Memo

SUBJECT
2023 Fiero Temporary Monitoring Plan
First Quarter Results

TO
Peter Ramanauskas, USEPA

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This memorandum summarizes the results of the first quarter (1Q) 2023 monitoring event completed as part of the revised 2023 Fiero Temporary Monitoring Plan (FTMP) at the Revitalizing Auto Communities Environmental Response Trust (RACER) Pontiac North Campus Site (Site) located in Pontiac, Michigan. The event consisted of gauging and sampling select monitoring wells and sampling soil vapor monitoring points (SVMPs) at the former Fiero property. The monitoring locations included in the 1Q event are shown on **Figure 1**.

On March 6th, 2023, Arcadis began monitoring activities by gauging Site monitoring wells. Following the gauging event, monitoring wells were sampled for volatile organic compounds (VOCs) over a 3-day period from March 6th - 8th. Of these, MW-16-22 was set in a low-lying area that was collecting surface water and was not sampled. On March 29th, MW-16-22 was converted to a stick-up well and re-developed. Four protective bollards were installed around the well. MW-16-22 was then sampled on April 7th, 2023. Soil vapor monitoring points (SVMP) were sampled on March 20th, 2023. All groundwater samples were submitted to Merit Laboratories and analyzed for VOCs in accordance with United State Environmental Protection Agency (USEPA) Method 8260 and all soil vapor samples were submitted to Eurofins Air Toxics and analyzed for VOCs in accordance with USEPA Method TO-15. The analytical reports from Merit and Eurofins are provided as **Attachment 1**. The results of the gauging and sampling are provided in the attached tables:

- **Table 1** – Summary of Groundwater Elevations
- **Table 2** – Summary of Monitoring Well Analytical Results
- **Table 3** – Summary of Soil Vapor Monitoring Point Results

Groundwater Gauging

A limited set of monitoring wells were gauged for depth to water and total depth during the 1Q event using an electronic water level meter accurate to 0.01-feet. The groundwater elevation data was used to create the groundwater elevation contour map included as **Figure 2**. As shown on **Figure 2**, groundwater gradient is to the southwest consistent with previous gauging events.

Groundwater Analytical Summary

Groundwater samples were collected from 14 monitoring wells and submitted for analysis of VOCs. A summary of the monitoring wells sampled and exceedances of the residential Site-Specific Volatilization to Indoor Air Criteria (SSVIAC) for groundwater is shown on **Figure 3**. Groundwater sampling logs can be found in **Attachment 2**. The following is based on the analytical results from the groundwater sampling:

- Groundwater samples collected from the 14 monitoring wells did not exceed the non-residential SSVIAC.

- Elevated VOC detections remain near the identified VOC source areas in the central portion of the Site and decrease steadily as they approach the southwest property boundary.
- One off-site location, MWOS-10, exceeded the residential SSVIAC for TCE during the first quarter sampling event. TCE at this location has ranged from 7 – 11 µg/L from November 2021 through March 2023.

Groundwater Stability Analysis

Mann-Kendall trend tests were conducted at wells with sufficient data for constituents present at concentrations higher than the residential SSVIAC, and coefficient of variation values were calculated. The Mann-Kendall trend analysis included data from 2017 through 2023, to coincide with the more frequent sampling events, and only included wells with at least 5 data points collected since 2017 with at least 50 percent detections, which is further outlined in Arcadis' April 4, 2023 Fiero Temporary Groundwater Monitoring Program submitted to USEPA. The methodology, preliminary results summary, figures, and trend graphs associated with the Mann-Kendall trend tests, as well as concentration over time trend graphs for wells that did not meet the criteria for Mann-Kendall analysis, are included in **Attachment 3**.

Key findings of the trend analysis include the following:

- PCE in groundwater is primarily stable with two wells indicating an increasing trend in downgradient well MW-14-22 and MWF16-05 located near the source area. Stability analysis results for PCE in groundwater are summarized in **Attachment 3 (Figure 1A).**
- TCE in groundwater is stable at all on-site and off-site locations, apart from MWOS-09R, located off-site, which has a decreasing trend, and MW-06-20 located on-site that has an increasing trend. MWOS-10, located offsite and downgradient from MW-06-20 has no significant trend, as further described in the 2022 Fiero Temporary Groundwater Monitoring Plan Summary submitted to USEPA on April 21, 2023. Stability analysis results for TCE in groundwater are summarized in **Attachment 3 (Figure 1B).**
- Cis-1,2-DCE in groundwater is increasing in MWF16-18 near a source area, and stable in all other sampled locations. Stability analysis results for cis-1,2-DCE in groundwater are summarized in **Attachment 3 (Figure 1C).**

Soil Vapor Analytical Summary

Soil vapor samples were collected from all six SVMP locations on-site and off-site. An analytical summary of the SVMPs sampled is shown on **Figure 3**. Soil vapor collection logs can be found in **Attachment 4**. The following is based on the analytical results from the soil vapor sampling:

- Analytical results for all SVMP locations, both on-site and off-site, were below the residential SSVIAC, except for the duplicate sample collected from SV-02-21 for TCE. The parent sample for SV-02-21, screened from 23.25 – 23.75 ft. bgs did not exceed residential SSVIAC for the constituents analyzed.

Peter Ramanauskas
USEPA
June 13, 2023

Closing

No modifications to the approved FTMP are recommended at this time. The next FTMP monitoring event is scheduled to take place from June 5th, 2023, through June 8th, 2023. For any questions or concerns related to the 1Q FTMP results contact Tiffany Linder by phone at 810-225-1928 or by email at Tiffany.Linder@arcadis.com.

Enclosures:

Tables:

Table 1 – 2023 Groundwater Elevation Summary – 1Q

Table 2 – 2023 Summary of Groundwater Analytical Results – 1Q

Table 3 – Summary of 2023 Soil Gas Analytical Results

Figures:

Figure 1 – 2023 Fiero Temporary Monitoring Plan 1Q Monitoring Locations

Figure 2 – Fiero Groundwater Contour Map March 6, 2023

Figure 3 – Summary of Groundwater and Soil Gas Results March 2023

Attachments:

Attachment 1 – Analytical Reports

Attachment 2 – Groundwater Sampling Logs

Attachment 3 – Groundwater Stability Analysis

Attachment 4 – Soil Vapor Collection Logs

TABLES

Table 1
2023 Groundwater Elevation Summary - 1Q
RACER Trust Pontiac North Campus
Former Fiero Properties
Pontiac, Michigan

Well ID	Ground Elevation	Well Elevation [1]	Total Depth (ft)[2]	Date	Depth to Water (ft)[2]	Groundwater Elevation
Former Fiero Powerhouse						
MW-06-20	975.54	974.97	29.22	3/6/2023	26.80	948.17
MW-08-21	976.04	975.50	30.25	3/6/2023	27.58	947.92
MW-13-22	973.17	972.62	26.74	3/6/2023	22.88	949.74
MW-14-22	973.21	972.71	34.66	3/6/2023	23.25	949.46
MW-15-22	972.97	972.66	35.95	3/6/2023	23.37	949.29
MW-16-22	972.84	972.50	30.51	3/7/2023	23.45	949.05
MWF16-23	973.82	973.39	30.46	3/6/2023	24.76	948.63
Former Fiero Assembly						
MW-09-22	973.83	973.46	32.85	3/6/2023	21.84	951.62
MWF16-05	973.95	973.68	22.73	3/6/2023	21.22	952.46
MWF16-16	973.44	973.22	31.26	3/6/2023	23.32	949.90
MWF16-18	973.60	973.22	31.95	3/6/2023	21.69	951.53
Offsite						
MWOS-08	975.55	975.09	28.80	3/6/2023	26.82	948.27
MWOS-09R	976.68	976.18	32.20	3/6/2023	28.05	948.13
MWOS-10	977.01	976.55	32.75	3/6/2023	29.19	947.36

Abbreviations:
ft - feet
NA - Not Applicable
NM - Not Measured

Notes:
1. MW-16-22 was under water when initial gauging took place. It was gauged the next day after water had been removed from the area.

Footnotes:
[1] Top of Temporary Well Casing/Stickup Elevation is in feet National Vertical Geodetic Datum (1988).
[2] Measurements collected from top of temporary well casing/stickup.

Table 2
2023 Summary of Groundwater Analytical Results - 1Q
RACER Trust Pontiac North Campus
Former Fiero Properties
Pontiac, Michigan

Location ID:	Res Fiero SSVIAC SOG	Res Fiero SSVIAC BASE	NR Fiero SSVIAC <50k SOG	Units	MW-06-20	MW-08-21	MW-09-22	MW-13-22	MW-14-22	MW-15-22	MW-16-22	MWF16-05	MWF16-16	MWF16-18
Date Collected:					3/7/2023	3/7/2023	3/6/2023	3/7/2023	3/7/2023	3/7/2023	4/7/2023	3/8/2023	3/6/2023	3/7/2023
Sample Name:					MW-06-20_GW-030723	MW-08-21_GW-030723	MW-09-22_GW-030623	MW-13-22_GW-030723	MW-14-22_GW-030723	MW-15-22_GW-030723	MW-16-22_GW-040723	MWF16-05_GW-030823	MWF16-16_GW-030623	MWF16-18_GW-030823
Volatile Organics														
1,1,1,2-Tetrachloroethane	***180***	***93***	5,700	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [<1 U]	< 10 UY	< 1 U	< 1 U	< 10 UY
1,1,1-Trichloroethane	***22,000***	***11,000***	210,000	ug/L	5 [5]	3	< 1 U	< 1 U	6	< 1 U [<1 U]	< 10 UY	4	5	< 10 UY
1,1,2,2-Tetrachloroethane	***130***	***66***	4,100	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [<1 U]	< 10 UY	< 1 U	< 1 U	< 10 UY
1,1,2-Trichloroethane	***21***	***11***	410	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [<1 U]	< 10 UY	< 1 U	< 1 U	< 10 UY
1,1-Dichloroethane	***160***	***88***	5,300	ug/L	7 [7]	9	< 1 U	< 1 U	< 1 U	< 1 U [<1 U]	< 10 UY	< 1 U	6	< 10 UY
1,1-Dichloroethene	***410***	***220***	8,300	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [<1 U]	< 10 UY	< 1 U	< 1 U	< 10 UY
1,2,3-Trichlorobenzene	***4,100***	***2,100***	18,000	ug/L	< 5 U [<5 U]	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U [<5 U]	< 50 UY	< 5 U	< 5 U	< 50 UY
1,2,3-Trichloropropane	***91***	***47***	1,800	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [<1 U]	< 10 UY	< 1 U	< 1 U	< 10 UY
1,2,3-Trimethylbenzene	***2,000***	***1,100***	41,000	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [<1 U]	< 10 UY	< 1 U	< 1 U	< 10 UY
1,2,4-Trichlorobenzene	***270***	***130***	5,100	ug/L	< 5 U [<5 U]	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U [<5 U]	< 50 UY	< 5 U	< 5 U	< 50 UY
1,2,4-Trimethylbenzene	***1,100***	***590***	22,000	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [<1 U]	< 10 UY	< 1 U	< 1 U	< 10 UY
1,2-Dibromo-3-chloropropane	***0.00045***	***0.00045***	0.042	ug/L	< 5 U [<5 U]	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U [<5 U]	< 50 UY	< 5 U	< 5 U	< 50 UY
1,2-Dibromoethane	***8***	***4***	250	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [<1 U]	< 10 UY	< 1 U	< 1 U	< 10 UY
1,2-Dichlorobenzene	***19,000***	***9,900***	160,000	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [<1 U]	< 10 UY	< 1 U	< 1 U	< 10 UY
1,2-Dichloroethane	***50***	***27***	1,600	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [<1 U]	< 10 UY	< 1 U	< 1 U	< 10 UY
1,2-Dichloropropane	***100***	***56***	2,100	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [<1 U]	< 10 UY	< 1 U	< 1 U	< 10 UY
1,3,5-Trimethylbenzene	***800***	***420***	16,000	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [<1 U]	< 10 UY	< 1 U	< 1 U	< 10 UY
1,3-Dichlorobenzene	***130***	***70***	2,700	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [<1 U]	< 10 UY	< 1 U	< 1 U	< 10 UY
1,4-Dichlorobenzene	***310***	***160***	9,800	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [<1 U]	< 10 UY	< 1 U	< 1 U	< 10 UY
2-Butanone	***4,000,000***	***2,200,000***	59,000,000	ug/L	< 25 U [< 25 U]	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U [<25 U]	< 250 UY	< 25 U	< 25 U	< 250 UY
2-Methylnaphthalene	***3,500***	***1,800***	25,000	ug/L	< 5 U [<5 U]	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U [<5 U]	< 50 UY	< 5 U	< 5 U	< 50 UY
4-Methyl-2-pentanone	***1,600,000***	***810,000***	19,000,000	ug/L	< 50 U [<50 U]	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U [<50 U]	< 500 UY	< 50 U	< 50 U	< 500 UY
Acetone	***32,000,000***	***18,000,000***	240,000,000	ug/L	< 50 U [<50 U]	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U [<50 U]	< 500 UY	< 50 U	< 50 U	< 500 UY
Acrylonitrile	***120***	***67***	4,100	ug/L	< 2 U [<2 U]	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U [<2 U]	< 20 UY	< 2 U	< 2 U	< 20 UY
Benzene	***34***	***18***	1,100	ug/L	< 1 U [<1 U]	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [<1 U]	< 10 UY	< 1 U	< 1 U	< 10 UY
Bromobenzene	***3,300***	***1,700***	66,000	ug/L	< 1 U [<1 U]	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [<1 U]	< 10 UY	< 1 U	< 1 U	< 10 UY
Bromodichloromethane	***60***	***31***	1,700	ug/L	< 1 U [<1 U]	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [<1 U]	< 10 UY	< 1 U	< 1 U	< 10 UY
Bromoform	***6,400***	***3,200***	200,000	ug/L	< 1 U [<1 U]	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [<1 U]	< 10 UY	< 1 U	< 1 U	< 10 UY
Bromomethane	***59***	***33***	1,200	ug/L	< 5 U [<5 U]	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U [<5 U]	< 50 UY	< 5 U	< 5 U	< 50 UY
Carbon Disulfide	***2,200***	***1,200***	46,000	ug/L	< 5 U [<5 U]	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U [<5 U]	< 50 UY	< 5 U	< 5 U	< 50 UY
Carbon Tetrachloride	***14***	***7.2***	440	ug/L	< 1 U [< 1 U]	< 1 U	1	< 1 U	3	< 1 U [<1 U]	< 10 UY	< 1 U	1	< 10 UY
CFC-11	***300***	***160***	6,000	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [<1 U]	< 10 UY	< 1 U	< 1 U	< 10 UY
CFC-12	***71***	***38***	1,400	ug/L	< 5 U [<5 U]	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U [<5 U]	< 50 UY	< 5 U	< 5 U	< 50 UY
Chlorobenzene	***1,300***	***720***	27,000	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [<1 U]	< 10 UY	< 1 U	< 1 U	< 10 UY
Chlorodibromomethane	***58***	***29***	4,400	ug/L	< 5 U [<5 U]	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U [<5 U]	< 50 UY	< 5 U	< 5 U	< 50 UY
Chlorobromomethane	***- -***	***- -***	- -	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U	<1 U [<1 U]	< 10 UY	< 1 U	< 1 U	< 10 UY
Chloroethane	***15,000***	***8,600***	320,000	ug/L	< 5 U [<5 U]	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U [<5 U]	< 50 UY	< 5 U	< 5 U	< 50 UY
Chloroform	***19***	***10***	610	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	1	< 1 U [<1 U]	< 10 UY	< 1 U	1	< 10 UY
Chloromethane	***340***	***200***	7,400	ug/L	< 5 U [<5 U]	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U [<5 U]	< 50 UY	< 5 U	< 5 U	< 50 UY
cis-1,2-Dichloroethene	***110***	***62***	2,300	ug/L	7 [7]	11	< 1 U	< 1 U	8	< 1 U [<1 U]	20 Y	< 1 U	8	***70 Y***
cis-1,3-Dichloropropene	***- -***	***- -***	- -	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [<1 U]	< 10 UY	< 1 U	< 1 U	< 10 UY
Dibromomethane	***450***	***230***	9,000	ug/L	< 5 U [<5 U]	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U [<5 U]	< 50 UY	< 5 U	< 5 U	< 50 UY
Ethyl ether	***44,000***	***24,000***	900,000	ug/L	< 10 U [<10 U]	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U [<10 U]	< 100 UY	< 10 U	< 10 U	< 100 UY
Ethylbenzene	***110***	***60***	3,600	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [<1 U]	< 10 UY	< 1 U	< 1 U	< 10 UY
Hexachloroethane	***130***	***64***	3,900	ug/L	< 5 U [<5 U]	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U [<5 U]	< 50 UY	< 5 U	< 5 U	< 50 UY
Iodomethane	***- -***	***- -***	- -	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [<1 U]	< 10 UY	< 1 U	< 1 U	< 10 UY
Isopropyl benzene	***26***	***13***	810	ug/L	< 5 U [<5 U]	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U [<5 U]	< 50 UY	< 5 U	< 5 U	< 50 UY
m&p-Xylene	***- -***	***- -***	- -	ug/L	< 2 U [<2 U]	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U [<2 U]	< 20 UY	< 2 U	< 2 U	< 20 UY
Methyl N-Butyl Ketone	***24,000***	***12,000***	490,000	ug/L	< 50 U [<50 U]	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U [<50 U]	< 500 UY	< 50 U	< 50 U	< 500 UY
Methyl tert-butyl ether	***10,000***	***5,300***	320,000	ug/L	< 5 U [<5 U]	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U [<5 U]	< 50 UY	< 5 U	< 5 U	< 50 UY
Methylene chloride	***9,100***	***5,000***	190,000	ug/L	< 5 U [<5 U]	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U [<5 U]	< 50 UY	< 5 U	< 5 U	< 50 UY
Naphthalene	***190***	***100***	6,200	ug/L	< 5 U [<5 U]	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U [<5 U]	< 50 UY	< 5 U	< 5 U	< 50 UY
N-Butylbenzene	***2,000***	***1,100***	12,000	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [<1 U]	< 10 UY	< 1 U	< 1 U	< 10 UY
N-Propylbenzene	***10,000***	***5,400***	52,000	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [<1 U]	< 10 UY	< 1 U	< 1 U	< 10 UY
o-Xylene	***- -***	***- -***	- -	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [<1 U]	< 10 UY	< 1 U	< 1 U	< 10 UY
p-Isopropyltoluene	***- -***	***- -***	- -	ug/L	< 5 U [<5 U]	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U [<5 U]	< 50 UY	< 5 U	< 5 U	< 50 UY
sec-Butylbenzene	***9,200***	***4,300***	18,000	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [<1 U]	< 10 UY	< 1 U	< 1 U	< 10 UY
Styrene	***1,400***	***740***	45,000	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [<1 U]	< 10 UY	< 1 U	< 1 U	< 10 UY
tert-Butylbenzene	***3.4***	***1.8***	67	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [<1 U]	< 10 UY	< 1 U	< 1 U	< 10 UY
Tetrachloroethene	***250***	***130***	3,400	ug/L	< 1 U [< 1 U]	< 1 U	***148***	< 1 U	100	< 1 U [<1 U]	***300 Y***	***550 Y***	***260 Y***	***1,070 Y***
Tetrahydrofuran	***1,300,000***	***690,000***	27,000,000	ug/L	< 90 U [<90 U]	< 90 U	< 90 U	< 90 U	< 90 U	< 90 U [<90 U]	< 900 UY	< 90 U	< 90 U	< 900 UY
Toluene	***56,000***	***30,000***	530,000	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [<1 U]	< 10 UY	< 1 U	< 1 U	< 10 UY
trans-1,2-Dichloroethene	***480***	***260***	9,800	ug/L	< 1 U [< 1 U]	1	< 1 U	< 1 U	< 1 U	< 1 U [<1 U]	< 10 UY	< 1 U	< 1 U	< 10 UY
trans-1,3-Dichloropropene	***- -***	***- -***	- -	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [<1 U]	< 10 UY	< 1 U	< 1 U	< 10 UY
trans-1,4-Dichloro-2-butene	***- -***	***- -***	- -	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [<1 U]	< 10 UY	< 1 U	< 1 U	< 10 UY
Trichloroethene	***15***	***8.1***	210	ug/L	***14 [14]***	***11***	4	< 1 U	***15***	< 1 U [<1 U]	***10 Y***	***23***	8	***20 Y***
Vinyl Chloride	***2.2***	***1.2***	260	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [<1 U]	< 10 UY	< 1 U	< 1 U	< 10 UY

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Table 2
2023 Summary of Groundwater Analytical Results - 1Q
RACER Trust Pontiac North Campus
Former Fiero Properties
Pontiac, Michigan

Location ID: / Date Collected: / Sample Name:	Res Fiero SSVIAC SOG	Res Fiero SSVIAC BASE	NR Fiero SSVIAC <50k SOG	Units	MWF16-23 3/7/2023 MWF16-23_GW-030723	MWOS-08 3/8/2023 MWOS-08_GW-030823	MWOS-09R 3/7/2023 MWOS-09R_GW-030723	MWOS-10 3/7/2023 MWOS-10_GW-030723
Volatile Organics								
1,1,1,2-Tetrachloroethane	***180***	***93***	5,700	ug/L	< 1 U	< 1 U	< 1 U	< 1 U
1,1,1-Trichloroethane	***22,000***	***11,000***	210,000	ug/L	12	4	4	4
1,1,2,2-Tetrachloroethane	***130***	***66***	4,100	ug/L	< 1 U	< 1 U	< 1 U	< 1 U
1,1,2-Trichloroethane	***21***	***11***	410	ug/L	< 1 U	< 1 U	< 1 U	< 1 U
1,1-Dichloroethane	***160***	***88***	5,300	ug/L	6	< 1 U	4	7
1,1-Dichloroethene	***410***	***220***	8,300	ug/L	< 1 U	< 1 U	< 1 U	< 1 U
1,2,3-Trichlorobenzene	***4,100***	***2,100***	18,000	ug/L	< 5 U	< 5 U	< 5 U	< 5 U
1,2,3-Trichloropropane	***91***	***47***	1,800	ug/L	< 1 U	< 1 U	< 1 U	< 1 U
1,2,3-Trimethylbenzene	***2,000***	***1,100***	41,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U
1,2,4-Trichlorobenzene	***270***	***130***	5,100	ug/L	< 5 U	< 5 U	< 5 U	< 5 U
1,2,4-Trimethylbenzene	***1,100***	***590***	22,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U
1,2-Dibromo-3-chloropropane	***0.00045***	***0.00045***	0.042	ug/L	< 5 U	< 5 U	< 5 U	< 5 U
1,2-Dibromoethane	***8***	***4***	250	ug/L	< 1 U	< 1 U	< 1 U	< 1 U
1,2-Dichlorobenzene	***19,000***	***9,900***	160,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U
1,2-Dichloroethane	***50***	***27***	1,600	ug/L	< 1 U	< 1 U	< 1 U	< 1 U
1,2-Dichloropropane	***100***	***56***	2,100	ug/L	< 1 U	< 1 U	< 1 U	< 1 U
1,3,5-Trimethylbenzene	***800***	***420***	16,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U
1,3-Dichlorobenzene	***130***	***70***	2,700	ug/L	< 1 U	< 1 U	< 1 U	< 1 U
1,4-Dichlorobenzene	***310***	***160***	9,800	ug/L	< 1 U	< 1 U	< 1 U	< 1 U
2-Butanone	***4,000,000***	***2,200,000***	59,000,000	ug/L	< 25 U	< 25 U	< 25 U	< 25 U
2-Methylnaphthalene	***3,500***	***1,800***	25,000	ug/L	< 5 U	< 5 U	< 5 U	< 5 U
4-Methyl-2-pentanone	***1,600,000***	***810,000***	19,000,000	ug/L	< 50 U	< 50 U	< 50 U	< 50 U
Acetone	***32,000,000***	***18,000,000***	240,000,000	ug/L	< 50 U	< 50 U	< 50 U	< 50 U
Acrylonitrile	***120***	***67***	4,100	ug/L	< 2 U	< 2 U	< 2 U	< 2 U
Benzene	***34***	***18***	1,100	ug/L	< 1 U	< 1 U	< 1 U	< 1 U
Bromobenzene	***3,300***	***1,700***	66,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U
Bromodichloromethane	***60***	***31***	1,700	ug/L	< 1 U	< 1 U	< 1 U	< 1 U
Bromoform	***6,400***	***3,200***	200,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U
Bromomethane	***59***	***33***	1,200	ug/L	< 5 U	< 5 U	< 5 U	< 5 U
Carbon Disulfide	***2,200***	***1,200***	46,000	ug/L	< 5 U	< 5 U	< 5 U	< 5 U
Carbon Tetrachloride	***14***	***7.2***	440	ug/L	< 1 U	< 1 U	< 1 U	< 1 U
CFC-11	***300***	***160***	6,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U
CFC-12	***71***	***38***	1,400	ug/L	< 5 U	< 5 U	< 5 U	< 5 U
Chlorobenzene	***1,300***	***720***	27,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U
Chlorodibromomethane	***58***	***29***	4,400	ug/L	< 5 U	< 5 U	< 5 U	< 5 U
Chlorobromomethane	***- -***	***- -***	- -	ug/L	< 1 U	< 1 U	< 1 U	< 1 U
Chloroethane	***15,000***	***8,600***	320,000	ug/L	< 5 U	< 5 U	< 5 U	< 5 U
Chloroform	***19***	***10***	610	ug/L	< 1 U	1	< 1 U	< 1 U
Chloromethane	***340***	***200***	7,400	ug/L	< 5 U	< 5 U	< 5 U	< 5 U
cis-1,2-Dichloroethene	***110***	***62***	2,300	ug/L	7	5	28	9
cis-1,3-Dichloropropene	***- -***	***- -***	- -	ug/L	< 1 U	< 1 U	< 1 U	< 1 U
Dibromomethane	***450***	***230***	9,000	ug/L	< 5 U	< 5 U	< 5 U	< 5 U
Ethyl ether	***44,000***	***24,000***	900,000	ug/L	< 10 U	< 10 U	< 10 U	< 10 U
Ethylbenzene	***110***	***60***	3,600	ug/L	< 1 U	< 1 U	< 1 U	< 1 U
Hexachloroethane	***130***	***64***	3,900	ug/L	< 5 U	< 5 U	< 5 U	< 5 U
Iodomethane	***- -***	***- -***	- -	ug/L	< 1 U	< 1 U	< 1 U	< 1 U
Isopropyl benzene	***26***	***13***	810	ug/L	< 5 U	< 5 U	< 5 U	< 5 U
m&p-Xylene	***- -***	***- -***	- -	ug/L	< 2 U	< 2 U	< 2 U	< 2 U
Methyl N-Butyl Ketone	***24,000***	***12,000***	490,000	ug/L	< 50 U	< 50 U	< 50 U	< 50 U
Methyl tert-butyl ether	***10,000***	***5,300***	320,000	ug/L	< 5 U	< 5 U	< 5 U	< 5 U
Methylene chloride	***9,100***	***5,000***	190,000	ug/L	< 5 U	< 5 U	< 5 U	< 5 U
Naphthalene	***190***	***100***	6,200	ug/L	< 5 U	< 5 U	< 5 U	< 5 U
N-Butylbenzene	***2,000***	***1,100***	12,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U
N-Propylbenzene	***10,000***	***5,400***	52,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U
o-Xylene	***- -***	***- -***	- -	ug/L	< 1 U	< 1 U	< 1 U	< 1 U
p-Isopropyltoluene	***- -***	***- -***	- -	ug/L	< 5 U	< 5 U	< 5 U	< 5 U
sec-Butylbenzene	***9,200***	***4,300***	18,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U
Styrene	***1,400***	***740***	45,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U
tert-Butylbenzene	***3.4***	***1.8***	67	ug/L	< 1 U	< 1 U	< 1 U	< 1 U
Tetrachloroethene	***250***	***130***	3,400	ug/L	< 1 U	< 1 U	17	< 1 U
Tetrahydrofuran	***1,300,000***	***690,000***	27,000,000	ug/L	< 90 U	< 90 U	< 90 U	< 90 U
Toluene	***56,000***	***30,000***	530,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U
trans-1,2-Dichloroethene	***480***	***260***	9,800	ug/L	2	< 1 U	2	1
trans-1,3-Dichloropropene	***- -***	***- -***	- -	ug/L	< 1 U	< 1 U	< 1 U	< 1 U
trans-1,4-Dichloro-2-butene	***- -***	***- -***	- -	ug/L	< 1 U	< 1 U	< 1 U	< 1 U
Trichloroethene	***15***	***8.1***	210	ug/L	***16***	< 1 U	3	***11***
Vinyl Chloride	***2.2***	***1.2***	260	ug/L	< 1 U	< 1 U	< 1 U	< 1 U

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Table 2
2023 Summary of Groundwater Analytical Results - 1Q
RACER Trust Pontiac North Campus
Former Fiero Properties
Pontiac, Michigan

Notes:

1) Criteria listed are from the EGLE Former Fiero Assembly Site-Specific Criteria Evaluation dated April 21, 2020.
2) Values in bold italics denotes exceedance and/or equal to Residential Site-Specific Volatilization to Indoor Air Criteria.
3) Values in red type denotes exceedance and/or equal to Non-Residential Site-Specific Volatilization to Indoor Air Criteria.
4) Duplicate analyses are presented in brackets.
5) Samples were analyzed by EPA Method SW5030C/8260C
6) MW-16-22 was in a low-lying area and covered by surface water during the sampling event. The well was converted to a stick-up well and sampled at a later date.

Abbreviations:

µg/L	Micrograms per liter
BASE	Basement scenario
NR	Non-Residential
Res	Residential
SOG	Slab-On-Grade scenario
SSVIAC	Site-Specific Volatilization to Indoor Air Criteria
U	Compound was analyzed for but not detected. The associated value is the compound quantitation limit.
Y	Elevated reporting limit due to high target concentration.
<50k	Less than 50,000 square feet
>50k	Greater than 50,000 square feet

Table 3
Summary of 1Q 2023 Soil Gas Analytical Results
RACER Trust Pontiac North Campus
Former Fiero Properties
Pontiac, Michigan

Location ID: Sample Depth (ft. bgs): Date Collected:	Fiero SSVIAC Soil Gas Residential SOG Criteria	Fiero SSVIAC Soil Gas Residential Basement Criteria	Units	SV-01-21 14-14.5 3/20/2023	SV-02-21 23.25-23.75 3/20/2023	SV-03-21 11.5-12 3/20/2023	SV-04-21 22.5-23 3/20/2023	SV-05-21 11.5-12 3/20/2023	SV-06-21 22.5-23 3/20/2023
Analyte									
1,1-Dichloroethene	**7,000**	7,000	ug/m^3	< 4.0 U	< 4.0 U (<4.0 U)	< 4.1 U	< 4.1 U	< 4.1 U	< 4.2 U
cis-1,2-Dichloroethene	**280**	280	ug/m^3	< 4.0 U	< 4.0 U (<4.0 U)	< 4.1 U	< 4.1 U	< 4.1 U	< 4.2 U
trans-1,2-Dichloroethene	**2,800**	2,800	ug/m^3	< 4.0 U	< 4.0 U (<4.0 U)	< 4.1 U	< 4.1 U	< 4.1 U	< 4.2 U
Tetrachloroethene	**1,400**	1,400	ug/m^3	< 6.8 U	7.6 (8.4)	< 7.0 U	< 7.0 U	< 7.0 U	< 7.2 U
Trichloroethene	**67**	67	ug/m^3	8.0	61.0 **(68.0)**	< 5.6 U	18	< 5.5 U	48
Vinyl Chloride	**54**	54	ug/m^3	< 2.6 U	< 2.6 U (<2.6 U)	< 2.6 U	< 2.6 U	< 2.6 U	< 2.7 U

NOTES:

1) Criteria listed are from the EGLE Former Fiero Assembly Site-Specific Criteria Evaluation dated April 21, 2020.
2) Values in bold denote exceedance and/or equal to Residential Site-Specific Volatilization to Indoor Air soil gas SOG criteria.
3) Values in red type denote exceedance and/or equal to Residential Site-Specific Volatilization to Indoor Air soil gas basement criteria.
4) Duplicate analyses are presented in parenthesis
5) Reporting limits for samples collected on 11/28/22 were elevated from lab dilutions performed due to the presence of high level 2-propanol

Abbreviations:
µg/m^3 - Micrograms per cubic meter.
< - Not detected
ft. bgs - feet below ground surface
U - Compound analyzed for but not detected above the reporting limit, LOD, or MDL value.
SOG - Slab-On-Grade
SSVIAC - Site-Specific Volatilization to Indoor Air Criteria

FIGURES

Service Layer Credits: Google Earth Pro Aerial Dated March 19, 2021

PZF17-01
PZF17-02
PZF17-03
PZF17-04
PZF17-05
MWF2
MWF8-01
MWF16-09
MWF16-17
MWF16-05
MW-09-22
MWF16-12
MWF16-18
MWF16-24
MWF16-26
TW-12-22
MWF16-06
MWF16-20
MW-16-22
MWF16-16
MWF16-19
MWF16-22
MW-14-22
MW-13-22
MW-15-22
MW-11-22
MWF16-25
MWF16-07
MWF16-15
MWF7-03
MWF16-23
MWOS-08
MWF7-02
MWOS-09R
MW-06-20
SV-01-21
MW-08-21
SV-02-21
UNKNOWN-01
MWF15-01
SV-06-21
SV-05-21
MW-07-20
MWOS-10
SV-04-21
SV-03-21
MW-05-18
MW-02-17
MWF12-01R
MWF12-02R

LEGEND

- EXISTING MONITORING WELL
- SOIL VAPOR MONITORING POINT
- SAMPLED ONLY
- GAUGED AND SAMPLED
- CURRENT OR FORMER RACER PROPERTY

NOTES:

1. MW-16-22 WAS INACCESSIBLE DURNG THE SAMPLING EVENT, BUT WAS THEN SAMPLED ON 4/7/23.

0 200 400

SCALE IN FEET

RACER TRUST
PONTIAC NORTH CAMPUS
PONTIAC, MICHIGAN

2023 FIERO TEMPORARY MONITORING PLAN - 1Q MONITORING LOCATIONS

ARCADIS

FIGURE 1

E Beverly Ave
Price
Hollywood
W Tennyson
MWF2
MWF8-01
PZF17-01
PZF17-02
MWF16-09
FORMER FIERO PARKING LOT
PZF17-03
PZF17-04
MWF16-17
FORMER FIERO PLANT 17
MWF16-05
952.46
Saint Louis Ave
952
MW-09-22
951.62
MWF16-12
MWF16-18
951.53
PZF17-05
951
W Kennett Rd
MWF16-24
MWF16-26
MWF16-06
MWF16-20
TW-12-22
MWF16-16
949.90
MW-14-22
949.46
950
MW-16-22
949.05**
MWF16-19
MWF16-22
MW-13-22
949.74
Parkdale Ave
MWF16-07
MW-15-22
949.29
MWF16-15
MWF7-03
MW-11-22
MWF16-25
949
POWER HOUSE
MWF16-23
948.63
MWF7-02
MWOS-08
948.27
MW-06-20
948.17
UNKNOWN-01
MWOS-09R
948.13
MWF15-01
N Merrimac St
Baldwin Ave
MW-08-21
947.92
948
MWOS-10
947.36
MW-07-20
MW-05-18
N Merrimac St
S Merrimac
MW-02-17
MWF12-01R
MWF12-02R
Owens St
Saint Clair St
Young
Wing
Portland
MWOS-01
E Montcalm
MWOS-02
Rd

LEGEND

- MONITORING WELL
- 947.09 GROUNDWATER ELEVATION
- GROUNDWATER CONTOUR
- INFERRED GROUNDWATER CONTOUR
- APPROXIMATE GROUNDWATER FLOW DIRECTION
- ** GAUGED AT LATER DATE
- CURRENT OR FORMER RACER PROPERTY

0 210 420
SCALE IN FEET

RACER TRUST
PONTIAC NORTH CAMPUS
PONTIAC, MICHIGAN

FIERO GROUNDWATER CONTOUR MAP
MARCH 6, 2023

ARCADIS

FIGURE
2

CITY: NOVI, MI DIV: ENV DB: TRY PIC: PM: TM: TR: PROJECT NUMBER: 30112891.00005 COORDINATE SYSTEM: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl
D:\GIS\Project Files\MotorsLiquidationCompany\PontiacNorthCampus\Documents\Former_Fiero_Property\DataPackage_2023_1Q\02_FieroProperty_GWE_2023Q1.mxd PLOTTED: 5/9/2023 10:52:39 AM BY: TYarbrough

Service Layer Credits: Google Earth Pro Aerial Dated March 19, 2021

PZF17-01
PZF17-02
PZF17-03
PZF17-04
PZF17-05
MWF2
MWF8-01
MWF16-09
MWF16-17
MWF16-05
MWF16-12
MW-09-22
MWF16-18
MWF16-24
MWF16-26
TW-12-22
MWF16-06
MWF16-20
MWF16-22
MWF16-16
MWF16-19
MW-13-22
MW-11-22
MW-16-22
MWF16-07
MWF16-25
MW-14-22
MW-15-22
MWF16-15
MWF7-03
MWOS-08
MWF16-23
MWF7-02
MWOS-09R
MW-06-20
UNKNOWN-01
SV-01-21
MW-08-21
MWF15-01
SV-02-21
SV-06-21
MW-07-20
SV-05-21
MWOS-10
SV-03-21
SV-04-21
MW-05-18
MW-02-17
MWF12-01R
MWF12-02R

LEGEND

- EXISTING MONITORING WELL
- SOIL VAPOR MONITORING POINT
- EXCEEDS RESIDENTIAL SSVIAC
- DOES NOT EXCEED RESIDENTIAL SSVIAC
- CURRENT OR FORMER RACER PROPERTY

NOTES:

1. SSVIAC - SITE SPECIFIC VOLATILIZATION TO INDOOR AIR CRITERIA

2. GROUNDWATER AND SOIL GAS DATA DOES NOT EXCEED NONRESIDENTIAL SSVIAC.

3. CRITERIA FROM DEPARTMENT OF ENVIRONMENT, GREAT LAKES AND ENERGY (EGLE) DEVELOPED SITE-SPECIFIC VOLATILIZATION TO INDOOR AIR CRITERIA FOR THE FORMER FIERO ASSEMBLY, APRIL 21, 2020.

