

MEMO

To:

MDEQ Southeast MI District Office
Attn: Mr. Greg Barrows
27700 Donald Court
Warren, MI 48092-2793

Copies:

Mr. Dave Favero (RACER)

Arcadis of Michigan, LLC

28550 Cabot Drive

Suite 500

Novi

Michigan 48377

Tel 248 994 2240

Fax 248 994 2241

From:

Brad Saunders

Date:

November 14, 2018

Arcadis Project No.:

B0064486.2017.00003

Subject:

Off-Site / Mill Street Groundwater Monitoring Event
RACER Trust Pontiac Employee Development Center (EDC) Site
Facility ID 6300600
65 East University, Pontiac, Oakland County, MI

The purpose of this memorandum is to report the results of a groundwater monitoring event conducted on October 16, 2018 encompassing the five remaining monitoring wells located off-site west of the RACER Trust Pontiac Employee Development Center (EDC) site (refer to **Figure 1** for Site Location Map). RACER achieved restricted No Further Action (NFA) for the site from MDEQ in December 2016 and sold the site to George W. Auch Company in February 2017, but the NFA did not include impacted property located west of the site. Three of the remaining monitoring wells are located in the City of Pontiac's Mill Street, while the other two monitoring wells are located on off-site properties immediately west of Mill Street. Prior groundwater monitoring events were conducted on March 29, 2017, September 27, 2017, and April 10, 2018.

On October 16, 2018, ARCADIS conducted a gauging event and collected groundwater samples from monitoring wells MW-19, MW-20, MW-25, MW-26, and MW-27. Sampling methods and techniques were identical to those used for past groundwater sampling events. The analytical parameter list was limited to analysis of volatile organic compounds (VOCs) via United States Environmental Protection Agency (USEPA) Method 8260, consistent with the most recent monitoring events as based on past results and constituents of concern. Samples were submitted to Merit Laboratories for analysis. Locations of the monitoring wells sampled are shown within the red-bordered area identified as "Not Included in the NFA" on the attached Site Map (refer to **Figure 2**).

The groundwater elevations for the remaining five monitoring wells are shown on **Table 1**. The groundwater gauging data from October 2018 indicated groundwater levels within the range of levels realized in past sampling events. Groundwater flow direction in the vicinity of the Mill St. and two other off-

site wells as determined from previous site investigations indicated radial flow from the southwest portion of former Pontiac EDC site to the west. Groundwater analytical results (refer to **Table 2**) from the October 2018 indicated continued stable to decreasing concentrations of contaminants in the two monitoring wells where contaminants were previously detected, although low concentrations of two different contaminants were detected in one of the two wells. There was no detection of contaminants in the other three monitoring wells. The following is a summary of the groundwater analytical results from the October 2018 event:

- MW-26: Benzene was detected in MW-26 (centrally located Mill St. well) at 70 micrograms per liter (ug/L) in the October 2018 groundwater sampling event. This concentration reflects a continued decline from 128 ug/L detected in the April 2018 groundwater sampling event, 197 ug/L detected in the September 2017 groundwater sampling event, and 517 ug/L detected in the March 2017 groundwater sampling event. The concentration of benzene in MW-26 continues to exceed its Part 201 NRDW Criteria of 5 ug/L, but remains below its 200 ug/L GSI Criteria for the second straight monitoring event. Although the monitoring well location is located in a city street where the vapor intrusion pathway is incomplete, the concentration of benzene also remains below the vapor intrusion screening level (VISL) criteria of 140 ug/L. The concentration of benzene has consistently and steadily decreased from a high of 3,360 ug/L detected in January 2013 following 2012 impacted soil excavation activities at the adjacent Pontiac EDC site.

While vinyl chloride was no longer detected down to a laboratory method detection limit of 1 ug/L (it had been detected in 2 of 3 prior events), both 1,2-dichloroethane and 1,2-dichloropropane were detected at MW-26 for the first time. However, it should be noted that the laboratory method detection limit was elevated due to higher benzene concentrations prior to 2018. 1,2-Dichloroethane was detected at 6 ug/L, which exceeds its NRDW Criteria of 5 ug/L, but is well below the Part 201 Criteria for GSI of 360 ug/L and VISL of 210 ug/L. 1,2-Dichloropropane was detected at the detection limit of 1 ug/L, which is below its applicable Part 201 Criteria for NRDW of 5 ug/L, GSI of 230 ug/L, and VISL of 290 ug/L. Other contaminants continue to remain below detection limits at MW-26.

- MW-27: Trichloroethylene (TCE) was detected in MW-27 (southern-most Mill St. well) at 3 ug/L in the October 2018 groundwater sampling event. The concentration of TCE at MW-27 has been stable over the past two years. It was also detected at 3 ug/L in the September 2017 groundwater sampling event. TCE was detected at 2 ug/L in both the March 2017 and April 2018 groundwater sampling events. The concentration of TCE remains below Part 201 Criteria for NRDW of 5 ug/L, GSI of 200 ug/L, and VISL of 41 ug/L. The concentrations of TCE has declined from a high of 6 ug/L during the September 2013 groundwater monitoring event, and has not exceeded criteria since that event.
- Concentrations of target VOCs remain below Part 201 Generic Cleanup Criteria and laboratory method detection limits in MW-19 (off-site property west of Mill St.), MW-20 (off-site property west of Mill St.), and MW-25 (northern-most Mill St. well).

