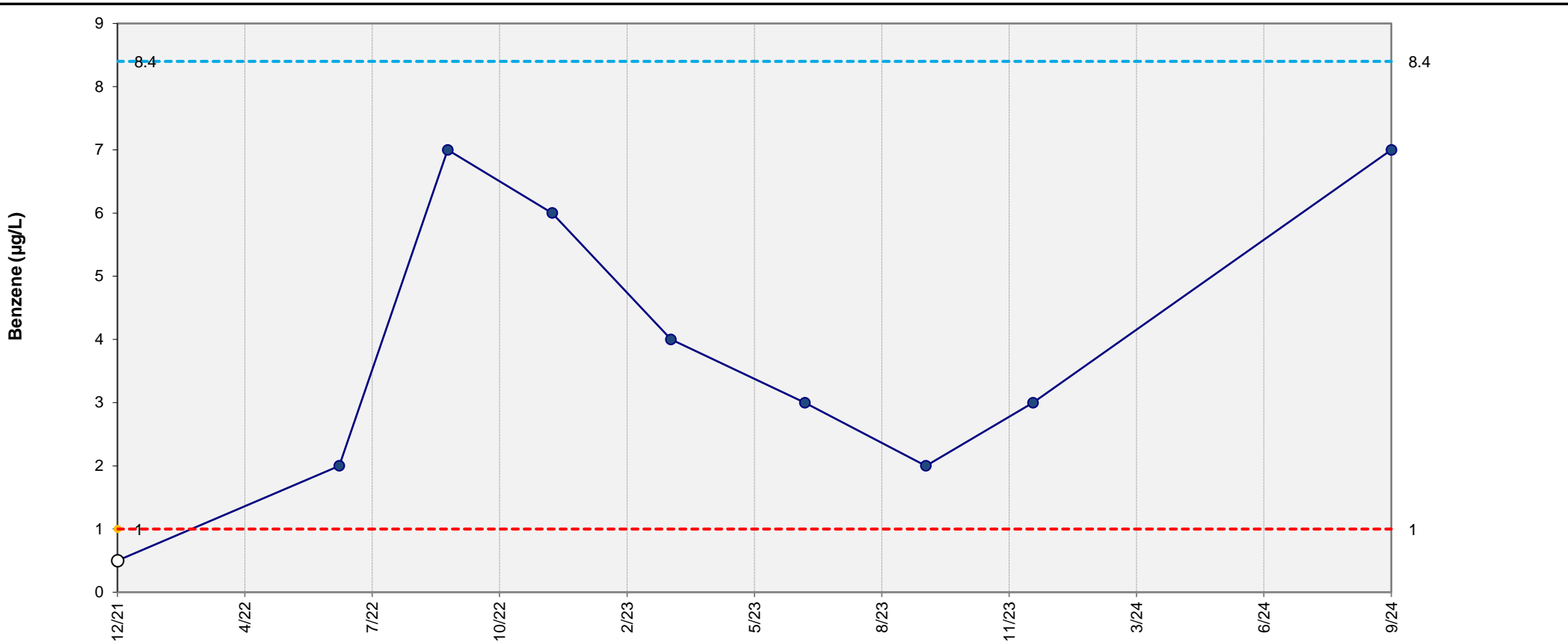
**No Significant Trend**

p value =  Note: p value < 0.05 indicates a statistically significant trend (95% confidence level).



**Concentration vs. Time Plot – 1,2-Dichloroethane in Well JS-MW-16**  
RACER PNC (Joslyn)

**Figure 3-3**



Sampling Date

detect ●  
 nondetects ○ for trend ● original RL

- █ Groundwater Surface Water Interface (GSI) Value 200 µg/L (off-scale)
- █ Res Joslyn SSVIAC Base Value 1.0 µg/L
- █ NR Joslyn SSVIAC <50k SOG Value 8.4 µg/L