0 200 400

SCALE IN FEET

RACER TRUST
PONTIAC NORTH CAMPUS
PONTIAC, MICHIGAN

SUMMARY OF GROUNDWATER AND SOIL GAS RESULTS MARCH 2023

ARCADIS

FIGURE 3

CITY: NOVI DIV: ENV DB: TRY PIC:S.INSALACO PM: T. LINDER TM: L. CRISP TR: PROJECT NUMBER: 30075936.0005 COORDINATE SYSTEM: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl
D:\GIS\Project Files\MotorsLiquidationCompany\PontiacNorthCampus\Documents\Former_Fiero_Property\DataPackage_2023_1Q03_FormerFiero_SoilGasSummary_2023Q1.mxd PLOTTED: 5/10/2023 11:22:14 AM BY: TYarbrough

Attachment 1

Analytical Reports

Analytical Laboratory Report

Report ID: S45983.01(01)
Generated on 03/09/2023

Report to

Attention: Alexis Crisp
Arcadis US, Inc.
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 810-225-1909 FAX:
Email: Alexis.Crisp@arcadis.com

Addtional Contacts: Tiffany Linder, Ian Drost

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 Laverty (johnlaverty@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S45983.01-S45983.04
Project: 30167840.00005 / RACER PNC
Collected Date(s): 03/06/2023 - 03/07/2023
Submitted Date/Time: 03/07/2023 16:05
Sampled by: Leticia Ferreria / Sommer Guy
P.O. #: 30167840.00005

Table of Contents

Maya Murshak
Technical Director

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.
Full accreditation certificates are available upon request. Starred (*) analytes are not 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.

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.

Report Narrative

There is no additional narrative for this analytical report

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001
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
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
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

Method Summary

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

Sample Summary (4 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S45983.01	MW-09-22_GW-030623	Groundwater	03/06/23 13:48
S45983.02	tripblank_01	Water	03/06/23 00:01
S45983.03	MW-08-21_GW-030723	Groundwater	03/07/23 13:55
S45983.04	MWF16-23_GW-030723	Groundwater	03/07/23 14:22

Analytical Laboratory Report

Lab Sample ID: S45983.01
Sample Tag: MW-09-22_GW-030623
Collected Date/Time: 03/06/2023 13:48
Matrix: Groundwater
COC Reference: 160085

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/09/23 10:00	ASW	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/08/23 19:16, Analyst: KAG

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	1	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	4	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	148	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	

Lab Sample ID: S45983.01 (continued)
Sample Tag: MW-09-22_GW-030623

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/08/23 19:16, Analyst: KAG (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: S45983.02
Sample Tag: tripblank_01
Collected Date/Time: 03/06/2023 00:01
Matrix: Water
COC Reference: 160085

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	2.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/09/23 10:00	ASW	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/08/23 15:04, Analyst: KAG

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	

Lab Sample ID: S45983.02 (continued)
Sample Tag: tripblank_01

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/08/23 15:04, Analyst: KAG (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: S45983.03
Sample Tag: MW-08-21_GW-030723
Collected Date/Time: 03/07/2023 13:55
Matrix: Groundwater
COC Reference: 160085

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/09/23 10:00	ASW	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/08/23 19:35, Analyst: KAG

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	1	1		ug/L	1	156-60-5	
1,1-Dichloroethane	9	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	11	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	3	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	11	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	

Lab Sample ID: S45983.03 (continued)
Sample Tag: MW-08-21_GW-030723

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/08/23 19:35, Analyst: KAG (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: S45983.04
Sample Tag: MWF16-23_GW-030723
Collected Date/Time: 03/07/2023 14:22
Matrix: Groundwater
COC Reference: 160085

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/09/23 10:00	ASW	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/08/23 19:54, Analyst: KAG

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	2	1		ug/L	1	156-60-5	
1,1-Dichloroethane	6	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	7	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	12	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	16	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	

Lab Sample ID: S45983.04 (continued)
Sample Tag: MWF16-23_GW-030723

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/08/23 19:54, Analyst: KAG (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:S45983
Client:ARCADIS_NOVI (ARCADIS U.S., Inc.)
Project: 30167840.00005 / RACER PNC
Submitted:03/07/2023 16:05 Login User: MMC

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

Phone: 810-225-1909 FAX:
Email: Alexis.Crisp@arcadis.com

Selection				Description	Note
Sample Receiving					
01.	[X] Yes	[ ] No	[ ] N/A	Samples are received at 4C +/- 2C Thermometer #	IR 2.5
02.	[X] Yes	[ ] No	[ ] N/A	Received on ice/ cooling process begun	
03.	[ ] Yes	[X] No	[ ] N/A	Samples shipped	
04.	[ ] Yes	[X] No	[ ] N/A	Samples left in 24 hr. drop box	
05.	[ ] Yes	[ ] No	[X] N/A	Are there custody seals/tape or is the drop box locked	
Chain of Custody					
06.	[X] Yes	[ ] No	[ ] N/A	COC adequately filled out	
07.	[X] Yes	[ ] No	[ ] N/A	COC signed and relinquished to the lab	
08.	[X] Yes	[ ] No	[ ] N/A	Sample tag on bottles match COC	
09.	[ ] Yes	[X] No	[ ] N/A	Subcontracting needed? Subcontacted to:	
Preservation					
10.	[X] Yes	[ ] No	[ ] N/A	Do sample have correct chemical preservation	
11.	[ ] Yes	[ ] No	[X] N/A	Completed pH checks on preserved samples? (no VOAs)	
12.	[ ] Yes	[X] No	[ ] N/A	Did any samples need to be preserved in the lab?	
Bottle Conditions					
13.	[X] Yes	[ ] No	[ ] N/A	All bottles intact	
14.	[X] Yes	[ ] No	[ ] N/A	Appropriate analytical bottles are used	
15.	[X] Yes	[ ] No	[ ] N/A	Merit bottles used	
16.	[X] Yes	[ ] No	[ ] N/A	Sufficient sample volume received	
17.	[ ] Yes	[X] No	[ ] N/A	Samples require laboratory filtration	
18.	[X] Yes	[ ] No	[ ] N/A	Samples submitted within holding time	
19.	[ ] Yes	[X] No	[ ] N/A	Do water VOC or TOX bottles contain headspace	

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

Client Review By: _____ Date:_____

Merit Laboratories, Inc.
2680 East Lansing Dr., East Lansing, MI 48823
Phone (517) 332-0167 Fax (517) 332-4034
www.meritlabs.com

C.O.C. PAGE # _____ OF _____ 160085

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME: Alexis Crisp
COMPANY: Arcadis
ADDRESS: 28550 Cabot Dr #500
CITY: Novi STATE: MI ZIP CODE: 48377
PHONE NO.: CELL NO.:
P.O. NO.: 30167840.00005
E-MAIL ADDRESS: tiffany.linder@arcadis.com Alexis.crisp@arcadis.com
QUOTE NO.:

INVOICE TO

CONTACT NAME: Accounts Payable ☐ SAME
COMPANY: Arcadis
ADDRESS: 630 Plaza Dr #600
CITY: Highlands Ranch STATE: CO ZIP CODE: 80129
PHONE NO.:
E-MAIL ADDRESS: accountspayable.administration@arcadis.com

PROJECT NO./NAME: 30167840.00005 / Racer PNC
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Leticia Ferreria / Sommer Guy

TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☒ STANDARD ☐ OTHER _____

DELIVERABLES REQUIRED ☐ STD ☒ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☒ EDD ☐ OTHER _____

MATRIX CODE: W=WATER GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIPE A=AIR WS=WASTE

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

Full 8260 VOCs list

Certifications
☐ OHIO VAP ☐ Drinking Water
☐ DoD ☐ NPDES

Project Locations
☐ Detroit ☐ New York
☐ Other _____

Special Instructions

MERIT LAB NO. (FOR LAB USE ONLY)	COLLECTION DATE	COLLECTION TIME	SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives: NONE	HCl	HNO_3	H_2SO_4	NaOH	MeOH	OTHER	Full 8260 VOCs list	Special Instructions
45983.01	3/6/23	1348	MW-09-22_GW-030623	GW	3		X						X	
.02	—	—	tripblank_01	L	1		1						X	tripblank
.03	3/7/23	1355	MW-08-21_GW-030723	GW	3		3						X	
.04	3/7/23	1422	MWF-16-23_GW-030723	GW	3		3						X	

RELINQUISHED BY: SIGNATURE/ORGANIZATION	☐ Sampler	DATE	TIME
Sommer Guy		3/7/23	1440
RECEIVED BY: SIGNATURE/ORGANIZATION		DATE	TIME
		3/7/23	14:40
RELINQUISHED BY: SIGNATURE/ORGANIZATION		DATE	TIME
		3/7/23	16:05
RECEIVED BY: SIGNATURE/ORGANIZATION		DATE	TIME
M Chilcote		3/7/23	1605

RELINQUISHED BY: SIGNATURE/ORGANIZATION	DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION	DATE	TIME

SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS

NOTES: TEMP. ON ARRIVAL 2.5

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE

Rev. 1.26.22

Analytical Laboratory Report

Report ID: S45984.01(01)
Generated on 03/10/2023

Report to

Attention: Alexis Crisp
Arcadis US, Inc.
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 810-225-1909 FAX:
Email: Alexis.Crisp@arcadis.com

Addtional Contacts: Tiffany Linder, Ian Drost

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 Laverty (johnlaverty@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S45984.01-S45984.08
Project: 30167840.00005 / RACER PNC
Collected Date(s): 03/06/2023 - 03/07/2023
Submitted Date/Time: 03/07/2023 16:05
Sampled by: Leticia Ferreria / Sommer Guy
P.O. #: 30167840.00005

Table of Contents

Maya Murshak
Technical Director

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.
Full accreditation certificates are available upon request. Starred (*) analytes are not 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.

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.

Report Narrative

There is no additional narrative for this analytical report

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001
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
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
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

Method Summary

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

Sample Summary (8 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S45984.01	MWF16-16_GW-030623	Groundwater	03/06/23 13:37
S45984.02	MW-14-22_GW-030723	Groundwater	03/07/23 11:34
S45984.03	MW-14-22_GW-030723 MS	Groundwater	03/07/23 11:34
S45984.04	MW-14-22_GW-030723 MSD	Groundwater	03/07/23 11:34
S45984.05	MW-15-22_GW-030723	Groundwater	03/07/23 12:45
S45984.06	MW-13-22_GW-030723	Groundwater	03/07/23 12:51
S45984.07	tripblank_02	Water	03/07/23 00:01
S45984.08	DUP-02_GW-030723	Groundwater	03/07/23 00:01

Lab Sample ID: S45984.01
Sample Tag: MWF16-16_GW-030623
Collected Date/Time: 03/06/2023 13:37
Matrix: Groundwater
COC Reference: 138071

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/09/23 10:00	ASW	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/08/23 14:39, Analyst: KAG

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	6	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	8	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	1	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	5	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	1	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	8	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	346	1		ug/L	1	127-18-4	E

E-Concentration exceeds calibration range

Lab Sample ID: S45984.01 (continued)
Sample Tag: MWF16-16_GW-030623

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/08/23 14:39, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	
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	

Volatile Organics - DEQ List (Replicate 01), Method: SW5030C/8260C, Run Date: 03/08/23 18:56, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	100		ug/L	10	60-29-7	Y
Acetone	Not detected	500		ug/L	10	67-64-1	Y
Methyl iodide	Not detected	10		ug/L	10	74-88-4	Y
Carbon disulfide	Not detected	50		ug/L	10	75-15-0	Y
tert-Methyl butyl ether (MTBE)	Not detected	50		ug/L	10	1634-04-4	Y
Acrylonitrile	Not detected	20		ug/L	10	107-13-1	Y
2-Butanone (MEK)	Not detected	250		ug/L	10	78-93-3	Y
Dichlorodifluoromethane	Not detected	50		ug/L	10	75-71-8	Y
Chloromethane	Not detected	50		ug/L	10	74-87-3	Y
Vinyl chloride	Not detected	10		ug/L	10	75-01-4	Y
Bromomethane	Not detected	50		ug/L	10	74-83-9	Y
Chloroethane	Not detected	50		ug/L	10	75-00-3	Y
Trichlorofluoromethane	Not detected	10		ug/L	10	75-69-4	Y
1,1-Dichloroethene	Not detected	10		ug/L	10	75-35-4	Y
Methylene chloride	Not detected	50		ug/L	10	75-09-2	Y

Y-Elevated reporting limit due to high target concentration

Lab Sample ID: S45984.01 (continued)
Sample Tag: MWF16-16_GW-030623

Volatile Organics - DEQ List (Replicate 01), Method: SW5030C/8260C, Run Date: 03/08/23 18:56, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
trans-1,2-Dichloroethene	Not detected	10		ug/L	10	156-60-5	Y
1,1-Dichloroethane	Not detected	10		ug/L	10	75-34-3	Y
cis-1,2-Dichloroethene	Not detected	10		ug/L	10	156-59-2	Y
Tetrahydrofuran*	Not detected	900		ug/L	10	109-99-9	Y
Chloroform	Not detected	10		ug/L	10	67-66-3	Y
Bromochloromethane	Not detected	10		ug/L	10	74-97-5	Y
1,1,1-Trichloroethane	Not detected	10		ug/L	10	71-55-6	Y
4-Methyl-2-pentanone (MIBK)	Not detected	500		ug/L	10	108-10-1	Y
2-Hexanone	Not detected	500		ug/L	10	591-78-6	Y
Carbon tetrachloride	Not detected	10		ug/L	10	56-23-5	Y
Benzene	Not detected	10		ug/L	10	71-43-2	Y
1,2-Dichloroethane	Not detected	10		ug/L	10	107-06-2	Y
Trichloroethene	Not detected	10		ug/L	10	79-01-6	Y
1,2-Dichloropropane	Not detected	10		ug/L	10	78-87-5	Y
Bromodichloromethane	Not detected	10		ug/L	10	75-27-4	Y
Dibromomethane	Not detected	50		ug/L	10	74-95-3	Y
cis-1,3-Dichloropropene	Not detected	10		ug/L	10	10061-01-5	Y
Toluene	Not detected	10		ug/L	10	108-88-3	Y
trans-1,3-Dichloropropene	Not detected	10		ug/L	10	10061-02-6	Y
1,1,2-Trichloroethane	Not detected	10		ug/L	10	79-00-5	Y
Tetrachloroethene	260	10		ug/L	10	127-18-4	Y
trans-1,4-Dichloro-2-butene	Not detected	10		ug/L	10	110-57-6	Y
Dibromochloromethane	Not detected	50		ug/L	10	124-48-1	Y
1,2-Dibromoethane	Not detected	10		ug/L	10	106-93-4	Y
Chlorobenzene	Not detected	10		ug/L	10	108-90-7	Y
1,1,1,2-Tetrachloroethane	Not detected	10		ug/L	10	630-20-6	Y
Ethylbenzene	Not detected	10		ug/L	10	100-41-4	Y
p,m-Xylene*	Not detected	20		ug/L	10		Y
o-Xylene	Not detected	10		ug/L	10	95-47-6	Y
Styrene	Not detected	10		ug/L	10	100-42-5	Y
Isopropylbenzene	Not detected	50		ug/L	10	98-82-8	Y
Bromoform	Not detected	10		ug/L	10	75-25-2	Y
1,1,2,2-Tetrachloroethane	Not detected	10		ug/L	10	79-34-5	Y
1,2,3-Trichloropropane	Not detected	10		ug/L	10	96-18-4	Y
n-Propylbenzene	Not detected	10		ug/L	10	103-65-1	Y
Bromobenzene	Not detected	10		ug/L	10	108-86-1	Y
1,3,5-Trimethylbenzene	Not detected	10		ug/L	10	108-67-8	Y
tert-Butylbenzene	Not detected	10		ug/L	10	98-06-6	Y
1,2,4-Trimethylbenzene	Not detected	10		ug/L	10	95-63-6	Y
sec-Butylbenzene	Not detected	10		ug/L	10	135-98-8	Y
p-Isopropyltoluene	Not detected	50		ug/L	10	99-87-6	Y
1,3-Dichlorobenzene	Not detected	10		ug/L	10	541-73-1	Y
1,4-Dichlorobenzene	Not detected	10		ug/L	10	106-46-7	Y
1,2-Dichlorobenzene	Not detected	10		ug/L	10	95-50-1	Y
1,2,3-Trimethylbenzene	Not detected	10		ug/L	10	526-73-8	Y
n-Butylbenzene	Not detected	10		ug/L	10	104-51-8	Y
Hexachloroethane	Not detected	50		ug/L	10	67-72-1	Y
1,2-Dibromo-3-chloropropane	Not detected	50		ug/L	10	96-12-8	Y
1,2,4-Trichlorobenzene	Not detected	50		ug/L	10	120-82-1	Y

Y-Elevated reporting limit due to high target concentration

Lab Sample ID: S45984.01 (continued)
Sample Tag: MWF16-16_GW-030623

Volatile Organics - DEQ List (Replicate 01), Method: SW5030C/8260C, Run Date: 03/08/23 18:56, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2,3-Trichlorobenzene	Not detected	50		ug/L	10	87-61-6	Y
Naphthalene	Not detected	50		ug/L	10	91-20-3	Y
2-Methylnaphthalene	Not detected	50		ug/L	10	91-57-6	Y

Y-Elevated reporting limit due to high target concentration

Lab Sample ID: S45984.02
Sample Tag: MW-14-22_GW-030723
Collected Date/Time: 03/07/2023 11:34
Matrix: Groundwater
COC Reference: 138071

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/09/23 10:00	ASW	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/08/23 15:26, Analyst: KAG

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	8	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	1	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	6	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	3	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	15	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	100	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	

Lab Sample ID: S45984.02 (continued)
Sample Tag: MW-14-22_GW-030723

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/08/23 15:26, Analyst: KAG (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: S45984.03
Sample Tag: MW-14-22_GW-030723 MS
Collected Date/Time: 03/07/2023 11:34
Matrix: Groundwater
COC Reference: 138071

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/09/23 10:00	ASW	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/08/23 19:20, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	52	10		ug/L	1	60-29-7	1
Acetone	51	50		ug/L	1	67-64-1	1
Methyl iodide	48	1		ug/L	1	74-88-4	1
Carbon disulfide	47	5		ug/L	1	75-15-0	1
tert-Methyl butyl ether (MTBE)	48	5		ug/L	1	1634-04-4	1
Acrylonitrile	49	2		ug/L	1	107-13-1	1
2-Butanone (MEK)	48	25		ug/L	1	78-93-3	1
Dichlorodifluoromethane	45	5		ug/L	1	75-71-8	1
Chloromethane	53	5		ug/L	1	74-87-3	1
Vinyl chloride	52	1		ug/L	1	75-01-4	1
Bromomethane	57	5		ug/L	1	74-83-9	1
Chloroethane	56	5		ug/L	1	75-00-3	1
Trichlorofluoromethane	50	1		ug/L	1	75-69-4	1
1,1-Dichloroethene	52	1		ug/L	1	75-35-4	1
Methylene chloride	49	5		ug/L	1	75-09-2	1
trans-1,2-Dichloroethene	49	1		ug/L	1	156-60-5	1
1,1-Dichloroethane	51	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	50	1		ug/L	1	67-66-3	1
Bromochloromethane	50	1		ug/L	1	74-97-5	1
1,1,1-Trichloroethane	53	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	47	1		ug/L	1	56-23-5	1
Benzene	49	1		ug/L	1	71-43-2	1
1,2-Dichloroethane	47	1		ug/L	1	107-06-2	1
Trichloroethene	62	1		ug/L	1	79-01-6	1
1,2-Dichloropropane	49	1		ug/L	1	78-87-5	1
Bromodichloromethane	48	1		ug/L	1	75-27-4	1
Dibromomethane	48	5		ug/L	1	74-95-3	1
cis-1,3-Dichloropropene	49	1		ug/L	1	10061-01-5	1
Toluene	49	1		ug/L	1	108-88-3	1
trans-1,3-Dichloropropene	48	1		ug/L	1	10061-02-6	1
1,1,2-Trichloroethane	50	1		ug/L	1	79-00-5	1
Tetrachloroethene	138	1		ug/L	1	127-18-4	1

1-Spiked at 50ug/L

Lab Sample ID: S45984.03 (continued)
Sample Tag: MW-14-22_GW-030723 MS

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/08/23 19:20, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
trans-1,4-Dichloro-2-butene	36	1		ug/L	1	110-57-6	1
Dibromochloromethane	45	5		ug/L	1	124-48-1	1
1,2-Dibromoethane	46	1		ug/L	1	106-93-4	1
Chlorobenzene	47	1		ug/L	1	108-90-7	1
1,1,1,2-Tetrachloroethane	46	1		ug/L	1	630-20-6	1
Ethylbenzene	47	1		ug/L	1	100-41-4	1
p,m-Xylene*	93	2		ug/L	1		1
o-Xylene	46	1		ug/L	1	95-47-6	1
Styrene	47	1		ug/L	1	100-42-5	1
Isopropylbenzene	46	5		ug/L	1	98-82-8	1
Bromoform	45	1		ug/L	1	75-25-2	1
1,1,2,2-Tetrachloroethane	47	1		ug/L	1	79-34-5	1
1,2,3-Trichloropropane	45	1		ug/L	1	96-18-4	1
n-Propylbenzene	46	1		ug/L	1	103-65-1	1
Bromobenzene	48	1		ug/L	1	108-86-1	1
1,3,5-Trimethylbenzene	45	1		ug/L	1	108-67-8	1
tert-Butylbenzene	44	1		ug/L	1	98-06-6	1
1,2,4-Trimethylbenzene	46	1		ug/L	1	95-63-6	1
sec-Butylbenzene	45	1		ug/L	1	135-98-8	1
p-Isopropyltoluene	44	5		ug/L	1	99-87-6	1
1,3-Dichlorobenzene	46	1		ug/L	1	541-73-1	1
1,4-Dichlorobenzene	46	1		ug/L	1	106-46-7	1
1,2-Dichlorobenzene	46	1		ug/L	1	95-50-1	1
1,2,3-Trimethylbenzene	45	1		ug/L	1	526-73-8	1
n-Butylbenzene	45	1		ug/L	1	104-51-8	1
Hexachloroethane	40	5		ug/L	1	67-72-1	1
1,2-Dibromo-3-chloropropane	44	5		ug/L	1	96-12-8	1
1,2,4-Trichlorobenzene	45	5		ug/L	1	120-82-1	1
1,2,3-Trichlorobenzene	45	5		ug/L	1	87-61-6	1
Naphthalene	45	5		ug/L	1	91-20-3	1
2-Methylnaphthalene	38	5		ug/L	1	91-57-6	1

1-Spiked at 50ug/L

Lab Sample ID: S45984.04
Sample Tag: MW-14-22_GW-030723 MSD
Collected Date/Time: 03/07/2023 11:34
Matrix: Groundwater
COC Reference: 138071

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/09/23 10:00	ASW	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/08/23 19:43, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	54	10		ug/L	1	60-29-7	1
Acetone	56	50		ug/L	1	67-64-1	1
Methyl iodide	47	1		ug/L	1	74-88-4	1
Carbon disulfide	46	5		ug/L	1	75-15-0	1
tert-Methyl butyl ether (MTBE)	49	5		ug/L	1	1634-04-4	1
Acrylonitrile	53	2		ug/L	1	107-13-1	1
2-Butanone (MEK)	53	25		ug/L	1	78-93-3	1
Dichlorodifluoromethane	41	5		ug/L	1	75-71-8	1
Chloromethane	53	5		ug/L	1	74-87-3	1
Vinyl chloride	51	1		ug/L	1	75-01-4	1
Bromomethane	56	5		ug/L	1	74-83-9	1
Chloroethane	56	5		ug/L	1	75-00-3	1
Trichlorofluoromethane	49	1		ug/L	1	75-69-4	1
1,1-Dichloroethene	48	1		ug/L	1	75-35-4	1
Methylene chloride	49	5		ug/L	1	75-09-2	1
trans-1,2-Dichloroethene	49	1		ug/L	1	156-60-5	1
1,1-Dichloroethane	50	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	50	1		ug/L	1	67-66-3	1
Bromochloromethane	49	1		ug/L	1	74-97-5	1
1,1,1-Trichloroethane	53	1		ug/L	1	71-55-6	1
4-Methyl-2-pentanone (MIBK)	52	50		ug/L	1	108-10-1	1
2-Hexanone	54	50		ug/L	1	591-78-6	1
Carbon tetrachloride	47	1		ug/L	1	56-23-5	1
Benzene	48	1		ug/L	1	71-43-2	1
1,2-Dichloroethane	47	1		ug/L	1	107-06-2	1
Trichloroethene	61	1		ug/L	1	79-01-6	1
1,2-Dichloropropane	50	1		ug/L	1	78-87-5	1
Bromodichloromethane	49	1		ug/L	1	75-27-4	1
Dibromomethane	50	5		ug/L	1	74-95-3	1
cis-1,3-Dichloropropene	50	1		ug/L	1	10061-01-5	1
Toluene	48	1		ug/L	1	108-88-3	1
trans-1,3-Dichloropropene	49	1		ug/L	1	10061-02-6	1
1,1,2-Trichloroethane	52	1		ug/L	1	79-00-5	1
Tetrachloroethene	139	1		ug/L	1	127-18-4	1

1-Spiked at 50ug/L

Lab Sample ID: S45984.04 (continued)
Sample Tag: MW-14-22_GW-030723 MSD

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/08/23 19:43, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
trans-1,4-Dichloro-2-butene	41	1		ug/L	1	110-57-6	1
Dibromochloromethane	47	5		ug/L	1	124-48-1	1
1,2-Dibromoethane	49	1		ug/L	1	106-93-4	1
Chlorobenzene	47	1		ug/L	1	108-90-7	1
1,1,1,2-Tetrachloroethane	47	1		ug/L	1	630-20-6	1
Ethylbenzene	48	1		ug/L	1	100-41-4	1
p,m-Xylene*	94	2		ug/L	1		1
o-Xylene	47	1		ug/L	1	95-47-6	1
Styrene	47	1		ug/L	1	100-42-5	1
Isopropylbenzene	47	5		ug/L	1	98-82-8	1
Bromoform	48	1		ug/L	1	75-25-2	1
1,1,2,2-Tetrachloroethane	51	1		ug/L	1	79-34-5	1
1,2,3-Trichloropropane	51	1		ug/L	1	96-18-4	1
n-Propylbenzene	47	1		ug/L	1	103-65-1	1
Bromobenzene	49	1		ug/L	1	108-86-1	1
1,3,5-Trimethylbenzene	46	1		ug/L	1	108-67-8	1
tert-Butylbenzene	45	1		ug/L	1	98-06-6	1
1,2,4-Trimethylbenzene	46	1		ug/L	1	95-63-6	1
sec-Butylbenzene	45	1		ug/L	1	135-98-8	1
p-Isopropyltoluene	45	5		ug/L	1	99-87-6	1
1,3-Dichlorobenzene	47	1		ug/L	1	541-73-1	1
1,4-Dichlorobenzene	48	1		ug/L	1	106-46-7	1
1,2-Dichlorobenzene	47	1		ug/L	1	95-50-1	1
1,2,3-Trimethylbenzene	46	1		ug/L	1	526-73-8	1
n-Butylbenzene	46	1		ug/L	1	104-51-8	1
Hexachloroethane	43	5		ug/L	1	67-72-1	1
1,2-Dibromo-3-chloropropane	49	5		ug/L	1	96-12-8	1
1,2,4-Trichlorobenzene	48	5		ug/L	1	120-82-1	1
1,2,3-Trichlorobenzene	50	5		ug/L	1	87-61-6	1
Naphthalene	49	5		ug/L	1	91-20-3	1
2-Methylnaphthalene	49	5		ug/L	1	91-57-6	1

1-Spiked at 50ug/L

Lab Sample ID: S45984.05
Sample Tag: MW-15-22_GW-030723
Collected Date/Time: 03/07/2023 12:45
Matrix: Groundwater
COC Reference: 138071

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/09/23 10:00	ASW	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/08/23 15:49, Analyst: KAG

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	

Lab Sample ID: S45984.05 (continued)
Sample Tag: MW-15-22_GW-030723

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/08/23 15:49, Analyst: KAG (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	

Lab Sample ID: S45984.06
Sample Tag: MW-13-22_GW-030723
Collected Date/Time: 03/07/2023 12:51
Matrix: Groundwater
COC Reference: 138071

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/09/23 10:00	ASW	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/08/23 16:13, Analyst: KAG

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	

Lab Sample ID: S45984.06 (continued)
Sample Tag: MW-13-22_GW-030723

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/08/23 16:13, Analyst: KAG (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	

Lab Sample ID: S45984.07
Sample Tag: tripblank_02
Collected Date/Time: 03/07/2023 00:01
Matrix: Water
COC Reference: 138071

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	2.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/09/23 10:00	ASW	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/08/23 16:59, Analyst: KAG

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	

Lab Sample ID: S45984.07 (continued)
Sample Tag: tripblank_02

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/08/23 16:59, Analyst: KAG (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: S45984.08
Sample Tag: DUP-02_GW-030723
Collected Date/Time: 03/07/2023 00:01
Matrix: Groundwater
COC Reference: 138071

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/09/23 10:00	ASW	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/08/23 17:23, Analyst: KAG

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	

Lab Sample ID: S45984.08 (continued)
Sample Tag: DUP-02_GW-030723

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/08/23 17:23, Analyst: KAG (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:S45984
Client:ARCADIS_NOVI (ARCADIS U.S., Inc.)
Project: 30167840.00005 / RACER PNC
Submitted:03/07/2023 16:05 Login User: MMC

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

Phone: 810-225-1909 FAX:
Email: Alexis.Crisp@arcadis.com

Selection				Description	Note
Sample Receiving					
01.	[X] Yes	[ ] No	[ ] N/A	Samples are received at 4C +/- 2C Thermometer #	IR 2.5
02.	[X] Yes	[ ] No	[ ] N/A	Received on ice/ cooling process begun	
03.	[ ] Yes	[X] No	[ ] N/A	Samples shipped	
04.	[ ] Yes	[X] No	[ ] N/A	Samples left in 24 hr. drop box	
05.	[ ] Yes	[ ] No	[X] N/A	Are there custody seals/tape or is the drop box locked	
Chain of Custody					
06.	[X] Yes	[ ] No	[ ] N/A	COC adequately filled out	
07.	[X] Yes	[ ] No	[ ] N/A	COC signed and relinquished to the lab	
08.	[X] Yes	[ ] No	[ ] N/A	Sample tag on bottles match COC	
09.	[ ] Yes	[X] No	[ ] N/A	Subcontracting needed? Subcontacted to:	
Preservation					
10.	[X] Yes	[ ] No	[ ] N/A	Do sample have correct chemical preservation	
11.	[ ] Yes	[ ] No	[X] N/A	Completed pH checks on preserved samples? (no VOAs)	
12.	[ ] Yes	[X] No	[ ] N/A	Did any samples need to be preserved in the lab?	
Bottle Conditions					
13.	[X] Yes	[ ] No	[ ] N/A	All bottles intact	
14.	[X] Yes	[ ] No	[ ] N/A	Appropriate analytical bottles are used	
15.	[X] Yes	[ ] No	[ ] N/A	Merit bottles used	
16.	[X] Yes	[ ] No	[ ] N/A	Sufficient sample volume received	
17.	[ ] Yes	[X] No	[ ] N/A	Samples require laboratory filtration	
18.	[X] Yes	[ ] No	[ ] N/A	Samples submitted within holding time	
19.	[ ] Yes	[X] No	[ ] N/A	Do water VOC or TOX bottles contain headspace	

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

Client Review By: _____ Date:_____

Merit Laboratories, Inc.
2680 East Lansing Dr., East Lansing, MI 48823
Phone (517) 332-0167 Fax (517) 332-4034
www.meritlabs.com

C.O.C. PAGE # _____ OF _____ 138071

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME: Alexis Crisp
COMPANY: Arcadis
ADDRESS: 28550 Cabot Dr #500
CITY: Novi STATE: MI ZIP CODE: 48377
PHONE NO.: FAX NO.: P.O. NO.: 30167840.00005
E-MAIL ADDRESS: tiffany.linder@arcadis.com Alexis.Crisp@arcadis.com QUOTE NO.:

INVOICE TO

CONTACT NAME: Accounts Payable ☐ SAME
COMPANY: Arcadis
ADDRESS: 630 Plaza Dr #600
CITY: Highlands Ranch STATE: CO ZIP CODE: 80129
PHONE NO.: E-MAIL ADDRESS: accountspayable.administration@arcadis.com

PROJECT NO./NAME: 30167840.00005 / Racer PNC
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Sommer Guy / Leticia Ferreira

TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☒ STANDARD ☐ OTHER _____

DELIVERABLES REQUIRED ☐ STD ☒ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☐ EDD ☐ OTHER _____

MATRIX CODE: GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIPE A=AIR W=WASTE

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

Certifications: ☐ OHIO VAP ☐ Drinking Water ☐ DoD ☐ NPDES
Project Locations: ☐ Detroit ☐ New York ☐ Other _____
Special Instructions

MERIT LAB NO. (FOR LAB USE ONLY)	YEAR DATE	YEAR TIME	SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives: NONE	HCl	HNO_3	H_2SO_4	NaOH	MeOH	OTHER	Full 8260 VOC's	Special Instructions
45984.01	3/6/23	1337	MWF16-16_GW-030623	GW	3		3						X	
.02/.03/.04	3/7/23	1134	~~MW-14-22_GW-030723~~ MS MW-14-22_GW-030723	GW	9		9						X	Run MS/MSD
.05	3/7/23	1245	MW-15-22_GW-030723	GW	3		3						X	
.06	3/7/23	1251	MW-13-22_GW-030723	GW	3		3						X	
.07	—	—	tripblank_02	L	1		1						X	tripblank
.08	3/7/23	—	DUP-02_GW-030723	GW	3		3						X	

RELINQUISHED BY: SIGNATURE/ORGANIZATION: Sommer Guy ☐ Sampler	DATE: 3/7/23	TIME: 1440	
RECEIVED BY: SIGNATURE/ORGANIZATION:	DATE: 3/7/23	TIME: 14:40	
RELINQUISHED BY: SIGNATURE/ORGANIZATION:	DATE: 3/7/23	TIME: 10:05	
RECEIVED BY: SIGNATURE/ORGANIZATION: M Allford	DATE: 3/7/23	TIME: 1605	

RELINQUISHED BY: SIGNATURE/ORGANIZATION:	DATE:	TIME:	
RECEIVED BY: SIGNATURE/ORGANIZATION:	DATE:	TIME:	
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS	NOTES: TEMP. ON ARRIVAL: 2.5
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS	

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE

Rev. 5.18.12

Analytical Laboratory Report

Report ID: S46021.01(01)
Generated on 03/10/2023

Report to

Attention: Alexis Crisp
Arcadis US, Inc.
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 810-225-1909 FAX:
Email: Alexis.Crisp@arcadis.com

Addtional Contacts: Tiffany Linder, Ian Drost

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 Laverty (johnlaverty@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S46021.01
Project: 30167840.00005 / RACER PNC
Collected Date(s): 03/07/2023
Submitted Date/Time: 03/08/2023 13:25
Sampled by: Leticia Ferreria
P.O. #: 30167840.00005

Table of Contents

Maya Murshak
Technical Director

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.
Full accreditation certificates are available upon request. Starred (*) analytes are not 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.