Trend graphs (refer to **Figures 3A and 3B**) showing analytical history of benzene in monitoring well MW-27 and TCE are also included as attachments to this memorandum. The Laboratory Analytical Report is also included as **Appendix A**.

Based on the results of groundwater monitoring activities and current conditions in the vicinity of the Site, ARCADIS proposes the following activities:

- Continue to monitor contaminant concentrations in the Mill Street monitoring wells, execute a Public Highway Institutional Control with City of Pontiac, and pursue MDEQ regulatory closure of the identified impacted area within Mill Street.

Attachments

- 1 Table 1 Groundwater Level and Elevation Data
- 2 Table 2 Groundwater Analytical Data
- 3 Figure 1 Site Location Map
- 4 Figure 2 Site Map
- 5 Figures 3A & 3B MW-26 and MW-27 Trend Graphs
- 6 Appendix A Laboratory Analytical Report

TABLES



Table 1
Groundwater Level and Elevation Data

RACER Trust
Employee Development Center
65 E. University Drive
Pontiac, MI 48342

Monitoring/Extraction Well ID	Top of Casing Elevation (feet) ¹	Date	Depth to Product (feet bgs)	Depth to Groundwater (feet bgs)	Product Thickness (feet)	Groundwater Elevation (feet) ¹
MW-19 (3-13')	917.38	12/2/2010	NP	4.21	NP	913.17
	917.38	1/28/2013	NP	5.63	NP	911.75
	917.38	6/24/2013	NP	4.87	NP	912.51
	917.38	9/17/2013	NP	6.02	NP	911.36
	917.38	5/21/2014	NP	4.29	NP	913.09
	917.38	10/27/2014	NP	5.67	NP	911.71
	917.38	4/15/2015	NP	5.98	NP	911.40
	917.38	3/29/2017	NP	5.45	NP	911.93
	917.38	9/27/2017	NP	6.85	NP	910.53
	917.38	4/10/2018	NP	5.83	NP	911.55
	917.38	10/16/2018	NP	6.27	NP	911.11
MW-20 (3-13')	917.44	12/2/2010	NP	7.15	NP	910.29
	917.44	1/28/2013	NP	7.05	NP	910.39
	917.44	6/24/2013	NP	6.67	NP	910.77
	917.44	9/17/2013	NP	7.51	NP	909.93
	917.44	5/21/2014	NP	6.24	NP	911.20
	917.44	10/27/2014	NP	6.72	NP	910.72
	917.44	4/15/2015	NP	6.87	NP	910.57
	917.44	3/29/2017	NP	6.11	NP	911.33
	917.44	9/27/2017	NP	8.71	NP	908.73
	917.44	4/10/2018	NP	7.29	NP	910.15
	917.44	10/16/2018	NP	7.54	NP	909.90
MW-25 (4-14')	915.68	1/28/2013	NP	5.25	NP	910.43
	915.68	6/24/2013	NP	4.71	NP	910.97
	915.68	9/17/2013	NP	5.91	NP	909.77
	915.68	5/21/2014	NP	4.11	NP	911.57
	915.68	10/27/2014	NP	4.91	NP	910.77
	915.68	4/15/2015	NP	5.30	NP	910.38
	915.68	3/29/2017	NP	4.12	NP	911.56
	915.68	9/27/2017	NP	6.72	NP	908.96
	915.68	4/10/2018	NP	5.36	NP	910.32
	915.68	10/16/2018	NP	5.88	NP	909.80
MW-26 (3-13')	916.67	1/28/2013	NP	3.49	NP	913.18
	916.67	6/24/2013	NP	3.43	NP	913.24
	916.67	9/17/2013	NP	3.64	NP	913.03
	916.67	5/21/2014	NP	3.40	NP	913.27
	916.67	10/27/2014	NP	3.19	NP	913.48
	916.67	4/15/2015	NP	4.46	NP	912.21
	916.67	3/29/2017	NP	2.48	NP	914.19
	916.67	9/27/2017	NP	4.42	NP	912.25
	916.67	4/10/2018	NP	4.36	NP	912.31
	916.67	10/16/2018	NP	4.59	NP	912.08
MW-27 (6.5-16.5')	916.75	1/28/2013	NP	8.11	NP	908.64
	916.75	6/24/2013	NP	6.83	NP	909.92
	916.75	9/17/2013	NP	6.67	NP	910.08
	916.75	5/21/2014	NP	6.79	NP	909.96
	916.75	10/27/2014	NP	8.00	NP	908.75
	916.75	4/15/2015	NP	8.47	NP	908.28
	916.75	3/29/2017	NP	7.24	NP	909.51
	916.75	9/27/2017	NP	9.06	NP	907.69
	916.75	4/10/2018	NP	9.01	NP	907.74
	916.75	10/16/2018	NP	8.53	NP	908.22

General Notes:

1. Elevations are based on feet above the North American Vertical Datum of 1988 (NAVD88).
2. Coordinates are on the Michigan State Plane Coordinate System.
3. Elevations and coordinates were determined during surveys completed on December 11, 2006, February 12, 2008, November 1, 2010, January 30, 2013 and October 24, 2014.