**Results of Mann-Kendall Test for Trend:**

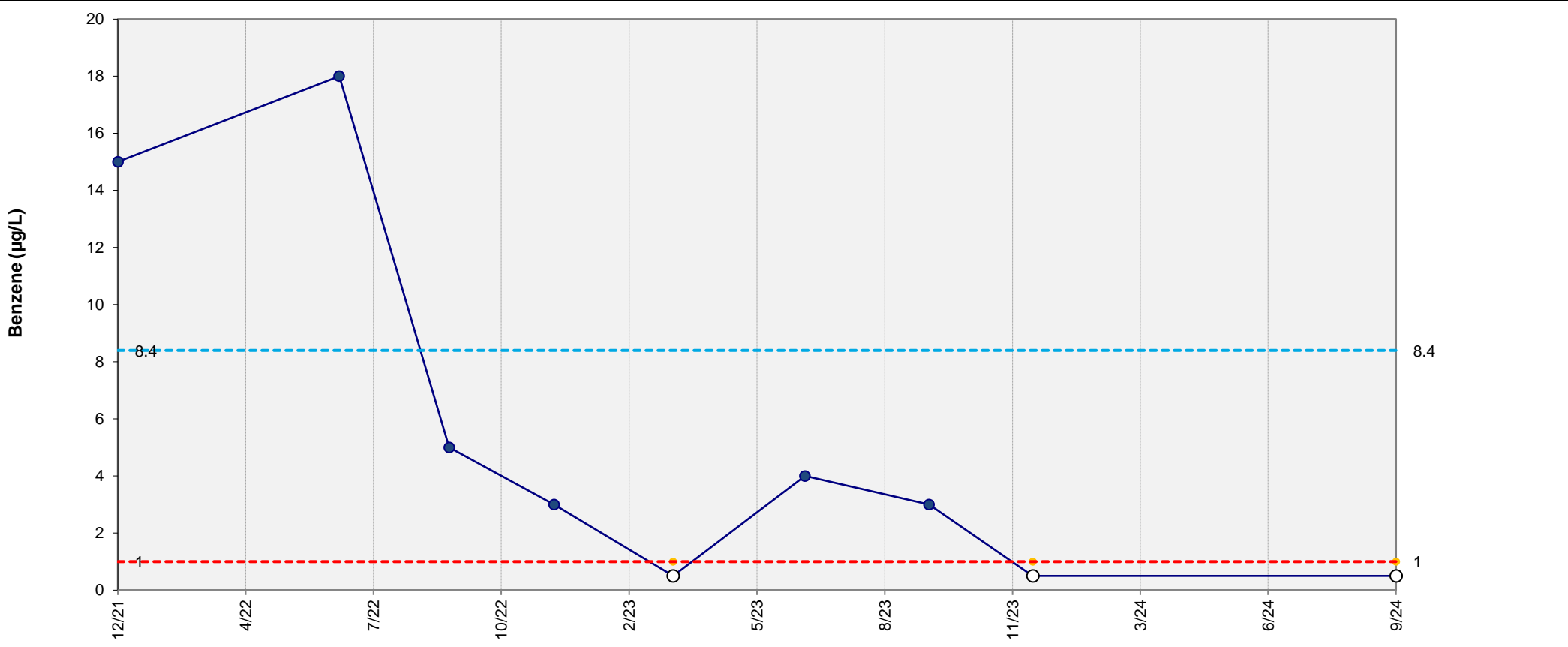
**No Significant Trend**

p value = 0.272 Note: p value < 0.05 indicates a statistically significant trend (95% confidence level).



**Concentration vs. Time Plot – Benzene in Well JS-MW-16**  
 RACER PNC (Joslyn)

**Figure 3-4**



Sampling Date

detect ●  
 nondetects ○ for trend ● original RL

- Groundwater Surface Water Interface (GSI) Value 200 µg/L (off-scale)
- Res Joslyn SSVIAC Base Value 1.0 µg/L
- - - NR Joslyn SSVIAC <50k SOG Value 8.4 µg/L

**Results of Mann-Kendall Test for Trend:**

**DECREASING TREND**

p value = 0.006 Note: p value < 0.05 indicates a statistically significant trend (95% confidence level).



**Concentration vs. Time Plot – Benzene in Well JS-MW-19**  
 RACER PNC (Joslyn)

**Figure 3-5**