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.

Report Narrative

There is no additional narrative for this analytical report

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001
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
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
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

Method Summary

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

Sample Summary (1 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S46021.01	MWOS-09R_GW-030723	Groundwater	03/07/23 15:38

Analytical Laboratory Report

Lab Sample ID: S46021.01
Sample Tag: MWOS-09R_GW-030723
Collected Date/Time: 03/07/2023 15:38
Matrix: Groundwater
COC Reference: 138071

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/10/23 10:45	ASW	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/09/23 19:16, Analyst: KAG

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	2	1		ug/L	1	156-60-5	
1,1-Dichloroethane	4	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	28	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	4	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	3	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	17	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	

Lab Sample ID: S46021.01 (continued)
Sample Tag: MWOS-09R_GW-030723

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/09/23 19:16, Analyst: KAG (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:S46021
Client:ARCADIS_NOVI (ARCADIS U.S., Inc.)
Project: 30167840.00005 / RACER PNC
Submitted:03/08/2023 13:25 Login User: PFD

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

Phone: 810-225-1909 FAX:
Email: Alexis.Crisp@arcadis.com

Selection				Description	Note
Sample Receiving					
01.	[X] Yes	[ ] No	[ ] N/A	Samples are received at 4C +/- 2C Thermometer #	IR 4.2
02.	[X] Yes	[ ] No	[ ] N/A	Received on ice/ cooling process begun	
03.	[ ] Yes	[X] No	[ ] N/A	Samples shipped	
04.	[ ] Yes	[X] No	[ ] N/A	Samples left in 24 hr. drop box	
05.	[ ] Yes	[ ] No	[X] N/A	Are there custody seals/tape or is the drop box locked	
Chain of Custody					
06.	[X] Yes	[ ] No	[ ] N/A	COC adequately filled out	
07.	[X] Yes	[ ] No	[ ] N/A	COC signed and relinquished to the lab	
08.	[X] Yes	[ ] No	[ ] N/A	Sample tag on bottles match COC	
09.	[ ] Yes	[X] No	[ ] N/A	Subcontracting needed? Subcontacted to:	
Preservation					
10.	[X] Yes	[ ] No	[ ] N/A	Do sample have correct chemical preservation	
11.	[ ] Yes	[ ] No	[X] N/A	Completed pH checks on preserved samples? (no VOAs)	
12.	[ ] Yes	[X] No	[ ] N/A	Did any samples need to be preserved in the lab?	
Bottle Conditions					
13.	[X] Yes	[ ] No	[ ] N/A	All bottles intact	
14.	[X] Yes	[ ] No	[ ] N/A	Appropriate analytical bottles are used	
15.	[X] Yes	[ ] No	[ ] N/A	Merit bottles used	
16.	[X] Yes	[ ] No	[ ] N/A	Sufficient sample volume received	
17.	[ ] Yes	[X] No	[ ] N/A	Samples require laboratory filtration	
18.	[X] Yes	[ ] No	[ ] N/A	Samples submitted within holding time	
19.	[ ] Yes	[X] No	[ ] N/A	Do water VOC or TOX bottles contain headspace	

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

Client Review By: _____ Date:_____

Merit Laboratories, Inc.
2680 East Lansing Dr., East Lansing, MI 48823
Phone (517) 332-0167 Fax (517) 332-4034
www.meritlabs.com

C.O.C. PAGE # ____ OF ____ 138071

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME: Alexis Crisp
COMPANY: Arcadis
ADDRESS: 28850 Cabot Dr # 500
CITY: Novi STATE: ZIP CODE:
PHONE NO.: FAX NO.: P.O. NO.: 30167840.00005
E-MAIL ADDRESS: Tiffany.Linder@arcadis.com, Lexis.Crisp@arcadis.com QUOTE NO.:

INVOICE TO ☐ SAME

CONTACT NAME: Accounts Payable
COMPANY: Arcadis
ADDRESS: 630 Plaza Dr #60
CITY: Highlands Ranch STATE: CO ZIP CODE: 80129
PHONE NO.: E-MAIL ADDRESS: accountspayable.administration@arcadis.com

PROJECT NO./NAME: "
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Leticia Ferreira / [signature]

TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☐ STANDARD ☐ OTHER ______

DELIVERABLES REQUIRED ☐ STD ☒ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☒ EDD ☐ OTHER ______

MATRIX CODE: GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIPE A=AIR W=WASTE

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

MERIT LAB NO. (FOR LAB USE ONLY)	DATE	TIME	SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	NONE	HCl	HNO_3	H_2SO_4	NaOH	MeOH	OTHER	Full 8260 VOCs
48021	~~[illegible]~~	~~[illegible]~~	~~MW-16-[illegible]-GW-030723~~	~~GW~~	~~3~~		~~X~~						~~X~~ LF
.01	03/07/23	1538	MWDS-09R-GW-030723	GW	3		X						X
	~~03/08/23~~		~~MW-[illegible]-GW-030823~~	~~GW~~	~~3~~		~~X~~						~~X~~ LF

Certifications: ☐ OHIO VAP ☐ Drinking Water ☐ DoD ☐ NPDES
Project Locations: ☐ Detroit ☐ New York ☐ Other ______
Special Instructions

	SIGNATURE/ORGANIZATION	DATE	TIME
RELINQUISHED BY: (☐ Sampler)	[signature]	3/8/23	1200
RECEIVED BY:	[signature]	3/8/23	10:00
RELINQUISHED BY:	[signature]	3/8/23	13:25
RECEIVED BY:	M Chilcote	3/8/23	1325

RELINQUISHED BY: SIGNATURE/ORGANIZATION DATE TIME
RECEIVED BY: SIGNATURE/ORGANIZATION DATE TIME

SEAL NO. SEAL INTACT YES ☐ NO ☐ INITIALS
SEAL NO. SEAL INTACT YES ☐ NO ☐ INITIALS
NOTES:
TEMP. ON ARRIVAL: 4.2

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE

Rev. 5.18.12

Analytical Laboratory Report

Report ID: S46018.01(01)
Generated on 03/10/2023

Report to

Attention: Alexis Crisp
Arcadis US, Inc.
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 810-225-1909 FAX:
Email: Alexis.Crisp@arcadis.com

Addtional Contacts: Tiffany Linder, Ian Drost

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 Laverty (johnlaverty@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S46018.01-S46018.05
Project: 30167840.00005 / RACER PNC
Collected Date(s): 03/07/2023
Submitted Date/Time: 03/08/2023 13:25
Sampled by: Sommer Guy
P.O. #: 30167840.00005

Table of Contents

Maya Murshak
Technical Director

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

Report Narrative

There is no additional narrative for this analytical report

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001
Pennsylvania DEP	#68-05884
Wisconsin DNR	FID# 399147320

Qualifier Descriptions

Qualifier	Description
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E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
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L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
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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

Method Summary

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

Sample Summary (5 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S46018.01	MW-06-20_GW-030723	Groundwater	03/07/23 14:58
S46018.02	MWOS-10_GW-030723	Groundwater	03/07/23 15:55
S46018.03	DUP-01_GW-030723	Groundwater	03/07/23 00:01
S46018.04	Tripblank	Water	03/07/23 00:01
S46018.05	MWF16-18_GW-030823	Groundwater	03/07/23 11:35

Analytical Laboratory Report

Lab Sample ID: S46018.01
Sample Tag: MW-06-20_GW-030723
Collected Date/Time: 03/07/2023 14:58
Matrix: Groundwater
COC Reference: 138071

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/10/23 10:45	ASW	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/09/23 17:59, Analyst: KAG

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	7	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	7	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	5	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	14	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	

Lab Sample ID: S46018.01 (continued)
Sample Tag: MW-06-20_GW-030723

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/09/23 17:59, Analyst: KAG (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	

Lab Sample ID: S46018.02
Sample Tag: MWOS-10_GW-030723
Collected Date/Time: 03/07/2023 15:55
Matrix: Groundwater
COC Reference: 138071

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/10/23 10:45	ASW	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/09/23 18:19, Analyst: KAG

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	1	1		ug/L	1	156-60-5	
1,1-Dichloroethane	7	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	9	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	4	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	11	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	

Lab Sample ID: S46018.02 (continued)
Sample Tag: MWOS-10_GW-030723

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/09/23 18:19, Analyst: KAG (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	

Lab Sample ID: S46018.03
Sample Tag: DUP-01_GW-030723
Collected Date/Time: 03/07/2023 00:01
Matrix: Groundwater
COC Reference: 138071

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/10/23 10:45	ASW	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/09/23 18:38, Analyst: KAG

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	7	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	7	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	5	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	14	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	

Lab Sample ID: S46018.03 (continued)
Sample Tag: DUP-01_GW-030723

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/09/23 18:38, Analyst: KAG (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: S46018.04
Sample Tag: Tripblank
Collected Date/Time: 03/07/2023 00:01
Matrix: Water
COC Reference: 138071

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	4.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/10/23 10:45	ASW	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/09/23 18:57, Analyst: KAG

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	

Lab Sample ID: S46018.04 (continued)
Sample Tag: Tripblank

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/09/23 18:57, Analyst: KAG (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: S46018.05
Sample Tag: MWF16-18_GW-030823
Collected Date/Time: 03/07/2023 11:35
Matrix: Groundwater
COC Reference: 138071

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/10/23 10:45	ASW	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/09/23 20:15, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	100		ug/L	10	60-29-7	Y
Acetone	Not detected	500		ug/L	10	67-64-1	Y
Methyl iodide	Not detected	10		ug/L	10	74-88-4	Y
Carbon disulfide	Not detected	50		ug/L	10	75-15-0	Y
tert-Methyl butyl ether (MTBE)	Not detected	50		ug/L	10	1634-04-4	Y
Acrylonitrile	Not detected	20		ug/L	10	107-13-1	Y
2-Butanone (MEK)	Not detected	250		ug/L	10	78-93-3	Y
Dichlorodifluoromethane	Not detected	50		ug/L	10	75-71-8	Y
Chloromethane	Not detected	50		ug/L	10	74-87-3	Y
Vinyl chloride	Not detected	10		ug/L	10	75-01-4	Y
Bromomethane	Not detected	50		ug/L	10	74-83-9	Y
Chloroethane	Not detected	50		ug/L	10	75-00-3	Y
Trichlorofluoromethane	Not detected	10		ug/L	10	75-69-4	Y
1,1-Dichloroethene	Not detected	10		ug/L	10	75-35-4	Y
Methylene chloride	Not detected	50		ug/L	10	75-09-2	Y
trans-1,2-Dichloroethene	Not detected	10		ug/L	10	156-60-5	Y
1,1-Dichloroethane	Not detected	10		ug/L	10	75-34-3	Y
cis-1,2-Dichloroethene	70	10		ug/L	10	156-59-2	Y
Tetrahydrofuran*	Not detected	900		ug/L	10	109-99-9	Y
Chloroform	Not detected	10		ug/L	10	67-66-3	Y
Bromochloromethane	Not detected	10		ug/L	10	74-97-5	Y
1,1,1-Trichloroethane	Not detected	10		ug/L	10	71-55-6	Y
4-Methyl-2-pentanone (MIBK)	Not detected	500		ug/L	10	108-10-1	Y
2-Hexanone	Not detected	500		ug/L	10	591-78-6	Y
Carbon tetrachloride	Not detected	10		ug/L	10	56-23-5	Y
Benzene	Not detected	10		ug/L	10	71-43-2	Y
1,2-Dichloroethane	Not detected	10		ug/L	10	107-06-2	Y
Trichloroethene	20	10		ug/L	10	79-01-6	Y
1,2-Dichloropropane	Not detected	10		ug/L	10	78-87-5	Y
Bromodichloromethane	Not detected	10		ug/L	10	75-27-4	Y
Dibromomethane	Not detected	50		ug/L	10	74-95-3	Y
cis-1,3-Dichloropropene	Not detected	10		ug/L	10	10061-01-5	Y
Toluene	Not detected	10		ug/L	10	108-88-3	Y
trans-1,3-Dichloropropene	Not detected	10		ug/L	10	10061-02-6	Y
1,1,2-Trichloroethane	Not detected	10		ug/L	10	79-00-5	Y
Tetrachloroethene	1,070	10		ug/L	10	127-18-4	Y

Y-Elevated reporting limit due to high target concentration

Lab Sample ID: S46018.05 (continued)
Sample Tag: MWF16-18_GW-030823

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/09/23 20:15, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
trans-1,4-Dichloro-2-butene	Not detected	10		ug/L	10	110-57-6	Y
Dibromochloromethane	Not detected	50		ug/L	10	124-48-1	Y
1,2-Dibromoethane	Not detected	10		ug/L	10	106-93-4	Y
Chlorobenzene	Not detected	10		ug/L	10	108-90-7	Y
1,1,1,2-Tetrachloroethane	Not detected	10		ug/L	10	630-20-6	Y
Ethylbenzene	Not detected	10		ug/L	10	100-41-4	Y
p,m-Xylene*	Not detected	20		ug/L	10		Y
o-Xylene	Not detected	10		ug/L	10	95-47-6	Y
Styrene	Not detected	10		ug/L	10	100-42-5	Y
Isopropylbenzene	Not detected	50		ug/L	10	98-82-8	Y
Bromoform	Not detected	10		ug/L	10	75-25-2	Y
1,1,2,2-Tetrachloroethane	Not detected	10		ug/L	10	79-34-5	Y
1,2,3-Trichloropropane	Not detected	10		ug/L	10	96-18-4	Y
n-Propylbenzene	Not detected	10		ug/L	10	103-65-1	Y
Bromobenzene	Not detected	10		ug/L	10	108-86-1	Y
1,3,5-Trimethylbenzene	Not detected	10		ug/L	10	108-67-8	Y
tert-Butylbenzene	Not detected	10		ug/L	10	98-06-6	Y
1,2,4-Trimethylbenzene	Not detected	10		ug/L	10	95-63-6	Y
sec-Butylbenzene	Not detected	10		ug/L	10	135-98-8	Y
p-Isopropyltoluene	Not detected	50		ug/L	10	99-87-6	Y
1,3-Dichlorobenzene	Not detected	10		ug/L	10	541-73-1	Y
1,4-Dichlorobenzene	Not detected	10		ug/L	10	106-46-7	Y
1,2-Dichlorobenzene	Not detected	10		ug/L	10	95-50-1	Y
1,2,3-Trimethylbenzene	Not detected	10		ug/L	10	526-73-8	Y
n-Butylbenzene	Not detected	10		ug/L	10	104-51-8	Y
Hexachloroethane	Not detected	50		ug/L	10	67-72-1	Y
1,2-Dibromo-3-chloropropane	Not detected	50		ug/L	10	96-12-8	Y
1,2,4-Trichlorobenzene	Not detected	50		ug/L	10	120-82-1	Y
1,2,3-Trichlorobenzene	Not detected	50		ug/L	10	87-61-6	Y
Naphthalene	Not detected	50		ug/L	10	91-20-3	Y
2-Methylnaphthalene	Not detected	50		ug/L	10	91-57-6	Y

Y-Elevated reporting limit due to high target concentration

Merit Laboratories Login Checklist

Lab Set ID:S46018
Client:ARCADIS_NOVI (ARCADIS U.S., Inc.)
Project: 30167840.00005 / RACER PNC
Submitted:03/08/2023 13:25 Login User: PFD

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

Phone: 810-225-1909 FAX:
Email: Alexis.Crisp@arcadis.com

Selection				Description	Note
Sample Receiving					
01.	[X] Yes	[ ] No	[ ] N/A	Samples are received at 4C +/- 2C Thermometer #	IR 4.2
02.	[X] Yes	[ ] No	[ ] N/A	Received on ice/ cooling process begun	
03.	[ ] Yes	[X] No	[ ] N/A	Samples shipped	
04.	[ ] Yes	[X] No	[ ] N/A	Samples left in 24 hr. drop box	
05.	[ ] Yes	[ ] No	[X] N/A	Are there custody seals/tape or is the drop box locked	
Chain of Custody					
06.	[X] Yes	[ ] No	[ ] N/A	COC adequately filled out	
07.	[X] Yes	[ ] No	[ ] N/A	COC signed and relinquished to the lab	
08.	[X] Yes	[ ] No	[ ] N/A	Sample tag on bottles match COC	
09.	[ ] Yes	[X] No	[ ] N/A	Subcontracting needed? Subcontacted to:	
Preservation					
10.	[X] Yes	[ ] No	[ ] N/A	Do sample have correct chemical preservation	
11.	[ ] Yes	[ ] No	[X] N/A	Completed pH checks on preserved samples? (no VOAs)	
12.	[ ] Yes	[X] No	[ ] N/A	Did any samples need to be preserved in the lab?	
Bottle Conditions					
13.	[X] Yes	[ ] No	[ ] N/A	All bottles intact	
14.	[X] Yes	[ ] No	[ ] N/A	Appropriate analytical bottles are used	
15.	[X] Yes	[ ] No	[ ] N/A	Merit bottles used	
16.	[X] Yes	[ ] No	[ ] N/A	Sufficient sample volume received	
17.	[ ] Yes	[X] No	[ ] N/A	Samples require laboratory filtration	
18.	[X] Yes	[ ] No	[ ] N/A	Samples submitted within holding time	
19.	[ ] Yes	[X] No	[ ] N/A	Do water VOC or TOX bottles contain headspace	

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

Client Review By: _____ Date:_____

Merit Laboratories, Inc.

2680 East Lansing Dr., East Lansing, MI 48823
Phone (517) 332-0167 Fax (517) 332-4034
www.meritlabs.com

C.O.C. PAGE # _____ OF _____

138071

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME: Alexis Crisp
COMPANY: Arcadis
ADDRESS: 28550 Cabot Dr #500
CITY: Novi STATE: MI ZIP CODE: 48377
PHONE NO.: FAX NO.: P.O. NO.: 30167840.00005
E-MAIL ADDRESS: tiffany.linder@arcadis.com Alexis.Crisp@arcadis.com QUOTE NO.:

INVOICE TO

CONTACT NAME: Accounts Payable ☐ SAME
COMPANY: ~~&~~ Arcadis
ADDRESS: 630 Plaza Dr #600
CITY: Highlands Ranch STATE: CO ZIP CODE: 80129
PHONE NO.: E-MAIL ADDRESS: accountspayable.administration@arcadis.com

PROJECT NO./NAME: 30167840.00005 / Racer PNC
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Sommer Guy / Sommer Guy

TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☒ STANDARD ☐ OTHER _____

DELIVERABLES REQUIRED ☐ STD ☒ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☒ EDD ☐ OTHER _____

MATRIX CODE: GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIPE A=AIR W=WASTE

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

Certifications
☐ OHIO VAP ☐ Drinking Water
☐ DoD ☐ NPDES

Project Locations
☐ Detroit ☐ New York
☐ Other _____

Special Instructions

MERIT LAB NO. (FOR LAB USE ONLY)	YEAR DATE	YEAR TIME	SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives: NONE	HCl	HNO_3	H_2SO_4	NaOH	MeOH	OTHER	Full 8260 VOCs	Special Instructions
460180.01	3/7/23	1458	MW-06-20_GW-030723	GW	3		3						X	
.02	3/7/23	1555	MW05-10_GW-030723	GW	3		3						X	
.03	3/7/23	—	DUP-01_GW-030723	GW	3		3						X	
.04	—	—	tripblank	L	1		1						X	tripblank
.05	3/8/23	1135	MWF16-18_GW-030823	GW	3		3						X	

RELINQUISHED BY: SIGNATURE/ORGANIZATION: Sommer Guy ☒ Sampler	DATE: 3/8/23	TIME: 1200	
RECEIVED BY: SIGNATURE/ORGANIZATION: [illegible]	DATE: 3/8/23	TIME: 1800	
RELINQUISHED BY: SIGNATURE/ORGANIZATION: [illegible]	DATE: 3/8/23	TIME: 1125	
RECEIVED BY: SIGNATURE/ORGANIZATION: M Chilcote	DATE: 3/8/23	TIME: 1325	

RELINQUISHED BY: SIGNATURE/ORGANIZATION: _____ DATE: _____ TIME: _____
RECEIVED BY: SIGNATURE/ORGANIZATION: _____ DATE: _____ TIME: _____

SEAL NO. _____ SEAL INTACT YES ☐ NO ☐ INITIALS _____
SEAL NO. _____ SEAL INTACT YES ☐ NO ☐ INITIALS _____

NOTES: TEMP. ON ARRIVAL 4.2

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE

Rev. 5.18.12

Analytical Laboratory Report

Report ID: S46108.01(01)
Generated on 03/15/2023

Report to

Attention: Alexis Crisp
Arcadis US, Inc.
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 810-225-1909 FAX:
Email: Alexis.Crisp@arcadis.com

Addtional Contacts: Tiffany Linder, Ian Drost

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 Laverty (johnlaverty@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S46108.01-S46108.02
Project: 30167840 / Racer PNC
Collected Date(s): 03/08/2023
Submitted Date/Time: 03/09/2023 15:20
Sampled by: Leticia Ferreria
P.O. #: 30167840.00005

Table of Contents

Maya Murshak
Technical Director

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.
Full accreditation certificates are available upon request. Starred (*) analytes are not 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.

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.

Report Narrative

There is no additional narrative for this analytical report

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001
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
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
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

Method Summary

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

Sample Summary (2 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S46108.01	MWOS-08_GW-030823	Groundwater	03/08/23 13:17
S46108.02	MWF16-05_GW-030823	Groundwater	03/08/23 12:08

Analytical Laboratory Report

Lab Sample ID: S46108.01
Sample Tag: MWOS-08_GW-030823
Collected Date/Time: 03/08/2023 13:17
Matrix: Groundwater
COC Reference: 138071

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/13/23 10:58	ASW	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/10/23 22:47, Analyst: KAG

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	5	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	1	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	4	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	

Lab Sample ID: S46108.01 (continued)
Sample Tag: MWOS-08_GW-030823

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/10/23 22:47, Analyst: KAG (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: S46108.02
Sample Tag: MWF16-05_GW-030823
Collected Date/Time: 03/08/2023 12:08
Matrix: Groundwater
COC Reference: 138071

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/13/23 10:58	ASW	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/10/23 23:07, Analyst: KAG

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	4	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	23	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	623	1		ug/L	1	127-18-4	E

E-Concentration exceeds calibration range

Lab Sample ID: S46108.02 (continued)
Sample Tag: MWF16-05_GW-030823

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/10/23 23:07, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	
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	

Volatile Organics - DEQ List (Replicate 01), Method: SW5030C/8260C, Run Date: 03/13/23 18:45, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	100		ug/L	10	60-29-7	Y
Acetone	Not detected	500		ug/L	10	67-64-1	Y
Methyl iodide	Not detected	10		ug/L	10	74-88-4	Y
Carbon disulfide	Not detected	50		ug/L	10	75-15-0	Y
tert-Methyl butyl ether (MTBE)	Not detected	50		ug/L	10	1634-04-4	Y
Acrylonitrile	Not detected	20		ug/L	10	107-13-1	Y
2-Butanone (MEK)	Not detected	250		ug/L	10	78-93-3	Y
Dichlorodifluoromethane	Not detected	50		ug/L	10	75-71-8	Y
Chloromethane	Not detected	50		ug/L	10	74-87-3	Y
Vinyl chloride	Not detected	10		ug/L	10	75-01-4	Y
Bromomethane	Not detected	50		ug/L	10	74-83-9	Y
Chloroethane	Not detected	50		ug/L	10	75-00-3	Y
Trichlorofluoromethane	Not detected	10		ug/L	10	75-69-4	Y
1,1-Dichloroethene	Not detected	10		ug/L	10	75-35-4	Y
Methylene chloride	Not detected	50		ug/L	10	75-09-2	Y

Y-Elevated reporting limit due to high target concentration

Lab Sample ID: S46108.02 (continued)
Sample Tag: MWF16-05_GW-030823

Volatile Organics - DEQ List (Replicate 01), Method: SW5030C/8260C, Run Date: 03/13/23 18:45, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
trans-1,2-Dichloroethene	Not detected	10		ug/L	10	156-60-5	Y
1,1-Dichloroethane	Not detected	10		ug/L	10	75-34-3	Y
cis-1,2-Dichloroethene	Not detected	10		ug/L	10	156-59-2	Y
Tetrahydrofuran*	Not detected	900		ug/L	10	109-99-9	Y
Chloroform	Not detected	10		ug/L	10	67-66-3	Y
Bromochloromethane	Not detected	10		ug/L	10	74-97-5	Y
1,1,1-Trichloroethane	Not detected	10		ug/L	10	71-55-6	Y
4-Methyl-2-pentanone (MIBK)	Not detected	500		ug/L	10	108-10-1	Y
2-Hexanone	Not detected	500		ug/L	10	591-78-6	Y
Carbon tetrachloride	Not detected	10		ug/L	10	56-23-5	Y
Benzene	Not detected	10		ug/L	10	71-43-2	Y
1,2-Dichloroethane	Not detected	10		ug/L	10	107-06-2	Y
Trichloroethene	20	10		ug/L	10	79-01-6	Y
1,2-Dichloropropane	Not detected	10		ug/L	10	78-87-5	Y
Bromodichloromethane	Not detected	10		ug/L	10	75-27-4	Y
Dibromomethane	Not detected	50		ug/L	10	74-95-3	Y
cis-1,3-Dichloropropene	Not detected	10		ug/L	10	10061-01-5	Y
Toluene	Not detected	10		ug/L	10	108-88-3	Y
trans-1,3-Dichloropropene	Not detected	10		ug/L	10	10061-02-6	Y
1,1,2-Trichloroethane	Not detected	10		ug/L	10	79-00-5	Y
Tetrachloroethene	550	10		ug/L	10	127-18-4	Y
trans-1,4-Dichloro-2-butene	Not detected	10		ug/L	10	110-57-6	Y
Dibromochloromethane	Not detected	50		ug/L	10	124-48-1	Y
1,2-Dibromoethane	Not detected	10		ug/L	10	106-93-4	Y
Chlorobenzene	Not detected	10		ug/L	10	108-90-7	Y
1,1,1,2-Tetrachloroethane	Not detected	10		ug/L	10	630-20-6	Y
Ethylbenzene	Not detected	10		ug/L	10	100-41-4	Y
p,m-Xylene*	Not detected	20		ug/L	10		Y
o-Xylene	Not detected	10		ug/L	10	95-47-6	Y
Styrene	Not detected	10		ug/L	10	100-42-5	Y
Isopropylbenzene	Not detected	50		ug/L	10	98-82-8	Y
Bromoform	Not detected	10		ug/L	10	75-25-2	Y
1,1,2,2-Tetrachloroethane	Not detected	10		ug/L	10	79-34-5	Y
1,2,3-Trichloropropane	Not detected	10		ug/L	10	96-18-4	Y
n-Propylbenzene	Not detected	10		ug/L	10	103-65-1	Y
Bromobenzene	Not detected	10		ug/L	10	108-86-1	Y
1,3,5-Trimethylbenzene	Not detected	10		ug/L	10	108-67-8	Y
tert-Butylbenzene	Not detected	10		ug/L	10	98-06-6	Y
1,2,4-Trimethylbenzene	Not detected	10		ug/L	10	95-63-6	Y
sec-Butylbenzene	Not detected	10		ug/L	10	135-98-8	Y
p-Isopropyltoluene	Not detected	50		ug/L	10	99-87-6	Y
1,3-Dichlorobenzene	Not detected	10		ug/L	10	541-73-1	Y
1,4-Dichlorobenzene	Not detected	10		ug/L	10	106-46-7	Y
1,2-Dichlorobenzene	Not detected	10		ug/L	10	95-50-1	Y
1,2,3-Trimethylbenzene	Not detected	10		ug/L	10	526-73-8	Y
n-Butylbenzene	Not detected	10		ug/L	10	104-51-8	Y
Hexachloroethane	Not detected	50		ug/L	10	67-72-1	Y
1,2-Dibromo-3-chloropropane	Not detected	50		ug/L	10	96-12-8	Y
1,2,4-Trichlorobenzene	Not detected	50		ug/L	10	120-82-1	Y

Y-Elevated reporting limit due to high target concentration

Lab Sample ID: S46108.02 (continued)
Sample Tag: MWF16-05_GW-030823

Volatile Organics - DEQ List (Replicate 01), Method: SW5030C/8260C, Run Date: 03/13/23 18:45, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2,3-Trichlorobenzene	Not detected	50		ug/L	10	87-61-6	Y
Naphthalene	Not detected	50		ug/L	10	91-20-3	Y
2-Methylnaphthalene	Not detected	50		ug/L	10	91-57-6	Y

Y-Elevated reporting limit due to high target concentration

Merit Laboratories Login Checklist

Lab Set ID:S46108
Client:ARCADIS_NOVI (ARCADIS U.S., Inc.)
Project: 30167840 / Racer PNC
Submitted:03/09/2023 15:20 Login User: MMC

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

Phone: 810-225-1909 FAX:
Email: Alexis.Crisp@arcadis.com

Selection				Description	Note
Sample Receiving					
01.	[X] Yes	[ ] No	[ ] N/A	Samples are received at 4C +/- 2C Thermometer #	IR 3.3
02.	[X] Yes	[ ] No	[ ] N/A	Received on ice/ cooling process begun	
03.	[ ] Yes	[X] No	[ ] N/A	Samples shipped	
04.	[ ] Yes	[X] No	[ ] N/A	Samples left in 24 hr. drop box	
05.	[ ] Yes	[ ] No	[X] N/A	Are there custody seals/tape or is the drop box locked	
Chain of Custody					
06.	[X] Yes	[ ] No	[ ] N/A	COC adequately filled out	
07.	[X] Yes	[ ] No	[ ] N/A	COC signed and relinquished to the lab	
08.	[X] Yes	[ ] No	[ ] N/A	Sample tag on bottles match COC	
09.	[ ] Yes	[X] No	[ ] N/A	Subcontracting needed? Subcontacted to:	
Preservation					
10.	[X] Yes	[ ] No	[ ] N/A	Do sample have correct chemical preservation	
11.	[ ] Yes	[ ] No	[X] N/A	Completed pH checks on preserved samples? (no VOAs)	
12.	[ ] Yes	[X] No	[ ] N/A	Did any samples need to be preserved in the lab?	
Bottle Conditions					
13.	[X] Yes	[ ] No	[ ] N/A	All bottles intact	
14.	[X] Yes	[ ] No	[ ] N/A	Appropriate analytical bottles are used	
15.	[X] Yes	[ ] No	[ ] N/A	Merit bottles used	
16.	[X] Yes	[ ] No	[ ] N/A	Sufficient sample volume received	
17.	[ ] Yes	[X] No	[ ] N/A	Samples require laboratory filtration	
18.	[X] Yes	[ ] No	[ ] N/A	Samples submitted within holding time	
19.	[ ] Yes	[X] No	[ ] N/A	Do water VOC or TOX bottles contain headspace	

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

Client Review By: _____ Date:_____

Merit Laboratories, Inc.
2680 East Lansing Dr., East Lansing, MI 48823
Phone (517) 332-0167 Fax (517) 332-4034
www.meritlabs.com

C.O.C. PAGE # _____ OF _____

138071

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME: Alexis Crisp
COMPANY: Arcadis
ADDRESS: 28550 Cabot Drive #500
CITY: Novi STATE: MI ZIP CODE: 48377
PHONE NO.: FAX NO.: P.O. NO.: 30167840.00005
E-MAIL ADDRESS: Tiffany.Linder@arcadis.com Alexis.Crisp@arcadis.com QUOTE NO.:

INVOICE TO

CONTACT NAME: Accounts Payable ☐ SAME
COMPANY: Arcadis
ADDRESS: 630 Plaza Dr #600
CITY: Highlands Ranch STATE: CO ZIP CODE: 80129
PHONE NO.: E-MAIL ADDRESS: accountspayable.administration@arcadis.com

PROJECT NO./NAME: 30167840 / Racer PNC
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Leticia Ferreira

TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☐ STANDARD ☐ OTHER _____

DELIVERABLES REQUIRED ☐ STD ☐ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☐ EDD ☐ OTHER _____

MATRIX CODE: GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIPE A=AIR W=WASTE

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

Certifications
☐ OHIO VAP ☐ Drinking Water
☐ DoD ☐ NPDES
Project Locations
☐ Detroit ☐ New York
☐ Other _____
Special Instructions

MERIT LAB NO. (FOR LAB USE ONLY)	YEAR DATE	YEAR TIME	SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives: NONE	HCl	HNO_3	H_2SO_4	NaOH	MeOH	OTHER	Full VOCs	Full 8260 VOCs
46108.01	03/08/23	1317	MWOS-08_GW-030823	GW	3		X							X
.02	03/08/23	1208	MWF16-05_GW-030823	GW	3		X							X

RELINQUISHED BY: SIGNATURE/ORGANIZATION ☐ Sampler	DATE 03/09/23	TIME 1400	
RECEIVED BY: SIGNATURE/ORGANIZATION	DATE 3/9/23	TIME 14:30	
RELINQUISHED BY: SIGNATURE/ORGANIZATION	DATE 3/9/23	TIME 15:20	
RECEIVED BY: SIGNATURE/ORGANIZATION	DATE 3/9/23	TIME 1520	

RELINQUISHED BY: SIGNATURE/ORGANIZATION — DATE — TIME
RECEIVED BY: SIGNATURE/ORGANIZATION — DATE — TIME

SEAL NO. — SEAL INTACT YES ☐ NO ☐ — INITIALS
SEAL NO. — SEAL INTACT YES ☐ NO ☐ — INITIALS

NOTES: TEMP. ON ARRIVAL 3.3

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE

Rev. 5.18.12

Analytical Laboratory Report

Report ID: S47239.01(01)
Generated on 04/13/2023

Report to

Attention: Alexis Crisp
Arcadis US, Inc.
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 810-225-1909 FAX:
Email: Alexis.Crisp@arcadis.com

Addtional Contacts: Tiffany Linder, Ian Drost

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 Laverty (johnlaverty@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S47239.01-S47239.02
Project: 30167840.00005 / RACER PNC
Collected Date(s): 04/07/2023
Submitted Date/Time: 04/07/2023 13:35
Sampled by: Sommer Guy
P.O. #: 30167840.00005

Table of Contents

Maya Murshak
Technical Director

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.
Full accreditation certificates are available upon request. Starred (*) analytes are not 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.