Acronyms and Abbreviations:

NP = No product

Table 2
Groundwater Analytical Data

RACER Trust
Employee Development Center
65 E. University Drive
Pontiac, MI 48342

Sample ID:		MDEQ Part 201 Non-Residential Cleanup Criteria				MW-19	MW-19	MW-19	MW-19	MW-19	MW-19	MW-19	MW-19	MW-19
		Non-Residential Drinking Water Protection Criteria	Ground Water Surface Water Interface Criteria	Vapor Intrusion Ground Water Screening Level	Flammability and Explosivity Screening Level	Off-Site, West of Pontiac EDC Site and Mill St.	Off-Site, West of Pontiac EDC Site and Mill St.	Off-Site, West of Pontiac EDC Site and Mill St.	Off-Site, West of Pontiac EDC Site and Mill St.	Off-Site, West of Pontiac EDC Site and Mill St.	Off-Site, West of Pontiac EDC Site and Mill St.	Off-Site, West of Pontiac EDC Site and Mill St.	Off-Site, West of Pontiac EDC Site and Mill St.	Off-Site, West of Pontiac EDC Site and Mill St.
Date Collected:						12/2/2010	1/30/2013	6/27/2013	9/19/2013	5/23/2014	3/29/2017	9/27/2017	4/10/2018	10/16/2018
Screened Interval (ft bgl):						3-13'	3-13'	3-13'	3-13'	3-13'	3-13'	3-13'	3-13'	3-13'
Analytical Parameter	Units													
VOCs (EPA Method 8260)														
1,2-Dichloroethane	ug/L	5.0 (A)	360 (X)	210	2.50E+06	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloropropane	ug/L	5.0 (A)	230 (X)	290	5.50E+05	<1	<1	<1	<1	<1	<1	<1	<1	<1
Benzene	ug/L	5.0 (A)	200 (X)	140	68,000	<1	<1	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	ug/L	5.0 (A)	200 (X)	41	ID	<1	<1	<1	<1	<1	<1	<1	<1	<1
Vinyl chloride	ug/L	2.0 (A)	13 (X)	42	33,000	<1	<1	<1	<1	<1	<1	<1	<1	<1
Other Target VOCs	ug/L	various	various	various	various	ND	ND	ND	ND	ND	ND	ND	ND	ND

See Notes on last page.

Table 2
Groundwater Analytical Data

RACER Trust
Employee Development Center
65 E. University Drive
Pontiac, MI 48342

Sample ID:		MDEQ Part 201 Non-Residential Cleanup Criteria				MW-20	MW-20	MW-20	MW-20	MW-20	MW-20	MW-20	MW-20	MW-20	MW-20	MW-20
		Non-Residential Drinking Water Protection Criteria	Ground Water Surface Water Interface Criteria	Vapor Intrusion Ground Water Screening Level	Flammability and Explosivity Screening Level	Off-Site, West of Pontiac EDC Site and Mill St. 12/2/2010	Off-Site, West of Pontiac EDC Site and Mill St. 1/30/2013	Off-Site, West of Pontiac EDC Site and Mill St. 6/27/2013	Off-Site, West of Pontiac EDC Site and Mill St. 9/20/2013	Off-Site, West of Pontiac EDC Site and Mill St. 5/22/2014	Off-Site, West of Pontiac EDC Site and Mill St. 10/27/2014	Off-Site, West of Pontiac EDC Site and Mill St. 4/15/2015	Off-Site, West of Pontiac EDC Site and Mill St. 3/29/2017	Off-Site, West of Pontiac EDC Site and Mill St. 9/27/2017	Off-Site, West of Pontiac EDC Site and Mill St. 4/10/2018	Off-Site, West of Pontiac EDC Site and Mill St. 10/16/2018
Date Collected:																
Screened Interval (ft bgl):						3-13'	3-13'	3-13'	3-13'	3-13'	3-13'	3-13'	3-13'	3-13'	3-13'	3-13'
Analytical Parameter	Units															
VOCs (EPA Method 8260)																
1,2-Dichloroethane	ug/L	5.0 (A)	360 (X)	210	2.50E+06	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloropropane	ug/L	5.0 (A)	230 (X)	290	5.50E+05	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Benzene	ug/L	5.0 (A)	200 (X)	140	68,000	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	ug/L	5.0 (A)	200 (X)	41	ID	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Vinyl chloride	ug/L	2.0 (A)	13 (X)	42	33,000	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Other Target VOCs	ug/L	various	various	various	various	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

See Notes on last page.

Table 2
Groundwater Analytical Data

RACER Trust
Employee Development Center
65 E. University Drive
Pontiac, MI 48342

Sample ID:		MDEQ Part 201 Non-Residential Cleanup Criteria				MW-25	MW-25	MW-25	MW-25	MW-25	MW-25	MW-25	MW-25	MW-25
		Non-Residential Drinking Water Protection Criteria	Ground Water Surface Water Interface Criteria	Vapor Intrusion Ground Water Screening Level	Flammability and Explosivity Screening Level	Off-Site, City of Pontiac Mill Street (Northern)	Off-Site, City of Pontiac Mill Street (Northern)	Off-Site, City of Pontiac Mill Street (Northern)	Off-Site, City of Pontiac Mill Street (Northern)	Off-Site, City of Pontiac Mill Street (Northern)	Off-Site, City of Pontiac Mill Street (Northern)	Off-Site, City of Pontiac Mill Street (Northern)	Off-Site, City of Pontiac Mill Street (Northern)	Off-Site, City of Pontiac Mill Street (Northern)
Date Collected:						1/30/2013	6/24/2013	9/19/2013	5/22/2014	10/28/2014	4/15/2015	3/29/2017	9/27/2017	4/10/2018
Screened Interval (ft bgl):						4-14'	4-14'	4-14'	4-14'	4-14'	4-14'	4-14'	4-14'	4-14'
Analytical Parameter	Units													
VOCs (EPA Method 8260)														
1,2-Dichloroethane	ug/L	5.0 (A)	360 (X)	210	2.50E+06	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloropropane	ug/L	5.0 (A)	230 (X)	290	5.50E+05	<1	<1	<1	<1	<1	<1	<1	<1	<1
Benzene	ug/L	5.0 (A)	200 (X)	140	68,000	<1	<1	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	ug/L	5.0 (A)	200 (X)	41	ID	<1	<1	<1	<1	<1	<1	<1	<1	<1
Vinyl chloride	ug/L	2.0 (A)	13 (X)	42	33,000	<1	<1	<1	<1	<1	<1	<1	<1	<1
Other Target VOCs	ug/L	various	various	various	various	ND	ND	ND	ND	ND	ND	ND	ND	ND

See Notes on last page.

Table 2
Groundwater Analytical Data

RACER Trust
Employee Development Center
65 E. University Drive
Pontiac, MI 48342

Sample ID:		MDEQ Part 201 Non-Residential Cleanup Criteria				MW-26	MW-26	MW-26	MW-26	MW-26	MW-26	MW-26	MW-26	MW-26	MW-26	MW-26	MW-26	MW-26	MW-26
		Non-Residential Drinking Water Protection Criteria	Ground Water Surface Water Interface Criteria	Vapor Intrusion Ground Water Screening Level	Flammability and Explosivity Screening Level	Off-Site, City of Pontiac Mill Street (Central)	Off-Site, City of Pontiac Mill Street (Central)	Off-Site, City of Pontiac Mill Street (Central)	Off-Site, City of Pontiac Mill Street (Central)	Off-Site, City of Pontiac Mill Street (Central)	Off-Site, City of Pontiac Mill Street (Central)	Off-Site, City of Pontiac Mill Street (Central)	Off-Site, City of Pontiac Mill Street (Central)	Off-Site, City of Pontiac Mill Street (Central)	Off-Site, City of Pontiac Mill Street (Central)	Off-Site, City of Pontiac Mill Street (Central)	Off-Site, City of Pontiac Mill Street (Central)	Off-Site, City of Pontiac Mill Street (Central)	Off-Site, City of Pontiac Mill Street (Central)
Date Collected:						1/30/2013	6/24/2013	9/19/2013	5/23/2014	10/27/2014	4/15/2015	3/29/2017	9/27/2017	4/10/2018	10/16/2018				
Screened Interval (ft bgl):						3-13'	3-13'	3-13'	3-13'	3-13'	3-13'	3-13'	3-13'	3-13'	3-13'				
Analytical Parameter	Units																		
VOCs (EPA Method 8260)																			
1,2-Dichloroethane	ug/L	5.0 (A)	360 (X)	210	2.50E+06	<50	<50	<100	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
1,2-Dichloropropane	ug/L	5.0 (A)	230 (X)	290	5.50E+05	<50	<50	<100	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Benzene	ug/L	5.0 (A)	200 (X)	140	68,000	3,360	3,020	2,600	2,450	2,530	2,870	3,200	1,920	1,490	517	512	197	191	128
Trichloroethene	ug/L	5.0 (A)	200 (X)	41	ID	<50	<50	<100	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Vinyl chloride	ug/L	2.0 (A)	13 (X)	42	33,000	<50	<50	<100	<50	<50	<50	<50	<50	<50	8	8	<50	<50	2
Other Target VOCs	ug/L	various	various	various	various	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

See Notes on last page.

Table 2
Groundwater Analytical Data

RACER Trust
Employee Development Center
65 E. University Drive
Pontiac, MI 48342

Sample ID:		MDEQ Part 201 Non-Residential Cleanup Criteria				MW-27	MW-27	MW-27	MW-27	MW-27	MW-27	MW-27	MW-27	MW-27
		Non-Residential Drinking Water Protection Criteria	Ground Water Surface Water Interface Criteria	Vapor Intrusion Ground Water Screening Level	Flammability and Explosivity Screening Level	Off-Site, City of Pontiac Mill Street (Southern)	Off-Site, City of Pontiac Mill Street (Southern)	Off-Site, City of Pontiac Mill Street (Southern)	Off-Site, City of Pontiac Mill Street (Southern)	Off-Site, City of Pontiac Mill Street (Southern)	Off-Site, City of Pontiac Mill Street (Southern)	Off-Site, City of Pontiac Mill Street (Southern)	Off-Site, City of Pontiac Mill Street (Southern)	Off-Site, City of Pontiac Mill Street (Southern)
Date Collected:						1/30/2013	6/24/2013	9/19/2013	5/23/2014	10/27/2014	4/15/2015	3/29/2017	9/27/2017	4/10/2018
Screened Interval (ft bgl):						6.5-16.5'	6.5-16.5'	6.5-16.5'	6.5-16.5'	6.5-16.5'	6.5-16.5'	6.5-16.5'	6.5-16.5'	6.5-16.5'
Analytical Parameter	Units													
VOCs (EPA Method 8260)														
1,2-Dichloroethane	ug/L	5.0 (A)	360 (X)	210	2.50E+06	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloropropane	ug/L	5.0 (A)	230 (X)	290	5.50E+05	<1	<1	<1	<1	<1	<1	<1	<1	<1
Benzene	ug/L	5.0 (A)	200 (X)	140	68,000	<1	<1	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	ug/L	5.0 (A)	200 (X)	41	ID	<1	4	6	4	5	3	2	3	2
Vinyl chloride	ug/L	2.0 (A)	13 (X)	42	33,000	<1	<1	<1	<1	<1	<1	<1	<1	<1
Other Target VOCs	ug/L	various	various	various	various	ND	ND	ND	ND	ND	ND	ND	ND	ND