Report Narrative

There is no additional narrative for this analytical report

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001
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
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
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

Method Summary

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

Sample Summary (2 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S47239.01	tripblank	Water	04/07/23 00:01
S47239.02	MW-16-22_GW-040723	Groundwater	04/07/23 11:48

Analytical Laboratory Report

Lab Sample ID: S47239.01
Sample Tag: tripblank
Collected Date/Time: 04/07/2023 00:01
Matrix: Water
COC Reference: 150908

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	5.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	04/13/23 10:30	ASW	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 04/12/23 16:09, Analyst: KAG

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	

Lab Sample ID: S47239.01 (continued)
Sample Tag: tripblank

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 04/12/23 16:09, Analyst: KAG (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: S47239.02
Sample Tag: MW-16-22_GW-040723
Collected Date/Time: 04/07/2023 11:48
Matrix: Groundwater
COC Reference: 150908

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	5.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	04/12/23 10:51	ASW	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 04/12/23 05:59, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	100		ug/L	10	60-29-7	Y
Acetone	Not detected	500		ug/L	10	67-64-1	Y
Methyl iodide	Not detected	10		ug/L	10	74-88-4	Y
Carbon disulfide	Not detected	50		ug/L	10	75-15-0	Y
tert-Methyl butyl ether (MTBE)	Not detected	50		ug/L	10	1634-04-4	Y
Acrylonitrile	Not detected	20		ug/L	10	107-13-1	Y
2-Butanone (MEK)	Not detected	250		ug/L	10	78-93-3	Y
Dichlorodifluoromethane	Not detected	50		ug/L	10	75-71-8	Y
Chloromethane	Not detected	50		ug/L	10	74-87-3	Y
Vinyl chloride	Not detected	10		ug/L	10	75-01-4	Y
Bromomethane	Not detected	50		ug/L	10	74-83-9	Y
Chloroethane	Not detected	50		ug/L	10	75-00-3	Y
Trichlorofluoromethane	Not detected	10		ug/L	10	75-69-4	Y
1,1-Dichloroethene	Not detected	10		ug/L	10	75-35-4	Y
Methylene chloride	Not detected	50		ug/L	10	75-09-2	Y
trans-1,2-Dichloroethene	Not detected	10		ug/L	10	156-60-5	Y
1,1-Dichloroethane	Not detected	10		ug/L	10	75-34-3	Y
cis-1,2-Dichloroethene	20	10		ug/L	10	156-59-2	Y
Tetrahydrofuran*	Not detected	900		ug/L	10	109-99-9	Y
Chloroform	Not detected	10		ug/L	10	67-66-3	Y
Bromochloromethane	Not detected	10		ug/L	10	74-97-5	Y
1,1,1-Trichloroethane	Not detected	10		ug/L	10	71-55-6	Y
4-Methyl-2-pentanone (MIBK)	Not detected	500		ug/L	10	108-10-1	Y
2-Hexanone	Not detected	500		ug/L	10	591-78-6	Y
Carbon tetrachloride	Not detected	10		ug/L	10	56-23-5	Y
Benzene	Not detected	10		ug/L	10	71-43-2	Y
1,2-Dichloroethane	Not detected	10		ug/L	10	107-06-2	Y
Trichloroethene	10	10		ug/L	10	79-01-6	Y
1,2-Dichloropropane	Not detected	10		ug/L	10	78-87-5	Y
Bromodichloromethane	Not detected	10		ug/L	10	75-27-4	Y
Dibromomethane	Not detected	50		ug/L	10	74-95-3	Y
cis-1,3-Dichloropropene	Not detected	10		ug/L	10	10061-01-5	Y
Toluene	Not detected	10		ug/L	10	108-88-3	Y
trans-1,3-Dichloropropene	Not detected	10		ug/L	10	10061-02-6	Y
1,1,2-Trichloroethane	Not detected	10		ug/L	10	79-00-5	Y
Tetrachloroethene	300	10		ug/L	10	127-18-4	Y

Y-Elevated reporting limit due to high target concentration

Lab Sample ID: S47239.02 (continued)
Sample Tag: MW-16-22_GW-040723

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 04/12/23 05:59, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
trans-1,4-Dichloro-2-butene	Not detected	10		ug/L	10	110-57-6	Y
Dibromochloromethane	Not detected	50		ug/L	10	124-48-1	Y
1,2-Dibromoethane	Not detected	10		ug/L	10	106-93-4	Y
Chlorobenzene	Not detected	10		ug/L	10	108-90-7	Y
1,1,1,2-Tetrachloroethane	Not detected	10		ug/L	10	630-20-6	Y
Ethylbenzene	Not detected	10		ug/L	10	100-41-4	Y
p,m-Xylene*	Not detected	20		ug/L	10		Y
o-Xylene	Not detected	10		ug/L	10	95-47-6	Y
Styrene	Not detected	10		ug/L	10	100-42-5	Y
Isopropylbenzene	Not detected	50		ug/L	10	98-82-8	Y
Bromoform	Not detected	10		ug/L	10	75-25-2	Y
1,1,2,2-Tetrachloroethane	Not detected	10		ug/L	10	79-34-5	Y
1,2,3-Trichloropropane	Not detected	10		ug/L	10	96-18-4	Y
n-Propylbenzene	Not detected	10		ug/L	10	103-65-1	Y
Bromobenzene	Not detected	10		ug/L	10	108-86-1	Y
1,3,5-Trimethylbenzene	Not detected	10		ug/L	10	108-67-8	Y
tert-Butylbenzene	Not detected	10		ug/L	10	98-06-6	Y
1,2,4-Trimethylbenzene	Not detected	10		ug/L	10	95-63-6	Y
sec-Butylbenzene	Not detected	10		ug/L	10	135-98-8	Y
p-Isopropyltoluene	Not detected	50		ug/L	10	99-87-6	Y
1,3-Dichlorobenzene	Not detected	10		ug/L	10	541-73-1	Y
1,4-Dichlorobenzene	Not detected	10		ug/L	10	106-46-7	Y
1,2-Dichlorobenzene	Not detected	10		ug/L	10	95-50-1	Y
1,2,3-Trimethylbenzene	Not detected	10		ug/L	10	526-73-8	Y
n-Butylbenzene	Not detected	10		ug/L	10	104-51-8	Y
Hexachloroethane	Not detected	50		ug/L	10	67-72-1	Y
1,2-Dibromo-3-chloropropane	Not detected	50		ug/L	10	96-12-8	Y
1,2,4-Trichlorobenzene	Not detected	50		ug/L	10	120-82-1	Y
1,2,3-Trichlorobenzene	Not detected	50		ug/L	10	87-61-6	Y
Naphthalene	Not detected	50		ug/L	10	91-20-3	Y
2-Methylnaphthalene	Not detected	50		ug/L	10	91-57-6	Y

Y-Elevated reporting limit due to high target concentration

Merit Laboratories Login Checklist

Lab Set ID:S47239
Client:ARCADIS_NOVI (ARCADIS U.S., Inc.)
Project: 30167840.00005 / RACER PNC
Submitted: 04/07/2023 13:35 Login User: MMC

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

Phone: 810-225-1909 FAX:
Email: Alexis.Crisp@arcadis.com

Selection				Description	Note
Sample Receiving					
01.	[X] Yes	[ ] No	[ ] N/A	Samples are received at 4C +/- 2C Thermometer #	IR 5.0
02.	[X] Yes	[ ] No	[ ] N/A	Received on ice/ cooling process begun	
03.	[ ] Yes	[X] No	[ ] N/A	Samples shipped	
04.	[ ] Yes	[X] No	[ ] N/A	Samples left in 24 hr. drop box	
05.	[ ] Yes	[ ] No	[X] N/A	Are there custody seals/tape or is the drop box locked	
Chain of Custody					
06.	[X] Yes	[ ] No	[ ] N/A	COC adequately filled out	
07.	[X] Yes	[ ] No	[ ] N/A	COC signed and relinquished to the lab	
08.	[X] Yes	[ ] No	[ ] N/A	Sample tag on bottles match COC	
09.	[ ] Yes	[X] No	[ ] N/A	Subcontracting needed? Subcontacted to:	
Preservation					
10.	[X] Yes	[ ] No	[ ] N/A	Do sample have correct chemical preservation	
11.	[ ] Yes	[ ] No	[X] N/A	Completed pH checks on preserved samples? (no VOAs)	
12.	[ ] Yes	[X] No	[ ] N/A	Did any samples need to be preserved in the lab?	
Bottle Conditions					
13.	[X] Yes	[ ] No	[ ] N/A	All bottles intact	
14.	[X] Yes	[ ] No	[ ] N/A	Appropriate analytical bottles are used	
15.	[X] Yes	[ ] No	[ ] N/A	Merit bottles used	
16.	[X] Yes	[ ] No	[ ] N/A	Sufficient sample volume received	
17.	[ ] Yes	[X] No	[ ] N/A	Samples require laboratory filtration	
18.	[X] Yes	[ ] No	[ ] N/A	Samples submitted within holding time	
19.	[ ] Yes	[X] No	[ ] N/A	Do water VOC or TOX bottles contain headspace	

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

Client Review By: _____ Date:_____

Merit Laboratories, Inc.
2680 East Lansing Dr., East Lansing, MI 48823
Phone (517) 332-0167 Fax (517) 332-4034
www.meritlabs.com

C.O.C. PAGE # 1 OF 1 150908

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME: Alexis Crisp
COMPANY: Arcadis
ADDRESS: 28550 Cabot Dr #500
CITY: Novi STATE: MI ZIP CODE: 48377
PHONE NO.: CELL NO.: P.O. NO.:
E-MAIL ADDRESS: tiffany.linder@arcadis.com Alexis.Crisp@arcadis.com QUOTE NO.:

INVOICE TO

CONTACT NAME: Accounts Payable ☐ SAME
COMPANY: Arcadis
ADDRESS: 630 Plaza Dr #600
CITY: Highlands Ranch STATE: CO ZIP CODE: 80129
PHONE NO.: E-MAIL ADDRESS: accountspayable.administration@arcadis.com

PROJECT NO./NAME: 30167840.00005 / Racer PNC
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Sommer Guy / Sommer Guy
TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☒ STANDARD ☐ OTHER
DELIVERABLES REQUIRED ☐ STD ☒ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☒ EDD ☐ OTHER

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

Certifications: ☐ OHIO VAP ☐ Drinking Water ☐ DoD ☐ NPDES
Project Locations: ☐ Detroit ☐ New York ☐ Other
Special Instructions

MATRIX CODE: W=WATER GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIPE A=AIR WS=WASTE

MERIT LAB NO. (FOR LAB USE ONLY)	COLLECTION DATE	COLLECTION TIME	SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives: NONE	HCl	HNO_3	H_2SO_4	NaOH	MeOH	OTHER	Full #8260 VOC's	Special Instructions
47239.01	-	-	tripblank	W	1		X						X	tripblank
.02	4/7/23	1148	MW-16-22_GW-040723	GW	3		3						X	

RELINQUISHED BY: SIGNATURE/ORGANIZATION: Sommer Guy / Sampler — DATE: 4/7/23 — TIME: 1155
RECEIVED BY: SIGNATURE/ORGANIZATION: [illegible] — DATE: 4/7/23 — TIME: 1155
RELINQUISHED BY: SIGNATURE/ORGANIZATION: [illegible] — DATE: 4/7/23 — TIME: 1717
RECEIVED BY: SIGNATURE/ORGANIZATION: M Chilcote — DATE: 4/7/23 — TIME: 1335

RELINQUISHED BY: SIGNATURE/ORGANIZATION: — DATE: — TIME:
RECEIVED BY: SIGNATURE/ORGANIZATION: — DATE: — TIME:

SEAL NO. — SEAL INTACT YES ☐ NO ☐ — INITIALS
SEAL NO. — SEAL INTACT YES ☐ NO ☐ — INITIALS

NOTES: TEMP. ON ARRIVAL 5.0

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE

Rev. 1.26.22

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Analytical Report

3/28/2023

Ms. Lexi Crisp
Arcadis U.S., Inc.
7575 Huntington Park Drive
Suite 130
Columbus OH 43235

Project Name: Racer PNC
Project #: 30167840.00004
Workorder #: 2303510

Dear Ms. Lexi Crisp

The following report includes the data for the above referenced project for sample(s) received on 3/21/2023 at Eurofins Air Toxics LLC.

The data and associated QC analyzed by TO-15 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: Jade White at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Jade White

Project Manager

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WORK ORDER #: 2303510

Work Order Summary

CLIENT:	Ms. Lexi Crisp Arcadis U.S., Inc. 7575 Huntington Park Drive Suite 130 Columbus, OH 43235	**BILL TO:**	Accounts Payable Arcadis U.S., Inc. 630 Plaza Drive Suite 600 Highlands Ranch, CO 80129
PHONE:		**P.O. #**	30167840.00004
FAX:		**PROJECT #**	30167840.00004 Racer PNC
DATE RECEIVED:	03/21/2023	**CONTACT:**	Jade White
DATE COMPLETED:	03/28/2023		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	SV-01-21_SG-032023	TO-15	4.9 "Hg	9.9 psi
02A	SV-02-21_SG-032023	TO-15	5.1 "Hg	10 psi
03A	SV-03-21_SG_032023	TO-15	5.9 "Hg	9.9 psi
04A	SV-04-21_SG-032023	TO-15	5.5 "Hg	10.1 psi
05A	SV-05-21_SG-032023	TO-15	5.7 "Hg	9.8 psi
06A	SV-06-21_SG-032023	TO-15	6.3 "Hg	9.8 psi
07A	DUP-01_SG-032023	TO-15	6.1 "Hg	9.9 psi
08A	Lab Blank	TO-15	NA	NA
09A	CCV	TO-15	NA	NA
10A	LCS	TO-15	NA	NA
10AA	LCSD	TO-15	NA	NA

CERTIFIED BY: Heidi Hayes DATE: 03/28/23

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.

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000 . (800) 985-5955 . FAX (916) 351-8279

LABORATORY NARRATIVE
EPA Method TO-15
Arcadis U.S., Inc.
Workorder# 2303510

Seven 1 Liter Summa Canister samples were received on March 21, 2023. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

Receiving Notes

The Chain of Custody (COC) information for sample SV-03-21_SG_032023 did not match the entry on the sample tag with regard to sample identification. The information on the COC was used to process and report the sample.

Analytical Notes

There were no analytical discrepancies.

Definition of Data Qualifying Flags

Ten qualifiers may have been used on the data analysis sheets and indicates 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, LOD, or MDL value. See data page for project specific U-flag definition.

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

N - The identification is based on presumptive evidence.

M - Reported value may be biased due to apparent matrix interferences.

CN - See Case Narrative.

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
EPA METHOD TO-15 GC/MS FULL SCAN

Client Sample ID: SV-01-21_SG-032023

Lab ID#: 2303510-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	1.0	1.5	5.4	8.0

Client Sample ID: SV-02-21_SG-032023

Lab ID#: 2303510-02A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	1.0	11	5.4	61
Tetrachloroethene	1.0	1.1	6.8	7.6

Client Sample ID: SV-03-21_SG_032023

Lab ID#: 2303510-03A

No Detections Were Found.

Client Sample ID: SV-04-21_SG-032023

Lab ID#: 2303510-04A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	1.0	3.3	5.5	18

Client Sample ID: SV-05-21_SG-032023

Lab ID#: 2303510-05A

No Detections Were Found.

Client Sample ID: SV-06-21_SG-032023

Lab ID#: 2303510-06A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	1.0	8.9	5.7	48

Client Sample ID: DUP-01_SG-032023

Lab ID#: 2303510-07A

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Summary of Detected Compounds
EPA METHOD TO-15 GC/MS FULL SCAN

Client Sample ID: DUP-01_SG-032023

Lab ID#: 2303510-07A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	1.0	13	5.6	68
Tetrachloroethene	1.0	1.2	7.1	8.4

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Client Sample ID: SV-01-21_SG-032023

Lab ID#: 2303510-01A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3032726**	**Date of Collection:**	**3/20/23 11:51:00 AM**
Dil. Factor:	**2.00**	**Date of Analysis:**	**3/28/23 12:06 AM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.0	Not Detected	2.6	Not Detected
1,1-Dichloroethene	1.0	Not Detected	4.0	Not Detected
cis-1,2-Dichloroethene	1.0	Not Detected	4.0	Not Detected
Trichloroethene	1.0	1.5	5.4	8.0
trans-1,2-Dichloroethene	1.0	Not Detected	4.0	Not Detected
Tetrachloroethene	1.0	Not Detected	6.8	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	108	70-130
1,2-Dichloroethane-d4	96	70-130
4-Bromofluorobenzene	96	70-130

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Client Sample ID: SV-02-21_SG-032023

Lab ID#: 2303510-02A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3032727**	**Date of Collection:**	**3/20/23 12:24:00 PM**
Dil. Factor:	**2.02**	**Date of Analysis:**	**3/28/23 12:35 AM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.0	Not Detected	2.6	Not Detected
1,1-Dichloroethene	1.0	Not Detected	4.0	Not Detected
cis-1,2-Dichloroethene	1.0	Not Detected	4.0	Not Detected
Trichloroethene	1.0	11	5.4	61
trans-1,2-Dichloroethene	1.0	Not Detected	4.0	Not Detected
Tetrachloroethene	1.0	1.1	6.8	7.6

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	108	70-130
1,2-Dichloroethane-d4	99	70-130
4-Bromofluorobenzene	95	70-130

eurofins | Air Toxics

Client Sample ID: SV-03-21_SG_032023

Lab ID#: 2303510-03A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3032728**	**Date of Collection:**	**3/20/23 1:14:00 PM**
Dil. Factor:	**2.08**	**Date of Analysis:**	**3/28/23 01:03 AM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.0	Not Detected	2.6	Not Detected
1,1-Dichloroethene	1.0	Not Detected	4.1	Not Detected
cis-1,2-Dichloroethene	1.0	Not Detected	4.1	Not Detected
Trichloroethene	1.0	Not Detected	5.6	Not Detected
trans-1,2-Dichloroethene	1.0	Not Detected	4.1	Not Detected
Tetrachloroethene	1.0	Not Detected	7.0	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	108	70-130
1,2-Dichloroethane-d4	98	70-130
4-Bromofluorobenzene	95	70-130

eurofins | Air Toxics

Client Sample ID: SV-04-21_SG-032023

Lab ID#: 2303510-04A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3032729**	**Date of Collection:**	**3/20/23 2:32:00 PM**
Dil. Factor:	**2.06**	**Date of Analysis:**	**3/28/23 01:32 AM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.0	Not Detected	2.6	Not Detected
1,1-Dichloroethene	1.0	Not Detected	4.1	Not Detected
cis-1,2-Dichloroethene	1.0	Not Detected	4.1	Not Detected
Trichloroethene	1.0	3.3	5.5	18
trans-1,2-Dichloroethene	1.0	Not Detected	4.1	Not Detected
Tetrachloroethene	1.0	Not Detected	7.0	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	109	70-130
1,2-Dichloroethane-d4	98	70-130
4-Bromofluorobenzene	95	70-130

eurofins | Air Toxics

Client Sample ID: SV-05-21_SG-032023

Lab ID#: 2303510-05A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3032730**	**Date of Collection:**	**3/20/23 2:09:00 PM**
Dil. Factor:	**2.06**	**Date of Analysis:**	**3/28/23 02:01 AM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.0	Not Detected	2.6	Not Detected
1,1-Dichloroethene	1.0	Not Detected	4.1	Not Detected
cis-1,2-Dichloroethene	1.0	Not Detected	4.1	Not Detected
Trichloroethene	1.0	Not Detected	5.5	Not Detected
trans-1,2-Dichloroethene	1.0	Not Detected	4.1	Not Detected
Tetrachloroethene	1.0	Not Detected	7.0	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	109	70-130
1,2-Dichloroethane-d4	96	70-130
4-Bromofluorobenzene	95	70-130

eurofins | Air Toxics

Client Sample ID: SV-06-21_SG-032023

Lab ID#: 2303510-06A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3032716**	**Date of Collection:**	**3/20/23 2:54:00 PM**
Dil. Factor:	**2.11**	**Date of Analysis:**	**3/27/23 05:03 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.0	Not Detected	2.7	Not Detected
1,1-Dichloroethene	1.0	Not Detected	4.2	Not Detected
cis-1,2-Dichloroethene	1.0	Not Detected	4.2	Not Detected
Trichloroethene	1.0	8.9	5.7	48
trans-1,2-Dichloroethene	1.0	Not Detected	4.2	Not Detected
Tetrachloroethene	1.0	Not Detected	7.2	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	110	70-130
1,2-Dichloroethane-d4	98	70-130
4-Bromofluorobenzene	98	70-130

eurofins | Air Toxics

Client Sample ID: DUP-01_SG-032023

Lab ID#: 2303510-07A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3032715**	**Date of Collection: 3/20/23**	
Dil. Factor:	**2.10**	**Date of Analysis: 3/27/23 04:34 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.0	Not Detected	2.7	Not Detected
1,1-Dichloroethene	1.0	Not Detected	4.2	Not Detected
cis-1,2-Dichloroethene	1.0	Not Detected	4.2	Not Detected
Trichloroethene	1.0	13	5.6	68
trans-1,2-Dichloroethene	1.0	Not Detected	4.2	Not Detected
Tetrachloroethene	1.0	1.2	7.1	8.4

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	110	70-130
1,2-Dichloroethane-d4	100	70-130
4-Bromofluorobenzene	97	70-130

eurofins | Air Toxics

Client Sample ID: Lab Blank

Lab ID#: 2303510-08A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3032705c**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/27/23 10:24 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.50	Not Detected	1.3	Not Detected
1,1-Dichloroethene	0.50	Not Detected	2.0	Not Detected
cis-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Trichloroethene	0.50	Not Detected	2.7	Not Detected
trans-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Tetrachloroethene	0.50	Not Detected	3.4	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	112	70-130
1,2-Dichloroethane-d4	100	70-130
4-Bromofluorobenzene	100	70-130

eurofins | Air Toxics

Client Sample ID: CCV

Lab ID#: 2303510-09A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3032702**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/27/23 08:43 AM**	

Compound	%Recovery
Vinyl Chloride	104
1,1-Dichloroethene	92
cis-1,2-Dichloroethene	90
Trichloroethene	93
trans-1,2-Dichloroethene	90
Tetrachloroethene	95

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130
1,2-Dichloroethane-d4	98	70-130
4-Bromofluorobenzene	104	70-130

eurofins | Air Toxics

Client Sample ID: LCS

Lab ID#: 2303510-10A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3032703**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/27/23 09:10 AM**	

Compound	%Recovery	Method Limits
Vinyl Chloride	102	70-130
1,1-Dichloroethene	86	70-130
cis-1,2-Dichloroethene	90	70-130
Trichloroethene	89	70-130
trans-1,2-Dichloroethene	90	70-130
Tetrachloroethene	98	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	95	70-130
1,2-Dichloroethane-d4	94	70-130
4-Bromofluorobenzene	104	70-130

eurofins | Air Toxics

Client Sample ID: LCSD

Lab ID#: 2303510-10AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3032704**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/27/23 09:37 AM**	

Compound	%Recovery	Method Limits
Vinyl Chloride	102	70-130
1,1-Dichloroethene	86	70-130
cis-1,2-Dichloroethene	89	70-130
Trichloroethene	92	70-130
trans-1,2-Dichloroethene	90	70-130
Tetrachloroethene	98	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	96	70-130
1,2-Dichloroethane-d4	96	70-130
4-Bromofluorobenzene	104	70-130

Attachment 2

Groundwater Sampling Logs

Groundwater Sampling Form

ARCADIS

Project Number	30167840	**Well ID**	MW-06-20			**Date**	03/07/2023
Project Name/Location	RACER Pontiac North Campus 2023	**Weather(°F)**	37.0 degrees F and Clear. NE 12 mph				
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	26.82	**Total Depth (ft-bmp)**	29.21	**Water Column (ft)**	2.39	**Gallons in Well**	0.39
Purge Start	14:22	**Pump Intake (ft-bmp)**	28	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End		**Volumes Purged**	6.41	**Sample ID**	MW-06-20_GW-030723	**Sampled by**	Sommer Guy
Sample Time	14:58	**Gallons Purged**	2.50	**Replicate/ Code No.**	DUP-01	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
14:24	0	0	150	26.85	--	7.44	0.864	3.59	9.19	13.4	29.7	--	--
14:29	5	5	150	26.85	--	7.24	0.842	1.51	7.93	13.6	28.3	--	--
14:34	5	10	150	26.85	--	7.26	0.799	1.51	7.51	13.5	30.3	--	--
14:39	5	15	150	26.85	--	7.27	0.792	1.24	7.29	13.7	32.6	--	--
14:44	5	20	150	26.85	--	7.27	0.783	1.46	7.08	13.7	34.9	--	--
14:49	5	25	150	26.85	--	7.27	0.778	0.94	6.83	13.6	37.7	--	--
14:54	5	30	150	26.85	--	7.27	0.774	1.42	6.58	13.6	39.6	Clear	None

Constituent Sampled	Container	Number	Preservative
Full 8260 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: South Fiero
Well Locked at Arrival:
Condition of Well: Good condition
Well Locked at Departure:
Well Completion: Flush mount
Key Number To Well: NA

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 = millivolts
°F = degrees Fahrenheit
°C = degrees Celsius

Groundwater Sampling Form

ARCADIS

Project Number	30167840	**Well ID**	MW-08-21			**Date**	03/07/2023
Project Name/Location	RACER Pontiac North Campus 2023	**Weather(°F)**	36.0 degrees F and Clear. The wind is blowing N/NE at 17.2 mph.				
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	27.60	**Total Depth (ft-bmp)**	30.29	**Water Column (ft)**	2.69	**Gallons in Well**	0.44
Purge Start	13:08	**Pump Intake (ft-bmp)**	28.5	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	13:57	**Volumes Purged**	5.68	**Sample ID**	MW-08-21_GW-030723	**Sampled by**	Sommer Guy
Sample Time	13:55	**Gallons Purged**	2.50	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
13:10	0	0	150	27.62	--	7.68	0.803	3.71	2.26	13.4	0.807	--	--
13:15	5	5	150	27.62	--	7.38	0.757	1.55	1.46	13.7	0.3	--	--
13:20	5	10	150	27.62	--	7.39	0.748	1.85	1.84	13.6	0.7	--	--
13:25	5	15	150	27.62	--	7.39	0.742	1.97	1.66	13.5	4.2	--	--
13:30	5	20	150	27.62	--	7.39	0.744	1.57	1.62	13.3	7.3	--	--
13:35	5	25	150	27.62	--	7.39	0.74	1.22	1.29	13.4	10.9	--	--
13:40	5	30	150	27.62	--	7.39	0.739	1.5	1.14	13.4	13.6	--	--
13:45	5	35	150	27.62	--	7.39	0.742	1.33	1.09	13.4	15.9	--	--
13:50	5	40	150	27.62	--	7.39	0.742	1.67	1.04	13.4	18.5	Clear	None

Constituent Sampled	Container	Number	Preservative
Full 8260 VOCs	40 mL Glass	3	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: South Fiero
Well Locked at Arrival:
Condition of Well: Good condition,Missing bolts
Well Locked at Departure:
Well Completion: Flush mount
Key Number To Well: NA

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 = millivolts
°F = degrees Fahrenheit
°C = degrees Celsius

Groundwater Sampling Form

ARCADIS

Project Number	30167840	**Well ID**	MW-09-22			**Date**	03/06/2023
Project Name/Location	RACER Pontiac North Campus 2023	**Weather(°F)**	36.0 degrees F and Cloudy. The wind is blowing E at 13.9 mph.				
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	21.84	**Total Depth (ft-bmp)**	32.82	**Water Column (ft)**	10.98	**Gallons in Well**	1.78
Purge Start	13:09	**Pump Intake (ft-bmp)**	27.32	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	13:51	**Volumes Purged**	0.82	**Sample ID**	MW-09-22_GW-030623	**Sampled by**	Leticia Ferreira
Sample Time	13:18	**Gallons Purged**	1.47	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
13:10	0	0	300	21.84	--	6.92	0.582	4.6	1.51	11.1	195.6	--	--
13:15	5	5	150	21.84	--	6.86	0.002	3.73	11.5	10	153.3	--	--
13:20	5	10	150	21.84	--	7.31	0.006	3.59	10.2	11.5	187.6	--	--
13:25	5	15	150	21.84	--	6.98	0.621	3.97	0.54	11.7	185.7	--	--
13:30	5	20	150	21.84	--	7.12	0.623	3.47	0.49	11.7	180.5	--	--
13:35	5	25	150	21.84	--	7.12	0.623	3.25	0.47	11.5	180	--	--
13:40	5	30	150	21.84	--	7.13	0.623	3.2	0.47	11.6	180	--	--
13:45	5	35	150	21.84	--	7.12	0.623	3.4	0.44	11.6	181.1	Clear	None

Constituent Sampled	Container	Number	Preservative
Full 8260 VOCs List	40 mL Glass	3	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: Fiero North

Condition of Well: Good condition

Well Completion: Flush mount

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: NA

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 = millivolts
°F = degrees Fahrenheit
°C = degrees Celsius

Groundwater Sampling Form

ARCADIS

Project Number	30167840	**Well ID**	MW-13-22			**Date**	03/07/2023
Project Name/Location	RACER Pontiac North Campus 2023	**Weather(°F)**					
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	22.84	**Total Depth (ft-bmp)**	26.72	**Water Column (ft)**	3.88	**Gallons in Well**	0.63
Purge Start	12:14	**Pump Intake (ft-bmp)**	24.74	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	12:54	**Volumes Purged**	2.31	**Sample ID**	MW-23-22_GW-030723	**Sampled by**	Leticia Ferreira
Sample Time	12:51	**Gallons Purged**	1.45	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
12:15	0	0	300	22.84	--	6.39	0.86	14.3	1	10.2	-56.1	--	--
12:20	5	5	150	22.84	--	10.4	0.9	11.2	0.71	10.5	-74.9	--	--
12:25	5	10	150	22.84	--	6.58	0.91	10.5	0.37	10.5	-85.5	--	--
12:30	5	15	150	22.84	--	6.62	0.92	9.5	0.29	10.5	-93.7	--	--
12:35	5	20	150	22.84	--	6.63	0.93	7.74	0.25	10.8	-96.3	--	--
12:40	5	25	150	22.84	--	6.64	0.93	5.07	0.26	10.8	-98.6	--	--
12:45	5	30	150	22.84	--	6.64	0.93	5.67	0.25	10.8	-99.7	--	--
12:50	5	35	150	22.84	--	6.64	0.92	4.9	0.26	10.9	-100.8	Clear	None

Constituent Sampled	Container	Number	Preservative
Full 8260 VOCs list	40 mL Glass	3	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: Racer Pontiac MI

Condition of Well: Good condition

Well Completion: NA

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: NA

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 = millivolts
°F = degrees Fahrenheit
°C = degrees Celsius

Groundwater Sampling Form

Project Number	30167840	**Well ID**	MW-14-22			**Date**	03/07/2023
Project Name/Location	RACER Pontiac North Campus 2023	**Weather(°F)**	33.1 degrees F and Clear. The wind is blowing N at 15.0 mph.				
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	23.38	**Total Depth (ft-bmp)**	34.63	**Water Column (ft)**	11.25	**Gallons in Well**	1.83
Purge Start	10:51	**Pump Intake (ft-bmp)**	29.13	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	11:44	**Volumes Purged**	0.91	**Sample ID**	MW-14-22_GW-030723	**Sampled by**	Leticia Ferreira
Sample Time	11:52	**Gallons Purged**	1.66	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
10:52	0	0	300	23.38	--	9.12	125.7	34.3	6.48	11.2	127.1	--	--
10:57	5	5	150	23.38	--	8.71	0.537	27.8	7.05	11.3	142.7	--	--
11:02	5	10	150	23.38	--	8.56	0.543	22.3	7.61	11.41	144.9	--	--
11:07	5	15	150	23.38	--	8.2	0.561	17.5	8.61	11.6	143.9	--	--
11:12	5	20	150	23.38	--	7.79	0.581	14.2	7.91	11.5	143.5	--	--
11:17	5	25	150	23.38	--	7.58	0.593	8.5	7.95	11.5	144.5	--	--
11:22	5	30	150	23.38	--	7.5	0.603	7.93	8	11.5	144.9	--	--
11:27	5	35	150	23.38	--	7.46	0.602	7.63	7.98	11.6	145	--	--
11:32	5	40	150	23.38	--	7.45	0.614	7.51	7.98	11.5	144.9	Clear	None

Constituent Sampled	Container	Number	Preservative
Full 8260 VOCs list	40 mL Glass	9	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:	Racer Pontiac MI	Well Locked at Arrival:	yes
Condition of Well:	Good condition	Well Locked at Departure:	yes
Well Completion:	NA	Key Number To Well:	NA

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 = millivolts
°F = degrees Fahrenheit
°C = degrees Celsius

Groundwater Sampling Form

Project Number	30167840	**Well ID**	MW-15-22			**Date**	03/07/2023
Project Name/Location	RACER Pontiac North Campus 2023	**Weather(°F)**	36F, Sunny, NE 14 mph				
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	23.48	**Total Depth (ft-bmp)**	35.94	**Water Column (ft)**	12.46	**Gallons in Well**	2.02
Purge Start	12:08	**Pump Intake (ft-bmp)**	33.5	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	12:48	**Volumes Purged**	1.24	**Sample ID**	MW-15-22_GW-030723	**Sampled by**	Sommer Guy
Sample Time	12:45	**Gallons Purged**	2.50	**Replicate/ Code No.**	DUP-02	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
12:10	0	0	150	23.49	--	7.21	0.823	8.91	0.92	12.1	-54.4	--	--
12:15	5	5	150	23.49	--	7.12	0.785	7.55	0.42	13.1	-86.7	--	--
12:20	5	10	150	23.49	--	7.12	0.784	8.22	0.43	13.1	-95.7	--	--
12:25	5	15	150	23.49	--	7.1	0.78	6.37	0.24	13.2	-99.8	--	--
12:30	5	20	150	23.49	--	7.09	0.778	7.13	0.18	13.3	-102.9	--	--
12:35	5	25	150	23.49	--	7.09	0.776	7.16	0.19	13.5	-105.4	--	--
12:40	5	30	150	23.49	--	7.09	0.779	7.45	0.19	13.4	-106.4	Clear	None

Constituent Sampled	Container	Number	Preservative
Full 8260 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: South Fiero
Well Locked at Arrival:
Condition of Well: Good condition
Well Locked at Departure:
Well Completion: Flush mount
Key Number To Well: NA

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 = millivolts
°F = degrees Fahrenheit
°C = degrees Celsius

Groundwater Sampling Form

ARCADIS

Project Number	30167840	**Well ID**	MWF16-05			**Date**	03/08/2023
Project Name/Location	RACER Pontiac North Campus 2023	**Weather(°F)**	34.0 degrees F and Mostly Cloudy. The wind is blowing N/NE at 13.9 mph.				
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	21.31	**Total Depth (ft-bmp)**	22.77	**Water Column (ft)**	1.46	**Gallons in Well**	0.24
Purge Start	11:00	**Pump Intake (ft-bmp)**	22	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	12:12	**Volumes Purged**	11.39	**Sample ID**	MWF16-05_GW-030823	**Sampled by**	Leticia Ferreira
Sample Time	12:08	**Gallons Purged**	2.73	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
11:02	0	0	300	21.31	--	8.78	0.395	404	7.87	8.7	119.9	--	--
11:07	5	5	150	21.31	--	8.07	0.78	587	4.85	8.5	125.1	--	--
11:12	5	10	150	21.31	--	7.74	1.01	1100	2.73	8.8	131.6	--	--
11:17	5	15	150	21.31	--	7.6	1.1	404	2.33	8.7	133.3	--	--
11:22	5	20	150	21.31	--	7.56	1.1	226	2.28	9.1	134.4	--	--
11:27	5	25	150	21.31	--	7.5	1.19	122	2.09	8.9	133.1	--	--
11:32	5	30	150	21.31	--	7.47	1.17	76.3	2.11	9.6	132.7	--	--
11:37	5	35	150	21.31	--	7.45	1.18	57.1	2.15	9.6	132.6	--	--
11:42	5	40	150	21.31	--	7.49	1.15	22.7	2.15	9.3	130.4	--	--
11:47	5	45	150	21.31	--	7.48	1.16	13.3	2.11	9.3	130.3	--	--
11:52	5	50	150	21.31	--	7.48	1.15	13	2.19	9.3	130.1	--	--
11:57	5	55	150	21.31	--	7.44	1.17	9.9	2.16	9.3	130.1	--	--
12:02	5	60	150	21.31	--	7.44	1.17	10	2.16	9.3	130.1	--	--
12:07	5	65	150	21.31	--	7.44	1.17	10.9	2.16	9.3	130.1	Clear	None