See Notes on last page.

Table 2
Groundwater Analytical Data
RACER Trust
Employee Development Center
65 E. University Drive
Pontiac, MI 48342

General Notes:

1. Cleanup criteria exceedances are bolded.
2. < denotes less than noted detection limit.
3. Cleanup Criteria: Part 201 (Environmental Remediation) of the Michigan Natural Resources and Environmental Protection Act (NREPA), 1994 PA 451 (Revised December 30, 2013).

Footnote:

** Analyzed via USEPA Method 8260B

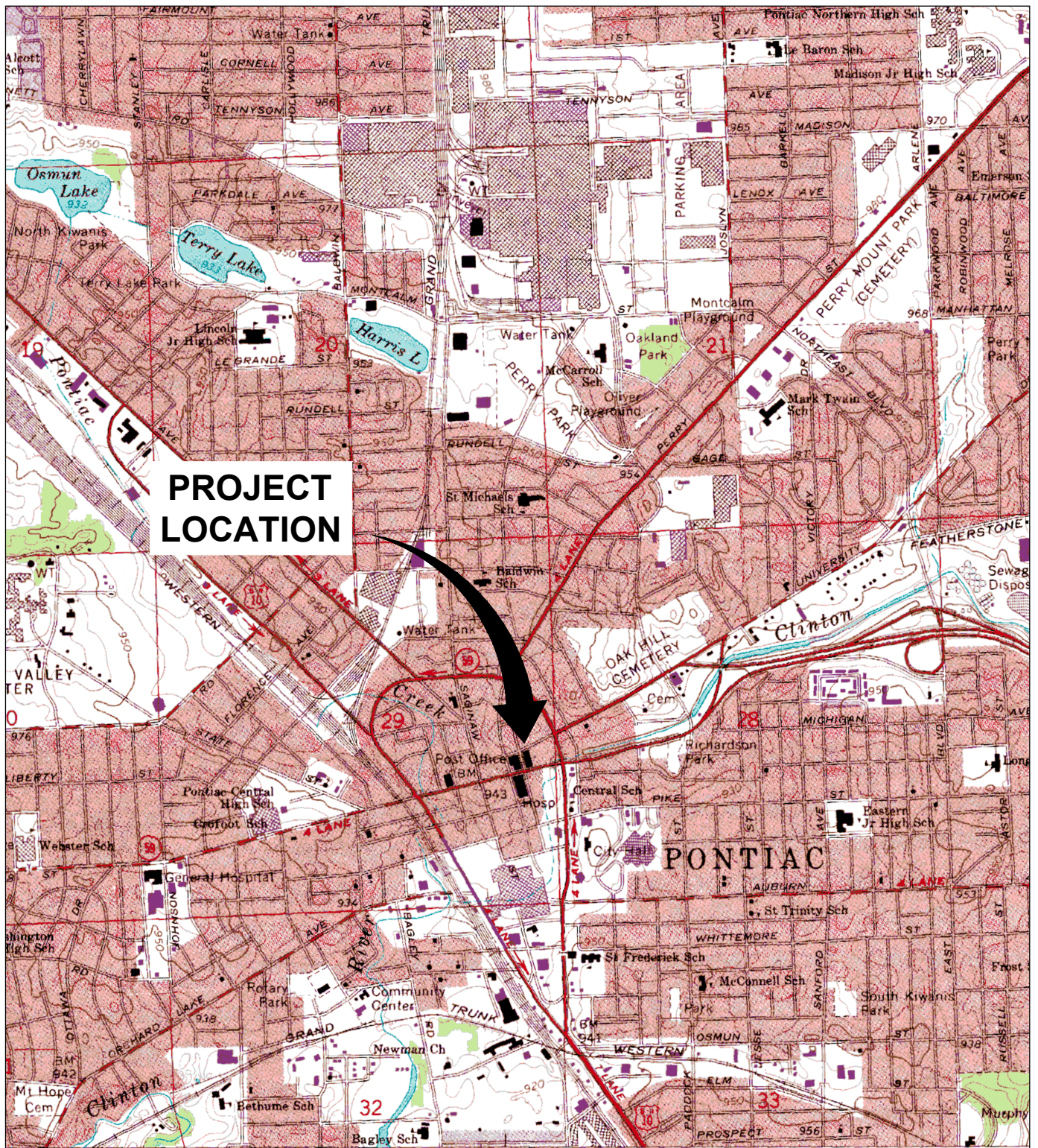
Acronyms and Abbreviations:

- ID Insufficient data to develop criterion
- ND Not detected
- (A) Criterion is the State of Michigan Drinking Water Standard established pursuant to Section 5 of 1976 PA 399, MCL 325.1005.
- (X) The GSI criterion shown in the generic cleanup criteria tables is not protective for surface water that is used as a drinking water source. For a groundwater discharge to the Great Lakes and their connecting waters or discharge in close proximity to a water supply intake in inland surface waters, the generic GSI criterion shall be the surface water human drinking water value (HDV) listed in the table in this footnote, except for those HDV indicated with an asterisk. For HDV with an asterisk, the generic GSI criterion shall be the lowest of the HDV, the WV, and the calculated FCV. see formulas in footnote (G). Soil protection criteria based on the HDV shall be as listed in the table in this footnote, except for those values with an asterisk. Soil GSI protection criteria based on the HDV shall be as listed in the table in this footnote, except for those values with an asterisk. Soil GSI protection criteria for compounds with an asterisk shall be the greater of 20 times the GSI criterion or the GSI soil-water partition values using the GSI criteria developed with the procedure.

FIGURES



CITY: (Read) DIV: (Group) (Read) DB: (Read) LD: (Opt) PG: (Opt) PM: (Read) TM: (Opt) LYR: (Opt) ON: OFF: REF: G:\ENV\CAD\STRA\USE\ACT1806448201\100003\DWG6448201.dwg LAYOUT: 1 SAVED: 3/16/2016 2:36 PM ACADVER: 19.1S (LMS TECH) PAGES: 19.1S (LMS TECH) PLOTSETUP: PLOTSETUP: PLT: FULL.CTB PLOTTED: 3/16/2016 2:39 PM BY: HOWES, DAVID



REFERENCE: BASE MAP USGS 7.5. MIN. TOPO. QUAD., PONTIAC NORTH, MICH, 1968, PHOTOREVISED 1983.