Constituent Sampled	Container	Number	Preservative
Full 8260 VOCs list	40 mL Glass	3	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: Racer Pontiac MI

Well Locked at Arrival: no

Condition of Well:

Well Locked at Departure: no

Well Completion: NA

Key Number To Well: NA

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 = millivolts
°F = degrees Fahrenheit
°C = degrees Celsius

Groundwater Sampling Form

ARCADIS

Project Number	30167840	**Well ID**	MWF16-16			**Date**	03/06/2023
Project Name/Location	RACER Pontiac North Campus 2023	**Weather(°F)**	36.0 degrees F and Cloudy. The wind is blowing E at 13.9 mph.				
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	23.31	**Total Depth (ft-bmp)**	31.25	**Water Column (ft)**	7.94	**Gallons in Well**	1.29
Purge Start	12:56	**Pump Intake (ft-bmp)**	19	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	13:39	**Volumes Purged**	1.94	**Sample ID**	MWF16-16_GW-030623	**Sampled by**	Sommer Guy
Sample Time	13:37	**Gallons Purged**	2.50	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
12:58	0	0	150	23.31	--	7.6	0.879	23.2	10.54	11	176.3	--	--
13:03	5	5	150	23.31	--	7.63	0.794	8.92	3.32	12.3	151	--	--
13:08	5	10	150	23.31	--	7.62	0.777	7.24	3.9	12.5	143.7	--	--
13:13	5	15	150	23.31	--	7.6	0.75	5.84	3.94	12.6	141.6	--	--
13:18	5	20	150	23.31	--	7.58	0.73	5.81	3.94	12.7	141.3	--	--
13:23	5	25	150	23.31	--	7.56	0.699	4.41	3.68	12.7	141.9	--	--
13:28	5	30	150	23.31	--	7.56	0.694	4.79	3.33	12.8	143.6	--	--
13:33	5	35	150	23.31	--	7.57	0.692	5.2	3.52	12.7	145.4	Clear	None

Constituent Sampled	Container	Number	Preservative
Full 8260 VOCs	40 mL Glass	3	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: Ferio North

Condition of Well: Good condition,Missing bolts

Well Completion: Flush mount

Well Locked at Arrival:

Well Locked at Departure:

Key Number To Well: NA

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 = millivolts
°F = degrees Fahrenheit
°C = degrees Celsius

Groundwater Sampling Form

Project Number	30167840	**Well ID**	MWF16-18			**Date**	03/08/2023
Project Name/Location	RACER Pontiac North Campus 2023	**Weather(°F)**	34.0 degrees F and Mostly Cloudy. The wind is blowing N/NE at 13.9 mph.				
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	21.80	**Total Depth (ft-bmp)**	31.95	**Water Column (ft)**	10.15	**Gallons in Well**	1.65
Purge Start	10:52	**Pump Intake (ft-bmp)**	29.55	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	11:37	**Volumes Purged**	1.52	**Sample ID**	MWF16-18_GW-030823	**Sampled by**	Sommer Guy
Sample Time	11:35	**Gallons Purged**	2.50	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
10:54	0	0	150	21.82	--	7.22	0.944	5.91	1.52	11.2	161.3	--	--
10:59	5	5	150	21.82	--	7.15	0.859	1.18	1.45	11.9	155.3	--	--
11:04	5	10	150	21.82	--	7.15	0.847	2.15	1.18	11.9	155.2	--	--
11:09	5	15	150	21.82	--	7.16	0.831	2.22	1.01	11.8	155.7	--	--
11:14	5	20	150	21.82	--	7.15	0.835	2.14	0.97	11.8	156.6	--	--
11:19	5	25	150	21.82	--	7.16	0.838	0.46	0.89	11.7	156.3	--	--
11:24	5	30	150	21.82	--	7.15	0.841	0.62	0.88	11.8	155.5	--	--
11:29	5	35	150	21.82	--	7.15	0.836	0.9	0.87	12	153.4	Clear	None

Constituent Sampled	Container	Number	Preservative
Full 8260 VOCs	40 mL Glass	3	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: North Fiero
Condition of Well: Good condition
Well Completion: Flush mount
Well Locked at Arrival:
Well Locked at Departure:
Key Number To Well: NA

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 = millivolts
°F = degrees Fahrenheit
°C = degrees Celsius

Groundwater Sampling Form

Project Number	30167840	**Well ID**	MWF16-23			**Date**	03/07/2023
Project Name/Location	RACER Pontiac North Campus 2023	**Weather(°F)**	37.0 degrees F and Clear.				
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	24.82	**Total Depth (ft-bmp)**	30.4	**Water Column (ft)**	5.58	**Gallons in Well**	0.91
Purge Start	13:50	**Pump Intake (ft-bmp)**	27.3	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	14:24	**Volumes Purged**	1.39	**Sample ID**	MW-16-23_GW-030723	**Sampled by**	Leticia Ferreira
Sample Time	14:22	**Gallons Purged**	1.27	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
13:51	0	0	300	24.82	--	7.23	0.503	20.4	1.69	13.7	-0.6	--	--
13:56	5	5	150	24.82	--	7.35	0.503	9.19	1.36	13.7	-7.3	--	--
14:01	5	10	150	24.82	--	7.3	0.526	10.3	1.27	14	0.2	--	--
14:06	5	15	150	24.82	--	7.28	0.531	7.38	1.14	14.2	3.9	--	--
14:11	5	20	150	24.82	--	7.24	0.55	5.1	1.04	14.1	9.6	--	--
14:16	5	25	150	24.82	--	7.21	0.56	4.45	1.03	14	10	--	--
14:21	5	30	150	24.82	--	7.24	0.559	5.1	1.01	14.1	17.1	Clear	None

Constituent Sampled	Container	Number	Preservative
Full 8260 VOCs list	40 mL Glass	3	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: Racer Pontiac MI
Well Locked at Arrival: yes
Condition of Well: Good condition
Well Locked at Departure: yes
Well Completion: NA
Key Number To Well: NA

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 = millivolts
°F = degrees Fahrenheit
°C = degrees Celsius

Groundwater Sampling Form

Project Number	30167840	**Well ID**	MWOS-08			**Date**	03/08/2023
Project Name/Location	RACER Pontiac North Campus 2023	**Weather(°F)**	37.9 degrees F and Mostly Cloudy. The wind is blowing N at 15.0 mph.				
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	26.85	**Total Depth (ft-bmp)**	28.8	**Water Column (ft)**	1.95	**Gallons in Well**	0.32
Purge Start	12:45	**Pump Intake (ft-bmp)**	27.8	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	13:18	**Volumes Purged**		**Sample ID**	MWOS-08_GW-030823	**Sampled by**	Leticia Ferreira
Sample Time	13:17	**Gallons Purged**		**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
12:46	0	0	300	26.85	--	7.04	0.77	184	4.63	11.1	122.7	--	--
12:51	5	5	150	26.85	--	7.11	0.78	10.2	4.22	11.6	119.9	--	--
12:56	5	10	150	26.85	--	7.12	0.77	1.94	4.05	11.5	121.9	--	--
13:01	5	15	150	26.85	--	7.07	0.76	1.09	3.82	11.6	126.3	--	--
13:06	5	20	150	26.85	--	7.05	0.76	1.26	3.78	11.6	128.6	--	--
13:11	5	25	150	26.85	--	7.03	0.76	0.9	3.78	11.3	130.4	--	--
13:16	5	30	150	26.85	--	7.05	0.76	0.94	3.8	11.3	131.1	Clear	None

Constituent Sampled	Container	Number	Preservative
Full 8260 VOCs	40 mL Glass	3	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: Racer Pontiac MI

Well Locked at Arrival: yes

Condition of Well: Good condition

Well Locked at Departure: yes

Well Completion: NA

Key Number To Well: NA

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 = millivolts
°F = degrees Fahrenheit
°C = degrees Celsius

Groundwater Sampling Form

Project Number	30167840	**Well ID**	MWOS-09R			**Date**	03/07/2023
Project Name/Location	RACER Pontiac North Campus 2023	**Weather(°F)**	39.0 degrees F and Clear. The wind is blowing N at 15.0 mph.				
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	28.11	**Total Depth (ft-bmp)**	32.2	**Water Column (ft)**	4.09	**Gallons in Well**	0.66
Purge Start	15:06	**Pump Intake (ft-bmp)**	30.11	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	15:40	**Volumes Purged**		**Sample ID**	MWOS-09R_GW-030723	**Sampled by**	Leticia Ferreira
Sample Time	15:38	**Gallons Purged**		**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
15:07	0	0	300	28.11	--	6.9	0.81	17.1	0.41	12.2	94.7	--	--
15:12	5	5	300	28.11	--	6.84	0.006	11.4	1.04	11.6	102.2	--	--
15:17	5	10	300	28.11	--	6.89	0.8	91.89	0.29	11.4	89.1	--	--
15:22	5	15	300	28.11	--	6.92	0.79	13.7	0.25	11.5	88.5	--	--
15:27	5	20	300	28.11	--	6.95	0.79	9.9	0.24	10.9	87.1	--	--
15:32	5	25	300	28.11	--	6.95	0.79	10	0.24	11.1	86	--	--
15:37	5	30	300	28.11	--	6.97	0.79	9	0.22	10.9	85.9	Clear	None

Constituent Sampled	Container	Number	Preservative
Full 8260 VOCs list	40 mL Glass	3	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: Racer Pontiac MI
Well Locked at Arrival: yes
Condition of Well: Good condition
Well Locked at Departure: yes
Well Completion: NA
Key Number To Well: NA

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 = millivolts
°F = degrees Fahrenheit
°C = degrees Celsius

Groundwater Sampling Form

ARCADIS

Project Number	30167840	**Well ID**	MWOS-10			**Date**	03/07/2023
Project Name/Location	RACER Pontiac North Campus 2023	**Weather(°F)**	37.9 degrees F and Clear. The wind is blowing N at 17.2 mph.				
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	29.25	**Total Depth (ft-bmp)**	32.74	**Water Column (ft)**	3.49	**Gallons in Well**	0.57
Purge Start	15:17	**Pump Intake (ft-bmp)**	31	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	15:57	**Volumes Purged**	4.39	**Sample ID**	MWOS-10_GW-030723	**Sampled by**	Sommer Guy
Sample Time	15:55	**Gallons Purged**	2.50	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
15:20	0	0	150	29.25	--	7.38	0.971	24.3	7.96	10.4	48.3	--	--
15:25	5	5	150	29.25	--	7.32	0.977	21.8	6.91	10	49.9	--	--
15:30	5	10	150	29.25	--	7.33	0.939	23.1	5.32	10	52.6	--	--
15:35	5	15	150	29.25	--	7.33	0.94	12.9	5.52	9.8	52.5	--	--
15:40	5	20	150	29.25	--	7.33	0.944	7.6	5.46	10	53.1	--	--
15:45	5	25	150	29.25	--	7.33	0.94	7.71	5.51	10	53.6	--	--
15:50	5	30	150	29.25	--	7.32	0.94	7.38	5.04	10.1	53.9	Clear	None

Constituent Sampled	Container	Number	Preservative
Full 8260 VOCs	40 mL Glass	3	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: In sidewalk offsite
Well Locked at Arrival:
Condition of Well: Good condition
Well Locked at Departure:
Well Completion: Flush mount
Key Number To Well: NA

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 = millivolts
°F = degrees Fahrenheit
°C = degrees Celsius

Groundwater Sampling Form

ARCADIS

Project Number	30167840	**Well ID**	MW-16-22			**Date**	04/07/2023
Project Name/Location	RACER Pontiac North Campus 2023		**Weather(°F)**	36.0 degrees F and Mostly Clear. The wind is blowing N at 9.2 mph.			
Measuring Pt. Description	Top of Inner Casing	**Screen Setting (ft-bmp)**	--	**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	27.03	**Total Depth (ft-bmp)**	34.49	**Water Column(ft)**	7.46	**Gallons in Well**	1.21
MP Elevation		**Pump Intake (ft-bmp)**	32	**Purge Method**	Low-Flow	**Sample Method**	
Sample Time	11:48	**Volumes Purged**	3.31	**Sample ID**	MW-16-22_GW-040723	**Sampled by**	Sommer Guy
Purge Start	10:53	**Gallons Purged**	4.00	**Replicate/ Code No.**			
Purge End	10:51						

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
10:55	0	0	150	27.04	0.00	7.38	0.73	184	1.46	11.1	217.7	Clear	None
11:00	5	5	150	27.05	0.00	7.4	0.67	149	0.78	11.8	174.2	Clear	None
11:05	5	10	150	27.05	0.00	7.42	0.655	81.9	0.94	12	169	Clear	None
11:10	5	15	150	27.05	0.00	7.41	0.654	58.6	0.31	12	164.3	Clear	None
11:15	5	20	150	27.05	0.00	7.39	0.653	38.2	0.65	12.2	157.5	Clear	None
11:20	5	25	150	27.05	0.00	7.39	0.655	19.3	0.53	12.3	152.8	Clear	None
11:25	5	30	150	27.05	0.00	7.39	0.655	15	0.47	12.2	149.2	Clear	None
11:30	5	35	150	27.05	0.00	7.39	0.657	12.1	0.42	12.3	145.9	Clear	None
11:35	5	40	150	27.05	0.00	7.39	0.658	7.42	0.4	12.3	142.7	Clear	None
11:40	5	45	150	27.05	0.00	7.38	0.659	7.3	0.38	12.3	140.3	Clear	None
11:45	5	50	150	27.05	0.00	7.37	0.66	6.83	0.37	12.3	138.4	Clear	None

Constituent Sampled	Container	Number	Preservative
Full 8260 VOCs	40 mL Glass	3	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: South Fiero

Well Locked at Arrival:

Condition of Well: Good condition

Well Locked at Departure:

Well Completion: Stick-up

Key Number To Well: NA

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 = millivolts
°F = degrees Fahrenheit
°C = degrees Celsius

Attachment 3

Groundwater Stability Analysis

TABLE 3-1
Summary Statistics and Trend Results
RACER Trust Pontiac North Campus
Pontiac, MI

Well ID	Analyte	Date Range	Figure	FOD	Detected Results Summary [1]				Mann-Kendall Test [2]		
					Range	Mean	Median	SD	Result[4]	P-Value	S Value
MW-06-20	TCE	09/20 - 03/23	3-1	11 / 11	7 - 14	9.6	9	2.2	UP	0.018	27
MW-06-20	cDCE	09/20 - 03/23	3-2	11 / 11	4 - 10	6.8	7	1.6	NST	0.500	1
MW-08-21	TCE	06/21 - 03/23	3-3	8 / 8	9 - 12	10.1	10	0.99	NST	0.406	3
MW-08-21	cDCE	06/21 - 03/23	3-4	7 / 8	3 - 12	9	11	3.5	NST	0.406	3
MW-09-22	PCE	01/22 - 03/23	3-5	6 / 6	48 - 195	115	121.5	58.7	NST	0.360	3
MW-09-22	TCE	01/22 - 03/23	3-6	5 / 6	1 - 4	2.8	3	1.3	NST	0.298	4
MW-14-22	PCE	03/22 - 03/23	3-7	5 / 5	52 - 100	81.2	89	20.9	UP	0.008	10
MW-14-22	TCE	03/22 - 03/23	3-8	5 / 5	12 - 19	16	16	2.7	NST	0.408	2
MW-14-22	cDCE	03/22 - 03/23	3-9	5 / 5	8 - 14	11.4	12	2.4	NST	0.592	0
MWF16-05	PCE	10/17 - 03/23	3-10	9 / 9	12 - 730	507	530	215	UP	0.060	16
MWF16-05	TCE	10/17 - 03/23	3-11	8 / 9	3 - 40	25.8	30	10.9	NST	0.540	0
MWF16-16	PCE	10/17 - 03/23	3-12	11 / 11	14 - 490	284	260	140	NST	0.119	16
MWF16-16	TCE	10/17 - 12/22	3-13	5 / 10	4 - 20	12	10	7.2	NST	0.300	-7
MWF16-16	cDCE	10/17 - 03/23	3-14	8 / 11	2 - 20	13	12.5	6.6	NST	0.346	-6
MWF16-18	PCE	03/21 - 03/23	3-15	8 / 8	740 - 1350	1130	1185	206	NST	0.452	2
MWF16-18	TCE	03/21 - 03/23	3-16	8 / 8	10 - 20	18.8	20	3.5	NST	0.237	7
MWF16-18	cDCE	03/21 - 03/23	3-17	8 / 8	20 - 100	63.8	70	26.2	UP	0.012	19
MWF16-23	TCE	10/17 - 03/23	3-18	14 / 14	9 - 23	17.4	17	3.7	NST	0.289	-11
MWF16-23	cDCE	10/17 - 03/23	3-19	14 / 14	2 - 21	10.1	11	5.3	NST	0.198	-16
MWOS-08	cDCE	09/20 - 03/23	3-20	10 / 10	1 - 6	3.5	4	1.5	NST	0.466	-2
MWOS-09R	PCE	11/21 - 03/23	3-21	7 / 7	10 - 17	13.3	13	2.4	NST	0.155	8
MWOS-09R	TCE	11/21 - 03/23	3-22	7 / 7	3 - 5	3.6	3	0.79	DWN	0.052	-12
MWOS-09R	cDCE	11/21 - 03/23	3-23	7 / 7	20 - 28	24.9	25	3.3	NST	0.236	6
MWOS-10	TCE	11/21 - 03/23	3-24	7 / 7	7 - 11	8.7	8	1.7	NST	0.443	-2
MWOS-10	cDCE	11/21 - 03/23	3-25	7 / 7	4 - 9	6.4	6	2.1	NST	0.334	-4

Abbreviations:

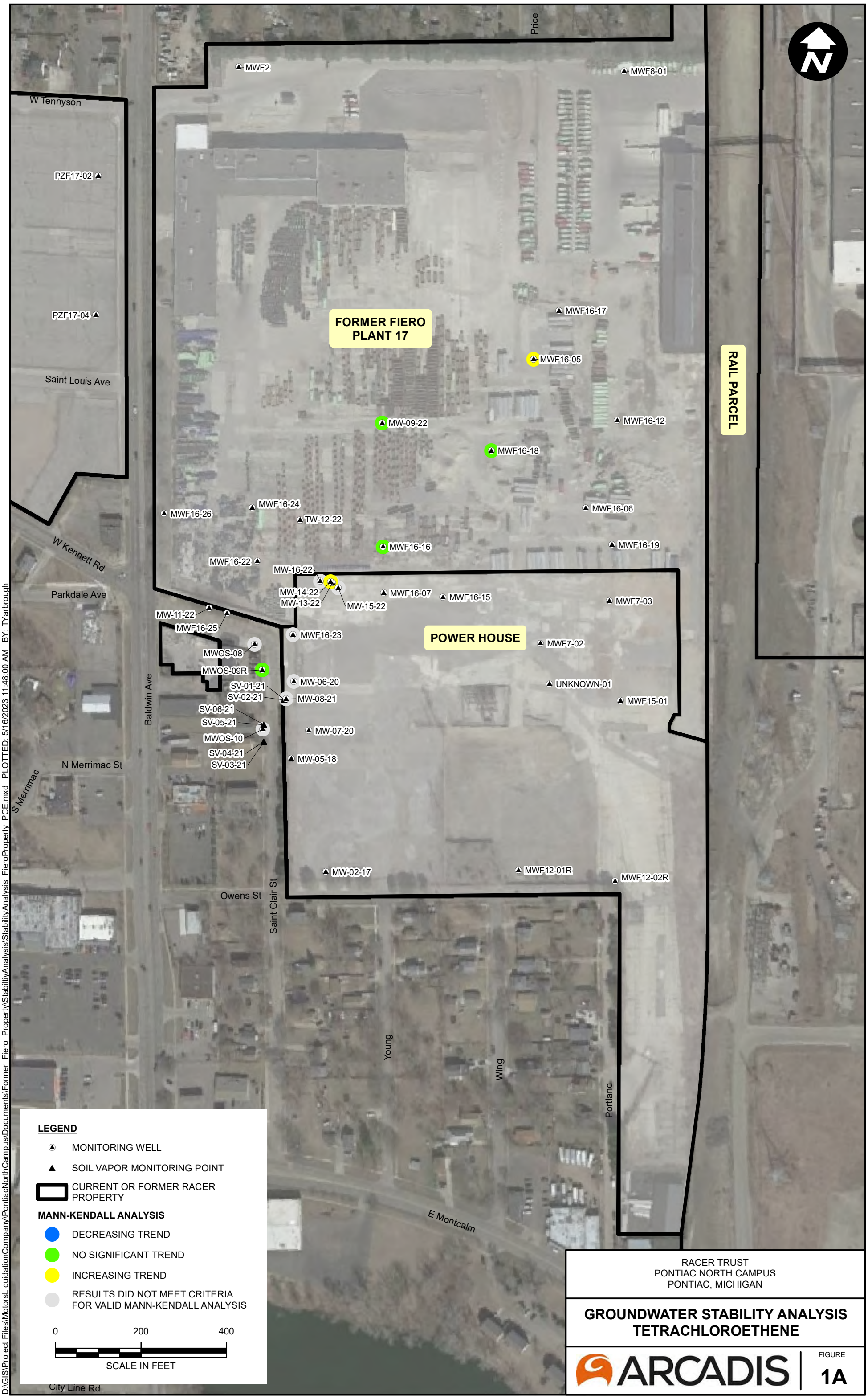
cDCE : cis-1,2-dichloroethene
DWN : downward trend
FOD : frequency of detection (# detects / # samples)
mean : arithmetic mean
NST : no significant trend
PCE : tetrachloroethene
SD : standard deviation
TCE : trichloroethene
UP : upward trend

Notes:

1. All analytical results are in microgram per liter.
2. Trend results are presented when: at least five samples are available and the frequency of detection is greater than or equal to 50%
3. 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.
4. Statistically significant trend defined as having p-value ≤ 0.10, or 90% confidence.

Reference:

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



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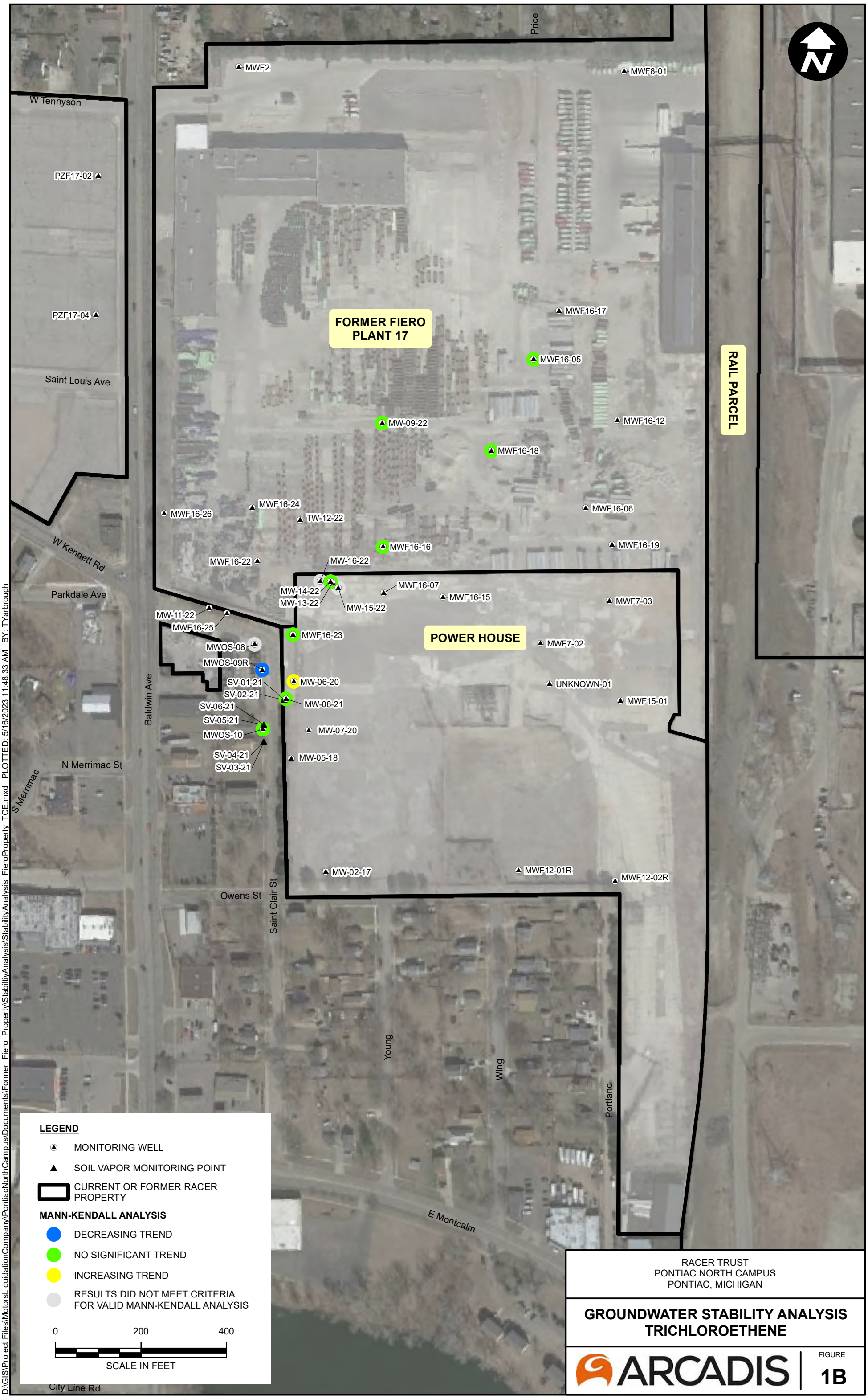

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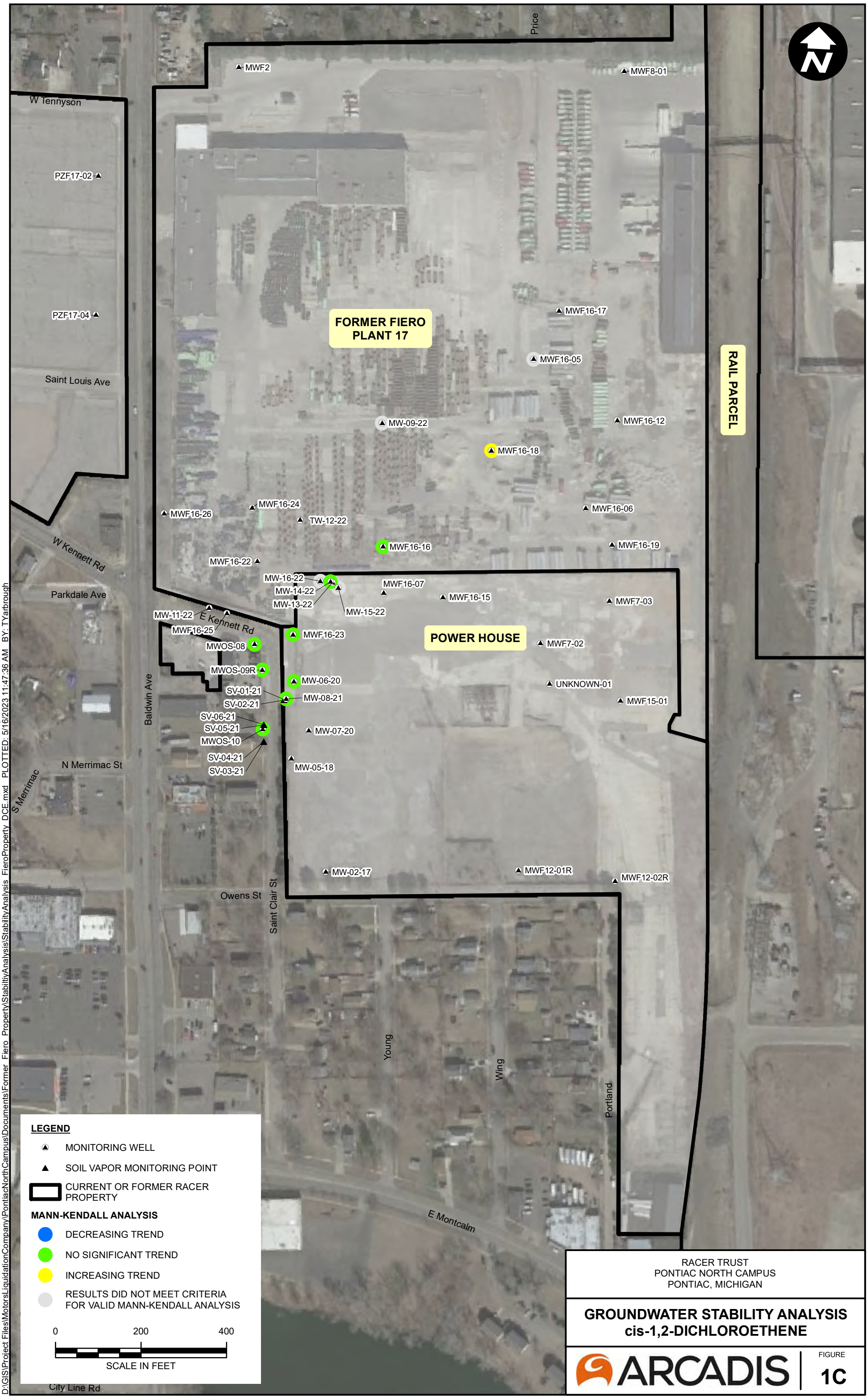

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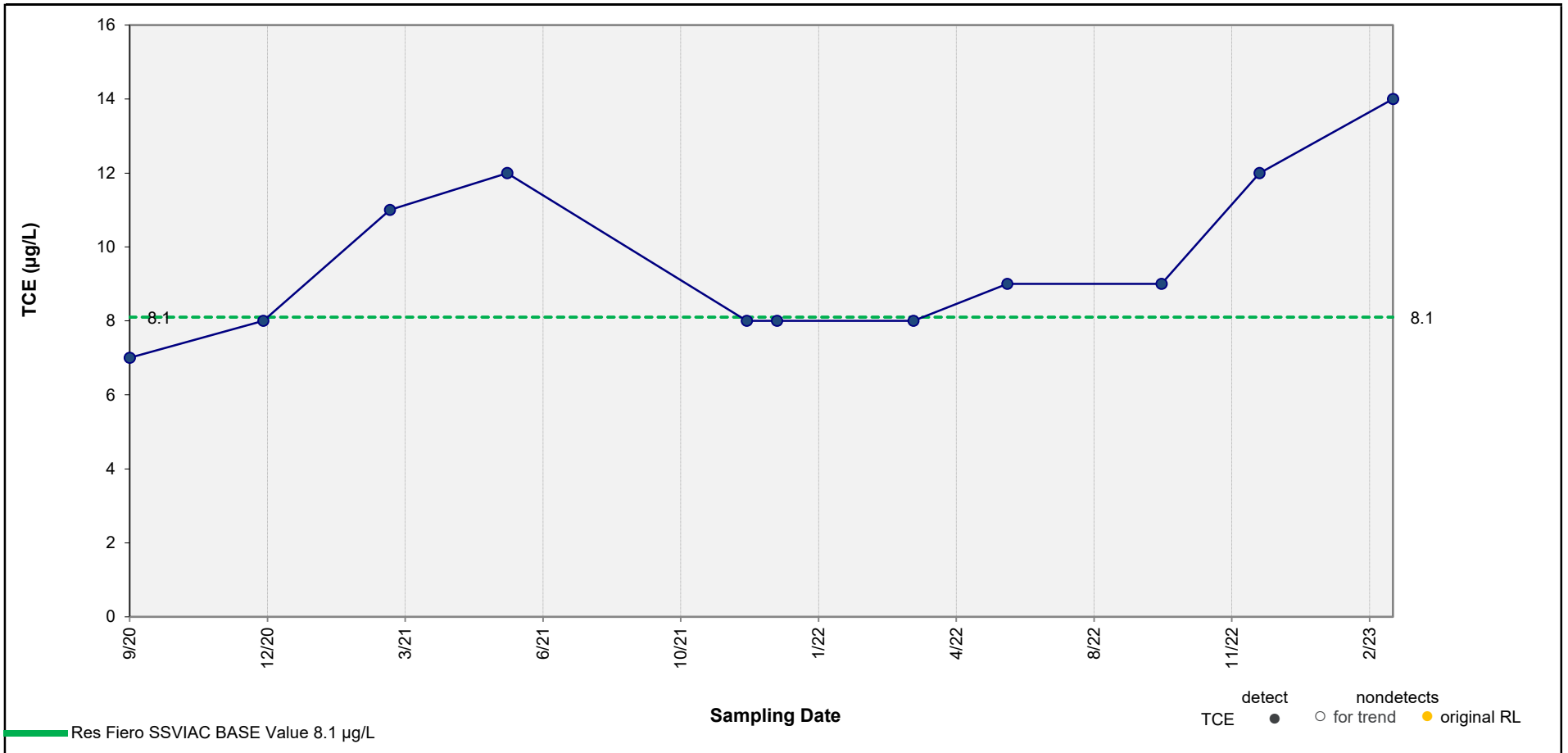


Results of Mann-Kendall Test for Trend: **INCREASING TREND**

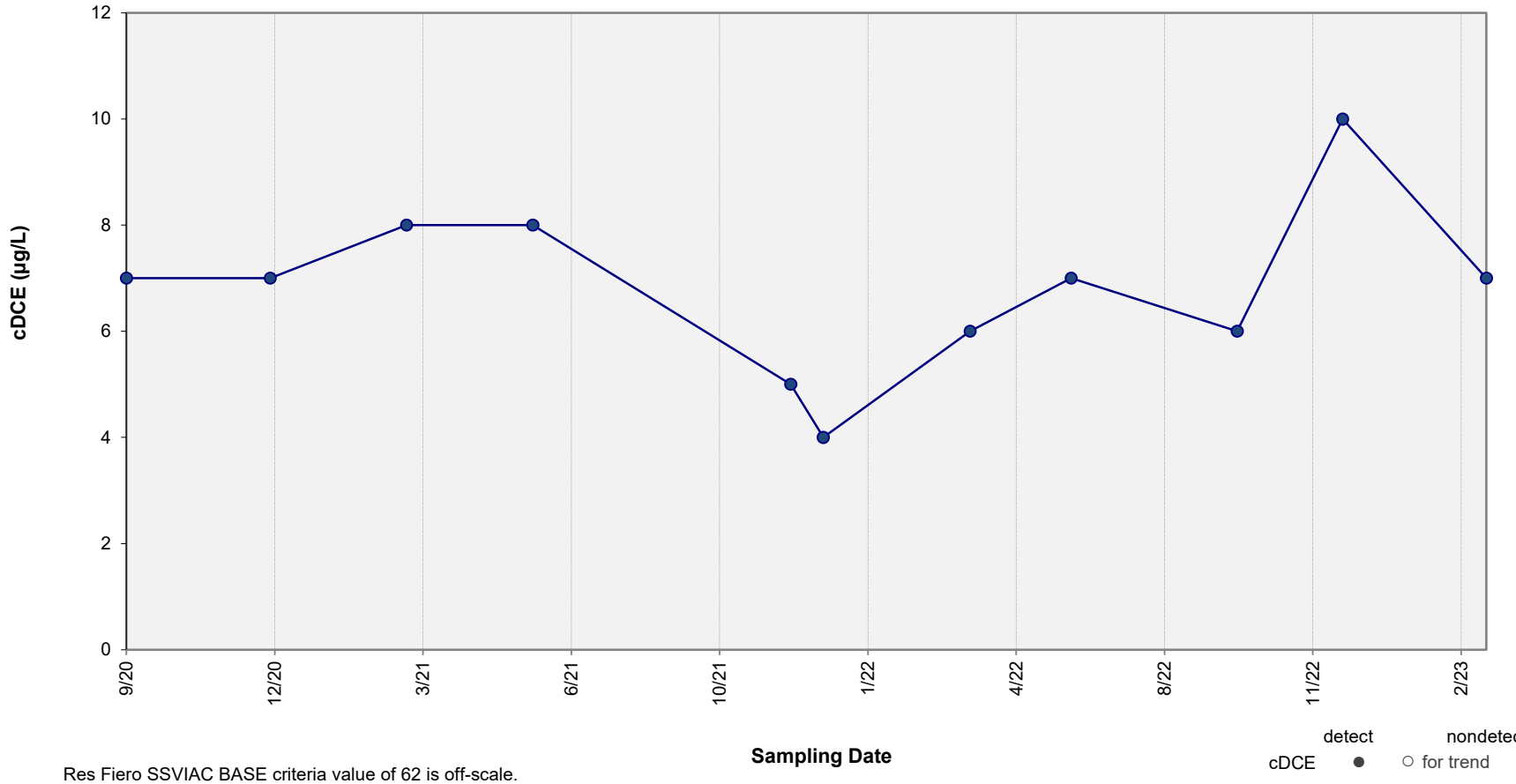
p value = 0.018 Note: p value < 0.104 indicates a statistically significant trend (89.6% confidence level).