RACER TRUST
EMPLOYEE DEVELOPMENT CENTER
65 E. UNIVERSITY DRIVE
PONTIAC, MICHIGAN 48342

SITE LOCATION MAP



Design & Consultancy
for natural and
built assets

FIGURE

1

Figure 3A
Groundwater Analytical Trend Graph for Benzene

RACER Trust
Employee Development Center
65 E. University Drive
Pontiac, MI 48342

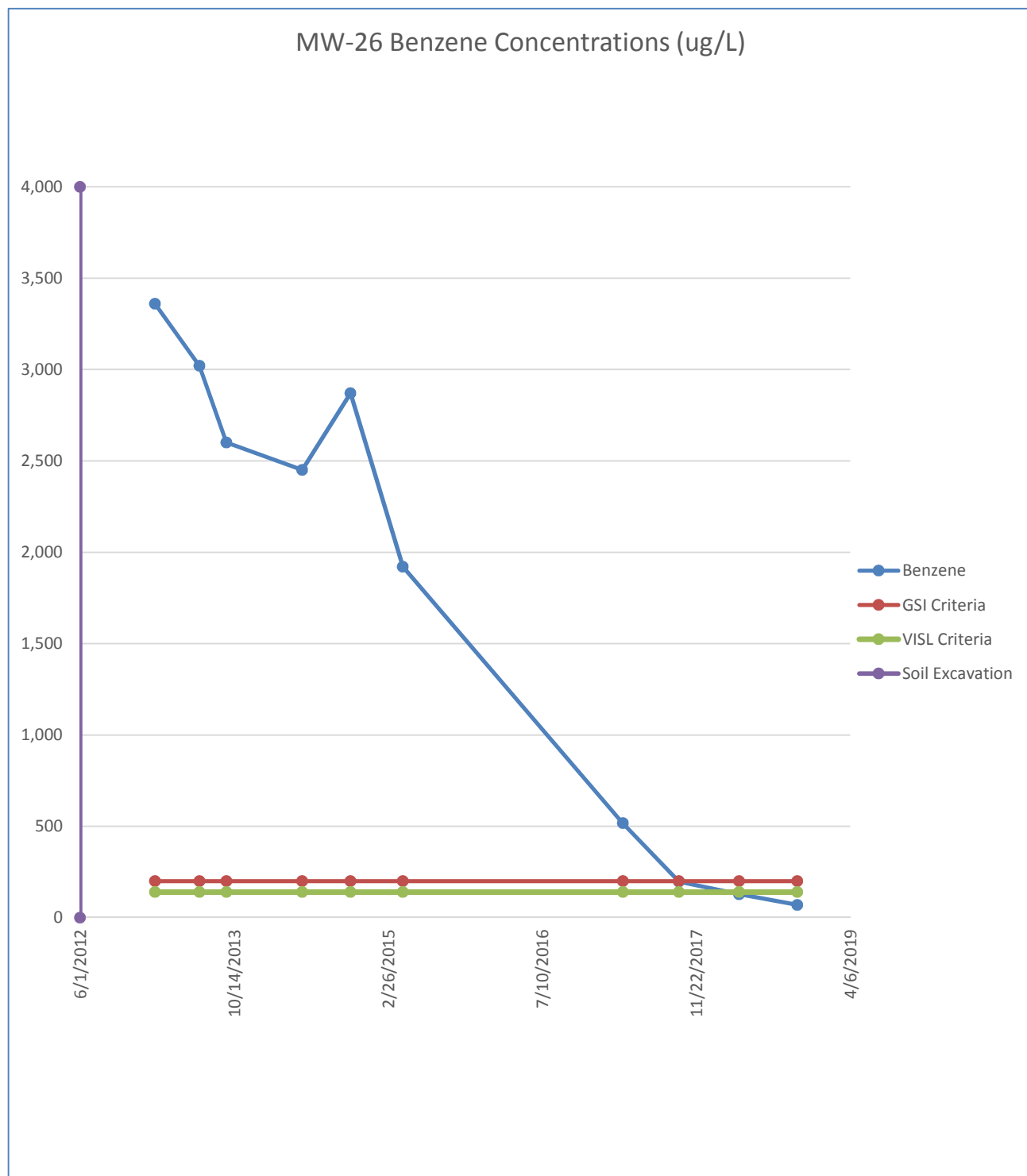
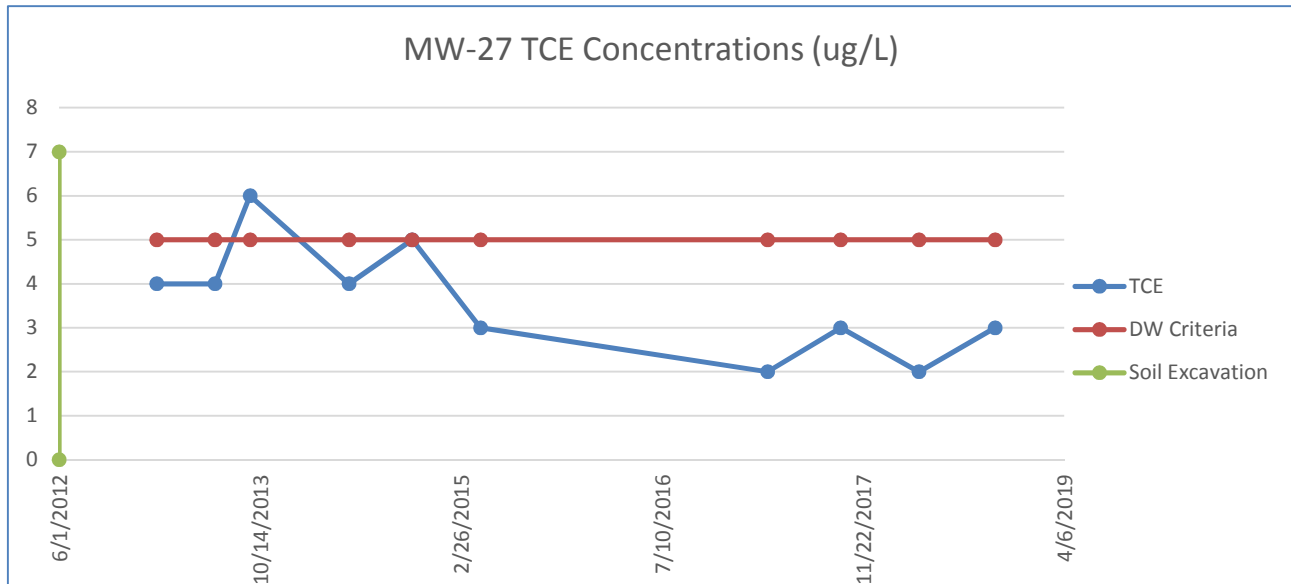


Figure 3B
Groundwater Analytical Trend Graph for TCE

RACER Trust
Employee Development Center
65 E. University Drive
Pontiac, MI 48342







Analytical Laboratory Report

Report ID: S95661.01(01)
Generated on 10/23/2018

Report to

Attention: Brad Saunders
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 810-225-1904 FAX: 248-994-2241
Email: brad.saunders@arcadis.com

Report produced by

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

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

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

Report Summary

Lab Sample ID(s): S95661.01-S95661.07
Project: B0064486.2018.00003
Collected Date: 10/16/2018
Submitted Date/Time: 10/17/2018 08:31
Sampled by: Daniel Stockard
P.O. #: B0064486.2018.00003

Table of Contents

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

Maya Murshak
Technical Director



Analytical Laboratory Report

General Report Notes

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

Methods may be modified for improved performance.

Results reported on a dry weight basis where applicable.