ARCADIS

Concentration vs. Time Plot – TCE in Well MW-06-20

Racer PNC Stability Analysis

FIGURE 3-1



Res Fiero SSVIAC BASE criteria value of 62 is off-scale.

Results of Mann-Kendall Test for Trend: **No Significant Trend**

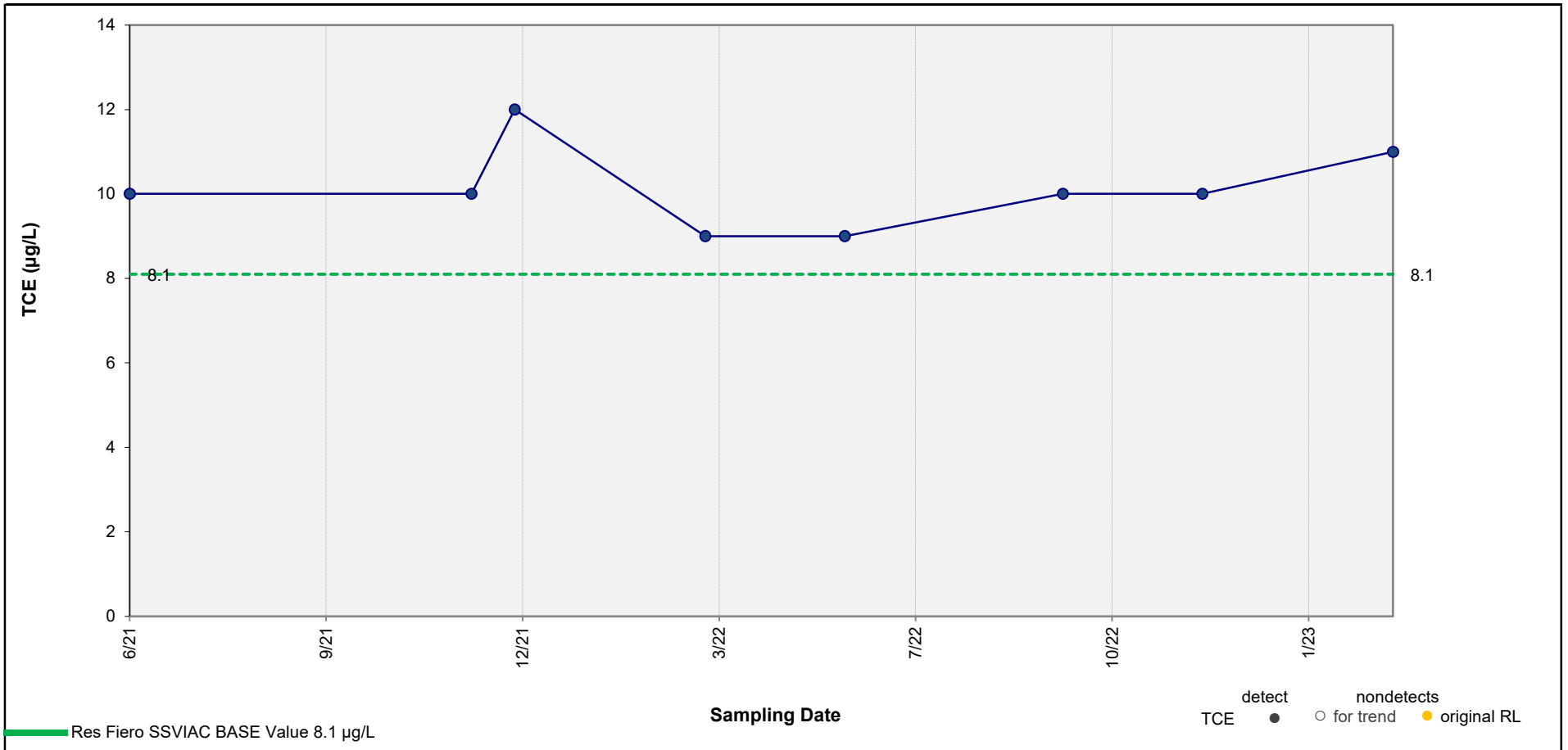
p value = 0.500 Note: p value < 0.104 indicates a statistically significant trend (89.6% confidence level).

ARCADIS

Concentration vs. Time Plot – cDCE in Well MW-06-20

Racer PNC Stability Analysis

FIGURE 3-2



Results of Mann-Kendall Test for Trend: **No Significant Trend**

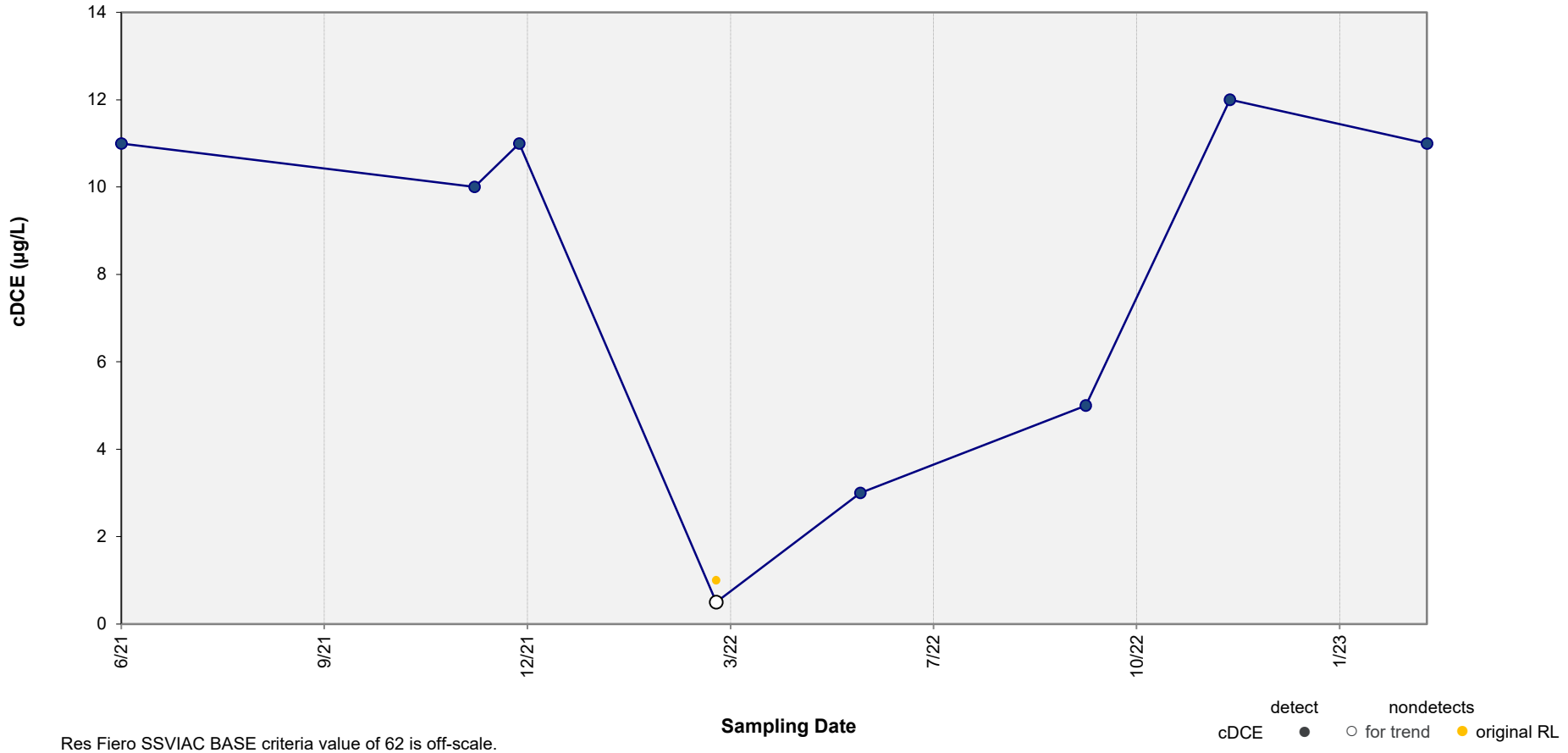
p value = 0.406 Note: p value < 0.104 indicates a statistically significant trend (89.6% confidence level).

ARCADIS

Concentration vs. Time Plot – TCE in Well MW-08-21

Racer PNC Stability Analysis

FIGURE 3-3



Res Fiero SSVIAC BASE criteria value of 62 is off-scale.

Results of Mann-Kendall Test for Trend: **No Significant Trend**

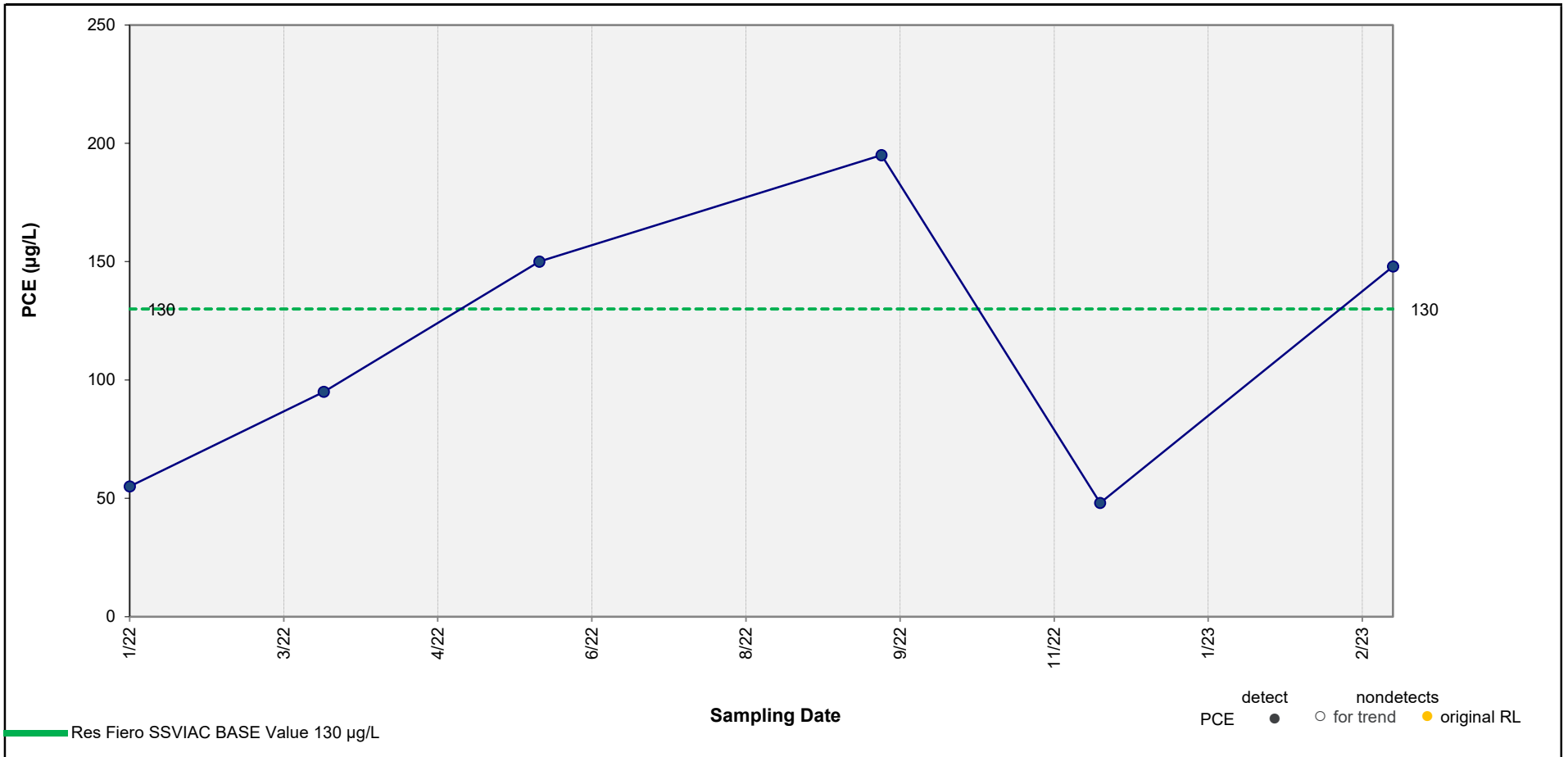
p value = 0.406 Note: p value < 0.104 indicates a statistically significant trend (89.6% confidence level).

ARCADIS

Concentration vs. Time Plot – cDCE in Well MW-08-21

Racer PNC Stability Analysis

FIGURE 3-4



Results of Mann-Kendall Test for Trend: **No Significant Trend**

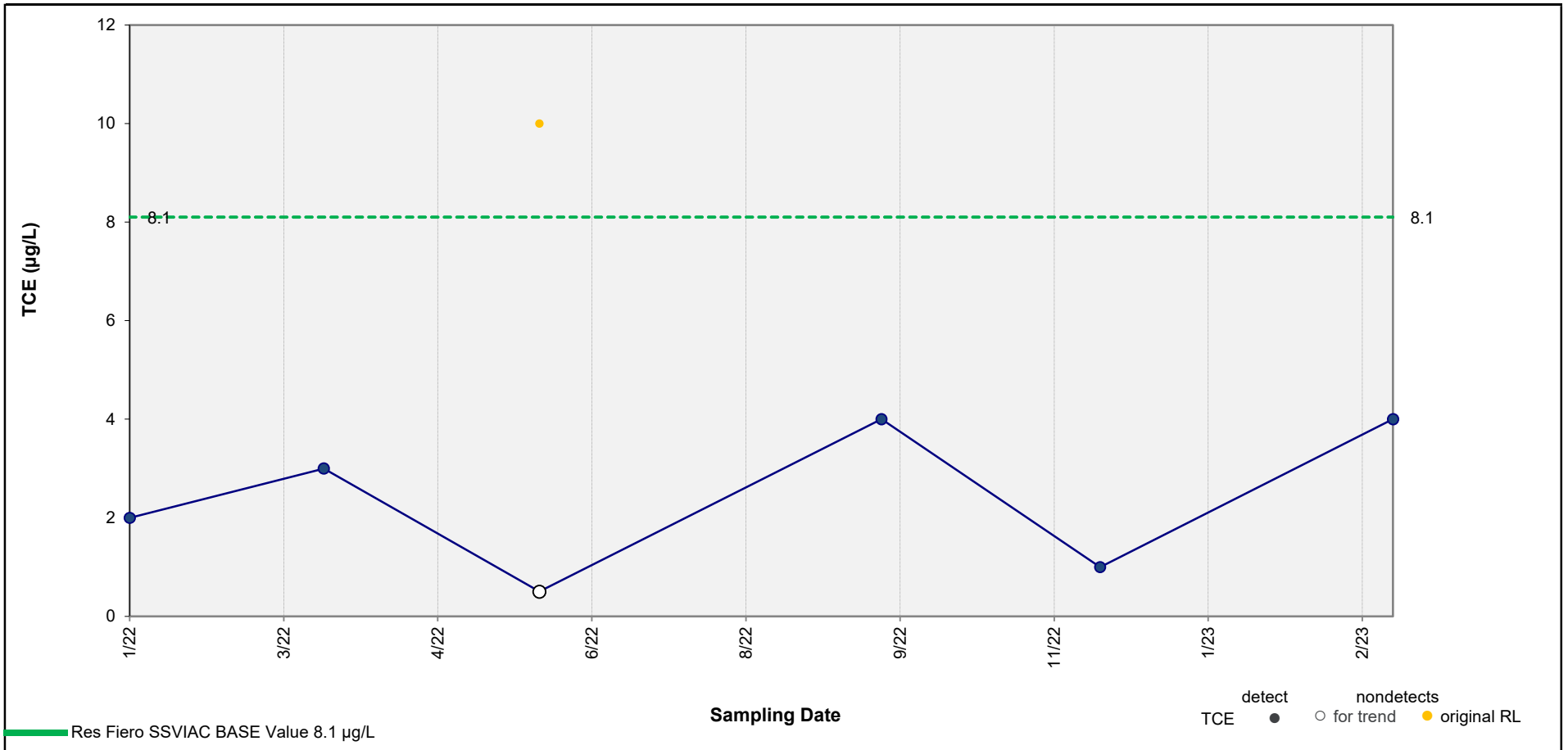
p value = 0.360 Note: p value < 0.104 indicates a statistically significant trend (89.6% confidence level).

ARCADIS

Concentration vs. Time Plot – PCE in Well MW-09-22

Racer PNC Stability Analysis

FIGURE 3-5



Results of Mann-Kendall Test for Trend: **No Significant Trend**

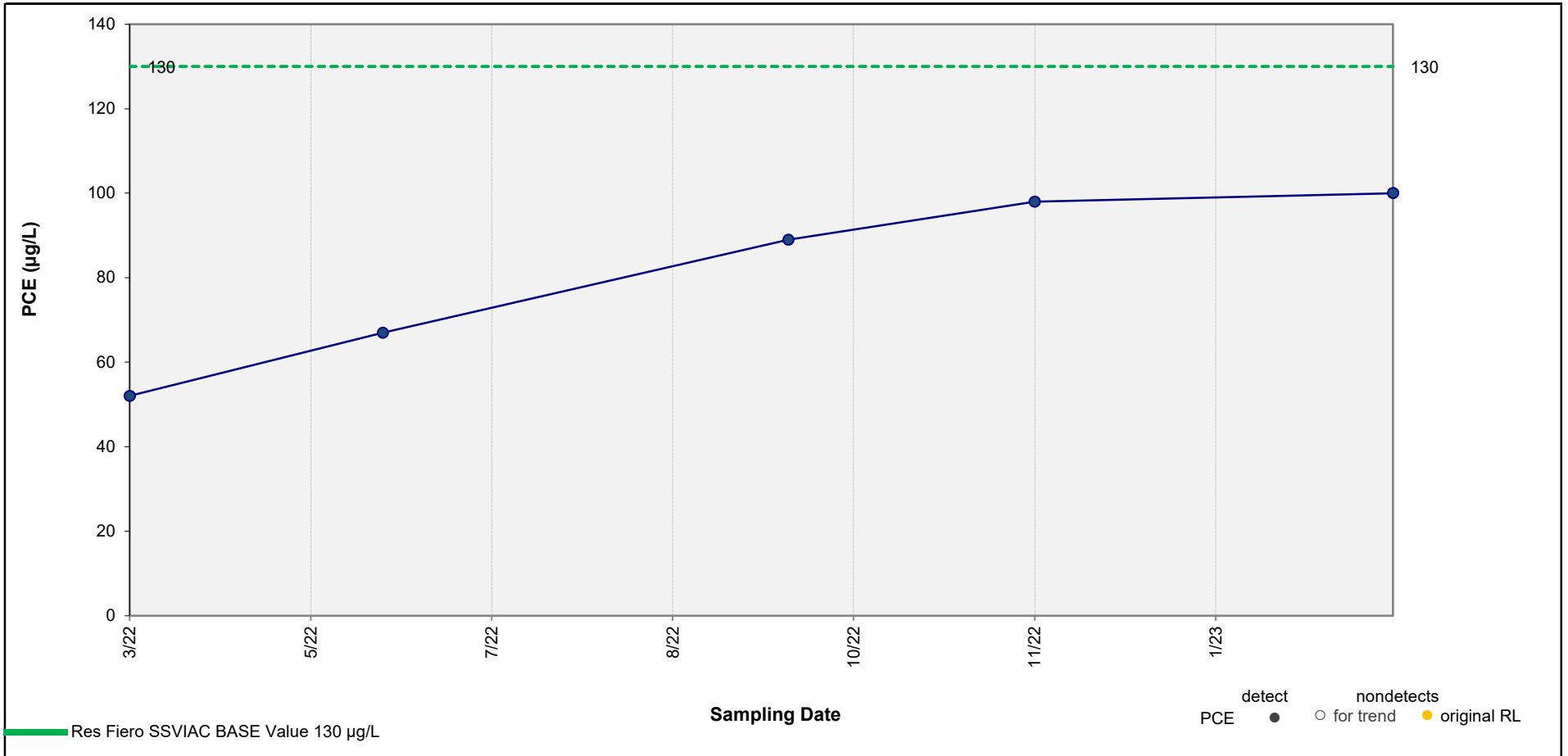
p value = 0.298 Note: p value < 0.104 indicates a statistically significant trend (89.6% confidence level).

ARCADIS

Concentration vs. Time Plot – TCE in Well MW-09-22

Racer PNC Stability Analysis

FIGURE 3-6



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

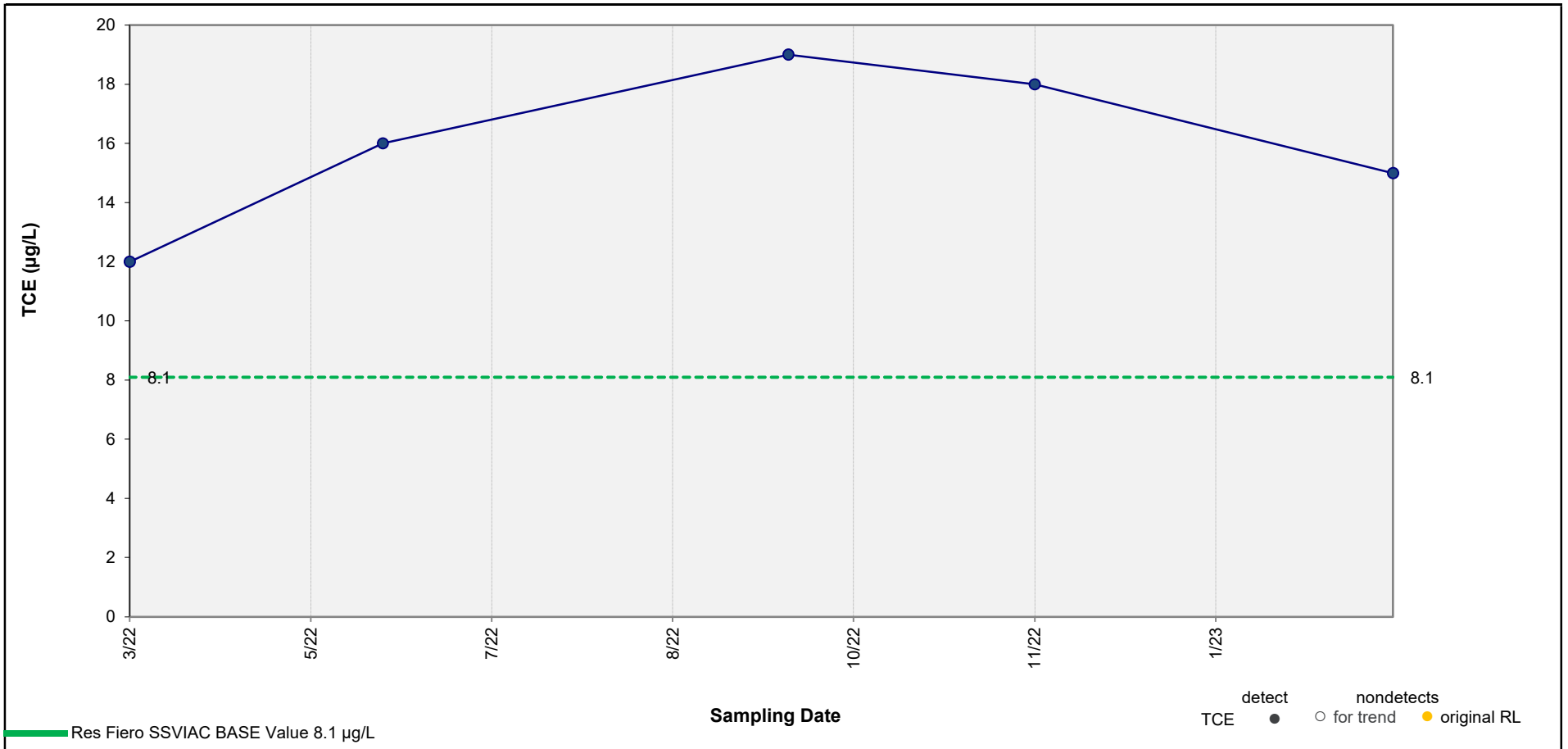
p value = 0.008 Note: p value < 0.104 indicates a statistically significant trend (89.6% confidence level).

ARCADIS

Concentration vs. Time Plot – PCE in Well MW-14-22

Racer PNC Stability Analysis

FIGURE 3-7



Results of Mann-Kendall Test for Trend: **No Significant Trend**

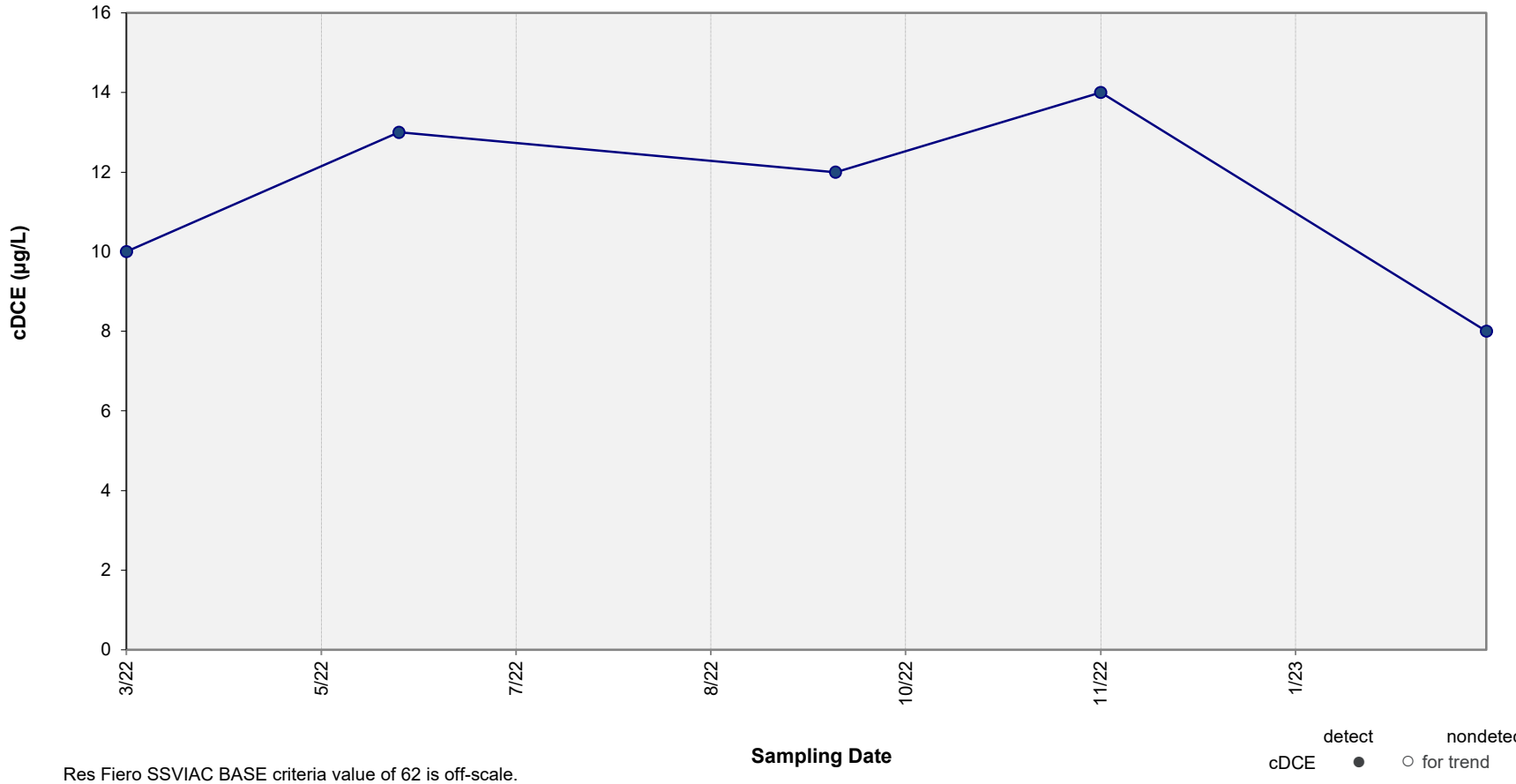
p value = 0.408 Note: p value < 0.104 indicates a statistically significant trend (89.6% confidence level).

ARCADIS

Concentration vs. Time Plot – TCE in Well MW-14-22

Racer PNC Stability Analysis

FIGURE 3-8



Res Fiero SSVIAC BASE criteria value of 62 is off-scale.

Results of Mann-Kendall Test for Trend: **No Significant Trend**

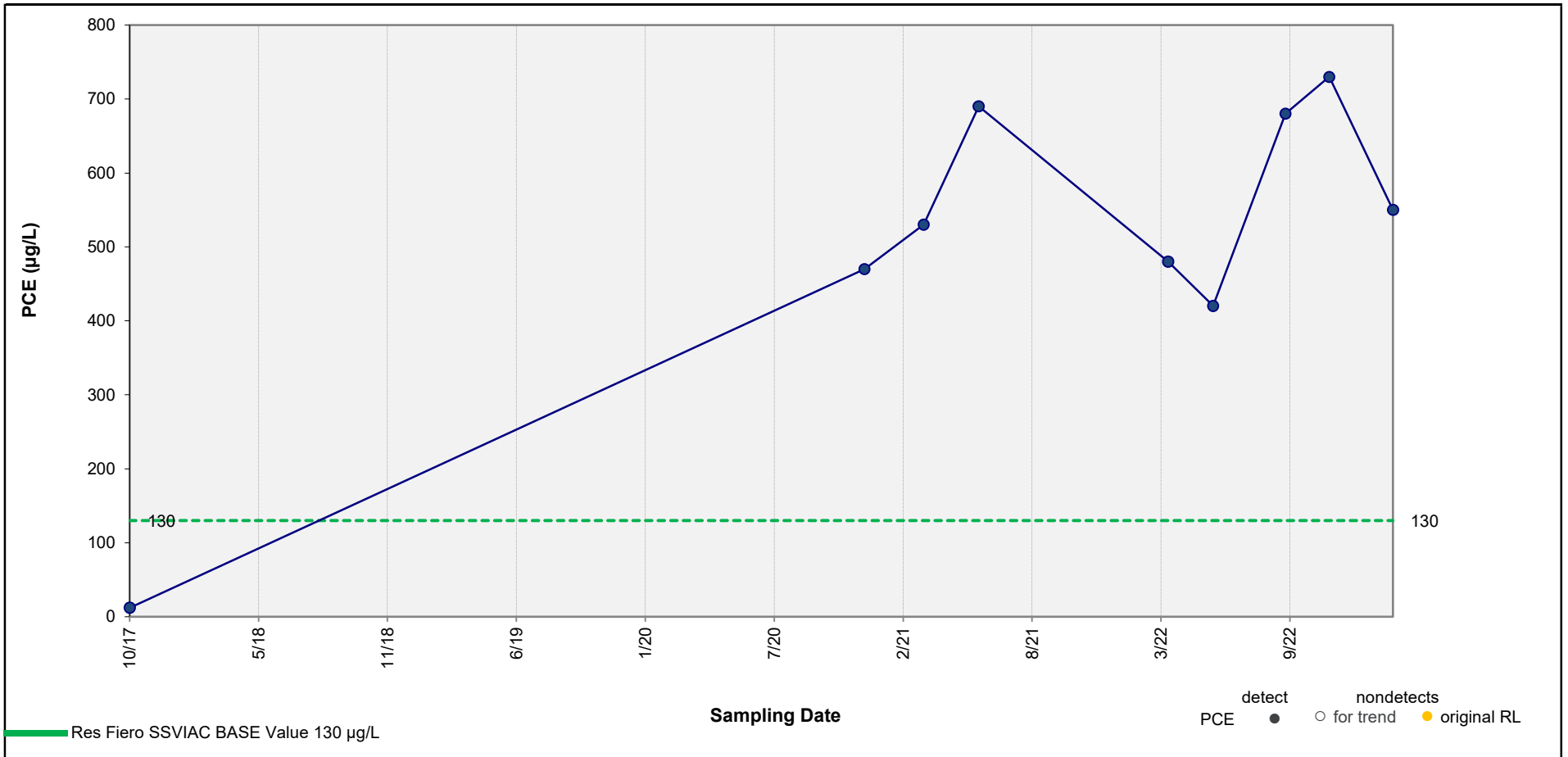
p value = 0.592 Note: p value < 0.104 indicates a statistically significant trend (89.6% confidence level).

ARCADIS

Concentration vs. Time Plot – cDCE in Well MW-14-22

Racer PNC Stability Analysis

FIGURE 3-9



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

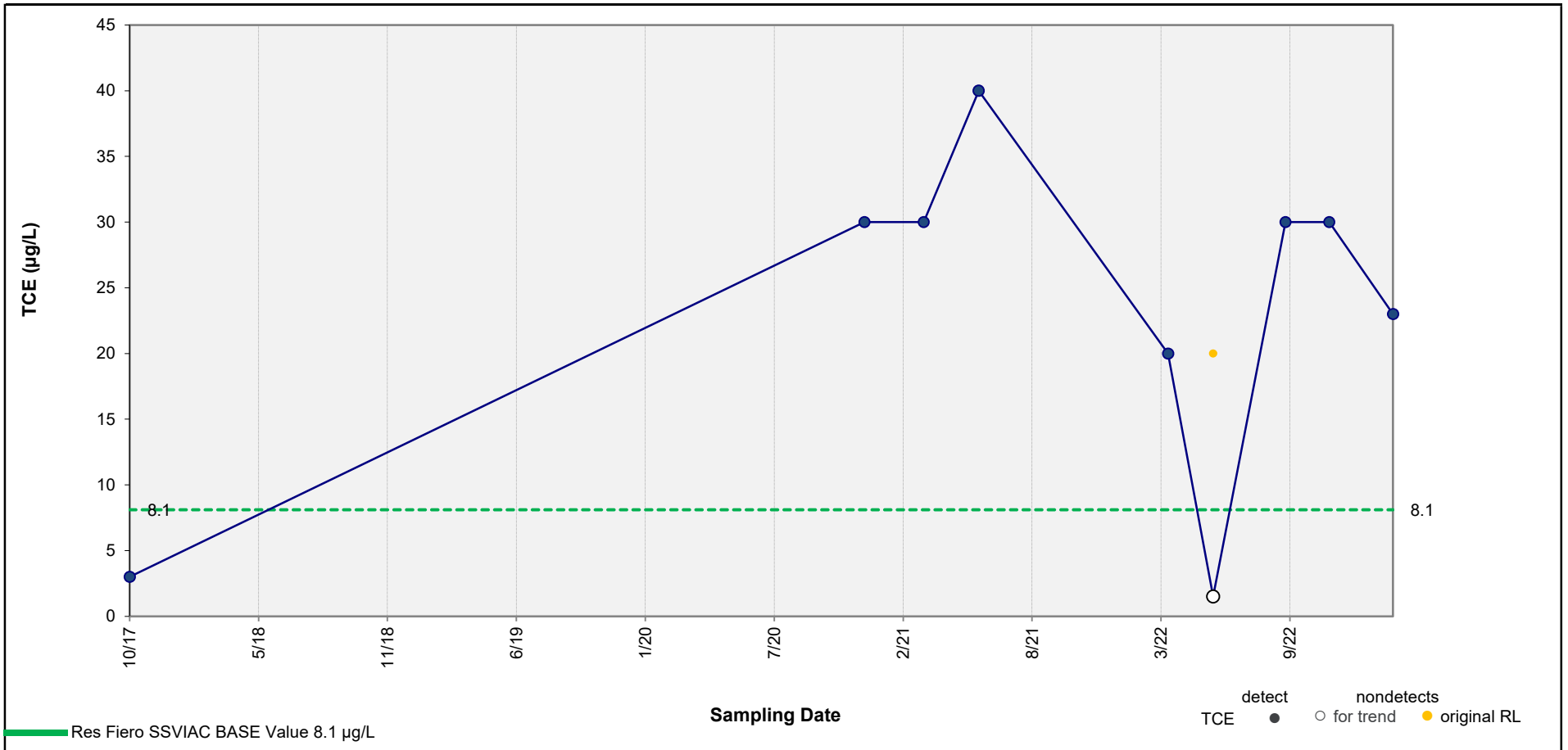
p value = 0.060 Note: p value < 0.104 indicates a statistically significant trend (89.6% confidence level).

ARCADIS

Concentration vs. Time Plot – PCE in Well MWF16-05

Racer PNC Stability Analysis

FIGURE 3-10



Results of Mann-Kendall Test for Trend: **No Significant Trend**

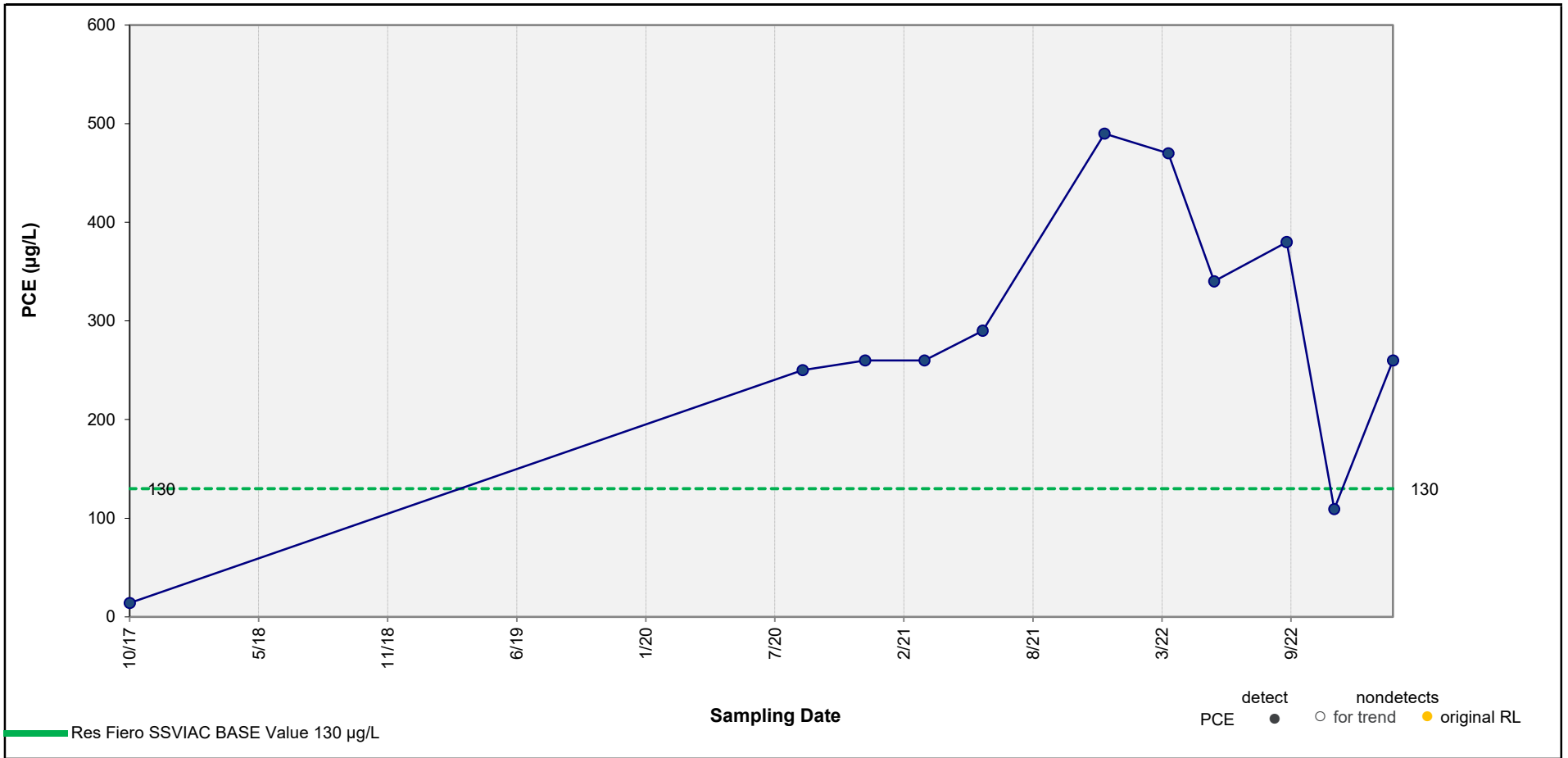
p value = 0.540 Note: p value < 0.104 indicates a statistically significant trend (89.6% confidence level).

ARCADIS

Concentration vs. Time Plot – TCE in Well MWF16-05

Racer PNC Stability Analysis

FIGURE 3-11



Results of Mann-Kendall Test for Trend: **No Significant Trend**

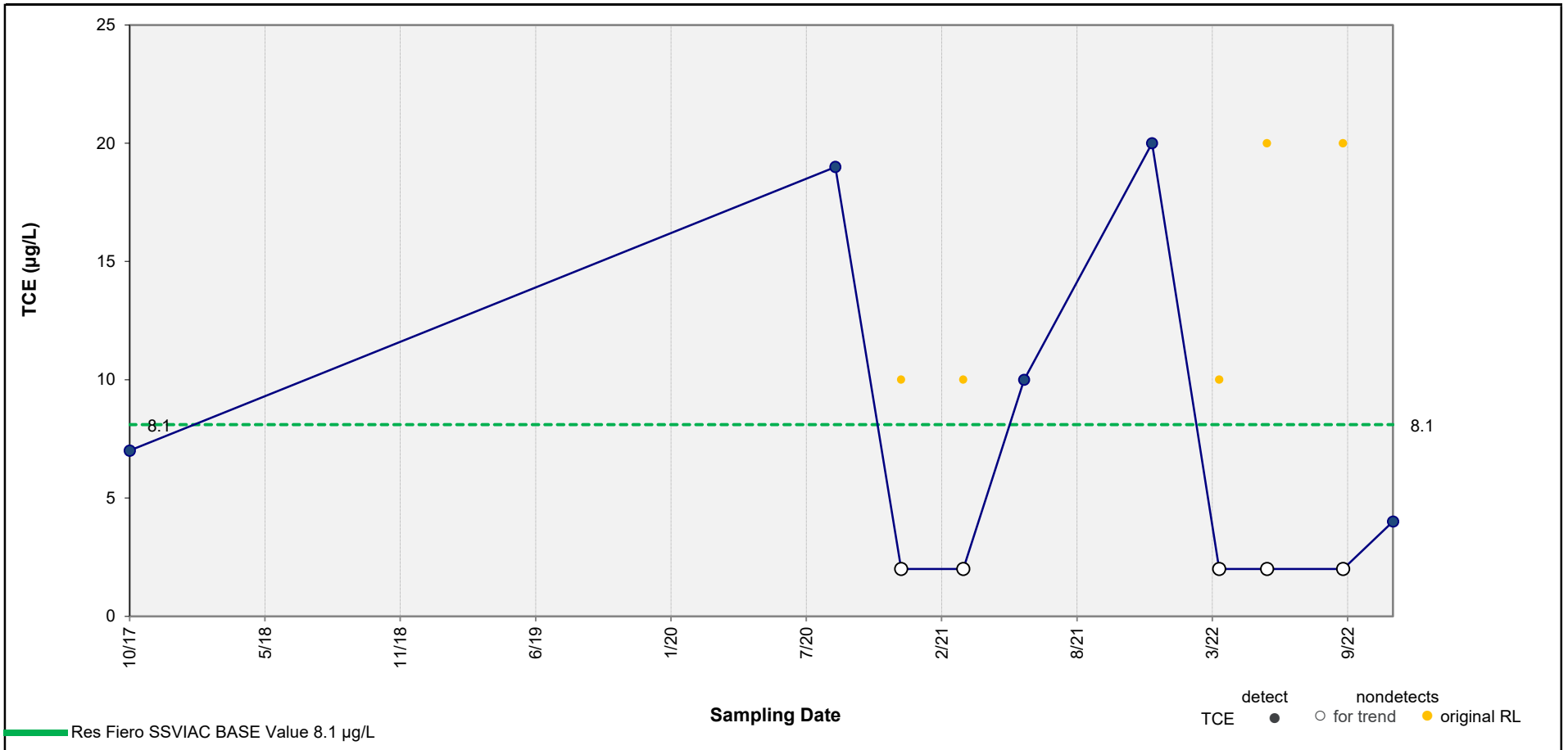
p value = 0.119 Note: p value < 0.104 indicates a statistically significant trend (89.6% confidence level).

ARCADIS

Concentration vs. Time Plot – PCE in Well MWF16-16

Racer PNC Stability Analysis

FIGURE 3-12



Results of Mann-Kendall Test for Trend: **No Significant Trend**

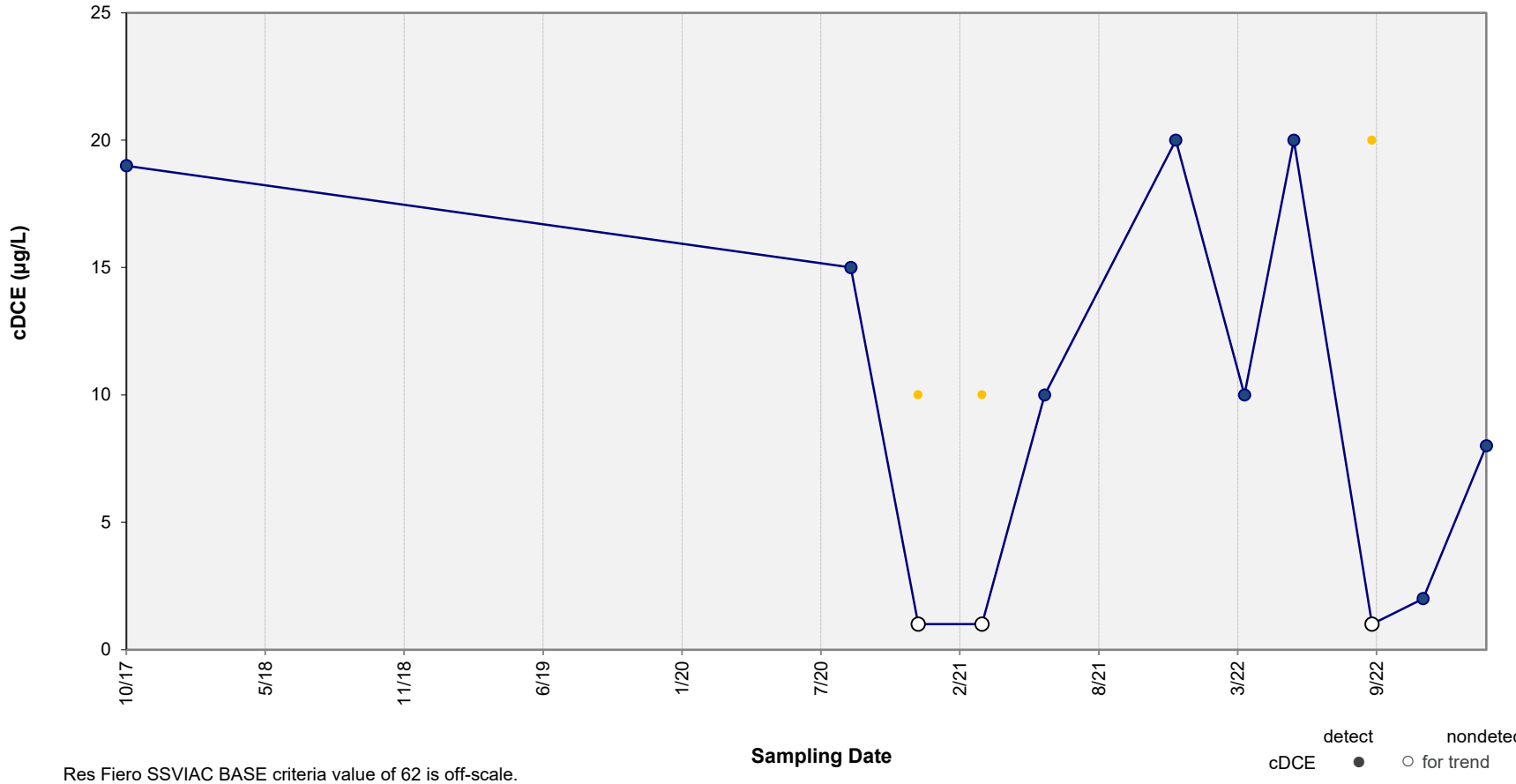
p value = 0.300 Note: p value < 0.104 indicates a statistically significant trend (89.6% confidence level).

ARCADIS

Concentration vs. Time Plot – TCE in Well MWF16-16

Racer PNC Stability Analysis

FIGURE 3-13



Res Fiero SSVIAC BASE criteria value of 62 is off-scale.

Results of Mann-Kendall Test for Trend: **No Significant Trend**

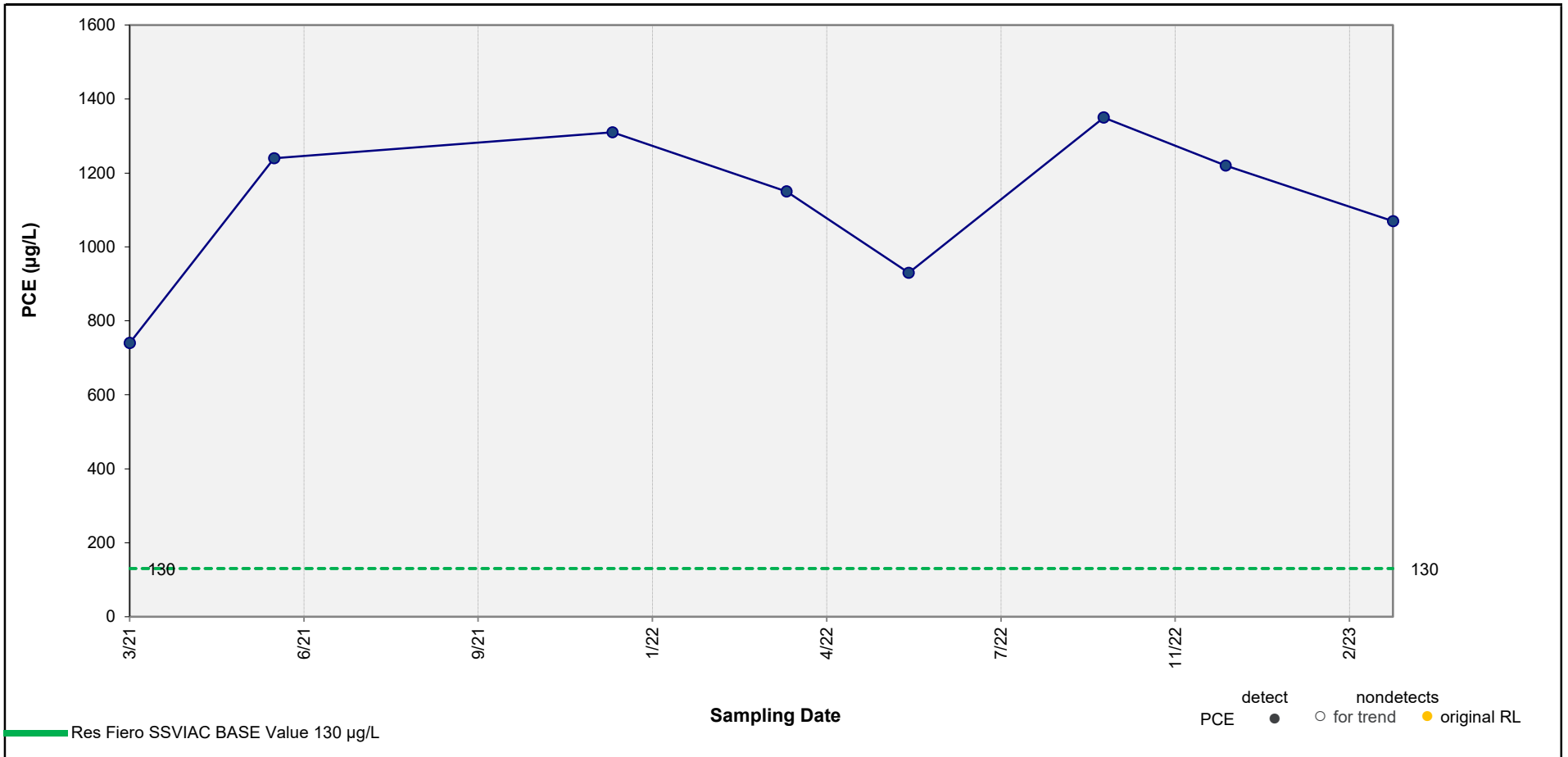
p value = 0.346 Note: p value < 0.104 indicates a statistically significant trend (89.6% confidence level).

ARCADIS

Concentration vs. Time Plot – cDCE in Well MWF16-16

Racer PNC Stability Analysis

FIGURE 3-14



Results of Mann-Kendall Test for Trend: **No Significant Trend**

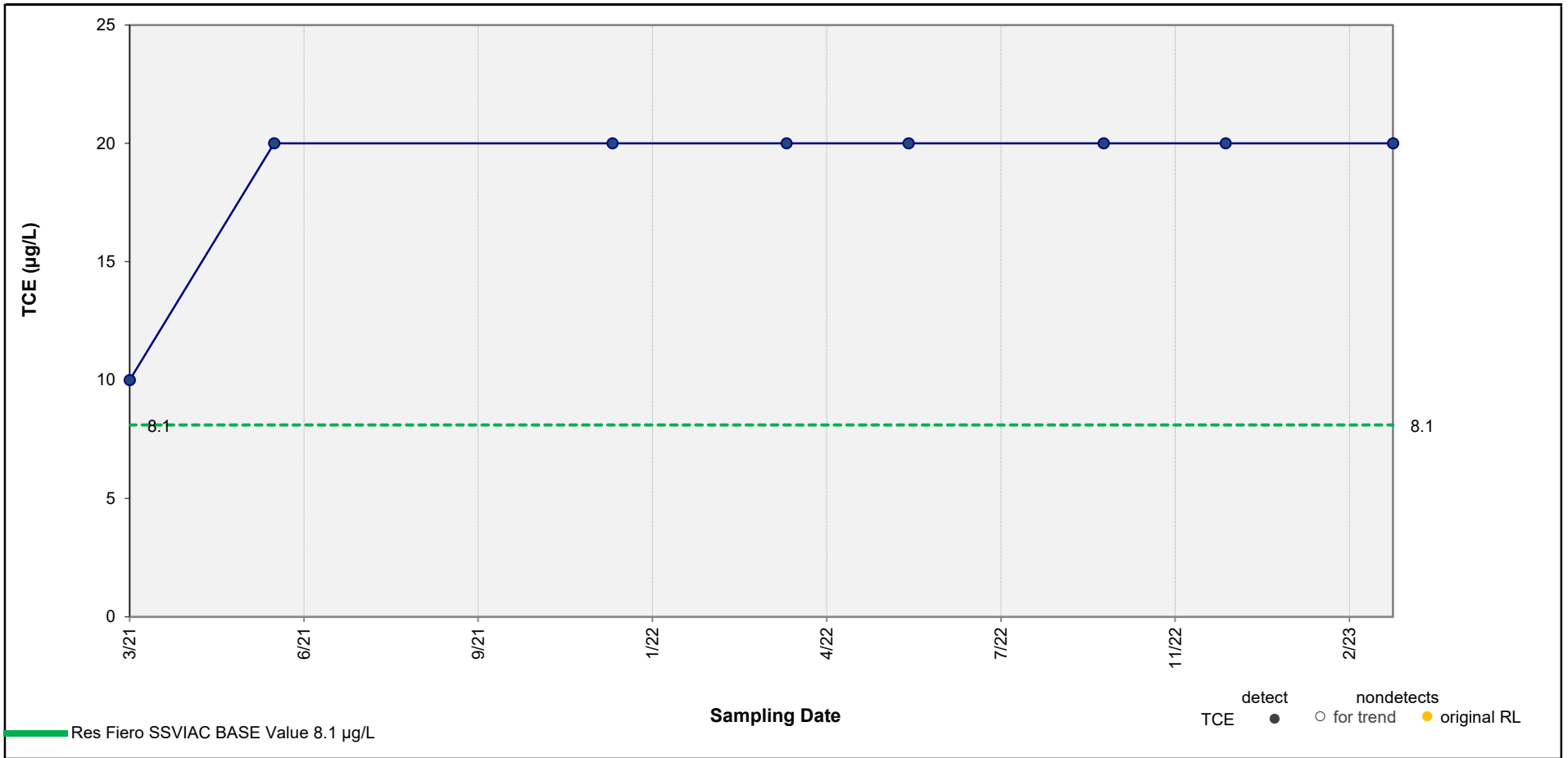
p value = 0.452 Note: p value < 0.104 indicates a statistically significant trend (89.6% confidence level).

ARCADIS

Concentration vs. Time Plot – PCE in Well MWF16-18

Racer PNC Stability Analysis

FIGURE 3-15



Results of Mann-Kendall Test for Trend: **No Significant Trend**

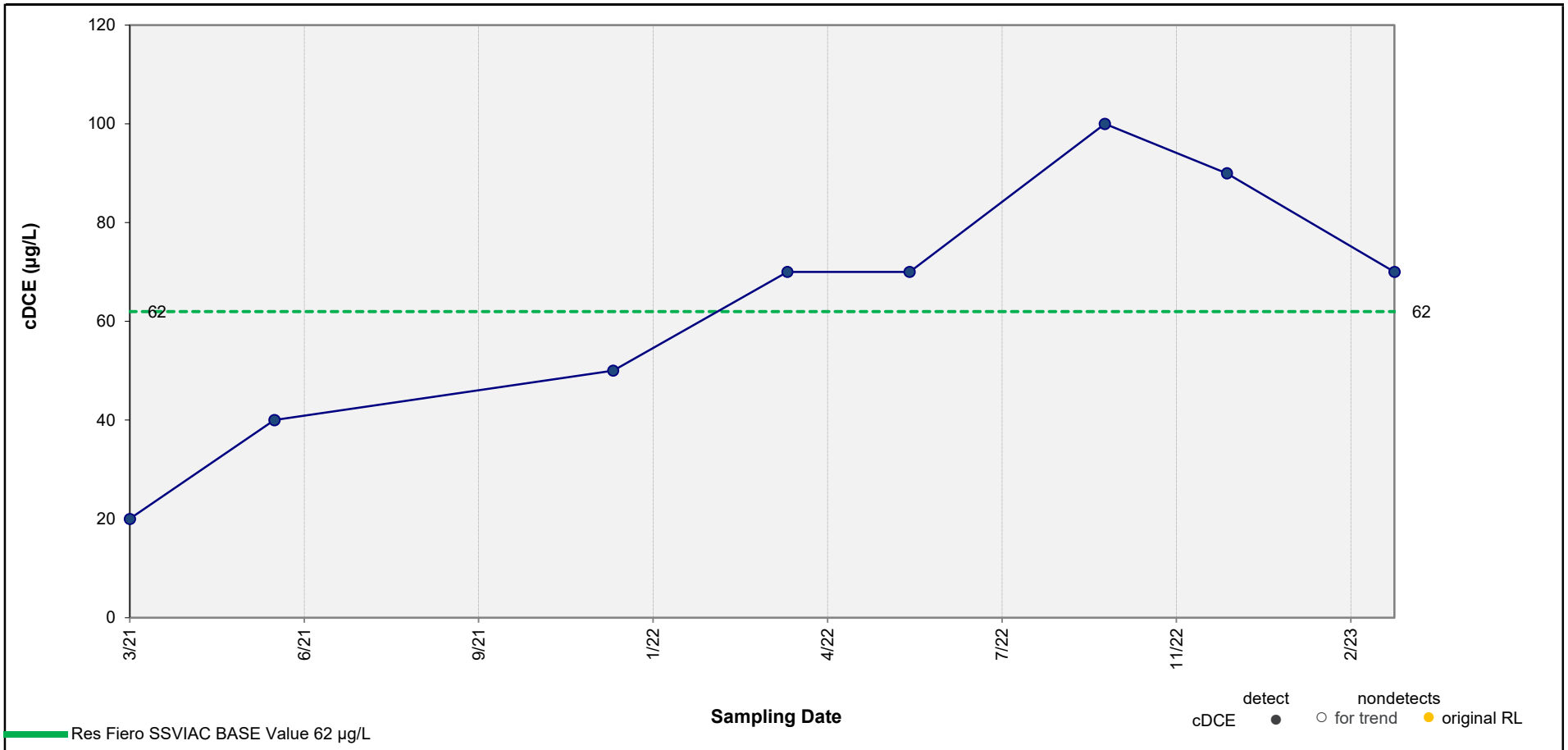
p value = 0.237 Note: p value < 0.104 indicates a statistically significant trend (89.6% confidence level).

ARCADIS

Concentration vs. Time Plot – TCE in Well MWF16-18

Racer PNC Stability Analysis

FIGURE 3-16



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

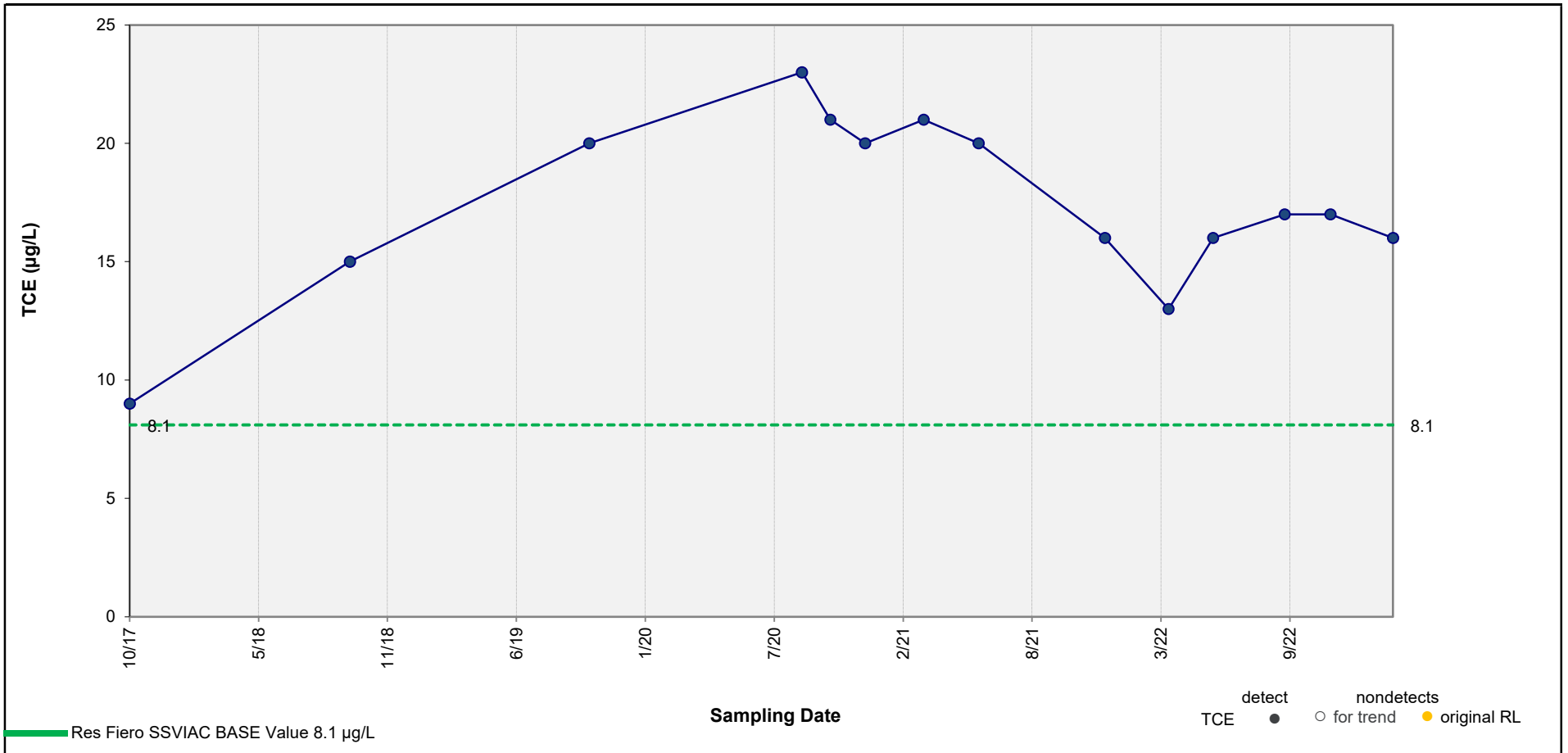
p value = 0.012 Note: p value < 0.104 indicates a statistically significant trend (89.6% confidence level).

ARCADIS

Concentration vs. Time Plot – cDCE in Well MWF16-18

Racer PNC Stability Analysis

FIGURE 3-17



Results of Mann-Kendall Test for Trend: **No Significant Trend**

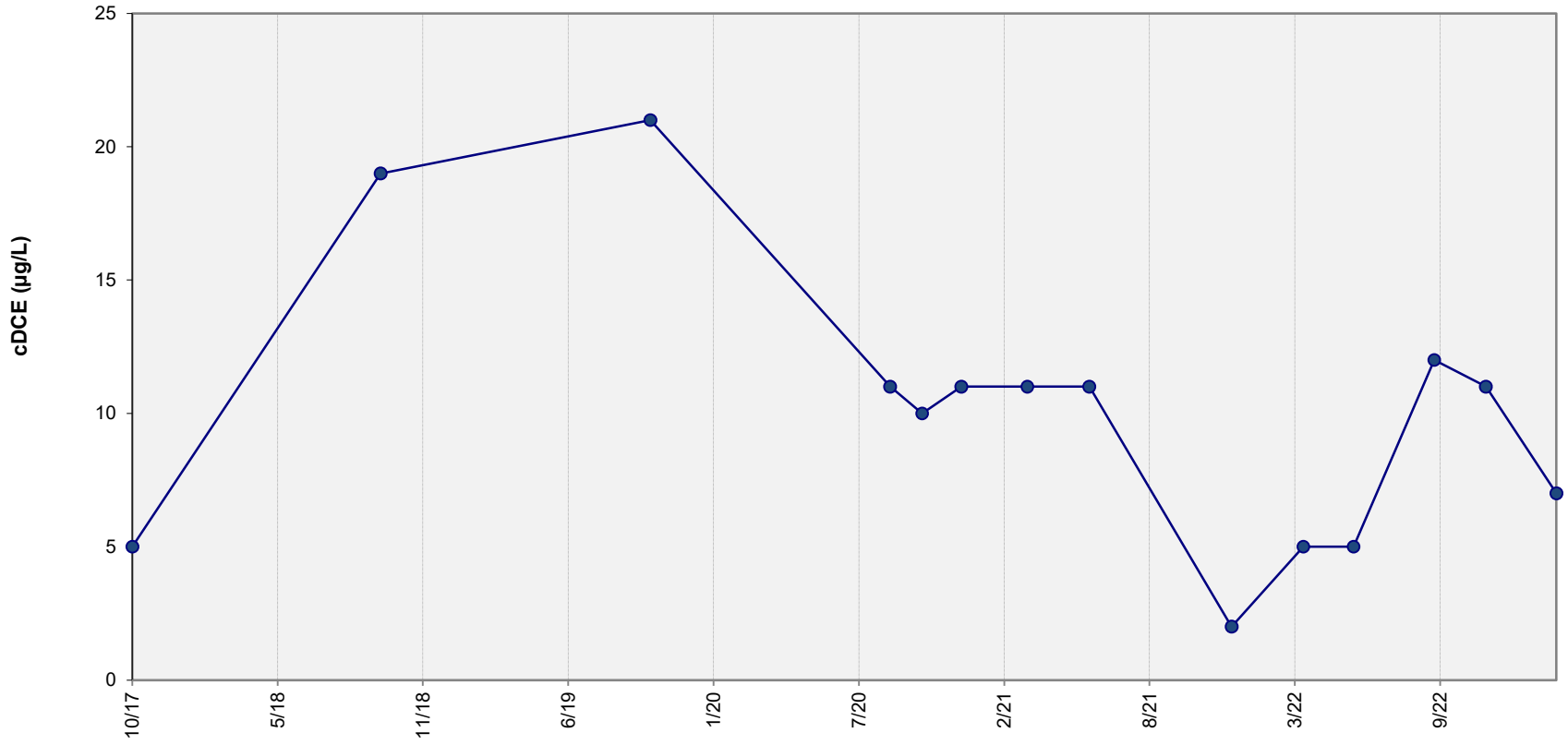
p value = 0.289 Note: p value < 0.104 indicates a statistically significant trend (89.6% confidence level).

ARCADIS

Concentration vs. Time Plot – TCE in Well MWF16-23

Racer PNC Stability Analysis

FIGURE 3-18



Res Fiero SSVIAC BASE criteria value of 62 is off-scale.

Results of Mann-Kendall Test for Trend: **No Significant Trend**

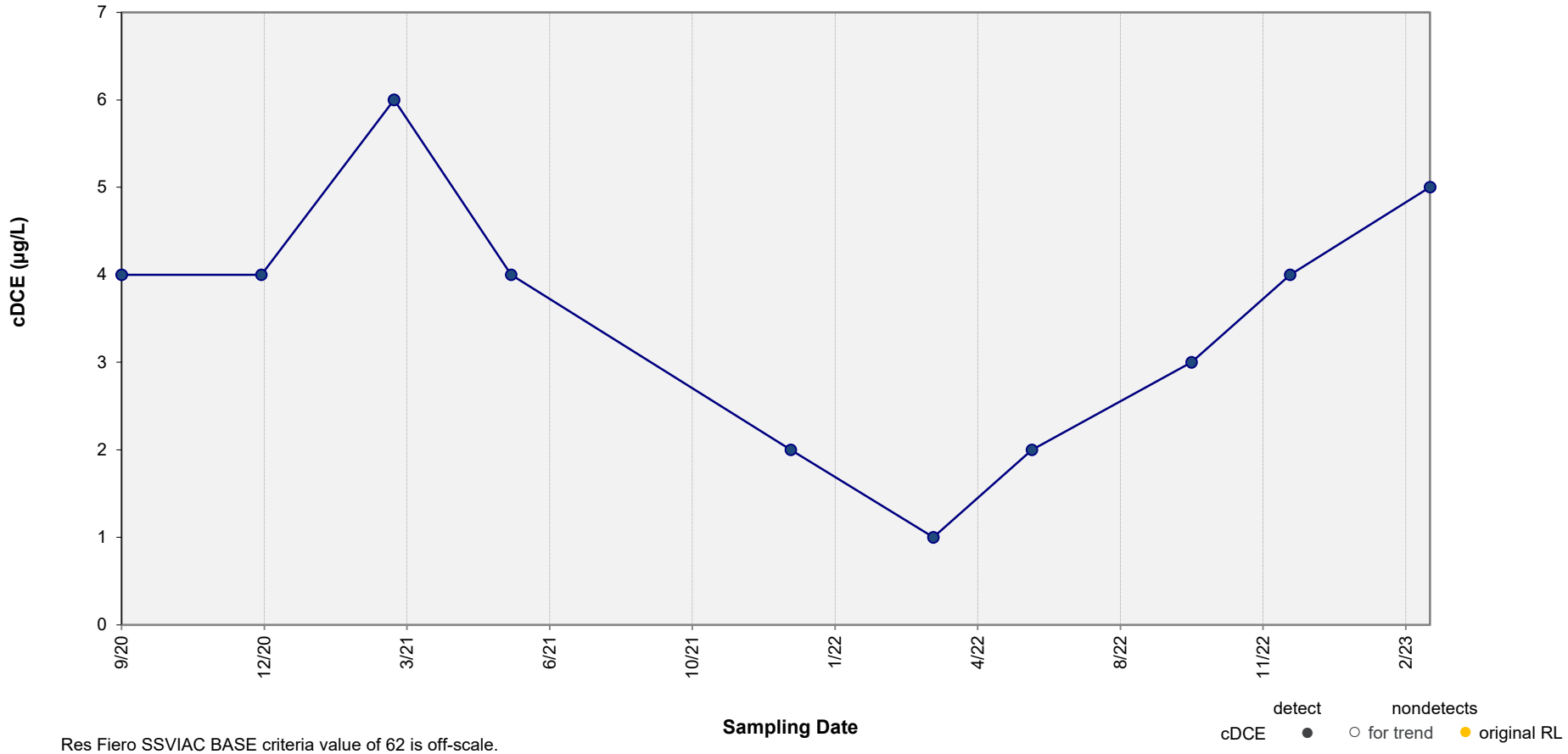
p value = 0.198 Note: p value < 0.104 indicates a statistically significant trend (89.6% confidence level).

ARCADIS

Concentration vs. Time Plot – cDCE in Well MWF16-23

Racer PNC Stability Analysis

FIGURE 3-19



Res Fiero SSVIAC BASE criteria value of 62 is off-scale.

Results of Mann-Kendall Test for Trend: **No Significant Trend**

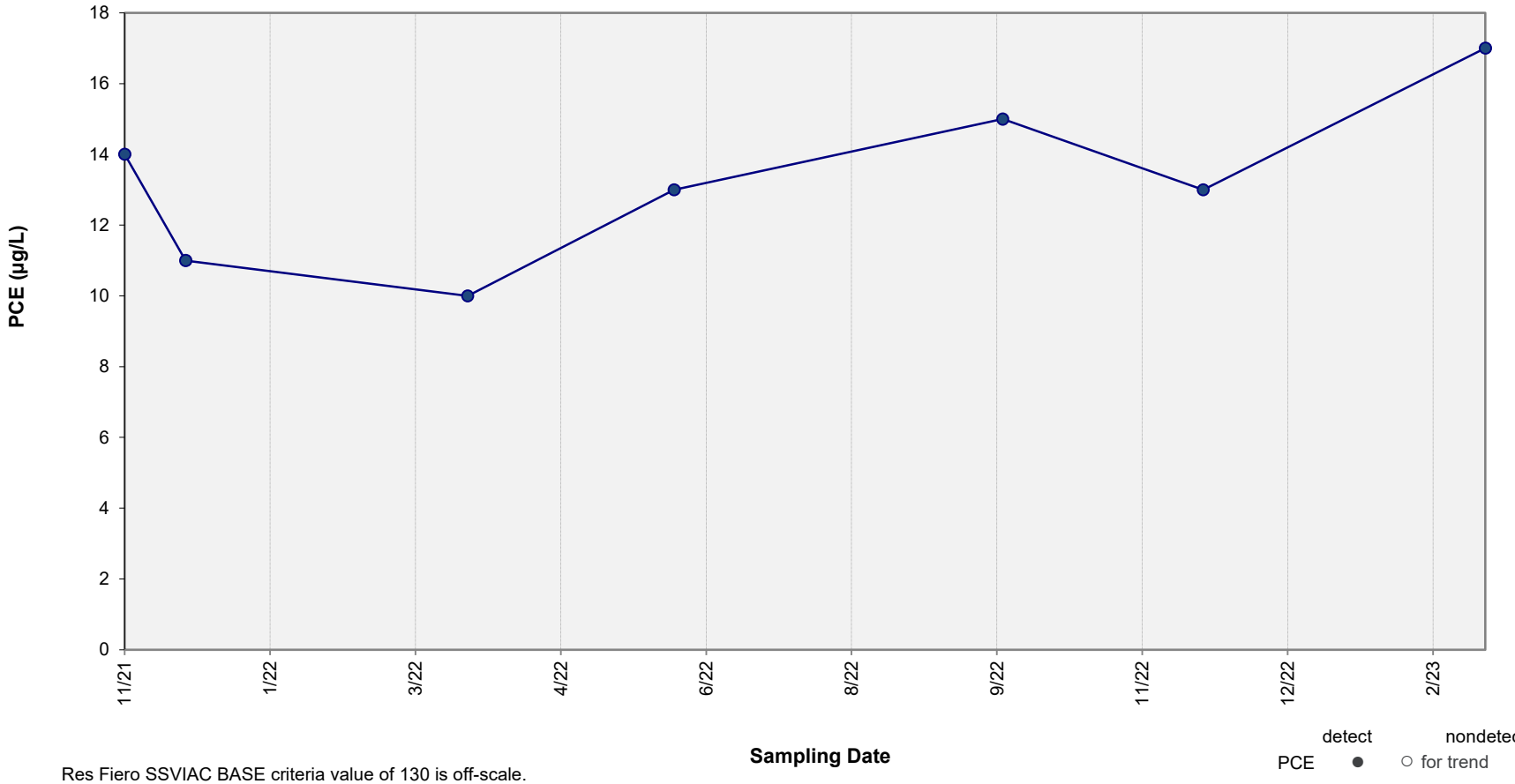
p value = 0.466 Note: p value < 0.104 indicates a statistically significant trend (89.6% confidence level).

ARCADIS

Concentration vs. Time Plot – cDCE in Well MWOS-08

Racer PNC Stability Analysis

FIGURE 3-20



Res Fiero SSVIAC BASE criteria value of 130 is off-scale.

Results of Mann-Kendall Test for Trend: **No Significant Trend**

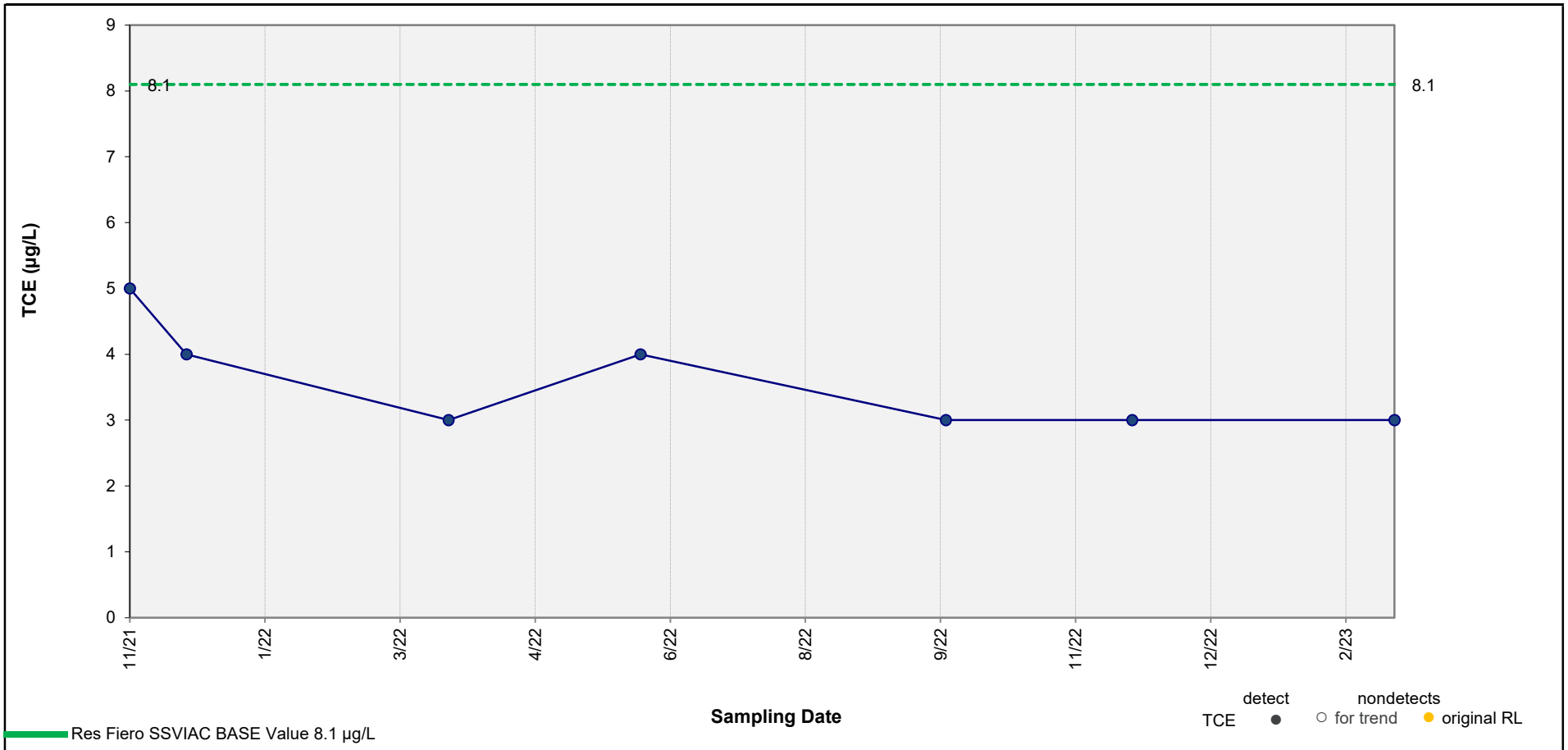
p value = 0.155 Note: p value < 0.104 indicates a statistically significant trend (89.6% confidence level).

ARCADIS

Concentration vs. Time Plot – PCE in Well MWOS-09R

Racer PNC Stability Analysis

FIGURE 3-21



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

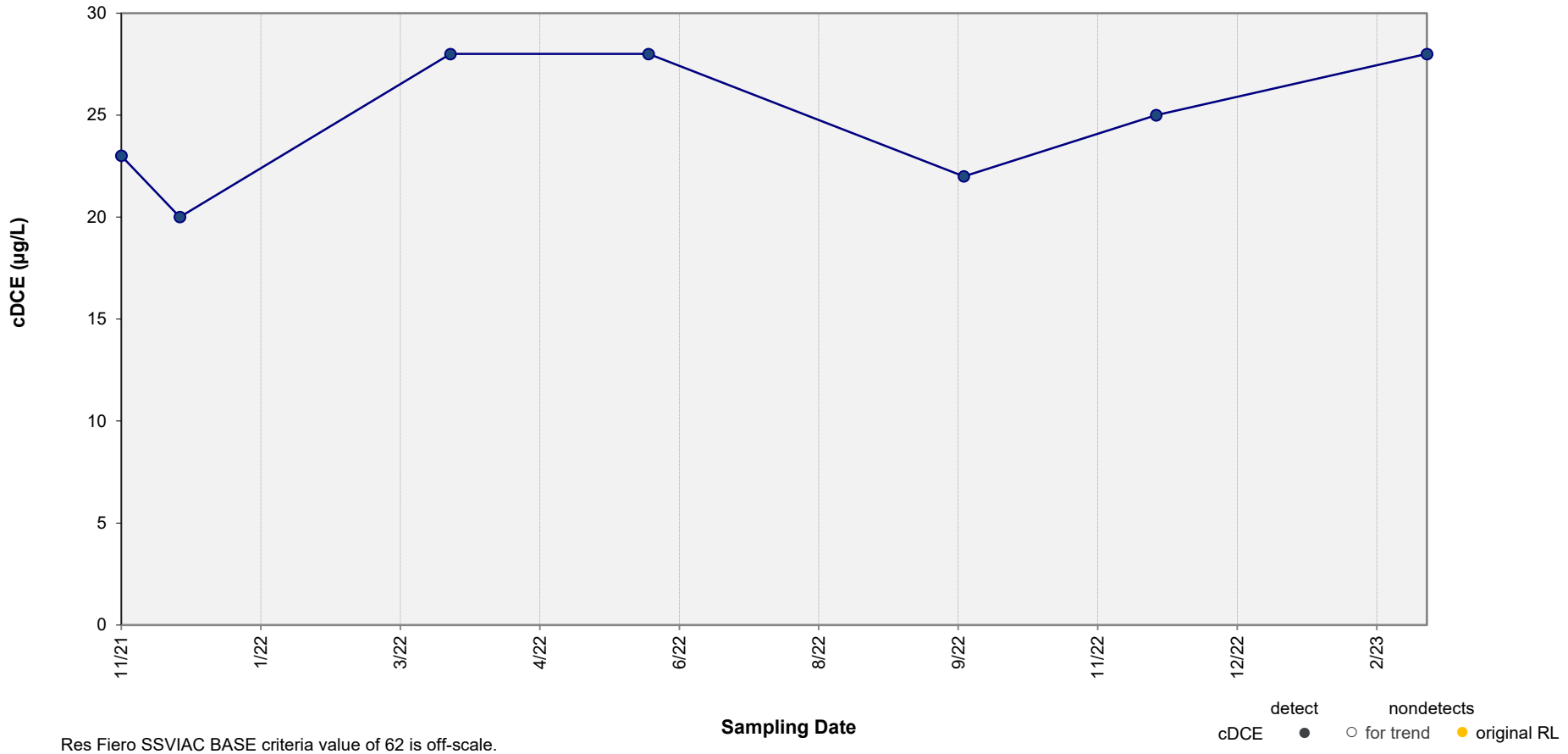
p value = 0.052 Note: p value < 0.104 indicates a statistically significant trend (89.6% confidence level).

ARCADIS

Concentration vs. Time Plot – TCE in Well MWOS-09R

Racer PNC Stability Analysis

FIGURE 3-22



Res Fiero SSVIAC BASE criteria value of 62 is off-scale.

Results of Mann-Kendall Test for Trend: **No Significant Trend**

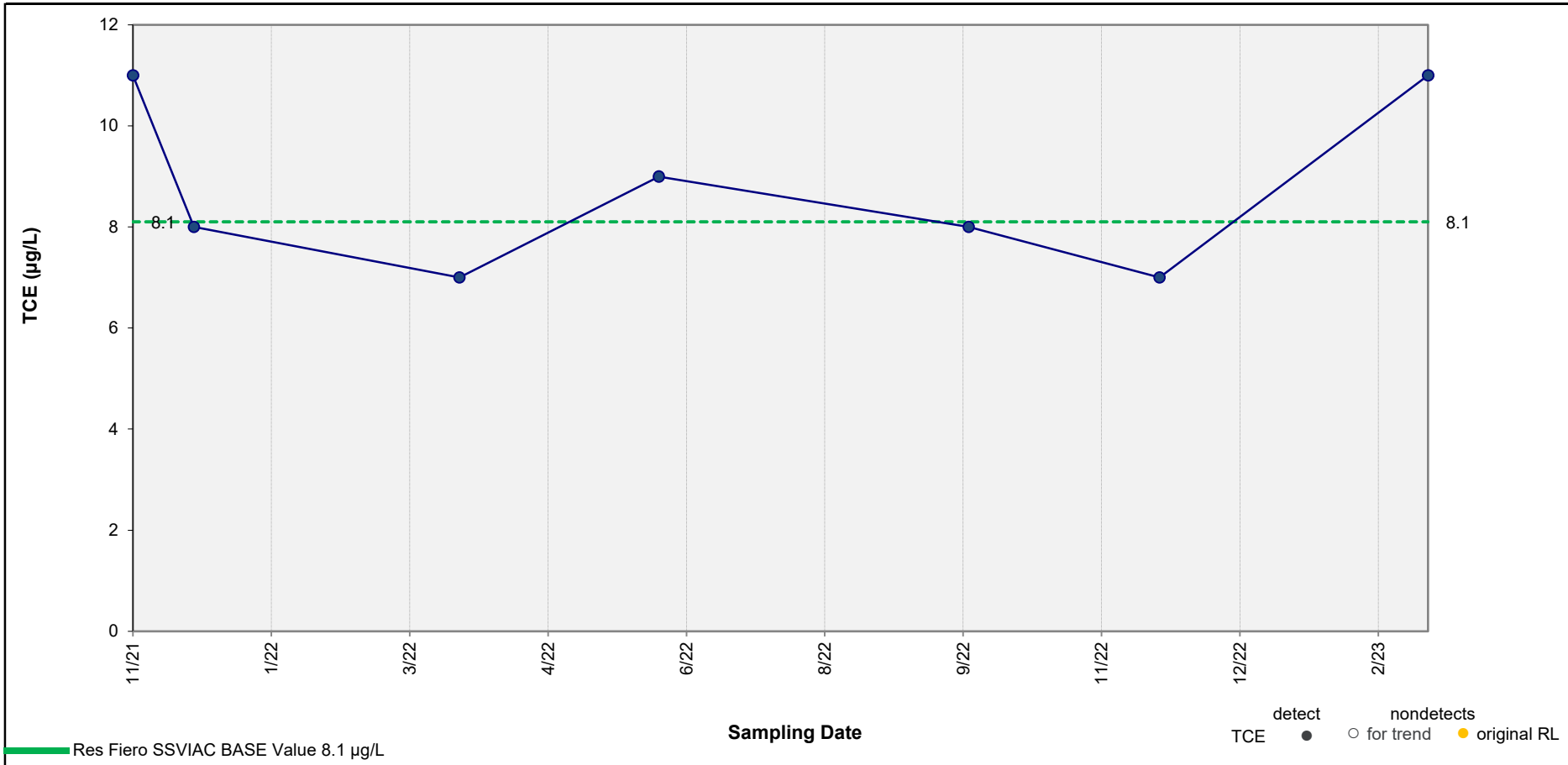
p value = 0.236 Note: p value < 0.104 indicates a statistically significant trend (89.6% confidence level).

ARCADIS

Concentration vs. Time Plot – cDCE in Well MWOS-09R

Racer PNC Stability Analysis

FIGURE 3-23



Results of Mann-Kendall Test for Trend: **No Significant Trend**

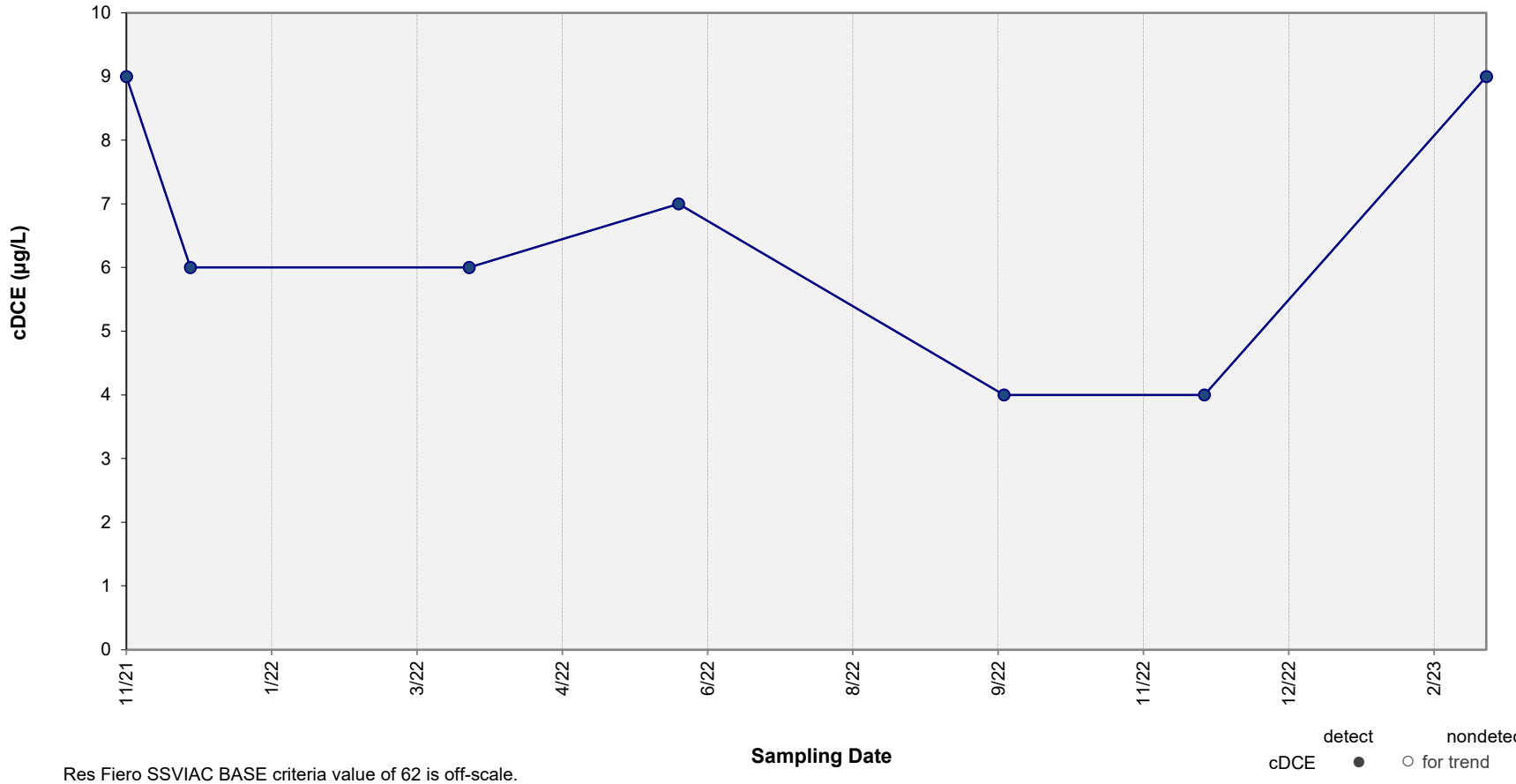
p value = 0.443 Note: p value < 0.104 indicates a statistically significant trend (89.6% confidence level).

ARCADIS

Concentration vs. Time Plot – TCE in Well MWOS-10

Racer PNC Stability Analysis

FIGURE 3-24



Res Fiero SSVIAC BASE criteria value of 62 is off-scale.

Results of Mann-Kendall Test for Trend: **No Significant Trend**

p value = 0.334 Note: p value < 0.104 indicates a statistically significant trend (89.6% confidence level).

ARCADIS

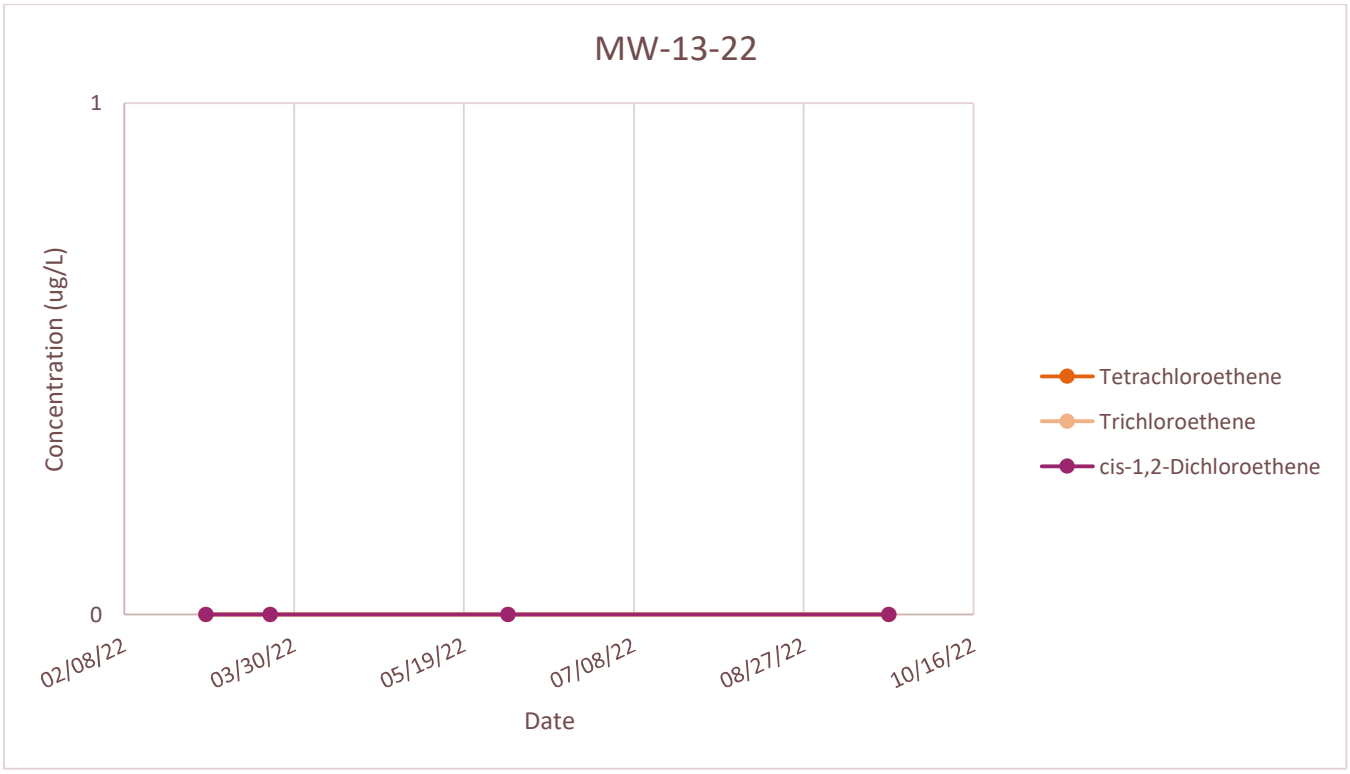
Concentration vs. Time Plot – cDCE in Well MWOS-10

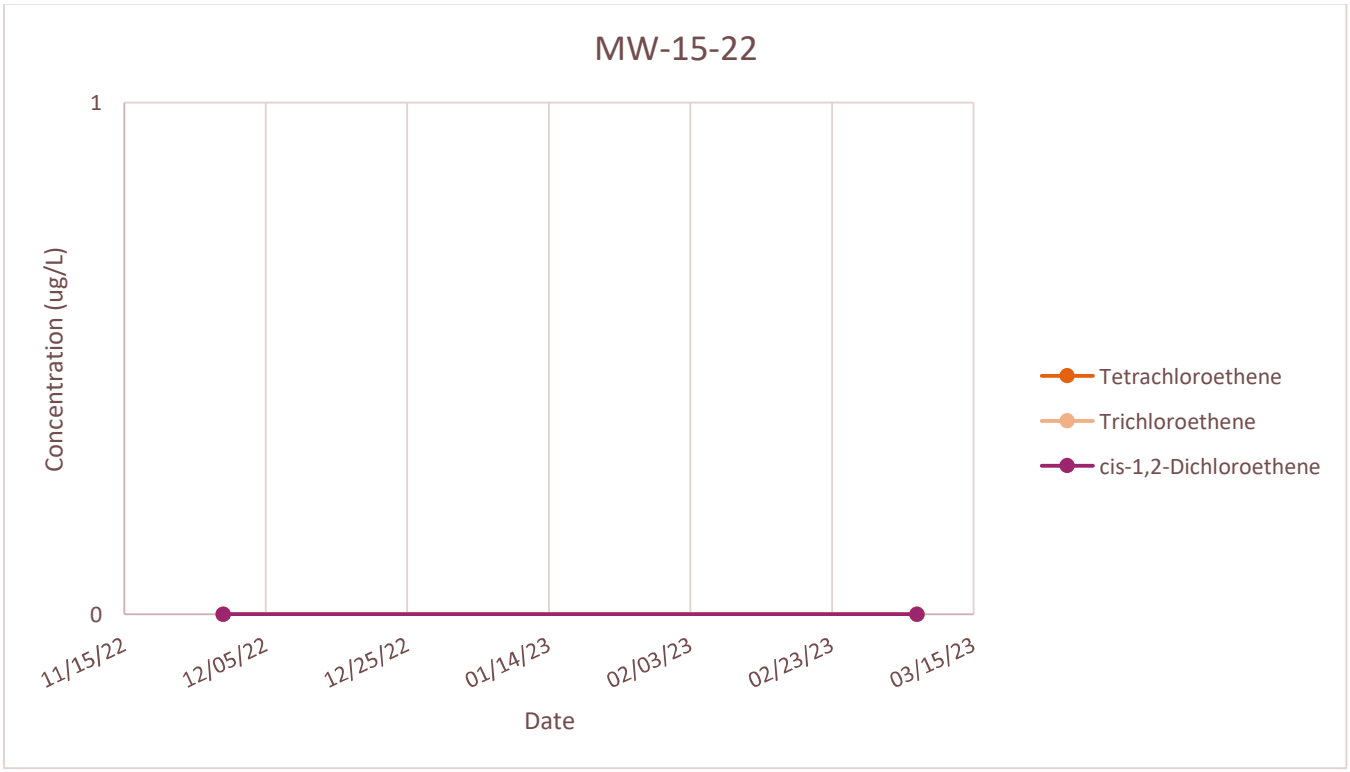
Racer PNC Stability Analysis

FIGURE 3-25

Attachment 3 -

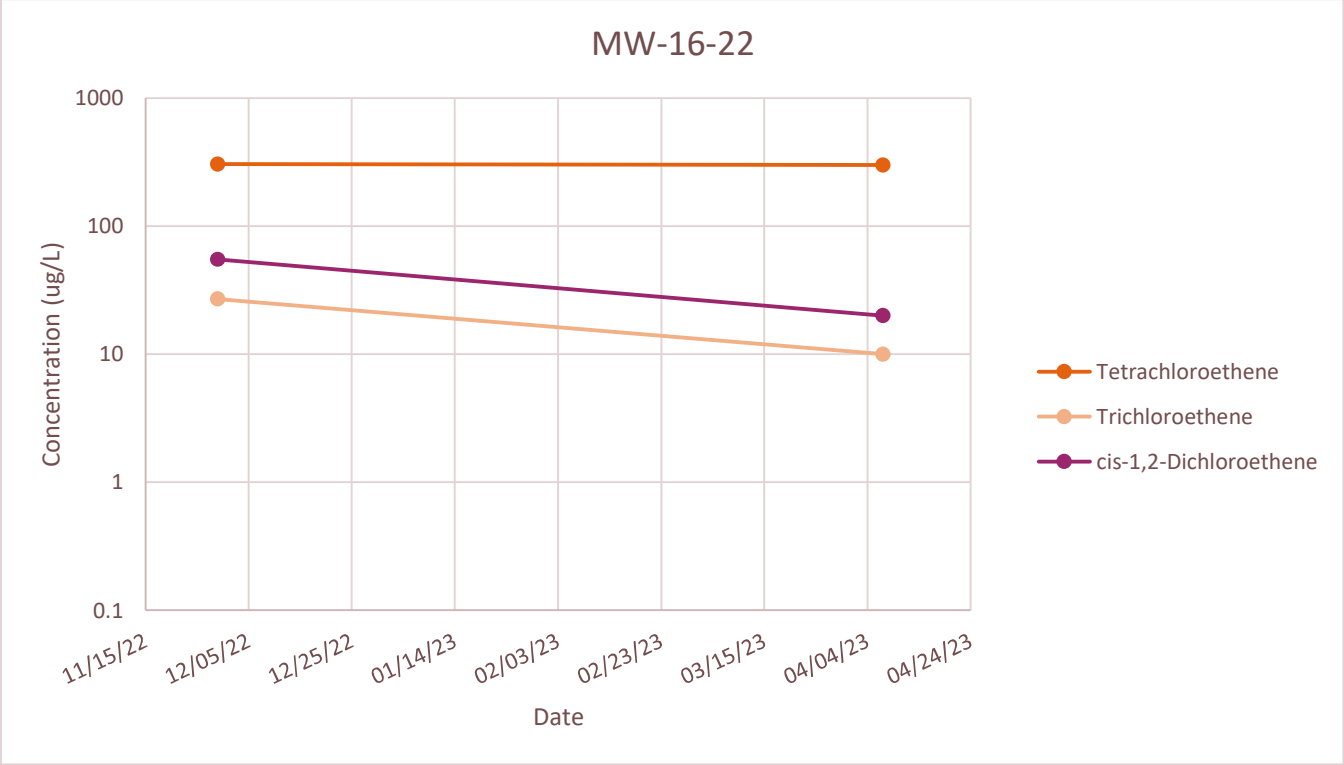
Groundwater Trend Graphs





Attachment 3 -

Groundwater Trend Graphs



Attachment 4

Soil Vapor Collection Logs

Soil Vapor Collection Log Sheet

Office Name & Address (Reporting Information): Novi, MI 28550 Cabot Dr #500			Project Name: RACER Pontiac North Campus 2023
Field Manager: Alexis Crisp			Project Number: 30167840
Phone: 937-206-4005	Special Instructions: VOCs		Site Address: 200 E Montcalm Pontiac MI 48340 US
Email Address for Result Reporting: Alexis.crisp@arcadis.com			Sampler Name: Sommer Guy / Phone Number:947-465-3421
			Email:Alexis.crisp@arcadis.com
Helium Detector Used: MGD-2002	Helium Leak Method: Helium Tracer Test		Summa Canister Size (1L, 2.7 L, 6L): 1 L / Lab: Eurofins

Sample ID	Sample Location Description	Date	Leak/Tracer Test completed prior to sample collection						Canister Number	Flow Controller Number	Sample Collection Start Time	Beginning Canister Pressure (in. Hg)	Sample Collection End Time	Ending Canister Pressure (in. Hg)	Notes
			Shut in Test Pass/Fail?	Purge Reading (ppm)	Shroud Helium Concentration (%)	Helium Test Pass/Fail?	Purge Volume (mL)	Purge Rate (mL/min)							
SV-04-21_SG-032021	In sidewalk	03/20/2023	Pass	0	42.7	Pass	334.83	200	1134	2243	14:26	-28	14:32	-6	N/A
SV-03-21_SG-032023	In sidewalk	03/20/2023	Pass	0	42.8	Pass	187.5	200	3445	2242	13:09	-28	13:14	-6	N/A
DUP-01_SG-032023	In grass	03/20/2023	Pass	3400	40.5	Pass	328.14	200	2332	2217	12:17	-28	12:24	-6	N/A
SV-05-21_SG-032023	In sidewalk	03/20/2023	Pass	0	46.3	Pass	187.5	200	748	2242	14:03	-28	14:09	-6	N/A
SV-06-21_SG-032023	In sidewalk	03/20/2023	Pass	325	45.8	Pass	334.83	200	2405	23217	14:48	-28	14:54	-6	N/A
SV-01-21_SG-032023	In grass	03/20/2023	Pass	0	40.3	Pass	207.6	200	1803	2150	11:46	-28	11:51	-6	N/A
SV-02-21_SG-032023	In grass	03/20/2023	Pass	3400	40.5	Pass	328.14	200	3038	2228	12:17	-28	12:24	-6	N/A

Meteorological Data

Date	Time	Temp		Relative Humidity (%)	Barometric Pressure (in.Hg)	Weather source
		Indoor	Outdoor			

General Notes or Observations

Soil Vapor Collection Log Sheet

03/20/2023	10:53	N/A	37	35	30	37.0 degrees F and Clear. The wind is blowing undefined at 16.1 mph.	N/A
03/20/2023	10:53	N/A	37	35	30	37.0 degrees F and Clear. The wind is blowing undefined at 16.1 mph.	
03/20/2023	10:53	N/A	37	35	30	37.0 degrees F and Clear. The wind is blowing undefined at 16.1 mph.	
03/20/2023	10:53	N/A	37	35	30	37.0 degrees F and Clear. The wind is blowing undefined at 16.1 mph.	
03/20/2023	10:53	N/A	37	35	30	37.0 degrees F and Clear. The wind is blowing undefined at 16.1 mph.	
03/20/2023	10:53	N/A	37	35	30	37.0 degrees F and Clear. The wind is blowing undefined at 16.1 mph.	

Air Parameters (completed after sample collection)

Location ID	CH4 %	CH4 LEL %	O2 %	PID (ppm)	Differential Pressure (in. Water Column)
SV-04-21	0.1	NM	13.5	NM	NM
SV-03-21	0	NM	15.4	NM	NM
--	0.2	NM	20.4	NM	NM
SV-05-21	0.1	NM	14	NM	NM
SV-06-21	0	NM	13.5	NM	NM
SV-01-21	0.1	NM	17	NM	NM
SV-02-21	0.2	NM	20.4	NM	NM