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

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 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)

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

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



Analytical Laboratory Report

Method Summary

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



Analytical Laboratory Report

Sample Summary (7 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S95661.01	MW-25_101618	Groundwater	10/16/18 09:20
S95661.02	MW-26_101618	Groundwater	10/16/18 10:10
S95661.03	MW-27_101618	Groundwater	10/16/18 11:20
S95661.04	MW-19_101618	Groundwater	10/16/18 12:35
S95661.05	MW-20_101618	Groundwater	10/16/18 13:25
S95661.06	DUP-01	Groundwater	10/16/18 00:01
S95661.07	Trip Blank	Water	10/16/18 00:01



Analytical Laboratory Report

Lab Sample ID: S95661.01

Sample Tag: MW-25_101618

Collected Date/Time: 10/16/2018 09:20

Matrix: Groundwater

COC Reference: 112207

Sample Containers

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

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	10/22/18 13:20	JML	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 10/20/18 23:25, Analyst: JML

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



Analytical Laboratory Report

Lab Sample ID: S95661.01 (continued)

Sample Tag: MW-25_101618

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 10/20/18 23:25, Analyst: JML (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: S95661.02

Sample Tag: MW-26_101618

Collected Date/Time: 10/16/2018 10:10

Matrix: Groundwater

COC Reference: 112207

Sample Containers

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

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	10/22/18 13:20	JML	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 10/20/18 23:44, Analyst: JML

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	70	1		ug/L	1	71-43-2	
1,2-Dichloroethane	6	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	1	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S95661.02 (continued)

Sample Tag: MW-26_101618

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 10/20/18 23:44, Analyst: JML (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: S95661.03

Sample Tag: MW-27_101618

Collected Date/Time: 10/16/2018 11:20

Matrix: Groundwater

COC Reference: 112207

Sample Containers

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

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	10/22/18 13:20	JML	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 10/21/18 00:04, Analyst: JML

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



Analytical Laboratory Report

Lab Sample ID: S95661.03 (continued)

Sample Tag: MW-27_101618

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 10/21/18 00:04, Analyst: JML (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: S95661.04

Sample Tag: MW-19_101618

Collected Date/Time: 10/16/2018 12:35

Matrix: Groundwater

COC Reference: 112207

Sample Containers

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

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	10/22/18 13:20	JML	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 10/21/18 00:24, Analyst: JML

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



Analytical Laboratory Report

Lab Sample ID: S95661.04 (continued)

Sample Tag: MW-19_101618

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 10/21/18 00:24, Analyst: JML (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: S95661.05

Sample Tag: MW-20_101618

Collected Date/Time: 10/16/2018 13:25

Matrix: Groundwater

COC Reference: 112207

Sample Containers

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

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	10/22/18 13:20	JML	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 10/21/18 00:43, Analyst: JML

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



Analytical Laboratory Report

Lab Sample ID: S95661.05 (continued)

Sample Tag: MW-20_101618

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 10/21/18 00:43, Analyst: JML (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: S95661.06

Sample Tag: DUP-01

Collected Date/Time: 10/16/2018 00:01

Matrix: Groundwater

COC Reference: 112207

Sample Containers

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

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	10/22/18 13:20	JML	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 10/21/18 01:03, Analyst: JML

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	68	1		ug/L	1	71-43-2	
1,2-Dichloroethane	5	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	1	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S95661.06 (continued)

Sample Tag: DUP-01

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 10/21/18 01:03, Analyst: JML (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: S95661.07

Sample Tag: Trip Blank

Collected Date/Time: 10/16/2018 00:01

Matrix: Water

COC Reference: 112207

Sample Containers

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

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	10/22/18 13:20	JML	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 10/21/18 01:23, Analyst: JML

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



Analytical Laboratory Report

Lab Sample ID: S95661.07 (continued)

Sample Tag: Trip Blank

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 10/21/18 01:23, Analyst: JML (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:S95661

Client:ARCADIS_NOVI (ARCADIS U.S., Inc.)

Project: B0064486.2018.00003

Submitted: 10/17/2018 08:31 Login User: MMC

Attention: Brad Saunders

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

Phone: 810-225-1904 FAX: 248-994-2241

Email: brad.saunders@arcadis.com

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

REPORT TO

CONTACT NAME Brad Saunders			
COMPANY Arcadis			
ADDRESS 28550 Cabot Dr #500			
CITY Novi			STATE MI
			ZIP CODE 48377
PHONE NO. 517-974-4441		FAX NO.	
E-MAIL ADDRESS brad.saunders@arcadis.com		P.O. NO. B006486-2018.00003	
		QUOTE NO.	

CHAIN OF CUSTODY RECORD

CONTACT NAME		NAME	
COMPANY			
ADDRESS			
CITY		STATE	ZIP CODE
PHONE NO.	E-MAIL ADDRESS		

INVOICE TO

PROJECT NO./NAME B0064786.2018.00003	SAMPLER(S) - PLEASE PRINT/SIGN NAME David Stochard Jim Storch
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	GW=GROUNDWATER	WW=WASTEWATER	S=SOIL	L=LIQUID	SD=SOLID
CODE:	SL=SLUDGE	DW=DRINKING WATER	O=OIL	WP=WIPE	A=AIR W=WASTE

Containers & Preservatives

[illegible]

RELINQUISHED BY:	<i>Daniel H. Smith</i>	X Sampler	DATE	TIME
SIGNATURE/ORGANIZATION			10/17/18	8:31
RECEIVED BY:	<i>M. Chilcote</i>		DATE	TIME
SIGNATURE/ORGANIZATION			10/17/18	083
RELINQUISHED BY:			DATE	TIME
SIGNATURE/ORGANIZATION				
RECEIVED BY:			DATE	TIME
SIGNATURE/ORGANIZATION				

RELINQUISHED BY: SIGNATURE/ORGANIZATION			DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION			DATE	TIME
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS	NOTES: TEMP. ON ARRIVAL <u>4.6</u>	
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS		