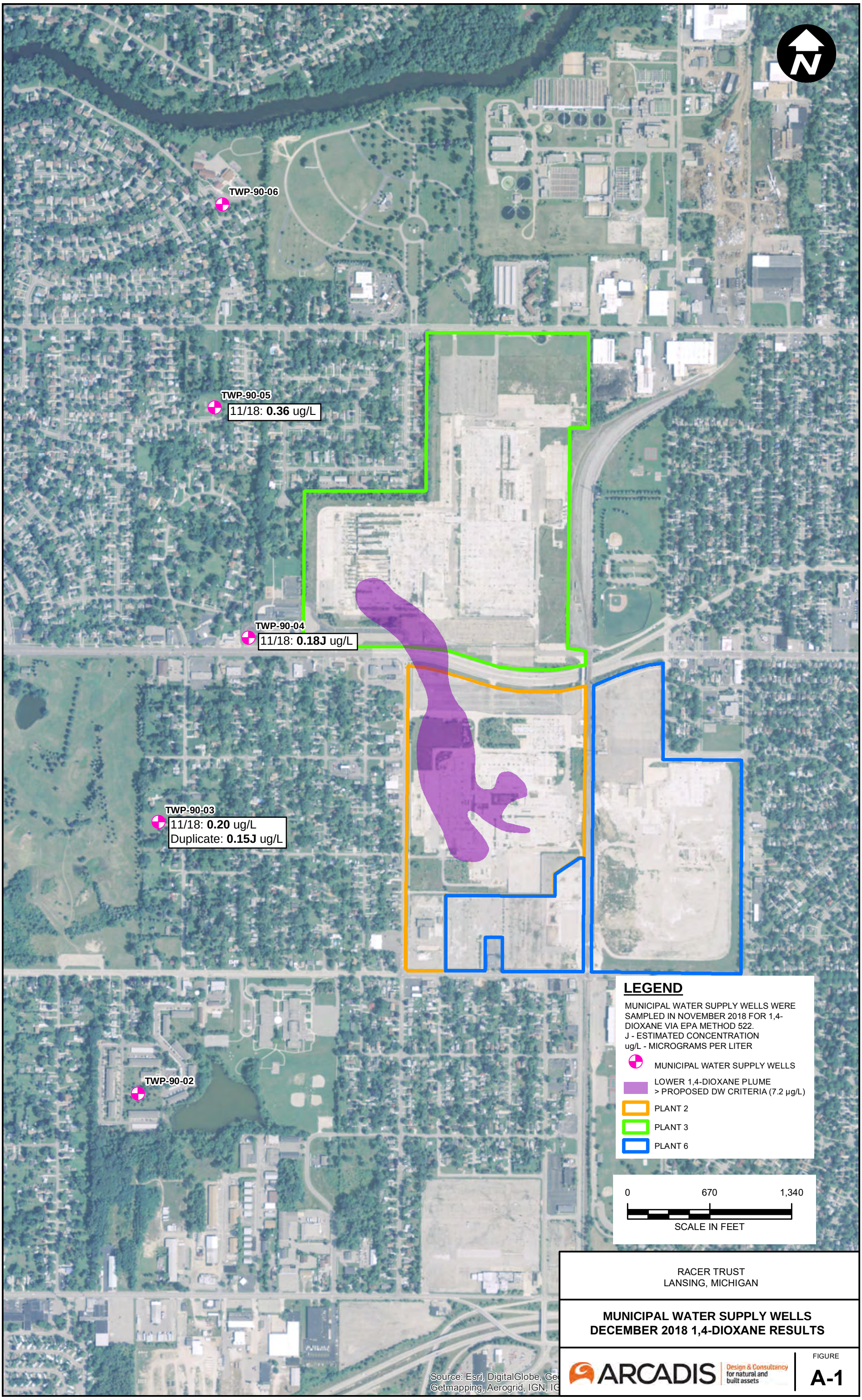
APPENDIX A

Lansing Township Municipal Well Locations and Data

(on attached CD)



RACER TRUST
LANSING, MICHIGAN

MUNICIPAL WATER SUPPLY WELLS
DECEMBER 2018 1,4-DIOXANE RESULTS

ARCADIS Design & Consultancy for natural and built assets

FIGURE
A-1

CITY: Novi DIV: ENV DB: TRY PIC: PM: TM: TR: PROJECT NUMBER: COORDINATE SYSTEM: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl
G:\GIS\Project Files\MotorsLiquidationCompany\Lansing\Docs\working\Lansing WHPAs.mxd PLOTTED: 1/24/2017 12:21:12 PM BY: dolexa

Table 1
Township Well Sampling Results
RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Location ID: Date Collected:	Units	MI GW 2013 RES DW	TWP-90-03 11/13/18	TWP-90-04 11/13/18	TWP-90-05 11/13/18
Volatile Organics					
1,4-Dioxane	µg/L	7.2	**0.20**	**0.18 J**	**0.36**

Table Notes:

1,4-Dioxane is compared to a drinking water criteria of 7.2 µg/L per the *MDEQ Establishment of Cleanup Criteria for 1,4 -Dioxane: Emergency Rules* dated October 27, 2016.

Bold fonts represent data where detections were noted above the MDL but below MDEQ Part 201 Generic Cleanup Criteria.

µg/L - micrograms per liter

2013 MDEQ Criteria Footnotes:

RES DW = Residential Drinking Water Criteria

Lab and Validation Data Qualifiers:

J = The compound/constituent was positively identified; however, the associated numerical value is below the reporting limit and is an estimated concentration only.

APPENDIX B

Quarterly Figures

(on attached CD)

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

W. SAGINAW STREET

N. ROSEMARY STREET

W. MICHIGAN AVENUE

MW-14-63 MW-12-02 P2-MW-01 P2-MW-03 MW-16-80 MW-13-43 TW-14-03 MW-13-43 TW-15-12 TW-14-04 MW-13-44 MW-13-42 TW-15-13 TW-14-05 PW-14-02 P2-SB-20 MW-13-45 P2-SB-03 MW-15-73 MW-14-58 MW-14-59 MW-16-85 MW-16-83 MW-17-87 MW-16-84 MW-14-60 MW-16-82 LMW-14-14D LMW-12-02 LMW-12-08 MW-17-86 PMW-01 MW-15-72 MW-12-05R LMW-12-07 LMW-14-13D PMW-02 P2-MW-04 LMW-12-01 MW-14-61 LMW-12-06 P2-SB-37 MW-12-06 MW-12-09 LMW-15-17D PMW-03 MW-14-56 MW-14-57 LMW-12-05 LMW-14-15D LMW-14-12D LMW-12-03S/D P2-SB-06 LMW-15-16D MW-14-62 LMW-12-04 MW-16-81 MW-16-79 MW-12-18 MW-14-55 AS-16-02 TW-14-02 MW-16-74 AS-16-01 MW-14-54 PW-14-01 MW-16-78 MW-16-76 TW-14-01 TW-16-01 MW-12-01 MW-16-77 MW-16-75 MW-12-07 MW-12-08 P2-MW-02 MW-13-51 MW-13-52 MW-13-50 MW-13-53 MW-03(2) MW-02(2) MW-12-17 MW-01(2) MWBP-12-UST5-6 MWBP-10-UST5-6

MW-16-80	Res DW	Conc	Date
1,4-Dioxane	7.2 ug/L	23	5/8/18

MW-13-43	Res DW	Conc	Date
1,4-Dioxane	7.2 ug/L	260 Y [270 Y]	5/8/18

MW-13-45	Res DW	Conc	Date
1,4-Dioxane	7.2 ug/L	53	5/9/18

MW-16-84	Res DW	Conc	Date
1,4-Dioxane	7.2 ug/L	59	3/5/18
1,4-Dioxane	7.2 ug/L	59	5/8/18

MW-14-58	Res DW	Conc	Date
1,4-Dioxane	7.2 ug/L	58	5/9/18

PW-14-02	Res DW	Conc	Date
1,4-Dioxane	7.2 ug/L	210 Y	5/10/18

MW-17-86	Res DW	Conc	Date
1,4-Dioxane	7.2 ug/L	44	5/8/18

MW-15-72	Res DW	Conc	Date
1,4-Dioxane	7.2 ug/L	260 Y	5/8/18

AS-16-01	Res DW	Conc	Date
1,4-Dioxane	7.2 ug/L	53	5/10/18

P2-SB-06	Res DW	Conc	Date
1,4-Dioxane	7.2 ug/L	27	5/15/18

AS-16-02	Res DW	Conc	Date
1,4-Dioxane	7.2 ug/L	8	5/11/18

TW-14-02	Res DW	Conc	Date
1,4-Dioxane	7.2 ug/L	400 Y	5/8/18

MW-16-81	Res DW	Conc	Date
1,4-Dioxane	7.2 ug/L	1390 Y [1370 Y]	3/5/18
1,4-Dioxane	7.2 ug/L	1400 Y	5/8/18

PW-14-01	Res DW	Conc	Date
1,4-Dioxane	7.2 ug/L	190 Y	5/14/18

TW-14-01	Res DW	Conc	Date
1,4-Dioxane	7.2 ug/L	25	5/14/18

TW-16-01	Res DW	Conc	Date
1,4-Dioxane	7.2 ug/L	172 [174]	5/10/18

MW-03(2)	Res DW	Conc	Date
Arsenic	0.01 mg/L	0.015	5/14/18

MWBP-10-UST5-6	Res DW	Conc	Date
Arsenic	0.01 mg/L	0.018	5/14/18

NOTES:

NOT ALL WELLS SHOWN ON THIS FIGURE WERE SAMPLED DURING THIS MONITORING EVENT.

APPROXIMATE EXTENT OF IMPACTS/PLUMES SHOWN ARE BASED ON SEVERAL INVESTIGATIONS PREVIOUSLY COMPLETED AT THE SITE.

CONCENTRATIONS ARE COMPARED TO MDEQ 2013 RESIDENCE DW CRITERIA.

mg/L: MILLIGRAMS PER LITER
ug/L: MICROGRAMS PER LITER
DW: DRINKING WATER
VOCs: VOLATILE ORGANIC COMPOUNDS
LNAPL: LIGHT NON-AQUEOUS PHASE LIQUID
Y: ELEVATED REPORTING LIMIT DUE TO HIGH TARGET CONCENTRATION
[ ]: DUPLICATE SAMPLE ANALYTICAL RESULTS
MDEQ: MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

0 200 400
SCALE IN FEET

LEGEND

EXISTING MONITORING WELLS
- NAPL MONITORING WELL
- PERCHED MONITORING WELL
- WEATHERED BEDROCK MONITORING WELL
- BEDROCK MONITORING WELL
- 2018 SAMPLED MONITORING WELL (Q1 AND Q2)
- APPROXIMATE EXTENT OF LNAPL
- APPROX. EXTENT VOCs IN PERCHED ZONE
- PERCHED 1,4-DIOXANE IMPACTS > THAN DW CRITERIA (7.2 µg/L)
- 1,4-DIOXANE IN LOWER AQUIFER ABOVE 7.2 MICROGRAMS PER LITER
- APC PERCHED 1,4-DIOXANE >7.2 µg/L (DASHED WHERE ESTIMATED OR COMINGLED)
- APC POTENTIAL AREA OF WEATHERED BEDROCK IMPACTS >7.2 µg/L (ESTIMATED FROM OFF-SITE VAP BORINGS AND INCONGRUENT IMPACTS TO RACER WEATHERED BEDROCK WELLS)
- PROPERTY BOUNDARY

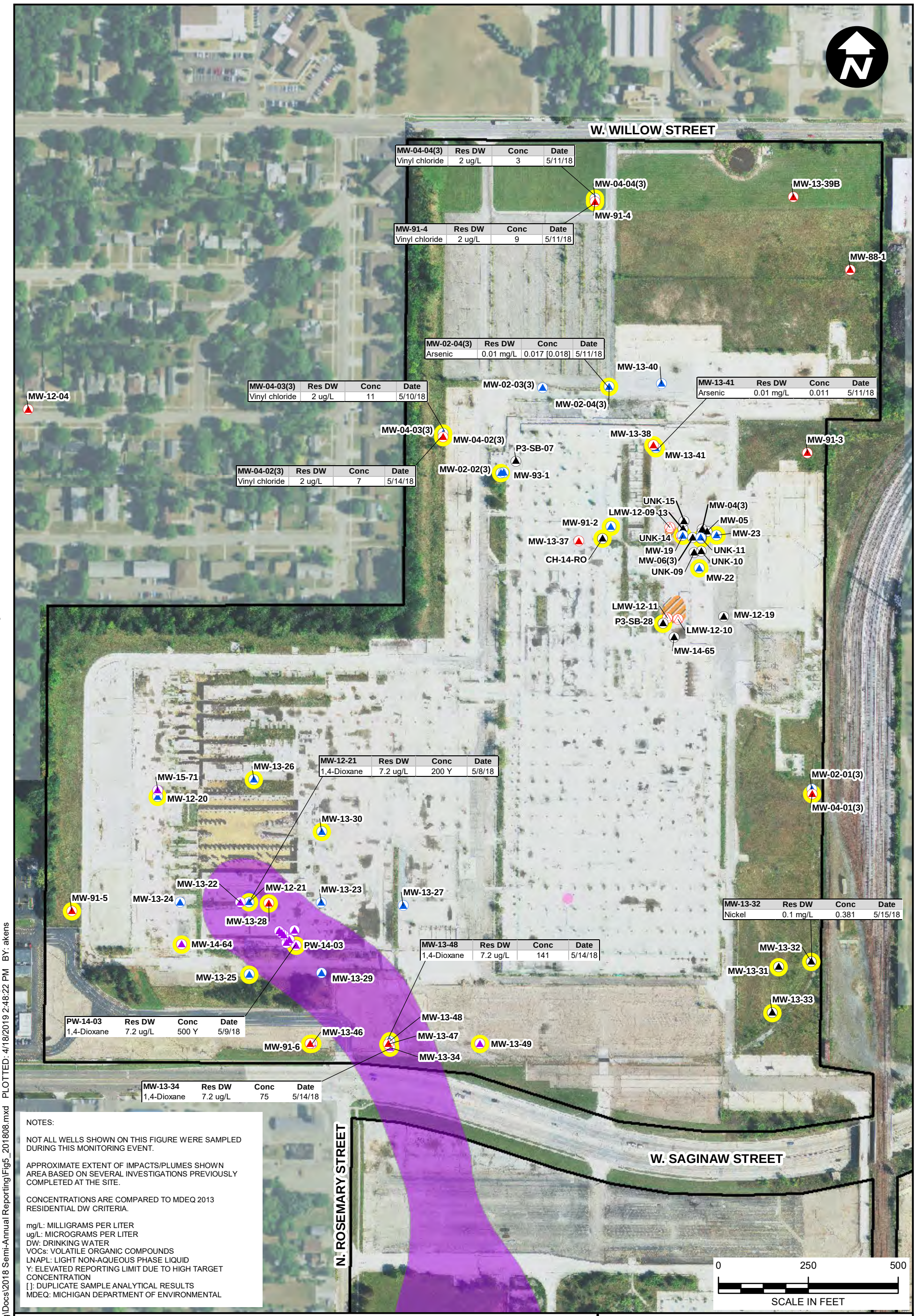
RACER TRUST
PLANTS 2, 3 & 6
LANSING, MICHIGAN

FIRST AND SECOND QUARTER 2018 DRINKING WATER EXCEEDANCES PLANTS 2 AND W. PLANT 6

ARCADIS Design & Consultancy for natural and built assets

FIGURE
B-1

CITY: Novi DIV: ENV DB: D. OLEXA PIC: J. Barrett PM: R. Christensen APM: T. Linder TM: A. Villhauer TR: P. Curry PROJECT NUMBER: B0064479.2018 COORDINATE SYSTEM: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl
Z:\GISProjects_ENV\RACER_Lansing\Docs\2018 Annual Report\Revised_20190419\B1_201808.mxd PLOTTED: 4/19/2019 2:49:35 PM BY: tyarbrough



NOTES:

NOT ALL WELLS SHOWN ON THIS FIGURE WERE SAMPLED DURING THIS MONITORING EVENT.

APPROXIMATE EXTENT OF IMPACTS/PLUMES SHOWN AREA BASED ON SEVERAL INVESTIGATIONS PREVIOUSLY COMPLETED AT THE SITE.

CONCENTRATIONS ARE COMPARED TO MDEQ 2013 RESIDENTIAL DW CRITERIA.

mg/L: MILLIGRAMS PER LITER
ug/L: MICROGRAMS PER LITER
DW: DRINKING WATER
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LNAPL: LIGHT NON-AQUEOUS PHASE LIQUID
Y: ELEVATED REPORTING LIMIT DUE TO HIGH TARGET CONCENTRATION
[ ]: DUPLICATE SAMPLE ANALYTICAL RESULTS
MDEQ: MICHIGAN DEPARTMENT OF ENVIRONMENTAL

LEGEND

EXISTING MONITORING WELLS

- NAPL MONITORING WELL
- PERCHED MONITORING WELL
- DEEP OVERBURDEN MONITORING WELL
- WEATHERED BEDROCK MONITORING WELL; TEST MW
- BEDROCK MONITORING WELL
- 2018 SAMPLED MONITORING WELL (Q1 AND Q2)

- APPROXIMATE EXTENT LNAPL
- APPROXIMATE EXTENT OF VOCs IN PERCHED GW > DW CRITERIA
- PERCHED 1,4-DIOXANE IMPACTS > DW CRITERIA (7.2 µg/L)
- LOWER 1,4-DIOXANE IMPACTS > DW CRITERIA (7.2 µg/L)
- PROPERTY BOUNDARY

RACER TRUST
PLANTS 2, 3 & 6
LANSING, MICHIGAN

FIRST AND SECOND QUARTER 2018 DRINKING WATER EXCEEDANCES PLANT 3

ARCADIS Design & Consultancy for natural and built assets

FIGURE
B-2

CITY: Novi DIV: ENV DB: D. OLEXA PIC: J. Barrett PM: R. Christensen APN: T. Linder TM: A. Villhauer TR: P. Curry PROJECT NUMBER: B0064479.2018 COORDINATE SYSTEM: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl
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MW-12-03
MW-12-10R
MW-04-06R
MW-12-11
MW-04-05(6)
MW-03-02
MW-12-12
MW-14-70
MW-03-04
MW-03-05
MW-02-01(6)
P6-SB-18
MW-14-66
MW-12-13
MW-14-69
MW-03-07
MW-04-01(6)
MW-02-03(6)
MW-02-02(6)
MW-03-06
P6-SB-37
MW-14-67
MW-14-68
SME-MW-02
MW-04-04R
MW-03-08
P6-SB-35
MW-13-36R
P6-SB-21
P6-SB-07
MWBP-13A-UST1-4
UNK-03
MWBP-11-UST1-4
MWBP-12-UST1-4
MWBP-10-UST1-4
MWBP-12A-UST1-4
MWBP-10A-UST1-4
B-BP-16
P6-MW-01
MW-12-14
MW-13-35
MW-12-16
MW-12-15

MW-12-11	Res DW	Conc	Date
Arsenic	0.01 mg/L	0.015	5/11/18

MW-13-36R	Res DW	Conc	Date
Vanadium	0.004 mg/L	0.008	5/14/18

MWBP-11-UST1-4	Res DW	Conc	Date
Arsenic	0.01 mg/L	0.012	5/11/18

MWBP-12-UST1-4	Res DW	Conc	Date
Arsenic	0.01 mg/L	0.015	5/11/18
Vanadium	0.004 mg/L	0.009	5/11/18

MW-12-16	Res DW	Conc	Date
Arsenic	0.01 mg/L	0.015	5/11/18

NOTES:

NOT ALL WELLS SHOWN ON THIS FIGURE WERE SAMPLED DURING THIS MONITORING EVENT.

APPROXIMATE EXTENT OF IMPACTS/PLUMES SHOWN ARE BASED ON SEVERAL INVESTIGATIONS PEVIOUSLY COMPLETED AT THE SITE.

CONCENTRATIONS ARE COMPARED TO MDEQ 2013 RESIDENTIAL DW CRITERIA.

mg/L: MILLIGRAMS PER LITER
MDEQ: MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

0 200 400
SCALE IN FEET

LEGEND

EXISTING MONITORING WELLS

- PERCHED MONITORING WELL
- BEDROCK MONITORING WELL
- 2018 SAMPLED MONITORING WELL (Q1 AND Q2)

- APPROXIMATE EXTENT OF VOCs IN PERCHED GW > DW CRITERIA
- PERCHED 1,4-DIOXANE IMPACTS > DW CRITERIA (7.2 µg/L)
- PROPERTY BOUNDARY

RACER TRUST
PLANTS 2, 3 & 6
LANSING, MICHIGAN

FIRST AND SECOND QUARTER 2018 DRINKING WATER EXCEEDANCES E. PLANT 6

ARCADIS Design & Consultancy for natural and built assets

FIGURE
B-3

CITY: Novi DIV: ENV DB: D. Olexa PIC: J. Barrett PM: R. Christensen APM: T. Linder TM: A. Villhauer TR: P. Curry PROJECT NUMBER: B0064479.2018 COORDINATE SYSTEM: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl
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W. SAGINAW STREET

N. ROSEMARY STREET

W. MICHIGAN AVENUE

MW-16-80	Res DW	Conc	Date
1,4-Dioxane	7.2 ug/L	27	12/5/18

MW-15-73	Res DW	Conc	Date
1,4-Dioxane	7.2 ug/L	11	12/5/18

MW-13-45	Res DW	Conc	Date
1,4-Dioxane	7.2 ug/L	52	12/7/18

MW-14-59	Res DW	Conc	Date
1,4-Dioxane	7.2 ug/L	60[60]	12/7/18
1,1-Dichloroethene	7.0 ug/L	24[25]	12/7/18

MW-16-84	Res DW	Conc	Date
1,4-Dioxane	7.2 ug/L	56	9/6/18
1,4-Dioxane	7.2 ug/L	77	12/10/18

MW-13-43	Res DW	Conc	Date
1,4-Dioxane	7.2 ug/L	320	12/11/18

PW-14-02	Res DW	Conc	Date
1,4-Dioxane	7.2 ug/L	240 Y	12/11/18

MW-14-60	Res DW	Conc	Date
1,4-Dioxane	7.2 ug/L	115	12/7/18
Vinyl Chloride	2.0 ug/L	9	12/7/18

MW-14-58	Res DW	Conc	Date
1,4-Dioxane	7.2 ug/L	78	12/5/18

MW-17-86	Res DW	Conc	Date
1,4-Dioxane	7.2 ug/L	75	12/10/18

MW-15-72	Res DW	Conc	Date
1,4-Dioxane	7.2 ug/L	240 Y	9/5/18
1,4-Dioxane	7.2 ug/L	290 Y	12/5/18

MW-14-61	Res DW	Conc	Date
1,4-Dioxane	7.2 ug/L	142	12/10/18

MW-14-56	Res DW	Conc	Date
1,4-Dioxane	7.2 ug/L	14	12/6/18

P2-SB-37	Res DW	Conc	Date
1,4-Dioxane	7.2 ug/L	244 Y	12/12/18

MW-14-54	Res DW	Conc	Date
Benzene	5.0 ug/L	260	12/10/18
Ethylbenzene	74 ug/L	1,200	12/10/18
Isopropyl benzene	800 ug/L	50	12/10/18

MW-14-55	Res DW	Conc	Date
Tetrachloroethene	5.0 ug/L	7	12/6/18

TW-14-02	Res DW	Conc	Date
1,4-Dioxane	7.2 ug/L	310 Y	9/5/18
1,4-Dioxane	7.2 ug/L	169[161]	12/5/18

MW-14-62	Res DW	Conc	Date
1,4-Dioxane	7.2 ug/L	59	12/11/18

MW-16-81	Res DW	Conc	Date
1,4-Dioxane	7.2 ug/L	180 Y	9/5/18
1,4-Dioxane	7.2 ug/L	2100 Y	12/11/18

PW-14-01	Res DW	Conc	Date
1,4-Dioxane	7.2 ug/L	110 Y	9/5/18
1,4-Dioxane	7.2 ug/L	109 [117]	12/5/18

AS-16-01	Res DW	Conc	Date
1,4-Dioxane	7.2 ug/L	23	9/5/18
1,4-Dioxane	7.2 ug/L	73	12/5/18

MW-16-75	Res DW	Conc	Date
1,4-Dioxane	7.2 ug/L	10	12/6/18

TW-16-01	Res DW	Conc	Date
1,4-Dioxane	7.2 ug/L	89	9/5/18
1,4-Dioxane	7.2 ug/L	235 Y	12/4/18

MWBP-10-UST5-6	Res DW	Concentration	Date
Arsenic	0.01 mg/L	0.017	12/3/2018

NOTES:

NOT ALL WELLS SHOWN ON THIS FIGURE WERE SAMPLED DURING THIS MONITORING EVENT.

APPROXIMATE EXTENT OF IMPACTS/PLUMES SHOWN ARE BASED ON SEVERAL INVESTIGATIONS PREVIOUSLY COMPLETED AT THE SITE.

CONCENTRATIONS ARE COMPARED TO MDEQ 2013 RESIDENCE DW CRITERIA.

mg/L: MILLIGRAMS PER LITER
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LNAPL: LIGHT NON-AQUEOUS PHASE LIQUID
Y: ELEVATED REPORTING LIMIT DUE TO HIGH TARGET CONCENTRATION
[ ]: DUPLICATE SAMPLE ANALYTICAL RESULTS
MDEQ: MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

0 200 400
SCALE IN FEET

LEGEND

EXISTING MONITORING WELLS
- NAPL MONITORING WELL
- PERCHED MONITORING WELL
- WEATHERED BEDROCK MONITORING WELL
- BEDROCK MONITORING WELL
- 2018 SAMPLED MONITORING WELL (Q3 AND Q4)
- APPROXIMATE EXTENT OF LNAPL
- APPROX. EXTENT VOCs IN PERCHED ZONE
- PERCHED 1,4-DIOXANE IMPACTS > THAN DW CRITERIA (7.2 µg/L)
- 1,4-DIOXANE IN LOWER AQUIFER ABOVE 7.2 MICROGRAMS PER LITER
- APC PERCHED 1,4-DIOXANE >7.2 µg/L (DASHED WHERE ESTIMATED OR COMINGLED)
- APC POTENTIAL AREA OF WEATHERED BEDROCK IMPACTS >7.2 µg/L (ESTIMATED FROM OFF-SITE VAP BORINGS AND INCONGRUENT IMPACTS TO RACER WEATHERED BEDROCK WELLS)
- PROPERTY BOUNDARY

RACER TRUST
PLANTS 2, 3 & 6
LANSING, MICHIGAN

THIRD AND FOURTH QUARTER 2018 DRINKING WATER EXCEEDANCES PLANTS 2 AND W. PLANT 6

ARCADIS Design & Consultancy for natural and built assets

FIGURE
B-4

CITY: Novi DIV: ENV DB: D. OLEXA PIC: J. Barrett PM: R. Christensen APM: T. Linder TM: A. Villhauer TR: P. Curry PROJECT NUMBER: B0064479.2019 COORDINATE SYSTEM: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl
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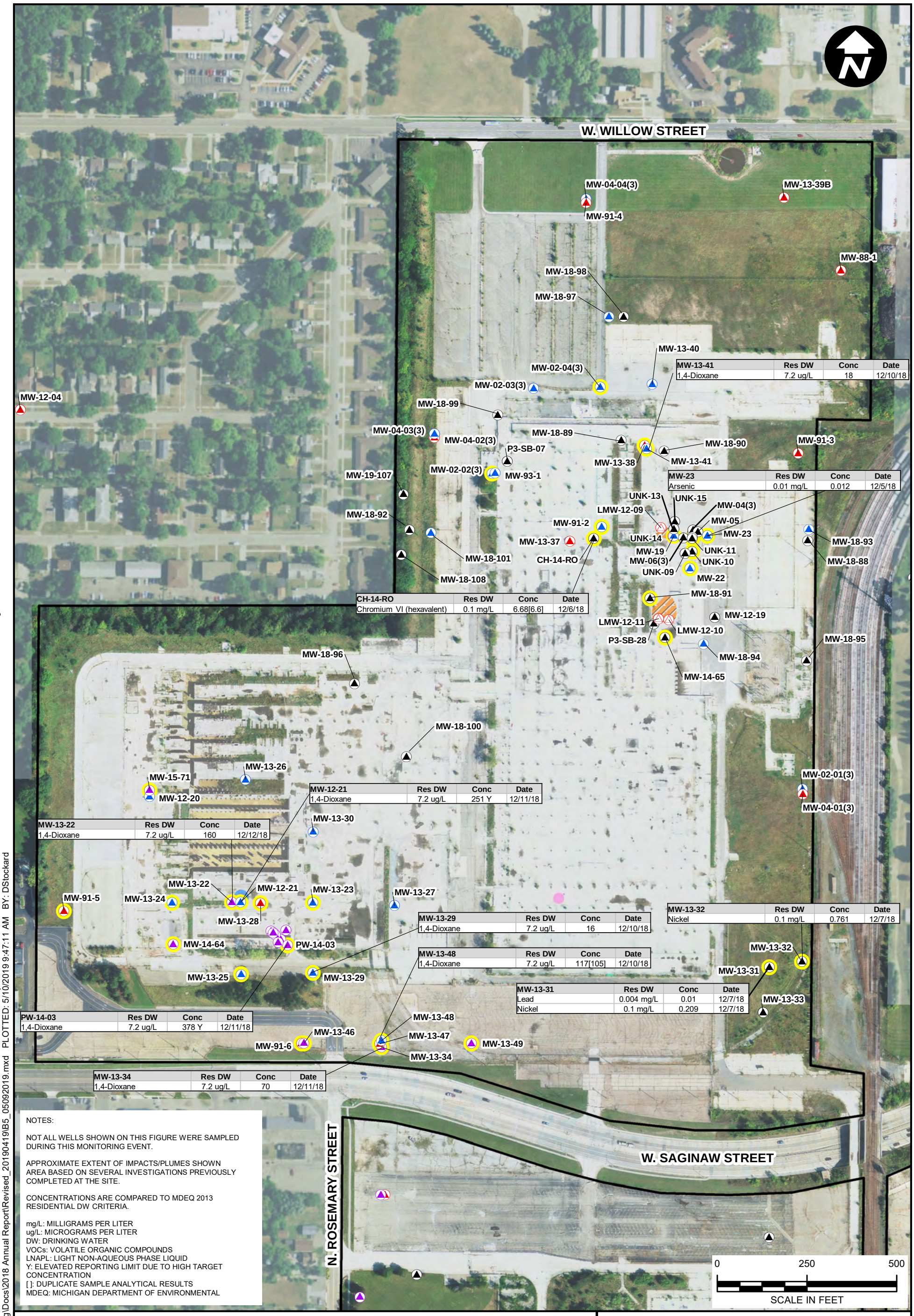

MW-13-41	Res DW	Conc	Date
1,4-Dioxane	7.2 ug/L	18	12/10/18

MW-23	Res DW	Conc	Date
Arsenic	0.01 mg/L	0.012	12/5/18

CH-14-RO	Res DW	Conc	Date
Chromium VI (hexavalent)	0.1 mg/L	6.68[6.6]	12/6/18

MW-12-21	Res DW	Conc	Date
1,4-Dioxane	7.2 ug/L	251 Y	12/11/18

MW-13-22	Res DW	Conc	Date
1,4-Dioxane	7.2 ug/L	160	12/12/18

MW-13-29	Res DW	Conc	Date
1,4-Dioxane	7.2 ug/L	16	12/10/18

MW-13-48	Res DW	Conc	Date
1,4-Dioxane	7.2 ug/L	117[105]	12/10/18

MW-13-32	Res DW	Conc	Date
Nickel	0.1 mg/L	0.761	12/7/18

MW-13-31	Res DW	Conc	Date
Lead	0.004 mg/L	0.01	12/7/18
Nickel	0.1 mg/L	0.209	12/7/18

PW-14-03	Res DW	Conc	Date
1,4-Dioxane	7.2 ug/L	378 Y	12/11/18

MW-13-34	Res DW	Conc	Date
1,4-Dioxane	7.2 ug/L	70	12/11/18

NOTES:

NOT ALL WELLS SHOWN ON THIS FIGURE WERE SAMPLED DURING THIS MONITORING EVENT.

APPROXIMATE EXTENT OF IMPACTS/PLUMES SHOWN AREA BASED ON SEVERAL INVESTIGATIONS PREVIOUSLY COMPLETED AT THE SITE.

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[ ]: DUPLICATE SAMPLE ANALYTICAL RESULTS
MDEQ: MICHIGAN DEPARTMENT OF ENVIRONMENTAL

0 250 500
SCALE IN FEET

LEGEND

EXISTING MONITORING WELLS

- NAPL MONITORING WELL
- PERCHED MONITORING WELL
- DEEP OVERBURDEN MONITORING WELL
- WEATHERED BEDROCK MONITORING WELL; TEST MW
- BEDROCK MONITORING WELL
- 2018 SAMPLED MONITORING WELL (Q3 AND Q4)

- APPROXIMATE EXTENT LNAPL
- APPROXIMATE EXTENT OF VOCs IN PERCHED GW > DW CRITERIA
- PERCHED 1,4-DIOXANE IMPACTS > DW CRITERIA (7.2 µg/L)
- LOWER 1,4-DIOXANE IMPACTS > DW CRITERIA (7.2 µg/L)
- PROPERTY BOUNDARY

RACER TRUST
PLANTS 2, 3 & 6
LANSING, MICHIGAN

THIRD AND FOURTH QUARTER 2018 DRINKING WATER EXCEEDANCES PLANT 3

ARCADIS Design & Consultancy for natural and built assets

FIGURE
B-5

CITY: Novi DIV: ENV DB: D. OLEXA PIC: J. Barrett PM: R. Christensen APN: T. Linder TM: A. Villhauer TR: P. Curry PROJECT NUMBER: B0064479.2019 COORDINATE SYSTEM: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl
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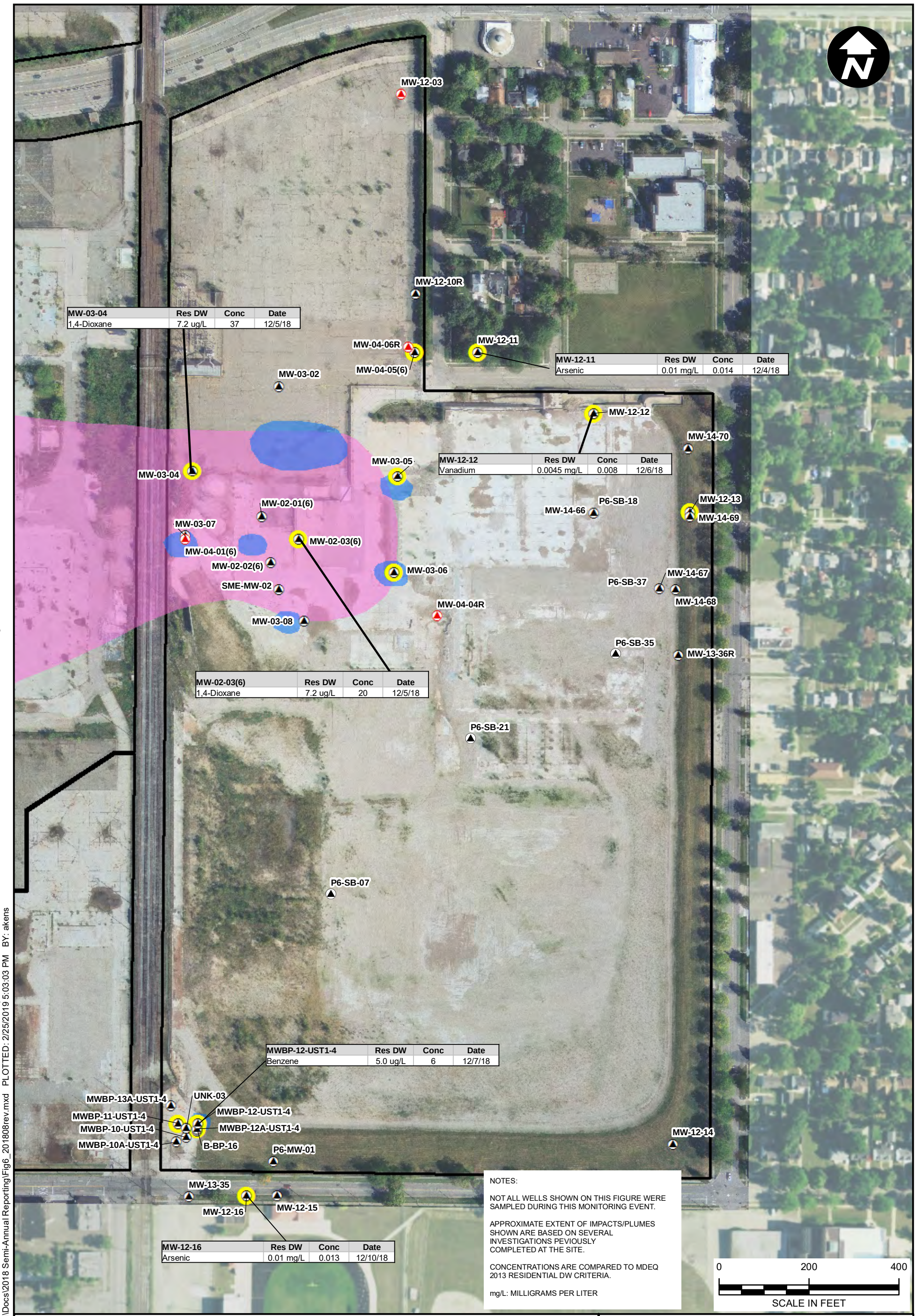

MW-03-04	Res DW	Conc	Date
1,4-Dioxane	7.2 ug/L	37	12/5/18

MW-12-11	Res DW	Conc	Date
Arsenic	0.01 mg/L	0.014	12/4/18

MW-12-12	Res DW	Conc	Date
Vanadium	0.0045 mg/L	0.008	12/6/18

MW-02-03(6)	Res DW	Conc	Date
1,4-Dioxane	7.2 ug/L	20	12/5/18

MWBP-12-UST1-4	Res DW	Conc	Date
Benzene	5.0 ug/L	6	12/7/18

MW-12-16	Res DW	Conc	Date
Arsenic	0.01 mg/L	0.013	12/10/18

NOTES:

NOT ALL WELLS SHOWN ON THIS FIGURE WERE SAMPLED DURING THIS MONITORING EVENT.

APPROXIMATE EXTENT OF IMPACTS/PLUMES SHOWN ARE BASED ON SEVERAL INVESTIGATIONS PEVIOUSLY COMPLETED AT THE SITE.

CONCENTRATIONS ARE COMPARED TO MDEQ 2013 RESIDENTIAL DW CRITERIA.

mg/L: MILLIGRAMS PER LITER

LEGEND

EXISTING MONITORING WELLS

- PERCHED MONITORING WELL
- BEDROCK MONITORING WELL
- 2018 SAMPLED MONITORING WELL (Q3 AND Q4)

- APPROXIMATE EXTENT OF VOCs IN PERCHED GW > DW CRITERIA
- PERCHED 1,4-DIOXANE IMPACTS > DW CRITERIA (7.2 µg/L)
- PROPERTY BOUNDARY

RACER TRUST
PLANTS 2, 3 & 6
LANSING, MICHIGAN

THIRD AND FOURTH QUARTER 2018 DRINKING WATER EXCEEDANCES E. PLANT 6

ARCADIS Design & Consultancy for natural and built assets

FIGURE
B-6

CITY: Novi DIV: ENV DB: D. Olexa PIC: J. Barrett PM: R. Christensen APM: T. Linder TM: A. Villhauer TR: P. Curry PROJECT NUMBER: B0064479.2019 COORDINATE SYSTEM: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl
Z:\GISProjects_ENV\RACER_Lansing\Docs\2018 Semi-Annual Reporting\Fig6_201808rev.mxd PLOTTED: 2/25/2019 5:03:03 PM BY: akens

APPENDIX C

Laboratory Analytical Reports

(On attached CD)

First Quarter

Analytical Laboratory Report

Report ID: S88048.01(01)
Generated on 03/13/2018

Report to

Attention: Christine Gregg
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 734-585-7817 FAX: 248-994-2241
Email: christine.gregg@arcadis.com

Addtional Contacts: Alex Villhauer

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): S88048.01-S88048.07
Project: B0064479.2018.01301 / RACER Lansing Plant 2
Collected Date: 03/05/2018 - 03/06/2018
Submitted Date/Time: 03/06/2018 11:00
Sampled by: Austin Westhuis
P.O. #: B0064479.2018.01301

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Method Summary (Page 4)
Sample Summary (Page 5)

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).
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

Method Summary

Method	Version
N/A	Not Applicable
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs

Sample Summary (7 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S88048.01	MW-16-81_030518	Groundwater	03/05/18 14:55
S88048.02	Dup-01_030518	Groundwater	03/05/18 00:01
S88048.03	MW-16-84_030518	Groundwater	03/05/18 16:25
S88048.04	MW-16-82_030618	Groundwater	03/06/18 09:35
S88048.05	MW-16-82_030618 MS	Groundwater	03/06/18 09:35
S88048.06	MW-16-82_030618 MSD	Groundwater	03/06/18 09:35
S88048.07	Trip Blank	Water	03/05/18 00:01

Analytical Laboratory Report

Lab Sample ID: S88048.01
Sample Tag: MW-16-81_030518
Collected Date/Time: 03/05/2018 14:55
Matrix: Groundwater
COC Reference: 104511

Sample Containers

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

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	03/09/18 11:20	JML		
Organics - Volatiles								
1,4-Dioxane*	1,390	ug/L	20	SW8260B - SIM	03/10/18 02:53	JML	123-91-1	Y

Y-Elevated reporting limit due to high target concentration

Analytical Laboratory Report

Lab Sample ID: S88048.02
Sample Tag: Dup-01_030518
Collected Date/Time: 03/05/2018 00:01
Matrix: Groundwater
COC Reference: 104511

Sample Containers

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

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	03/09/18 11:20	JML		
Organics - Volatiles								
1,4-Dioxane*	1,370	ug/L	20	SW8260B - SIM	03/10/18 03:14	JML	123-91-1	Y

Y-Elevated reporting limit due to high target concentration

Analytical Laboratory Report

Lab Sample ID: S88048.03
Sample Tag: MW-16-84_030518
Collected Date/Time: 03/05/2018 16:25
Matrix: Groundwater
COC Reference: 104511

Sample Containers

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

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	03/12/18 18:45	KCV		
Organics - Volatiles								
1,4-Dioxane*	59	ug/L	1	SW8260B - SIM	03/10/18 00:04	JML	123-91-1	

Analytical Laboratory Report

Lab Sample ID: S88048.04
Sample Tag: MW-16-82_030618
Collected Date/Time: 03/06/2018 09:35
Matrix: Groundwater
COC Reference: 104511

Sample Containers

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

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	03/09/18 11:20	JML		
Organics - Volatiles								
1,4-Dioxane*	Not detected	ug/L	1	SW8260B - SIM	03/08/18 15:44	JML	123-91-1	

Analytical Laboratory Report

Lab Sample ID: S88048.05
Sample Tag: MW-16-82_030618 MS
Collected Date/Time: 03/06/2018 09:35
Matrix: Groundwater
COC Reference: 104511

Sample Containers

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

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	03/09/18 11:20	JML		
Organics - Volatiles								
1,4-Dioxane*	43	ug/L	1	SW8260B - SIM	03/08/18 19:12	JML	123-91-1	1

1-spiked at 50ug/L

Analytical Laboratory Report

Lab Sample ID: S88048.06
Sample Tag: MW-16-82_030618 MSD
Collected Date/Time: 03/06/2018 09:35
Matrix: Groundwater
COC Reference: 104511

Sample Containers

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

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	03/09/18 11:20	JML		
Organics - Volatiles								
1,4-Dioxane*	50	ug/L	1	SW8260B - SIM	03/08/18 19:32	JML	123-91-1	1

1-spiked at 50ug/L

Analytical Laboratory Report

Lab Sample ID: S88048.07
Sample Tag: Trip Blank
Collected Date/Time: 03/05/2018 00:01
Matrix: Water
COC Reference: 104511

Sample Containers

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

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Other / Misc.								
Hold until notified*	Completed				03/07/18 09:05	SRS		

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

104511

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME: Christine Gregg
COMPANY: Arcadis
ADDRESS: 28550 Cabot Drive, Suite 500
CITY: Novi STATE: MI ZIP CODE: 48377
PHONE NO.: 248-483-6634 FAX NO.: 248-994-2241
P.O. NO.: B0064479.2018.01301
E-MAIL ADDRESS: Christine.Gregg@arcadis.com; Alex.Vilthauer@arcadis.com
QUOTE NO.:

INVOICE TO

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

PROJECT NO./NAME: B0064479.2018.01301/RACER Lansing Plant 2
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Austin Westhuis/

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 MI

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	1,4-Dioxane 8260B SIMS	
88048.01	3/5/18	1455	MW-16-81_030518	GW	3		3						X	
.02	3/5/18	—	Dup-01_030518	GW	3		3						X	
.03	3/5/18	1625	MW-16-82_030518	GW	3		3						X	
04/.05/.06	3/6/18	0935	MW-16-82_030618	GW	9		9						X	MS/MSD
.07	3/5/18	—	Trip Blank	GW	1		1						X	

RELINQUISHED BY: SIGNATURE/ORGANIZATION	Arcadis ☒ Sampler	DATE 3/6/18	TIME 1100
RECEIVED BY: SIGNATURE/ORGANIZATION		DATE 3/6/18	TIME 1100
RELINQUISHED BY: SIGNATURE/ORGANIZATION		DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION		DATE	TIME

RELINQUISHED BY: SIGNATURE/ORGANIZATION		DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION		DATE	TIME
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS	NOTES: TEMP. ON ARRIVAL 5.0
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

Second Quarter

Analytical Laboratory Report

Report ID: S89675.01(01)
Generated on 05/23/2018

Report to

Attention: Alex Villhauer
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 616-780-3277 FAX: 248-994-2241
Email: alex.villhauer@arcadis.com

Addtional Contacts: Christine Gregg

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): S89675.01-S89675.20
Project: B0064479.2018.00603 / Racer Lansing Plant 2
Collected Date: 05/08/2018
Submitted Date/Time: 05/10/2018 09:00
Sampled by: Pisackiewicz/Brett
P.O. #: B0064479.2018.00603

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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).
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

Method Summary

Method	Version
N/A	Not Applicable
SW3015A	SW 846 Method 3015A Revision 1 February 2007
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003
SW6020A	SW 846 Method 6020A Revision 1 February 2007
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs

Sample Summary (20 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S89675.01	MW-16-85_050818	Groundwater	05/08/18 10:20
S89675.02	MW-17-86_050818	Groundwater	05/08/18 11:25
S89675.03	MW-16-84_050818	Groundwater	05/08/18 13:40
S89675.04	P2-SB-20_050818	Groundwater	05/08/18 14:55
S89675.05	P2-SB-03_050818	Groundwater	05/08/18 16:00
S89675.06	MW-16-79_050818	Groundwater	05/08/18 10:15
S89675.07	MW-16-74_050818	Groundwater	05/08/18 11:55
S89675.08	MW-16-75_050818	Groundwater	05/08/18 14:00
S89675.09	MW-16-77_050818	Groundwater	05/08/18 15:00
S89675.10	MW-14-56_050818	Groundwater	05/08/18 15:40
S89675.11	Dup-01_050818	Liquid	05/08/18 00:01
S89675.12	MW-16-81_050818	Groundwater	05/08/18 10:15
S89675.13	FB-01_050818	Liquid	05/08/18 11:45
S89675.14	TW-14-02_050818	Groundwater	05/08/18 12:15
S89675.15	MW-15-72_050818	Groundwater	05/08/18 13:45
S89675.16	MW-13-43_050818	Groundwater	05/08/18 15:20
S89675.17	Dup-04_050818	Groundwater	05/08/18 00:01
S89675.18	MW-16-80_050818	Groundwater	05/08/18 16:35
S89675.19	EB-01_050818	Liquid	05/08/18 16:45
S89675.20	Trip Blank	Liquid	05/08/18 00:01

Analytical Laboratory Report

Lab Sample ID: S89675.01
Sample Tag: MW-16-85_050818
Collected Date/Time: 05/08/2018 10:20
Matrix: Groundwater
COC Reference: 110324

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.7	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/15/18 11:00	KCV		
Organics - Volatiles								
1,4-Dioxane*	1	ug/L	1	SW8260B - SIM	05/15/18 01:31	JML	123-91-1	

Analytical Laboratory Report

Lab Sample ID: S89675.02
Sample Tag: MW-17-86_050818
Collected Date/Time: 05/08/2018 11:25
Matrix: Groundwater
COC Reference: 110324

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.7	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/15/18 11:00	KCV		
Organics - Volatiles								
1,4-Dioxane*	44	ug/L	1	SW8260B - SIM	05/15/18 01:52	JML	123-91-1	

Analytical Laboratory Report

Lab Sample ID: S89675.03
Sample Tag: MW-16-84_050818
Collected Date/Time: 05/08/2018 13:40
Matrix: Groundwater
COC Reference: 110324

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.7	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/11/18 12:40	JML		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:01	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:01	JML	106-93-4	
1,4-Dioxane*	59	ug/L	1	SW8260B - SIM	05/14/18 19:42	JML	123-91-1	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:01	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/10/18 22:01	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:01	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/10/18 22:01	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:01	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/10/18 22:01	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:01	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:01	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:01	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:01	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:01	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:01	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:01	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:01	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:01	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:01	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:01	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:01	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:01	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:01	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/10/18 22:01	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/10/18 22:01	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:01	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:01	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:01	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:01	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:01	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:01	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:01	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:01	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:01	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:01	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:01	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:01	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:01	JML	124-48-1	

Lab Sample ID: S89675.03 (continued)
Sample Tag: MW-16-84_050818

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:01	JML	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:01	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:01	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/10/18 22:01	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:01	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:01	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:01	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:01	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:01	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:01	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:01	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:01	JML	120-82-1	

Analytical Laboratory Report

Lab Sample ID: S89675.04
Sample Tag: P2-SB-20_050818
Collected Date/Time: 05/08/2018 14:55
Matrix: Groundwater
COC Reference: 110324

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.7	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/11/18 12:40	JML		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:20	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:20	JML	106-93-4	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:20	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/10/18 22:20	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:20	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/10/18 22:20	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:20	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/10/18 22:20	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:20	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:20	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:20	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:20	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:20	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:20	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:20	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:20	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:20	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:20	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:20	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:20	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:20	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:20	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/10/18 22:20	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/10/18 22:20	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:20	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:20	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:20	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:20	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:20	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:20	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:20	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:20	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:20	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:20	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:20	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:20	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:20	JML	124-48-1	
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:20	JML	108-90-7	

Lab Sample ID: S89675.04 (continued)

Sample Tag: P2-SB-20_050818

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:20	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:20	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/10/18 22:20	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:20	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:20	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:20	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:20	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:20	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:20	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:20	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:20	JML	120-82-1	

Analytical Laboratory Report

Lab Sample ID: S89675.05
Sample Tag: P2-SB-03_050818
Collected Date/Time: 05/08/2018 16:00
Matrix: Groundwater
COC Reference: 110324

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.7	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/11/18 12:40	JML		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:39	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:39	JML	106-93-4	
1,4-Dioxane*	Not detected	ug/L	1	SW8260B - SIM	05/14/18 20:24	JML	123-91-1	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:39	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/10/18 22:39	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:39	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/10/18 22:39	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:39	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/10/18 22:39	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:39	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:39	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:39	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:39	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:39	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:39	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:39	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:39	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:39	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:39	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:39	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:39	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:39	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:39	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/10/18 22:39	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/10/18 22:39	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:39	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:39	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:39	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:39	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:39	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:39	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:39	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:39	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:39	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:39	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:39	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:39	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:39	JML	124-48-1	

Lab Sample ID: S89675.05 (continued)

Sample Tag: P2-SB-03_050818

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:39	JML	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:39	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:39	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/10/18 22:39	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:39	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:39	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:39	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:39	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:39	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:39	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:39	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:39	JML	120-82-1	

Analytical Laboratory Report

Lab Sample ID: S89675.06
Sample Tag: MW-16-79_050818
Collected Date/Time: 05/08/2018 10:15
Matrix: Groundwater
COC Reference: 110324

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.7	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/15/18 11:00	KCV		
Organics - Volatiles								
1,4-Dioxane*	Not detected	ug/L	1	SW8260B - SIM	05/15/18 02:13	JML	123-91-1	

Analytical Laboratory Report

Lab Sample ID: S89675.07
Sample Tag: MW-16-74_050818
Collected Date/Time: 05/08/2018 11:55
Matrix: Groundwater
COC Reference: 110324

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.7	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/15/18 11:00	KCV		
Organics - Volatiles								
1,4-Dioxane*	Not detected	ug/L	1	SW8260B - SIM	05/15/18 02:34	JML	123-91-1	

Analytical Laboratory Report

Lab Sample ID: S89675.08
Sample Tag: MW-16-75_050818
Collected Date/Time: 05/08/2018 14:00
Matrix: Groundwater
COC Reference: 110324

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.7	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/15/18 11:00	KCV		
Organics - Volatiles								
1,4-Dioxane*	Not detected	ug/L	1	SW8260B - SIM	05/15/18 02:55	JML	123-91-1	

Analytical Laboratory Report

Lab Sample ID: S89675.09
Sample Tag: MW-16-77_050818
Collected Date/Time: 05/08/2018 15:00
Matrix: Groundwater
COC Reference: 110324

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.7	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/15/18 11:00	KCV		
Organics - Volatiles								
1,4-Dioxane*	Not detected	ug/L	1	SW8260B - SIM	05/15/18 03:17	JML	123-91-1	

Analytical Laboratory Report

Lab Sample ID: S89675.10
Sample Tag: MW-14-56_050818
Collected Date/Time: 05/08/2018 15:40
Matrix: Groundwater
COC Reference: 110324

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.7	IR
1	125ml Plastic	HNO3	Yes	2.7	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
Metal Digestion	Completed			SW3015A	05/14/18 12:40	CCM		
pH check for VOCs*	<2	STD Units		N/A	05/11/18 12:40	JML		
Metals								
Arsenic	Not detected	mg/L	0.002	SW6020A	05/14/18 13:56	CCM	7440-38-2	
Chromium	0.014	mg/L	0.005	SW6020A	05/14/18 13:56	CCM	7440-47-3	
Copper	Not detected	mg/L	0.005	SW6020A	05/14/18 13:56	CCM	7440-50-8	
Lead	Not detected	mg/L	0.003	SW6020A	05/14/18 13:56	CCM	7439-92-1	
Nickel	0.021	mg/L	0.005	SW6020A	05/14/18 13:56	CCM	7440-02-0	
Vanadium	Not detected	mg/L	0.005	SW6020A	05/14/18 13:56	CCM	7440-62-2	
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:58	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:58	JML	106-93-4	
1,4-Dioxane*	7	ug/L	1	SW8260B - SIM	05/14/18 20:45	JML	123-91-1	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:58	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/10/18 22:58	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:58	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/10/18 22:58	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:58	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/10/18 22:58	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:58	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:58	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:58	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:58	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:58	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:58	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:58	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:58	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:58	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:58	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:58	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:58	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:58	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:58	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/10/18 22:58	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/10/18 22:58	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:58	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:58	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:58	JML	107-06-2	

Lab Sample ID: S89675.10 (continued)
Sample Tag: MW-14-56_050818

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:58	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:58	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:58	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:58	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:58	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:58	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:58	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:58	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:58	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:58	JML	124-48-1	
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:58	JML	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:58	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:58	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/10/18 22:58	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:58	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:58	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:58	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:58	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:58	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:58	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:58	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 22:58	JML	120-82-1	

Analytical Laboratory Report

Lab Sample ID: S89675.11
Sample Tag: Dup-01_050818
Collected Date/Time: 05/08/2018 00:01
Matrix: Liquid
COC Reference: 110324

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.7	IR
1	125ml Plastic	HNO3	Yes	2.7	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
Metal Digestion	Completed			SW3015A	05/14/18 12:40	CCM		
pH check for VOCs*	<2	STD Units		N/A	05/11/18 12:40	JML		
Metals								
Arsenic	Not detected	mg/L	0.002	SW6020A	05/14/18 13:58	CCM	7440-38-2	
Chromium	0.013	mg/L	0.005	SW6020A	05/14/18 13:58	CCM	7440-47-3	
Copper	Not detected	mg/L	0.005	SW6020A	05/14/18 13:58	CCM	7440-50-8	
Lead	Not detected	mg/L	0.003	SW6020A	05/14/18 13:58	CCM	7439-92-1	
Nickel	0.022	mg/L	0.005	SW6020A	05/14/18 13:58	CCM	7440-02-0	
Vanadium	Not detected	mg/L	0.005	SW6020A	05/14/18 13:58	CCM	7440-62-2	
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:18	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:18	JML	106-93-4	
1,4-Dioxane*	7	ug/L	1	SW8260B - SIM	05/21/18 16:51	JML	123-91-1	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:18	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/10/18 23:18	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:18	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/10/18 23:18	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:18	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/10/18 23:18	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:18	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:18	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:18	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:18	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:18	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:18	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:18	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:18	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:18	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:18	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:18	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:18	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:18	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:18	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/10/18 23:18	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/10/18 23:18	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:18	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:18	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:18	JML	107-06-2	

Lab Sample ID: S89675.11 (continued)
Sample Tag: Dup-01_050818

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:18	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:18	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:18	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:18	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:18	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:18	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:18	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:18	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:18	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:18	JML	124-48-1	
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:18	JML	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:18	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:18	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/10/18 23:18	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:18	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:18	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:18	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:18	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:18	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:18	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:18	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:18	JML	120-82-1	

Analytical Laboratory Report

Lab Sample ID: S89675.12
Sample Tag: MW-16-81_050818
Collected Date/Time: 05/08/2018 10:15
Matrix: Groundwater
COC Reference: 110320

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.7	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/15/18 11:00	KCV		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:37	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:37	JML	106-93-4	
1,4-Dioxane*	1,400	ug/L	100	SW8260B - SIM	05/22/18 00:36	JML	123-91-1	Y
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:37	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/10/18 23:37	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:37	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/10/18 23:37	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:37	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/10/18 23:37	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:37	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:37	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:37	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:37	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:37	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:37	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:37	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:37	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:37	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:37	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:37	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:37	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:37	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:37	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/10/18 23:37	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/10/18 23:37	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:37	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:37	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:37	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:37	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:37	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:37	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:37	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:37	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:37	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:37	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:37	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:37	JML	127-18-4	

Y-Elevated reporting limit due to high target concentration

Lab Sample ID: S89675.12 (continued)
Sample Tag: MW-16-81_050818

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:37	JML	124-48-1	
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:37	JML	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:37	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:37	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/10/18 23:37	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:37	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:37	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:37	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:37	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:37	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:37	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:37	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:37	JML	120-82-1	

Analytical Laboratory Report

Lab Sample ID: S89675.13
Sample Tag: FB-01_050818
Collected Date/Time: 05/08/2018 11:45
Matrix: Liquid
COC Reference: 110320

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.7	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/11/18 12:40	JML		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:23	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:23	JML	106-93-4	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:23	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/10/18 21:23	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:23	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/10/18 21:23	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:23	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/10/18 21:23	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:23	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:23	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:23	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:23	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:23	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:23	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:23	JML	75-35-4	
Methylene chloride	2	ug/L	1	SW5030C/8260C	05/10/18 21:23	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:23	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:23	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:23	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:23	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:23	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:23	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/10/18 21:23	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/10/18 21:23	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:23	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:23	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:23	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:23	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:23	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:23	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:23	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:23	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:23	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:23	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:23	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:23	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:23	JML	124-48-1	
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:23	JML	108-90-7	

Lab Sample ID: S89675.13 (continued)
Sample Tag: FB-01_050818

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:23	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:23	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/10/18 21:23	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:23	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:23	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:23	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:23	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:23	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:23	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:23	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:23	JML	120-82-1	

Analytical Laboratory Report

Lab Sample ID: S89675.14
Sample Tag: TW-14-02_050818
Collected Date/Time: 05/08/2018 12:15
Matrix: Groundwater
COC Reference: 110320

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.7	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/15/18 11:00	KCV		
Organics - Volatiles								
1,4-Dioxane*	400	ug/L	10	SW8260B - SIM	05/21/18 19:40	JML	123-91-1	Y

Y-Elevated reporting limit due to high target concentration

Analytical Laboratory Report

Lab Sample ID: S89675.15
Sample Tag: MW-15-72_050818
Collected Date/Time: 05/08/2018 13:45
Matrix: Groundwater
COC Reference: 110320

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.7	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/15/18 11:00	KCV		
Organics - Volatiles								
1,4-Dioxane*	260	ug/L	10	SW8260B - SIM	05/21/18 20:01	JML	123-91-1	Y

Y-Elevated reporting limit due to high target concentration

Analytical Laboratory Report

Lab Sample ID: S89675.16
Sample Tag: MW-13-43_050818
Collected Date/Time: 05/08/2018 15:20
Matrix: Groundwater
COC Reference: 110320

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.7	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/15/18 11:00	KCV		
Organics - Volatiles								
1,4-Dioxane*	260	ug/L	10	SW8260B - SIM	05/21/18 20:22	JML	123-91-1	Y

Y-Elevated reporting limit due to high target concentration

Analytical Laboratory Report

Lab Sample ID: S89675.17
Sample Tag: Dup-04_050818
Collected Date/Time: 05/08/2018 00:01
Matrix: Groundwater
COC Reference: 110320

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.7	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/15/18 11:00	KCV		
Organics - Volatiles								
1,4-Dioxane*	270	ug/L	10	SW8260B - SIM	05/22/18 15:54	JML	123-91-1	Y

Y-Elevated reporting limit due to high target concentration

Analytical Laboratory Report

Lab Sample ID: S89675.18
Sample Tag: MW-16-80_050818
Collected Date/Time: 05/08/2018 16:35
Matrix: Groundwater
COC Reference: 110320

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.7	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/15/18 11:00	KCV		
Organics - Volatiles								
1,4-Dioxane*	23	ug/L	1	SW8260B - SIM	05/22/18 15:33	JML	123-91-1	

Analytical Laboratory Report

Lab Sample ID: S89675.19
Sample Tag: EB-01_050818
Collected Date/Time: 05/08/2018 16:45
Matrix: Liquid
COC Reference: 110320

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.7	IR
1	125ml Plastic	HNO3	Yes	2.7	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
Metal Digestion	Completed			SW3015A	05/14/18 12:40	CCM		
pH check for VOCs*	<2	STD Units		N/A	05/11/18 12:40	JML		
Metals								
Arsenic	Not detected	mg/L	0.002	SW6020A	05/14/18 13:52	CCM	7440-38-2	
Chromium	Not detected	mg/L	0.005	SW6020A	05/14/18 13:52	CCM	7440-47-3	
Copper	0.026	mg/L	0.005	SW6020A	05/14/18 13:52	CCM	7440-50-8	
Lead	Not detected	mg/L	0.003	SW6020A	05/14/18 13:52	CCM	7439-92-1	
Nickel	Not detected	mg/L	0.005	SW6020A	05/14/18 13:52	CCM	7440-02-0	
Vanadium	Not detected	mg/L	0.005	SW6020A	05/14/18 13:52	CCM	7440-62-2	
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:42	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:42	JML	106-93-4	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:42	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/10/18 21:42	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:42	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/10/18 21:42	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:42	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/10/18 21:42	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:42	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:42	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:42	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:42	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:42	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:42	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:42	JML	75-35-4	
Methylene chloride	2	ug/L	1	SW5030C/8260C	05/10/18 21:42	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:42	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:42	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:42	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:42	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:42	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:42	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/10/18 21:42	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/10/18 21:42	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:42	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:42	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:42	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:42	JML	79-01-6	

Lab Sample ID: S89675.19 (continued)
Sample Tag: EB-01_050818

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:42	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:42	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:42	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:42	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:42	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:42	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:42	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:42	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:42	JML	124-48-1	
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:42	JML	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:42	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:42	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/10/18 21:42	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:42	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:42	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:42	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:42	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:42	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:42	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:42	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:42	JML	120-82-1	

Analytical Laboratory Report

Lab Sample ID: S89675.20
Sample Tag: Trip Blank
Collected Date/Time: 05/08/2018 00:01
Matrix: Liquid
COC Reference: 110320

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	2.7	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/14/18 13:30	KCV		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 17:35	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 17:35	JML	106-93-4	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 17:35	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/11/18 17:35	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/11/18 17:35	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/11/18 17:35	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/11/18 17:35	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/11/18 17:35	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 17:35	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 17:35	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/11/18 17:35	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 17:35	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 17:35	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 17:35	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 17:35	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/11/18 17:35	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 17:35	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 17:35	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 17:35	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/11/18 17:35	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 17:35	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 17:35	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/11/18 17:35	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/11/18 17:35	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/11/18 17:35	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 17:35	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 17:35	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 17:35	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 17:35	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 17:35	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 17:35	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 17:35	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 17:35	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 17:35	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 17:35	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 17:35	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 17:35	JML	124-48-1	
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 17:35	JML	108-90-7	

Lab Sample ID: S89675.20 (continued)

Sample Tag: Trip Blank

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 17:35	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 17:35	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/11/18 17:35	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 17:35	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 17:35	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 17:35	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/11/18 17:35	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 17:35	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 17:35	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 17:35	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 17:35	JML	120-82-1	

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C.O.C. PAGE # 1 OF 2

110324

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME: Alex Villhauer
COMPANY: Arcadis
ADDRESS: 3005 Washington Sq suite 315
CITY: Lansing STATE: MI ZIP CODE: 48933
PHONE NO.: 517-324-5036 FAX NO.: 517-267-4755 P.O. NO.:
E-MAIL ADDRESS: Alex.Villhauer@arcadis.com QUOTE NO.:

INVOICE TO

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

PROJECT NO./NAME: B00644479.2018 (09601) / Racer-Lansing Plant 2
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Jake Pisarkiewicz / Brett Fiessnel

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 MI

Special Instructions

MERIT LAB NO. (FOR LAB USE ONLY)	YEAR DATE	TIME	SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives: NONE	HCl	HNO3	H2SO4	NaOH	MeOH	OTHER	VOCs 8260B	1,4-Dioxane 8260B SIMS	Total Metals 6020	Special Instructions
	5-8-18		Trip Blank	W	1		1									
89675.01	5-8-18	1020	MW-16-85_050818	GW	3		3							X		* metals: Arsenic, Nickel, Lead, Vanadium, Chromium, Copper.
.02	5-8-18	1125	MW-17-86_050818	GW	3		3							X		
.03	5-8-18	1340	MW-16-84_050818	GW	3		3						X	X		
.04	5-8-18	1455	P2-SB-20_050818	GW	3		3						X			
.05	5-8-18	1600	P2-SB-03_050818	GW	3		3						X	X		
.06	5-8-18	1015	MW-16-79_050818	GW	3		3							X		
.07	5-8-18	1155	MW-16-74_050818	GW	3		3							X		
.08	5-8-18	1400	MW-16-75_050818	GW	3		3							X		
.09	5-8-18	1500	MW-16-77_050818	GW	3		3							X		
.10	5-8-18	1540	MW-14-56_050818	GW	4		3	1					X	X	X	
.11	5-8-18	—	Dup-01_050818	L	4		3	1					X	X	X	

RELINQUISHED BY: SIGNATURE/ORGANIZATION	Brett Fiessnel / Sampler	DATE 5/8/18	TIME 1900
RECEIVED BY: SIGNATURE/ORGANIZATION	PM Storage	DATE 5/8	TIME 1800
RELINQUISHED BY: SIGNATURE/ORGANIZATION		DATE 5/10/18	TIME 0900
RECEIVED BY: SIGNATURE/ORGANIZATION		DATE 5/10/18	TIME 0900

RELINQUISHED BY: SIGNATURE/ORGANIZATION	PM Storage	DATE 5/10/18	TIME 8:30
RECEIVED BY: SIGNATURE/ORGANIZATION		DATE 5/10/18	TIME 8:30

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

NOTES: TEMP. ON ARRIVAL: 2.7

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

Rev. 5.18.12

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C.O.C. PAGE # 2 OF 2

110320

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME: Alex Villhauer
COMPANY: Arcadis
ADDRESS: 300 S Washington Sq, Suite 315
CITY: Lansing STATE: MI ZIP CODE: 48933
PHONE NO.: 517-324-5036 FAX NO.: 517-267-4755 P.O. NO.:
E-MAIL ADDRESS: Alex.Villhauer@arcadis.com QUOTE NO.:

INVOICE TO

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

PROJECT NO./NAME: B0064479.2018.00603/RACER Lansing
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Austin Westhuis/

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 MF

Special Instructions
* Select Metals Include: Arsenic, Nickel, Lead, Vanadium, Chromium, and copper.

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	VOCs 8260B	1,4-Dioxane 8260B SIM	TCL VOCs	Select Metals 6020
89675.12	5/8/18	1015	MW-16-81_050818	GW	3		3						X	X		
.13	5/8/18	1145	FB-01_050818	GW	3		3						X	X		
.14	5/8/18	1215	TW-14-02_050818	GW	3		3							X		
.15	5/8/18	1345	MW-15-72_050818	GW	3		3							X		
.16	5/8/18	1520	MW-13-43_050818	GW	3		3							X		
.17	5/8/18	—	Dup-04_050818	GW	3		3							X		
.18	5/8/18	1635	MW-16-80_050818	GW	3		3							X		
.19	5/8/18	1645	EB-01_050818	GW	4		3	1							X	X
.20	5/8/18	—	~~AB-VOA_050818~~ Trip Blank	GW	1		1						X			

RELINQUISHED BY: SIGNATURE/ORGANIZATION	Arcadis / X Sampler	DATE 5/8/18	TIME 1720
RECEIVED BY: SIGNATURE/ORGANIZATION	Brett Fiessnel / PM	DATE 5/8	TIME 1720
RELINQUISHED BY: SIGNATURE/ORGANIZATION	PM Storage	DATE 5/10/18	TIME 8:30
RECEIVED BY: SIGNATURE/ORGANIZATION		DATE 5/10/18	TIME 8:30

RELINQUISHED BY: SIGNATURE/ORGANIZATION	/ PM	DATE 5/8	TIME 1800
RECEIVED BY: SIGNATURE/ORGANIZATION	PM storage	DATE 5/8	TIME 1800
SEAL NO.	SEAL INTACT? YES ☐ NO ☐	INITIALS	NOTES: 5/10/18 0900
SEAL NO.	SEAL INTACT? YES ☐ NO ☐	INITIALS	5/10/18 0900

TEMP. ON ARRIVAL: 2.7

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

Rev. 5.18.12

Analytical Laboratory Report

Report ID: S89676.01(01)
Generated on 05/22/2018

Report to

Attention: Alex Villhauer
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 616-780-3277 FAX: 248-994-2241
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John Laverty (johnlaverty@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S89676.01-S89676.05
Project: B0064479.2018 Racer Lansing
Collected Date: 05/08/2018
Submitted Date/Time: 05/10/2018 09:00
Sampled by: Sam Dunne
P.O. #: B0064479.2018

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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

Method Summary

Method	Version
E200.8	EPA Method 200.8 Revision 5.4
N/A	Not Applicable
SW3015A	SW 846 Method 3015A Revision 1 February 2007
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003
SW6020A	SW 846 Method 6020A Revision 1 February 2007
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs

Sample Summary (5 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S89676.01	MW-13-25_050818	Groundwater	05/08/18 12:35
S89676.02	MW-12-21_050818	Groundwater	05/08/18 14:25
S89676.03	MW-12-20_050818	Groundwater	05/08/18 16:35
S89676.04	DUP-06_050818	Groundwater	05/08/18 00:01
S89676.05	Trip Blank	Water	05/08/18 00:01

Analytical Laboratory Report

Lab Sample ID: S89676.01
Sample Tag: MW-13-25_050818
Collected Date/Time: 05/08/2018 12:35
Matrix: Groundwater
COC Reference: 110314

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.7	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/11/18 12:40	JML		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:56	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:56	JML	106-93-4	
1,4-Dioxane*	6	ug/L	1	SW8260B - SIM	05/21/18 17:12	JML	123-91-1	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:56	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/10/18 23:56	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:56	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/10/18 23:56	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:56	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/10/18 23:56	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:56	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:56	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:56	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:56	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:56	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:56	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:56	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:56	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:56	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:56	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:56	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:56	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:56	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:56	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/10/18 23:56	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/10/18 23:56	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:56	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:56	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:56	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:56	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:56	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:56	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:56	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:56	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:56	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:56	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:56	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:56	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:56	JML	124-48-1	

Lab Sample ID: S89676.01 (continued)
Sample Tag: MW-13-25_050818

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:56	JML	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:56	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:56	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/10/18 23:56	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:56	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:56	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:56	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:56	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:56	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:56	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:56	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 23:56	JML	120-82-1	

Analytical Laboratory Report

Lab Sample ID: S89676.02
Sample Tag: MW-12-21_050818
Collected Date/Time: 05/08/2018 14:25
Matrix: Groundwater
COC Reference: 110314

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.7	IR
2	125ml Plastic	HNO3	Yes	2.7	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
Metal Digestion	Completed			SW3015A	05/14/18 12:40	CCM		
Metal Digestion	Completed			SW3015A	05/14/18 12:40	CCM		
pH check for VOCs*	<2	STD Units		N/A	05/15/18 11:00	KCV		
Metals								
Arsenic, Dissolved	Not detected	mg/L	0.002	E200.8	05/14/18 14:02	CCM	7440-38-2	
Arsenic	Not detected	mg/L	0.002	SW6020A	05/14/18 14:00	CCM	7440-38-2	
Chromium, Dissolved	Not detected	mg/L	0.005	E200.8	05/14/18 14:02	CCM	7440-47-3	
Chromium	Not detected	mg/L	0.005	SW6020A	05/14/18 14:00	CCM	7440-47-3	
Copper, Dissolved	Not detected	mg/L	0.005	E200.8	05/14/18 14:02	CCM	7440-50-8	
Copper	Not detected	mg/L	0.005	SW6020A	05/14/18 14:00	CCM	7440-50-8	
Lead, Dissolved	Not detected	mg/L	0.003	E200.8	05/14/18 14:02	CCM	7439-92-1	
Lead	Not detected	mg/L	0.003	SW6020A	05/14/18 14:00	CCM	7439-92-1	
Nickel, Dissolved	0.008	mg/L	0.005	E200.8	05/14/18 14:02	CCM	7440-02-0	
Nickel	0.008	mg/L	0.005	SW6020A	05/14/18 14:00	CCM	7440-02-0	
Vanadium, Dissolved	Not detected	mg/L	0.005	E200.8	05/14/18 14:02	CCM	7440-62-2	
Vanadium	Not detected	mg/L	0.005	SW6020A	05/14/18 14:00	CCM	7440-62-2	
Organics - Volatiles								
1,4-Dioxane*	200	ug/L	10	SW8260B - SIM	05/21/18 20:44	JML	123-91-1	Y

Y-Elevated reporting limit due to high target concentration

Analytical Laboratory Report

Lab Sample ID: S89676.03
Sample Tag: MW-12-20_050818
Collected Date/Time: 05/08/2018 16:35
Matrix: Groundwater
COC Reference: 110314

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.7	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/11/18 12:40	JML		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:15	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:15	JML	106-93-4	
1,4-Dioxane*	Not detected	ug/L	1	SW8260B - SIM	05/14/18 22:09	JML	123-91-1	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:15	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/11/18 00:15	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:15	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/11/18 00:15	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:15	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/11/18 00:15	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:15	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:15	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:15	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:15	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:15	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:15	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:15	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:15	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:15	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:15	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:15	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:15	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:15	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:15	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/11/18 00:15	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/11/18 00:15	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:15	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:15	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:15	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:15	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:15	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:15	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:15	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:15	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:15	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:15	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:15	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:15	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:15	JML	124-48-1	

Lab Sample ID: S89676.03 (continued)
Sample Tag: MW-12-20_050818

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:15	JML	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:15	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:15	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/11/18 00:15	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:15	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:15	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:15	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:15	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:15	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:15	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:15	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:15	JML	120-82-1	

Analytical Laboratory Report

Lab Sample ID: S89676.04
Sample Tag: DUP-06_050818
Collected Date/Time: 05/08/2018 00:01
Matrix: Groundwater
COC Reference: 110314

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.7	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/11/18 12:40	JML		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:34	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:34	JML	106-93-4	
1,4-Dioxane*	7	ug/L	1	SW8260B - SIM	05/21/18 18:36	JML	123-91-1	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:34	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/11/18 00:34	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:34	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/11/18 00:34	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:34	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/11/18 00:34	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:34	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:34	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:34	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:34	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:34	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:34	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:34	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:34	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:34	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:34	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:34	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:34	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:34	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:34	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/11/18 00:34	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/11/18 00:34	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:34	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:34	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:34	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:34	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:34	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:34	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:34	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:34	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:34	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:34	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:34	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:34	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:34	JML	124-48-1	

Lab Sample ID: S89676.04 (continued)

Sample Tag: DUP-06_050818

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:34	JML	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:34	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:34	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/11/18 00:34	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:34	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:34	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:34	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:34	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:34	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:34	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:34	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 00:34	JML	120-82-1	

Analytical Laboratory Report

Lab Sample ID: S89676.05
Sample Tag: Trip Blank
Collected Date/Time: 05/08/2018 00:01
Matrix: Water
COC Reference: 110314

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	2.7	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/11/18 12:40	JML		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:04	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:04	JML	106-93-4	
1,4-Dioxane*	Not detected	ug/L	1	SW8260B - SIM	05/21/18 16:30	JML	123-91-1	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:04	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/10/18 21:04	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:04	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/10/18 21:04	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:04	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/10/18 21:04	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:04	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:04	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:04	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:04	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:04	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:04	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:04	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:04	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:04	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:04	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:04	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:04	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:04	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:04	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/10/18 21:04	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/10/18 21:04	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:04	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:04	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:04	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:04	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:04	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:04	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:04	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:04	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:04	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:04	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:04	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:04	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:04	JML	124-48-1	

Lab Sample ID: S89676.05 (continued)

Sample Tag: Trip Blank

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:04	JML	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:04	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:04	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/10/18 21:04	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:04	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:04	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:04	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:04	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:04	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:04	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:04	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/10/18 21:04	JML	120-82-1	

Merit Laboratories, Inc.

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www.meritlabs.com

C.O.C. PAGE # 1 OF 1

110314

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME: Christine Gregg, Alex Villhauer
COMPANY: Arcadis
ADDRESS: 28550 Cabot Drive Suite 500
CITY: Novi STATE: MI ZIP CODE: 48377
PHONE NO.: 248-994-2240 FAX NO.: 248-994-2241 P.O. NO.:
E-MAIL ADDRESS: Christine.Gregg@arcadis.com QUOTE NO.:

INVOICE TO

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

PROJECT NO./NAME: B006479.2018 RACER Lansing
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Sam Dunne

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	VOCs 8260B	1,4-Dioxane 8260B SIMS	Select Metals	Select Metals Dissolved
89676.01	05/08/18	1235	MW-13-25_050818	GW	3		3						X	X		
02	05/08/18	1425	MW-12-21_050818	GW	5		3	2						X	X	X
03	05/08/18	1635	MW-12-20-050818	GW	3								X	X		
04	05/08/18	—	DUP-06_050818	GW	3		3						X	X		
05	—	—	Trip Blank	W	1											

RELINQUISHED BY: SIGNATURE/ORGANIZATION: Sam Dunne (Sampler)	DATE: 5/8/18	TIME: 1730	
RECEIVED BY: SIGNATURE/ORGANIZATION: Brett Fiessnel	DATE: 5/8	TIME: 1730	
RELINQUISHED BY: SIGNATURE/ORGANIZATION: Brett Fiessnel	DATE: 5/8	TIME: 1800	
RECEIVED BY: SIGNATURE/ORGANIZATION: PM Storage	DATE: 5/9	TIME: 1800	

RELINQUISHED BY: SIGNATURE/ORGANIZATION: PM Storage	DATE: 5/10/18	TIME: 8:30	
RECEIVED BY: SIGNATURE/ORGANIZATION:	DATE: 5/10/18	TIME: 8:30	
SEAL NO.	SEAL INTACT? YES ☐ NO ☐	INITIALS	NOTES: 5/10/18 8:30 9:00 rgc 5/10/18
SEAL NO.	SEAL INTACT? YES ☐ NO ☐	INITIALS	TEMP. ON ARRIVAL: 2.7 5/10/18 0900

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

Rev. 5.18.12

Analytical Laboratory Report

Report ID: S89677.01(01)
Generated on 05/23/2018

Report to

Attention: Alex Villhauer
Arcadis
28550 Cabot Drive
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Novi, MI 48377

Phone: 616-780-3277 FAX: 248-994-2241
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Report Summary

Lab Sample ID(s): S89677.01-S89677.09
Project: B0064479.2018
Collected Date: 05/09/2018
Submitted Date/Time: 05/10/2018 09:00
Sampled by: Sam Dunne
P.O. #: B0064479.2018

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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).
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

Method Summary

Method	Version
N/A	Not Applicable
SW3015A	SW 846 Method 3015A Revision 1 February 2007
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003
SW6020A	SW 846 Method 6020A Revision 1 February 2007
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs

Sample Summary (9 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S89677.01	FB-02_050918	Liquid	05/09/18 08:30
S89677.02	EB-02_050918	Liquid	05/09/18 08:35
S89677.03	PW-14-03_050918	Liquid	05/09/18 10:35
S89677.04	MW-14-64_050918	Liquid	05/09/18 12:15
S89677.05	MW-13-30_050918	Liquid	05/09/18 14:15
S89677.06	MW-13-30_050918 MS	Liquid	05/09/18 14:15
S89677.07	MW-13-30_050918 MSD	Liquid	05/09/18 14:15
S89677.08	MW-91-5_050918	Liquid	05/09/18 16:00
S89677.09	Trip Blank	Liquid	05/09/18 00:01

Analytical Laboratory Report

Lab Sample ID: S89677.01
Sample Tag: FB-02_050918
Collected Date/Time: 05/09/2018 08:30
Matrix: Liquid
COC Reference: 110312

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.7	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/11/18 12:40	JML		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:01	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:01	JML	106-93-4	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:01	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/11/18 01:01	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:01	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/11/18 01:01	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:01	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/11/18 01:01	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:01	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:01	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:01	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:01	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:01	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:01	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:01	JML	75-35-4	
Methylene chloride	2	ug/L	1	SW5030C/8260C	05/11/18 01:01	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:01	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:01	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:01	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:01	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:01	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:01	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/11/18 01:01	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/11/18 01:01	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:01	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:01	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:01	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:01	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:01	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:01	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:01	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:01	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:01	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:01	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:01	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:01	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:01	JML	124-48-1	
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:01	JML	108-90-7	

Lab Sample ID: S89677.01 (continued)

Sample Tag: FB-02_050918

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:01	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:01	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/11/18 01:01	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:01	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:01	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:01	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:01	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:01	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:01	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:01	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:01	JML	120-82-1	

Analytical Laboratory Report

Lab Sample ID: S89677.02
Sample Tag: EB-02_050918
Collected Date/Time: 05/09/2018 08:35
Matrix: Liquid
COC Reference: 110312

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.7	IR
1	125ml Plastic	HNO3	Yes	2.7	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
Metal Digestion	Completed			SW3015A	05/14/18 12:40	CCM		
pH check for VOCs*	<2	STD Units		N/A	05/11/18 12:40	JML		
Metals								
Arsenic	Not detected	mg/L	0.002	SW6020A	05/14/18 13:51	CCM	7440-38-2	
Chromium	Not detected	mg/L	0.005	SW6020A	05/14/18 13:51	CCM	7440-47-3	
Copper	0.026	mg/L	0.005	SW6020A	05/14/18 13:51	CCM	7440-50-8	
Lead	Not detected	mg/L	0.003	SW6020A	05/14/18 13:51	CCM	7439-92-1	
Nickel	Not detected	mg/L	0.005	SW6020A	05/14/18 13:51	CCM	7440-02-0	
Vanadium	Not detected	mg/L	0.005	SW6020A	05/14/18 13:51	CCM	7440-62-2	
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:23	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:23	JML	106-93-4	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:23	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/11/18 01:23	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:23	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/11/18 01:23	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:23	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/11/18 01:23	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:23	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:23	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:23	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:23	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:23	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:23	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:23	JML	75-35-4	
Methylene chloride	2	ug/L	1	SW5030C/8260C	05/11/18 01:23	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:23	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:23	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:23	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:23	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:23	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:23	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/11/18 01:23	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/11/18 01:23	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:23	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:23	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:23	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:23	JML	79-01-6	

Lab Sample ID: S89677.02 (continued)
Sample Tag: EB-02_050918

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:23	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:23	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:23	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:23	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:23	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:23	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:23	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:23	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:23	JML	124-48-1	
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:23	JML	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:23	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:23	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/11/18 01:23	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:23	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:23	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:23	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:23	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:23	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:23	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:23	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:23	JML	120-82-1	

Analytical Laboratory Report

Lab Sample ID: S89677.03
Sample Tag: PW-14-03_050918
Collected Date/Time: 05/09/2018 10:35
Matrix: Liquid
COC Reference: 110312

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.7	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/15/18 11:00	KCV		
Organics - Volatiles								
1,4-Dioxane*	500	ug/L	10	SW8260B - SIM	05/21/18 21:05	JML	123-91-1	Y

Y-Elevated reporting limit due to high target concentration

Analytical Laboratory Report

Lab Sample ID: S89677.04
Sample Tag: MW-14-64_050918
Collected Date/Time: 05/09/2018 12:15
Matrix: Liquid
COC Reference: 110312

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.7	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/11/18 12:40	JML		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:35	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:35	JML	106-93-4	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:35	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/11/18 03:35	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:35	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/11/18 03:35	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:35	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/11/18 03:35	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:35	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:35	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:35	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:35	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:35	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:35	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:35	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:35	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:35	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:35	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:35	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:35	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:35	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:35	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/11/18 03:35	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/11/18 03:35	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:35	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:35	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:35	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:35	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:35	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:35	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:35	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:35	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:35	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:35	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:35	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:35	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:35	JML	124-48-1	
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:35	JML	108-90-7	

Lab Sample ID: S89677.04 (continued)

Sample Tag: MW-14-64_050918

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:35	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:35	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/11/18 03:35	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:35	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:35	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:35	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:35	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:35	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:35	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:35	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:35	JML	120-82-1	

Lab Sample ID: S89677.05
Sample Tag: MW-13-30_050918
Collected Date/Time: 05/09/2018 14:15
Matrix: Liquid
COC Reference: 110312

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.7	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/11/18 12:40	JML		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:29	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:29	JML	106-93-4	
1,4-Dioxane*	Not detected	ug/L	1	SW8260B - SIM	05/21/18 17:33	JML	123-91-1	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:29	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/11/18 02:29	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:29	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/11/18 02:29	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:29	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/11/18 02:29	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:29	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:29	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:29	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:29	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:29	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:29	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:29	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:29	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:29	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:29	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:29	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:29	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:29	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:29	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/11/18 02:29	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/11/18 02:29	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:29	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:29	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:29	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:29	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:29	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:29	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:29	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:29	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:29	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:29	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:29	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:29	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:29	JML	124-48-1	

Lab Sample ID: S89677.05 (continued)

Sample Tag: MW-13-30_050918

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:29	JML	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:29	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:29	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/11/18 02:29	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:29	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:29	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:29	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:29	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:29	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:29	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:29	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:29	JML	120-82-1	

Analytical Laboratory Report

Lab Sample ID: S89677.06
Sample Tag: MW-13-30_050918 MS
Collected Date/Time: 05/09/2018 14:15
Matrix: Liquid
COC Reference: 110312

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.7	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/11/18 12:40	JML		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	48	ug/L	1	SW5030C/8260C	05/10/18 23:14	JML	96-12-8	1
1,2-Dibromoethane	47	ug/L	1	SW5030C/8260C	05/10/18 23:14	JML	106-93-4	1
1,4-Dioxane*	53	ug/L	1	SW8260B - SIM	05/21/18 15:08	JML	123-91-1	1
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	50	ug/L	1	SW5030C/8260C	05/10/18 23:14	JML	76-13-1	1
Acetone	53	ug/L	10	SW5030C/8260C	05/10/18 23:14	JML	67-64-1	1
Carbon disulfide	53	ug/L	1	SW5030C/8260C	05/10/18 23:14	JML	75-15-0	1
Methyl Acetate	58	ug/L	10	SW5030C/8260C	05/10/18 23:14	JML	79-20-9	1
tert-Methyl butyl ether (MTBE)	55	ug/L	1	SW5030C/8260C	05/10/18 23:14	JML	1634-04-4	1
2-Butanone (MEK)	58	ug/L	10	SW5030C/8260C	05/10/18 23:14	JML	78-93-3	1
Dichlorodifluoromethane	46	ug/L	1	SW5030C/8260C	05/10/18 23:14	JML	75-71-8	1
Chloromethane	51	ug/L	1	SW5030C/8260C	05/10/18 23:14	JML	74-87-3	1
Vinyl chloride	48	ug/L	1	SW5030C/8260C	05/10/18 23:14	JML	75-01-4	1
Bromomethane	44	ug/L	1	SW5030C/8260C	05/10/18 23:14	JML	74-83-9	1
Chloroethane	47	ug/L	1	SW5030C/8260C	05/10/18 23:14	JML	75-00-3	1
Trichlorofluoromethane	45	ug/L	1	SW5030C/8260C	05/10/18 23:14	JML	75-69-4	1
1,1-Dichloroethene	51	ug/L	1	SW5030C/8260C	05/10/18 23:14	JML	75-35-4	1
Methylene chloride	51	ug/L	1	SW5030C/8260C	05/10/18 23:14	JML	75-09-2	1
trans-1,2-Dichloroethene	53	ug/L	1	SW5030C/8260C	05/10/18 23:14	JML	156-60-5	1
1,1-Dichloroethane	54	ug/L	1	SW5030C/8260C	05/10/18 23:14	JML	75-34-3	1
cis-1,2-Dichloroethene	51	ug/L	1	SW5030C/8260C	05/10/18 23:14	JML	156-59-2	1
Chloroform	50	ug/L	1	SW5030C/8260C	05/10/18 23:14	JML	67-66-3	1
1,1,1-Trichloroethane	52	ug/L	1	SW5030C/8260C	05/10/18 23:14	JML	71-55-6	1
Cyclohexane	49	ug/L	1	SW5030C/8260C	05/10/18 23:14	JML	110-82-7	1
4-Methyl-2-pentanone (MIBK)	55	ug/L	10	SW5030C/8260C	05/10/18 23:14	JML	108-10-1	1
2-Hexanone	54	ug/L	10	SW5030C/8260C	05/10/18 23:14	JML	591-78-6	1
Carbon tetrachloride	48	ug/L	1	SW5030C/8260C	05/10/18 23:14	JML	56-23-5	1
Benzene	50	ug/L	1	SW5030C/8260C	05/10/18 23:14	JML	71-43-2	1
1,2-Dichloroethane	50	ug/L	1	SW5030C/8260C	05/10/18 23:14	JML	107-06-2	1
Trichloroethene	49	ug/L	1	SW5030C/8260C	05/10/18 23:14	JML	79-01-6	1
1,2-Dichloropropane	51	ug/L	1	SW5030C/8260C	05/10/18 23:14	JML	78-87-5	1
Bromodichloromethane	48	ug/L	1	SW5030C/8260C	05/10/18 23:14	JML	75-27-4	1
Methyl cyclohexane	48	ug/L	1	SW5030C/8260C	05/10/18 23:14	JML	108-87-2	1
cis-1,3-Dichloropropene	52	ug/L	1	SW5030C/8260C	05/10/18 23:14	JML	10061-01-5	1
Toluene	49	ug/L	1	SW5030C/8260C	05/10/18 23:14	JML	108-88-3	1
trans-1,3-Dichloropropene	52	ug/L	1	SW5030C/8260C	05/10/18 23:14	JML	10061-02-6	1
1,1,2-Trichloroethane	50	ug/L	1	SW5030C/8260C	05/10/18 23:14	JML	79-00-5	1
Tetrachloroethene	43	ug/L	1	SW5030C/8260C	05/10/18 23:14	JML	127-18-4	1

1-spiked at 50ug/L

Lab Sample ID: S89677.06 (continued)

Sample Tag: MW-13-30_050918 MS

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
Dibromochloromethane	47	ug/L	1	SW5030C/8260C	05/10/18 23:14	JML	124-48-1	1
Chlorobenzene	46	ug/L	1	SW5030C/8260C	05/10/18 23:14	JML	108-90-7	1
1,1,2,2-Tetrachloroethane	48	ug/L	1	SW5030C/8260C	05/10/18 23:14	JML	79-34-5	1
Ethylbenzene	46	ug/L	1	SW5030C/8260C	05/10/18 23:14	JML	100-41-4	1
p,m-Xylene*	88	ug/L	2	SW5030C/8260C	05/10/18 23:14	JML		1
o-Xylene	45	ug/L	1	SW5030C/8260C	05/10/18 23:14	JML	95-47-6	1
Styrene	42	ug/L	1	SW5030C/8260C	05/10/18 23:14	JML	100-42-5	1
Isopropylbenzene	45	ug/L	1	SW5030C/8260C	05/10/18 23:14	JML	98-82-8	1
Bromoform	44	ug/L	1	SW5030C/8260C	05/10/18 23:14	JML	75-25-2	1
1,3-Dichlorobenzene	45	ug/L	1	SW5030C/8260C	05/10/18 23:14	JML	541-73-1	1
1,4-Dichlorobenzene	46	ug/L	1	SW5030C/8260C	05/10/18 23:14	JML	106-46-7	1
1,2-Dichlorobenzene	46	ug/L	1	SW5030C/8260C	05/10/18 23:14	JML	95-50-1	1
1,2,4-Trichlorobenzene	42	ug/L	1	SW5030C/8260C	05/10/18 23:14	JML	120-82-1	1

1-spiked at 50ug/L

Analytical Laboratory Report

Lab Sample ID: S89677.07
Sample Tag: MW-13-30_050918 MSD
Collected Date/Time: 05/09/2018 14:15
Matrix: Liquid
COC Reference: 110312

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.7	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/11/18 12:40	JML		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	50	ug/L	1	SW5030C/8260C	05/10/18 23:35	JML	96-12-8	1
1,2-Dibromoethane	47	ug/L	1	SW5030C/8260C	05/10/18 23:35	JML	106-93-4	1
1,4-Dioxane*	45	ug/L	1	SW8260B - SIM	05/21/18 15:28	JML	123-91-1	1
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	50	ug/L	1	SW5030C/8260C	05/10/18 23:35	JML	76-13-1	1
Acetone	54	ug/L	10	SW5030C/8260C	05/10/18 23:35	JML	67-64-1	1
Carbon disulfide	54	ug/L	1	SW5030C/8260C	05/10/18 23:35	JML	75-15-0	1
Methyl Acetate	58	ug/L	10	SW5030C/8260C	05/10/18 23:35	JML	79-20-9	1
tert-Methyl butyl ether (MTBE)	56	ug/L	1	SW5030C/8260C	05/10/18 23:35	JML	1634-04-4	1
2-Butanone (MEK)	58	ug/L	10	SW5030C/8260C	05/10/18 23:35	JML	78-93-3	1
Dichlorodifluoromethane	47	ug/L	1	SW5030C/8260C	05/10/18 23:35	JML	75-71-8	1
Chloromethane	52	ug/L	1	SW5030C/8260C	05/10/18 23:35	JML	74-87-3	1
Vinyl chloride	49	ug/L	1	SW5030C/8260C	05/10/18 23:35	JML	75-01-4	1
Bromomethane	45	ug/L	1	SW5030C/8260C	05/10/18 23:35	JML	74-83-9	1
Chloroethane	49	ug/L	1	SW5030C/8260C	05/10/18 23:35	JML	75-00-3	1
Trichlorofluoromethane	46	ug/L	1	SW5030C/8260C	05/10/18 23:35	JML	75-69-4	1
1,1-Dichloroethene	51	ug/L	1	SW5030C/8260C	05/10/18 23:35	JML	75-35-4	1
Methylene chloride	53	ug/L	1	SW5030C/8260C	05/10/18 23:35	JML	75-09-2	1
trans-1,2-Dichloroethene	54	ug/L	1	SW5030C/8260C	05/10/18 23:35	JML	156-60-5	1
1,1-Dichloroethane	55	ug/L	1	SW5030C/8260C	05/10/18 23:35	JML	75-34-3	1
cis-1,2-Dichloroethene	52	ug/L	1	SW5030C/8260C	05/10/18 23:35	JML	156-59-2	1
Chloroform	51	ug/L	1	SW5030C/8260C	05/10/18 23:35	JML	67-66-3	1
1,1,1-Trichloroethane	53	ug/L	1	SW5030C/8260C	05/10/18 23:35	JML	71-55-6	1
Cyclohexane	49	ug/L	1	SW5030C/8260C	05/10/18 23:35	JML	110-82-7	1
4-Methyl-2-pentanone (MIBK)	56	ug/L	10	SW5030C/8260C	05/10/18 23:35	JML	108-10-1	1
2-Hexanone	55	ug/L	10	SW5030C/8260C	05/10/18 23:35	JML	591-78-6	1
Carbon tetrachloride	48	ug/L	1	SW5030C/8260C	05/10/18 23:35	JML	56-23-5	1
Benzene	51	ug/L	1	SW5030C/8260C	05/10/18 23:35	JML	71-43-2	1
1,2-Dichloroethane	51	ug/L	1	SW5030C/8260C	05/10/18 23:35	JML	107-06-2	1
Trichloroethene	49	ug/L	1	SW5030C/8260C	05/10/18 23:35	JML	79-01-6	1
1,2-Dichloropropane	52	ug/L	1	SW5030C/8260C	05/10/18 23:35	JML	78-87-5	1
Bromodichloromethane	48	ug/L	1	SW5030C/8260C	05/10/18 23:35	JML	75-27-4	1
Methyl cyclohexane	48	ug/L	1	SW5030C/8260C	05/10/18 23:35	JML	108-87-2	1
cis-1,3-Dichloropropene	53	ug/L	1	SW5030C/8260C	05/10/18 23:35	JML	10061-01-5	1
Toluene	49	ug/L	1	SW5030C/8260C	05/10/18 23:35	JML	108-88-3	1
trans-1,3-Dichloropropene	52	ug/L	1	SW5030C/8260C	05/10/18 23:35	JML	10061-02-6	1
1,1,2-Trichloroethane	51	ug/L	1	SW5030C/8260C	05/10/18 23:35	JML	79-00-5	1
Tetrachloroethene	43	ug/L	1	SW5030C/8260C	05/10/18 23:35	JML	127-18-4	1

1-spiked at 50ug/L

Lab Sample ID: S89677.07 (continued)

Sample Tag: MW-13-30_050918 MSD

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
Dibromochloromethane	47	ug/L	1	SW5030C/8260C	05/10/18 23:35	JML	124-48-1	1
Chlorobenzene	47	ug/L	1	SW5030C/8260C	05/10/18 23:35	JML	108-90-7	1
1,1,2,2-Tetrachloroethane	49	ug/L	1	SW5030C/8260C	05/10/18 23:35	JML	79-34-5	1
Ethylbenzene	46	ug/L	1	SW5030C/8260C	05/10/18 23:35	JML	100-41-4	1
p,m-Xylene*	89	ug/L	2	SW5030C/8260C	05/10/18 23:35	JML		1
o-Xylene	46	ug/L	1	SW5030C/8260C	05/10/18 23:35	JML	95-47-6	1
Styrene	43	ug/L	1	SW5030C/8260C	05/10/18 23:35	JML	100-42-5	1
Isopropylbenzene	45	ug/L	1	SW5030C/8260C	05/10/18 23:35	JML	98-82-8	1
Bromoform	44	ug/L	1	SW5030C/8260C	05/10/18 23:35	JML	75-25-2	1
1,3-Dichlorobenzene	46	ug/L	1	SW5030C/8260C	05/10/18 23:35	JML	541-73-1	1
1,4-Dichlorobenzene	46	ug/L	1	SW5030C/8260C	05/10/18 23:35	JML	106-46-7	1
1,2-Dichlorobenzene	47	ug/L	1	SW5030C/8260C	05/10/18 23:35	JML	95-50-1	1
1,2,4-Trichlorobenzene	43	ug/L	1	SW5030C/8260C	05/10/18 23:35	JML	120-82-1	1

1-spiked at 50ug/L

Analytical Laboratory Report

Lab Sample ID: S89677.08
Sample Tag: MW-91-5_050918
Collected Date/Time: 05/09/2018 16:00
Matrix: Liquid
COC Reference: 110312

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.7	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/11/18 12:40	JML		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:56	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:56	JML	106-93-4	
1,4-Dioxane*	Not detected	ug/L	1	SW8260B - SIM	05/22/18 16:15	JML	123-91-1	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:56	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/11/18 03:56	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:56	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/11/18 03:56	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:56	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/11/18 03:56	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:56	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:56	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:56	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:56	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:56	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:56	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:56	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:56	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:56	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:56	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:56	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:56	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:56	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:56	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/11/18 03:56	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/11/18 03:56	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:56	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:56	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:56	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:56	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:56	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:56	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:56	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:56	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:56	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:56	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:56	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:56	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:56	JML	124-48-1	

Lab Sample ID: S89677.08 (continued)

Sample Tag: MW-91-5_050918

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:56	JML	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:56	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:56	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/11/18 03:56	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:56	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:56	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:56	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:56	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:56	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:56	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:56	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 03:56	JML	120-82-1	

Analytical Laboratory Report

Lab Sample ID: S89677.09
Sample Tag: Trip Blank
Collected Date/Time: 05/09/2018 00:01
Matrix: Liquid
COC Reference: 110312

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	2.7	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/11/18 12:40	JML		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:45	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:45	JML	106-93-4	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:45	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/11/18 01:45	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:45	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/11/18 01:45	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:45	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/11/18 01:45	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:45	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:45	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:45	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:45	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:45	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:45	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:45	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:45	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:45	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:45	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:45	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:45	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:45	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:45	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/11/18 01:45	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/11/18 01:45	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:45	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:45	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:45	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:45	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:45	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:45	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:45	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:45	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:45	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:45	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:45	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:45	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:45	JML	124-48-1	
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:45	JML	108-90-7	

Lab Sample ID: S89677.09 (continued)

Sample Tag: Trip Blank

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:45	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:45	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/11/18 01:45	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:45	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:45	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:45	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:45	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:45	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:45	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:45	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 01:45	JML	120-82-1	

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C.O.C. PAGE # 1 OF 1

110312

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME: Christine Gregg, Alex Villhauer
COMPANY: Arcadis
ADDRESS: 28550 Cabot Dr. Suite 500
CITY: Novi STATE: MI ZIP CODE: 48377
PHONE NO.: 248-994-2240 FAX NO.: 248994-2241 P.O. NO.:
E-MAIL ADDRESS: Christine.Gregg@arcadis.com QUOTE NO.:

INVOICE TO

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

PROJECT NO./NAME: B006447 9.2018
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Sam Dunne

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	VOC's 8260B	1,4-Dioxane 8260B SIMs	Select + Metals*	Special Instructions
89677.01	05/09/18	0836	FB-02_050918		3		3						X			
.02	05/09/18	0835	EB-02_050918		4		3	1					X		X	
.03	05/09/18	1035	PW-14-03_050918		3		3							X		
.04	05/09/18	1215	MW-14-64_050918		3		3						X			
05.06/04	05/09/18	1415	MW-13-30_050918		9		9						X	X		MS/MSD
.08	05/09/18	1600	MW-91-5_050918		3		3						X	X		
.09	—	—	Trip Blank		1		1						X			

*metals include: arsenic, nickel, lead, vanadium, chromium, copper

RELINQUISHED BY: SIGNATURE/ORGANIZATION	Sam Dunne ☒Sampler Arcadis	DATE 05/09/18	TIME 1640
RECEIVED BY: SIGNATURE/ORGANIZATION	Brett Fiessler MN	DATE 5/9	TIME 1643
RELINQUISHED BY: SIGNATURE/ORGANIZATION		DATE 5/10/18	TIME 8:30 9:00
RECEIVED BY: SIGNATURE/ORGANIZATION		DATE 5/10/18	TIME 0900

RELINQUISHED BY: SIGNATURE/ORGANIZATION	PM Storage	DATE 5/10/18	TIME 8:30
RECEIVED BY: SIGNATURE/ORGANIZATION		DATE 5/10/18	TIME 8:30
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS JAL 5/10/18	
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS	

NOTES: TEMP. ON ARRIVAL 2.7

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

Rev. 5.18.12

Analytical Laboratory Report

Report ID: S89678.01(01)
Generated on 05/23/2018

Report to

Attention: Alex Villhauer
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Novi, MI 48377

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Report Summary

Lab Sample ID(s): S89678.01-S89678.17
Project: B0064479.2018 / Racer Lansing Plant 2
Collected Date: 05/09/2018
Submitted Date/Time: 05/10/2018 09:00
Sampled by: Jake P. / Brett F.
P.O. #: B0064479.2018

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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).
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

Method Summary

Method	Version
N/A	Not Applicable
SW3015A	SW 846 Method 3015A Revision 1 February 2007
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003
SW6020A	SW 846 Method 6020A Revision 1 February 2007
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs

Sample Summary (17 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S89678.01	Trip Blank	Water	05/09/18 00:01
S89678.02	Dup-02	Groundwater	05/09/18 00:01
S89678.03	MW-12-06_050918	Groundwater	05/09/18 09:50
S89678.04	MW-14-61_050918	Groundwater	05/09/18 11:00
S89678.05	MW-16-82_050918	Groundwater	05/09/18 12:40
S89678.06	MW-13-45_050918	Groundwater	05/09/18 14:35
S89678.07	MW-16-83_050918	Groundwater	05/09/18 16:00
S89678.08	MW-12-01_050918	Groundwater	05/09/18 10:35
S89678.09	MW-12-18_050818	Groundwater	05/09/18 11:25
S89678.10	MW-12-07_050918	Groundwater	05/09/18 13:20
S89678.11	P2-MW-02_050918	Groundwater	05/09/18 11:50
S89678.12	MW-14-58_050918	Groundwater	05/09/18 16:00
S89678.13	MW-12-09_050918	Groundwater	05/09/18 15:05
S89678.14	MW-12-09_050918 MS	Groundwater	05/09/18 15:05
S89678.15	MW-12-09_050918 MSD	Groundwater	05/09/18 15:05
S89678.16	MW-17-87_050918	Groundwater	05/09/18 16:05
S89678.17	MW-16-76_050918	Groundwater	05/09/18 09:15

Analytical Laboratory Report

Lab Sample ID: S89678.01
Sample Tag: Trip Blank
Collected Date/Time: 05/09/2018 00:01
Matrix: Water
COC Reference: 110325

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	2.7	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/11/18 12:40	JML		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:06	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:06	JML	106-93-4	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:06	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/11/18 02:06	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:06	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/11/18 02:06	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:06	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/11/18 02:06	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:06	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:06	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:06	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:06	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:06	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:06	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:06	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:06	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:06	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:06	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:06	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:06	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:06	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:06	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/11/18 02:06	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/11/18 02:06	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:06	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:06	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:06	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:06	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:06	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:06	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:06	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:06	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:06	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:06	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:06	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:06	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:06	JML	124-48-1	
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:06	JML	108-90-7	

Lab Sample ID: S89678.01 (continued)

Sample Tag: Trip Blank

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:06	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:06	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/11/18 02:06	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:06	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:06	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:06	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:06	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:06	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:06	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:06	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:06	JML	120-82-1	

Analytical Laboratory Report

Lab Sample ID: S89678.02
Sample Tag: Dup-02
Collected Date/Time: 05/09/2018 00:01
Matrix: Groundwater
COC Reference: 110325

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.7	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/11/18 12:40	JML		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:51	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:51	JML	106-93-4	
1,4-Dioxane*	Not detected	ug/L	1	SW8260B - SIM	05/21/18 18:57	JML	123-91-1	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:51	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/11/18 02:51	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:51	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/11/18 02:51	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:51	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/11/18 02:51	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:51	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:51	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:51	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:51	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:51	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:51	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:51	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:51	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:51	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:51	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:51	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:51	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:51	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:51	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/11/18 02:51	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/11/18 02:51	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:51	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:51	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:51	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:51	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:51	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:51	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:51	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:51	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:51	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:51	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:51	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:51	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:51	JML	124-48-1	

Lab Sample ID: S89678.02 (continued)

Sample Tag: Dup-02

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:51	JML	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:51	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:51	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/11/18 02:51	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:51	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:51	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:51	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:51	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:51	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:51	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:51	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 02:51	JML	120-82-1	

Analytical Laboratory Report

Lab Sample ID: S89678.03
Sample Tag: MW-12-06_050918
Collected Date/Time: 05/09/2018 09:50
Matrix: Groundwater
COC Reference: 110325

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.7	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/11/18 17:25	JML		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 08:37	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 08:37	JML	106-93-4	
1,4-Dioxane*	Not detected	ug/L	1	SW8260B - SIM	05/22/18 17:06	JML	123-91-1	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 08:37	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/11/18 08:37	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/11/18 08:37	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/11/18 08:37	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/11/18 08:37	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/11/18 08:37	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 08:37	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 08:37	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/11/18 08:37	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 08:37	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 08:37	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 08:37	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 08:37	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/11/18 08:37	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 08:37	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 08:37	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 08:37	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/11/18 08:37	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 08:37	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 08:37	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/11/18 08:37	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/11/18 08:37	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/11/18 08:37	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 08:37	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 08:37	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 08:37	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 08:37	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 08:37	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 08:37	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 08:37	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 08:37	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 08:37	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 08:37	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 08:37	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 08:37	JML	124-48-1	

Lab Sample ID: S89678.03 (continued)
Sample Tag: MW-12-06_050918

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 08:37	JML	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 08:37	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 08:37	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/11/18 08:37	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 08:37	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 08:37	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 08:37	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/11/18 08:37	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 08:37	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 08:37	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 08:37	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 08:37	JML	120-82-1	

Analytical Laboratory Report

Lab Sample ID: S89678.04
Sample Tag: MW-14-61_050918
Collected Date/Time: 05/09/2018 11:00
Matrix: Groundwater
COC Reference: 110325

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.7	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/11/18 17:25	JML		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 08:56	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 08:56	JML	106-93-4	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 08:56	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/11/18 08:56	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/11/18 08:56	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/11/18 08:56	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/11/18 08:56	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/11/18 08:56	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 08:56	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 08:56	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/11/18 08:56	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 08:56	JML	74-83-9	
Chloroethane	113	ug/L	1	SW5030C/8260C	05/11/18 08:56	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 08:56	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 08:56	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/11/18 08:56	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 08:56	JML	156-60-5	
1,1-Dichloroethane	33	ug/L	1	SW5030C/8260C	05/11/18 08:56	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 08:56	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/11/18 08:56	JML	67-66-3	
1,1,1-Trichloroethane	3	ug/L	1	SW5030C/8260C	05/11/18 08:56	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 08:56	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/11/18 08:56	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/11/18 08:56	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/11/18 08:56	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 08:56	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 08:56	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 08:56	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 08:56	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 08:56	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 08:56	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 08:56	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 08:56	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 08:56	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 08:56	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 08:56	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 08:56	JML	124-48-1	
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 08:56	JML	108-90-7	

Lab Sample ID: S89678.04 (continued)

Sample Tag: MW-14-61_050918

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 08:56	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 08:56	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/11/18 08:56	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 08:56	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 08:56	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 08:56	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/11/18 08:56	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 08:56	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 08:56	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 08:56	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 08:56	JML	120-82-1	

Analytical Laboratory Report

Lab Sample ID: S89678.05
Sample Tag: MW-16-82_050918
Collected Date/Time: 05/09/2018 12:40
Matrix: Groundwater
COC Reference: 110325

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.7	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/11/18 17:25	JML		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:15	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:15	JML	106-93-4	
1,4-Dioxane*	Not detected	ug/L	1	SW8260B - SIM	05/22/18 17:27	JML	123-91-1	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:15	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/11/18 09:15	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:15	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/11/18 09:15	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:15	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/11/18 09:15	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:15	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:15	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:15	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:15	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:15	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:15	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:15	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:15	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:15	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:15	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:15	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:15	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:15	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:15	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/11/18 09:15	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/11/18 09:15	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:15	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:15	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:15	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:15	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:15	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:15	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:15	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:15	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:15	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:15	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:15	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:15	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:15	JML	124-48-1	

Lab Sample ID: S89678.05 (continued)
Sample Tag: MW-16-82_050918

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:15	JML	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:15	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:15	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/11/18 09:15	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:15	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:15	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:15	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:15	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:15	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:15	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:15	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:15	JML	120-82-1	

Analytical Laboratory Report

Lab Sample ID: S89678.06
Sample Tag: MW-13-45_050918
Collected Date/Time: 05/09/2018 14:35
Matrix: Groundwater
COC Reference: 110325

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.7	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/11/18 17:25	JML		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:35	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:35	JML	106-93-4	
1,4-Dioxane*	53	ug/L	1	SW8260B - SIM	05/22/18 17:48	JML	123-91-1	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:35	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/11/18 09:35	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:35	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/11/18 09:35	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:35	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/11/18 09:35	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:35	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:35	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:35	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:35	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:35	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:35	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:35	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:35	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:35	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:35	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:35	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:35	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:35	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:35	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/11/18 09:35	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/11/18 09:35	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:35	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:35	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:35	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:35	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:35	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:35	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:35	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:35	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:35	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:35	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:35	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:35	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:35	JML	124-48-1	

Lab Sample ID: S89678.06 (continued)
Sample Tag: MW-13-45_050918

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:35	JML	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:35	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:35	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/11/18 09:35	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:35	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:35	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:35	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:35	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:35	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:35	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:35	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:35	JML	120-82-1	

Analytical Laboratory Report

Lab Sample ID: S89678.07
Sample Tag: MW-16-83_050918
Collected Date/Time: 05/09/2018 16:00
Matrix: Groundwater
COC Reference: 110325

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.7	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/16/18 11:15	KCV		
Organics - Volatiles								
1,4-Dioxane*	Not detected	ug/L	1	SW8260B - SIM	05/22/18 18:08	JML	123-91-1	

Analytical Laboratory Report

Lab Sample ID: S89678.08
Sample Tag: MW-12-01_050918
Collected Date/Time: 05/09/2018 10:35
Matrix: Groundwater
COC Reference: 110325

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.7	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/11/18 17:25	JML		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:54	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:54	JML	106-93-4	
1,4-Dioxane*	Not detected	ug/L	1	SW8260B - SIM	05/22/18 18:30	JML	123-91-1	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:54	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/11/18 09:54	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:54	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/11/18 09:54	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:54	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/11/18 09:54	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:54	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:54	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:54	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:54	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:54	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:54	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:54	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:54	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:54	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:54	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:54	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:54	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:54	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:54	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/11/18 09:54	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/11/18 09:54	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:54	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:54	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:54	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:54	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:54	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:54	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:54	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:54	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:54	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:54	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:54	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:54	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:54	JML	124-48-1	

Lab Sample ID: S89678.08 (continued)
Sample Tag: MW-12-01_050918

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:54	JML	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:54	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:54	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/11/18 09:54	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:54	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:54	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:54	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:54	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:54	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:54	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:54	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 09:54	JML	120-82-1	

Analytical Laboratory Report

Lab Sample ID: S89678.09
Sample Tag: MW-12-18_050818
Collected Date/Time: 05/09/2018 11:25
Matrix: Groundwater
COC Reference: 110325

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.7	IR
1	125ml Plastic	HNO3	Yes	2.7	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
Metal Digestion	Completed			SW3015A	05/14/18 12:40	CCM		
pH check for VOCs*	<2	STD Units		N/A	05/11/18 17:25	JML		
Metals								
Arsenic	Not detected	mg/L	0.002	SW6020A	05/14/18 14:04	CCM	7440-38-2	
Chromium	Not detected	mg/L	0.005	SW6020A	05/14/18 14:04	CCM	7440-47-3	
Copper	Not detected	mg/L	0.005	SW6020A	05/14/18 14:04	CCM	7440-50-8	
Lead	Not detected	mg/L	0.003	SW6020A	05/14/18 14:04	CCM	7439-92-1	
Nickel	Not detected	mg/L	0.005	SW6020A	05/14/18 14:04	CCM	7440-02-0	
Vanadium	Not detected	mg/L	0.005	SW6020A	05/14/18 14:04	CCM	7440-62-2	
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:13	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:13	JML	106-93-4	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:13	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/11/18 10:13	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:13	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/11/18 10:13	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:13	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/11/18 10:13	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:13	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:13	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:13	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:13	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:13	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:13	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:13	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:13	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:13	JML	156-60-5	
1,1-Dichloroethane	1	ug/L	1	SW5030C/8260C	05/11/18 10:13	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:13	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:13	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:13	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:13	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/11/18 10:13	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/11/18 10:13	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:13	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:13	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:13	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:13	JML	79-01-6	

Lab Sample ID: S89678.09 (continued)
Sample Tag: MW-12-18_050818

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:13	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:13	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:13	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:13	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:13	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:13	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:13	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:13	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:13	JML	124-48-1	
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:13	JML	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:13	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:13	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/11/18 10:13	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:13	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:13	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:13	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:13	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:13	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:13	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:13	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:13	JML	120-82-1	

Analytical Laboratory Report

Lab Sample ID: S89678.10
Sample Tag: MW-12-07_050918
Collected Date/Time: 05/09/2018 13:20
Matrix: Groundwater
COC Reference: 110325

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.7	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/11/18 17:25	JML		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:32	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:32	JML	106-93-4	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:32	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/11/18 10:32	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:32	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/11/18 10:32	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:32	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/11/18 10:32	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:32	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:32	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:32	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:32	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:32	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:32	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:32	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:32	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:32	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:32	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:32	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:32	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:32	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:32	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/11/18 10:32	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/11/18 10:32	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:32	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:32	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:32	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:32	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:32	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:32	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:32	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:32	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:32	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:32	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:32	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:32	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:32	JML	124-48-1	
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:32	JML	108-90-7	

Lab Sample ID: S89678.10 (continued)

Sample Tag: MW-12-07_050918

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:32	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:32	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/11/18 10:32	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:32	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:32	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:32	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:32	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:32	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:32	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:32	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:32	JML	120-82-1	

Analytical Laboratory Report

Lab Sample ID: S89678.11
Sample Tag: P2-MW-02_050918
Collected Date/Time: 05/09/2018 11:50
Matrix: Groundwater
COC Reference: 110321

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.7	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/11/18 17:25	JML		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:51	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:51	JML	106-93-4	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:51	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/11/18 10:51	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:51	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/11/18 10:51	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:51	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/11/18 10:51	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:51	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:51	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:51	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:51	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:51	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:51	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:51	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:51	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:51	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:51	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:51	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:51	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:51	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:51	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/11/18 10:51	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/11/18 10:51	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:51	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:51	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:51	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:51	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:51	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:51	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:51	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:51	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:51	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:51	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:51	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:51	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:51	JML	124-48-1	
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:51	JML	108-90-7	

Lab Sample ID: S89678.11 (continued)

Sample Tag: P2-MW-02_050918

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:51	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:51	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/11/18 10:51	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:51	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:51	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:51	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:51	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:51	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:51	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:51	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 10:51	JML	120-82-1	

Analytical Laboratory Report

Lab Sample ID: S89678.12
Sample Tag: MW-14-58_050918
Collected Date/Time: 05/09/2018 16:00
Matrix: Groundwater
COC Reference: 110321

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.7	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/15/18 11:00	KCV		
Organics - Volatiles								
1,4-Dioxane*	58	ug/L	1	SW8260B - SIM	05/21/18 19:18	JML	123-91-1	

Analytical Laboratory Report

Lab Sample ID: S89678.13
Sample Tag: MW-12-09_050918
Collected Date/Time: 05/09/2018 15:05
Matrix: Groundwater
COC Reference: 110321

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.7	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/11/18 17:25	JML		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 07:58	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 07:58	JML	106-93-4	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 07:58	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/11/18 07:58	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/11/18 07:58	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/11/18 07:58	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/11/18 07:58	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/11/18 07:58	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 07:58	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 07:58	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/11/18 07:58	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 07:58	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 07:58	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 07:58	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 07:58	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/11/18 07:58	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 07:58	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 07:58	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 07:58	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/11/18 07:58	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 07:58	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 07:58	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/11/18 07:58	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/11/18 07:58	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/11/18 07:58	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 07:58	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 07:58	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 07:58	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 07:58	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 07:58	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 07:58	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 07:58	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 07:58	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 07:58	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 07:58	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 07:58	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 07:58	JML	124-48-1	
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 07:58	JML	108-90-7	

Lab Sample ID: S89678.13 (continued)

Sample Tag: MW-12-09_050918

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 07:58	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 07:58	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/11/18 07:58	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 07:58	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 07:58	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 07:58	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/11/18 07:58	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 07:58	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 07:58	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 07:58	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 07:58	JML	120-82-1	

Analytical Laboratory Report

Lab Sample ID: S89678.14
Sample Tag: MW-12-09_050918 MS
Collected Date/Time: 05/09/2018 15:05
Matrix: Groundwater
COC Reference: 110321

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.7	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/11/18 17:25	JML		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	55	ug/L	1	SW5030C/8260C	05/11/18 06:03	JML	96-12-8	1
1,2-Dibromoethane	53	ug/L	1	SW5030C/8260C	05/11/18 06:03	JML	106-93-4	1
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	45	ug/L	1	SW5030C/8260C	05/11/18 06:03	JML	76-13-1	
Acetone	51	ug/L	10	SW5030C/8260C	05/11/18 06:03	JML	67-64-1	
Carbon disulfide	43	ug/L	1	SW5030C/8260C	05/11/18 06:03	JML	75-15-0	
Methyl Acetate	42	ug/L	10	SW5030C/8260C	05/11/18 06:03	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	47	ug/L	1	SW5030C/8260C	05/11/18 06:03	JML	1634-04-4	
2-Butanone (MEK)	47	ug/L	10	SW5030C/8260C	05/11/18 06:03	JML	78-93-3	
Dichlorodifluoromethane	41	ug/L	1	SW5030C/8260C	05/11/18 06:03	JML	75-71-8	
Chloromethane	40	ug/L	1	SW5030C/8260C	05/11/18 06:03	JML	74-87-3	
Vinyl chloride	41	ug/L	1	SW5030C/8260C	05/11/18 06:03	JML	75-01-4	
Bromomethane	42	ug/L	1	SW5030C/8260C	05/11/18 06:03	JML	74-83-9	
Chloroethane	41	ug/L	1	SW5030C/8260C	05/11/18 06:03	JML	75-00-3	
Trichlorofluoromethane	30	ug/L	1	SW5030C/8260C	05/11/18 06:03	JML	75-69-4	
1,1-Dichloroethene	40	ug/L	1	SW5030C/8260C	05/11/18 06:03	JML	75-35-4	
Methylene chloride	44	ug/L	1	SW5030C/8260C	05/11/18 06:03	JML	75-09-2	
trans-1,2-Dichloroethene	44	ug/L	1	SW5030C/8260C	05/11/18 06:03	JML	156-60-5	
1,1-Dichloroethane	44	ug/L	1	SW5030C/8260C	05/11/18 06:03	JML	75-34-3	
cis-1,2-Dichloroethene	46	ug/L	1	SW5030C/8260C	05/11/18 06:03	JML	156-59-2	
Chloroform	45	ug/L	1	SW5030C/8260C	05/11/18 06:03	JML	67-66-3	
1,1,1-Trichloroethane	48	ug/L	1	SW5030C/8260C	05/11/18 06:03	JML	71-55-6	
Cyclohexane	42	ug/L	1	SW5030C/8260C	05/11/18 06:03	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	48	ug/L	10	SW5030C/8260C	05/11/18 06:03	JML	108-10-1	
2-Hexanone	49	ug/L	10	SW5030C/8260C	05/11/18 06:03	JML	591-78-6	
Carbon tetrachloride	47	ug/L	1	SW5030C/8260C	05/11/18 06:03	JML	56-23-5	
Benzene	46	ug/L	1	SW5030C/8260C	05/11/18 06:03	JML	71-43-2	
1,2-Dichloroethane	47	ug/L	1	SW5030C/8260C	05/11/18 06:03	JML	107-06-2	
Trichloroethene	47	ug/L	1	SW5030C/8260C	05/11/18 06:03	JML	79-01-6	
1,2-Dichloropropane	45	ug/L	1	SW5030C/8260C	05/11/18 06:03	JML	78-87-5	
Bromodichloromethane	46	ug/L	1	SW5030C/8260C	05/11/18 06:03	JML	75-27-4	
Methyl cyclohexane	43	ug/L	1	SW5030C/8260C	05/11/18 06:03	JML	108-87-2	
cis-1,3-Dichloropropene	48	ug/L	1	SW5030C/8260C	05/11/18 06:03	JML	10061-01-5	
Toluene	48	ug/L	1	SW5030C/8260C	05/11/18 06:03	JML	108-88-3	
trans-1,3-Dichloropropene	50	ug/L	1	SW5030C/8260C	05/11/18 06:03	JML	10061-02-6	
1,1,2-Trichloroethane	49	ug/L	1	SW5030C/8260C	05/11/18 06:03	JML	79-00-5	
Tetrachloroethene	49	ug/L	1	SW5030C/8260C	05/11/18 06:03	JML	127-18-4	
Dibromochloromethane	53	ug/L	1	SW5030C/8260C	05/11/18 06:03	JML	124-48-1	

1-spiked at 50ug/L

Lab Sample ID: S89678.14 (continued)

Sample Tag: MW-12-09_050918 MS

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
Chlorobenzene	51	ug/L	1	SW5030C/8260C	05/11/18 06:03	JML	108-90-7	
1,1,2,2-Tetrachloroethane	51	ug/L	1	SW5030C/8260C	05/11/18 06:03	JML	79-34-5	
Ethylbenzene	50	ug/L	1	SW5030C/8260C	05/11/18 06:03	JML	100-41-4	
p,m-Xylene*	100	ug/L	2	SW5030C/8260C	05/11/18 06:03	JML		
o-Xylene	49	ug/L	1	SW5030C/8260C	05/11/18 06:03	JML	95-47-6	
Styrene	48	ug/L	1	SW5030C/8260C	05/11/18 06:03	JML	100-42-5	
Isopropylbenzene	49	ug/L	1	SW5030C/8260C	05/11/18 06:03	JML	98-82-8	
Bromoform	55	ug/L	1	SW5030C/8260C	05/11/18 06:03	JML	75-25-2	
1,3-Dichlorobenzene	50	ug/L	1	SW5030C/8260C	05/11/18 06:03	JML	541-73-1	
1,4-Dichlorobenzene	50	ug/L	1	SW5030C/8260C	05/11/18 06:03	JML	106-46-7	
1,2-Dichlorobenzene	50	ug/L	1	SW5030C/8260C	05/11/18 06:03	JML	95-50-1	
1,2,4-Trichlorobenzene	47	ug/L	1	SW5030C/8260C	05/11/18 06:03	JML	120-82-1	

Analytical Laboratory Report

Lab Sample ID: S89678.15
Sample Tag: MW-12-09_050918 MSD
Collected Date/Time: 05/09/2018 15:05
Matrix: Groundwater
COC Reference: 110321

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.7	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/11/18 17:25	JML		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	56	ug/L	1	SW5030C/8260C	05/11/18 06:22	JML	96-12-8	1
1,2-Dibromoethane	54	ug/L	1	SW5030C/8260C	05/11/18 06:22	JML	106-93-4	1
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	46	ug/L	1	SW5030C/8260C	05/11/18 06:22	JML	76-13-1	
Acetone	50	ug/L	10	SW5030C/8260C	05/11/18 06:22	JML	67-64-1	
Carbon disulfide	44	ug/L	1	SW5030C/8260C	05/11/18 06:22	JML	75-15-0	
Methyl Acetate	42	ug/L	10	SW5030C/8260C	05/11/18 06:22	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	49	ug/L	1	SW5030C/8260C	05/11/18 06:22	JML	1634-04-4	
2-Butanone (MEK)	47	ug/L	10	SW5030C/8260C	05/11/18 06:22	JML	78-93-3	
Dichlorodifluoromethane	43	ug/L	1	SW5030C/8260C	05/11/18 06:22	JML	75-71-8	
Chloromethane	41	ug/L	1	SW5030C/8260C	05/11/18 06:22	JML	74-87-3	
Vinyl chloride	41	ug/L	1	SW5030C/8260C	05/11/18 06:22	JML	75-01-4	
Bromomethane	43	ug/L	1	SW5030C/8260C	05/11/18 06:22	JML	74-83-9	
Chloroethane	42	ug/L	1	SW5030C/8260C	05/11/18 06:22	JML	75-00-3	
Trichlorofluoromethane	29	ug/L	1	SW5030C/8260C	05/11/18 06:22	JML	75-69-4	
1,1-Dichloroethene	41	ug/L	1	SW5030C/8260C	05/11/18 06:22	JML	75-35-4	
Methylene chloride	45	ug/L	1	SW5030C/8260C	05/11/18 06:22	JML	75-09-2	
trans-1,2-Dichloroethene	45	ug/L	1	SW5030C/8260C	05/11/18 06:22	JML	156-60-5	
1,1-Dichloroethane	46	ug/L	1	SW5030C/8260C	05/11/18 06:22	JML	75-34-3	
cis-1,2-Dichloroethene	47	ug/L	1	SW5030C/8260C	05/11/18 06:22	JML	156-59-2	
Chloroform	46	ug/L	1	SW5030C/8260C	05/11/18 06:22	JML	67-66-3	
1,1,1-Trichloroethane	49	ug/L	1	SW5030C/8260C	05/11/18 06:22	JML	71-55-6	
Cyclohexane	44	ug/L	1	SW5030C/8260C	05/11/18 06:22	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	49	ug/L	10	SW5030C/8260C	05/11/18 06:22	JML	108-10-1	
2-Hexanone	50	ug/L	10	SW5030C/8260C	05/11/18 06:22	JML	591-78-6	
Carbon tetrachloride	50	ug/L	1	SW5030C/8260C	05/11/18 06:22	JML	56-23-5	
Benzene	48	ug/L	1	SW5030C/8260C	05/11/18 06:22	JML	71-43-2	
1,2-Dichloroethane	49	ug/L	1	SW5030C/8260C	05/11/18 06:22	JML	107-06-2	
Trichloroethene	49	ug/L	1	SW5030C/8260C	05/11/18 06:22	JML	79-01-6	
1,2-Dichloropropane	47	ug/L	1	SW5030C/8260C	05/11/18 06:22	JML	78-87-5	
Bromodichloromethane	48	ug/L	1	SW5030C/8260C	05/11/18 06:22	JML	75-27-4	
Methyl cyclohexane	45	ug/L	1	SW5030C/8260C	05/11/18 06:22	JML	108-87-2	
cis-1,3-Dichloropropene	50	ug/L	1	SW5030C/8260C	05/11/18 06:22	JML	10061-01-5	
Toluene	50	ug/L	1	SW5030C/8260C	05/11/18 06:22	JML	108-88-3	
trans-1,3-Dichloropropene	52	ug/L	1	SW5030C/8260C	05/11/18 06:22	JML	10061-02-6	
1,1,2-Trichloroethane	51	ug/L	1	SW5030C/8260C	05/11/18 06:22	JML	79-00-5	
Tetrachloroethene	51	ug/L	1	SW5030C/8260C	05/11/18 06:22	JML	127-18-4	
Dibromochloromethane	55	ug/L	1	SW5030C/8260C	05/11/18 06:22	JML	124-48-1	

1-spiked at 50ug/L

Lab Sample ID: S89678.15 (continued)

Sample Tag: MW-12-09_050918 MSD

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
Chlorobenzene	53	ug/L	1	SW5030C/8260C	05/11/18 06:22	JML	108-90-7	
1,1,2,2-Tetrachloroethane	52	ug/L	1	SW5030C/8260C	05/11/18 06:22	JML	79-34-5	
Ethylbenzene	51	ug/L	1	SW5030C/8260C	05/11/18 06:22	JML	100-41-4	
p,m-Xylene*	104	ug/L	2	SW5030C/8260C	05/11/18 06:22	JML		
o-Xylene	51	ug/L	1	SW5030C/8260C	05/11/18 06:22	JML	95-47-6	
Styrene	50	ug/L	1	SW5030C/8260C	05/11/18 06:22	JML	100-42-5	
Isopropylbenzene	51	ug/L	1	SW5030C/8260C	05/11/18 06:22	JML	98-82-8	
Bromoform	56	ug/L	1	SW5030C/8260C	05/11/18 06:22	JML	75-25-2	
1,3-Dichlorobenzene	51	ug/L	1	SW5030C/8260C	05/11/18 06:22	JML	541-73-1	
1,4-Dichlorobenzene	51	ug/L	1	SW5030C/8260C	05/11/18 06:22	JML	106-46-7	
1,2-Dichlorobenzene	51	ug/L	1	SW5030C/8260C	05/11/18 06:22	JML	95-50-1	
1,2,4-Trichlorobenzene	48	ug/L	1	SW5030C/8260C	05/11/18 06:22	JML	120-82-1	

Analytical Laboratory Report

Lab Sample ID: S89678.16
Sample Tag: MW-17-87_050918
Collected Date/Time: 05/09/2018 16:05
Matrix: Groundwater
COC Reference: 110321

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.7	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/11/18 17:25	JML		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 11:11	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 11:11	JML	106-93-4	
1,4-Dioxane*	Not detected	ug/L	1	SW8260B - SIM	05/22/18 18:50	JML	123-91-1	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 11:11	JML	76-13-1	
Acetone	42	ug/L	10	SW5030C/8260C	05/11/18 11:11	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/11/18 11:11	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/11/18 11:11	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/11/18 11:11	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/11/18 11:11	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 11:11	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 11:11	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/11/18 11:11	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 11:11	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 11:11	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 11:11	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 11:11	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/11/18 11:11	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 11:11	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 11:11	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 11:11	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/11/18 11:11	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 11:11	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 11:11	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/11/18 11:11	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/11/18 11:11	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/11/18 11:11	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 11:11	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 11:11	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 11:11	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 11:11	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 11:11	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 11:11	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 11:11	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 11:11	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 11:11	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 11:11	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 11:11	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 11:11	JML	124-48-1	

Lab Sample ID: S89678.16 (continued)
Sample Tag: MW-17-87_050918

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 11:11	JML	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/11/18 11:11	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 11:11	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/11/18 11:11	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 11:11	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 11:11	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 11:11	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/11/18 11:11	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 11:11	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 11:11	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 11:11	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/11/18 11:11	JML	120-82-1	

Analytical Laboratory Report

Lab Sample ID: S89678.17
Sample Tag: MW-16-76_050918
Collected Date/Time: 05/09/2018 09:15
Matrix: Groundwater
COC Reference: 110321

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.7	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/16/18 11:15	KCV		
Organics - Volatiles								
1,4-Dioxane*	Not detected	ug/L	1	SW8260B - SIM	05/22/18 19:11	JML	123-91-1	

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www.meritlabs.com

C.O.C. PAGE # 1 OF 2

110325

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME: Alex Villhaver
COMPANY: Arcadis
ADDRESS: 300 S Washington Square, Suite 315
CITY: Lansing STATE: MI ZIP CODE: 48933
PHONE NO.: 517-324-5036 FAX NO.:
P.O. NO.:
E-MAIL ADDRESS: Alex.Villhaver@Arcadis.com
QUOTE NO.:

INVOICE TO

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

PROJECT NO./NAME: B0064479.2018 / Racer Lansing Plant 2
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Jake Pisarkiewicz Brett Fissnal

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	VOCs	1,4-Dioxane	Metals *	Special Instructions
896678.01	5-9-18	AM	Trip Blank	W	1		1						x			* Metals: Arsenic,
.02	5-9-18	AM	Dup-02	GW	3		3						x	x		Nickel, Lead, Vanadium,
.03	5-9-18	0950	MW-12-06_050918	GW	3		3						x	x		Chromium, Copper
.04	5-9-18	1100	MW-14-61_050918	GW	3		3						x			
.05	5-9-18	1240	MW-16-82_050918	GW	3		3						x	x		
.06	5-9-18	1435	MW-13-45_050918	GW	3		3						x	x		
.07	5-9-18	1600	MW-16-83_050918	GW	3		3						x	x		
.08	5-9-18	1035	MW-12-01_050918	GW	3		3						x	x		
.09	5-9-18	1125	MW-12-18_050918	GW	4		3	1					x		x	
.10	5-9-18	1320	MW-12-07_050918	GW	3		3						x			
	~~5-9-18~~	~~1505~~	~~MW-12-09_050918~~													
	~~5-9-18~~	~~1505~~	~~MW-12-09_050918 MS~~													

RELINQUISHED BY: SIGNATURE/ORGANIZATION: ☒ Sampler DATE: 5/9 TIME: 1730
RECEIVED BY: SIGNATURE/ORGANIZATION: PM Storage DATE: 5/9 TIME: 1730
RELINQUISHED BY: SIGNATURE/ORGANIZATION: DATE: 5/10/18 TIME: 9100
RECEIVED BY: SIGNATURE/ORGANIZATION: DATE: 5/10/18 TIME: 0900

RELINQUISHED BY: SIGNATURE/ORGANIZATION: PM Storage DATE: 5/10/18 TIME: 8:30
RECEIVED BY: SIGNATURE/ORGANIZATION: DATE: 5/10/18 TIME: 8:30

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

NOTES: TEMP. ON ARRIVAL: 2.7

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

Rev. 5.18.12

Merit Laboratories, Inc.
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C.O.C. PAGE # 2 OF 2

110321

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME: Alex Villhauer
COMPANY: Arcadis
ADDRESS: 300 S Washington Square, Suite 315
CITY: Lansing STATE: MI ZIP CODE: 48933
PHONE NO.: 517-324-5036 FAX NO.: 517-267-4755 P.O. NO.:
E-MAIL ADDRESS: Alex.Villhauer@arcadis.com QUOTE NO.:

INVOICE TO

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

PROJECT NO./NAME: B0064479.2018 | RACER Lansing
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Austin Westhuis

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	VOCs 8260B	1,4-Dioxane 8260B SIM	TCL VOCs	Select Metals 6020	Special Instructions
8[illegible].11	5/9/18	1150	P2-MW-02_050918	GW	3	3							X				*Select Metals Include: Arsenic, Nickel, Lead, Vanadium, Chromium, and Copper.
.12	5/9/18	1600	MW-14-58_050918	GW	3	3								X			
13/.14/.15	5/9/18	1505	MW-12-09_050918 MS/MSD	GW	9	9							X	X			
.16	5/9/18	1605	MW-17-87_050918	GW	3	3								X			
.17	5/9/18	09:15	MW-16-76_050918	GW	3	3									X		* Added per Brett F. on 5/10/18 JAL ✓ 5/10/18

RELINQUISHED BY: SIGNATURE/ORGANIZATION	Arcadis X Sampler	5/9/18	DATE	TIME 1700
RECEIVED BY: SIGNATURE/ORGANIZATION	Brett Flessner	5/9	DATE	TIME 1700
RELINQUISHED BY: SIGNATURE/ORGANIZATION		5/9	DATE	TIME 1730
RECEIVED BY: SIGNATURE/ORGANIZATION	PM Storage	5/9	DATE	TIME 1730

RELINQUISHED BY: SIGNATURE/ORGANIZATION	PM Storage	5/10/18	DATE	TIME 8:30
RECEIVED BY: SIGNATURE/ORGANIZATION		5/10/18	DATE	TIME 8:30

SEAL NO. SEAL INTACT YES ☐ NO ☐ INITIALS NOTES: 5/10/18 9100 TEMP. ON ARRIVAL 2.7
SEAL NO. SEAL INTACT YES ☐ NO ☐ INITIALS 5/10/18 0900

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

Rev. 5.18.12

Analytical Laboratory Report

Report ID: S89741.01(01)
Generated on 05/23/2018

Report to

Attention: Alex Villhauer
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Report Summary

Lab Sample ID(s): S89741.01-S89741.15
Project: B0064479.2018 / Racer Lansing Plant 2
Collected Date: 05/10/2018
Submitted Date/Time: 05/11/2018 13:22
Sampled by: Jake P. / Brett F.
P.O. #: B0064479.2018

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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).
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

Method Summary

Method	Version
N/A	Not Applicable
SW3015A	SW 846 Method 3015A Revision 1 February 2007
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003
SW6020A	SW 846 Method 6020A Revision 1 February 2007
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs

Sample Summary (15 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S89741.01	Trip Blank	Water	05/10/18 00:01
S89741.02	FB-03	Water	05/10/18 09:05
S89741.03	PW-14-02_051018	Groundwater	05/10/18 09:50
S89741.04	MW-13-44_051018	Groundwater	05/10/18 11:15
S89741.05	MW-15-73_051018	Groundwater	05/10/18 13:35
S89741.06	MW-15-73_051018 MS	Groundwater	05/10/18 13:35
S89741.07	MW-15-73_051018 MSD	Groundwater	05/10/18 13:35
S89741.08	MW-12-05R_051018	Groundwater	05/10/18 15:05
S89741.09	MW-13-51_051018	Groundwater	05/10/18 09:55
S89741.10	AS-16-01_051018	Groundwater	05/10/18 11:50
S89741.11	TW-16-01_051018	Groundwater	05/10/18 13:30
S89741.12	DUP-03_051018	Liquid	05/10/18 00:01
S89741.13	MW-02(2)_051018	Groundwater	05/10/18 14:30
S89741.14	MW-03(2)_051018	Groundwater	05/10/18 16:20
S89741.15	MWBP-12A-USTI-4_051018	Groundwater	05/10/18 11:35

Analytical Laboratory Report

Lab Sample ID: S89741.01
Sample Tag: Trip Blank
Collected Date/Time: 05/10/2018 00:01
Matrix: Water
COC Reference: 110326

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	4.8	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/14/18 13:30	KCV		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 03:47	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 03:47	JML	106-93-4	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 03:47	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/12/18 03:47	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/12/18 03:47	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/12/18 03:47	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/12/18 03:47	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/12/18 03:47	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 03:47	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 03:47	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/12/18 03:47	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 03:47	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 03:47	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 03:47	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 03:47	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/12/18 03:47	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 03:47	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 03:47	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 03:47	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/12/18 03:47	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 03:47	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 03:47	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/12/18 03:47	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/12/18 03:47	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/12/18 03:47	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 03:47	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 03:47	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 03:47	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 03:47	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 03:47	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 03:47	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 03:47	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 03:47	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 03:47	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 03:47	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 03:47	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 03:47	JML	124-48-1	
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 03:47	JML	108-90-7	

Lab Sample ID: S89741.01 (continued)

Sample Tag: Trip Blank

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 03:47	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 03:47	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/12/18 03:47	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 03:47	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 03:47	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 03:47	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/12/18 03:47	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 03:47	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 03:47	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 03:47	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 03:47	JML	120-82-1	

Analytical Laboratory Report

Lab Sample ID: S89741.02
Sample Tag: FB-03
Collected Date/Time: 05/10/2018 09:05
Matrix: Water
COC Reference: 110326

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.8	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/14/18 13:30	KCV		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:06	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:06	JML	106-93-4	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:06	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/12/18 04:06	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:06	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/12/18 04:06	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:06	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/12/18 04:06	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:06	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:06	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:06	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:06	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:06	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:06	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:06	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:06	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:06	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:06	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:06	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:06	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:06	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:06	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/12/18 04:06	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/12/18 04:06	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:06	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:06	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:06	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:06	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:06	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:06	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:06	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:06	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:06	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:06	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:06	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:06	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:06	JML	124-48-1	
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:06	JML	108-90-7	

Lab Sample ID: S89741.02 (continued)

Sample Tag: FB-03

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:06	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:06	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/12/18 04:06	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:06	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:06	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:06	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:06	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:06	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:06	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:06	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:06	JML	120-82-1	

Analytical Laboratory Report

Lab Sample ID: S89741.03
Sample Tag: PW-14-02_051018
Collected Date/Time: 05/10/2018 09:50
Matrix: Groundwater
COC Reference: 110326

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.8	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/15/18 11:00	KCV		
Organics - Volatiles								
1,4-Dioxane*	210	ug/L	10	SW8260B - SIM	05/22/18 00:15	JML	123-91-1	Y

Y-Elevated reporting limit due to high target concentration

Analytical Laboratory Report

Lab Sample ID: S89741.04
Sample Tag: MW-13-44_051018
Collected Date/Time: 05/10/2018 11:15
Matrix: Groundwater
COC Reference: 110326

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.8	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/14/18 13:30	KCV		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:25	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:25	JML	106-93-4	
1,4-Dioxane*	Not detected	ug/L	1	SW8260B - SIM	05/22/18 19:33	JML	123-91-1	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:25	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/12/18 04:25	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:25	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/12/18 04:25	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:25	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/12/18 04:25	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:25	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:25	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:25	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:25	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:25	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:25	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:25	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:25	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:25	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:25	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:25	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:25	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:25	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:25	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/12/18 04:25	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/12/18 04:25	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:25	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:25	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:25	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:25	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:25	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:25	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:25	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:25	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:25	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:25	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:25	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:25	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:25	JML	124-48-1	

Lab Sample ID: S89741.04 (continued)
Sample Tag: MW-13-44_051018

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:25	JML	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:25	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:25	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/12/18 04:25	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:25	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:25	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:25	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:25	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:25	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:25	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:25	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:25	JML	120-82-1	

Analytical Laboratory Report

Lab Sample ID: S89741.05
Sample Tag: MW-15-73_051018
Collected Date/Time: 05/10/2018 13:35
Matrix: Groundwater
COC Reference: 110326

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.8	IR
1	125ml Plastic	HNO3	Yes	4.8	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
Metal Digestion	Completed			SW3015A	05/14/18 12:40	CCM		
pH check for VOCs*	<2	STD Units		N/A	05/15/18 11:00	KCV		
Metals								
Arsenic	Not detected	mg/L	0.002	SW6020A	05/14/18 14:09	CCM	7440-38-2	
Chromium	Not detected	mg/L	0.005	SW6020A	05/14/18 14:09	CCM	7440-47-3	
Copper	Not detected	mg/L	0.005	SW6020A	05/14/18 14:09	CCM	7440-50-8	
Lead	Not detected	mg/L	0.003	SW6020A	05/14/18 14:09	CCM	7439-92-1	
Nickel	Not detected	mg/L	0.005	SW6020A	05/14/18 14:09	CCM	7440-02-0	
Vanadium	Not detected	mg/L	0.005	SW6020A	05/14/18 14:09	CCM	7440-62-2	
Organics - Volatiles								
1,4-Dioxane*	4	ug/L	1	SW8260B - SIM	05/15/18 01:10	JML	123-91-1	

Analytical Laboratory Report

Lab Sample ID: S89741.06
Sample Tag: MW-15-73_051018 MS
Collected Date/Time: 05/10/2018 13:35
Matrix: Groundwater
COC Reference: 110326

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.8	IR
1	125ml Plastic	HNO3	Yes	4.8	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
Metal Digestion	Completed			SW3015A	05/14/18 12:40	CCM		
pH check for VOCs*	<2	STD Units		N/A	05/15/18 11:00	KCV		
Metals								
Arsenic	0.241	mg/L	0.002	SW6020A	05/14/18 14:12	CCM	7440-38-2	
Chromium	0.248	mg/L	0.005	SW6020A	05/14/18 14:12	CCM	7440-47-3	
Copper	0.227	mg/L	0.005	SW6020A	05/14/18 14:12	CCM	7440-50-8	
Lead	0.231	mg/L	0.003	SW6020A	05/14/18 14:12	CCM	7439-92-1	
Nickel	0.234	mg/L	0.005	SW6020A	05/14/18 14:12	CCM	7440-02-0	
Vanadium	0.248	mg/L	0.005	SW6020A	05/14/18 14:12	CCM	7440-62-2	
Organics - Volatiles								
1,4-Dioxane*	55	ug/L	1	SW8260B - SIM	05/14/18 23:48	JML	123-91-1	1

1-spiked at 50ug/L

Analytical Laboratory Report

Lab Sample ID: S89741.07
Sample Tag: MW-15-73_051018 MSD
Collected Date/Time: 05/10/2018 13:35
Matrix: Groundwater
COC Reference: 110326

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.8	IR
1	125ml Plastic	HNO3	Yes	4.8	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
Metal Digestion	Completed			SW3015A	05/14/18 12:40	CCM		
pH check for VOCs*	<2	STD Units		N/A	05/15/18 11:00	KCV		
Metals								
Arsenic	0.246	mg/L	0.002	SW6020A	05/14/18 14:13	CCM	7440-38-2	
Chromium	0.250	mg/L	0.005	SW6020A	05/14/18 14:13	CCM	7440-47-3	
Copper	0.230	mg/L	0.005	SW6020A	05/14/18 14:13	CCM	7440-50-8	
Lead	0.234	mg/L	0.003	SW6020A	05/14/18 14:13	CCM	7439-92-1	
Nickel	0.243	mg/L	0.005	SW6020A	05/14/18 14:13	CCM	7440-02-0	
Vanadium	0.251	mg/L	0.005	SW6020A	05/14/18 14:13	CCM	7440-62-2	
Organics - Volatiles								
1,4-Dioxane*	51	ug/L	1	SW8260B - SIM	05/15/18 00:08	JML	123-91-1	1

1-spiked at 50ug/L

Analytical Laboratory Report

Lab Sample ID: S89741.08
Sample Tag: MW-12-05R_051018
Collected Date/Time: 05/10/2018 15:05
Matrix: Groundwater
COC Reference: 110326

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.8	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/14/18 13:30	KCV		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:44	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:44	JML	106-93-4	
1,4-Dioxane*	Not detected	ug/L	1	SW8260B - SIM	05/22/18 19:54	JML	123-91-1	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:44	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/12/18 04:44	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:44	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/12/18 04:44	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:44	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/12/18 04:44	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:44	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:44	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:44	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:44	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:44	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:44	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:44	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:44	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:44	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:44	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:44	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:44	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:44	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:44	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/12/18 04:44	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/12/18 04:44	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:44	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:44	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:44	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:44	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:44	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:44	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:44	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:44	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:44	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:44	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:44	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:44	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:44	JML	124-48-1	

Lab Sample ID: S89741.08 (continued)
Sample Tag: MW-12-05R_051018

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:44	JML	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:44	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:44	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/12/18 04:44	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:44	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:44	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:44	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:44	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:44	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:44	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:44	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 04:44	JML	120-82-1	

Analytical Laboratory Report

Lab Sample ID: S89741.09
Sample Tag: MW-13-51_051018
Collected Date/Time: 05/10/2018 09:55
Matrix: Groundwater
COC Reference: 110326

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.8	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/15/18 11:00	KCV		
Organics - Volatiles								
1,4-Dioxane*	Not detected	ug/L	1	SW8260B - SIM	05/22/18 20:15	JML	123-91-1	

Analytical Laboratory Report

Lab Sample ID: S89741.10
Sample Tag: AS-16-01_051018
Collected Date/Time: 05/10/2018 11:50
Matrix: Groundwater
COC Reference: 110326

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.8	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/15/18 11:00	KCV		
Organics - Volatiles								
1,4-Dioxane*	53	ug/L	1	SW8260B - SIM	05/15/18 07:08	JML	123-91-1	

Analytical Laboratory Report

Lab Sample ID: S89741.11
Sample Tag: TW-16-01_051018
Collected Date/Time: 05/10/2018 13:30
Matrix: Groundwater
COC Reference: 110326

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.8	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/15/18 11:00	KCV		
Organics - Volatiles								
1,4-Dioxane*	172	ug/L	1	SW8260B - SIM	05/15/18 07:29	JML	123-91-1	

Analytical Laboratory Report

Lab Sample ID: S89741.12
Sample Tag: DUP-03_051018
Collected Date/Time: 05/10/2018 00:01
Matrix: Liquid
COC Reference: 110326

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.8	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/15/18 11:00	KCV		
Organics - Volatiles								
1,4-Dioxane*	174	ug/L	1	SW8260B - SIM	05/15/18 07:50	JML	123-91-1	

Analytical Laboratory Report

Lab Sample ID: S89741.13
Sample Tag: MW-02(2)_051018
Collected Date/Time: 05/10/2018 14:30
Matrix: Groundwater
COC Reference: 110326

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.8	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/14/18 13:30	KCV		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:03	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:03	JML	106-93-4	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:03	JML	76-13-1	
Acetone	14	ug/L	10	SW5030C/8260C	05/12/18 05:03	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:03	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/12/18 05:03	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:03	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/12/18 05:03	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:03	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:03	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:03	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:03	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:03	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:03	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:03	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:03	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:03	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:03	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:03	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:03	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:03	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:03	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/12/18 05:03	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/12/18 05:03	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:03	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:03	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:03	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:03	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:03	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:03	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:03	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:03	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:03	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:03	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:03	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:03	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:03	JML	124-48-1	
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:03	JML	108-90-7	

Lab Sample ID: S89741.13 (continued)

Sample Tag: MW-02(2)_051018

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:03	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:03	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/12/18 05:03	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:03	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:03	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:03	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:03	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:03	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:03	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:03	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:03	JML	120-82-1	

Analytical Laboratory Report

Lab Sample ID: S89741.14
Sample Tag: MW-03(2)_051018
Collected Date/Time: 05/10/2018 16:20
Matrix: Groundwater
COC Reference: 110326

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125ml Plastic	HNO3	Yes	4.8	IR
3	40ml Glass	HCL	Yes	4.8	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
Metal Digestion	Completed			SW3015A	05/14/18 12:40	CCM		
pH check for VOCs*	<2	STD Units		N/A	05/14/18 13:30	KCV		
Metals								
Arsenic	Not detected	mg/L	0.002	SW6020A	05/14/18 14:05	CCM	7440-38-2	
Chromium	Not detected	mg/L	0.005	SW6020A	05/14/18 14:05	CCM	7440-47-3	
Copper	Not detected	mg/L	0.005	SW6020A	05/14/18 14:05	CCM	7440-50-8	
Lead	Not detected	mg/L	0.003	SW6020A	05/14/18 14:05	CCM	7439-92-1	
Nickel	0.025	mg/L	0.005	SW6020A	05/14/18 14:05	CCM	7440-02-0	
Vanadium	Not detected	mg/L	0.005	SW6020A	05/14/18 14:05	CCM	7440-62-2	
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:22	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:22	JML	106-93-4	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:22	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/12/18 05:22	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:22	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/12/18 05:22	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:22	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/12/18 05:22	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:22	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:22	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:22	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:22	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:22	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:22	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:22	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:22	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:22	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:22	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:22	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:22	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:22	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:22	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/12/18 05:22	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/12/18 05:22	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:22	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:22	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:22	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:22	JML	79-01-6	

Lab Sample ID: S89741.14 (continued)
Sample Tag: MW-03(2)_051018

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:22	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:22	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:22	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:22	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:22	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:22	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:22	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:22	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:22	JML	124-48-1	
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:22	JML	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:22	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:22	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/12/18 05:22	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:22	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:22	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:22	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:22	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:22	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:22	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:22	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:22	JML	120-82-1	

Analytical Laboratory Report

Lab Sample ID: S89741.15
Sample Tag: MWBP-12A-USTI-4_051018
Collected Date/Time: 05/10/2018 11:35
Matrix: Groundwater
COC Reference: 110323

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125ml Plastic	HNO3	Yes	4.8	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
Metal Digestion	Completed			SW3015A	05/14/18 12:40	CCM		
Metals								
Arsenic	0.009	mg/L	0.002	SW6020A	05/14/18 14:07	CCM	7440-38-2	
Chromium	Not detected	mg/L	0.005	SW6020A	05/14/18 14:07	CCM	7440-47-3	
Copper	Not detected	mg/L	0.005	SW6020A	05/14/18 14:07	CCM	7440-50-8	
Lead	Not detected	mg/L	0.003	SW6020A	05/14/18 14:07	CCM	7439-92-1	
Nickel	0.011	mg/L	0.005	SW6020A	05/14/18 14:07	CCM	7440-02-0	
Vanadium	Not detected	mg/L	0.005	SW6020A	05/14/18 14:07	CCM	7440-62-2	

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C.O.C. PAGE # 1 OF 2

110326

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME	Alex Villhaver
COMPANY	Arcadis
ADDRESS	300 S Washington Square
CITY	Lansing
STATE	MI
ZIP CODE	48933
PHONE NO.	517-324-5036
FAX NO.	
P.O. NO.	
E-MAIL ADDRESS	Alex.Villhaver@arcadis.com
QUOTE NO.	

INVOICE TO

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

PROJECT NO./NAME: BOD64479.2018 / Racer Lansing Plant 2

SAMPLER(S) - PLEASE PRINT/SIGN NAME: Jake Pisarkiewicz / Brett Fiessner

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	VOCs	1,4-Dioxane	Metals *	Special Instructions
89741.01	5-10-18	AM	Trip Blank	W	1		1						X			*Metals: Arsenic, Nickel, Lead, Vanadium, chromium, copper
.02	5-10-18	0905	FB-03	W	3		3						X			
.03	5-10-18	0950	PW-14-02_051018	GW	3		3							X		
.04	5-10-18	1115	MW-13-44_051018	GW	3		3						X	X		
05/06/07	5-10-18	1335	MW-15-73_051018	GW	12		9	3						X	X	MS/MSD
08	5-10-18	1505	MW-12-05R_051018	GW	3		3						X	X		
.09	5-10	0955	MW-13-51_051018	GW	3		3							X		
.10 08	5-10	1150	AS-16-01_051018	GW	3		3							X		
.11 07	5-10	1330	TW-16-01_051018	GW	3		3							X		
.12 10	5-10		DUP-03_051018	L	3		3							X		
.13 11	5-10	1430	MW-02(2)_051018	GW	3		3						X			
.14 12	5-10	1620	MW-03(27)_051018	GW	4		3	1					X		X	

RELINQUISHED BY: SIGNATURE/ORGANIZATION	Brett Fiessner / Sampler	DATE 5/10	TIME 1800
RECEIVED BY: SIGNATURE/ORGANIZATION	PM storage	DATE 5/10	TIME 1800
RELINQUISHED BY: SIGNATURE/ORGANIZATION		DATE 5/11/18	TIME 13:22
RECEIVED BY: SIGNATURE/ORGANIZATION		DATE 5/11/18	TIME 1322

RELINQUISHED BY: SIGNATURE/ORGANIZATION	PM Storage	DATE 5/11/18	TIME 12:25
RECEIVED BY: SIGNATURE/ORGANIZATION		DATE 5/11/18	TIME 12:25

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

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

NOTES: | TEMP. ON ARRIVAL 4.8

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

Rev. 5.18.12

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C.O.C. PAGE # 2 OF 2

110323

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME: Alex Villhauer
COMPANY: Arcadis
ADDRESS: 300 S Washington Square, Suite 315
CITY: Lansing STATE: MI ZIP CODE: 48933
PHONE NO.: 517-324-5036 FAX NO.: 517-267-4755 P.O. NO.:
E-MAIL ADDRESS: Alex.Villhauer@arcadis.com QUOTE NO.:

INVOICE TO

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

PROJECT NO./NAME: B00644479.2018 / RACER Lansing
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Austin Westhuis / [signature]

TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS X 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

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	ANALYSIS: VOCs 8260B	1,4-Dioxane 8260B SIMS	TCL VOCs	Select Metals (6020)*	TAL Metals **
89741.13	5/10/18	1135	MWBP-12A-UST1-4_051018	GW	1			1								X	

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

Special Instructions

*Select Metals Include: Arsenic, Nickel, Lead, Vanadium, Chromium, and Copper

**TAL Metals Include: Antimony, Arsenic, Barium, Boron, Cadmium, Chromium, Cobalt, Copper, Lead, Manganese, Mercury, Nickel, Selenium, Silver, Vanadium, and Zinc.

RELINQUISHED BY: SIGNATURE/ORGANIZATION	[signature] / Arcadis X Sampler	DATE 5/10/18	TIME 1620
RECEIVED BY: SIGNATURE/ORGANIZATION	[signature] / PM	DATE 5/10	TIME 1620
RELINQUISHED BY: SIGNATURE/ORGANIZATION	[signature]	DATE 5/10	TIME 1800
RECEIVED BY: SIGNATURE/ORGANIZATION	PM storage	DATE 5/10	TIME 1800

RELINQUISHED BY: SIGNATURE/ORGANIZATION	PM Storage	DATE 5/11/18	TIME 12:25
RECEIVED BY: SIGNATURE/ORGANIZATION	[signature]	DATE 5/11/18	TIME 12:25
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS 5/11/18	NOTES: 13:22
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS 5/11/18	TEMP. ON ARRIVAL 4.8

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

1322

Rev. 5.18.12

Analytical Laboratory Report

Report ID: S89742.01(01)
Generated on 05/23/2018

Report to

Attention: Alex Villhauer
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 616-780-3277 FAX: 248-994-2241
Email: alex.villhauer@arcadis.com

Addtional Contacts: Christine Gregg

Report produced by

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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): S89742.01-S89742.07
Project: B0064479.2018 / Racer Lansing
Collected Date: 05/10/2018
Submitted Date/Time: 05/11/2018 13:22
Sampled by: Dale Arnett
P.O. #: B0064479.2018

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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

Method Summary

Method	Version
N/A	Not Applicable
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs

Sample Summary (7 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S89742.01	MW-04-01(6)_051018	Groundwater	05/10/18 11:45
S89742.02	MW-04-04R_051018	Groundwater	05/10/18 12:55
S89742.03	MW-04-06R_051018	Groundwater	05/10/18 14:30
S89742.04	MW-13-50_051018	Groundwater	05/10/18 16:00
S89742.05	MW-13-50_051018 MS	Groundwater	05/10/18 16:00
S89742.06	MW-13-50_051018 MSD	Groundwater	05/10/18 16:00
S89742.07	Dup-12_051018	Groundwater	05/10/18 00:01

Analytical Laboratory Report

Lab Sample ID: S89742.01
Sample Tag: MW-04-01(6)_051018
Collected Date/Time: 05/10/2018 11:45
Matrix: Groundwater
COC Reference: 110316

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.8	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/14/18 13:30	KCV		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:42	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:42	JML	106-93-4	
1,4-Dioxane*	Not detected	ug/L	1	SW8260B - SIM	05/22/18 20:36	JML	123-91-1	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:42	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/12/18 05:42	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:42	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/12/18 05:42	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	2	ug/L	1	SW5030C/8260C	05/12/18 05:42	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/12/18 05:42	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:42	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:42	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:42	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:42	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:42	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:42	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:42	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:42	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:42	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:42	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:42	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:42	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:42	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:42	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/12/18 05:42	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/12/18 05:42	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:42	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:42	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:42	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:42	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:42	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:42	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:42	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:42	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:42	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:42	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:42	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:42	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:42	JML	124-48-1	

Lab Sample ID: S89742.01 (continued)
Sample Tag: MW-04-01(6)_051018

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:42	JML	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:42	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:42	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/12/18 05:42	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:42	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:42	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:42	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:42	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:42	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:42	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:42	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 05:42	JML	120-82-1	

Analytical Laboratory Report

Lab Sample ID: S89742.02
Sample Tag: MW-04-04R_051018
Collected Date/Time: 05/10/2018 12:55
Matrix: Groundwater
COC Reference: 110316

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.8	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/14/18 13:30	KCV		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:01	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:01	JML	106-93-4	
1,4-Dioxane*	Not detected	ug/L	1	SW8260B - SIM	05/22/18 20:56	JML	123-91-1	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:01	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/12/18 06:01	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:01	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/12/18 06:01	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:01	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/12/18 06:01	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:01	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:01	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:01	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:01	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:01	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:01	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:01	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:01	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:01	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:01	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:01	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:01	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:01	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:01	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/12/18 06:01	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/12/18 06:01	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:01	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:01	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:01	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:01	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:01	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:01	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:01	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:01	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:01	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:01	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:01	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:01	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:01	JML	124-48-1	

Lab Sample ID: S89742.02 (continued)
Sample Tag: MW-04-04R_051018

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:01	JML	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:01	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:01	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/12/18 06:01	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:01	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:01	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:01	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:01	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:01	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:01	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:01	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:01	JML	120-82-1	

Analytical Laboratory Report

Lab Sample ID: S89742.03
Sample Tag: MW-04-06R_051018
Collected Date/Time: 05/10/2018 14:30
Matrix: Groundwater
COC Reference: 110316

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.8	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/14/18 13:30	KCV		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:20	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:20	JML	106-93-4	
1,4-Dioxane*	Not detected	ug/L	1	SW8260B - SIM	05/22/18 21:17	JML	123-91-1	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:20	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/12/18 06:20	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:20	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/12/18 06:20	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:20	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/12/18 06:20	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:20	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:20	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:20	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:20	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:20	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:20	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:20	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:20	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:20	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:20	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:20	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:20	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:20	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:20	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/12/18 06:20	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/12/18 06:20	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:20	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:20	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:20	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:20	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:20	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:20	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:20	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:20	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:20	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:20	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:20	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:20	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:20	JML	124-48-1	

Lab Sample ID: S89742.03 (continued)
Sample Tag: MW-04-06R_051018

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:20	JML	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:20	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:20	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/12/18 06:20	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:20	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:20	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:20	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:20	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:20	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:20	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:20	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:20	JML	120-82-1	

Analytical Laboratory Report

Lab Sample ID: S89742.04
Sample Tag: MW-13-50_051018
Collected Date/Time: 05/10/2018 16:00
Matrix: Groundwater
COC Reference: 110316

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.8	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/14/18 13:30	KCV		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:39	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:39	JML	106-93-4	
1,4-Dioxane*	Not detected	ug/L	1	SW8260B - SIM	05/22/18 15:12	JML	123-91-1	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:39	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/12/18 06:39	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:39	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/12/18 06:39	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:39	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/12/18 06:39	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:39	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:39	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:39	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:39	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:39	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:39	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:39	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:39	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:39	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:39	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:39	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:39	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:39	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:39	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/12/18 06:39	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/12/18 06:39	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:39	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:39	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:39	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:39	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:39	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:39	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:39	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:39	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:39	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:39	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:39	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:39	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:39	JML	124-48-1	

Lab Sample ID: S89742.04 (continued)
Sample Tag: MW-13-50_051018

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:39	JML	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:39	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:39	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/12/18 06:39	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:39	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:39	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:39	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:39	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:39	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:39	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:39	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:39	JML	120-82-1	

Analytical Laboratory Report

Lab Sample ID: S89742.05
Sample Tag: MW-13-50_051018 MS
Collected Date/Time: 05/10/2018 16:00
Matrix: Groundwater
COC Reference: 110316

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.8	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/14/18 13:30	KCV		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	53	ug/L	1	SW5030C/8260C	05/12/18 02:11	JML	96-12-8	1
1,2-Dibromoethane	53	ug/L	1	SW5030C/8260C	05/12/18 02:11	JML	106-93-4	1
1,4-Dioxane*	56	ug/L	1	SW8260B - SIM	05/22/18 23:44	JML	123-91-1	1
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	44	ug/L	1	SW5030C/8260C	05/12/18 02:11	JML	76-13-1	1
Acetone	43	ug/L	10	SW5030C/8260C	05/12/18 02:11	JML	67-64-1	1
Carbon disulfide	45	ug/L	1	SW5030C/8260C	05/12/18 02:11	JML	75-15-0	1
Methyl Acetate	38	ug/L	10	SW5030C/8260C	05/12/18 02:11	JML	79-20-9	1
tert-Methyl butyl ether (MTBE)	46	ug/L	1	SW5030C/8260C	05/12/18 02:11	JML	1634-04-4	1
2-Butanone (MEK)	40	ug/L	10	SW5030C/8260C	05/12/18 02:11	JML	78-93-3	1
Dichlorodifluoromethane	39	ug/L	1	SW5030C/8260C	05/12/18 02:11	JML	75-71-8	1
Chloromethane	40	ug/L	1	SW5030C/8260C	05/12/18 02:11	JML	74-87-3	1
Vinyl chloride	41	ug/L	1	SW5030C/8260C	05/12/18 02:11	JML	75-01-4	1
Bromomethane	43	ug/L	1	SW5030C/8260C	05/12/18 02:11	JML	74-83-9	1
Chloroethane	42	ug/L	1	SW5030C/8260C	05/12/18 02:11	JML	75-00-3	1
Trichlorofluoromethane	45	ug/L	1	SW5030C/8260C	05/12/18 02:11	JML	75-69-4	1
1,1-Dichloroethene	41	ug/L	1	SW5030C/8260C	05/12/18 02:11	JML	75-35-4	1
Methylene chloride	46	ug/L	1	SW5030C/8260C	05/12/18 02:11	JML	75-09-2	1
trans-1,2-Dichloroethene	46	ug/L	1	SW5030C/8260C	05/12/18 02:11	JML	156-60-5	1
1,1-Dichloroethane	47	ug/L	1	SW5030C/8260C	05/12/18 02:11	JML	75-34-3	1
cis-1,2-Dichloroethene	48	ug/L	1	SW5030C/8260C	05/12/18 02:11	JML	156-59-2	1
Chloroform	47	ug/L	1	SW5030C/8260C	05/12/18 02:11	JML	67-66-3	1
1,1,1-Trichloroethane	50	ug/L	1	SW5030C/8260C	05/12/18 02:11	JML	71-55-6	1
Cyclohexane	41	ug/L	1	SW5030C/8260C	05/12/18 02:11	JML	110-82-7	1
4-Methyl-2-pentanone (MIBK)	46	ug/L	10	SW5030C/8260C	05/12/18 02:11	JML	108-10-1	1
2-Hexanone	45	ug/L	10	SW5030C/8260C	05/12/18 02:11	JML	591-78-6	1
Carbon tetrachloride	51	ug/L	1	SW5030C/8260C	05/12/18 02:11	JML	56-23-5	1
Benzene	48	ug/L	1	SW5030C/8260C	05/12/18 02:11	JML	71-43-2	1
1,2-Dichloroethane	49	ug/L	1	SW5030C/8260C	05/12/18 02:11	JML	107-06-2	1
Trichloroethene	50	ug/L	1	SW5030C/8260C	05/12/18 02:11	JML	79-01-6	1
1,2-Dichloropropane	46	ug/L	1	SW5030C/8260C	05/12/18 02:11	JML	78-87-5	1
Bromodichloromethane	49	ug/L	1	SW5030C/8260C	05/12/18 02:11	JML	75-27-4	1
Methyl cyclohexane	42	ug/L	1	SW5030C/8260C	05/12/18 02:11	JML	108-87-2	1
cis-1,3-Dichloropropene	50	ug/L	1	SW5030C/8260C	05/12/18 02:11	JML	10061-01-5	1
Toluene	49	ug/L	1	SW5030C/8260C	05/12/18 02:11	JML	108-88-3	1
trans-1,3-Dichloropropene	50	ug/L	1	SW5030C/8260C	05/12/18 02:11	JML	10061-02-6	1
1,1,2-Trichloroethane	48	ug/L	1	SW5030C/8260C	05/12/18 02:11	JML	79-00-5	1
Tetrachloroethene	51	ug/L	1	SW5030C/8260C	05/12/18 02:11	JML	127-18-4	1

1-spiked at 50ug/L

Lab Sample ID: S89742.05 (continued)

Sample Tag: MW-13-50_051018 MS

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
Dibromochloromethane	55	ug/L	1	SW5030C/8260C	05/12/18 02:11	JML	124-48-1	1
Chlorobenzene	53	ug/L	1	SW5030C/8260C	05/12/18 02:11	JML	108-90-7	1
1,1,2,2-Tetrachloroethane	50	ug/L	1	SW5030C/8260C	05/12/18 02:11	JML	79-34-5	1
Ethylbenzene	52	ug/L	1	SW5030C/8260C	05/12/18 02:11	JML	100-41-4	1
p,m-Xylene*	104	ug/L	2	SW5030C/8260C	05/12/18 02:11	JML		1
o-Xylene	51	ug/L	1	SW5030C/8260C	05/12/18 02:11	JML	95-47-6	1
Styrene	50	ug/L	1	SW5030C/8260C	05/12/18 02:11	JML	100-42-5	1
Isopropylbenzene	51	ug/L	1	SW5030C/8260C	05/12/18 02:11	JML	98-82-8	1
Bromoform	55	ug/L	1	SW5030C/8260C	05/12/18 02:11	JML	75-25-2	1
1,3-Dichlorobenzene	50	ug/L	1	SW5030C/8260C	05/12/18 02:11	JML	541-73-1	1
1,4-Dichlorobenzene	50	ug/L	1	SW5030C/8260C	05/12/18 02:11	JML	106-46-7	1
1,2-Dichlorobenzene	50	ug/L	1	SW5030C/8260C	05/12/18 02:11	JML	95-50-1	1
1,2,4-Trichlorobenzene	48	ug/L	1	SW5030C/8260C	05/12/18 02:11	JML	120-82-1	1

1-spiked at 50ug/L

Analytical Laboratory Report

Lab Sample ID: S89742.06
Sample Tag: MW-13-50_051018 MSD
Collected Date/Time: 05/10/2018 16:00
Matrix: Groundwater
COC Reference: 110316

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.8	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/14/18 13:30	KCV		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	52	ug/L	1	SW5030C/8260C	05/12/18 02:30	JML	96-12-8	1
1,2-Dibromoethane	52	ug/L	1	SW5030C/8260C	05/12/18 02:30	JML	106-93-4	1
1,4-Dioxane*	51	ug/L	1	SW8260B - SIM	05/22/18 14:11	JML	123-91-1	1
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	44	ug/L	1	SW5030C/8260C	05/12/18 02:30	JML	76-13-1	1
Acetone	45	ug/L	10	SW5030C/8260C	05/12/18 02:30	JML	67-64-1	1
Carbon disulfide	44	ug/L	1	SW5030C/8260C	05/12/18 02:30	JML	75-15-0	1
Methyl Acetate	36	ug/L	10	SW5030C/8260C	05/12/18 02:30	JML	79-20-9	1
tert-Methyl butyl ether (MTBE)	45	ug/L	1	SW5030C/8260C	05/12/18 02:30	JML	1634-04-4	1
2-Butanone (MEK)	40	ug/L	10	SW5030C/8260C	05/12/18 02:30	JML	78-93-3	1
Dichlorodifluoromethane	38	ug/L	1	SW5030C/8260C	05/12/18 02:30	JML	75-71-8	1
Chloromethane	40	ug/L	1	SW5030C/8260C	05/12/18 02:30	JML	74-87-3	1
Vinyl chloride	41	ug/L	1	SW5030C/8260C	05/12/18 02:30	JML	75-01-4	1
Bromomethane	43	ug/L	1	SW5030C/8260C	05/12/18 02:30	JML	74-83-9	1
Chloroethane	42	ug/L	1	SW5030C/8260C	05/12/18 02:30	JML	75-00-3	1
Trichlorofluoromethane	44	ug/L	1	SW5030C/8260C	05/12/18 02:30	JML	75-69-4	1
1,1-Dichloroethene	40	ug/L	1	SW5030C/8260C	05/12/18 02:30	JML	75-35-4	1
Methylene chloride	44	ug/L	1	SW5030C/8260C	05/12/18 02:30	JML	75-09-2	1
trans-1,2-Dichloroethene	45	ug/L	1	SW5030C/8260C	05/12/18 02:30	JML	156-60-5	1
1,1-Dichloroethane	45	ug/L	1	SW5030C/8260C	05/12/18 02:30	JML	75-34-3	1
cis-1,2-Dichloroethene	47	ug/L	1	SW5030C/8260C	05/12/18 02:30	JML	156-59-2	1
Chloroform	46	ug/L	1	SW5030C/8260C	05/12/18 02:30	JML	67-66-3	1
1,1,1-Trichloroethane	50	ug/L	1	SW5030C/8260C	05/12/18 02:30	JML	71-55-6	1
Cyclohexane	41	ug/L	1	SW5030C/8260C	05/12/18 02:30	JML	110-82-7	1
4-Methyl-2-pentanone (MIBK)	45	ug/L	10	SW5030C/8260C	05/12/18 02:30	JML	108-10-1	1
2-Hexanone	44	ug/L	10	SW5030C/8260C	05/12/18 02:30	JML	591-78-6	1
Carbon tetrachloride	51	ug/L	1	SW5030C/8260C	05/12/18 02:30	JML	56-23-5	1
Benzene	48	ug/L	1	SW5030C/8260C	05/12/18 02:30	JML	71-43-2	1
1,2-Dichloroethane	49	ug/L	1	SW5030C/8260C	05/12/18 02:30	JML	107-06-2	1
Trichloroethene	49	ug/L	1	SW5030C/8260C	05/12/18 02:30	JML	79-01-6	1
1,2-Dichloropropane	46	ug/L	1	SW5030C/8260C	05/12/18 02:30	JML	78-87-5	1
Bromodichloromethane	48	ug/L	1	SW5030C/8260C	05/12/18 02:30	JML	75-27-4	1
Methyl cyclohexane	43	ug/L	1	SW5030C/8260C	05/12/18 02:30	JML	108-87-2	1
cis-1,3-Dichloropropene	49	ug/L	1	SW5030C/8260C	05/12/18 02:30	JML	10061-01-5	1
Toluene	48	ug/L	1	SW5030C/8260C	05/12/18 02:30	JML	108-88-3	1
trans-1,3-Dichloropropene	50	ug/L	1	SW5030C/8260C	05/12/18 02:30	JML	10061-02-6	1
1,1,2-Trichloroethane	48	ug/L	1	SW5030C/8260C	05/12/18 02:30	JML	79-00-5	1
Tetrachloroethene	50	ug/L	1	SW5030C/8260C	05/12/18 02:30	JML	127-18-4	1

1-spiked at 50ug/L

Lab Sample ID: S89742.06 (continued)
Sample Tag: MW-13-50_051018 MSD

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
Dibromochloromethane	55	ug/L	1	SW5030C/8260C	05/12/18 02:30	JML	124-48-1	1
Chlorobenzene	53	ug/L	1	SW5030C/8260C	05/12/18 02:30	JML	108-90-7	1
1,1,2,2-Tetrachloroethane	50	ug/L	1	SW5030C/8260C	05/12/18 02:30	JML	79-34-5	1
Ethylbenzene	51	ug/L	1	SW5030C/8260C	05/12/18 02:30	JML	100-41-4	1
p,m-Xylene*	103	ug/L	2	SW5030C/8260C	05/12/18 02:30	JML		1
o-Xylene	52	ug/L	1	SW5030C/8260C	05/12/18 02:30	JML	95-47-6	1
Styrene	49	ug/L	1	SW5030C/8260C	05/12/18 02:30	JML	100-42-5	1
Isopropylbenzene	52	ug/L	1	SW5030C/8260C	05/12/18 02:30	JML	98-82-8	1
Bromoform	55	ug/L	1	SW5030C/8260C	05/12/18 02:30	JML	75-25-2	1
1,3-Dichlorobenzene	50	ug/L	1	SW5030C/8260C	05/12/18 02:30	JML	541-73-1	1
1,4-Dichlorobenzene	50	ug/L	1	SW5030C/8260C	05/12/18 02:30	JML	106-46-7	1
1,2-Dichlorobenzene	50	ug/L	1	SW5030C/8260C	05/12/18 02:30	JML	95-50-1	1
1,2,4-Trichlorobenzene	48	ug/L	1	SW5030C/8260C	05/12/18 02:30	JML	120-82-1	1

1-spiked at 50ug/L

Analytical Laboratory Report

Lab Sample ID: S89742.07
Sample Tag: Dup-12_051018
Collected Date/Time: 05/10/2018 00:01
Matrix: Groundwater
COC Reference: 110316

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.8	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/14/18 13:30	KCV		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:58	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:58	JML	106-93-4	
1,4-Dioxane*	Not detected	ug/L	1	SW8260B - SIM	05/22/18 21:38	JML	123-91-1	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:58	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/12/18 06:58	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:58	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/12/18 06:58	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:58	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/12/18 06:58	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:58	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:58	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:58	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:58	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:58	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:58	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:58	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:58	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:58	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:58	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:58	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:58	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:58	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:58	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/12/18 06:58	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/12/18 06:58	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:58	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:58	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:58	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:58	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:58	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:58	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:58	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:58	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:58	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:58	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:58	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:58	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:58	JML	124-48-1	

Lab Sample ID: S89742.07 (continued)
Sample Tag: Dup-12_051018

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:58	JML	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:58	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:58	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/12/18 06:58	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:58	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:58	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:58	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:58	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:58	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:58	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:58	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 06:58	JML	120-82-1	

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Phone (517) 332-0167 Fax (517) 332-4034
www.meritlabs.com

C.O.C. PAGE # 1 OF 1

110316

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME: Christine Gregg
COMPANY: ARCADIS
ADDRESS: 28550 Cabot Dr.
CITY: Novi STATE: MI ZIP CODE: 48377
PHONE NO.: 248-994-2240 FAX NO.: 248-994-2241 P.O. NO.: —
E-MAIL ADDRESS: Christine.Gregg@arcadis.com QUOTE NO.: —

INVOICE TO

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

PROJECT NO./NAME: ~~Race~~ B0064479.2018 / Racer Lansing
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Dale Alman

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	VOCs	1,4-Dioxane
89742.01	5/10/18	1145	MW-04-01(6)_051018	GW	3		3						X	X
.02		1255	MW-04-04R_051018	GW	3		3						X	X
.03		1430	MW-04-06R_051018	GW	3		3						X	X
04/05/06		1600	MW-13-50_051018	GW	9		9						X	X
.07		—	Dup-12_051018	GW	3		3						X	X

RELINQUISHED BY: SIGNATURE/ORGANIZATION	Dale Alman / ARCADIS (Sampler)	DATE 5/10/18	TIME 1650
RECEIVED BY: SIGNATURE/ORGANIZATION	PM	DATE 5/10	TIME 1650
RELINQUISHED BY: SIGNATURE/ORGANIZATION	PM	DATE 5/10	TIME 1800
RECEIVED BY: SIGNATURE/ORGANIZATION	PM Storage	DATE 5/10	TIME 1802

RELINQUISHED BY: SIGNATURE/ORGANIZATION	PM Storage	DATE 5/11/18	TIME 12:25
RECEIVED BY: SIGNATURE/ORGANIZATION		DATE 5/11/18	TIME 12:25

SEAL NO. SEAL INTACT YES ☐ NO ☐ INITIALS 5/11/18 13:20
SEAL NO. SEAL INTACT YES ☐ NO ☐ INITIALS

NOTES: samples kept on wet ice
TEMP. ON ARRIVAL 5/11/18 4.8 1222

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

Rev. 5.18.12

Analytical Laboratory Report

Report ID: S89743.01(01)
Generated on 05/23/2018

Report to

Attention: Alex Villhauer
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 616-780-3277 FAX: 248-994-2241
Email: alex.villhauer@arcadis.com

Addtional Contacts: Christine Gregg

Report produced by

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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): S89743.01-S89743.06
Project: B0064479.2018 / Racer Lansing
Collected Date: 05/10/2018
Submitted Date/Time: 05/11/2018 13:22
Sampled by: Sam Dunne
P.O. #: B0064479.2018

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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

Method Summary

Method	Version
N/A	Not Applicable
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs

Sample Summary (6 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S89743.01	MW-19_051018	Groundwater	05/10/18 10:30
S89743.02	MW-23_051018	Groundwater	05/10/18 12:20
S89743.03	MW-22_051018	Groundwater	05/10/18 14:10
S89743.04	MW-04-03(3)_051018	Groundwater	05/10/18 16:20
S89743.05	DUP-07_051018	Groundwater	05/10/18 00:01
S89743.06	Trip Blank	Water	05/10/18 00:01

Analytical Laboratory Report

Lab Sample ID: S89743.01
Sample Tag: MW-19_051018
Collected Date/Time: 05/10/2018 10:30
Matrix: Groundwater
COC Reference: 110311

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.8	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/14/18 13:30	KCV		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:18	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:18	JML	106-93-4	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:18	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/12/18 07:18	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:18	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/12/18 07:18	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:18	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/12/18 07:18	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:18	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:18	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:18	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:18	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:18	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:18	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:18	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:18	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:18	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:18	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:18	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:18	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:18	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:18	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/12/18 07:18	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/12/18 07:18	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:18	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:18	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:18	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:18	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:18	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:18	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:18	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:18	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:18	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:18	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:18	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:18	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:18	JML	124-48-1	
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:18	JML	108-90-7	

Lab Sample ID: S89743.01 (continued)
Sample Tag: MW-19_051018

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:18	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:18	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/12/18 07:18	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:18	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:18	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:18	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:18	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:18	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:18	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:18	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:18	JML	120-82-1	

Analytical Laboratory Report

Lab Sample ID: S89743.02
Sample Tag: MW-23_051018
Collected Date/Time: 05/10/2018 12:20
Matrix: Groundwater
COC Reference: 110311

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.8	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/14/18 13:30	KCV		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:37	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:37	JML	106-93-4	
1,4-Dioxane*	Not detected	ug/L	1	SW8260B - SIM	05/22/18 21:59	JML	123-91-1	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:37	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/12/18 07:37	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:37	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/12/18 07:37	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:37	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/12/18 07:37	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:37	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:37	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:37	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:37	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:37	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:37	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:37	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:37	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:37	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:37	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:37	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:37	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:37	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:37	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/12/18 07:37	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/12/18 07:37	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:37	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:37	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:37	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:37	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:37	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:37	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:37	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:37	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:37	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:37	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:37	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:37	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:37	JML	124-48-1	

Lab Sample ID: S89743.02 (continued)
Sample Tag: MW-23_051018

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:37	JML	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:37	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:37	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/12/18 07:37	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:37	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:37	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:37	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:37	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:37	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:37	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:37	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:37	JML	120-82-1	

Analytical Laboratory Report

Lab Sample ID: S89743.03
Sample Tag: MW-22_051018
Collected Date/Time: 05/10/2018 14:10
Matrix: Groundwater
COC Reference: 110311

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.8	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/14/18 13:30	KCV		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:56	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:56	JML	106-93-4	
1,4-Dioxane*	Not detected	ug/L	1	SW8260B - SIM	05/22/18 22:20	JML	123-91-1	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:56	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/12/18 07:56	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:56	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/12/18 07:56	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:56	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/12/18 07:56	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:56	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:56	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:56	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:56	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:56	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:56	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:56	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:56	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:56	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:56	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:56	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:56	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:56	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:56	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/12/18 07:56	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/12/18 07:56	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:56	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:56	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:56	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:56	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:56	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:56	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:56	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:56	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:56	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:56	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:56	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:56	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:56	JML	124-48-1	

Lab Sample ID: S89743.03 (continued)
Sample Tag: MW-22_051018

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:56	JML	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:56	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:56	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/12/18 07:56	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:56	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:56	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:56	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:56	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:56	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:56	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:56	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 07:56	JML	120-82-1	

Analytical Laboratory Report

Lab Sample ID: S89743.04
Sample Tag: MW-04-03(3)_051018
Collected Date/Time: 05/10/2018 16:20
Matrix: Groundwater
COC Reference: 110311

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.8	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/14/18 13:30	KCV		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:22	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:22	JML	106-93-4	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:22	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/12/18 00:22	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:22	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/12/18 00:22	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:22	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/12/18 00:22	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:22	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:22	JML	74-87-3	
Vinyl chloride	11	ug/L	1	SW5030C/8260C	05/12/18 00:22	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:22	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:22	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:22	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:22	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:22	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:22	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:22	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:22	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:22	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:22	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:22	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/12/18 00:22	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/12/18 00:22	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:22	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:22	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:22	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:22	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:22	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:22	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:22	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:22	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:22	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:22	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:22	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:22	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:22	JML	124-48-1	
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:22	JML	108-90-7	

Lab Sample ID: S89743.04 (continued)

Sample Tag: MW-04-03(3)_051018

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:22	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:22	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/12/18 00:22	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:22	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:22	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:22	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:22	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:22	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:22	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:22	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:22	JML	120-82-1	

Analytical Laboratory Report

Lab Sample ID: S89743.05
Sample Tag: DUP-07_051018
Collected Date/Time: 05/10/2018 00:01
Matrix: Groundwater
COC Reference: 110311

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.8	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/14/18 13:30	KCV		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:42	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:42	JML	106-93-4	
1,4-Dioxane*	Not detected	ug/L	1	SW8260B - SIM	05/22/18 22:41	JML	123-91-1	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:42	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/12/18 00:42	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:42	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/12/18 00:42	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:42	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/12/18 00:42	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:42	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:42	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:42	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:42	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:42	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:42	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:42	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:42	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:42	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:42	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:42	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:42	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:42	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:42	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/12/18 00:42	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/12/18 00:42	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:42	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:42	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:42	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:42	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:42	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:42	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:42	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:42	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:42	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:42	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:42	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:42	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:42	JML	124-48-1	

Lab Sample ID: S89743.05 (continued)
Sample Tag: DUP-07_051018

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:42	JML	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:42	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:42	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/12/18 00:42	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:42	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:42	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:42	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:42	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:42	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:42	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:42	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/12/18 00:42	JML	120-82-1	

Analytical Laboratory Report

Lab Sample ID: S89743.06
Sample Tag: Trip Blank
Collected Date/Time: 05/10/2018 00:01
Matrix: Water
COC Reference: 110311

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	4.8	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Other / Misc.								
No Analyses*	Completed				05/22/18 09:56	SRS		

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

110311

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME: Christine Gregg, Alex Villhauer
COMPANY: Arcadis
ADDRESS: 28550 Cabot Dr. Suite 500
CITY: Novi STATE: MI ZIP CODE: 48377
PHONE NO.: 248-994-2240 FAX NO.: 248-994-2241 P.O. NO.:
E-MAIL ADDRESS: Christine.Gregg@arcadis.com QUOTE NO.:

INVOICE TO

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

PROJECT NO./NAME: B0064479.2018 RACER Lansing
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Sam Dunne
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	VOC's 8260B	1,4-Dioxane 8260B SIMS
89743.01	05/10/18	1030	MW-19_051018	GW	3		3						X	
.02	05/10/18	1220	MW-23_051018	GW	3		3						X	X
.03	05/10/18	1410	MW-22_051018	GW	3		3						X	X
.04	05/10/18	1620	MW-04-03(3)_051018	GW	3		3						X	
.05	05/10/18	—	DUP-07_051018	GW	3		3						X	X
.06	—	—	Trip Blank	W	1		1						X	

RELINQUISHED BY: SAMPLER SIGNATURE/ORGANIZATION: Sam Dunne DATE: 5/10/18 TIME: 1648
RECEIVED BY: SIGNATURE/ORGANIZATION: Brett Fiessner DATE: 5/10/18 TIME: 1648
RELINQUISHED BY: SIGNATURE/ORGANIZATION: DATE: 5/10 TIME: 1800
RECEIVED BY: SIGNATURE/ORGANIZATION: AM Storage DATE: 5/10 TIME: 1800

RELINQUISHED BY: SIGNATURE/ORGANIZATION: PM Storage DATE: 5/11/18 TIME: 1322
RECEIVED BY: SIGNATURE/ORGANIZATION: DATE: 5/11/18 TIME: 1322
SEAL NO. SEAL INTACT? YES ☐ NO ☐ INITIALS: 5/11/18 13:22
SEAL NO. SEAL INTACT? YES ☐ NO ☐ INITIALS: 5/11/18 1322
NOTES: TEMP. ON ARRIVAL: 4.8

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

Analytical Laboratory Report

Report ID: S89781.01(01)
Generated on 05/23/2018

Report to

Attention: Alex Villhauer
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 616-780-3277 FAX: 248-994-2241
Email: alex.villhauer@arcadis.com

Addtional Contacts: Christine Gregg

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): S89781.01-S89781.07
Project: B0064479.2018 / Racer Lansing
Collected Date: 05/11/2018
Submitted Date/Time: 05/14/2018 14:57
Sampled by: Jake Pisackiewicz
P.O. #: B0064479.2018

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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).
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

Method Summary

Method	Version
N/A	Not Applicable
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs

Sample Summary (7 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S89781.01	Trip Blank	Water	05/11/18 00:01
S89781.02	MW-14-63_051118	Groundwater	05/11/18 09:45
S89781.03	MW-12-02_051118	Groundwater	05/11/18 11:25
S89781.04	MW-12-17_051118	Groundwater	05/11/18 10:20
S89781.05	AS-16-02_051118	Groundwater	05/11/18 12:05
S89781.06	FB-04_051118	Water	05/11/18 00:01
S89781.07	TB	Water	05/11/18 00:01

Analytical Laboratory Report

Lab Sample ID: S89781.01
Sample Tag: Trip Blank
Collected Date/Time: 05/11/2018 00:01
Matrix: Water
COC Reference: 110327

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	3.9	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/15/18 11:00	KCV		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 17:54	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 17:54	JML	106-93-4	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 17:54	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/14/18 17:54	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/14/18 17:54	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/14/18 17:54	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/14/18 17:54	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/14/18 17:54	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 17:54	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 17:54	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/14/18 17:54	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 17:54	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 17:54	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 17:54	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 17:54	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/14/18 17:54	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 17:54	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 17:54	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 17:54	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/14/18 17:54	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 17:54	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 17:54	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/14/18 17:54	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/14/18 17:54	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/14/18 17:54	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 17:54	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 17:54	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 17:54	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 17:54	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 17:54	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 17:54	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 17:54	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 17:54	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 17:54	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 17:54	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 17:54	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 17:54	JML	124-48-1	
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 17:54	JML	108-90-7	

Lab Sample ID: S89781.01 (continued)

Sample Tag: Trip Blank

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 17:54	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 17:54	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/14/18 17:54	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 17:54	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 17:54	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 17:54	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/14/18 17:54	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 17:54	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 17:54	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 17:54	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 17:54	JML	120-82-1	

Analytical Laboratory Report

Lab Sample ID: S89781.02
Sample Tag: MW-14-63_051118
Collected Date/Time: 05/11/2018 09:45
Matrix: Groundwater
COC Reference: 110327

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.9	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/15/18 11:00	KCV		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:13	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:13	JML	106-93-4	
1,4-Dioxane*	Not detected	ug/L	1	SW8260B - SIM	05/22/18 23:03	JML	123-91-1	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:13	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/14/18 18:13	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:13	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/14/18 18:13	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:13	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/14/18 18:13	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:13	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:13	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:13	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:13	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:13	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:13	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:13	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:13	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:13	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:13	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:13	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:13	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:13	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:13	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/14/18 18:13	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/14/18 18:13	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:13	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:13	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:13	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:13	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:13	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:13	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:13	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:13	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:13	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:13	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:13	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:13	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:13	JML	124-48-1	

Lab Sample ID: S89781.02 (continued)
Sample Tag: MW-14-63_051118

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:13	JML	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:13	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:13	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/14/18 18:13	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:13	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:13	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:13	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:13	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:13	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:13	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:13	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:13	JML	120-82-1	

Analytical Laboratory Report

Lab Sample ID: S89781.03
Sample Tag: MW-12-02_051118
Collected Date/Time: 05/11/2018 11:25
Matrix: Groundwater
COC Reference: 110327

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.9	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/15/18 11:00	KCV		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:32	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:32	JML	106-93-4	
1,4-Dioxane*	Not detected	ug/L	1	SW8260B - SIM	05/22/18 23:24	JML	123-91-1	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:32	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/14/18 18:32	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:32	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/14/18 18:32	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:32	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/14/18 18:32	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:32	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:32	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:32	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:32	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:32	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:32	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:32	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:32	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:32	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:32	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:32	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:32	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:32	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:32	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/14/18 18:32	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/14/18 18:32	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:32	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:32	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:32	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:32	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:32	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:32	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:32	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:32	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:32	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:32	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:32	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:32	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:32	JML	124-48-1	

Lab Sample ID: S89781.03 (continued)
Sample Tag: MW-12-02_051118

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:32	JML	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:32	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:32	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/14/18 18:32	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:32	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:32	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:32	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:32	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:32	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:32	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:32	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:32	JML	120-82-1	

Analytical Laboratory Report

Lab Sample ID: S89781.04
Sample Tag: MW-12-17_051118
Collected Date/Time: 05/11/2018 10:20
Matrix: Groundwater
COC Reference: 110327

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.9	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/15/18 11:00	KCV		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:51	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:51	JML	106-93-4	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:51	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/14/18 18:51	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:51	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/14/18 18:51	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:51	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/14/18 18:51	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:51	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:51	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:51	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:51	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:51	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:51	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:51	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:51	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:51	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:51	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:51	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:51	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:51	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:51	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/14/18 18:51	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/14/18 18:51	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:51	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:51	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:51	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:51	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:51	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:51	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:51	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:51	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:51	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:51	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:51	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:51	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:51	JML	124-48-1	
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:51	JML	108-90-7	

Lab Sample ID: S89781.04 (continued)

Sample Tag: MW-12-17_051118

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:51	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:51	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/14/18 18:51	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:51	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:51	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:51	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:51	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:51	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:51	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:51	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 18:51	JML	120-82-1	

Analytical Laboratory Report

Lab Sample ID: S89781.05
Sample Tag: AS-16-02_051118
Collected Date/Time: 05/11/2018 12:05
Matrix: Groundwater
COC Reference: 110327

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.9	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/15/18 11:00	KCV		
Organics - Volatiles								
1,4-Dioxane*	8	ug/L	1	SW8260B - SIM	05/23/18 03:25	JML	123-91-1	

Analytical Laboratory Report

Lab Sample ID: S89781.06
Sample Tag: FB-04_051118
Collected Date/Time: 05/11/2018 00:01
Matrix: Water
COC Reference: 110327

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.9	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/15/18 11:00	KCV		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:30	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:30	JML	106-93-4	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:30	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/14/18 19:30	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:30	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/14/18 19:30	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:30	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/14/18 19:30	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:30	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:30	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:30	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:30	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:30	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:30	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:30	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:30	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:30	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:30	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:30	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:30	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:30	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:30	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/14/18 19:30	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/14/18 19:30	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:30	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:30	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:30	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:30	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:30	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:30	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:30	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:30	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:30	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:30	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:30	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:30	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:30	JML	124-48-1	
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:30	JML	108-90-7	

Lab Sample ID: S89781.06 (continued)

Sample Tag: FB-04_051118

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:30	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:30	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/14/18 19:30	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:30	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:30	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:30	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:30	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:30	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:30	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:30	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:30	JML	120-82-1	

Analytical Laboratory Report

Lab Sample ID: S89781.07
Sample Tag: TB
Collected Date/Time: 05/11/2018 00:01
Matrix: Water
COC Reference: 110327

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	n/a	n/a	Yes	n/a	n/a

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Other / Misc.								
No Analyses*	Completed				05/22/18 09:56	SRS		

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

110327

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME: Alex Vill Lauer / Christine Gregg
COMPANY: Arcadis
ADDRESS: 28550 Cabot Drive
CITY: Novi STATE: MI ZIP CODE: 48377
PHONE NO.: 248-994-2240 FAX NO.: 248-994-2241 P.O. NO.:
E-MAIL ADDRESS: christine.gregg@arcadis.com QUOTE NO.:

INVOICE TO

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

PROJECT NO./NAME: B0064479.2018 / Reser Lansing
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Jake Pisarkiewicz

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	VOCs	1,4-Dioxane	Metals*	Special Instructions
89781.01	5-11-18	AM	Trip Blank	W	1		1						X			*metals: Arsenic,
.02	5-11-18	0945	MW-14-63_051118	GW	3		3						X	X		Nickel, Lead, Vanadium,
.03	5-11-18	1125	MW-12-02_051118	GW	3		3						X	X		Chromium, Copper
.04	5-11-18	1020	MW-12-17_051118	GW	3		3						X			
.05	5-11-18	1205	AS-16-02_051118	GW	3		3						X	X		
.06	5-11-18	AM	FB-04_051118	W	3		3						X			
.07	5-11-18	AM	TB	W	1		1						X			

RELINQUISHED BY: SIGNATURE/ORGANIZATION	Brett Fiesinger ☐ Sampler	DATE 5/11	TIME 1700
RECEIVED BY: SIGNATURE/ORGANIZATION	FM / storage	DATE 5/11	TIME 1800
RELINQUISHED BY: SIGNATURE/ORGANIZATION		DATE 5/14/18	TIME 14:57
RECEIVED BY: SIGNATURE/ORGANIZATION	M Arcate	DATE 5/14/18	TIME 1457

RELINQUISHED BY: SIGNATURE/ORGANIZATION	JM Shrano	DATE 5/14/18	TIME 14:20
RECEIVED BY: SIGNATURE/ORGANIZATION		DATE 5/14/18	TIME 14:30
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS	
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS	

NOTES: TEMP. ON ARRIVAL: 3.9

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

Rev. 5.18.12

Analytical Laboratory Report

Report ID: S89782.01(01)
Generated on 05/17/2018

Report to

Attention: Alex Villhauer
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 616-780-3277 FAX: 248-994-2241
Email: alex.villhauer@arcadis.com

Addtional Contacts: Christine Gregg

Report produced by

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Contacts for report questions:
John Laverty (johnlaverty@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S89782.01-S89782.08
Project: B0064479.2018 / Racer Lansing
Collected Date: 05/11/2018
Submitted Date/Time: 05/14/2018 14:57
Sampled by: Dale Arnett
P.O. #: B0064479.2018

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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).
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

Method Summary

Method	Version
N/A	Not Applicable
SW3015A	SW 846 Method 3015A Revision 1 February 2007
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003
SW6020A	SW 846 Method 6020A Revision 1 February 2007

Sample Summary (8 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S89782.01	MW-12-11_051118	Groundwater	05/11/18 09:40
S89782.02	MW-13-35_051118	Groundwater	05/11/18 10:45
S89782.03	MW-13-35_051118 MS	Groundwater	05/11/18 10:45
S89782.04	MW-13-35_051118 MSD	Groundwater	05/11/18 10:45
S89782.05	MW-12-16_051118	Groundwater	05/11/18 11:35
S89782.06	MWBP-11-UST1-4_051118	Groundwater	05/11/18 12:45
S89782.07	MWBP-12-UST1-4_051118	Groundwater	05/11/18 13:35
S89782.08	MW-04-05(6)_051118	Groundwater	05/11/18 14:50

Analytical Laboratory Report

Lab Sample ID: S89782.01
Sample Tag: MW-12-11_051118
Collected Date/Time: 05/11/2018 09:40
Matrix: Groundwater
COC Reference: 110318

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125ml Plastic	HNO3	Yes	3.9	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
Metal Digestion	Completed			SW3015A	05/17/18 13:50	CCM		
Metals								
Arsenic	0.015	mg/L	0.002	SW6020A	05/17/18 15:27	CCM	7440-38-2	
Chromium	Not detected	mg/L	0.005	SW6020A	05/17/18 15:27	CCM	7440-47-3	
Copper	Not detected	mg/L	0.005	SW6020A	05/17/18 15:27	CCM	7440-50-8	
Lead	Not detected	mg/L	0.003	SW6020A	05/17/18 15:27	CCM	7439-92-1	
Nickel	Not detected	mg/L	0.005	SW6020A	05/17/18 15:27	CCM	7440-02-0	
Vanadium	Not detected	mg/L	0.005	SW6020A	05/17/18 15:27	CCM	7440-62-2	

Analytical Laboratory Report

Lab Sample ID: S89782.02
Sample Tag: MW-13-35_051118
Collected Date/Time: 05/11/2018 10:45
Matrix: Groundwater
COC Reference: 110318

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125ml Plastic	HNO3	Yes	3.9	IR
3	40ml Glass	None	Yes	3.9	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
Metal Digestion	Completed			SW3015A	05/17/18 13:50	CCM		
pH check for VOCs*	<2	STD Units		N/A	05/16/18 11:15	KCV		
Metals								
Arsenic	Not detected	mg/L	0.002	SW6020A	05/17/18 15:48	CCM	7440-38-2	
Chromium	Not detected	mg/L	0.005	SW6020A	05/17/18 15:48	CCM	7440-47-3	
Copper	Not detected	mg/L	0.005	SW6020A	05/17/18 15:48	CCM	7440-50-8	
Lead	Not detected	mg/L	0.003	SW6020A	05/17/18 15:48	CCM	7439-92-1	
Nickel	Not detected	mg/L	0.005	SW6020A	05/17/18 15:48	CCM	7440-02-0	
Vanadium	Not detected	mg/L	0.005	SW6020A	05/17/18 15:48	CCM	7440-62-2	
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:09	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:09	JML	106-93-4	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:09	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/15/18 13:09	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:09	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/15/18 13:09	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:09	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/15/18 13:09	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:09	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:09	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:09	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:09	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:09	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:09	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:09	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:09	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:09	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:09	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:09	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:09	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:09	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:09	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/15/18 13:09	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/15/18 13:09	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:09	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:09	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:09	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:09	JML	79-01-6	

Lab Sample ID: S89782.02 (continued)
Sample Tag: MW-13-35_051118

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:09	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:09	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:09	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:09	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:09	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:09	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:09	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:09	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:09	JML	124-48-1	
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:09	JML	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:09	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:09	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/15/18 13:09	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:09	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:09	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:09	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:09	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:09	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:09	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:09	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:09	JML	120-82-1	

Analytical Laboratory Report

Lab Sample ID: S89782.03
Sample Tag: MW-13-35_051118 MS
Collected Date/Time: 05/11/2018 10:45
Matrix: Groundwater
COC Reference: 110318

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125ml Plastic	HNO3	Yes	3.9	IR
3	40ml Glass	None	Yes	3.9	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
Metal Digestion	Completed			SW3015A	05/17/18 13:50	CCM		
pH check for VOCs*	<2	STD Units		N/A	05/16/18 11:15	KCV		
Metals								
Arsenic	0.254	mg/L	0.002	SW6020A	05/17/18 15:49	CCM	7440-38-2	
Chromium	0.244	mg/L	0.005	SW6020A	05/17/18 15:49	CCM	7440-47-3	
Copper	0.234	mg/L	0.005	SW6020A	05/17/18 15:49	CCM	7440-50-8	
Lead	0.236	mg/L	0.003	SW6020A	05/17/18 15:49	CCM	7439-92-1	
Nickel	0.237	mg/L	0.005	SW6020A	05/17/18 15:49	CCM	7440-02-0	
Vanadium	0.257	mg/L	0.005	SW6020A	05/17/18 15:49	CCM	7440-62-2	
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	55	ug/L	1	SW5030C/8260C	05/15/18 11:33	JML	96-12-8	1
1,2-Dibromoethane	54	ug/L	1	SW5030C/8260C	05/15/18 11:33	JML	106-93-4	1
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	48	ug/L	1	SW5030C/8260C	05/15/18 11:33	JML	76-13-1	1
Acetone	46	ug/L	10	SW5030C/8260C	05/15/18 11:33	JML	67-64-1	1
Carbon disulfide	44	ug/L	1	SW5030C/8260C	05/15/18 11:33	JML	75-15-0	1
Methyl Acetate	43	ug/L	10	SW5030C/8260C	05/15/18 11:33	JML	79-20-9	1
tert-Methyl butyl ether (MTBE)	49	ug/L	1	SW5030C/8260C	05/15/18 11:33	JML	1634-04-4	1
2-Butanone (MEK)	45	ug/L	10	SW5030C/8260C	05/15/18 11:33	JML	78-93-3	1
Dichlorodifluoromethane	38	ug/L	1	SW5030C/8260C	05/15/18 11:33	JML	75-71-8	1
Chloromethane	38	ug/L	1	SW5030C/8260C	05/15/18 11:33	JML	74-87-3	1
Vinyl chloride	41	ug/L	1	SW5030C/8260C	05/15/18 11:33	JML	75-01-4	1
Bromomethane	44	ug/L	1	SW5030C/8260C	05/15/18 11:33	JML	74-83-9	1
Chloroethane	43	ug/L	1	SW5030C/8260C	05/15/18 11:33	JML	75-00-3	1
Trichlorofluoromethane	31	ug/L	1	SW5030C/8260C	05/15/18 11:33	JML	75-69-4	1
1,1-Dichloroethene	41	ug/L	1	SW5030C/8260C	05/15/18 11:33	JML	75-35-4	1
Methylene chloride	46	ug/L	1	SW5030C/8260C	05/15/18 11:33	JML	75-09-2	1
trans-1,2-Dichloroethene	45	ug/L	1	SW5030C/8260C	05/15/18 11:33	JML	156-60-5	1
1,1-Dichloroethane	46	ug/L	1	SW5030C/8260C	05/15/18 11:33	JML	75-34-3	1
cis-1,2-Dichloroethene	49	ug/L	1	SW5030C/8260C	05/15/18 11:33	JML	156-59-2	1
Chloroform	47	ug/L	1	SW5030C/8260C	05/15/18 11:33	JML	67-66-3	1
1,1,1-Trichloroethane	52	ug/L	1	SW5030C/8260C	05/15/18 11:33	JML	71-55-6	1
Cyclohexane	44	ug/L	1	SW5030C/8260C	05/15/18 11:33	JML	110-82-7	1
4-Methyl-2-pentanone (MIBK)	48	ug/L	10	SW5030C/8260C	05/15/18 11:33	JML	108-10-1	1
2-Hexanone	46	ug/L	10	SW5030C/8260C	05/15/18 11:33	JML	591-78-6	1
Carbon tetrachloride	53	ug/L	1	SW5030C/8260C	05/15/18 11:33	JML	56-23-5	1
Benzene	48	ug/L	1	SW5030C/8260C	05/15/18 11:33	JML	71-43-2	1
1,2-Dichloroethane	50	ug/L	1	SW5030C/8260C	05/15/18 11:33	JML	107-06-2	1

1-spiked at 50ug/L

Lab Sample ID: S89782.03 (continued)

Sample Tag: MW-13-35_051118 MS

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
Trichloroethene	51	ug/L	1	SW5030C/8260C	05/15/18 11:33	JML	79-01-6	1
1,2-Dichloropropane	47	ug/L	1	SW5030C/8260C	05/15/18 11:33	JML	78-87-5	1
Bromodichloromethane	50	ug/L	1	SW5030C/8260C	05/15/18 11:33	JML	75-27-4	1
Methyl cyclohexane	47	ug/L	1	SW5030C/8260C	05/15/18 11:33	JML	108-87-2	1
cis-1,3-Dichloropropene	51	ug/L	1	SW5030C/8260C	05/15/18 11:33	JML	10061-01-5	1
Toluene	49	ug/L	1	SW5030C/8260C	05/15/18 11:33	JML	108-88-3	1
trans-1,3-Dichloropropene	52	ug/L	1	SW5030C/8260C	05/15/18 11:33	JML	10061-02-6	1
1,1,2-Trichloroethane	49	ug/L	1	SW5030C/8260C	05/15/18 11:33	JML	79-00-5	1
Tetrachloroethene	52	ug/L	1	SW5030C/8260C	05/15/18 11:33	JML	127-18-4	1
Dibromochloromethane	58	ug/L	1	SW5030C/8260C	05/15/18 11:33	JML	124-48-1	1
Chlorobenzene	55	ug/L	1	SW5030C/8260C	05/15/18 11:33	JML	108-90-7	1
1,1,2,2-Tetrachloroethane	53	ug/L	1	SW5030C/8260C	05/15/18 11:33	JML	79-34-5	1
Ethylbenzene	53	ug/L	1	SW5030C/8260C	05/15/18 11:33	JML	100-41-4	1
p,m-Xylene*	107	ug/L	2	SW5030C/8260C	05/15/18 11:33	JML		1
o-Xylene	53	ug/L	1	SW5030C/8260C	05/15/18 11:33	JML	95-47-6	1
Styrene	52	ug/L	1	SW5030C/8260C	05/15/18 11:33	JML	100-42-5	1
Isopropylbenzene	54	ug/L	1	SW5030C/8260C	05/15/18 11:33	JML	98-82-8	1
Bromoform	59	ug/L	1	SW5030C/8260C	05/15/18 11:33	JML	75-25-2	1
1,3-Dichlorobenzene	52	ug/L	1	SW5030C/8260C	05/15/18 11:33	JML	541-73-1	1
1,4-Dichlorobenzene	51	ug/L	1	SW5030C/8260C	05/15/18 11:33	JML	106-46-7	1
1,2-Dichlorobenzene	52	ug/L	1	SW5030C/8260C	05/15/18 11:33	JML	95-50-1	1
1,2,4-Trichlorobenzene	50	ug/L	1	SW5030C/8260C	05/15/18 11:33	JML	120-82-1	1

1-spiked at 50ug/L

Analytical Laboratory Report

Lab Sample ID: S89782.04
Sample Tag: MW-13-35_051118 MSD
Collected Date/Time: 05/11/2018 10:45
Matrix: Groundwater
COC Reference: 110318

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125ml Plastic	HNO3	Yes	3.9	IR
3	40ml Glass	None	Yes	3.9	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
Metal Digestion	Completed			SW3015A	05/17/18 13:50	CCM		
pH check for VOCs*	<2	STD Units		N/A	05/16/18 11:15	KCV		
Metals								
Arsenic	0.255	mg/L	0.002	SW6020A	05/17/18 15:49	CCM	7440-38-2	
Chromium	0.242	mg/L	0.005	SW6020A	05/17/18 15:49	CCM	7440-47-3	
Copper	0.229	mg/L	0.005	SW6020A	05/17/18 15:49	CCM	7440-50-8	
Lead	0.239	mg/L	0.003	SW6020A	05/17/18 15:49	CCM	7439-92-1	
Nickel	0.234	mg/L	0.005	SW6020A	05/17/18 15:49	CCM	7440-02-0	
Vanadium	0.259	mg/L	0.005	SW6020A	05/17/18 15:49	CCM	7440-62-2	
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	54	ug/L	1	SW5030C/8260C	05/15/18 11:53	JML	96-12-8	1
1,2-Dibromoethane	52	ug/L	1	SW5030C/8260C	05/15/18 11:53	JML	106-93-4	1
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	46	ug/L	1	SW5030C/8260C	05/15/18 11:53	JML	76-13-1	1
Acetone	43	ug/L	10	SW5030C/8260C	05/15/18 11:53	JML	67-64-1	1
Carbon disulfide	42	ug/L	1	SW5030C/8260C	05/15/18 11:53	JML	75-15-0	1
Methyl Acetate	44	ug/L	10	SW5030C/8260C	05/15/18 11:53	JML	79-20-9	1
tert-Methyl butyl ether (MTBE)	47	ug/L	1	SW5030C/8260C	05/15/18 11:53	JML	1634-04-4	1
2-Butanone (MEK)	40	ug/L	10	SW5030C/8260C	05/15/18 11:53	JML	78-93-3	1
Dichlorodifluoromethane	36	ug/L	1	SW5030C/8260C	05/15/18 11:53	JML	75-71-8	1
Chloromethane	36	ug/L	1	SW5030C/8260C	05/15/18 11:53	JML	74-87-3	1
Vinyl chloride	39	ug/L	1	SW5030C/8260C	05/15/18 11:53	JML	75-01-4	1
Bromomethane	42	ug/L	1	SW5030C/8260C	05/15/18 11:53	JML	74-83-9	1
Chloroethane	41	ug/L	1	SW5030C/8260C	05/15/18 11:53	JML	75-00-3	1
Trichlorofluoromethane	29	ug/L	1	SW5030C/8260C	05/15/18 11:53	JML	75-69-4	1
1,1-Dichloroethene	39	ug/L	1	SW5030C/8260C	05/15/18 11:53	JML	75-35-4	1
Methylene chloride	44	ug/L	1	SW5030C/8260C	05/15/18 11:53	JML	75-09-2	1
trans-1,2-Dichloroethene	43	ug/L	1	SW5030C/8260C	05/15/18 11:53	JML	156-60-5	1
1,1-Dichloroethane	44	ug/L	1	SW5030C/8260C	05/15/18 11:53	JML	75-34-3	1
cis-1,2-Dichloroethene	46	ug/L	1	SW5030C/8260C	05/15/18 11:53	JML	156-59-2	1
Chloroform	45	ug/L	1	SW5030C/8260C	05/15/18 11:53	JML	67-66-3	1
1,1,1-Trichloroethane	49	ug/L	1	SW5030C/8260C	05/15/18 11:53	JML	71-55-6	1
Cyclohexane	41	ug/L	1	SW5030C/8260C	05/15/18 11:53	JML	110-82-7	1
4-Methyl-2-pentanone (MIBK)	45	ug/L	10	SW5030C/8260C	05/15/18 11:53	JML	108-10-1	1
2-Hexanone	45	ug/L	10	SW5030C/8260C	05/15/18 11:53	JML	591-78-6	1
Carbon tetrachloride	49	ug/L	1	SW5030C/8260C	05/15/18 11:53	JML	56-23-5	1
Benzene	45	ug/L	1	SW5030C/8260C	05/15/18 11:53	JML	71-43-2	1
1,2-Dichloroethane	47	ug/L	1	SW5030C/8260C	05/15/18 11:53	JML	107-06-2	1

1-spiked at 50ug/L

Lab Sample ID: S89782.04 (continued)
Sample Tag: MW-13-35_051118 MSD

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
Trichloroethene	48	ug/L	1	SW5030C/8260C	05/15/18 11:53	JML	79-01-6	1
1,2-Dichloropropane	44	ug/L	1	SW5030C/8260C	05/15/18 11:53	JML	78-87-5	1
Bromodichloromethane	47	ug/L	1	SW5030C/8260C	05/15/18 11:53	JML	75-27-4	1
Methyl cyclohexane	44	ug/L	1	SW5030C/8260C	05/15/18 11:53	JML	108-87-2	1
cis-1,3-Dichloropropene	49	ug/L	1	SW5030C/8260C	05/15/18 11:53	JML	10061-01-5	1
Toluene	47	ug/L	1	SW5030C/8260C	05/15/18 11:53	JML	108-88-3	1
trans-1,3-Dichloropropene	50	ug/L	1	SW5030C/8260C	05/15/18 11:53	JML	10061-02-6	1
1,1,2-Trichloroethane	47	ug/L	1	SW5030C/8260C	05/15/18 11:53	JML	79-00-5	1
Tetrachloroethene	50	ug/L	1	SW5030C/8260C	05/15/18 11:53	JML	127-18-4	1
Dibromochloromethane	55	ug/L	1	SW5030C/8260C	05/15/18 11:53	JML	124-48-1	1
Chlorobenzene	52	ug/L	1	SW5030C/8260C	05/15/18 11:53	JML	108-90-7	1
1,1,2,2-Tetrachloroethane	49	ug/L	1	SW5030C/8260C	05/15/18 11:53	JML	79-34-5	1
Ethylbenzene	51	ug/L	1	SW5030C/8260C	05/15/18 11:53	JML	100-41-4	1
p,m-Xylene*	103	ug/L	2	SW5030C/8260C	05/15/18 11:53	JML		1
o-Xylene	51	ug/L	1	SW5030C/8260C	05/15/18 11:53	JML	95-47-6	1
Styrene	50	ug/L	1	SW5030C/8260C	05/15/18 11:53	JML	100-42-5	1
Isopropylbenzene	51	ug/L	1	SW5030C/8260C	05/15/18 11:53	JML	98-82-8	1
Bromoform	56	ug/L	1	SW5030C/8260C	05/15/18 11:53	JML	75-25-2	1
1,3-Dichlorobenzene	51	ug/L	1	SW5030C/8260C	05/15/18 11:53	JML	541-73-1	1
1,4-Dichlorobenzene	50	ug/L	1	SW5030C/8260C	05/15/18 11:53	JML	106-46-7	1
1,2-Dichlorobenzene	50	ug/L	1	SW5030C/8260C	05/15/18 11:53	JML	95-50-1	1
1,2,4-Trichlorobenzene	49	ug/L	1	SW5030C/8260C	05/15/18 11:53	JML	120-82-1	1

1-spiked at 50ug/L

Analytical Laboratory Report

Lab Sample ID: S89782.05
Sample Tag: MW-12-16_051118
Collected Date/Time: 05/11/2018 11:35
Matrix: Groundwater
COC Reference: 110318

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125ml Plastic	HNO3	Yes	3.9	IR
3	40ml Glass	None	Yes	3.9	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
Metal Digestion	Completed			SW3015A	05/17/18 13:50	CCM		
pH check for VOCs*	<2	STD Units		N/A	05/15/18 11:00	KCV		
Metals								
Arsenic	0.015	mg/L	0.002	SW6020A	05/17/18 15:33	CCM	7440-38-2	
Chromium	Not detected	mg/L	0.005	SW6020A	05/17/18 15:33	CCM	7440-47-3	
Copper	Not detected	mg/L	0.005	SW6020A	05/17/18 15:33	CCM	7440-50-8	
Lead	Not detected	mg/L	0.003	SW6020A	05/17/18 15:33	CCM	7439-92-1	
Nickel	Not detected	mg/L	0.005	SW6020A	05/17/18 15:33	CCM	7440-02-0	
Vanadium	Not detected	mg/L	0.005	SW6020A	05/17/18 15:33	CCM	7440-62-2	
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:49	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:49	JML	106-93-4	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:49	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/14/18 19:49	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:49	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/14/18 19:49	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:49	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/14/18 19:49	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:49	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:49	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:49	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:49	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:49	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:49	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:49	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:49	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:49	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:49	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:49	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:49	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:49	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:49	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/14/18 19:49	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/14/18 19:49	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:49	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:49	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:49	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:49	JML	79-01-6	

Lab Sample ID: S89782.05 (continued)
Sample Tag: MW-12-16_051118

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:49	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:49	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:49	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:49	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:49	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:49	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:49	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:49	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:49	JML	124-48-1	
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:49	JML	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:49	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:49	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/14/18 19:49	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:49	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:49	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:49	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:49	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:49	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:49	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:49	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:49	JML	120-82-1	

Analytical Laboratory Report

Lab Sample ID: S89782.06
Sample Tag: MWBP-11-UST1-4_051118
Collected Date/Time: 05/11/2018 12:45
Matrix: Groundwater
COC Reference: 110318

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125ml Plastic	HNO3	Yes	3.9	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
Metal Digestion	Completed			SW3015A	05/17/18 13:50	CCM		
Metals								
Arsenic	0.012	mg/L	0.002	SW6020A	05/17/18 15:35	CCM	7440-38-2	
Chromium	Not detected	mg/L	0.005	SW6020A	05/17/18 15:35	CCM	7440-47-3	
Copper	0.005	mg/L	0.005	SW6020A	05/17/18 15:35	CCM	7440-50-8	
Lead	Not detected	mg/L	0.003	SW6020A	05/17/18 15:35	CCM	7439-92-1	
Nickel	Not detected	mg/L	0.005	SW6020A	05/17/18 15:35	CCM	7440-02-0	
Vanadium	Not detected	mg/L	0.005	SW6020A	05/17/18 15:35	CCM	7440-62-2	

Analytical Laboratory Report

Lab Sample ID: S89782.07
Sample Tag: MWBP-12-UST1-4_051118
Collected Date/Time: 05/11/2018 13:35
Matrix: Groundwater
COC Reference: 110318

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125ml Plastic	HNO3	Yes	3.9	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
Metal Digestion	Completed			SW3015A	05/17/18 13:50	CCM		
Metals								
Arsenic	0.015	mg/L	0.002	SW6020A	05/17/18 15:37	CCM	7440-38-2	
Chromium	Not detected	mg/L	0.005	SW6020A	05/17/18 15:37	CCM	7440-47-3	
Copper	Not detected	mg/L	0.005	SW6020A	05/17/18 15:37	CCM	7440-50-8	
Lead	Not detected	mg/L	0.003	SW6020A	05/17/18 15:37	CCM	7439-92-1	
Nickel	Not detected	mg/L	0.005	SW6020A	05/17/18 15:37	CCM	7440-02-0	
Vanadium	0.009	mg/L	0.005	SW6020A	05/17/18 15:37	CCM	7440-62-2	

Analytical Laboratory Report

Lab Sample ID: S89782.08
Sample Tag: MW-04-05(6)_051118
Collected Date/Time: 05/11/2018 14:50
Matrix: Groundwater
COC Reference: 110318

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125ml Plastic	HNO3	Yes	3.9	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
Metal Digestion	Completed			SW3015A	05/17/18 13:50	CCM		
Metals								
Arsenic	Not detected	mg/L	0.002	SW6020A	05/17/18 15:39	CCM	7440-38-2	
Chromium	Not detected	mg/L	0.005	SW6020A	05/17/18 15:39	CCM	7440-47-3	
Copper	Not detected	mg/L	0.005	SW6020A	05/17/18 15:39	CCM	7440-50-8	
Lead	Not detected	mg/L	0.003	SW6020A	05/17/18 15:39	CCM	7439-92-1	
Nickel	Not detected	mg/L	0.005	SW6020A	05/17/18 15:39	CCM	7440-02-0	
Vanadium	Not detected	mg/L	0.005	SW6020A	05/17/18 15:39	CCM	7440-62-2	

Merit Laboratories, Inc.

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www.meritlabs.com

C.O.C. PAGE # 1 OF 1

110318

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME: Christine Gregg
COMPANY: ARCADIS
ADDRESS: ~~28850~~ 29550 Cabot Dr
CITY: Novi STATE: MI ZIP CODE: 48377
PHONE NO.: 248-994-2240 FAX NO.: 248-994-2241 P.O. NO.: —
E-MAIL ADDRESS: Christine.Gregg@arcadis.com QUOTE NO.: —

INVOICE TO

CONTACT NAME: ~~X~~ SAME
COMPANY:
ADDRESS:
CITY: STATE: ZIP CODE:
PHONE NO.: E-MAIL ADDRESS:

PROJECT NO./NAME: @B006447.2018 / Race Lansing
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Dan Arnett / Dan

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	Select Metals	VOC	Special Instructions
841782.01	5/11/18	940	MW-12-11_051118	GW	1			1					1		
02/03/04		1045	MW-13-35_051118	GW	12		9	3					3	9	MS/MSD
.05		1135	MW-12-16_051118	GW	4		3	1					1	3	
.06		1245	MWBP-11-UST1-4_051118	GW	1			1					1		
.07		1335	MWBP-12-UST1-4_051118	GW	1			1					1		
.08		1450	MW-04-05(6)_051118	GW	1			1					1		

RELINQUISHED BY: SIGNATURE/ORGANIZATION: Dan Arnett / ARCADIS (Sampler)	5/11/18	1540
RECEIVED BY: SIGNATURE/ORGANIZATION: PM	5/11	1540
RELINQUISHED BY: SIGNATURE/ORGANIZATION: PM	5/11	1700
RECEIVED BY: SIGNATURE/ORGANIZATION: PM Storage	5/11/18	1700

RELINQUISHED BY: SIGNATURE/ORGANIZATION: PM Storage	5/14/18	14:30
RECEIVED BY: SIGNATURE/ORGANIZATION:	5/14/18	14:30
SEAL NO. — SEAL INTACT YES ☐ NO ☐ — INITIALS — 5/14/18	NOTES: 14:57	TEMP. ON ARRIVAL:
SEAL NO. — SEAL INTACT YES ☐ NO ☐ — INITIALS — 5/14/18	Sample kept on wet ice 1457	3.9

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

Rev. 5

Analytical Laboratory Report

Report ID: S89784.01(01)
Generated on 05/23/2018

Report to

Attention: Alex Villhauer
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 616-780-3277 FAX: 248-994-2241
Email: alex.villhauer@arcadis.com

Addtional Contacts: Christine Gregg

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Contacts for report questions:
John Laverty (johnlaverty@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S89784.01-S89784.12
Project: B0064479.2018 Racer Lansing
Collected Date: 05/11/2018
Submitted Date/Time: 05/14/2018 14:57
Sampled by: Sam Dunne
P.O. #: B0064479.2018

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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).
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

Method Summary

Method	Version
E200.8	EPA Method 200.8 Revision 5.4
N/A	Not Applicable
SW3015A	SW 846 Method 3015A Revision 1 February 2007
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003
SW6020A	SW 846 Method 6020A Revision 1 February 2007
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs

Sample Summary (12 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S89784.01	MW-13-41_051118	Groundwater	05/11/18 10:10
S89784.02	MW-13-38_051118	Groundwater	05/11/18 11:20
S89784.03	MW-91-4_051118	Groundwater	05/11/18 13:30
S89784.04	MW-04-04(3)_051118	Groundwater	05/11/18 14:50
S89784.05	DUP-08_051118	Groundwater	05/11/18 00:01
S89784.06	MW-02-04(3)_051118	Groundwater	05/11/18 10:20
S89784.07	MW-91-2_051118	Groundwater	05/11/18 11:45
S89784.08	CH-14-RO_051118	Groundwater	05/11/18 12:50
S89784.09	DUP-09_051118	Groundwater	05/11/18 00:01
S89784.10	MW-13-49_051118	Groundwater	05/11/18 14:10
S89784.11	MW-13-46_051118	Groundwater	05/11/18 14:10
S89784.12	Trip Blank	Water	05/11/18 00:01

Analytical Laboratory Report

Lab Sample ID: S89784.01
Sample Tag: MW-13-41_051118
Collected Date/Time: 05/11/2018 10:10
Matrix: Groundwater
COC Reference: 110301

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	125ml Plastic	HNO3	Yes	3.9	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
Metal Digestion	Completed			SW3015A	05/17/18 13:50	CCM		
Metal Digestion	Completed			SW3015A	05/17/18 13:50	CCM		
Metals								
Arsenic, Dissolved	0.012	mg/L	0.002	E200.8	05/17/18 15:42	CCM	7440-38-2	
Arsenic	0.011	mg/L	0.002	SW6020A	05/17/18 15:40	CCM	7440-38-2	
Chromium, Dissolved	Not detected	mg/L	0.005	E200.8	05/17/18 15:42	CCM	7440-47-3	
Chromium	Not detected	mg/L	0.005	SW6020A	05/17/18 15:40	CCM	7440-47-3	
Copper, Dissolved	Not detected	mg/L	0.005	E200.8	05/17/18 15:42	CCM	7440-50-8	
Copper	Not detected	mg/L	0.005	SW6020A	05/17/18 15:40	CCM	7440-50-8	
Lead, Dissolved	Not detected	mg/L	0.003	E200.8	05/17/18 15:42	CCM	7439-92-1	
Lead	Not detected	mg/L	0.003	SW6020A	05/17/18 15:40	CCM	7439-92-1	
Nickel, Dissolved	0.025	mg/L	0.005	E200.8	05/17/18 15:42	CCM	7440-02-0	
Nickel	0.028	mg/L	0.005	SW6020A	05/17/18 15:40	CCM	7440-02-0	
Vanadium, Dissolved	Not detected	mg/L	0.005	E200.8	05/17/18 15:42	CCM	7440-62-2	
Vanadium	Not detected	mg/L	0.005	SW6020A	05/17/18 15:40	CCM	7440-62-2	

Analytical Laboratory Report

Lab Sample ID: S89784.02
Sample Tag: MW-13-38_051118
Collected Date/Time: 05/11/2018 11:20
Matrix: Groundwater
COC Reference: 110301

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.9	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/15/18 11:00	KCV		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:08	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:08	JML	106-93-4	
1,4-Dioxane*	Not detected	ug/L	1	SW8260B - SIM	05/23/18 03:46	JML	123-91-1	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:08	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/14/18 20:08	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:08	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/14/18 20:08	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:08	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/14/18 20:08	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:08	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:08	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:08	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:08	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:08	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:08	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:08	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:08	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:08	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:08	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:08	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:08	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:08	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:08	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/14/18 20:08	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/14/18 20:08	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:08	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:08	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:08	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:08	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:08	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:08	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:08	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:08	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:08	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:08	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:08	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:08	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:08	JML	124-48-1	

Lab Sample ID: S89784.02 (continued)
Sample Tag: MW-13-38_051118

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:08	JML	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:08	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:08	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/14/18 20:08	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:08	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:08	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:08	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:08	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:08	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:08	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:08	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:08	JML	120-82-1	

Analytical Laboratory Report

Lab Sample ID: S89784.03
Sample Tag: MW-91-4_051118
Collected Date/Time: 05/11/2018 13:30
Matrix: Groundwater
COC Reference: 110301

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.9	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/15/18 11:00	KCV		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:27	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:27	JML	106-93-4	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:27	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/14/18 20:27	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:27	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/14/18 20:27	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:27	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/14/18 20:27	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:27	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:27	JML	74-87-3	
Vinyl chloride	9	ug/L	1	SW5030C/8260C	05/14/18 20:27	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:27	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:27	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:27	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:27	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:27	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:27	JML	156-60-5	
1,1-Dichloroethane	2	ug/L	1	SW5030C/8260C	05/14/18 20:27	JML	75-34-3	
cis-1,2-Dichloroethene	16	ug/L	1	SW5030C/8260C	05/14/18 20:27	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:27	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:27	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:27	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/14/18 20:27	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/14/18 20:27	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:27	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:27	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:27	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:27	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:27	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:27	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:27	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:27	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:27	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:27	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:27	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:27	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:27	JML	124-48-1	
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:27	JML	108-90-7	

Lab Sample ID: S89784.03 (continued)

Sample Tag: MW-91-4_051118

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:27	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:27	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/14/18 20:27	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:27	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:27	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:27	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:27	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:27	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:27	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:27	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:27	JML	120-82-1	

Analytical Laboratory Report

Lab Sample ID: S89784.04
Sample Tag: MW-04-04(3)_051118
Collected Date/Time: 05/11/2018 14:50
Matrix: Groundwater
COC Reference: 110301

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.9	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/15/18 11:00	KCV		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:46	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:46	JML	106-93-4	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:46	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/14/18 20:46	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:46	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/14/18 20:46	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:46	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/14/18 20:46	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:46	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:46	JML	74-87-3	
Vinyl chloride	3	ug/L	1	SW5030C/8260C	05/14/18 20:46	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:46	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:46	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:46	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:46	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:46	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:46	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:46	JML	75-34-3	
cis-1,2-Dichloroethene	3	ug/L	1	SW5030C/8260C	05/14/18 20:46	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:46	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:46	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:46	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/14/18 20:46	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/14/18 20:46	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:46	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:46	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:46	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:46	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:46	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:46	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:46	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:46	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:46	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:46	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:46	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:46	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:46	JML	124-48-1	
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:46	JML	108-90-7	

Lab Sample ID: S89784.04 (continued)

Sample Tag: MW-04-04(3)_051118

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:46	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:46	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/14/18 20:46	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:46	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:46	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:46	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:46	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:46	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:46	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:46	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:46	JML	120-82-1	

Lab Sample ID: S89784.05
Sample Tag: DUP-08_051118
Collected Date/Time: 05/11/2018 00:01
Matrix: Groundwater
COC Reference: 110301

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.9	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/15/18 11:00	KCV		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 21:06	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 21:06	JML	106-93-4	
1,4-Dioxane*	Not detected	ug/L	1	SW8260B - SIM	05/23/18 04:07	JML	123-91-1	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 21:06	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/14/18 21:06	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/14/18 21:06	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/14/18 21:06	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/14/18 21:06	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/14/18 21:06	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 21:06	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 21:06	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/14/18 21:06	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 21:06	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 21:06	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 21:06	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 21:06	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/14/18 21:06	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 21:06	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 21:06	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 21:06	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/14/18 21:06	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 21:06	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 21:06	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/14/18 21:06	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/14/18 21:06	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/14/18 21:06	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 21:06	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 21:06	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 21:06	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 21:06	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 21:06	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 21:06	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 21:06	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 21:06	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 21:06	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 21:06	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 21:06	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 21:06	JML	124-48-1	

Lab Sample ID: S89784.05 (continued)
Sample Tag: DUP-08_051118

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 21:06	JML	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 21:06	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 21:06	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/14/18 21:06	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 21:06	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 21:06	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 21:06	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/14/18 21:06	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 21:06	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 21:06	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 21:06	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 21:06	JML	120-82-1	

Analytical Laboratory Report

Lab Sample ID: S89784.06
Sample Tag: MW-02-04(3)_051118
Collected Date/Time: 05/11/2018 10:20
Matrix: Groundwater
COC Reference: 110301

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125ml Plastic	HNO3	Yes	3.9	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
Metal Digestion	Completed			SW3015A	05/17/18 13:50	CCM		
Metals								
Arsenic	0.017	mg/L	0.002	SW6020A	05/17/18 15:44	CCM	7440-38-2	
Chromium	Not detected	mg/L	0.005	SW6020A	05/17/18 15:44	CCM	7440-47-3	
Copper	Not detected	mg/L	0.005	SW6020A	05/17/18 15:44	CCM	7440-50-8	
Lead	Not detected	mg/L	0.003	SW6020A	05/17/18 15:44	CCM	7439-92-1	
Nickel	0.010	mg/L	0.005	SW6020A	05/17/18 15:44	CCM	7440-02-0	
Vanadium	Not detected	mg/L	0.005	SW6020A	05/17/18 15:44	CCM	7440-62-2	

Analytical Laboratory Report

Lab Sample ID: S89784.07
Sample Tag: MW-91-2_051118
Collected Date/Time: 05/11/2018 11:45
Matrix: Groundwater
COC Reference: 110301

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.9	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/15/18 11:00	KCV		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:39	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:39	JML	106-93-4	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:39	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/14/18 19:39	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:39	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/14/18 19:39	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:39	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/14/18 19:39	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:39	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:39	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:39	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:39	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:39	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:39	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:39	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:39	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:39	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:39	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:39	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:39	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:39	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:39	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/14/18 19:39	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/14/18 19:39	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:39	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:39	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:39	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:39	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:39	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:39	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:39	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:39	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:39	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:39	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:39	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:39	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:39	JML	124-48-1	
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:39	JML	108-90-7	

Lab Sample ID: S89784.07 (continued)
Sample Tag: MW-91-2_051118

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:39	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:39	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/14/18 19:39	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:39	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:39	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:39	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:39	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:39	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:39	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:39	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:39	JML	120-82-1	

Lab Sample ID: S89784.08
Sample Tag: CH-14-RO_051118
Collected Date/Time: 05/11/2018 12:50
Matrix: Groundwater
COC Reference: 110301

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.9	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/16/18 11:15	KCV		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:47	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:47	JML	106-93-4	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:47	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/15/18 13:47	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:47	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/15/18 13:47	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:47	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/15/18 13:47	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:47	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:47	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:47	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:47	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:47	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:47	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:47	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:47	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:47	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:47	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:47	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:47	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:47	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:47	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/15/18 13:47	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/15/18 13:47	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:47	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:47	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:47	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:47	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:47	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:47	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:47	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:47	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:47	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:47	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:47	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:47	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:47	JML	124-48-1	
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:47	JML	108-90-7	

Lab Sample ID: S89784.08 (continued)

Sample Tag: CH-14-RO_051118

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:47	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:47	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/15/18 13:47	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:47	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:47	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:47	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:47	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:47	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:47	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:47	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/15/18 13:47	JML	120-82-1	

Analytical Laboratory Report

Lab Sample ID: S89784.09
Sample Tag: DUP-09_051118
Collected Date/Time: 05/11/2018 00:01
Matrix: Groundwater
COC Reference: 110301

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125ml Plastic	HNO3	Yes	3.9	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
Metal Digestion	Completed			SW3015A	05/17/18 13:50	CCM		
Metals								
Arsenic	0.018	mg/L	0.002	SW6020A	05/17/18 15:46	CCM	7440-38-2	
Chromium	Not detected	mg/L	0.005	SW6020A	05/17/18 15:46	CCM	7440-47-3	
Copper	Not detected	mg/L	0.005	SW6020A	05/17/18 15:46	CCM	7440-50-8	
Lead	Not detected	mg/L	0.003	SW6020A	05/17/18 15:46	CCM	7439-92-1	
Nickel	0.010	mg/L	0.005	SW6020A	05/17/18 15:46	CCM	7440-02-0	
Vanadium	Not detected	mg/L	0.005	SW6020A	05/17/18 15:46	CCM	7440-62-2	

Lab Sample ID: S89784.10
Sample Tag: MW-13-49_051118
Collected Date/Time: 05/11/2018 14:10
Matrix: Groundwater
COC Reference: 110301

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.9	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/15/18 11:00	KCV		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:00	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:00	JML	106-93-4	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:00	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/14/18 20:00	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:00	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/14/18 20:00	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:00	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/14/18 20:00	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:00	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:00	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:00	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:00	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:00	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:00	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:00	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:00	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:00	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:00	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:00	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:00	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:00	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:00	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/14/18 20:00	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/14/18 20:00	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:00	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:00	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:00	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:00	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:00	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:00	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:00	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:00	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:00	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:00	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:00	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:00	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:00	JML	124-48-1	
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:00	JML	108-90-7	

Lab Sample ID: S89784.10 (continued)
Sample Tag: MW-13-49_051118

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:00	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:00	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/14/18 20:00	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:00	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:00	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:00	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:00	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:00	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:00	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:00	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:00	JML	120-82-1	

Analytical Laboratory Report

Lab Sample ID: S89784.11
Sample Tag: MW-13-46_051118
Collected Date/Time: 05/11/2018 14:10
Matrix: Groundwater
COC Reference: 110301

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.9	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/15/18 11:00	KCV		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:21	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:21	JML	106-93-4	
1,4-Dioxane*	Not detected	ug/L	1	SW8260B - SIM	05/23/18 04:28	JML	123-91-1	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:21	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/14/18 20:21	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:21	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/14/18 20:21	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:21	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/14/18 20:21	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:21	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:21	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:21	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:21	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:21	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:21	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:21	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:21	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:21	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:21	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:21	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:21	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:21	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:21	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/14/18 20:21	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/14/18 20:21	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:21	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:21	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:21	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:21	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:21	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:21	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:21	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:21	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:21	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:21	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:21	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:21	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:21	JML	124-48-1	

Lab Sample ID: S89784.11 (continued)
Sample Tag: MW-13-46_051118

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:21	JML	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:21	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:21	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/14/18 20:21	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:21	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:21	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:21	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:21	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:21	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:21	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:21	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 20:21	JML	120-82-1	

Analytical Laboratory Report

Lab Sample ID: S89784.12
Sample Tag: Trip Blank
Collected Date/Time: 05/11/2018 00:01
Matrix: Water
COC Reference: 110301

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	3.9	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/15/18 11:00	KCV		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:18	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:18	JML	106-93-4	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:18	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/14/18 19:18	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:18	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/14/18 19:18	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:18	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/14/18 19:18	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:18	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:18	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:18	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:18	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:18	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:18	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:18	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:18	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:18	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:18	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:18	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:18	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:18	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:18	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/14/18 19:18	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/14/18 19:18	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:18	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:18	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:18	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:18	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:18	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:18	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:18	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:18	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:18	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:18	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:18	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:18	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:18	JML	124-48-1	
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:18	JML	108-90-7	

Lab Sample ID: S89784.12 (continued)

Sample Tag: Trip Blank

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:18	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:18	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/14/18 19:18	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:18	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:18	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:18	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:18	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:18	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:18	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:18	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/14/18 19:18	JML	120-82-1	

Merit Laboratories, Inc.

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C.O.C. PAGE # 1 OF 1

110301

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME: Christine Gregg, Alex Vollhaver
COMPANY: Arcadis
ADDRESS: 28550 Cabot Dr. Suite 500
CITY: Novi STATE: MI ZIP CODE: 48377
PHONE NO.: 248-994-2240 FAX NO.: 248-994-2241 P.O. NO.:
E-MAIL ADDRESS: Christine.Gregg@arcadis.com QUOTE NO.:

INVOICE TO

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

PROJECT NO./NAME: 30064479.298 RacerLansing
SAMPLER(S) - PLEASE PRINT/SIGN NAME: SamDunne A.Wathier J.
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	Select metals Total	Select Metals Dissolved	VOC's 8260B	1,4-Dioxane 8260B-SIM
89784.01	05/11/18	1010	MW-13-41_051118	GW	2			2					X	X		
.02	05/11/18	1120	MW-13-38_051118	GW	3		3	3							X	X
.03	05/11/18	1330	MW-91-4_051118	GW	3		3	3							X	
.04	05/11/18	1450	MW-04-04(3)_051118	GW	3		3								X	
.05	05/11/18	—	DUP-08_051118	GW	3		3								X	X
.06	05/11/18	1020	MW-02-04(3)_051118	GW	1			1					X			
.07	05/11/18	1145	MW-91-2_051118	GW	3		3								X	
.08	05/11/18	1250	CH-14-RO_051118	GW	3		3								X	
.09	05/11/18	—	DUP-09_051118	GW	1			1					X			
.10	05/11/18	1410	MW-13-49_051118	GW	3		3								X	
.11	05/11/18	1410	MW-13-46_051118	GW	3		3								X	X
.12	"	—	Trip Blank	W	1		1								X	

Select metals: arsenic, nickel, lead, vanadium, chromium, copper

RELINQUISHED BY: SIGNATURE/ORGANIZATION: SamDunne ☒ Sampler DATE: 05/11/18 TIME: 1518
RECEIVED BY: SIGNATURE/ORGANIZATION: Brett Fralick/PM DATE: 05/11 TIME: 1518
RELINQUISHED BY: SIGNATURE/ORGANIZATION: DATE: 5/11 TIME: 1700
RECEIVED BY: SIGNATURE/ORGANIZATION: PM Storage DATE: 5/11 TIME: 1700

RELINQUISHED BY: SIGNATURE/ORGANIZATION: PM Storage DATE: 5/14/18 TIME: 14:30
RECEIVED BY: SIGNATURE/ORGANIZATION: DATE: 5/14/18 TIME: 14:30
SEAL NO.: SEAL INTACT YES ☐ NO ☐ INITIALS: 5/14/18 NOTES: 14:57 TEMP. ON ARRIVAL: 3.9
SEAL NO.: SEAL INTACT YES ☐ NO ☐ INITIALS: 5/14/18 1457

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

Rev. 5.18.12

Analytical Laboratory Report

Report ID: S89830.01(01)
Generated on 05/23/2018

Report to

Attention: Alex Villhauer
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 616-780-3277 FAX: 248-994-2241
Email: alex.villhauer@arcadis.com

Addtional Contacts: Christine Gregg

Report produced by

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Contacts for report questions:
John Laverty (johnlaverty@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S89830.01-S89830.06
Project: B0064479.2018 Racer Lansing Plant 6
Collected Date: 05/15/2018
Submitted Date/Time: 05/15/2018 14:50
Sampled by: Jake Pisackiewicz
P.O. #: B0064479.2018

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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).
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

Method Summary

Method	Version
N/A	Not Applicable
SW3015A	SW 846 Method 3015A Revision 1 February 2007
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003
SW6020A	SW 846 Method 6020A Revision 1 February 2007

Sample Summary (6 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S89830.01	Trip Blank	Water	05/15/18 00:01
S89830.02	MW-12-12_051518	Groundwater	05/15/18 10:35
S89830.03	MW-03-06_051518	Groundwater	05/15/18 11:45
S89830.04	MW-03-04_051518	Groundwater	05/15/18 11:45
S89830.05	MWBP-13A-UST1-4_051518	Groundwater	05/15/18 09:45
S89830.06	DUP-10_051518	Groundwater	05/15/18 00:01

Analytical Laboratory Report

Lab Sample ID: S89830.01
Sample Tag: Trip Blank
Collected Date/Time: 05/15/2018 00:01
Matrix: Water
COC Reference: 110044

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	3.3	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/17/18 11:30	KCV		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:15	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:15	JML	106-93-4	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:15	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/16/18 22:15	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:15	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/16/18 22:15	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:15	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/16/18 22:15	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:15	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:15	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:15	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:15	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:15	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:15	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:15	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:15	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:15	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:15	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:15	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:15	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:15	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:15	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/16/18 22:15	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/16/18 22:15	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:15	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:15	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:15	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:15	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:15	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:15	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:15	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:15	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:15	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:15	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:15	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:15	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:15	JML	124-48-1	
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:15	JML	108-90-7	

Lab Sample ID: S89830.01 (continued)

Sample Tag: Trip Blank

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:15	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:15	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/16/18 22:15	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:15	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:15	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:15	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:15	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:15	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:15	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:15	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:15	JML	120-82-1	

Analytical Laboratory Report

Lab Sample ID: S89830.02
Sample Tag: MW-12-12_051518
Collected Date/Time: 05/15/2018 10:35
Matrix: Groundwater
COC Reference: 110044

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125ml Plastic	HNO3	Yes	3.3	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
Metal Digestion	Completed			SW3015A	05/17/18 13:50	CCM		
Metals								
Arsenic	0.002	mg/L	0.002	SW6020A	05/17/18 15:54	CCM	7440-38-2	
Chromium	Not detected	mg/L	0.005	SW6020A	05/17/18 15:54	CCM	7440-47-3	
Copper	Not detected	mg/L	0.005	SW6020A	05/17/18 15:54	CCM	7440-50-8	
Lead	Not detected	mg/L	0.003	SW6020A	05/17/18 15:54	CCM	7439-92-1	
Nickel	0.025	mg/L	0.005	SW6020A	05/17/18 15:54	CCM	7440-02-0	
Vanadium	Not detected	mg/L	0.005	SW6020A	05/17/18 15:54	CCM	7440-62-2	

Analytical Laboratory Report

Lab Sample ID: S89830.03
Sample Tag: MW-03-06_051518
Collected Date/Time: 05/15/2018 11:45
Matrix: Groundwater
COC Reference: 110044

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125ml Plastic	HNO3	Yes	3.3	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
Metal Digestion	Completed			SW3015A	05/17/18 13:50	CCM		
Metals								
Arsenic	0.008	mg/L	0.002	SW6020A	05/17/18 15:56	CCM	7440-38-2	
Chromium	Not detected	mg/L	0.005	SW6020A	05/17/18 15:56	CCM	7440-47-3	
Copper	Not detected	mg/L	0.005	SW6020A	05/17/18 15:56	CCM	7440-50-8	
Lead	Not detected	mg/L	0.003	SW6020A	05/17/18 15:56	CCM	7439-92-1	
Nickel	0.010	mg/L	0.005	SW6020A	05/17/18 15:56	CCM	7440-02-0	
Vanadium	Not detected	mg/L	0.005	SW6020A	05/17/18 15:56	CCM	7440-62-2	

Analytical Laboratory Report

Lab Sample ID: S89830.04
Sample Tag: MW-03-04_051518
Collected Date/Time: 05/15/2018 11:45
Matrix: Groundwater
COC Reference: 110044

Sample Containers

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

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/17/18 11:30	KCV		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:29	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:29	JML	106-93-4	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:29	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/17/18 14:29	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:29	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/17/18 14:29	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:29	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/17/18 14:29	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:29	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:29	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:29	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:29	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:29	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:29	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:29	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:29	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:29	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:29	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:29	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:29	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:29	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:29	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/17/18 14:29	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/17/18 14:29	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:29	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:29	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:29	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:29	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:29	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:29	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:29	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:29	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:29	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:29	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:29	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:29	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:29	JML	124-48-1	
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:29	JML	108-90-7	

Lab Sample ID: S89830.04 (continued)

Sample Tag: MW-03-04_051518

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:29	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:29	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/17/18 14:29	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:29	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:29	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:29	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:29	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:29	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:29	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:29	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:29	JML	120-82-1	

Analytical Laboratory Report

Lab Sample ID: S89830.05
Sample Tag: MWBP-13A-UST1-4_051518
Collected Date/Time: 05/15/2018 09:45
Matrix: Groundwater
COC Reference: 110044

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.3	IR
1	125ml Plastic	HNO3	Yes	3.3	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
Metal Digestion	Completed			SW3015A	05/17/18 13:50	CCM		
pH check for VOCs*	<2	STD Units		N/A	05/17/18 11:30	KCV		
Metals								
Arsenic	Not detected	mg/L	0.002	SW6020A	05/17/18 15:57	CCM	7440-38-2	
Chromium	Not detected	mg/L	0.005	SW6020A	05/17/18 15:57	CCM	7440-47-3	
Copper	Not detected	mg/L	0.005	SW6020A	05/17/18 15:57	CCM	7440-50-8	
Lead	Not detected	mg/L	0.003	SW6020A	05/17/18 15:57	CCM	7439-92-1	
Nickel	Not detected	mg/L	0.005	SW6020A	05/17/18 15:57	CCM	7440-02-0	
Vanadium	Not detected	mg/L	0.005	SW6020A	05/17/18 15:57	CCM	7440-62-2	
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:48	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:48	JML	106-93-4	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:48	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/17/18 14:48	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:48	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/17/18 14:48	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:48	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/17/18 14:48	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:48	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:48	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:48	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:48	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:48	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:48	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:48	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:48	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:48	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:48	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:48	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:48	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:48	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:48	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/17/18 14:48	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/17/18 14:48	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:48	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:48	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:48	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:48	JML	79-01-6	

Lab Sample ID: S89830.05 (continued)

Sample Tag: MWBP-13A-UST1-4_051518

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:48	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:48	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:48	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:48	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:48	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:48	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:48	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:48	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:48	JML	124-48-1	
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:48	JML	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:48	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:48	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/17/18 14:48	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:48	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:48	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:48	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:48	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:48	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:48	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:48	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 14:48	JML	120-82-1	

Analytical Laboratory Report

Lab Sample ID: S89830.06
Sample Tag: DUP-10_051518
Collected Date/Time: 05/15/2018 00:01
Matrix: Groundwater
COC Reference: 110044

Sample Containers

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

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/17/18 11:30	KCV		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 15:07	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 15:07	JML	106-93-4	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 15:07	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/17/18 15:07	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/17/18 15:07	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/17/18 15:07	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/17/18 15:07	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/17/18 15:07	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 15:07	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 15:07	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/17/18 15:07	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 15:07	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 15:07	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 15:07	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 15:07	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/17/18 15:07	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 15:07	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 15:07	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 15:07	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/17/18 15:07	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 15:07	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 15:07	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/17/18 15:07	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/17/18 15:07	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/17/18 15:07	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 15:07	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 15:07	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 15:07	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 15:07	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 15:07	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 15:07	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 15:07	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 15:07	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 15:07	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 15:07	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 15:07	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 15:07	JML	124-48-1	
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 15:07	JML	108-90-7	

Lab Sample ID: S89830.06 (continued)

Sample Tag: DUP-10_051518

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 15:07	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 15:07	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/17/18 15:07	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 15:07	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 15:07	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 15:07	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/17/18 15:07	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 15:07	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 15:07	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 15:07	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 15:07	JML	120-82-1	

Merit Laboratories, Inc.

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C.O.C. PAGE # 1 OF 1

110044

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME: Christine Gregg
COMPANY: Arcadis
ADDRESS: 28550 Cabot Drive suite 500
CITY: Novi STATE: MI ZIP CODE: 48377
PHONE NO.: 248-994-2241 FAX NO.:
P.O. NO.:
E-MAIL ADDRESS: Christine.Gregg@arcadis.com
QUOTE NO.:

INVOICE TO

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

PROJECT NO./NAME: BD064479.2018 / Ruch Lansing Plant 6
SAMPLER(S) - PLEASE PRINT/SIGN NAME: John Pisarkiewicz

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	VOC's	1,4 Dioxane	Metals +								
89830.01	5-15-18	AM	Trip Blank	W	1		1						X										
.02	5-15-18	1035	MW-12-17_051518	GW	1			1							X								
.03	5-15-18	1145	MW-03-06_051518	GW	1			1							X								
.04	5/15/18	1145	MW-03-04_051518	GW	3		3						X										
.05	5/15/18	0945	MWBP-13A-UST 1-4_051518	GW	4		3	1					X		X								
.06	5/15/18	—	Dup-10_051518	GW	3		3						X										

RELINQUISHED BY: SIGNATURE/ORGANIZATION: Brett Fiessinger ☒ Sampler — DATE: 5/15 TIME:
RECEIVED BY: SIGNATURE/ORGANIZATION: PM storage — DATE: 5/15 TIME:
RELINQUISHED BY: SIGNATURE/ORGANIZATION: — DATE: 5/15/18 TIME: 15:32
RECEIVED BY: SIGNATURE/ORGANIZATION: — DATE: 5/15/18 TIME: 1532

RELINQUISHED BY: SIGNATURE/ORGANIZATION: PM Storage — DATE: 5/15/18 TIME: 17:50
RECEIVED BY: SIGNATURE/ORGANIZATION: — DATE: 5/15/18 TIME: 14:50

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: S89831.01(01)
Generated on 05/24/2018

Report to

Attention: Alex Villhauer
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 616-780-3277 FAX: 248-994-2241
Email: alex.villhauer@arcadis.com

Addtional Contacts: Christine Gregg

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Contacts for report questions:
John Laverty (johnlaverty@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S89831.01-S89831.08
Project: B0064479.2018 Racer Lansing
Collected Date: 05/14/2018
Submitted Date/Time: 05/15/2018 15:32
Sampled by: Unknown
P.O. #: B0064479.2018

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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).
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

Method Summary

Method	Version
N/A	Not Applicable
SW3015A	SW 846 Method 3015A Revision 1 February 2007
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003
SW6020A	SW 846 Method 6020A Revision 1 February 2007
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs

Sample Summary (8 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S89831.01	MW-13-28_051418	Groundwater	05/14/18 11:05
S89831.02	MW-04-02(3)_051418	Groundwater	05/14/18 12:30
S89831.03	MW-02-02(3)_051418	Groundwater	05/14/18 14:20
S89831.04	MW-91-6_051418	Groundwater	05/14/18 10:45
S89831.05	MW-13-48_051418	Groundwater	05/14/18 11:35
S89831.06	MW-13-34_051418	Groundwater	05/14/18 14:30
S89831.07	MW-13-47_051418	Groundwater	05/14/18 15:40
S89831.08	TB	Liquid	05/14/18 00:01

Analytical Laboratory Report

Lab Sample ID: S89831.01
Sample Tag: MW-13-28_051418
Collected Date/Time: 05/14/2018 11:05
Matrix: Groundwater
COC Reference: 110310

Sample Containers

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

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/17/18 11:30	KCV		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:02	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:02	JML	106-93-4	
1,4-Dioxane*	Not detected	ug/L	1	SW8260B - SIM	05/23/18 04:49	JML	123-91-1	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:02	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/17/18 03:02	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:02	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/17/18 03:02	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:02	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/17/18 03:02	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:02	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:02	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:02	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:02	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:02	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:02	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:02	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:02	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:02	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:02	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:02	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:02	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:02	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:02	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/17/18 03:02	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/17/18 03:02	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:02	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:02	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:02	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:02	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:02	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:02	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:02	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:02	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:02	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:02	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:02	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:02	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:02	JML	124-48-1	

Lab Sample ID: S89831.01 (continued)
Sample Tag: MW-13-28_051418

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:02	JML	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:02	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:02	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/17/18 03:02	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:02	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:02	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:02	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:02	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:02	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:02	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:02	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:02	JML	120-82-1	

Analytical Laboratory Report

Lab Sample ID: S89831.02
Sample Tag: MW-04-02(3)_051418
Collected Date/Time: 05/14/2018 12:30
Matrix: Groundwater
COC Reference: 110310

Sample Containers

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

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/17/18 11:30	KCV		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:22	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:22	JML	106-93-4	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:22	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/17/18 03:22	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:22	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/17/18 03:22	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:22	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/17/18 03:22	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:22	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:22	JML	74-87-3	
Vinyl chloride	7	ug/L	1	SW5030C/8260C	05/17/18 03:22	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:22	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:22	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:22	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:22	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:22	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:22	JML	156-60-5	
1,1-Dichloroethane	3	ug/L	1	SW5030C/8260C	05/17/18 03:22	JML	75-34-3	
cis-1,2-Dichloroethene	15	ug/L	1	SW5030C/8260C	05/17/18 03:22	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:22	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:22	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:22	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/17/18 03:22	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/17/18 03:22	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:22	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:22	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:22	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:22	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:22	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:22	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:22	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:22	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:22	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:22	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:22	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:22	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:22	JML	124-48-1	
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:22	JML	108-90-7	

Lab Sample ID: S89831.02 (continued)

Sample Tag: MW-04-02(3)_051418

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:22	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:22	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/17/18 03:22	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:22	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:22	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:22	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:22	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:22	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:22	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:22	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:22	JML	120-82-1	

Analytical Laboratory Report

Lab Sample ID: S89831.03
Sample Tag: MW-02-02(3)_051418
Collected Date/Time: 05/14/2018 14:20
Matrix: Groundwater
COC Reference: 110310

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.3	IR
1	125ml Plastic	HNO3	Yes	3.3	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
Metal Digestion	Completed			SW3015A	05/17/18 13:50	CCM		
pH check for VOCs*	<2	STD Units		N/A	05/17/18 11:30	KCV		
Metals								
Arsenic	0.002	mg/L	0.002	SW6020A	05/17/18 15:59	CCM	7440-38-2	
Chromium	Not detected	mg/L	0.005	SW6020A	05/17/18 15:59	CCM	7440-47-3	
Copper	Not detected	mg/L	0.005	SW6020A	05/17/18 15:59	CCM	7440-50-8	
Lead	Not detected	mg/L	0.003	SW6020A	05/17/18 15:59	CCM	7439-92-1	
Nickel	0.017	mg/L	0.005	SW6020A	05/17/18 15:59	CCM	7440-02-0	
Vanadium	Not detected	mg/L	0.005	SW6020A	05/17/18 15:59	CCM	7440-62-2	
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:41	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:41	JML	106-93-4	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:41	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/17/18 03:41	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:41	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/17/18 03:41	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:41	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/17/18 03:41	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:41	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:41	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:41	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:41	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:41	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:41	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:41	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:41	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:41	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:41	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:41	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:41	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:41	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:41	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/17/18 03:41	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/17/18 03:41	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:41	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:41	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:41	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:41	JML	79-01-6	

Lab Sample ID: S89831.03 (continued)
Sample Tag: MW-02-02(3)_051418

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:41	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:41	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:41	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:41	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:41	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:41	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:41	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:41	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:41	JML	124-48-1	
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:41	JML	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:41	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:41	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/17/18 03:41	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:41	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:41	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:41	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:41	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:41	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:41	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:41	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 03:41	JML	120-82-1	

Analytical Laboratory Report

Lab Sample ID: S89831.04
Sample Tag: MW-91-6_051418
Collected Date/Time: 05/14/2018 10:45
Matrix: Groundwater
COC Reference: 110310

Sample Containers

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

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/17/18 11:30	KCV		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:00	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:00	JML	106-93-4	
1,4-Dioxane*	Not detected	ug/L	1	SW8260B - SIM	05/23/18 05:10	JML	123-91-1	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:00	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/17/18 04:00	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:00	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/17/18 04:00	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:00	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/17/18 04:00	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:00	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:00	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:00	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:00	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:00	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:00	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:00	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:00	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:00	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:00	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:00	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:00	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:00	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:00	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/17/18 04:00	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/17/18 04:00	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:00	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:00	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:00	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:00	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:00	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:00	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:00	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:00	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:00	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:00	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:00	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:00	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:00	JML	124-48-1	

Lab Sample ID: S89831.04 (continued)

Sample Tag: MW-91-6_051418

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:00	JML	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:00	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:00	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/17/18 04:00	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:00	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:00	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:00	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:00	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:00	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:00	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:00	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:00	JML	120-82-1	

Analytical Laboratory Report

Lab Sample ID: S89831.05
Sample Tag: MW-13-48_051418
Collected Date/Time: 05/14/2018 11:35
Matrix: Groundwater
COC Reference: 110310

Sample Containers

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

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/23/18 19:30	KCV		
Organics - Volatiles								
1,4-Dioxane*	141	ug/L	1	SW8260B - SIM	05/23/18 05:31	JML	123-91-1	

Analytical Laboratory Report

Lab Sample ID: S89831.06
Sample Tag: MW-13-34_051418
Collected Date/Time: 05/14/2018 14:30
Matrix: Groundwater
COC Reference: 110310

Sample Containers

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

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/23/18 19:30	KCV		
Organics - Volatiles								
1,4-Dioxane*	75	ug/L	1	SW8260B - SIM	05/23/18 05:53	JML	123-91-1	

Analytical Laboratory Report

Lab Sample ID: S89831.07
Sample Tag: MW-13-47_051418
Collected Date/Time: 05/14/2018 15:40
Matrix: Groundwater
COC Reference: 110310

Sample Containers

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

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/17/18 11:30	KCV		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:19	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:19	JML	106-93-4	
1,4-Dioxane*	Not detected	ug/L	1	SW8260B - SIM	05/23/18 06:14	JML	123-91-1	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:19	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/17/18 04:19	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:19	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/17/18 04:19	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:19	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/17/18 04:19	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:19	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:19	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:19	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:19	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:19	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:19	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:19	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:19	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:19	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:19	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:19	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:19	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:19	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:19	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/17/18 04:19	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/17/18 04:19	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:19	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:19	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:19	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:19	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:19	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:19	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:19	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:19	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:19	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:19	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:19	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:19	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:19	JML	124-48-1	

Lab Sample ID: S89831.07 (continued)
Sample Tag: MW-13-47_051418

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:19	JML	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:19	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:19	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/17/18 04:19	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:19	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:19	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:19	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:19	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:19	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:19	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:19	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:19	JML	120-82-1	

Analytical Laboratory Report

Lab Sample ID: S89831.08
Sample Tag: TB
Collected Date/Time: 05/14/2018 00:01
Matrix: Liquid
COC Reference: 110310

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	3.3	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/17/18 11:30	KCV		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:34	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:34	JML	106-93-4	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:34	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/16/18 22:34	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:34	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/16/18 22:34	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:34	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/16/18 22:34	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:34	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:34	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:34	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:34	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:34	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:34	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:34	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:34	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:34	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:34	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:34	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:34	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:34	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:34	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/16/18 22:34	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/16/18 22:34	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:34	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:34	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:34	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:34	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:34	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:34	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:34	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:34	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:34	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:34	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:34	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:34	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:34	JML	124-48-1	
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:34	JML	108-90-7	

Lab Sample ID: S89831.08 (continued)

Sample Tag: TB

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:34	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:34	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/16/18 22:34	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:34	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:34	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:34	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:34	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:34	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:34	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:34	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:34	JML	120-82-1	

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C.O.C. PAGE # 1 OF 1

110310

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME: Christine Gregg, Alex Villhauer
COMPANY: Arcadis
ADDRESS: 28550 Cabot Dr. Suite 500
CITY: Novi STATE: MI ZIP CODE: 48377
PHONE NO.: 248-994-2240 FAX NO.: 248-994-2241 P.O. NO.:
E-MAIL ADDRESS: Christine.Gregg@arcadis.com QUOTE NO.:

INVOICE TO

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

PROJECT NO./NAME: B00644479.2018 RACER Lansing
SAMPLER(S) - PLEASE PRINT/SIGN NAME:

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	VOC's 8260B	1,4-Dioxane 8260B SIMS	Select metals*
89183.01	05/14/18	1105	MW-13-28_051418	GW	3		3						X	X	
.02	05/14/18	1230	MW-04-02(3)_051418	GW	3		3						X		
.03	05/14/18	1420	MW-02-02(3)_051418	GW	4		3	1					X		X
.04	05/14	1045	MW-91-6_051418	GW	3		3						X	X	
.05	05/14	1135	MW-13-48_051418	GW	3		3							X	
.06	05/14	1430	MW-13-34_051418	GW	3		3							X	
.07	05/14	1540	MW-13-47_051418	GW	3		3						X	X	
.08	05/14	AM	TB	L	1		1						X		

* Select metals: arsenic, nickel, lead, vanadium, chromium or copper

RELINQUISHED BY: SIGNATURE/ORGANIZATION	Sam Dunne	DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION	Brett Fiessnel	5/14	1527
RELINQUISHED BY: SIGNATURE/ORGANIZATION	Brett Fiessnel	5/14	1730
RECEIVED BY: SIGNATURE/ORGANIZATION	PM Storage	5/14	1730

RELINQUISHED BY: SIGNATURE/ORGANIZATION	PM Storage	5/15/18	14:50
RECEIVED BY: SIGNATURE/ORGANIZATION		5/15/18	14:50

SEAL NO. SEAL INTACT? YES NO INITIALS 5/15/18 15:32 NOTES: TEMP. ON ARRIVAL 3.3

SEAL NO. SEAL INTACT? YES NO INITIALS 5/15/18 1532

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

Rev. 5.16.12

Analytical Laboratory Report

Report ID: S89832.01(01)
Generated on 05/24/2018

Report to

Attention: Alex Villhauer
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 616-780-3277 FAX: 248-994-2241
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Addtional Contacts: Christine Gregg

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Contacts for report questions:
John Laverty (johnlaverty@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S89832.01-S89832.06
Project: Racer Lansing / B0064479.2018
Collected Date: 05/14/2018 - 05/15/2018
Submitted Date/Time: 05/15/2018 14:50
Sampled by: Dale Arnett
P.O. #: B0064479.2018

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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

Method Summary

Method	Version
N/A	Not Applicable
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs

Analytical Laboratory Report

Sample Summary (6 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S89832.01	TW-14-01_051418	Groundwater	05/14/18 16:10
S89832.02	PW-14-01_051418	Groundwater	05/14/18 17:15
S89832.03	P2-SB-06_051518	Groundwater	05/15/18 13:15
S89832.04	FB-04_051518	Water	05/15/18 00:01
S89832.05	EB-04_051518	Water	05/15/18 00:01
S89832.06	TB	Water	05/15/18 00:01

Analytical Laboratory Report

Lab Sample ID: S89832.01
Sample Tag: TW-14-01_051418
Collected Date/Time: 05/14/2018 16:10
Matrix: Groundwater
COC Reference: 110308

Sample Containers

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

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/23/18 19:30	KCV		
Organics - Volatiles								
1,4-Dioxane*	25	ug/L	1	SW8260B - SIM	05/23/18 06:35	JML	123-91-1	

Analytical Laboratory Report

Lab Sample ID: S89832.02
Sample Tag: PW-14-01_051418
Collected Date/Time: 05/14/2018 17:15
Matrix: Groundwater
COC Reference: 110308

Sample Containers

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

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/23/18 19:30	KCV		
Organics - Volatiles								
1,4-Dioxane*	190	ug/L	10	SW8260B - SIM	05/23/18 10:39	JML	123-91-1	Y

Y-Elevated reporting limit due to high target concentration

Analytical Laboratory Report

Lab Sample ID: S89832.03
Sample Tag: P2-SB-06_051518
Collected Date/Time: 05/15/2018 13:15
Matrix: Groundwater
COC Reference: 110308

Sample Containers

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

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/23/18 19:30	KCV		
Organics - Volatiles								
1,4-Dioxane*	27	ug/L	1	SW8260B - SIM	05/23/18 10:18	JML	123-91-1	

Analytical Laboratory Report

Lab Sample ID: S89832.04
Sample Tag: FB-04_051518
Collected Date/Time: 05/15/2018 00:01
Matrix: Water
COC Reference: 110308

Sample Containers

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

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/17/18 11:30	KCV		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:31	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:31	JML	106-93-4	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:31	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/16/18 23:31	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:31	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/16/18 23:31	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:31	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/16/18 23:31	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:31	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:31	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:31	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:31	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:31	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:31	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:31	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:31	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:31	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:31	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:31	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:31	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:31	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:31	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/16/18 23:31	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/16/18 23:31	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:31	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:31	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:31	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:31	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:31	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:31	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:31	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:31	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:31	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:31	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:31	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:31	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:31	JML	124-48-1	
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:31	JML	108-90-7	

Lab Sample ID: S89832.04 (continued)

Sample Tag: FB-04_051518

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:31	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:31	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/16/18 23:31	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:31	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:31	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:31	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:31	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:31	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:31	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:31	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:31	JML	120-82-1	

Analytical Laboratory Report

Lab Sample ID: S89832.05
Sample Tag: EB-04_051518
Collected Date/Time: 05/15/2018 00:01
Matrix: Water
COC Reference: 110308

Sample Containers

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

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/17/18 11:30	KCV		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:50	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:50	JML	106-93-4	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:50	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/16/18 23:50	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:50	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/16/18 23:50	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:50	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/16/18 23:50	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:50	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:50	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:50	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:50	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:50	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:50	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:50	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:50	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:50	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:50	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:50	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:50	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:50	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:50	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/16/18 23:50	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/16/18 23:50	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:50	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:50	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:50	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:50	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:50	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:50	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:50	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:50	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:50	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:50	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:50	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:50	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:50	JML	124-48-1	
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:50	JML	108-90-7	

Lab Sample ID: S89832.05 (continued)

Sample Tag: EB-04_051518

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:50	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:50	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/16/18 23:50	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:50	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:50	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:50	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:50	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:50	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:50	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:50	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:50	JML	120-82-1	

Analytical Laboratory Report

Lab Sample ID: S89832.06
Sample Tag: TB
Collected Date/Time: 05/15/2018 00:01
Matrix: Water
COC Reference: 110308

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	3.3	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/17/18 11:30	KCV		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:53	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:53	JML	106-93-4	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:53	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/16/18 22:53	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:53	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/16/18 22:53	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:53	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/16/18 22:53	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:53	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:53	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:53	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:53	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:53	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:53	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:53	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:53	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:53	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:53	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:53	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:53	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:53	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:53	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/16/18 22:53	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/16/18 22:53	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:53	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:53	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:53	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:53	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:53	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:53	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:53	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:53	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:53	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:53	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:53	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:53	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:53	JML	124-48-1	
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:53	JML	108-90-7	

Lab Sample ID: S89832.06 (continued)

Sample Tag: TB

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:53	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:53	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/16/18 22:53	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:53	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:53	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:53	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:53	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:53	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:53	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:53	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 22:53	JML	120-82-1	

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C.O.C. PAGE # 1 OF 1

110308

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME: Christine Gregg
COMPANY: ARCADIS
ADDRESS: 28550 Cabot Dr.
CITY: Novi STATE: MI ZIP CODE: 48377
PHONE NO.: 248-994-2240 FAX NO.: 248-994-2241 P.O. NO.: —
E-MAIL ADDRESS: Christine.Gregg@arcadis.com QUOTE NO.: —

INVOICE TO

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

PROJECT NO./NAME: River Lansing / B0064479.2018
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Dale Arms / Dale M Arms

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	1,4-Dioxane	SOCs
89832.01	5/14/18	1610	TW-14-01_0514 18	GW	3		3						X	
.02	5/14/18	1715	PW-14-01_0514 18	GW	3		3						X	
.03	5/15/18	1315	PZ-SB-06_051518	GW	3		3						X	
.04	5/15	AM	FB-04_051518	W	3		3							X
.05	5/15	AM	EB-04_051518	W	3		3							X
.06	5/15	AM	TB	W	1		1							X

RELINQUISHED BY: SIGNATURE/ORGANIZATION	Dale M. Arms / ARCADIS, Sampler	DATE 5/15/18	TIME 1200
RECEIVED BY: SIGNATURE/ORGANIZATION	Brett Flessner / PM	DATE 5/15	TIME 1200
RELINQUISHED BY: SIGNATURE/ORGANIZATION		DATE 5/15	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION	PM Storage	DATE	TIME

RELINQUISHED BY: SIGNATURE/ORGANIZATION	PM Storage	DATE 5/15/18	TIME 14:50
RECEIVED BY: SIGNATURE/ORGANIZATION		DATE 5/15/18	TIME 14:50
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS 5/15/18	15:32
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS 5/15/18	1532

NOTES: Samples kept on wet Ice
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: S89833.01(01)
Generated on 05/23/2018

Report to

Attention: Alex Villhauer
Arcadis
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Novi, MI 48377

Phone: 616-780-3277 FAX: 248-994-2241
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Addtional Contacts: Christine Gregg

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Report Summary

Lab Sample ID(s): S89833.01-S89833.13
Project: B0064479.2018 / Racer Lansing Plant 6
Collected Date: 05/14/2018
Submitted Date/Time: 05/15/2018 15:32
Sampled by: Jake P./Donald R.
P.O. #: B0064479.2018

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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).
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

Method Summary

Method	Version
N/A	Not Applicable
SW3015A	SW 846 Method 3015A Revision 1 February 2007
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003
SW6020A	SW 846 Method 6020A Revision 1 February 2007
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs

Sample Summary (13 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S89833.01	Trip Blank	Water	05/14/18 00:01
S89833.02	FB-03	Water	05/14/18 10:00
S89833.03	MW-13-36R_051418	Groundwater	05/14/18 10:35
S89833.04	EB-03	Water	05/14/18 11:00
S89833.05	MW-14-67_051418	Groundwater	05/14/18 12:05
S89833.06	MW-14-66_051418	Groundwater	05/14/18 14:25
S89833.07	Dup-11	Groundwater	05/14/18 12:00
S89833.08	MW-12-13_051418	Groundwater	05/14/18 15:50
S89833.09	MW-12-15_051418	Groundwater	05/14/18 16:00
S89833.10	MWBP-10-UST5-6_051418	Groundwater	05/14/18 14:40
S89833.11	MW-13-53_051418	Groundwater	05/14/18 12:50
S89833.12	MW-13-52_051418	Groundwater	05/14/18 11:00
S89833.13	FB-01_051418	Water	05/14/18 09:45

Analytical Laboratory Report

Lab Sample ID: S89833.01
Sample Tag: Trip Blank
Collected Date/Time: 05/14/2018 00:01
Matrix: Water
COC Reference: 110328

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	3.3	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/17/18 11:30	KCV		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:12	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:12	JML	106-93-4	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:12	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/16/18 23:12	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:12	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/16/18 23:12	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:12	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/16/18 23:12	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:12	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:12	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:12	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:12	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:12	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:12	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:12	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:12	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:12	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:12	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:12	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:12	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:12	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:12	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/16/18 23:12	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/16/18 23:12	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:12	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:12	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:12	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:12	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:12	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:12	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:12	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:12	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:12	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:12	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:12	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:12	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:12	JML	124-48-1	
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:12	JML	108-90-7	

Lab Sample ID: S89833.01 (continued)

Sample Tag: Trip Blank

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:12	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:12	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/16/18 23:12	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:12	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:12	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:12	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:12	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:12	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:12	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:12	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 23:12	JML	120-82-1	

Analytical Laboratory Report

Lab Sample ID: S89833.02
Sample Tag: FB-03
Collected Date/Time: 05/14/2018 10:00
Matrix: Water
COC Reference: 110328

Sample Containers

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

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/17/18 11:30	KCV		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:10	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:10	JML	106-93-4	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:10	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/17/18 00:10	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:10	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/17/18 00:10	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:10	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/17/18 00:10	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:10	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:10	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:10	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:10	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:10	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:10	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:10	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:10	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:10	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:10	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:10	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:10	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:10	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:10	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/17/18 00:10	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/17/18 00:10	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:10	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:10	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:10	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:10	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:10	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:10	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:10	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:10	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:10	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:10	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:10	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:10	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:10	JML	124-48-1	
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:10	JML	108-90-7	

Lab Sample ID: S89833.02 (continued)

Sample Tag: FB-03

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:10	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:10	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/17/18 00:10	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:10	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:10	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:10	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:10	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:10	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:10	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:10	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:10	JML	120-82-1	

Analytical Laboratory Report

Lab Sample ID: S89833.03
Sample Tag: MW-13-36R_051418
Collected Date/Time: 05/14/2018 10:35
Matrix: Groundwater
COC Reference: 110328

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125ml Plastic	HNO3	Yes	3.3	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
Metal Digestion	Completed			SW3015A	05/17/18 13:50	CCM		
Metals								
Arsenic	Not detected	mg/L	0.002	SW6020A	05/17/18 16:01	CCM	7440-38-2	
Chromium	0.007	mg/L	0.005	SW6020A	05/17/18 16:01	CCM	7440-47-3	
Copper	0.013	mg/L	0.005	SW6020A	05/17/18 16:01	CCM	7440-50-8	
Lead	Not detected	mg/L	0.003	SW6020A	05/17/18 16:01	CCM	7439-92-1	
Nickel	Not detected	mg/L	0.005	SW6020A	05/17/18 16:01	CCM	7440-02-0	
Vanadium	0.008	mg/L	0.005	SW6020A	05/17/18 16:01	CCM	7440-62-2	

Analytical Laboratory Report

Lab Sample ID: S89833.04
Sample Tag: EB-03
Collected Date/Time: 05/14/2018 11:00
Matrix: Water
COC Reference: 110328

Sample Containers

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

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/17/18 11:30	KCV		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:29	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:29	JML	106-93-4	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:29	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/17/18 00:29	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:29	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/17/18 00:29	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:29	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/17/18 00:29	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:29	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:29	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:29	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:29	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:29	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:29	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:29	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:29	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:29	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:29	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:29	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:29	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:29	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:29	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/17/18 00:29	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/17/18 00:29	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:29	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:29	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:29	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:29	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:29	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:29	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:29	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:29	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:29	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:29	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:29	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:29	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:29	JML	124-48-1	
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:29	JML	108-90-7	

Lab Sample ID: S89833.04 (continued)

Sample Tag: EB-03

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:29	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:29	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/17/18 00:29	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:29	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:29	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:29	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:29	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:29	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:29	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:29	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 00:29	JML	120-82-1	

Analytical Laboratory Report

Lab Sample ID: S89833.05
Sample Tag: MW-14-67_051418
Collected Date/Time: 05/14/2018 12:05
Matrix: Groundwater
COC Reference: 110328

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.3	IR
1	125ml Plastic	HNO3	Yes	3.3	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
Metal Digestion	Completed			SW3015A	05/17/18 13:50	CCM		
pH check for VOCs*	<2	STD Units		N/A	05/17/18 11:30	KCV		
Metals								
Arsenic	Not detected	mg/L	0.002	SW6020A	05/17/18 16:03	CCM	7440-38-2	
Chromium	Not detected	mg/L	0.005	SW6020A	05/17/18 16:03	CCM	7440-47-3	
Copper	Not detected	mg/L	0.005	SW6020A	05/17/18 16:03	CCM	7440-50-8	
Lead	Not detected	mg/L	0.003	SW6020A	05/17/18 16:03	CCM	7439-92-1	
Nickel	Not detected	mg/L	0.005	SW6020A	05/17/18 16:03	CCM	7440-02-0	
Vanadium	Not detected	mg/L	0.005	SW6020A	05/17/18 16:03	CCM	7440-62-2	
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:39	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:39	JML	106-93-4	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:39	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/17/18 04:39	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:39	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/17/18 04:39	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:39	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/17/18 04:39	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:39	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:39	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:39	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:39	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:39	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:39	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:39	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:39	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:39	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:39	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:39	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:39	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:39	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:39	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/17/18 04:39	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/17/18 04:39	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:39	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:39	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:39	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:39	JML	79-01-6	

Lab Sample ID: S89833.05 (continued)
Sample Tag: MW-14-67_051418

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:39	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:39	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:39	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:39	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:39	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:39	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:39	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:39	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:39	JML	124-48-1	
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:39	JML	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:39	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:39	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/17/18 04:39	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:39	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:39	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:39	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:39	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:39	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:39	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:39	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:39	JML	120-82-1	

Analytical Laboratory Report

Lab Sample ID: S89833.06
Sample Tag: MW-14-66_051418
Collected Date/Time: 05/14/2018 14:25
Matrix: Groundwater
COC Reference: 110328

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.3	IR
1	125ml Plastic	HNO3	Yes	3.3	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
Metal Digestion	Completed			SW3015A	05/17/18 13:50	CCM		
pH check for VOCs*	<2	STD Units		N/A	05/17/18 11:30	KCV		
Metals								
Arsenic	0.005	mg/L	0.002	SW6020A	05/17/18 16:05	CCM	7440-38-2	
Chromium	Not detected	mg/L	0.005	SW6020A	05/17/18 16:05	CCM	7440-47-3	
Copper	Not detected	mg/L	0.005	SW6020A	05/17/18 16:05	CCM	7440-50-8	
Lead	Not detected	mg/L	0.003	SW6020A	05/17/18 16:05	CCM	7439-92-1	
Nickel	Not detected	mg/L	0.005	SW6020A	05/17/18 16:05	CCM	7440-02-0	
Vanadium	Not detected	mg/L	0.005	SW6020A	05/17/18 16:05	CCM	7440-62-2	
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:58	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:58	JML	106-93-4	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:58	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/17/18 04:58	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:58	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/17/18 04:58	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:58	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/17/18 04:58	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:58	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:58	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:58	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:58	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:58	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:58	JML	75-69-4	
1,1-Dichloroethene	2	ug/L	1	SW5030C/8260C	05/17/18 04:58	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:58	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:58	JML	156-60-5	
1,1-Dichloroethane	1	ug/L	1	SW5030C/8260C	05/17/18 04:58	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:58	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:58	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:58	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:58	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/17/18 04:58	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/17/18 04:58	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:58	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:58	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:58	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:58	JML	79-01-6	

Lab Sample ID: S89833.06 (continued)
Sample Tag: MW-14-66_051418

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:58	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:58	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:58	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:58	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:58	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:58	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:58	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:58	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:58	JML	124-48-1	
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:58	JML	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:58	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:58	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/17/18 04:58	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:58	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:58	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:58	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:58	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:58	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:58	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:58	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 04:58	JML	120-82-1	

Analytical Laboratory Report

Lab Sample ID: S89833.07
Sample Tag: Dup-11
Collected Date/Time: 05/14/2018 12:00
Matrix: Groundwater
COC Reference: 110328

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.3	IR
1	125ml Plastic	HNO3	Yes	3.3	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
Metal Digestion	Completed			SW3015A	05/17/18 13:50	CCM		
pH check for VOCs*	<2	STD Units		N/A	05/17/18 11:30	KCV		
Metals								
Arsenic	0.005	mg/L	0.002	SW6020A	05/17/18 16:07	CCM	7440-38-2	
Chromium	Not detected	mg/L	0.005	SW6020A	05/17/18 16:07	CCM	7440-47-3	
Copper	Not detected	mg/L	0.005	SW6020A	05/17/18 16:07	CCM	7440-50-8	
Lead	Not detected	mg/L	0.003	SW6020A	05/17/18 16:07	CCM	7439-92-1	
Nickel	Not detected	mg/L	0.005	SW6020A	05/17/18 16:07	CCM	7440-02-0	
Vanadium	Not detected	mg/L	0.005	SW6020A	05/17/18 16:07	CCM	7440-62-2	
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 05:17	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 05:17	JML	106-93-4	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 05:17	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/17/18 05:17	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/17/18 05:17	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/17/18 05:17	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/17/18 05:17	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/17/18 05:17	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 05:17	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 05:17	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/17/18 05:17	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 05:17	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 05:17	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 05:17	JML	75-69-4	
1,1-Dichloroethene	2	ug/L	1	SW5030C/8260C	05/17/18 05:17	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/17/18 05:17	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 05:17	JML	156-60-5	
1,1-Dichloroethane	1	ug/L	1	SW5030C/8260C	05/17/18 05:17	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 05:17	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/17/18 05:17	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 05:17	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 05:17	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/17/18 05:17	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/17/18 05:17	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/17/18 05:17	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 05:17	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 05:17	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 05:17	JML	79-01-6	

Lab Sample ID: S89833.07 (continued)

Sample Tag: Dup-11

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 05:17	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 05:17	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 05:17	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 05:17	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 05:17	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 05:17	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 05:17	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 05:17	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 05:17	JML	124-48-1	
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 05:17	JML	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/17/18 05:17	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 05:17	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/17/18 05:17	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 05:17	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 05:17	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 05:17	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/17/18 05:17	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 05:17	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 05:17	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 05:17	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/17/18 05:17	JML	120-82-1	

Analytical Laboratory Report

Lab Sample ID: S89833.08
Sample Tag: MW-12-13_051418
Collected Date/Time: 05/14/2018 15:50
Matrix: Groundwater
COC Reference: 110328

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125ml Plastic	HNO3	Yes	3.3	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
Metal Digestion	Completed			SW3015A	05/17/18 13:50	CCM		
Metals								
Arsenic	Not detected	mg/L	0.002	SW6020A	05/17/18 16:08	CCM	7440-38-2	
Chromium	Not detected	mg/L	0.005	SW6020A	05/17/18 16:08	CCM	7440-47-3	
Copper	Not detected	mg/L	0.005	SW6020A	05/17/18 16:08	CCM	7440-50-8	
Lead	Not detected	mg/L	0.003	SW6020A	05/17/18 16:08	CCM	7439-92-1	
Nickel	0.013	mg/L	0.005	SW6020A	05/17/18 16:08	CCM	7440-02-0	
Vanadium	Not detected	mg/L	0.005	SW6020A	05/17/18 16:08	CCM	7440-62-2	

Analytical Laboratory Report

Lab Sample ID: S89833.09
Sample Tag: MW-12-15_051418
Collected Date/Time: 05/14/2018 16:00
Matrix: Groundwater
COC Reference: 110328

Sample Containers

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

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/17/18 11:30	KCV		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:26	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:26	JML	106-93-4	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:26	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/16/18 18:26	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:26	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/16/18 18:26	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:26	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/16/18 18:26	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:26	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:26	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:26	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:26	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:26	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:26	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:26	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:26	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:26	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:26	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:26	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:26	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:26	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:26	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/16/18 18:26	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/16/18 18:26	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:26	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:26	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:26	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:26	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:26	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:26	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:26	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:26	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:26	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:26	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:26	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:26	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:26	JML	124-48-1	
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:26	JML	108-90-7	

Lab Sample ID: S89833.09 (continued)

Sample Tag: MW-12-15_051418

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:26	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:26	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/16/18 18:26	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:26	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:26	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:26	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:26	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:26	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:26	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:26	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:26	JML	120-82-1	

Analytical Laboratory Report

Lab Sample ID: S89833.10
Sample Tag: MWBP-10-UST5-6_051418
Collected Date/Time: 05/14/2018 14:40
Matrix: Groundwater
COC Reference: 110328

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125ml Plastic	HNO3	Yes	3.3	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
Metal Digestion	Completed			SW3015A	05/17/18 13:50	CCM		
Metals								
Arsenic	0.018	mg/L	0.002	SW6020A	05/17/18 16:10	CCM	7440-38-2	
Chromium	Not detected	mg/L	0.005	SW6020A	05/17/18 16:10	CCM	7440-47-3	
Copper	Not detected	mg/L	0.005	SW6020A	05/17/18 16:10	CCM	7440-50-8	
Lead	Not detected	mg/L	0.003	SW6020A	05/17/18 16:10	CCM	7439-92-1	
Nickel	Not detected	mg/L	0.005	SW6020A	05/17/18 16:10	CCM	7440-02-0	
Vanadium	Not detected	mg/L	0.005	SW6020A	05/17/18 16:10	CCM	7440-62-2	

Analytical Laboratory Report

Lab Sample ID: S89833.11
Sample Tag: MW-13-53_051418
Collected Date/Time: 05/14/2018 12:50
Matrix: Groundwater
COC Reference: 110328

Sample Containers

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

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/17/18 11:30	KCV		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:47	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:47	JML	106-93-4	
1,4-Dioxane*	Not detected	ug/L	1	SW8260B - SIM	05/23/18 07:38	JML	123-91-1	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:47	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/16/18 18:47	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:47	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/16/18 18:47	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:47	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/16/18 18:47	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:47	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:47	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:47	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:47	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:47	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:47	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:47	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:47	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:47	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:47	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:47	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:47	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:47	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:47	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/16/18 18:47	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/16/18 18:47	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:47	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:47	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:47	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:47	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:47	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:47	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:47	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:47	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:47	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:47	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:47	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:47	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:47	JML	124-48-1	

Lab Sample ID: S89833.11 (continued)
Sample Tag: MW-13-53_051418

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:47	JML	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:47	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:47	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/16/18 18:47	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:47	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:47	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:47	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:47	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:47	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:47	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:47	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:47	JML	120-82-1	

Analytical Laboratory Report

Lab Sample ID: S89833.12
Sample Tag: MW-13-52_051418
Collected Date/Time: 05/14/2018 11:00
Matrix: Groundwater
COC Reference: 110328

Sample Containers

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

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/17/18 11:30	KCV		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 19:08	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 19:08	JML	106-93-4	
1,4-Dioxane*	Not detected	ug/L	1	SW8260B - SIM	05/23/18 07:59	JML	123-91-1	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 19:08	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/16/18 19:08	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/16/18 19:08	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/16/18 19:08	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/16/18 19:08	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/16/18 19:08	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 19:08	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 19:08	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/16/18 19:08	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 19:08	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 19:08	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 19:08	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 19:08	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/16/18 19:08	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 19:08	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 19:08	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 19:08	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/16/18 19:08	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 19:08	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 19:08	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/16/18 19:08	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/16/18 19:08	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/16/18 19:08	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 19:08	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 19:08	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 19:08	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 19:08	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 19:08	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 19:08	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 19:08	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 19:08	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 19:08	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 19:08	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 19:08	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 19:08	JML	124-48-1	

Lab Sample ID: S89833.12 (continued)
Sample Tag: MW-13-52_051418

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 19:08	JML	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 19:08	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 19:08	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/16/18 19:08	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 19:08	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 19:08	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 19:08	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/16/18 19:08	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 19:08	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 19:08	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 19:08	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 19:08	JML	120-82-1	

Analytical Laboratory Report

Lab Sample ID: S89833.13
Sample Tag: FB-01_051418
Collected Date/Time: 05/14/2018 09:45
Matrix: Water
COC Reference: 110317

Sample Containers

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

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/17/18 11:30	KCV		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:06	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:06	JML	106-93-4	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:06	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/16/18 18:06	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:06	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/16/18 18:06	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:06	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/16/18 18:06	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:06	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:06	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:06	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:06	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:06	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:06	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:06	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:06	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:06	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:06	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:06	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:06	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:06	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:06	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/16/18 18:06	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/16/18 18:06	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:06	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:06	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:06	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:06	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:06	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:06	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:06	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:06	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:06	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:06	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:06	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:06	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:06	JML	124-48-1	
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:06	JML	108-90-7	

Lab Sample ID: S89833.13 (continued)
Sample Tag: FB-01_051418

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:06	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:06	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/16/18 18:06	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:06	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:06	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:06	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:06	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:06	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:06	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:06	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/16/18 18:06	JML	120-82-1	

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C.O.C. PAGE # 1 OF 2

110328

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME: Christine Gregg
COMPANY: Arcadis
ADDRESS: 28550 Cabot Drive
CITY: Novi STATE: MI ZIP CODE: 48377
PHONE NO. 248-994-2240 FAX NO. P.O. NO.
E-MAIL ADDRESS: christine.gregg@arcadis.com QUOTE NO.

INVOICE TO

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

PROJECT NO./NAME: B001644479.2018 / Racer Lansing Plant 6
SAMPLER(S) - PLEASE PRINT/SIGN NAME: John Pisarkiewicz

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	VOCs	1,4-Dioxane	Metals *	Special Instructions
89833.01	5-14-18	AM	Trip Blank	W	1		1						X			* metals: Arsenic,
.02	5-14-18	1000	~~Field B~~ FB-03	W	3		3						X			Nickel, Lead, Vanadium,
.03	5-14-18	1035	MW-13-36R_051418	GW	1			1							X	Chromium, Copper
.04	5-14-18	1100	EB-03	W	3		3						X			
.05	5-14-18	1205	MW-14-67_051418	GW	4		3	1					X		X	
.06	5-14-18	1425	MW-14-66_051418	GW	4		3	1					X		X	
.07	5-14-18	PM	Dup-11	GW	4		3	1					X		X	
.08	5-14-18	1550	MW-12-13_051418	GW	1			1							X	
.09	5/14/18	1600	MW-12-15_051418	GW	3		3						X			
.10	5/14/18	1440	MWBP-10-UST5-6_051418	GW	1			1							X	
.11	5/14/18	1250	MW-13-53_051418	GW	3		3						X	X		
.12	5/14/18	1100	MW-13-52_051418	GW	3		3						X	X		

RELINQUISHED BY: SIGNATURE/ORGANIZATION: Brett Fiessner ☐ Sampler DATE: 5/14 TIME: 1730
RECEIVED BY: SIGNATURE/ORGANIZATION: PM Storage DATE: 5/14 TIME: 1730
RELINQUISHED BY: SIGNATURE/ORGANIZATION: DATE: 5/15/18 TIME: 15:32
RECEIVED BY: SIGNATURE/ORGANIZATION: DATE: 5/15/18 TIME: 1532

RELINQUISHED BY: SIGNATURE/ORGANIZATION: PM Storage DATE: 5/15/18 TIME: 14:50
RECEIVED BY: SIGNATURE/ORGANIZATION: DATE: 5/15/18 TIME: 14:50

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

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C.O.C. PAGE # 2 OF 2

110317

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME: Christine Gregg
COMPANY: Arcadis
ADDRESS: 28550 Cabot Dr Suite 500
CITY: Novi STATE: MI ZIP CODE: 48377
PHONE NO.: 28 994 2240 FAX NO.: P.O. NO.:
E-MAIL ADDRESS: christine.gregg@arcadis.com QUOTE NO.:

INVOICE TO

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

PROJECT NO./NAME: B006479.2018
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Donald Rathmell/

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	VOCs
89833135	5/14/18	0945	FB-01_051418		3		3						X
	~~5/15/18~~	→	~~Dup_10_051518~~ ←		~~3~~		~~3~~						

* Add per Brett T. 5/15/18 TAL ✓
~~Ask Christine Gregg for analysis~~
JBF ✓ 5/15/18

SAMPLE BELONGED TO ANOTHER SET
TAL ✓ 5/15/18

RELINQUISHED BY: SIGNATURE/ORGANIZATION	☑ Sampler	DATE 5/14	TIME 1730
RECEIVED BY: SIGNATURE/ORGANIZATION: PM Storage		DATE 5/14	TIME 1730
RELINQUISHED BY: SIGNATURE/ORGANIZATION		DATE 5/15/18	TIME 15:32
RECEIVED BY: SIGNATURE/ORGANIZATION		DATE 5/15/18	TIME 1532

RELINQUISHED BY: SIGNATURE/ORGANIZATION: PM Storage		DATE 5/15/18	TIME 14:50
RECEIVED BY: SIGNATURE/ORGANIZATION		DATE 5/15/18	TIME 14:50
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: S89930.01(01)
Generated on 05/24/2018

Report to

Attention: Alex Villhauer
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 616-780-3277 FAX: 248-994-2241
Email: alex.villhauer@arcadis.com

Addtional Contacts: Christine Gregg

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): S89930.01-S89930.04
Project: B0064479.2018 Racer Lansing P2
Collected Date: 05/16/2018
Submitted Date/Time: 05/17/2018 15:00
Sampled by: Sam Dunne
P.O. #: B0064479.2018

Table of Contents

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Sample Summary (Page 5)

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).
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

Method Summary

Method	Version
N/A	Not Applicable
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs

Sample Summary (4 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S89930.01	MW-16-78_051618	Groundwater	05/16/18 13:40
S89930.02	MW-16-78_051618 MS	Groundwater	05/16/18 13:40
S89930.03	MW-16-78_051618 MSD	Groundwater	05/16/18 13:40
S89930.04	Trip Blank	Water	05/16/18 00:01

Analytical Laboratory Report

Lab Sample ID: S89930.01
Sample Tag: MW-16-78_051618
Collected Date/Time: 05/16/2018 13:40
Matrix: Groundwater
COC Reference: 110306

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.3	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/23/18 19:30	KCV		
Organics - Volatiles								
1,4-Dioxane*	Not detected	ug/L	1	SW8260B - SIM	05/23/18 03:04	JML	123-91-1	

Analytical Laboratory Report

Lab Sample ID: S89930.02
Sample Tag: MW-16-78_051618 MS
Collected Date/Time: 05/16/2018 13:40
Matrix: Groundwater
COC Reference: 110306

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.3	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/23/18 19:30	KCV		
Organics - Volatiles								
1,4-Dioxane*	45	ug/L	1	SW8260B - SIM	05/23/18 10:59	JML	123-91-1	1

1-spiked at 50ug/L

Analytical Laboratory Report

Lab Sample ID: S89930.03
Sample Tag: MW-16-78_051618 MSD
Collected Date/Time: 05/16/2018 13:40
Matrix: Groundwater
COC Reference: 110306

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.3	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/23/18 19:30	KCV		
Organics - Volatiles								
1,4-Dioxane*	40	ug/L	1	SW8260B - SIM	05/23/18 01:43	JML	123-91-1	1

1-spiked at 50ug/L

Analytical Laboratory Report

Lab Sample ID: S89930.04
Sample Tag: Trip Blank
Collected Date/Time: 05/16/2018 00:01
Matrix: Water
COC Reference: 110306

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	4.3	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/23/18 19:30	KCV		
Organics - Volatiles								
1,4-Dioxane*	Not detected	ug/L	1	SW8260B - SIM	05/23/18 02:43	JML	123-91-1	

Merit Laboratories, Inc.

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www.meritlabs.com

C.O.C. PAGE # 1 OF 1

110306

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME: Christine Gregg, Alex Villhauer
COMPANY: Arcadis
ADDRESS: 28550 Cabot Drive Suite 500
CITY: Novi STATE: MI ZIP CODE: 48377
PHONE NO.: 248-994-2240 FAX NO.: 248-994-2241 P.O. NO.:
E-MAIL ADDRESS: Christine.Gregg@arcadis.com QUOTE NO.:

INVOICE TO

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

PROJECT NO./NAME: B00644479.2018 Racer Lansing P2
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Sam Dunne

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	1,4-Dioxane 8260 BSIMS	Special Instructions
8978001.01	05/16/18	1340	MW-16-78_05/16/18	GW	9	9							X	MS/MSD
.01	—	—	trip Blank		1	1							X	

RELINQUISHED BY: Sam Dunne SIGNATURE/ORGANIZATION: Arcadis (Sampler) DATE: 05/17/18 TIME: 0820
RECEIVED BY: SIGNATURE/ORGANIZATION: Novi Sample Pickup DATE: 05/17/18 TIME: 0820
RELINQUISHED BY: SIGNATURE/ORGANIZATION: ARCADIS DATE: 5.17.18 TIME: 1035
RECEIVED BY: SIGNATURE/ORGANIZATION: DATE: 5.17.18 TIME: 1035

RELINQUISHED BY: SIGNATURE/ORGANIZATION: DATE: 5/17/18 TIME: 1500
RECEIVED BY: SIGNATURE/ORGANIZATION: DATE: 5/17/18 TIME: 1500

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

NOTES: TEMP. ON ARRIVAL 4.3

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

Rev. 5.18.12

Analytical Laboratory Report

Report ID: S89931.01(01)
Generated on 05/25/2018

Report to

Attention: Alex Villhauer
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 616-780-3277 FAX: 248-994-2241
Email: alex.villhauer@arcadis.com

Addtional Contacts: Christine Gregg

Report produced by

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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): S89931.01-S89931.02
Project: B0064479.2018 Racer Lansing P6
Collected Date: 05/16/2018
Submitted Date/Time: 05/17/2018 15:00
Sampled by: Sam Dunne
P.O. #: B0064479.2018

Table of Contents

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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).
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.
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Report Narrative

There is no additional narrative for this analytical report

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
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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
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M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
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Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
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p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
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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
SW3015A	SW 846 Method 3015A Revision 1 February 2007
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003
SW6020A	SW 846 Method 6020A Revision 1 February 2007

Sample Summary (2 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S89931.01	MW-03-02_051618	Groundwater	05/16/18 00:01
S89931.02	Trip Blank	Water	05/16/18 00:01

Analytical Laboratory Report

Lab Sample ID: S89931.01
Sample Tag: MW-03-02_051618
Collected Date/Time: 05/16/2018 00:01
Matrix: Groundwater
COC Reference: 110305

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125ml Plastic	HNO3	Yes	4.3	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
Metal Digestion	Completed			SW3015A	05/24/18 14:45	CCM		
Metals								
Arsenic	0.015	mg/L	0.002	SW6020A	05/24/18 16:46	CCM	7440-38-2	
Chromium	Not detected	mg/L	0.005	SW6020A	05/24/18 16:46	CCM	7440-47-3	
Copper	Not detected	mg/L	0.005	SW6020A	05/24/18 16:46	CCM	7440-50-8	
Lead	Not detected	mg/L	0.003	SW6020A	05/24/18 16:46	CCM	7439-92-1	
Nickel	Not detected	mg/L	0.005	SW6020A	05/24/18 16:46	CCM	7440-02-0	
Vanadium	Not detected	mg/L	0.005	SW6020A	05/24/18 16:46	CCM	7440-62-2	

Analytical Laboratory Report

Lab Sample ID: S89931.02
Sample Tag: Trip Blank
Collected Date/Time: 05/16/2018 00:01
Matrix: Water
COC Reference: 110305

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	4.3	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/21/18 16:00	KCV		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 16:51	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 16:51	JML	106-93-4	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 16:51	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/18/18 16:51	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/18/18 16:51	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/18/18 16:51	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/18/18 16:51	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/18/18 16:51	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 16:51	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 16:51	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/18/18 16:51	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 16:51	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 16:51	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 16:51	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 16:51	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/18/18 16:51	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 16:51	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 16:51	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 16:51	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/18/18 16:51	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 16:51	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 16:51	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/18/18 16:51	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/18/18 16:51	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/18/18 16:51	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 16:51	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 16:51	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 16:51	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 16:51	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 16:51	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 16:51	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 16:51	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 16:51	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 16:51	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 16:51	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 16:51	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 16:51	JML	124-48-1	
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 16:51	JML	108-90-7	

Lab Sample ID: S89931.02 (continued)

Sample Tag: Trip Blank

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 16:51	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 16:51	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/18/18 16:51	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 16:51	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 16:51	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 16:51	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/18/18 16:51	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 16:51	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 16:51	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 16:51	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 16:51	JML	120-82-1	

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C.O.C. PAGE # 1 OF 1

110305

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME: Christine Gregg, Alex Vilhauer
COMPANY: Arcadis
ADDRESS: 28550 Cabot Drive Suite 500
CITY: Novi STATE: MI ZIP CODE: 48377
PHONE NO.: 248-994-2240 FAX NO.: 248-994-2241 P.O. NO.:
E-MAIL ADDRESS: Christine.Gregg@arcadis.com QUOTE NO.:

INVOICE TO

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

PROJECT NO./NAME: B004479.2018 RACER Lansing PO
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Sam Dunne

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	Select metals*	VOC's
89931.01	05/16/18		MW-03-02_051618	GW	1			1					X	
.02	—	—	trip Blank		1		1							X

*Select Metals: arsenic, lead, nickel vanadium, chromium copper

RELINQUISHED BY: Sam Dunne SIGNATURE/ORGANIZATION: ARCADIS (Sampler) DATE: 05/17/18 TIME: 0820
RECEIVED BY: SIGNATURE/ORGANIZATION: Novi Sample Fridge DATE: 05/17/18 TIME: 0820
RELINQUISHED BY: SIGNATURE/ORGANIZATION: ARCADIS DATE: 5-17-18 TIME: 1035
RECEIVED BY: SIGNATURE/ORGANIZATION: DATE: 5-17-18 TIME: 1035

RELINQUISHED BY: SIGNATURE/ORGANIZATION: DATE: 5-17-18 TIME: 1500
RECEIVED BY: SIGNATURE/ORGANIZATION: M Chilcott DATE: 5/17/18 TIME: 1500

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

NOTES: TEMP. ON ARRIVAL: 4.3

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

Rev: 5.18.12

Analytical Laboratory Report

Report ID: S89933.01(01)
Generated on 05/25/2018

Report to

Attention: Alex Villhauer
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 616-780-3277 FAX: 248-994-2241
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Contacts for report questions:
John Laverty (johnlaverty@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S89933.01-S89933.10
Project: B0064479.2018 Racer Lansing P3
Collected Date: 05/15/2018 - 05/16/2018
Submitted Date/Time: 05/17/2018 15:00
Sampled by: Unknown
P.O. #: B0064479.2018

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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

Method Summary

Method	Version
N/A	Not Applicable
SW3015A	SW 846 Method 3015A Revision 1 February 2007
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003
SW6020A	SW 846 Method 6020A Revision 1 February 2007
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs

Sample Summary (10 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S89933.01	UNK-11_051518	Groundwater	05/15/18 09:50
S89933.02	P3-SB-28_051518	Groundwater	05/15/18 11:20
S89933.03	MW-13-31_051518	Groundwater	05/15/18 12:35
S89933.04	MW-13-33_051518	Groundwater	05/15/18 13:35
S89933.05	MW-13-32_051518	Groundwater	05/15/18 15:10
S89933.06	Dup-05_051518	Groundwater	05/15/18 00:01
S89933.07	FB-02_051518	Water	05/15/18 15:20
S89933.08	Trip Blank	Water	05/15/18 00:01
S89933.09	MW-13-26_051518	Groundwater	05/15/18 09:35
S89933.10	MW-04-01(3)_051618	Groundwater	05/16/18 11:15

Analytical Laboratory Report

Lab Sample ID: S89933.01
Sample Tag: UNK-11_051518
Collected Date/Time: 05/15/2018 09:50
Matrix: Groundwater
COC Reference: 110307

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125ml Plastic	HNO3	Yes	4.3	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
Metal Digestion	Completed			SW3015A	05/24/18 14:45	CCM		
Metals								
Arsenic	0.010	mg/L	0.002	SW6020A	05/24/18 16:47	CCM	7440-38-2	
Chromium	Not detected	mg/L	0.005	SW6020A	05/24/18 16:47	CCM	7440-47-3	
Copper	Not detected	mg/L	0.005	SW6020A	05/24/18 16:47	CCM	7440-50-8	
Lead	Not detected	mg/L	0.003	SW6020A	05/24/18 16:47	CCM	7439-92-1	
Nickel	Not detected	mg/L	0.005	SW6020A	05/24/18 16:47	CCM	7440-02-0	
Vanadium	Not detected	mg/L	0.005	SW6020A	05/24/18 16:47	CCM	7440-62-2	

Analytical Laboratory Report

Lab Sample ID: S89933.02
Sample Tag: P3-SB-28_051518
Collected Date/Time: 05/15/2018 11:20
Matrix: Groundwater
COC Reference: 110307

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.3	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/21/18 16:00	KCV		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:49	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:49	JML	106-93-4	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:49	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/18/18 17:49	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:49	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/18/18 17:49	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:49	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/18/18 17:49	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:49	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:49	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:49	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:49	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:49	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:49	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:49	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:49	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:49	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:49	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:49	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:49	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:49	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:49	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/18/18 17:49	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/18/18 17:49	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:49	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:49	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:49	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:49	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:49	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:49	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:49	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:49	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:49	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:49	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:49	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:49	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:49	JML	124-48-1	
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:49	JML	108-90-7	

Lab Sample ID: S89933.02 (continued)

Sample Tag: P3-SB-28_051518

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:49	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:49	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/18/18 17:49	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:49	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:49	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:49	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:49	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:49	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:49	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:49	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:49	JML	120-82-1	

Analytical Laboratory Report

Lab Sample ID: S89933.03
Sample Tag: MW-13-31_051518
Collected Date/Time: 05/15/2018 12:35
Matrix: Groundwater
COC Reference: 110307

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125ml Plastic	HNO3	Yes	4.3	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
Metal Digestion	Completed			SW3015A	05/24/18 14:45	CCM		
Metals								
Arsenic	Not detected	mg/L	0.002	SW6020A	05/24/18 16:49	CCM	7440-38-2	
Chromium	Not detected	mg/L	0.005	SW6020A	05/24/18 16:49	CCM	7440-47-3	
Copper	Not detected	mg/L	0.005	SW6020A	05/24/18 16:49	CCM	7440-50-8	
Lead	Not detected	mg/L	0.003	SW6020A	05/24/18 16:49	CCM	7439-92-1	
Nickel	0.025	mg/L	0.005	SW6020A	05/24/18 16:49	CCM	7440-02-0	
Vanadium	Not detected	mg/L	0.005	SW6020A	05/24/18 16:49	CCM	7440-62-2	

Analytical Laboratory Report

Lab Sample ID: S89933.04
Sample Tag: MW-13-33_051518
Collected Date/Time: 05/15/2018 13:35
Matrix: Groundwater
COC Reference: 110307

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125ml Plastic	HNO3	Yes	4.3	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
Metal Digestion	Completed			SW3015A	05/24/18 14:45	CCM		
Metals								
Arsenic	Not detected	mg/L	0.002	SW6020A	05/24/18 16:51	CCM	7440-38-2	
Chromium	Not detected	mg/L	0.005	SW6020A	05/24/18 16:51	CCM	7440-47-3	
Copper	Not detected	mg/L	0.005	SW6020A	05/24/18 16:51	CCM	7440-50-8	
Lead	Not detected	mg/L	0.003	SW6020A	05/24/18 16:51	CCM	7439-92-1	
Nickel	Not detected	mg/L	0.005	SW6020A	05/24/18 16:51	CCM	7440-02-0	
Vanadium	Not detected	mg/L	0.005	SW6020A	05/24/18 16:51	CCM	7440-62-2	

Analytical Laboratory Report

Lab Sample ID: S89933.05
Sample Tag: MW-13-32_051518
Collected Date/Time: 05/15/2018 15:10
Matrix: Groundwater
COC Reference: 110307

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125ml Plastic	HNO3	Yes	4.3	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
Metal Digestion	Completed			SW3015A	05/24/18 14:45	CCM		
Metals								
Arsenic	Not detected	mg/L	0.002	SW6020A	05/24/18 16:53	CCM	7440-38-2	
Chromium	0.012	mg/L	0.005	SW6020A	05/24/18 16:53	CCM	7440-47-3	
Copper	Not detected	mg/L	0.005	SW6020A	05/24/18 16:53	CCM	7440-50-8	
Lead	Not detected	mg/L	0.003	SW6020A	05/24/18 16:53	CCM	7439-92-1	
Nickel	0.381	mg/L	0.005	SW6020A	05/24/18 16:53	CCM	7440-02-0	
Vanadium	Not detected	mg/L	0.005	SW6020A	05/24/18 16:53	CCM	7440-62-2	

Analytical Laboratory Report

Lab Sample ID: S89933.06
Sample Tag: Dup-05_051518
Collected Date/Time: 05/15/2018 00:01
Matrix: Groundwater
COC Reference: 110307

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.3	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/21/18 16:00	KCV		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:08	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:08	JML	106-93-4	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:08	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/18/18 18:08	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:08	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/18/18 18:08	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:08	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/18/18 18:08	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:08	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:08	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:08	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:08	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:08	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:08	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:08	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:08	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:08	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:08	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:08	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:08	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:08	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:08	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/18/18 18:08	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/18/18 18:08	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:08	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:08	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:08	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:08	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:08	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:08	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:08	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:08	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:08	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:08	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:08	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:08	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:08	JML	124-48-1	
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:08	JML	108-90-7	

Lab Sample ID: S89933.06 (continued)

Sample Tag: Dup-05_051518

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:08	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:08	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/18/18 18:08	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:08	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:08	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:08	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:08	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:08	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:08	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:08	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:08	JML	120-82-1	

Lab Sample ID: S89933.07
Sample Tag: FB-02_051518
Collected Date/Time: 05/15/2018 15:20
Matrix: Water
COC Reference: 110307

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.3	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/21/18 16:00	KCV		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:10	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:10	JML	106-93-4	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:10	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/18/18 17:10	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:10	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/18/18 17:10	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:10	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/18/18 17:10	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:10	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:10	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:10	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:10	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:10	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:10	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:10	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:10	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:10	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:10	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:10	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:10	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:10	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:10	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/18/18 17:10	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/18/18 17:10	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:10	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:10	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:10	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:10	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:10	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:10	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:10	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:10	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:10	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:10	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:10	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:10	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:10	JML	124-48-1	
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:10	JML	108-90-7	

Lab Sample ID: S89933.07 (continued)

Sample Tag: FB-02_051518

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:10	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:10	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/18/18 17:10	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:10	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:10	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:10	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:10	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:10	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:10	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:10	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:10	JML	120-82-1	

Analytical Laboratory Report

Lab Sample ID: S89933.08
Sample Tag: Trip Blank
Collected Date/Time: 05/15/2018 00:01
Matrix: Water
COC Reference: 110307

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	4.3	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/21/18 16:00	KCV		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:30	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:30	JML	106-93-4	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:30	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/18/18 17:30	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:30	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/18/18 17:30	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:30	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/18/18 17:30	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:30	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:30	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:30	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:30	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:30	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:30	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:30	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:30	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:30	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:30	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:30	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:30	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:30	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:30	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/18/18 17:30	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/18/18 17:30	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:30	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:30	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:30	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:30	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:30	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:30	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:30	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:30	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:30	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:30	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:30	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:30	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:30	JML	124-48-1	
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:30	JML	108-90-7	

Lab Sample ID: S89933.08 (continued)

Sample Tag: Trip Blank

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:30	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:30	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/18/18 17:30	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:30	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:30	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:30	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:30	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:30	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:30	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:30	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 17:30	JML	120-82-1	

Analytical Laboratory Report

Lab Sample ID: S89933.09
Sample Tag: MW-13-26_051518
Collected Date/Time: 05/15/2018 09:35
Matrix: Groundwater
COC Reference: 110307

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.3	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/22/18 12:00	JML		
Organics - Volatiles								
1,4-Dioxane*	Not detected	ug/L	1	SW8260B - SIM	05/23/18 08:20	JML	123-91-1	

Analytical Laboratory Report

Lab Sample ID: S89933.10
Sample Tag: MW-04-01(3)_051618
Collected Date/Time: 05/16/2018 11:15
Matrix: Groundwater
COC Reference: 110307

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.3	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	05/21/18 16:00	KCV		
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:27	JML	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:27	JML	106-93-4	
1,4-Dioxane*	Not detected	ug/L	1	SW8260B - SIM	05/23/18 08:41	JML	123-91-1	
TCL Volatile Organics 8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:27	JML	76-13-1	
Acetone	Not detected	ug/L	10	SW5030C/8260C	05/18/18 18:27	JML	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:27	JML	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW5030C/8260C	05/18/18 18:27	JML	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:27	JML	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW5030C/8260C	05/18/18 18:27	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:27	JML	75-71-8	
Chloromethane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:27	JML	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:27	JML	75-01-4	
Bromomethane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:27	JML	74-83-9	
Chloroethane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:27	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:27	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:27	JML	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:27	JML	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:27	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:27	JML	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:27	JML	156-59-2	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:27	JML	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:27	JML	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:27	JML	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW5030C/8260C	05/18/18 18:27	JML	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW5030C/8260C	05/18/18 18:27	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:27	JML	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:27	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:27	JML	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:27	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:27	JML	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:27	JML	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:27	JML	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:27	JML	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:27	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:27	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:27	JML	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:27	JML	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:27	JML	124-48-1	

Lab Sample ID: S89933.10 (continued)
Sample Tag: MW-04-01(3)_051618

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:27	JML	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:27	JML	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:27	JML	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	05/18/18 18:27	JML		
o-Xylene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:27	JML	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:27	JML	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:27	JML	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:27	JML	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:27	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:27	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:27	JML	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	05/18/18 18:27	JML	120-82-1	

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C.O.C. PAGE # 1 OF 1

110307

CHAIN OF CUSTODY RECORD

REPORT TO

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COMPANY: Arcadis
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INVOICE TO

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

PROJECT NO./NAME: B0064479.2018 RACER Lansing P3
SAMPLER(S) - PLEASE PRINT/SIGN NAME:

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	Select Metals*	VOCs 8260B	1,4-Dioxane 8260B SIMs
89933.01	05/15/18	0950	UNK-11_051518	GW	1			1					X		
.02	05/15/18	1120	P3-SB-28_051518	GW	3		3							X	
.03	05/15/18	1235	MW-13-31_051518	GW	1			1					X		
.04	05/15/18	1335	MW-13-33_051518	GW	1			1					X		
.05	05/15/18	1510	MW-13-32_051518	GW	1			1					X		
.06	05/15/18	—	DUP-05_051518	GW	3		3							X	
.07	05/15/18	1520	FB-02_051518		3		3							X	
.08	—	—	Trip Blank		1		1							X	
.09	05/15/18	0935	MW-13-26_051518	GW	3		3								X
.10	05/16/18	1115	MW-04-01(3)_051618	GW	3		3							X	X

*Select metals: arsenic, nickel, lead, vanadium, chromium, copper.

RELINQUISHED BY: SIGNATURE/ORGANIZATION: Sam Dunning / Arcadis (Sampler)	DATE: 05/17/18	TIME: 0820	
RECEIVED BY: SIGNATURE/ORGANIZATION: Novi Sample Fridge	DATE: 05/17/18	TIME: 0820	
RELINQUISHED BY: SIGNATURE/ORGANIZATION: /ARCADIS	DATE: 5-17-18	TIME: 1035	
RECEIVED BY: SIGNATURE/ORGANIZATION: MD	DATE: 5-17-18	TIME: 1035	

RELINQUISHED BY: SIGNATURE/ORGANIZATION: M Dilcata	DATE: 5-17-18	TIME: 1500
RECEIVED BY: SIGNATURE/ORGANIZATION:	DATE: 5/17/18	TIME: 1500

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

NOTES: TEMP. ON ARRIVAL: 4.3

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

Rev. 5.18.12

Third Quarter

Analytical Laboratory Report

Report ID: S94071.01(01)
Generated on 09/24/2018

Report to

Attention: Christine Gregg
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 734-585-7817 FAX: 248-994-2241
Email: christine.gregg@arcadis.com

Addtional Contacts: Alex Villhauer, Kristen Padron, Randy Christensen

Report produced by

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Contacts for report questions:
John Laverty (johnlaverty@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S94071.01-S94071.14
Project: B0064479.2018.01302
Collected Date: 09/05/2018 - 09/06/2018
Submitted Date/Time: 09/07/2018 10:48
Sampled by: Dale Arnett / Cooper Zilio
P.O. #: B0064479.2018.01302

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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).
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

Method Summary

Method	Version
E300.0	EPA Method 300.0 Revision 2.1
N/A	Not Applicable
SM4500-N(org)/NH	Standard Method 4500 N(org)B / NH3D 2011
SM4500-PE	Standard Method 4500 P E 2011
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs

Sample Summary (14 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S94071.01	MW-16-81_090518	Groundwater	09/05/18 11:18
S94071.02	TW-14-02_090518	Groundwater	09/05/18 13:25
S94071.03	AS-16-01_090518	Groundwater	09/05/18 15:25
S94071.04	PW-14-01_090518	Groundwater	09/05/18 16:15
S94071.05	MW-15-72_090518	Groundwater	09/05/18 17:40
S94071.06	TW-16-01_090518	Groundwater	09/05/18 19:05
S94071.07	AS-16-02_090618	Groundwater	09/06/18 14:05
S94071.08	TW-14-01_090618	Groundwater	09/06/18 15:05
S94071.09	MW-16-82_090618	Groundwater	09/06/18 17:40
S94071.10	MW-16-84_090618	Groundwater	09/06/18 18:45
S94071.11	MW-16-84_090618 MS	Groundwater	09/06/18 18:45
S94071.12	MW-16-84_090618 MSD	Groundwater	09/06/18 18:45
S94071.13	Dup-01_090618	Groundwater	09/06/18 00:01
S94071.14	Trip Blank	Water	09/06/18 00:01

Analytical Laboratory Report

Lab Sample ID: S94071.01
Sample Tag: MW-16-81_090518
Collected Date/Time: 09/05/2018 11:18
Matrix: Groundwater
COC Reference: 106883

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.9	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/13/18 12:00	JML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 09/12/18 19:20, Analyst: JML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	180	10		ug/L	10	123-91-1	Y

Y-Elevated reporting limit due to high target concentration

Analytical Laboratory Report

Lab Sample ID: S94071.02
Sample Tag: TW-14-02_090518
Collected Date/Time: 09/05/2018 13:25
Matrix: Groundwater
COC Reference: 106883

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	40ml Glass	HCL	Yes	4.9	IR
1	125ml Plastic	None	Yes	4.9	IR
1	250ml Plastic	H2SO4	Yes	4.9	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/13/18 12:00	JML	

Inorganics

Method: E300.0, Run Date: 09/07/18 12:07, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Nitrate-N	1.0	0.5	0.04	mg/L	5	14797-55-8	

Method: SM4500-N(org)/NH, Run Date: 09/19/18 15:12, Analyst: MJC

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Kjeldahl Nitrogen	21.0	0.4		mg/L	1		

Method: SM4500-PE, Run Date: 09/13/18 21:50, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Phosphorus	0.81	0.01		mg/L	1	7723-14-0	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 09/12/18 17:34, Analyst: JML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	310	10		ug/L	10	123-91-1	Y

Y-Elevated reporting limit due to high target concentration

Analytical Laboratory Report

Lab Sample ID: S94071.03
Sample Tag: AS-16-01_090518
Collected Date/Time: 09/05/2018 15:25
Matrix: Groundwater
COC Reference: 106883

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	40ml Glass	HCL	Yes	4.9	IR
1	125ml Plastic	None	Yes	4.9	IR
1	250ml Plastic	H2SO4	Yes	4.9	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/13/18 12:00	JML	

Inorganics

Method: E300.0, Run Date: 09/07/18 12:20, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Nitrate-N	1.3	0.5	0.04	mg/L	5	14797-55-8	

Method: SM4500-N(org)/NH, Run Date: 09/19/18 17:07, Analyst: MJC

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Kjeldahl Nitrogen	1.8	0.1		mg/L	1		

Method: SM4500-PE, Run Date: 09/13/18 21:59, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Phosphorus	2.25	0.01		mg/L	1	7723-14-0	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 09/12/18 15:49, Analyst: JML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	23	1		ug/L	1	123-91-1	

Analytical Laboratory Report

Lab Sample ID: S94071.04
Sample Tag: PW-14-01_090518
Collected Date/Time: 09/05/2018 16:15
Matrix: Groundwater
COC Reference: 106883

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	40ml Glass	HCL	Yes	4.9	IR
1	125ml Plastic	None	Yes	4.9	IR
1	250ml Plastic	H2SO4	Yes	4.9	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/13/18 12:00	JML	

Inorganics

Method: E300.0, Run Date: 09/07/18 13:24, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Nitrate-N	0.6	0.5	0.04	mg/L	5	14797-55-8	

Method: SM4500-N(org)/NH, Run Date: 09/22/18 16:58, Analyst: MJC

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Kjeldahl Nitrogen	0.3	0.1		mg/L	1		

Method: SM4500-PE, Run Date: 09/13/18 22:09, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Phosphorus	0.02	0.01		mg/L	1	7723-14-0	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 09/12/18 17:55, Analyst: JML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	110	10		ug/L	10	123-91-1	Y

Y-Elevated reporting limit due to high target concentration

Analytical Laboratory Report

Lab Sample ID: S94071.05
Sample Tag: MW-15-72_090518
Collected Date/Time: 09/05/2018 17:40
Matrix: Groundwater
COC Reference: 106883

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	40ml Glass	HCL	Yes	4.9	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/13/18 12:00	JML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 09/12/18 18:16, Analyst: JML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	240	10		ug/L	10	123-91-1	Y

Y-Elevated reporting limit due to high target concentration

Analytical Laboratory Report

Lab Sample ID: S94071.06
Sample Tag: TW-16-01_090518
Collected Date/Time: 09/05/2018 19:05
Matrix: Groundwater
COC Reference: 106883

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	40ml Glass	HCL	Yes	4.9	IR
1	125ml Plastic	None	Yes	4.9	IR
1	250ml Plastic	H2SO4	Yes	4.9	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/13/18 12:00	JML	

Inorganics

Method: E300.0, Run Date: 09/07/18 13:37, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Nitrate-N	2.2	0.5	0.04	mg/L	5	14797-55-8	

Method: SM4500-N(org)/NH, Run Date: 09/19/18 17:24, Analyst: MJC

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Kjeldahl Nitrogen	1.5	0.1		mg/L	1		

Method: SM4500-PE, Run Date: 09/13/18 22:16, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Phosphorus	1.65	0.01		mg/L	1	7723-14-0	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 09/12/18 16:10, Analyst: JML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	89	1		ug/L	1	123-91-1	

Analytical Laboratory Report

Lab Sample ID: S94071.07
Sample Tag: AS-16-02_090618
Collected Date/Time: 09/06/2018 14:05
Matrix: Groundwater
COC Reference: 106883

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	40ml Glass	HCL	Yes	4.9	IR
1	125ml Plastic	None	Yes	4.9	IR
1	250ml Plastic	H2SO4	Yes	4.9	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/13/18 12:00	JML	

Inorganics

Method: E300.0, Run Date: 09/07/18 16:13, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Nitrate-N	52.2	5.0	0.35	mg/L	50	14797-55-8	

Method: SM4500-N(org)/NH, Run Date: 09/22/18 17:10, Analyst: MJC

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Kjeldahl Nitrogen	0.1	0.1		mg/L	1		

Method: SM4500-PE, Run Date: 09/13/18 22:25, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Phosphorus	5.40	0.01		mg/L	1	7723-14-0	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 09/12/18 16:31, Analyst: JML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	3	1		ug/L	1	123-91-1	

Lab Sample ID: S94071.08
Sample Tag: TW-14-01_090618
Collected Date/Time: 09/06/2018 15:05
Matrix: Groundwater
COC Reference: 106883

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	40ml Glass	HCL	Yes	4.9	IR
1	125ml Plastic	None	Yes	4.9	IR
1	250ml Plastic	H2SO4	Yes	4.9	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/13/18 12:00	JML	

Inorganics

Method: E300.0, Run Date: 09/07/18 16:26, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Nitrate-N	29.9	2.5	0.18	mg/L	25	14797-55-8	

Method: SM4500-N(org)/NH, Run Date: 09/19/18 17:35, Analyst: MJC

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Kjeldahl Nitrogen	3.9	0.1		mg/L	1		

Method: SM4500-PE, Run Date: 09/13/18 22:33, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Phosphorus	3.48	0.01		mg/L	1	7723-14-0	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 09/12/18 16:52, Analyst: JML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	4	1		ug/L	1	123-91-1	

Analytical Laboratory Report

Lab Sample ID: S94071.09
Sample Tag: MW-16-82_090618
Collected Date/Time: 09/06/2018 17:40
Matrix: Groundwater
COC Reference: 106883

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	40ml Glass	HCL	Yes	4.9	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/13/18 12:00	JML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 09/12/18 17:13, Analyst: JML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

Analytical Laboratory Report

Lab Sample ID: S94071.10
Sample Tag: MW-16-84_090618
Collected Date/Time: 09/06/2018 18:45
Matrix: Groundwater
COC Reference: 106883

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	40ml Glass	HCL	Yes	4.9	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/13/18 12:00	JML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 09/13/18 14:06, Analyst: JML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	56	1		ug/L	1	123-91-1	

Analytical Laboratory Report

Lab Sample ID: S94071.11
Sample Tag: MW-16-84_090618 MS
Collected Date/Time: 09/06/2018 18:45
Matrix: Groundwater
COC Reference: 106883

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	40ml Glass	HCL	Yes	4.9	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/17/18 11:55	JML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 09/13/18 12:33, Analyst: JML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	107	1		ug/L	1	123-91-1	1

1-spiked at 50ug/L

Analytical Laboratory Report

Lab Sample ID: S94071.12
Sample Tag: MW-16-84_090618 MSD
Collected Date/Time: 09/06/2018 18:45
Matrix: Groundwater
COC Reference: 106883

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	40ml Glass	HCL	Yes	4.9	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/17/18 11:55	JML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 09/13/18 12:53, Analyst: JML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	111	1		ug/L	1	123-91-1	1

1-spiked at 50ug/L

Analytical Laboratory Report

Lab Sample ID: S94071.13
Sample Tag: Dup-01_090618
Collected Date/Time: 09/06/2018 00:01
Matrix: Groundwater
COC Reference: 106883

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	40ml Glass	HCL	Yes	4.9	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/13/18 12:00	JML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 09/13/18 14:27, Analyst: JML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	1	1		ug/L	1	123-91-1	

Analytical Laboratory Report

Lab Sample ID: S94071.14
Sample Tag: Trip Blank
Collected Date/Time: 09/06/2018 00:01
Matrix: Water
COC Reference: 106883

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	40ml Glass	HCL	Yes	4.9	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/13/18 12:00	JML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 09/12/18 15:06, Analyst: JML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

Merit Laboratories Login Checklist

Lab Set ID: S94071
Client: ARCADIS_NOVI (ARCADIS U.S., Inc.)
Project: B0064479.2018.01302
Submitted: 09/07/2018 10:48 Login User: SRS

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

Phone: 734-585-7817 FAX: 248-994-2241
Email: christine.gregg@arcadis.com

Selection				Description	Note
Sample Receiving					
01.	[X] Yes	[ ] No	[ ] N/A	Samples are received at 4C +/- 2C Thermometer #	IR 4.9
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.	[X] Yes	[ ] No	[ ] 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 Bottle Preservation Check

Lab Set ID: S94071 Initials: SRS

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

Project: B0064479.2018.01302

Submitted: 09/07/2018 10:48 Login User:

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

Phone: 734-585-7817 FAX: 248-994-2241
Email: christine.gregg@arcadis.com

Lab ID	125 ml Plastic HNO_3	250 ml Plastic HNO_3	1 L Plastic HNO_3	250 ml Plastic H_2SO_4	125 ml Amber H_2SO_4	32 oz Glass HCl	125 ml Plastic NaOH	125 ml Amber $PbCO_3$ NaOH	pH					Notes
									<2	>12	other	ml add	new pH	
S94071.02				X					X					
S94071.03				X					X					
S94071.04				X					X					
S94071.06				X					X					
S94071.07				X					X					
S94071.08				X					X					

Prepared by Merit Laboratories

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

106883

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME: Christine Gregg
COMPANY: ARCADIS
ADDRESS: 28550 Cabot Dr Ste 500
CITY: Novi STATE: MI ZIP CODE: 48377
PHONE NO.: 248-994-2240 FAX NO.: 248-994-2241 P.O. NO.:
E-MAIL ADDRESS: ~~B0064479.2018-01302~~ Christine.Gregg@arcadis.com QUOTE NO.:

INVOICE TO

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

PROJECT NO./NAME: B0064479.2018-01302
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Dale Allen / Cooper Zilco
TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☒ STANDARD ☐ OTHER 10 working days
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	1,4-Dioxane (8260B SIMs)	Nitrate (E300.0)	TKN (SM4500-NorgC)	Total Phosphorous (SM4500-P E)	Special Instructions
94071.01	9/5/18	1118	MW-16-81_090518	GW	3		3						X				
.02		1325	TW-14-02_090518		4	1	2		1				X	X	X	X	
.03		1525	AS-16-01_090518		4	1	2		1				X	X	X	X	
.04		1615	PW-14-01_090518		4	1	2		1				X	X	X	X	
.05		1740	MW-15-72_090518		2		2						X				
.06		1905	TW-16-01_090518		4	1	2		1				X	X	X	X	
.07	9/6/18	1405	AS-16-02_090618		4	1	2		1				X	X	X	X	
.08		1505	TW-14-01_090618		4	1	2		1				X	X	X	X	
.09		1740	MW-16-82_090618		2		2						X				
10/.11/.12		1845	MW-16-84_090618		6		6						X				MS/MSD
.13		—	Dup-01_090618		2		2						X				
.14	—	—	trip Blank	DW	2		2						X				

RELINQUISHED BY: SIGNATURE/ORGANIZATION	Dale M. Allen / ARCADIS ☒ sampler	DATE 9/7/18	TIME 1048
RECEIVED BY: SIGNATURE/ORGANIZATION		DATE 9/7/18	TIME 1048
RELINQUISHED BY: SIGNATURE/ORGANIZATION		DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION		DATE	TIME

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: Samples kept on ice TEMP. ON ARRIVAL 4°C

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

Rev. 5.18.12

Fourth Quarter

Analytical Laboratory Report

Report ID: S97407.01(01)
Generated on 12/14/2018

Report to

Attention: Christine Gregg
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 734-585-7817 FAX: 248-994-2241
Email: christine.gregg@arcadis.com

Addtional Contacts: Alex Villhauer, Kristen Padron, Randy Christensen

Report produced by

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Contacts for report questions:
John Laverty (johnlaverty@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S97407.01-S97407.08
Project: B0064479.2018 / Racer Lansing
Collected Date: 12/03/2018 - 12/04/2018
Submitted Date/Time: 12/05/2018 08:25
Sampled by: Jake Pisarkiewicz
P.O. #: B0064479.2018.00603

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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

Method Summary

Method	Version
N/A	Not Applicable
SM3500-Cr B	Standard Method 3500 Cr B 2011
SW3015A	SW 846 Method 3015A Revision 1 February 2007
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003
SW6020A	SW 846 Method 6020A Revision 1 February 2007
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs

Sample Summary (8 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S97407.01	MW-12-02_120418	Groundwater	12/04/18 14:20
S97407.02	MW-14-63_120418	Groundwater	12/04/18 15:50
S97407.03	MW-13-25_120418	Groundwater	12/04/18 14:40
S97407.04	MW-91-2_120418	Groundwater	12/04/18 14:35
S97407.05	MWBP-10-UST5-6_120418	Groundwater	12/03/18 13:30
S97407.06	MW-12-11_120418	Groundwater	12/04/18 16:22
S97407.07	Trip Blank	Water	12/04/18 00:01
S97407.08	Dup-05	Groundwater	12/04/18 00:01

Analytical Laboratory Report

Lab Sample ID: S97407.01
Sample Tag: MW-12-02_120418
Collected Date/Time: 12/04/2018 14:20
Matrix: Groundwater
COC Reference: 102374

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/07/18 13:44	JML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 12/06/18 16:28, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

Lab Sample ID: S97407.02
Sample Tag: MW-14-63_120418
Collected Date/Time: 12/04/2018 15:50
Matrix: Groundwater
COC Reference: 102374

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/07/18 13:44	JML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 12/06/18 16:50, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

Lab Sample ID: S97407.03
Sample Tag: MW-13-25_120418
Collected Date/Time: 12/04/2018 14:40
Matrix: Groundwater
COC Reference: 102374

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/07/18 13:44	JML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 12/06/18 17:11, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	3	1		ug/L	1	123-91-1	

Analytical Laboratory Report

Lab Sample ID: S97407.04
Sample Tag: MW-91-2_120418
Collected Date/Time: 12/04/2018 14:35
Matrix: Groundwater
COC Reference: 102374

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.7	IR
1	125ml Plastic	None	Yes	3.7	IR
1	125ml Plastic	HNO3	Yes	3.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/07/18 13:44	JML	
Metal Digestion	Completed	SW3015A	12/14/18 13:45	CCM	

Inorganics

Method: SM3500-Cr B, Run Date: 12/05/18 14:20, Analyst: JKB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chromium VI	Not detected	0.01		mg/L	1	18540-29-9	

Metals

Method: SW6020A, Run Date: 12/14/18 15:16, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	0.007	0.002		mg/L	5	7440-38-2	
Chromium	0.005	0.005		mg/L	5	7440-47-3	
Copper	Not detected	0.005		mg/L	5	7440-50-8	
Lead	Not detected	0.003		mg/L	5	7439-92-1	
Nickel	Not detected	0.005		mg/L	5	7440-02-0	
Vanadium	Not detected	0.005		mg/L	5	7440-62-2	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 12/06/18 17:32, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	4	1		ug/L	1	123-91-1	

Lab Sample ID: S97407.05
Sample Tag: MWBP-10-UST5-6_120418
Collected Date/Time: 12/03/2018 13:30
Matrix: Groundwater
COC Reference: 102374

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.7	IR
1	125ml Plastic	HNO3	Yes	3.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/06/18 12:35	KAG	
Metal Digestion	Completed	SW3015A	12/14/18 13:45	CCM	

Metals

Method: SW6020A, Run Date: 12/14/18 15:37, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	0.017	0.002		mg/L	5	7440-38-2	
Chromium	Not detected	0.005		mg/L	5	7440-47-3	
Copper	Not detected	0.005		mg/L	5	7440-50-8	
Lead	Not detected	0.003		mg/L	5	7439-92-1	
Nickel	Not detected	0.005		mg/L	5	7440-02-0	
Vanadium	Not detected	0.005		mg/L	5	7440-62-2	

Organics - Volatiles

Method: SW5030C/8260C, Run Date: 12/06/18 04:09, Analyst: JML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromo-3-chloropropane	Not detected	1		ug/L	1	96-12-8	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
Acetone	Not detected	10		ug/L	1	67-64-1	
Carbon disulfide	Not detected	1		ug/L	1	75-15-0	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	1		ug/L	1	1634-04-4	
2-Butanone (MEK)	Not detected	10		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	1		ug/L	1	75-71-8	
Chloromethane	Not detected	1		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	1		ug/L	1	74-83-9	
Chloroethane	Not detected	1		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	1		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	
Chloroform	Not detected	1		ug/L	1	67-66-3	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	10		ug/L	1	108-10-1	
2-Hexanone	Not detected	10		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	

Lab Sample ID: S97407.05 (continued)
Sample Tag: MWBP-10-UST5-6_120418

Method: SW5030C/8260C, Run Date: 12/06/18 04:09, Analyst: JML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
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	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
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	
Dibromochloromethane	Not detected	1		ug/L	1	124-48-1	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
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	1		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
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	
1,2,4-Trichlorobenzene	Not detected	1		ug/L	1	120-82-1	

Analytical Laboratory Report

Lab Sample ID: S97407.06
Sample Tag: MW-12-11_120418
Collected Date/Time: 12/04/2018 16:22
Matrix: Groundwater
COC Reference: 102374

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	125ml Plastic	HNO3	Yes	3.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion	Completed	SW3015A	12/14/18 13:45	CCM	
Metal Digestion	Completed	SW3015A	12/14/18 13:45	CCM	

Metals

Method: SW6020A, Run Date: 12/14/18 15:39, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	0.014	0.002		mg/L	5	7440-38-2	
Chromium	0.040	0.005		mg/L	5	7440-47-3	
Copper	Not detected	0.005		mg/L	5	7440-50-8	
Lead	Not detected	0.003		mg/L	5	7439-92-1	
Nickel	0.013	0.005		mg/L	5	7440-02-0	
Vanadium	Not detected	0.005		mg/L	5	7440-62-2	

Method: SW6020A, Run Date: 12/14/18 15:41, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic, Dissolved	0.010	0.002		mg/L	5	7440-38-2	
Chromium, Dissolved	Not detected	0.005		mg/L	5	7440-47-3	
Copper, Dissolved	Not detected	0.005		mg/L	5	7440-50-8	
Lead, Dissolved	Not detected	0.003		mg/L	5	7439-92-1	
Nickel, Dissolved	0.010	0.005		mg/L	5	7440-02-0	
Vanadium, Dissolved	Not detected	0.005		mg/L	5	7440-62-2	

Analytical Laboratory Report

Lab Sample ID: S97407.07
Sample Tag: Trip Blank
Collected Date/Time: 12/04/2018 00:01
Matrix: Water
COC Reference: 102374

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	3.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/06/18 12:35	KAG	

Organics - Volatiles

Method: SW5030C/8260C, Run Date: 12/06/18 01:16, Analyst: JML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromo-3-chloropropane	Not detected	1		ug/L	1	96-12-8	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
Acetone	Not detected	10		ug/L	1	67-64-1	
Carbon disulfide	Not detected	1		ug/L	1	75-15-0	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	1		ug/L	1	1634-04-4	
2-Butanone (MEK)	Not detected	10		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	1		ug/L	1	75-71-8	
Chloromethane	Not detected	1		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	1		ug/L	1	74-83-9	
Chloroethane	Not detected	1		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	1		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	
Chloroform	Not detected	1		ug/L	1	67-66-3	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	10		ug/L	1	108-10-1	
2-Hexanone	Not detected	10		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	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
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	
Dibromochloromethane	Not detected	1		ug/L	1	124-48-1	

Lab Sample ID: S97407.07 (continued)
Sample Tag: Trip Blank

Method: SW5030C/8260C, Run Date: 12/06/18 01:16, Analyst: JML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
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	1		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
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	
1,2,4-Trichlorobenzene	Not detected	1		ug/L	1	120-82-1	

Analytical Laboratory Report

Lab Sample ID: S97407.08
Sample Tag: Dup-05
Collected Date/Time: 12/04/2018 00:01
Matrix: Groundwater
COC Reference: 102374

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/07/18 13:44	JML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 12/06/18 17:53, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	3	1		ug/L	1	123-91-1	

Merit Laboratories Login Checklist

Lab Set ID: S97407
Client: ARCADIS_NOVI (ARCADIS U.S., Inc.)
Project: B0064479.2018 / Racer Lansing
Submitted: 12/05/2018 08:25 Login User: MMC

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

Phone: 734-585-7817 FAX: 248-994-2241
Email: christine.gregg@arcadis.com

Selection				Description	Note
Sample Receiving					
01.	[X] Yes	[ ] No	[ ] N/A	Samples are received at 4C +/- 2C Thermometer #	IR 3.7
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.	[X] Yes	[ ] No	[ ] 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	[ ] No	[X] 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 Bottle Preservation Check

Lab Set ID: S97407 Initials: MMC

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

Project: B0064479.2018 / Racer Lansing

Submitted: 12/05/2018 08:25 Login User:

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

Phone: 734-585-7817 FAX: 248-994-2241
Email: christine.gregg@arcadis.com

Lab ID	125 ml Plastic HNO_3	250 ml Plastic HNO_3	1 L Plastic HNO_3	250 ml Plastic H_2SO_4	125 ml Amber H_2SO_4	32 oz Glass HCl	125 ml Plastic NaOH	125 ml Amber $PbCO_3$ NaOH	pH					Notes
									<2	>12	other	ml add	new pH	
S97407.04	X								X					
S97407.05	X								X					
S97407.06	X								X					
S97407.06	X								X					

Prepared by Merit Laboratories

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

102374

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME: Christine Greegg
COMPANY: Arcadis
ADDRESS: 28550 Cabot Dr, Suite 500
CITY: Novi STATE: MI ZIP CODE: 48377
PHONE NO.: 248-483-6634 FAX NO.: 248-994-2241 P.O. NO.: BD064479.2018.00603
E-MAIL ADDRESS: christine.greegg@arcadis.com QUOTE NO.:

INVOICE TO

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

PROJECT NO./NAME: BD064479.2018 / Racer Lansing
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Jake Pisarkiewicz

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	VOC's (8260)	1,4 Dioxane (8260B SIM)	Select Metals * Total	Hexavalent Chromium	Select Metals * Dissolved
97407.01	12-04-18	1420	MW-12-02_120418	GW	3		3							X			
.02	12-04-18	1550	MW-14-63_120418	GW	3		3							X			
.03	12/04/18	1440	MW-13-25_120418	GW	3		3							X			
.04	12/4/18	1435	MW-91-2_120418	GW	5	1	3	1						X	X	X	
.05	12/4/18	1330	MWBP-10-UST5-6_120418	GW	4		3	1					X		X		
.06	12/4/18	1622	MW-12-11_1204	GW	2			2							X		X
.07	12/4/18	—	Trip Blank	GW	1		1						X				
.08	12/4/18	—	Dup-05	GW	3		3							X			

* Select Metals: Arsenic, Nickel, Lead, Vanadium, Chromium, and Copper

		DATE	TIME
RELINQUISHED BY: SIGNATURE/ORGANIZATION	Sampler	12/4/18	1640
RECEIVED BY: SIGNATURE/ORGANIZATION	Arcadis	12/4/18	1640
RELINQUISHED BY: SIGNATURE/ORGANIZATION			
RECEIVED BY: SIGNATURE/ORGANIZATION			

		DATE	TIME
RELINQUISHED BY: SIGNATURE/ORGANIZATION	Arcadis	12/5/18	0825
RECEIVED BY: SIGNATURE/ORGANIZATION		12/5/18	0825

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

NOTES: TEMP. ON ARRIVAL 3.7

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

Rev. 5.18.12

Analytical Laboratory Report

Report ID: S97457.01(01)
Generated on 12/19/2018

Report to

Attention: Christine Gregg
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 734-585-7817 FAX: 248-994-2241
Email: christine.gregg@arcadis.com

Addtional Contacts: Alex Villhauer, Kristen Padron, Randy Christensen

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): S97457.01-S97457.11
Project: Racer Lansing
Collected Date: 12/04/2018 - 12/05/2018
Submitted Date/Time: 12/05/2018 16:37
Sampled by: Unknown
P.O. #: B0064479.2018.00603

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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

Method Summary

Method	Version
E300.0	EPA Method 300.0 Revision 2.1
N/A	Not Applicable
SM4500-N(org)/NH	Standard Method 4500 N(org)B / NH3D 2011
SM4500-PE	Standard Method 4500 P E 2011
SW3015A	SW 846 Method 3015A Revision 1 February 2007
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003
SW6020A	SW 846 Method 6020A Revision 1 February 2007
SW7471B	SW 846 Method 7471B Revision 2 February 2007
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs

Sample Summary (11 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S97457.01	TW-14-01_120418	Groundwater	12/04/18 13:00
S97457.02	AS-16-02_120418	Groundwater	12/04/18 15:00
S97457.03	EB-02_120418	Water	12/04/18 13:45
S97457.04	TW-16-01_120418	Groundwater	12/04/18 16:30
S97457.05	AS-16-01_120518	Groundwater	12/05/18 10:35
S97457.06	TW-14-02_120518	Groundwater	12/05/18 12:35
S97457.07	PW-14-01_120518	Groundwater	12/05/18 14:00
S97457.08	MW-15-72_120518	Groundwater	12/05/18 15:50
S97457.09	DUP-02	Groundwater	12/05/18 00:01
S97457.10	DUP-03	Groundwater	12/05/18 00:01
S97457.11	Trip Blank	Water	12/04/18 00:01

Analytical Laboratory Report

Lab Sample ID: S97457.01
Sample Tag: TW-14-01_120418
Collected Date/Time: 12/04/2018 13:00
Matrix: Groundwater
COC Reference: 120343

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.7	IR
1	125ml Plastic	None	Yes	3.7	IR
1	250ml Plastic	H2SO4	Yes	3.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/07/18 13:44	JML	

Inorganics

Method: E300.0, Run Date: 12/06/18 12:56, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Nitrate-N	38.8	2.5	0.18	mg/L	25	14797-55-8	

Method: SM4500-N(org)/NH, Run Date: 12/12/18 17:33, Analyst: MJC

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Kjeldahl Nitrogen	23.4	0.1		mg/L	1		

Method: SM4500-PE, Run Date: 12/18/18 16:35, Analyst: MJC

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Phosphorus	29	3	1	mg/L	250	7723-14-0	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 12/06/18 18:14, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	7	1		ug/L	1	123-91-1	

Analytical Laboratory Report

Lab Sample ID: S97457.02
Sample Tag: AS-16-02_120418
Collected Date/Time: 12/04/2018 15:00
Matrix: Groundwater
COC Reference: 120343

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.7	IR
1	125ml Plastic	None	Yes	3.7	IR
1	250ml Plastic	H2SO4	Yes	3.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/07/18 13:44	JML	

Inorganics

Method: E300.0, Run Date: 12/06/18 13:08, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Nitrate-N	146	5.0	0.35	mg/L	50	14797-55-8	

Method: SM4500-N(org)/NH, Run Date: 12/12/18 17:49, Analyst: MJC

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Kjeldahl Nitrogen	5.6	0.1		mg/L	1		

Method: SM4500-PE, Run Date: 12/18/18 16:43, Analyst: MJC

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Phosphorus	69	3	1	mg/L	250	7723-14-0	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 12/06/18 18:35, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	2	1		ug/L	1	123-91-1	

Lab Sample ID: S97457.03
Sample Tag: EB-02_120418
Collected Date/Time: 12/04/2018 13:45
Matrix: Water
COC Reference: 120343

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.7	IR
1	125ml Plastic	HNO3	Yes	3.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/07/18 13:44	JML	
Metal Digestion	Completed	SW3015A	12/06/18 09:15	JRH	
Mercury Digestion*	Completed	SW7471B	12/18/18 08:00	JRH	

Metals

Method: SW6020A, Run Date: 12/06/18 15:54, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Boron	Not detected	0.04		mg/L	2	7440-42-8	

Method: SW6020A, Run Date: 12/06/18 11:51, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Antimony	Not detected	0.005		mg/L	2	7440-36-0	
Arsenic	Not detected	0.002		mg/L	2	7440-38-2	
Barium	Not detected	0.005		mg/L	2	7440-39-3	
Cadmium	Not detected	0.0005		mg/L	2	7440-43-9	
Chromium	Not detected	0.005		mg/L	2	7440-47-3	
Cobalt	Not detected	0.005		mg/L	2	7440-48-4	
Copper	Not detected	0.005		mg/L	2	7440-50-8	
Lead	Not detected	0.003		mg/L	2	7439-92-1	
Manganese	Not detected	0.005		mg/L	2	7439-96-5	
Nickel	Not detected	0.005		mg/L	2	7440-02-0	
Selenium	Not detected	0.004		mg/L	2	7782-49-2	
Silver	Not detected	0.0005		mg/L	2	7440-22-4	
Vanadium	Not detected	0.005		mg/L	2	7440-62-2	
Zinc	Not detected	0.005		mg/L	2	7440-66-6	

Method: SW7471B, Run Date: 12/18/18 14:58, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury*	Not detected	0.0001		mg/L	1	7439-97-6	

Organics - Volatiles

Method: SW5030C/8260C, Run Date: 12/06/18 15:50, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromo-3-chloropropane	Not detected	1		ug/L	1	96-12-8	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
Acetone	Not detected	10		ug/L	1	67-64-1	
Carbon disulfide	Not detected	1		ug/L	1	75-15-0	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	1		ug/L	1	1634-04-4	
2-Butanone (MEK)	Not detected	10		ug/L	1	78-93-3	

Lab Sample ID: S97457.03 (continued)
Sample Tag: EB-02_120418

Method: SW5030C/8260C, Run Date: 12/06/18 15:50, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dichlorodifluoromethane	Not detected	1		ug/L	1	75-71-8	
Chloromethane	Not detected	1		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	1		ug/L	1	74-83-9	
Chloroethane	Not detected	1		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	1		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	
Chloroform	Not detected	1		ug/L	1	67-66-3	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	10		ug/L	1	108-10-1	
2-Hexanone	Not detected	10		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	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
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	
Dibromochloromethane	Not detected	1		ug/L	1	124-48-1	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
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	1		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
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	
1,2,4-Trichlorobenzene	Not detected	1		ug/L	1	120-82-1	

Lab Sample ID: S97457.04
Sample Tag: TW-16-01_120418
Collected Date/Time: 12/04/2018 16:30
Matrix: Groundwater
COC Reference: 120343

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	40ml Glass	HCL	Yes	3.7	IR
1	125ml Plastic	None	Yes	3.7	IR
1	250ml Plastic	H2SO4	Yes	3.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/07/18 13:44	JML	

Inorganics

Method: E300.0, Run Date: 12/06/18 09:56, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Nitrate-N	2.0	0.5	0.04	mg/L	5	14797-55-8	

Method: SM4500-N(org)/NH, Run Date: 12/12/18 17:58, Analyst: MJC

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Kjeldahl Nitrogen	2.6	0.1		mg/L	1		

Method: SM4500-PE, Run Date: 12/18/18 16:52, Analyst: MJC

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Phosphorus	2.9	0.3	0.1	mg/L	25	7723-14-0	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 12/07/18 20:06, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	235	5		ug/L	5	123-91-1	Y

Y-Elevated reporting limit due to high target concentration

Analytical Laboratory Report

Lab Sample ID: S97457.05
Sample Tag: AS-16-01_120518
Collected Date/Time: 12/05/2018 10:35
Matrix: Groundwater
COC Reference: 120343

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.7	IR
1	125ml Plastic	None	Yes	3.7	IR
1	250ml Plastic	H2SO4	Yes	3.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/07/18 13:44	JML	

Inorganics

Method: E300.0, Run Date: 12/06/18 10:08, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Nitrate-N	4.8	0.5	0.04	mg/L	5	14797-55-8	

Method: SM4500-N(org)/NH, Run Date: 12/12/18 18:08, Analyst: MJC

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Kjeldahl Nitrogen	2.9	0.1		mg/L	1		

Method: SM4500-PE, Run Date: 12/18/18 16:56, Analyst: MJC

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Phosphorus	5.1	0.3	0.1	mg/L	25	7723-14-0	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 12/06/18 19:17, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	73	1		ug/L	1	123-91-1	

Lab Sample ID: S97457.06
Sample Tag: TW-14-02_120518
Collected Date/Time: 12/05/2018 12:35
Matrix: Groundwater
COC Reference: 120343

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.7	IR
1	125ml Plastic	None	Yes	3.7	IR
1	250ml Plastic	H2SO4	Yes	3.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/10/18 12:30	JML	

Inorganics

Method: E300.0, Run Date: 12/06/18 10:21, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Nitrate-N	12.7	0.5	0.04	mg/L	5	14797-55-8	

Method: SM4500-N(org)/NH, Run Date: 12/12/18 18:24, Analyst: MJC

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Kjeldahl Nitrogen	6.0	0.4		mg/L	1		

Method: SM4500-PE, Run Date: 12/18/18 17:01, Analyst: MJC

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Phosphorus	9.5	0.5	0.2	mg/L	50	7723-14-0	

Organics - Volatiles

Method: SW5030C/8260C, Run Date: 12/06/18 16:28, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromo-3-chloropropane	Not detected	1		ug/L	1	96-12-8	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	

Method: SW8260B - SIM, Run Date: 12/07/18 14:28, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	169	1		ug/L	1	123-91-1	

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/06/18 16:28, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
Acetone	Not detected	10		ug/L	1	67-64-1	
Carbon disulfide	Not detected	1		ug/L	1	75-15-0	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	1		ug/L	1	1634-04-4	
2-Butanone (MEK)	Not detected	10		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	1		ug/L	1	75-71-8	
Chloromethane	Not detected	1		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	1		ug/L	1	74-83-9	
Chloroethane	Not detected	1		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	

Lab Sample ID: S97457.06 (continued)
Sample Tag: TW-14-02_120518

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/06/18 16:28, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Methylene chloride	Not detected	1		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	
Chloroform	Not detected	1		ug/L	1	67-66-3	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	10		ug/L	1	108-10-1	
2-Hexanone	Not detected	10		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	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
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	
Dibromochloromethane	Not detected	1		ug/L	1	124-48-1	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
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	1		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
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	
1,2,4-Trichlorobenzene	Not detected	1		ug/L	1	120-82-1	

Lab Sample ID: S97457.07
Sample Tag: PW-14-01_120518
Collected Date/Time: 12/05/2018 14:00
Matrix: Groundwater
COC Reference: 120343

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.7	IR
1	125ml Plastic	None	Yes	3.7	IR
1	250ml Plastic	H2SO4	Yes	3.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/07/18 13:44	JML	

Inorganics

Method: E300.0, Run Date: 12/06/18 10:34, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Nitrate-N	Not detected	0.5	0.04	mg/L	5	14797-55-8	

Method: SM4500-N(org)/NH, Run Date: 12/12/18 18:33, Analyst: MJC

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Kjeldahl Nitrogen	0.3	0.1		mg/L	1		

Method: SM4500-PE, Run Date: 12/18/18 17:05, Analyst: MJC

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Phosphorus	0.04	0.01	0.004	mg/L	1	7723-14-0	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 12/06/18 19:38, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	109	1		ug/L	1	123-91-1	

Analytical Laboratory Report

Lab Sample ID: S97457.08
Sample Tag: MW-15-72_120518
Collected Date/Time: 12/05/2018 15:50
Matrix: Groundwater
COC Reference: 120343

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/07/18 13:44	JML	

Organics - Volatiles

Method: SW5030C/8260C, Run Date: 12/06/18 16:47, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromo-3-chloropropane	Not detected	1		ug/L	1	96-12-8	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	

Method: SW8260B - SIM, Run Date: 12/11/18 23:06, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	290	10		ug/L	10	123-91-1	Y

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/06/18 16:47, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
Acetone	Not detected	10		ug/L	1	67-64-1	
Carbon disulfide	Not detected	1		ug/L	1	75-15-0	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	1		ug/L	1	1634-04-4	
2-Butanone (MEK)	Not detected	10		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	1		ug/L	1	75-71-8	
Chloromethane	Not detected	1		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	1		ug/L	1	74-83-9	
Chloroethane	Not detected	1		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	1		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	
Chloroform	Not detected	1		ug/L	1	67-66-3	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	10		ug/L	1	108-10-1	
2-Hexanone	Not detected	10		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	

Y-Elevated reporting limit due to high target concentration

Lab Sample ID: S97457.08 (continued)
Sample Tag: MW-15-72_120518

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/06/18 16:47, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
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	
Dibromochloromethane	Not detected	1		ug/L	1	124-48-1	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
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	1		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
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	
1,2,4-Trichlorobenzene	Not detected	1		ug/L	1	120-82-1	

Analytical Laboratory Report

Lab Sample ID: S97457.09
Sample Tag: DUP-02
Collected Date/Time: 12/05/2018 00:01
Matrix: Groundwater
COC Reference: 120343

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/07/18 13:44	JML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 12/06/18 19:59, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	117	1		ug/L	1	123-91-1	

Lab Sample ID: S97457.10
Sample Tag: DUP-03
Collected Date/Time: 12/05/2018 00:01
Matrix: Groundwater
COC Reference: 120343

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/07/18 13:44	JML	

Organics - Volatiles

Method: SW5030C/8260C, Run Date: 12/06/18 17:06, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromo-3-chloropropane	Not detected	1		ug/L	1	96-12-8	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	

Method: SW8260B - SIM, Run Date: 12/11/18 17:29, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	161	1		ug/L	1	123-91-1	

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/06/18 17:06, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
Acetone	Not detected	10		ug/L	1	67-64-1	
Carbon disulfide	Not detected	1		ug/L	1	75-15-0	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	1		ug/L	1	1634-04-4	
2-Butanone (MEK)	Not detected	10		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	1		ug/L	1	75-71-8	
Chloromethane	Not detected	1		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	1		ug/L	1	74-83-9	
Chloroethane	Not detected	1		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	1		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	
Chloroform	Not detected	1		ug/L	1	67-66-3	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	10		ug/L	1	108-10-1	
2-Hexanone	Not detected	10		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	

Lab Sample ID: S97457.10 (continued)
Sample Tag: DUP-03

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/06/18 17:06, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
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	
Dibromochloromethane	Not detected	1		ug/L	1	124-48-1	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
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	1		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
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	
1,2,4-Trichlorobenzene	Not detected	1		ug/L	1	120-82-1	

Lab Sample ID: S97457.11
Sample Tag: Trip Blank
Collected Date/Time: 12/04/2018 00:01
Matrix: Water
COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	3.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/07/18 13:44	JML	

Organics - Volatiles

Method: SW5030C/8260C, Run Date: 12/06/18 17:26, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromo-3-chloropropane	Not detected	1		ug/L	1	96-12-8	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	

Method: SW8260B - SIM, Run Date: 12/12/18 13:10, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/06/18 17:26, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
Acetone	Not detected	10		ug/L	1	67-64-1	
Carbon disulfide	Not detected	1		ug/L	1	75-15-0	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	1		ug/L	1	1634-04-4	
2-Butanone (MEK)	Not detected	10		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	1		ug/L	1	75-71-8	
Chloromethane	Not detected	1		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	1		ug/L	1	74-83-9	
Chloroethane	Not detected	1		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	1		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	
Chloroform	Not detected	1		ug/L	1	67-66-3	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	10		ug/L	1	108-10-1	
2-Hexanone	Not detected	10		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	

Lab Sample ID: S97457.11 (continued)
Sample Tag: Trip Blank

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/06/18 17:26, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
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	
Dibromochloromethane	Not detected	1		ug/L	1	124-48-1	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
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	1		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
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	
1,2,4-Trichlorobenzene	Not detected	1		ug/L	1	120-82-1	

Merit Laboratories Login Checklist

Lab Set ID: S97457
Client: ARCADIS_NOVI (ARCADIS U.S., Inc.)
Project: Racer Lansing
Submitted: 12/05/2018 16:37 Login User: SRS

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

Phone: 734-585-7817 FAX: 248-994-2241
Email: christine.gregg@arcadis.com

Selection				Description	Note
Sample Receiving					
01.	[X] Yes	[ ] No	[ ] N/A	Samples are received at 4C +/- 2C Thermometer #	IR 3.8
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.	[ ] Yes	[X] No	[ ] N/A	Sample tag on bottles match COC	Trip blank was not listed on 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.	[X] Yes	[ ] No	[ ] 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: _____

Prepared by Merit Laboratories

Merit Laboratories Bottle Preservation Check

Lab Set ID: S97457 Initials: SRS

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

Project: Racer Lansing

Submitted: 12/05/2018 16:37 Login User:

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

Phone: 734-585-7817 FAX: 248-994-2241
Email: christine.gregg@arcadis.com

Lab ID	125 ml Plastic HNO_3	250 ml Plastic HNO_3	1 L Plastic HNO_3	250 ml Plastic H_2SO_4	125 ml Amber H_2SO_4	32 oz Glass HCl	125 ml Plastic NaOH	125 ml Amber $PbCO_3$ NaOH	pH					Notes
									<2	>12	other	ml add	new pH	
S97457.01				X					X					
S97457.02				X					X					
S97457.03	X								X					
S97457.04				X					X					
S97457.05				X					X					
S97457.06				X					X					
S97457.07				X					X					

Prepared by Merit Laboratories

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C.O.C. PAGE # 1 OF 1

120343

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME: Christine Gregg
COMPANY: Arcadis
ADDRESS: 28550 Cabot Dr. #500
CITY: Nori STATE: MI ZIP CODE: 48377
PHONE NO.: 248-483-6634 FAX NO.:
P.O. NO.: B00647179.2018.00603
E-MAIL ADDRESS: christine.gregg@arcadis.com
QUOTE NO.:

INVOICE TO

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

PROJECT NO./NAME: RACER Lansing
SAMPLER(S) - PLEASE PRINT/SIGN NAME:

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	1,4-Dioxane SIM	TMS with MS/MSD	TO Shaw-PE	Nitrate-N E300.0	VOCs 8260	Antimony, Arsenic, Barium, Cd,	Chromium, Cobalt, Zn	Copper, Lead, Manganese, Vanadium	Hg, Nickel, Selenium, Silver	by 6020
97457.01	12/4/18	13:00	TW-14-01_120418	GW	5	1	3		1				X	X	X	X							
.02		15:00	AS-16-02_120418	GW	5	1	3		1				X	X	X	X							
.03		13:45	EB-02_120418	GW	4		3	1									X	X	X	X	X	X	
.04		16:30	TW-16-01_120418	GW	5	1	2		1				X	X	X	X							
.05	12/5/18	10:35	AS-16-01_120518	GW	5	1	3		1				X	X	X	X							
.06	12/5/18	12:35	TW-14-03_120518	GW	5	1	3		1				X	X	X	X	X						
.07		14:00	PW-14-01_120518	GW	5	1	3		1				X	X	X	X							
.08		15:50	MW-15-72_120518	GW	3		3						X				X						
.09			DUP-02				3						X										
.10			DUP-03				3						X				X						
.11																							

RELINQUISHED BY: SIGNATURE/ORGANIZATION		DATE	TIME
	David Stockman / Arcadis	12/5/18	16:37
RECEIVED BY: SIGNATURE/ORGANIZATION		DATE	TIME
		12/5/18	16:37
RELINQUISHED BY: SIGNATURE/ORGANIZATION		DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION		DATE	TIME

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 3.8

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

Rev. 5.18.12

Analytical Laboratory Report

Report ID: S97458.01(01)
Generated on 12/20/2018

Report to

Attention: Christine Gregg
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 734-585-7817 FAX: 248-994-2241
Email: christine.gregg@arcadis.com

Addtional Contacts: Alex Villhauer, Kristen Padron, Randy Christensen

Report produced by

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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): S97458.01-S97458.22
Project: B0064479.2018.00603 / RACER Lansing
Collected Date: 12/05/2018
Submitted Date/Time: 12/06/2018 08:45
Sampled by: Westhuis / Pisarkiewicz
P.O. #: B0064479.2018.00603

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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).
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

Method Summary

Method	Version
E300.0	EPA Method 300.0 Revision 2.1
E365.3	EPA Method 365.3 Editorial Revision 1978
E410.4	EPA Method 410.4 Revision 2.0
HACH 10360	HACH 10360
N/A	Not Applicable
SM2320B	Standard Method 2320 B 2011
SM2540C	Standard Method 2540 C 2011
SM2540D	Standard Method 2540 D 2011
SM4500-S2 D	Standard Method 4450 S2 D 2011
SM5310C	Standard Method 5310C 2011
SW3015A	SW 846 Method 3015A Revision 1 February 2007
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003
SW6020A	SW 846 Method 6020A Revision 1 February 2007
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs

Sample Summary (22 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S97458.01	MW-02-04(3)_120518	Groundwater	12/05/18 10:45
S97458.02	MW-18-88_120518	Groundwater	12/05/18 13:40
S97458.03	MW-18-89_120518	Groundwater	12/05/18 15:15
S97458.04	MW-23_120518	Groundwater	12/05/18 10:30
S97458.05	MW-05(3)_120518	Groundwater	12/05/18 12:30
S97458.06	UNK-11_120518	Groundwater	12/05/18 13:50
S97458.07	MW-06(3)_120518	Groundwater	12/05/18 14:50
S97458.08	FB-01_120518	Water	12/05/18 15:35
S97458.09	MW-04-05(6)_120518	Groundwater	12/05/18 09:57
S97458.10	MW-04-05(6)_120518 MS	Groundwater	12/05/18 09:57
S97458.11	MW-04-05(6)_120518 MSD	Groundwater	12/05/18 09:57
S97458.12	MW-03-04_120518	Groundwater	12/05/18 11:32
S97458.13	MW-02-03(6)_120518	Groundwater	12/05/18 13:22
S97458.14	Dup-07_120518	Groundwater	12/05/18 00:01
S97458.15	MW-16-80_120518	Groundwater	12/05/18 10:00
S97458.16	MW-16-80_120518 MS	Groundwater	12/05/18 10:00
S97458.17	MW-16-80_120518 MSD	Groundwater	12/05/18 10:00
S97458.18	MW-15-73_120518	Groundwater	12/05/18 11:35
S97458.19	MW-14-58_120518	Groundwater	12/05/18 12:45
S97458.20	MW-16-83_120518	Groundwater	12/05/18 14:40
S97458.21	MW-17-87_120518	Groundwater	12/05/18 16:15
S97458.22	Trip Blank	Water	12/05/18 00:01

Lab Sample ID: S97458.01
Sample Tag: MW-02-04(3)_120518
Collected Date/Time: 12/05/2018 10:45
Matrix: Groundwater
COC Reference: 120374

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.8	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/07/18 13:44	JML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 12/06/18 20:21, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	4	1		ug/L	1	123-91-1	

Lab Sample ID: S97458.02
Sample Tag: MW-18-88_120518
Collected Date/Time: 12/05/2018 13:40
Matrix: Groundwater
COC Reference: 120374

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.8	IR
1	1L Plastic	None	Yes	2.8	IR
1	500ml Plastic	None	Yes	2.8	IR
2	40ml Glass	H2SO4	Yes	2.8	IR
1	250ml Plastic	H2SO4	Yes	2.8	IR
1	125ml Plastic	NaOH	Yes	2.8	IR
2	125ml Plastic	HNO3	Yes	2.8	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
TBOD5 - Set*	Completed	HACH 10360	12/06/18 17:00	ASB	
pH check for VOCs*	<2	N/A	12/07/18 13:44	JML	
Metal Digestion	Completed	SW3015A	12/06/18 11:00	JRH	
Metal Digestion	Completed	SW3015A	12/06/18 11:00	JRH	

Inorganics

Method: E300.0, Run Date: 12/06/18 12:30, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chloride	Not detected	10	0.51	mg/L	10	16887-00-6	
Nitrate-N	Not detected	0.5	0.07	mg/L	10	14797-55-8	
Nitrite-N	Not detected	0.5	0.06	mg/L	10	14797-65-0	
Sulfate	28	10	0.58	mg/L	10	14808-79-8	

Method: E365.3, Run Date: 12/19/18 17:14, Analyst: MJC

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Phosphate*	0.2	0.1	0.01	mg/L	1		

Method: E410.4, Run Date: 12/13/18 13:13, Analyst: MJC

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
COD	21	10	6	mg/L	1		

Method: HACH 10360, Run Date: 12/11/18 20:45, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
TBOD5*	Not detected	3		mg/L	1		1

Method: SM2540C, Run Date: 12/10/18 19:15, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Dissolved Solids	294	20		mg/L	2		

Method: SM2540D, Run Date: 12/10/18 18:00, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Suspended Solids	5	3		mg/L	1		

1-Sample did not exhibit proper BOD behavior

Lab Sample ID: S97458.02 (continued)
Sample Tag: MW-18-88_120518

Method: SM4500-S2 D, Run Date: 12/07/18 13:10, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	Not detected	0.04	0.006	mg/L	2	18496-25-8	

Method: SM5310C, Run Date: 12/11/18 13:23, Analyst: JKB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
TOC	2.3	1		mg/L	1		

Alkalinity, Method: SM2320B, Run Date: 12/10/18 13:08, Analyst: JKB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Alkalinity as CaCO3	266	2		mg/L	2		
Bicarbonate Alkalinity as CaCO3	266	2		mg/L	2		
Carbonate Alkalinity as CaCO3	Not detected	2		mg/L	2		

Metals

Method: SW6020A, Run Date: 12/06/18 13:42, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Aluminum	0.302	0.010		mg/L	5	7429-90-5	
Arsenic	Not detected	0.002		mg/L	5	7440-38-2	
Barium	0.030	0.005		mg/L	5	7440-39-3	
Chromium	Not detected	0.005		mg/L	5	7440-47-3	
Cobalt	Not detected	0.005		mg/L	5	7440-48-4	
Copper	0.010	0.005		mg/L	5	7440-50-8	
Iron	0.39	0.02		mg/L	5	7439-89-6	
Lead	Not detected	0.003		mg/L	5	7439-92-1	
Manganese	0.588	0.005		mg/L	5	7439-96-5	
Nickel	Not detected	0.005		mg/L	5	7440-02-0	
Selenium	Not detected	0.004		mg/L	5	7782-49-2	
Vanadium	Not detected	0.005		mg/L	5	7440-62-2	
Zinc	Not detected	0.005		mg/L	5	7440-66-6	

Method: SW6020A, Run Date: 12/06/18 13:44, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Aluminum, Dissolved	0.011	0.010		mg/L	5	7429-90-5	
Arsenic, Dissolved	Not detected	0.002		mg/L	5	7440-38-2	
Barium, Dissolved	0.028	0.005		mg/L	5	7440-39-3	
Chromium, Dissolved	Not detected	0.005		mg/L	5	7440-47-3	
Cobalt, Dissolved	Not detected	0.005		mg/L	5	7440-48-4	
Copper, Dissolved	Not detected	0.005		mg/L	5	7440-50-8	
Iron, Dissolved	Not detected	0.02		mg/L	5	7439-89-6	
Lead, Dissolved	Not detected	0.003		mg/L	5	7439-92-1	
Manganese, Dissolved	0.436	0.005		mg/L	5	7439-96-5	
Nickel, Dissolved	Not detected	0.005		mg/L	5	7440-02-0	
Selenium, Dissolved	Not detected	0.004		mg/L	5	7782-49-2	
Vanadium, Dissolved	Not detected	0.005		mg/L	5	7440-62-2	
Zinc, Dissolved	Not detected	0.005		mg/L	5	7440-66-6	

Method: SW6020A, Run Date: 12/07/18 08:43, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium	83.0	2.5		mg/L	5	7440-70-2	
Magnesium	20.4	2.5		mg/L	5	7439-95-4	
Potassium	Not detected	2.5		mg/L	5	7440-09-7	

Lab Sample ID: S97458.02 (continued)
Sample Tag: MW-18-88_120518

Method: SW6020A, Run Date: 12/07/18 08:43, Analyst: JRH (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sodium	6.33	2.5		mg/L	5	7440-23-5	

Method: SW6020A, Run Date: 12/07/18 08:45, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium, Dissolved	81.7	2.5		mg/L	5	7440-70-2	
Magnesium, Dissolved	19.9	2.5		mg/L	5	7439-95-4	
Potassium, Dissolved	Not detected	2.5		mg/L	5	7440-09-7	
Sodium, Dissolved	6.43	2.5		mg/L	5	7440-23-5	

Organics - Volatiles

Method: SW5030C/8260C, Run Date: 12/06/18 18:42, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromo-3-chloropropane	Not detected	1		ug/L	1	96-12-8	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
Acetone	Not detected	10		ug/L	1	67-64-1	
Carbon disulfide	Not detected	1		ug/L	1	75-15-0	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	1		ug/L	1	1634-04-4	
2-Butanone (MEK)	Not detected	10		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	1		ug/L	1	75-71-8	
Chloromethane	Not detected	1		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	1		ug/L	1	74-83-9	
Chloroethane	Not detected	1		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	1		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	
Chloroform	Not detected	1		ug/L	1	67-66-3	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	10		ug/L	1	108-10-1	
2-Hexanone	Not detected	10		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	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
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	
Dibromochloromethane	Not detected	1		ug/L	1	124-48-1	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	

Lab Sample ID: S97458.02 (continued)
Sample Tag: MW-18-88_120518

Method: SW5030C/8260C, Run Date: 12/06/18 18:42, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
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	1		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
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	
1,2,4-Trichlorobenzene	Not detected	1		ug/L	1	120-82-1	

Lab Sample ID: S97458.03
Sample Tag: MW-18-89_120518
Collected Date/Time: 12/05/2018 15:15
Matrix: Groundwater
COC Reference: 120374

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.8	IR
1	1L Plastic	None	Yes	2.8	IR
1	500ml Plastic	None	Yes	2.8	IR
2	40ml Glass	H2SO4	Yes	2.8	IR
1	250ml Plastic	H2SO4	Yes	2.8	IR
1	125ml Plastic	NaOH	Yes	2.8	IR
2	125ml Plastic	HNO3	Yes	2.8	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
TBOD5 - Set*	Completed	HACH 10360	12/06/18 17:00	ASB	
pH check for VOCs*	<2	N/A	12/07/18 13:44	JML	
Metal Digestion	Completed	SW3015A	12/06/18 11:00	JRH	
Metal Digestion	Completed	SW3015A	12/06/18 11:00	JRH	

Inorganics

Method: E300.0, Run Date: 12/06/18 12:43, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chloride	11	10	0.51	mg/L	10	16887-00-6	
Nitrate-N	Not detected	0.5	0.07	mg/L	10	14797-55-8	
Nitrite-N	Not detected	0.5	0.06	mg/L	10	14797-65-0	
Sulfate	79	10	0.58	mg/L	10	14808-79-8	

Method: E365.3, Run Date: 12/19/18 17:19, Analyst: MJC

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Phosphate*	0.2	0.1	0.01	mg/L	1		

Method: E410.4, Run Date: 12/13/18 13:13, Analyst: MJC

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
COD	42	10	6	mg/L	1		

Method: HACH 10360, Run Date: 12/11/18 20:45, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
TBOD5*	Not detected	3		mg/L	1		1

Method: SM2540C, Run Date: 12/10/18 19:15, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Dissolved Solids	458	20		mg/L	2		

Method: SM2540D, Run Date: 12/10/18 18:00, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Suspended Solids	18	3		mg/L	1		

1-Sample did not exhibit proper BOD behavior

Lab Sample ID: S97458.03 (continued)
Sample Tag: MW-18-89_120518

Method: SM4500-S2 D, Run Date: 12/07/18 13:18, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	Not detected	0.04	0.006	mg/L	2	18496-25-8	

Method: SM5310C, Run Date: 12/11/18 14:08, Analyst: JKB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
TOC	7.9	1		mg/L	1		

Alkalinity, Method: SM2320B, Run Date: 12/10/18 13:14, Analyst: JKB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Alkalinity as CaCO3	276	2		mg/L	2		
Bicarbonate Alkalinity as CaCO3	276	2		mg/L	2		
Carbonate Alkalinity as CaCO3	Not detected	2		mg/L	2		

Metals

Method: SW6020A, Run Date: 12/06/18 14:05, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Aluminum	0.187	0.010		mg/L	5	7429-90-5	
Arsenic	0.005	0.002		mg/L	5	7440-38-2	
Barium	0.007	0.005		mg/L	5	7440-39-3	
Chromium	Not detected	0.005		mg/L	5	7440-47-3	
Cobalt	0.014	0.005		mg/L	5	7440-48-4	
Copper	0.028	0.005		mg/L	5	7440-50-8	
Iron	1.05	0.02		mg/L	5	7439-89-6	
Lead	Not detected	0.003		mg/L	5	7439-92-1	
Manganese	0.070	0.005		mg/L	5	7439-96-5	
Nickel	0.033	0.005		mg/L	5	7440-02-0	
Selenium	Not detected	0.004		mg/L	5	7782-49-2	
Vanadium	Not detected	0.005		mg/L	5	7440-62-2	
Zinc	Not detected	0.005		mg/L	5	7440-66-6	

Method: SW6020A, Run Date: 12/06/18 14:07, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Aluminum, Dissolved	0.026	0.010		mg/L	5	7429-90-5	
Arsenic, Dissolved	0.005	0.002		mg/L	5	7440-38-2	
Barium, Dissolved	0.006	0.005		mg/L	5	7440-39-3	
Chromium, Dissolved	Not detected	0.005		mg/L	5	7440-47-3	
Cobalt, Dissolved	0.015	0.005		mg/L	5	7440-48-4	
Copper, Dissolved	0.011	0.005		mg/L	5	7440-50-8	
Iron, Dissolved	0.47	0.02		mg/L	5	7439-89-6	
Lead, Dissolved	Not detected	0.003		mg/L	5	7439-92-1	
Manganese, Dissolved	0.061	0.005		mg/L	5	7439-96-5	
Nickel, Dissolved	0.027	0.005		mg/L	5	7440-02-0	
Selenium, Dissolved	Not detected	0.004		mg/L	5	7782-49-2	
Vanadium, Dissolved	Not detected	0.005		mg/L	5	7440-62-2	
Zinc, Dissolved	Not detected	0.005		mg/L	5	7440-66-6	

Method: SW6020A, Run Date: 12/07/18 08:47, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium	18.4	2.5		mg/L	5	7440-70-2	
Magnesium	4.66	2.5		mg/L	5	7439-95-4	
Potassium	39.4	2.5		mg/L	5	7440-09-7	

Lab Sample ID: S97458.03 (continued)
Sample Tag: MW-18-89_120518

Method: SW6020A, Run Date: 12/07/18 08:47, Analyst: JRH (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sodium	142	2.5		mg/L	5	7440-23-5	

Method: SW6020A, Run Date: 12/07/18 08:52, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium, Dissolved	16.6	2.5		mg/L	5	7440-70-2	
Magnesium, Dissolved	4.12	2.5		mg/L	5	7439-95-4	
Potassium, Dissolved	36.8	2.5		mg/L	5	7440-09-7	
Sodium, Dissolved	130	2.5		mg/L	5	7440-23-5	

Organics - Volatiles

Method: SW5030C/8260C, Run Date: 12/06/18 19:01, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromo-3-chloropropane	Not detected	1		ug/L	1	96-12-8	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
Acetone	Not detected	10		ug/L	1	67-64-1	
Carbon disulfide	Not detected	1		ug/L	1	75-15-0	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	1		ug/L	1	1634-04-4	
2-Butanone (MEK)	Not detected	10		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	1		ug/L	1	75-71-8	
Chloromethane	Not detected	1		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	1		ug/L	1	74-83-9	
Chloroethane	Not detected	1		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	1		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	
Chloroform	Not detected	1		ug/L	1	67-66-3	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	10		ug/L	1	108-10-1	
2-Hexanone	Not detected	10		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	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
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	
Dibromochloromethane	Not detected	1		ug/L	1	124-48-1	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	

Lab Sample ID: S97458.03 (continued)
Sample Tag: MW-18-89_120518

Method: SW5030C/8260C, Run Date: 12/06/18 19:01, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
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	1		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
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	
1,2,4-Trichlorobenzene	Not detected	1		ug/L	1	120-82-1	

Lab Sample ID: S97458.04
Sample Tag: MW-23_120518
Collected Date/Time: 12/05/2018 10:30
Matrix: Groundwater
COC Reference: 120374

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	125ml Plastic	HNO3	Yes	2.8	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion	Completed	SW3015A	12/06/18 11:00	JRH	
Metal Digestion	Completed	SW3015A	12/06/18 11:00	JRH	

Metals

Method: SW6020A, Run Date: 12/06/18 14:01, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	0.012	0.002		mg/L	5	7440-38-2	
Chromium	Not detected	0.005		mg/L	5	7440-47-3	
Copper	Not detected	0.005		mg/L	5	7440-50-8	
Lead	Not detected	0.003		mg/L	5	7439-92-1	
Nickel	Not detected	0.005		mg/L	5	7440-02-0	
Vanadium	Not detected	0.005		mg/L	5	7440-62-2	

Method: SW6020A, Run Date: 12/06/18 14:03, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic, Dissolved	0.007	0.002		mg/L	5	7440-38-2	
Chromium, Dissolved	Not detected	0.005		mg/L	5	7440-47-3	
Copper, Dissolved	Not detected	0.005		mg/L	5	7440-50-8	
Lead, Dissolved	Not detected	0.003		mg/L	5	7439-92-1	
Nickel, Dissolved	Not detected	0.005		mg/L	5	7440-02-0	
Vanadium, Dissolved	Not detected	0.005		mg/L	5	7440-62-2	

Lab Sample ID: S97458.05
Sample Tag: MW-05(3)_120518
Collected Date/Time: 12/05/2018 12:30
Matrix: Groundwater
COC Reference: 120374

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.8	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/07/18 13:44	JML	

Organics - Volatiles

Method: SW5030C/8260C, Run Date: 12/06/18 19:20, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromo-3-chloropropane	Not detected	1		ug/L	1	96-12-8	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
Acetone	Not detected	10		ug/L	1	67-64-1	
Carbon disulfide	Not detected	1		ug/L	1	75-15-0	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	1		ug/L	1	1634-04-4	
2-Butanone (MEK)	Not detected	10		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	1		ug/L	1	75-71-8	
Chloromethane	Not detected	1		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	1		ug/L	1	74-83-9	
Chloroethane	Not detected	1		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	1		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	
Chloroform	Not detected	1		ug/L	1	67-66-3	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	10		ug/L	1	108-10-1	
2-Hexanone	Not detected	10		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	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
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	
Dibromochloromethane	Not detected	1		ug/L	1	124-48-1	

Lab Sample ID: S97458.05 (continued)
Sample Tag: MW-05(3)_120518

Method: SW5030C/8260C, Run Date: 12/06/18 19:20, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
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	1		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
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	
1,2,4-Trichlorobenzene	Not detected	1		ug/L	1	120-82-1	

Lab Sample ID: S97458.06
Sample Tag: UNK-11_120518
Collected Date/Time: 12/05/2018 13:50
Matrix: Groundwater
COC Reference: 120374

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.8	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/07/18 13:44	JML	

Organics - Volatiles

Method: SW5030C/8260C, Run Date: 12/06/18 19:40, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromo-3-chloropropane	Not detected	1		ug/L	1	96-12-8	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
Acetone	Not detected	10		ug/L	1	67-64-1	
Carbon disulfide	Not detected	1		ug/L	1	75-15-0	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	1		ug/L	1	1634-04-4	
2-Butanone (MEK)	Not detected	10		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	1		ug/L	1	75-71-8	
Chloromethane	Not detected	1		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	1		ug/L	1	74-83-9	
Chloroethane	Not detected	1		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	1		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	
Chloroform	Not detected	1		ug/L	1	67-66-3	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	10		ug/L	1	108-10-1	
2-Hexanone	Not detected	10		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	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
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	
Dibromochloromethane	Not detected	1		ug/L	1	124-48-1	

Lab Sample ID: S97458.06 (continued)
Sample Tag: UNK-11_120518

Method: SW5030C/8260C, Run Date: 12/06/18 19:40, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
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	1		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
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	
1,2,4-Trichlorobenzene	Not detected	1		ug/L	1	120-82-1	

Lab Sample ID: S97458.07
Sample Tag: MW-06(3)_120518
Collected Date/Time: 12/05/2018 14:50
Matrix: Groundwater
COC Reference: 120374

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.8	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/07/18 13:44	JML	

Organics - Volatiles

Method: SW5030C/8260C, Run Date: 12/06/18 19:59, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromo-3-chloropropane	Not detected	1		ug/L	1	96-12-8	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
Acetone	Not detected	10		ug/L	1	67-64-1	
Carbon disulfide	Not detected	1		ug/L	1	75-15-0	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	1		ug/L	1	1634-04-4	
2-Butanone (MEK)	Not detected	10		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	1		ug/L	1	75-71-8	
Chloromethane	Not detected	1		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	1		ug/L	1	74-83-9	
Chloroethane	Not detected	1		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	1		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	1	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Chloroform	Not detected	1		ug/L	1	67-66-3	
1,1,1-Trichloroethane	7	1		ug/L	1	71-55-6	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	10		ug/L	1	108-10-1	
2-Hexanone	Not detected	10		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	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
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	
Dibromochloromethane	Not detected	1		ug/L	1	124-48-1	

Lab Sample ID: S97458.07 (continued)
Sample Tag: MW-06(3)_120518

Method: SW5030C/8260C, Run Date: 12/06/18 19:59, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
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	1		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
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	
1,2,4-Trichlorobenzene	Not detected	1		ug/L	1	120-82-1	

Lab Sample ID: S97458.08
Sample Tag: FB-01_120518
Collected Date/Time: 12/05/2018 15:35
Matrix: Water
COC Reference: 120374

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.8	IR
1	125ml Plastic	HNO3	Yes	2.8	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/07/18 13:44	JML	
Metal Digestion	Completed	SW3015A	12/06/18 11:00	JRH	

Metals

Method: SW6020A, Run Date: 12/06/18 13:38, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	Not detected	0.002		mg/L	2	7440-38-2	
Chromium	Not detected	0.005		mg/L	2	7440-47-3	
Copper	Not detected	0.005		mg/L	2	7440-50-8	
Lead	Not detected	0.003		mg/L	2	7439-92-1	
Nickel	Not detected	0.005		mg/L	2	7440-02-0	
Vanadium	Not detected	0.005		mg/L	2	7440-62-2	

Organics - Volatiles

Method: SW5030C/8260C, Run Date: 12/06/18 17:45, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromo-3-chloropropane	Not detected	1		ug/L	1	96-12-8	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
Acetone	Not detected	10		ug/L	1	67-64-1	
Carbon disulfide	Not detected	1		ug/L	1	75-15-0	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	1		ug/L	1	1634-04-4	
2-Butanone (MEK)	Not detected	10		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	1		ug/L	1	75-71-8	
Chloromethane	Not detected	1		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	1		ug/L	1	74-83-9	
Chloroethane	Not detected	1		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	1		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	
Chloroform	Not detected	1		ug/L	1	67-66-3	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	10		ug/L	1	108-10-1	
2-Hexanone	Not detected	10		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	

Lab Sample ID: S97458.08 (continued)
Sample Tag: FB-01_120518

Method: SW5030C/8260C, Run Date: 12/06/18 17:45, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
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	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
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	
Dibromochloromethane	Not detected	1		ug/L	1	124-48-1	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
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	1		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
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	
1,2,4-Trichlorobenzene	Not detected	1		ug/L	1	120-82-1	

Lab Sample ID: S97458.09
Sample Tag: MW-04-05(6)_120518
Collected Date/Time: 12/05/2018 09:57
Matrix: Groundwater
COC Reference: 120374

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.8	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/10/18 12:30	JML	

Organics - Volatiles

Method: SW5030C/8260C, Run Date: 12/07/18 16:59, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromo-3-chloropropane	Not detected	1		ug/L	1	96-12-8	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	

Method: SW8260B - SIM, Run Date: 12/07/18 13:25, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	3	1		ug/L	1	123-91-1	

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/07/18 16:59, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
Acetone	Not detected	10		ug/L	1	67-64-1	
Carbon disulfide	Not detected	1		ug/L	1	75-15-0	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	1		ug/L	1	1634-04-4	
2-Butanone (MEK)	Not detected	10		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	1		ug/L	1	75-71-8	
Chloromethane	Not detected	1		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	1		ug/L	1	74-83-9	
Chloroethane	Not detected	1		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	1		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	
Chloroform	Not detected	1		ug/L	1	67-66-3	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	10		ug/L	1	108-10-1	
2-Hexanone	Not detected	10		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	

Lab Sample ID: S97458.09 (continued)
Sample Tag: MW-04-05(6)_120518

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/07/18 16:59, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
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	
Dibromochloromethane	Not detected	1		ug/L	1	124-48-1	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
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	1		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
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	
1,2,4-Trichlorobenzene	Not detected	1		ug/L	1	120-82-1	

Lab Sample ID: S97458.10
Sample Tag: MW-04-05(6)_120518 MS
Collected Date/Time: 12/05/2018 09:57
Matrix: Groundwater
COC Reference: 120374

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.8	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/10/18 12:30	JML	

Organics - Volatiles

Method: SW5030C/8260C, Run Date: 12/07/18 13:48, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromo-3-chloropropane	48	1		ug/L	1	96-12-8	1
1,2-Dibromoethane	44	1		ug/L	1	106-93-4	1

Method: SW8260B - SIM, Run Date: 12/07/18 20:26, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	50	1		ug/L	1	123-91-1	1

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/07/18 13:48, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,1,2-Trichloro-1,2,2-trifluoroethane	42	1		ug/L	1	76-13-1	1
Acetone	44	10		ug/L	1	67-64-1	1
Carbon disulfide	39	1		ug/L	1	75-15-0	1
Methyl Acetate	44	10		ug/L	1	79-20-9	1
tert-Methyl butyl ether (MTBE)	42	1		ug/L	1	1634-04-4	1
2-Butanone (MEK)	42	10		ug/L	1	78-93-3	1
Dichlorodifluoromethane	41	1		ug/L	1	75-71-8	1
Chloromethane	40	1		ug/L	1	74-87-3	1
Vinyl chloride	41	1		ug/L	1	75-01-4	1
Bromomethane	41	1		ug/L	1	74-83-9	1
Chloroethane	41	1		ug/L	1	75-00-3	1
Trichlorofluoromethane	41	1		ug/L	1	75-69-4	1
1,1-Dichloroethene	41	1		ug/L	1	75-35-4	1
Methylene chloride	38	1		ug/L	1	75-09-2	1
trans-1,2-Dichloroethene	41	1		ug/L	1	156-60-5	1
1,1-Dichloroethane	42	1		ug/L	1	75-34-3	1
cis-1,2-Dichloroethene	42	1		ug/L	1	156-59-2	1
Chloroform	42	1		ug/L	1	67-66-3	1
1,1,1-Trichloroethane	42	1		ug/L	1	71-55-6	1
Cyclohexane	41	1		ug/L	1	110-82-7	1
4-Methyl-2-pentanone (MIBK)	44	10		ug/L	1	108-10-1	1
2-Hexanone	44	10		ug/L	1	591-78-6	1
Carbon tetrachloride	44	1		ug/L	1	56-23-5	1
Benzene	44	1		ug/L	1	71-43-2	1
1,2-Dichloroethane	43	1		ug/L	1	107-06-2	1
Trichloroethene	44	1		ug/L	1	79-01-6	1
1,2-Dichloropropane	44	1		ug/L	1	78-87-5	1

1-Spiked at 50ug/L

Lab Sample ID: S97458.10 (continued)
Sample Tag: MW-04-05(6)_120518 MS

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/07/18 13:48, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Bromodichloromethane	45	1		ug/L	1	75-27-4	1
Methyl cyclohexane	45	1		ug/L	1	108-87-2	1
cis-1,3-Dichloropropene	45	1		ug/L	1	10061-01-5	1
Toluene	43	1		ug/L	1	108-88-3	1
trans-1,3-Dichloropropene	45	1		ug/L	1	10061-02-6	1
1,1,2-Trichloroethane	43	1		ug/L	1	79-00-5	1
Tetrachloroethene	50	1		ug/L	1	127-18-4	1
Dibromochloromethane	45	1		ug/L	1	124-48-1	1
Chlorobenzene	44	1		ug/L	1	108-90-7	1
1,1,2,2-Tetrachloroethane	45	1		ug/L	1	79-34-5	1
Ethylbenzene	44	1		ug/L	1	100-41-4	1
p,m-Xylene*	87	2		ug/L	1		1
o-Xylene	43	1		ug/L	1	95-47-6	1
Styrene	44	1		ug/L	1	100-42-5	1
Isopropylbenzene	44	1		ug/L	1	98-82-8	1
Bromoform	46	1		ug/L	1	75-25-2	1
1,3-Dichlorobenzene	45	1		ug/L	1	541-73-1	1
1,4-Dichlorobenzene	44	1		ug/L	1	106-46-7	1
1,2-Dichlorobenzene	45	1		ug/L	1	95-50-1	1
1,2,4-Trichlorobenzene	48	1		ug/L	1	120-82-1	1

1-Spiked at 50ug/L

Lab Sample ID: S97458.11
Sample Tag: MW-04-05(6)_120518 MSD
Collected Date/Time: 12/05/2018 09:57
Matrix: Groundwater
COC Reference: 120374

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.8	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/10/18 12:30	JML	

Organics - Volatiles

Method: SW5030C/8260C, Run Date: 12/07/18 14:08, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromo-3-chloropropane	49	1		ug/L	1	96-12-8	1
1,2-Dibromoethane	45	1		ug/L	1	106-93-4	1

Method: SW8260B - SIM, Run Date: 12/07/18 20:46, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	47	1		ug/L	1	123-91-1	1

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/07/18 14:08, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,1,2-Trichloro-1,2,2-trifluoroethane	43	1		ug/L	1	76-13-1	1
Acetone	47	10		ug/L	1	67-64-1	1
Carbon disulfide	39	1		ug/L	1	75-15-0	1
Methyl Acetate	44	10		ug/L	1	79-20-9	1
tert-Methyl butyl ether (MTBE)	42	1		ug/L	1	1634-04-4	1
2-Butanone (MEK)	43	10		ug/L	1	78-93-3	1
Dichlorodifluoromethane	42	1		ug/L	1	75-71-8	1
Chloromethane	40	1		ug/L	1	74-87-3	1
Vinyl chloride	42	1		ug/L	1	75-01-4	1
Bromomethane	41	1		ug/L	1	74-83-9	1
Chloroethane	42	1		ug/L	1	75-00-3	1
Trichlorofluoromethane	42	1		ug/L	1	75-69-4	1
1,1-Dichloroethene	42	1		ug/L	1	75-35-4	1
Methylene chloride	39	1		ug/L	1	75-09-2	1
trans-1,2-Dichloroethene	41	1		ug/L	1	156-60-5	1
1,1-Dichloroethane	42	1		ug/L	1	75-34-3	1
cis-1,2-Dichloroethene	42	1		ug/L	1	156-59-2	1
Chloroform	42	1		ug/L	1	67-66-3	1
1,1,1-Trichloroethane	42	1		ug/L	1	71-55-6	1
Cyclohexane	42	1		ug/L	1	110-82-7	1
4-Methyl-2-pentanone (MIBK)	44	10		ug/L	1	108-10-1	1
2-Hexanone	44	10		ug/L	1	591-78-6	1
Carbon tetrachloride	44	1		ug/L	1	56-23-5	1
Benzene	43	1		ug/L	1	71-43-2	1
1,2-Dichloroethane	44	1		ug/L	1	107-06-2	1
Trichloroethene	44	1		ug/L	1	79-01-6	1
1,2-Dichloropropane	44	1		ug/L	1	78-87-5	1

1-Spiked at 50ug/L

Lab Sample ID: S97458.11 (continued)
Sample Tag: MW-04-05(6)_120518 MSD

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/07/18 14:08, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Bromodichloromethane	45	1		ug/L	1	75-27-4	1
Methyl cyclohexane	45	1		ug/L	1	108-87-2	1
cis-1,3-Dichloropropene	45	1		ug/L	1	10061-01-5	1
Toluene	43	1		ug/L	1	108-88-3	1
trans-1,3-Dichloropropene	45	1		ug/L	1	10061-02-6	1
1,1,2-Trichloroethane	44	1		ug/L	1	79-00-5	1
Tetrachloroethene	51	1		ug/L	1	127-18-4	1
Dibromochloromethane	46	1		ug/L	1	124-48-1	1
Chlorobenzene	45	1		ug/L	1	108-90-7	1
1,1,2,2-Tetrachloroethane	46	1		ug/L	1	79-34-5	1
Ethylbenzene	45	1		ug/L	1	100-41-4	1
p,m-Xylene*	89	2		ug/L	1		1
o-Xylene	44	1		ug/L	1	95-47-6	1
Styrene	45	1		ug/L	1	100-42-5	1
Isopropylbenzene	45	1		ug/L	1	98-82-8	1
Bromoform	46	1		ug/L	1	75-25-2	1
1,3-Dichlorobenzene	45	1		ug/L	1	541-73-1	1
1,4-Dichlorobenzene	45	1		ug/L	1	106-46-7	1
1,2-Dichlorobenzene	45	1		ug/L	1	95-50-1	1
1,2,4-Trichlorobenzene	48	1		ug/L	1	120-82-1	1

1-Spiked at 50ug/L

Lab Sample ID: S97458.12
Sample Tag: MW-03-04_120518
Collected Date/Time: 12/05/2018 11:32
Matrix: Groundwater
COC Reference: 120374

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.8	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/07/18 13:44	JML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 12/06/18 20:42, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	37	1		ug/L	1	123-91-1	

Lab Sample ID: S97458.13
Sample Tag: MW-02-03(6)_120518
Collected Date/Time: 12/05/2018 13:22
Matrix: Groundwater
COC Reference: 120374

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.8	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/07/18 13:44	JML	

Organics - Volatiles

Method: SW5030C/8260C, Run Date: 12/06/18 20:18, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromo-3-chloropropane	Not detected	1		ug/L	1	96-12-8	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	

Method: SW8260B - SIM, Run Date: 12/07/18 15:31, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	20	1		ug/L	1	123-91-1	

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/06/18 20:18, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
Acetone	Not detected	10		ug/L	1	67-64-1	
Carbon disulfide	Not detected	1		ug/L	1	75-15-0	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	1		ug/L	1	1634-04-4	
2-Butanone (MEK)	Not detected	10		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	1		ug/L	1	75-71-8	
Chloromethane	Not detected	1		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	1		ug/L	1	74-83-9	
Chloroethane	Not detected	1		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	1		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	
Chloroform	Not detected	1		ug/L	1	67-66-3	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	10		ug/L	1	108-10-1	
2-Hexanone	Not detected	10		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	

Lab Sample ID: S97458.13 (continued)
Sample Tag: MW-02-03(6)_120518

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/06/18 20:18, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
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	
Dibromochloromethane	Not detected	1		ug/L	1	124-48-1	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
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	1		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
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	
1,2,4-Trichlorobenzene	Not detected	1		ug/L	1	120-82-1	

Lab Sample ID: S97458.14
Sample Tag: Dup-07_120518
Collected Date/Time: 12/05/2018 00:01
Matrix: Groundwater
COC Reference: 120374

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.8	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/07/18 13:44	JML	

Organics - Volatiles

Method: SW5030C/8260C, Run Date: 12/06/18 20:37, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromo-3-chloropropane	Not detected	1		ug/L	1	96-12-8	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	

Method: SW8260B - SIM, Run Date: 12/07/18 15:52, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	15	1		ug/L	1	123-91-1	

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/06/18 20:37, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
Acetone	Not detected	10		ug/L	1	67-64-1	
Carbon disulfide	Not detected	1		ug/L	1	75-15-0	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	1		ug/L	1	1634-04-4	
2-Butanone (MEK)	Not detected	10		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	1		ug/L	1	75-71-8	
Chloromethane	Not detected	1		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	1		ug/L	1	74-83-9	
Chloroethane	Not detected	1		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	1		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	
Chloroform	Not detected	1		ug/L	1	67-66-3	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	10		ug/L	1	108-10-1	
2-Hexanone	Not detected	10		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	

Lab Sample ID: S97458.14 (continued)
Sample Tag: Dup-07_120518

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/06/18 20:37, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
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	
Dibromochloromethane	Not detected	1		ug/L	1	124-48-1	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
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	1		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
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	
1,2,4-Trichlorobenzene	Not detected	1		ug/L	1	120-82-1	

Lab Sample ID: S97458.15
Sample Tag: MW-16-80_120518
Collected Date/Time: 12/05/2018 10:00
Matrix: Groundwater
COC Reference: 102375

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.8	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/10/18 12:30	JML	

Organics - Volatiles

Method: SW5030C/8260C, Run Date: 12/07/18 17:56, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromo-3-chloropropane	Not detected	1		ug/L	1	96-12-8	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	

Method: SW8260B - SIM, Run Date: 12/07/18 13:46, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	27	1		ug/L	1	123-91-1	

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/07/18 17:56, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
Acetone	Not detected	10		ug/L	1	67-64-1	
Carbon disulfide	Not detected	1		ug/L	1	75-15-0	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	1		ug/L	1	1634-04-4	
2-Butanone (MEK)	Not detected	10		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	1		ug/L	1	75-71-8	
Chloromethane	Not detected	1		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	1		ug/L	1	74-83-9	
Chloroethane	Not detected	1		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	1		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	
Chloroform	Not detected	1		ug/L	1	67-66-3	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	10		ug/L	1	108-10-1	
2-Hexanone	Not detected	10		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	

Lab Sample ID: S97458.15 (continued)
Sample Tag: MW-16-80_120518

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/07/18 17:56, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
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	
Dibromochloromethane	Not detected	1		ug/L	1	124-48-1	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
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	1		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
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	
1,2,4-Trichlorobenzene	Not detected	1		ug/L	1	120-82-1	

Lab Sample ID: S97458.16
Sample Tag: MW-16-80_120518 MS
Collected Date/Time: 12/05/2018 10:00
Matrix: Groundwater
COC Reference: 102375

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.8	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/10/18 12:30	JML	

Organics - Volatiles

Method: SW5030C/8260C, Run Date: 12/07/18 12:08, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromo-3-chloropropane	54	1		ug/L	1	96-12-8	1
1,2-Dibromoethane	51	1		ug/L	1	106-93-4	1

Method: SW8260B - SIM, Run Date: 12/07/18 21:06, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	67	1		ug/L	1	123-91-1	1

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/07/18 12:08, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,1,2-Trichloro-1,2,2-trifluoroethane	55	1		ug/L	1	76-13-1	1
Acetone	59	10		ug/L	1	67-64-1	1
Carbon disulfide	50	1		ug/L	1	75-15-0	1
Methyl Acetate	56	10		ug/L	1	79-20-9	1
tert-Methyl butyl ether (MTBE)	55	1		ug/L	1	1634-04-4	1
2-Butanone (MEK)	55	10		ug/L	1	78-93-3	1
Dichlorodifluoromethane	54	1		ug/L	1	75-71-8	1
Chloromethane	57	1		ug/L	1	74-87-3	1
Vinyl chloride	57	1		ug/L	1	75-01-4	1
Bromomethane	56	1		ug/L	1	74-83-9	1
Chloroethane	54	1		ug/L	1	75-00-3	1
Trichlorofluoromethane	59	1		ug/L	1	75-69-4	1
1,1-Dichloroethene	55	1		ug/L	1	75-35-4	1
Methylene chloride	53	1		ug/L	1	75-09-2	1
trans-1,2-Dichloroethene	54	1		ug/L	1	156-60-5	1
1,1-Dichloroethane	54	1		ug/L	1	75-34-3	1
cis-1,2-Dichloroethene	54	1		ug/L	1	156-59-2	1
Chloroform	56	1		ug/L	1	67-66-3	1
1,1,1-Trichloroethane	56	1		ug/L	1	71-55-6	1
Cyclohexane	54	1		ug/L	1	110-82-7	1
4-Methyl-2-pentanone (MIBK)	55	10		ug/L	1	108-10-1	1
2-Hexanone	55	10		ug/L	1	591-78-6	1
Carbon tetrachloride	57	1		ug/L	1	56-23-5	1
Benzene	53	1		ug/L	1	71-43-2	1
1,2-Dichloroethane	54	1		ug/L	1	107-06-2	1
Trichloroethene	53	1		ug/L	1	79-01-6	1
1,2-Dichloropropane	52	1		ug/L	1	78-87-5	1

1-Spiked at 50ug/L

Lab Sample ID: S97458.16 (continued)
Sample Tag: MW-16-80_120518 MS

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/07/18 12:08, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Bromodichloromethane	56	1		ug/L	1	75-27-4	1
Methyl cyclohexane	55	1		ug/L	1	108-87-2	1
cis-1,3-Dichloropropene	54	1		ug/L	1	10061-01-5	1
Toluene	54	1		ug/L	1	108-88-3	1
trans-1,3-Dichloropropene	55	1		ug/L	1	10061-02-6	1
1,1,2-Trichloroethane	54	1		ug/L	1	79-00-5	1
Tetrachloroethene	48	1		ug/L	1	127-18-4	1
Dibromochloromethane	51	1		ug/L	1	124-48-1	1
Chlorobenzene	50	1		ug/L	1	108-90-7	1
1,1,2,2-Tetrachloroethane	52	1		ug/L	1	79-34-5	1
Ethylbenzene	51	1		ug/L	1	100-41-4	1
p,m-Xylene*	102	2		ug/L	1		1
o-Xylene	52	1		ug/L	1	95-47-6	1
Styrene	53	1		ug/L	1	100-42-5	1
Isopropylbenzene	51	1		ug/L	1	98-82-8	1
Bromoform	51	1		ug/L	1	75-25-2	1
1,3-Dichlorobenzene	51	1		ug/L	1	541-73-1	1
1,4-Dichlorobenzene	51	1		ug/L	1	106-46-7	1
1,2-Dichlorobenzene	51	1		ug/L	1	95-50-1	1
1,2,4-Trichlorobenzene	51	1		ug/L	1	120-82-1	1

1-Spiked at 50ug/L

Lab Sample ID: S97458.17
Sample Tag: MW-16-80_120518 MSD
Collected Date/Time: 12/05/2018 10:00
Matrix: Groundwater
COC Reference: 102375

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.8	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/10/18 12:30	JML	

Organics - Volatiles

Method: SW5030C/8260C, Run Date: 12/07/18 12:28, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromo-3-chloropropane	52	1		ug/L	1	96-12-8	1
1,2-Dibromoethane	49	1		ug/L	1	106-93-4	1

Method: SW8260B - SIM, Run Date: 12/07/18 21:27, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	67	1		ug/L	1	123-91-1	1

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/07/18 12:28, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,1,2-Trichloro-1,2,2-trifluoroethane	52	1		ug/L	1	76-13-1	1
Acetone	59	10		ug/L	1	67-64-1	1
Carbon disulfide	48	1		ug/L	1	75-15-0	1
Methyl Acetate	57	10		ug/L	1	79-20-9	1
tert-Methyl butyl ether (MTBE)	54	1		ug/L	1	1634-04-4	1
2-Butanone (MEK)	54	10		ug/L	1	78-93-3	1
Dichlorodifluoromethane	50	1		ug/L	1	75-71-8	1
Chloromethane	56	1		ug/L	1	74-87-3	1
Vinyl chloride	54	1		ug/L	1	75-01-4	1
Bromomethane	54	1		ug/L	1	74-83-9	1
Chloroethane	51	1		ug/L	1	75-00-3	1
Trichlorofluoromethane	57	1		ug/L	1	75-69-4	1
1,1-Dichloroethene	53	1		ug/L	1	75-35-4	1
Methylene chloride	52	1		ug/L	1	75-09-2	1
trans-1,2-Dichloroethene	53	1		ug/L	1	156-60-5	1
1,1-Dichloroethane	53	1		ug/L	1	75-34-3	1
cis-1,2-Dichloroethene	52	1		ug/L	1	156-59-2	1
Chloroform	54	1		ug/L	1	67-66-3	1
1,1,1-Trichloroethane	54	1		ug/L	1	71-55-6	1
Cyclohexane	51	1		ug/L	1	110-82-7	1
4-Methyl-2-pentanone (MIBK)	55	10		ug/L	1	108-10-1	1
2-Hexanone	54	10		ug/L	1	591-78-6	1
Carbon tetrachloride	54	1		ug/L	1	56-23-5	1
Benzene	52	1		ug/L	1	71-43-2	1
1,2-Dichloroethane	52	1		ug/L	1	107-06-2	1
Trichloroethene	51	1		ug/L	1	79-01-6	1
1,2-Dichloropropane	51	1		ug/L	1	78-87-5	1

1-Spiked at 50ug/L

Lab Sample ID: S97458.17 (continued)
Sample Tag: MW-16-80_120518 MSD

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/07/18 12:28, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Bromodichloromethane	55	1		ug/L	1	75-27-4	1
Methyl cyclohexane	53	1		ug/L	1	108-87-2	1
cis-1,3-Dichloropropene	52	1		ug/L	1	10061-01-5	1
Toluene	52	1		ug/L	1	108-88-3	1
trans-1,3-Dichloropropene	53	1		ug/L	1	10061-02-6	1
1,1,2-Trichloroethane	52	1		ug/L	1	79-00-5	1
Tetrachloroethene	46	1		ug/L	1	127-18-4	1
Dibromochloromethane	49	1		ug/L	1	124-48-1	1
Chlorobenzene	48	1		ug/L	1	108-90-7	1
1,1,2,2-Tetrachloroethane	51	1		ug/L	1	79-34-5	1
Ethylbenzene	49	1		ug/L	1	100-41-4	1
p,m-Xylene*	100	2		ug/L	1		1
o-Xylene	50	1		ug/L	1	95-47-6	1
Styrene	51	1		ug/L	1	100-42-5	1
Isopropylbenzene	49	1		ug/L	1	98-82-8	1
Bromoform	50	1		ug/L	1	75-25-2	1
1,3-Dichlorobenzene	50	1		ug/L	1	541-73-1	1
1,4-Dichlorobenzene	50	1		ug/L	1	106-46-7	1
1,2-Dichlorobenzene	50	1		ug/L	1	95-50-1	1
1,2,4-Trichlorobenzene	50	1		ug/L	1	120-82-1	1

1-Spiked at 50ug/L

Lab Sample ID: S97458.18
Sample Tag: MW-15-73_120518
Collected Date/Time: 12/05/2018 11:35
Matrix: Groundwater
COC Reference: 102375

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.8	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/07/18 13:44	JML	

Organics - Volatiles

Method: SW5030C/8260C, Run Date: 12/06/18 20:56, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromo-3-chloropropane	Not detected	1		ug/L	1	96-12-8	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	

Method: SW8260B - SIM, Run Date: 12/07/18 16:13, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	11	1		ug/L	1	123-91-1	

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/06/18 20:56, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
Acetone	Not detected	10		ug/L	1	67-64-1	
Carbon disulfide	Not detected	1		ug/L	1	75-15-0	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	1		ug/L	1	1634-04-4	
2-Butanone (MEK)	Not detected	10		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	1		ug/L	1	75-71-8	
Chloromethane	Not detected	1		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	1		ug/L	1	74-83-9	
Chloroethane	Not detected	1		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	1		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	
Chloroform	Not detected	1		ug/L	1	67-66-3	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	10		ug/L	1	108-10-1	
2-Hexanone	Not detected	10		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	

Lab Sample ID: S97458.18 (continued)
Sample Tag: MW-15-73_120518

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/06/18 20:56, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
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	
Dibromochloromethane	Not detected	1		ug/L	1	124-48-1	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
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	1		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
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	
1,2,4-Trichlorobenzene	Not detected	1		ug/L	1	120-82-1	

Lab Sample ID: S97458.19
Sample Tag: MW-14-58_120518
Collected Date/Time: 12/05/2018 12:45
Matrix: Groundwater
COC Reference: 102375

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.8	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/07/18 13:44	JML	

Organics - Volatiles

Method: SW5030C/8260C, Run Date: 12/06/18 21:15, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromo-3-chloropropane	Not detected	1		ug/L	1	96-12-8	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	

Method: SW8260B - SIM, Run Date: 12/07/18 16:35, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	78	1		ug/L	1	123-91-1	

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/06/18 21:15, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
Acetone	Not detected	10		ug/L	1	67-64-1	
Carbon disulfide	Not detected	1		ug/L	1	75-15-0	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	1		ug/L	1	1634-04-4	
2-Butanone (MEK)	Not detected	10		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	1		ug/L	1	75-71-8	
Chloromethane	Not detected	1		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	1		ug/L	1	74-83-9	
Chloroethane	Not detected	1		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	1		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	
Chloroform	Not detected	1		ug/L	1	67-66-3	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	10		ug/L	1	108-10-1	
2-Hexanone	Not detected	10		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	

Lab Sample ID: S97458.19 (continued)
Sample Tag: MW-14-58_120518

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/06/18 21:15, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
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	
Dibromochloromethane	Not detected	1		ug/L	1	124-48-1	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
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	1		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
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	
1,2,4-Trichlorobenzene	Not detected	1		ug/L	1	120-82-1	

Lab Sample ID: S97458.20
Sample Tag: MW-16-83_120518
Collected Date/Time: 12/05/2018 14:40
Matrix: Groundwater
COC Reference: 102375

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.8	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/07/18 13:44	JML	

Organics - Volatiles

Method: SW5030C/8260C, Run Date: 12/06/18 21:34, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromo-3-chloropropane	Not detected	1		ug/L	1	96-12-8	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	

Method: SW8260B - SIM, Run Date: 12/11/18 18:11, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/06/18 21:34, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
Acetone	Not detected	10		ug/L	1	67-64-1	
Carbon disulfide	Not detected	1		ug/L	1	75-15-0	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	1		ug/L	1	1634-04-4	
2-Butanone (MEK)	Not detected	10		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	1		ug/L	1	75-71-8	
Chloromethane	Not detected	1		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	1		ug/L	1	74-83-9	
Chloroethane	Not detected	1		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	1		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	
Chloroform	Not detected	1		ug/L	1	67-66-3	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	10		ug/L	1	108-10-1	
2-Hexanone	Not detected	10		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	

Lab Sample ID: S97458.20 (continued)
Sample Tag: MW-16-83_120518

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/06/18 21:34, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
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	
Dibromochloromethane	Not detected	1		ug/L	1	124-48-1	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
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	1		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
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	
1,2,4-Trichlorobenzene	Not detected	1		ug/L	1	120-82-1	

Lab Sample ID: S97458.21
Sample Tag: MW-17-87_120518
Collected Date/Time: 12/05/2018 16:15
Matrix: Groundwater
COC Reference: 102375

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.8	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/07/18 13:44	JML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 12/06/18 21:03, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	2	1		ug/L	1	123-91-1	

Lab Sample ID: S97458.22
Sample Tag: Trip Blank
Collected Date/Time: 12/05/2018 00:01
Matrix: Water
COC Reference: 102375

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	2.8	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/07/18 13:44	JML	

Organics - Volatiles

Method: SW5030C/8260C, Run Date: 12/06/18 18:04, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromo-3-chloropropane	Not detected	1		ug/L	1	96-12-8	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
Acetone	Not detected	10		ug/L	1	67-64-1	
Carbon disulfide	Not detected	1		ug/L	1	75-15-0	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	1		ug/L	1	1634-04-4	
2-Butanone (MEK)	Not detected	10		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	1		ug/L	1	75-71-8	
Chloromethane	Not detected	1		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	1		ug/L	1	74-83-9	
Chloroethane	Not detected	1		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	1		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	
Chloroform	Not detected	1		ug/L	1	67-66-3	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	10		ug/L	1	108-10-1	
2-Hexanone	Not detected	10		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	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
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	
Dibromochloromethane	Not detected	1		ug/L	1	124-48-1	

Lab Sample ID: S97458.22 (continued)

Sample Tag: Trip Blank

Method: SW5030C/8260C, Run Date: 12/06/18 18:04, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
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	1		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
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	
1,2,4-Trichlorobenzene	Not detected	1		ug/L	1	120-82-1	

Merit Laboratories Login Checklist

Lab Set ID: S97458
Client: ARCADIS_NOVI (ARCADIS U.S., Inc.)
Project: B0064479.2018.00603 / RACER Lansing
Submitted: 12/06/2018 08:45 Login User: MMC

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

Phone: 734-585-7817 FAX: 248-994-2241
Email: christine.gregg@arcadis.com

Selection				Description	Note
Sample Receiving					
01.	[X] Yes	[ ] No	[ ] N/A	Samples are received at 4C +/- 2C Thermometer #	IR 2.8
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.	[X] Yes	[ ] No	[ ] 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	[ ] No	[X] 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 Bottle Preservation Check

Lab Set ID: S97458 Initials: MMC

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

Project: B0064479.2018.00603 / RACER Lansing

Submitted: 12/06/2018 08:45 Login User:

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

Phone: 734-585-7817 FAX: 248-994-2241
Email: christine.gregg@arcadis.com

Lab ID	125 ml Plastic HNO_3	250 ml Plastic HNO_3	1 L Plastic HNO_3	250 ml Plastic H_2SO_4	125 ml Amber H_2SO_4	32 oz Glass HCl	125 ml Plastic NaOH	125 ml Amber $PbCO_3$ NaOH	pH					Notes
									<2	>12	other	ml add	new pH	
S97458.02	X								X					
S97458.02	X								X					
S97458.02				X					X					
S97458.02							X			X				
S97458.03	X								X					
S97458.03	X								X					
S97458.03				X					X					
S97458.03							X			X				
S97458.04	X								X					
S97458.04	X								X					
S97458.08	X								X					

Prepared by Merit Laboratories

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 2

120374

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME: Christine Gregg
COMPANY: Arcadis of Michigan, LLC
ADDRESS: 28550 Cabot Drive, Suite 500
CITY: Novi | STATE: MI | ZIP CODE: 48377
PHONE NO.: 248-483-6634 | FAX NO.: 248-994-2241 | P.O. NO.: B00644479.2018.00603
E-MAIL ADDRESS: Christine.Gregg@arcadis.com | QUOTE NO.:

INVOICE TO

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

PROJECT NO./NAME: B00644479.2018.00603 / RACER Lansing
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Austin Westhuis / [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)

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

MERIT LAB NO. (FOR LAB USE ONLY)	DATE	TIME	SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives: NONE	HCl	HNO_3	H_2SO_4	NaOH	MeOH	OTHER	VOCs 8260	1,4-Dioxane 8260B SIMS	Total Select Metals*	Diss. Select Metals*	Hexavalent Chromium	Total and Diss. Metals**	Alkalinity, BOD, Chloride, Nitrate, Nitrite, Phosphate, Sulfate, TSS, TDS	COD	Sulfide	TOC	Special Instructions
97458.01	12/5/18	1045	MW-02-04(3)_120518	GW	3		3							X									* Select Metals: Arsenic, Nickel, Lead, Vanadium, Chromium, and copper
.02	12/5/18	1340	MW-18-88_120518	GW	11	2	3	2	3	1			X					X	X	X	X	X	
.03	12/5/18	1515	MW-18-89_120518	GW	11	2	3	2	3	1			X					X	X	X	X	X	
.04	12/5/18	1030	MW-23_120518	GW	2			2							X	X							
.05	12/5/18	1230	MW-07(3)_120518	GW	3		3						X										** Total and Diss. Metals: Aluminum, Arsenic, Barium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Nickel, Potassium, Selenium, Sodium, Vanadium, Zinc
.06	12/5/18	1350	~~DUP~~ - DUP-11_120518	GW	3		3						X										
.07	12/5/18	1450	MW-06(3)_120518	GW	3		3						X										
.08	12/5/18	1535	FB-01_120518	GW	4		3	1					X		X								
.09.10.11	12/5/18	0957	MW-04-05(6)_120518 MS/MSD	GW	9		9						X	X									
.12	12/5/18	1132	MW-03-04_120518	GW	3		3							X									* Phosphate as PO4
.13	12/5/18	1322	MW-02-03(6)_120518	GW	3		3						X	X									
.14	12/5/18	—	Dup-07_120518	GW	3		3						X	X									* Diss. Metals field filtered

RELINQUISHED BY: SIGNATURE/ORGANIZATION	[signature] / Arcadis (X Sampler)	12/6/18	0845
RECEIVED BY: SIGNATURE/ORGANIZATION	M Ailcate	12/6/18	0845
RELINQUISHED BY: SIGNATURE/ORGANIZATION		DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION		DATE	TIME

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 2.8

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

Rev. 5.18.12

Merit Laboratories, Inc.

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Phone (517) 332-0167 Fax (517) 332-4034
www.meritlabs.com

C.O.C. PAGE # 2 OF 2

102375

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME: Christine Gregg
COMPANY: Arcadis of Michigan, LLC
ADDRESS: 28550 Cabot Drive, Suite 500
CITY: Novi STATE: MI ZIP CODE: 48377
PHONE NO.: 248-483-6634 FAX NO.: 248-994-2241 P.O. NO.: B006447 9.2018.00603
E-MAIL ADDRESS: B006447 9.2018.00603/RACER Lansing QUOTE NO.:

INVOICE TO

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

PROJECT NO./NAME: Racer Lansing / B006447 9.2018
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Jake Pisarkiewicz

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	VOC's	1,4 Dioxane	Special Instructions
1458.15|16|17	12-5-18	1000	MW-16-80_120518	GW	9		9						X	X	MS/MSD
.18	12-5-18	1135	MW-15-73_120518	GW	3		3						X	X	
.19	12-5-18	1245	MW-14-58_120518	GW	3		3						X	X	
.20	12-5-18	1440	MW-16-83_120518	GW	3		3						X	X	
.21	12-5-18	1615	MW-17-87_120518	GW	3		3							X	
.22	12/5/18	—	Trip Blank	GW	1		1						X		

RELINQUISHED BY: SIGNATURE/ORGANIZATION	Arcadis (X Sampler)	DATE 12/6/18	TIME 0845
RECEIVED BY: SIGNATURE/ORGANIZATION	M Wilcox	DATE 12/6/18	TIME 0845
RELINQUISHED BY: SIGNATURE/ORGANIZATION		DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION		DATE	TIME

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 2.8

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

Rev. 5.18.12

Analytical Laboratory Report

Revised Report

Report ID: S97534.01(02)
Generated on 01/09/2019
Replaces report S97534.01(01) generated on 12/20/2018

Report to

Attention: Christine Gregg
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 734-585-7817 FAX: 248-994-2241
Email: christine.gregg@arcadis.com

Addtional Contacts: Alex Villhauer, Kristen Padron, Randy Christensen

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): S97534.01-S97534.23
Project: B0064479.2018.00603 / RACER Lansing
Collected Date: 12/06/2018
Submitted Date/Time: 12/07/2018 08:15
Sampled by: Westhuis / Pisarkiewicz
P.O. #: B0064479.2018.00603

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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).
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

.22 sample tag corrected

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

Method Summary

Method	Version
E300.0	EPA Method 300.0 Revision 2.1
E365.3	EPA Method 365.3 Editorial Revision 1978
E410.4	EPA Method 410.4 Revision 2.0
HACH 10360	HACH 10360
N/A	Not Applicable
SM2320B	Standard Method 2320 B 2011
SM2540C	Standard Method 2540 C 2011
SM2540D	Standard Method 2540 D 2011
SM3500-Cr B	Standard Method 3500 Cr B 2011
SM4500-S2 D	Standard Method 4450 S2 D 2011
SM5310C	Standard Method 5310C 2011
SW3015A	SW 846 Method 3015A Revision 1 February 2007
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003
SW6020A	SW 846 Method 6020A Revision 1 February 2007
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs

Sample Summary (23 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S97534.01	MW-12-09_120618	Groundwater	12/06/18 09:30
S97534.02	MW-14-56_120618	Groundwater	12/06/18 10:45
S97534.03	MW-14-57_120618	Groundwater	12/06/18 12:00
S97534.04	MW-16-75_120618	Groundwater	12/06/18 09:30
S97534.05	MW-16-77_120618	Groundwater	12/06/18 11:05
S97534.06	MW-16-74_120618	Groundwater	12/06/18 12:05
S97534.07	P2-SB-20_120618	Groundwater	12/06/18 13:50
S97534.08	MW-14-55_120618	Groundwater	12/06/18 15:00
S97534.09	MW-03-06_120618	Groundwater	12/06/18 09:32
S97534.10	MW-03-05_120618	Groundwater	12/06/18 11:12
S97534.11	MW-03-05_120618 MS	Groundwater	12/06/18 11:12
S97534.12	MW-03-05_120618 MSD	Groundwater	12/06/18 11:12
S97534.13	MW-12-12_120618	Groundwater	12/06/18 13:27
S97534.14	MW-12-13_120618	Groundwater	12/06/18 14:47
S97534.15	MW-18-90_120618	Groundwater	12/06/18 10:45
S97534.16	MW-18-91_120618	Groundwater	12/06/18 12:15
S97534.17	CH-14-RO_120618	Groundwater	12/06/18 14:40
S97534.18	Dup-04	Groundwater	12/06/18 14:40
S97534.19	UNK-10_120618	Groundwater	12/06/18 09:35
S97534.20	EB-03_120618	Groundwater	12/06/18 09:45
S97534.21	MW-22_120618	Groundwater	12/06/18 14:00
S97534.22	MW-14-65_120618	Groundwater	12/06/18 15:00
S97534.23	Trip Blank	Water	12/06/18 00:01

Lab Sample ID: S97534.01
Sample Tag: MW-12-09_120618
Collected Date/Time: 12/06/2018 09:30
Matrix: Groundwater
COC Reference: 102376

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/10/18 12:30	JML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 12/07/18 17:17, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	7	1		ug/L	1	123-91-1	

Lab Sample ID: S97534.02
Sample Tag: MW-14-56_120618
Collected Date/Time: 12/06/2018 10:45
Matrix: Groundwater
COC Reference: 102376

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/10/18 12:30	JML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 12/07/18 17:38, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	14	1		ug/L	1	123-91-1	

Lab Sample ID: S97534.03
Sample Tag: MW-14-57_120618
Collected Date/Time: 12/06/2018 12:00
Matrix: Groundwater
COC Reference: 102376

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/10/18 12:30	JML	

Organics - Volatiles

Method: SW5030C/8260C, Run Date: 12/10/18 17:11, Analyst: WAT

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromo-3-chloropropane	Not detected	1	0.47	ug/L	1	96-12-8	
1,2-Dibromoethane	Not detected	1	0.30	ug/L	1	106-93-4	

Method: SW8260B - SIM, Run Date: 12/07/18 17:59, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	7	1		ug/L	1	123-91-1	

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/10/18 17:11, Analyst: WAT

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1	0.18	ug/L	1	76-13-1	
Acetone	Not detected	10	0.56	ug/L	1	67-64-1	
Carbon disulfide	Not detected	1	0.24	ug/L	1	75-15-0	
Methyl Acetate	Not detected	10	0.25	ug/L	1	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	1	0.19	ug/L	1	1634-04-4	
2-Butanone (MEK)	Not detected	10	0.26	ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	1	0.50	ug/L	1	75-71-8	
Chloromethane	Not detected	1	0.26	ug/L	1	74-87-3	
Vinyl chloride	Not detected	1	0.31	ug/L	1	75-01-4	
Bromomethane	Not detected	1	0.32	ug/L	1	74-83-9	
Chloroethane	Not detected	1	0.34	ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1	0.33	ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1	0.27	ug/L	1	75-35-4	
Methylene chloride	Not detected	1	0.29	ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1	0.20	ug/L	1	156-60-5	
1,1-Dichloroethane	1	1	0.20	ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1	0.26	ug/L	1	156-59-2	
Chloroform	Not detected	1	0.20	ug/L	1	67-66-3	
1,1,1-Trichloroethane	10	1	0.28	ug/L	1	71-55-6	
Cyclohexane	Not detected	1	0.29	ug/L	1	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	10	0.14	ug/L	1	108-10-1	
2-Hexanone	Not detected	10	0.29	ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1	0.20	ug/L	1	56-23-5	
Benzene	Not detected	1	0.20	ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1	0.16	ug/L	1	107-06-2	
Trichloroethene	Not detected	1	0.23	ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1	0.20	ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1	0.23	ug/L	1	75-27-4	

Lab Sample ID: S97534.03 (continued)

Sample Tag: MW-14-57_120618

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/10/18 17:11, Analyst: WAT (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Methyl cyclohexane	Not detected	1	0.21	ug/L	1	108-87-2	
cis-1,3-Dichloropropene	Not detected	1	0.19	ug/L	1	10061-01-5	
Toluene	Not detected	1	0.25	ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1	0.25	ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1	0.28	ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1	0.20	ug/L	1	127-18-4	
Dibromochloromethane	Not detected	1	0.24	ug/L	1	124-48-1	
Chlorobenzene	Not detected	1	0.17	ug/L	1	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	1	0.18	ug/L	1	79-34-5	
Ethylbenzene	Not detected	1	0.26	ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2	0.41	ug/L	1		
o-Xylene	Not detected	1	0.25	ug/L	1	95-47-6	
Styrene	Not detected	1	0.18	ug/L	1	100-42-5	
Isopropylbenzene	Not detected	1	0.25	ug/L	1	98-82-8	
Bromoform	Not detected	1	0.22	ug/L	1	75-25-2	
1,3-Dichlorobenzene	Not detected	1	0.24	ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1	0.23	ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1	0.28	ug/L	1	95-50-1	
1,2,4-Trichlorobenzene	Not detected	1	0.19	ug/L	1	120-82-1	

Lab Sample ID: S97534.04
Sample Tag: MW-16-75_120618
Collected Date/Time: 12/06/2018 09:30
Matrix: Groundwater
COC Reference: 102376

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/10/18 12:30	JML	

Organics - Volatiles

Method: SW5030C/8260C, Run Date: 12/10/18 17:29, Analyst: WAT

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromo-3-chloropropane	Not detected	1	0.47	ug/L	1	96-12-8	
1,2-Dibromoethane	Not detected	1	0.30	ug/L	1	106-93-4	

Method: SW8260B - SIM, Run Date: 12/07/18 18:20, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	10	1		ug/L	1	123-91-1	

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/10/18 17:29, Analyst: WAT

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1	0.18	ug/L	1	76-13-1	
Acetone	Not detected	10	0.56	ug/L	1	67-64-1	
Carbon disulfide	Not detected	1	0.24	ug/L	1	75-15-0	
Methyl Acetate	Not detected	10	0.25	ug/L	1	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	1	0.19	ug/L	1	1634-04-4	
2-Butanone (MEK)	Not detected	10	0.26	ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	1	0.50	ug/L	1	75-71-8	
Chloromethane	Not detected	1	0.26	ug/L	1	74-87-3	
Vinyl chloride	Not detected	1	0.31	ug/L	1	75-01-4	
Bromomethane	Not detected	1	0.32	ug/L	1	74-83-9	
Chloroethane	Not detected	1	0.34	ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1	0.33	ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1	0.27	ug/L	1	75-35-4	
Methylene chloride	Not detected	1	0.29	ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1	0.20	ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1	0.20	ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1	0.26	ug/L	1	156-59-2	
Chloroform	Not detected	1	0.20	ug/L	1	67-66-3	
1,1,1-Trichloroethane	Not detected	1	0.28	ug/L	1	71-55-6	
Cyclohexane	Not detected	1	0.29	ug/L	1	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	10	0.14	ug/L	1	108-10-1	
2-Hexanone	Not detected	10	0.29	ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1	0.20	ug/L	1	56-23-5	
Benzene	Not detected	1	0.20	ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1	0.16	ug/L	1	107-06-2	
Trichloroethene	Not detected	1	0.23	ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1	0.20	ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1	0.23	ug/L	1	75-27-4	

Lab Sample ID: S97534.04 (continued)
Sample Tag: MW-16-75_120618

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/10/18 17:29, Analyst: WAT (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Methyl cyclohexane	Not detected	1	0.21	ug/L	1	108-87-2	
cis-1,3-Dichloropropene	Not detected	1	0.19	ug/L	1	10061-01-5	
Toluene	Not detected	1	0.25	ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1	0.25	ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1	0.28	ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1	0.20	ug/L	1	127-18-4	
Dibromochloromethane	Not detected	1	0.24	ug/L	1	124-48-1	
Chlorobenzene	Not detected	1	0.17	ug/L	1	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	1	0.18	ug/L	1	79-34-5	
Ethylbenzene	Not detected	1	0.26	ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2	0.41	ug/L	1		
o-Xylene	Not detected	1	0.25	ug/L	1	95-47-6	
Styrene	Not detected	1	0.18	ug/L	1	100-42-5	
Isopropylbenzene	Not detected	1	0.25	ug/L	1	98-82-8	
Bromoform	Not detected	1	0.22	ug/L	1	75-25-2	
1,3-Dichlorobenzene	Not detected	1	0.24	ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1	0.23	ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1	0.28	ug/L	1	95-50-1	
1,2,4-Trichlorobenzene	Not detected	1	0.19	ug/L	1	120-82-1	

Lab Sample ID: S97534.05
Sample Tag: MW-16-77_120618
Collected Date/Time: 12/06/2018 11:05
Matrix: Groundwater
COC Reference: 102376

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/10/18 12:30	JML	

Organics - Volatiles

Method: SW5030C/8260C, Run Date: 12/11/18 17:37, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromo-3-chloropropane	Not detected	1		ug/L	1	96-12-8	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	

Method: SW8260B - SIM, Run Date: 12/07/18 18:41, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	4	1		ug/L	1	123-91-1	

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/11/18 17:37, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
Acetone	Not detected	10		ug/L	1	67-64-1	
Carbon disulfide	Not detected	1		ug/L	1	75-15-0	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	1		ug/L	1	1634-04-4	
2-Butanone (MEK)	Not detected	10		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	1		ug/L	1	75-71-8	
Chloromethane	Not detected	1		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	1		ug/L	1	74-83-9	
Chloroethane	Not detected	1		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	1		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	
Chloroform	Not detected	1		ug/L	1	67-66-3	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	10		ug/L	1	108-10-1	
2-Hexanone	Not detected	10		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	

Lab Sample ID: S97534.05 (continued)
Sample Tag: MW-16-77_120618

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/11/18 17:37, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
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	
Dibromochloromethane	Not detected	1		ug/L	1	124-48-1	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
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	1		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
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	
1,2,4-Trichlorobenzene	Not detected	1		ug/L	1	120-82-1	

Lab Sample ID: S97534.06
Sample Tag: MW-16-74_120618
Collected Date/Time: 12/06/2018 12:05
Matrix: Groundwater
COC Reference: 102376

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/10/18 12:30	JML	

Organics - Volatiles

Method: SW5030C/8260C, Run Date: 12/07/18 20:12, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromo-3-chloropropane	Not detected	1		ug/L	1	96-12-8	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	

Method: SW8260B - SIM, Run Date: 12/07/18 19:02, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	6	1		ug/L	1	123-91-1	

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/07/18 20:12, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
Acetone	Not detected	10		ug/L	1	67-64-1	
Carbon disulfide	Not detected	1		ug/L	1	75-15-0	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	1		ug/L	1	1634-04-4	
2-Butanone (MEK)	Not detected	10		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	1		ug/L	1	75-71-8	
Chloromethane	Not detected	1		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	1		ug/L	1	74-83-9	
Chloroethane	Not detected	1		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	1		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	
Chloroform	Not detected	1		ug/L	1	67-66-3	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	10		ug/L	1	108-10-1	
2-Hexanone	Not detected	10		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	

Lab Sample ID: S97534.06 (continued)
Sample Tag: MW-16-74_120618

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/07/18 20:12, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
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	
Dibromochloromethane	Not detected	1		ug/L	1	124-48-1	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
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	1		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
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	
1,2,4-Trichlorobenzene	Not detected	1		ug/L	1	120-82-1	

Lab Sample ID: S97534.07
Sample Tag: P2-SB-20_120618
Collected Date/Time: 12/06/2018 13:50
Matrix: Groundwater
COC Reference: 102376

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/10/18 12:30	JML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 12/11/18 18:32, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

Lab Sample ID: S97534.08
Sample Tag: MW-14-55_120618
Collected Date/Time: 12/06/2018 15:00
Matrix: Groundwater
COC Reference: 102376

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/11/18 14:20	JML	

Organics - Volatiles

Method: SW5030C/8260C, Run Date: 12/11/18 06:20, Analyst: WAT

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromo-3-chloropropane	Not detected	1	0.47	ug/L	1	96-12-8	
1,2-Dibromoethane	Not detected	1	0.30	ug/L	1	106-93-4	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1	0.18	ug/L	1	76-13-1	
Acetone	Not detected	10	0.56	ug/L	1	67-64-1	
Carbon disulfide	Not detected	1	0.24	ug/L	1	75-15-0	
Methyl Acetate	Not detected	10	0.25	ug/L	1	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	1	0.19	ug/L	1	1634-04-4	
2-Butanone (MEK)	Not detected	10	0.26	ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	1	0.50	ug/L	1	75-71-8	
Chloromethane	Not detected	1	0.26	ug/L	1	74-87-3	
Vinyl chloride	Not detected	1	0.31	ug/L	1	75-01-4	
Bromomethane	Not detected	1	0.32	ug/L	1	74-83-9	
Chloroethane	Not detected	1	0.34	ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1	0.33	ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1	0.27	ug/L	1	75-35-4	
Methylene chloride	Not detected	1	0.29	ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1	0.20	ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1	0.20	ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1	0.26	ug/L	1	156-59-2	
Chloroform	Not detected	1	0.20	ug/L	1	67-66-3	
1,1,1-Trichloroethane	Not detected	1	0.28	ug/L	1	71-55-6	
Cyclohexane	Not detected	1	0.29	ug/L	1	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	10	0.14	ug/L	1	108-10-1	
2-Hexanone	Not detected	10	0.29	ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1	0.20	ug/L	1	56-23-5	
Benzene	Not detected	1	0.20	ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1	0.16	ug/L	1	107-06-2	
Trichloroethene	Not detected	1	0.23	ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1	0.20	ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1	0.23	ug/L	1	75-27-4	
Methyl cyclohexane	Not detected	1	0.21	ug/L	1	108-87-2	
cis-1,3-Dichloropropene	Not detected	1	0.19	ug/L	1	10061-01-5	
Toluene	Not detected	1	0.25	ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1	0.25	ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1	0.28	ug/L	1	79-00-5	
Tetrachloroethene	7	1	0.20	ug/L	1	127-18-4	
Dibromochloromethane	Not detected	1	0.24	ug/L	1	124-48-1	

Lab Sample ID: S97534.08 (continued)

Sample Tag: MW-14-55_120618

Method: SW5030C/8260C, Run Date: 12/11/18 06:20, Analyst: WAT (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chlorobenzene	Not detected	1	0.17	ug/L	1	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	1	0.18	ug/L	1	79-34-5	
Ethylbenzene	Not detected	1	0.26	ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2	0.41	ug/L	1		
o-Xylene	Not detected	1	0.25	ug/L	1	95-47-6	
Styrene	Not detected	1	0.18	ug/L	1	100-42-5	
Isopropylbenzene	Not detected	1	0.25	ug/L	1	98-82-8	
Bromoform	Not detected	1	0.22	ug/L	1	75-25-2	
1,3-Dichlorobenzene	Not detected	1	0.24	ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1	0.23	ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1	0.28	ug/L	1	95-50-1	
1,2,4-Trichlorobenzene	Not detected	1	0.19	ug/L	1	120-82-1	

Lab Sample ID: S97534.09
Sample Tag: MW-03-06_120618
Collected Date/Time: 12/06/2018 09:32
Matrix: Groundwater
COC Reference: 102376

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/10/18 12:30	JML	

Organics - Volatiles

Method: SW5030C/8260C, Run Date: 12/08/18 02:52, Analyst: JGH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromo-3-chloropropane	Not detected	1		ug/L	1	96-12-8	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	

Method: SW8260B - SIM, Run Date: 12/07/18 19:45, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	7	1		ug/L	1	123-91-1	

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/08/18 02:52, Analyst: JGH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
Acetone	Not detected	10		ug/L	1	67-64-1	
Carbon disulfide	Not detected	1		ug/L	1	75-15-0	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	1		ug/L	1	1634-04-4	
2-Butanone (MEK)	Not detected	10		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	1		ug/L	1	75-71-8	
Chloromethane	Not detected	1		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	1		ug/L	1	74-83-9	
Chloroethane	Not detected	1		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	1		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	
Chloroform	Not detected	1		ug/L	1	67-66-3	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	10		ug/L	1	108-10-1	
2-Hexanone	Not detected	10		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	

Lab Sample ID: S97534.09 (continued)
Sample Tag: MW-03-06_120618

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/08/18 02:52, Analyst: JGH (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
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	
Dibromochloromethane	Not detected	1		ug/L	1	124-48-1	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
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	1		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
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	
1,2,4-Trichlorobenzene	Not detected	1		ug/L	1	120-82-1	

Lab Sample ID: S97534.10
Sample Tag: MW-03-05_120618
Collected Date/Time: 12/06/2018 11:12
Matrix: Groundwater
COC Reference: 102376

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/12/18 14:00	JML	

Organics - Volatiles

Method: SW5030C/8260C, Run Date: 12/13/18 08:38, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromo-3-chloropropane	Not detected	1		ug/L	1	96-12-8	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	

Method: SW8260B - SIM, Run Date: 12/11/18 17:08, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/13/18 08:38, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
Acetone	Not detected	10		ug/L	1	67-64-1	
Carbon disulfide	Not detected	1		ug/L	1	75-15-0	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	1		ug/L	1	1634-04-4	
2-Butanone (MEK)	Not detected	10		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	1		ug/L	1	75-71-8	
Chloromethane	Not detected	1		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	1		ug/L	1	74-83-9	
Chloroethane	Not detected	1		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	1		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	
Chloroform	Not detected	1		ug/L	1	67-66-3	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	10		ug/L	1	108-10-1	
2-Hexanone	Not detected	10		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	

Lab Sample ID: S97534.10 (continued)
Sample Tag: MW-03-05_120618

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/13/18 08:38, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
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	
Dibromochloromethane	Not detected	1		ug/L	1	124-48-1	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
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	1		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
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	
1,2,4-Trichlorobenzene	Not detected	1		ug/L	1	120-82-1	

Lab Sample ID: S97534.11
Sample Tag: MW-03-05_120618 MS
Collected Date/Time: 12/06/2018 11:12
Matrix: Groundwater
COC Reference: 102376

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/12/18 14:00	JML	

Organics - Volatiles

Method: SW5030C/8260C, Run Date: 12/13/18 04:53, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromo-3-chloropropane	44	1		ug/L	1	96-12-8	1
1,2-Dibromoethane	50	1		ug/L	1	106-93-4	1

Method: SW8260B - SIM, Run Date: 12/11/18 23:26, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	49	1		ug/L	1	123-91-1	1

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/13/18 04:53, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,1,2-Trichloro-1,2,2-trifluoroethane	48	1		ug/L	1	76-13-1	1
Acetone	44	10		ug/L	1	67-64-1	1
Carbon disulfide	47	1		ug/L	1	75-15-0	1
Methyl Acetate	38	10		ug/L	1	79-20-9	1
tert-Methyl butyl ether (MTBE)	46	1		ug/L	1	1634-04-4	1
2-Butanone (MEK)	43	10		ug/L	1	78-93-3	1
Dichlorodifluoromethane	53	1		ug/L	1	75-71-8	1
Chloromethane	49	1		ug/L	1	74-87-3	1
Vinyl chloride	51	1		ug/L	1	75-01-4	1
Bromomethane	55	1		ug/L	1	74-83-9	1
Chloroethane	48	1		ug/L	1	75-00-3	1
Trichlorofluoromethane	51	1		ug/L	1	75-69-4	1
1,1-Dichloroethene	46	1		ug/L	1	75-35-4	1
Methylene chloride	47	1		ug/L	1	75-09-2	1
trans-1,2-Dichloroethene	48	1		ug/L	1	156-60-5	1
1,1-Dichloroethane	48	1		ug/L	1	75-34-3	1
cis-1,2-Dichloroethene	50	1		ug/L	1	156-59-2	1
Chloroform	49	1		ug/L	1	67-66-3	1
1,1,1-Trichloroethane	50	1		ug/L	1	71-55-6	1
Cyclohexane	48	1		ug/L	1	110-82-7	1
4-Methyl-2-pentanone (MIBK)	44	10		ug/L	1	108-10-1	1
2-Hexanone	43	10		ug/L	1	591-78-6	1
Carbon tetrachloride	53	1		ug/L	1	56-23-5	1
Benzene	50	1		ug/L	1	71-43-2	1
1,2-Dichloroethane	48	1		ug/L	1	107-06-2	1
Trichloroethene	49	1		ug/L	1	79-01-6	1
1,2-Dichloropropane	49	1		ug/L	1	78-87-5	1

1-Spiked at 50ug/L

Lab Sample ID: S97534.11 (continued)
Sample Tag: MW-03-05_120618 MS

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/13/18 04:53, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Bromodichloromethane	49	1		ug/L	1	75-27-4	1
Methyl cyclohexane	46	1		ug/L	1	108-87-2	1
cis-1,3-Dichloropropene	49	1		ug/L	1	10061-01-5	1
Toluene	51	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	49	1		ug/L	1	79-00-5	1
Tetrachloroethene	40	1		ug/L	1	127-18-4	1
Dibromochloromethane	51	1		ug/L	1	124-48-1	1
Chlorobenzene	53	1		ug/L	1	108-90-7	1
1,1,2,2-Tetrachloroethane	49	1		ug/L	1	79-34-5	1
Ethylbenzene	52	1		ug/L	1	100-41-4	1
p,m-Xylene*	106	2		ug/L	1		1
o-Xylene	52	1		ug/L	1	95-47-6	1
Styrene	53	1		ug/L	1	100-42-5	1
Isopropylbenzene	53	1		ug/L	1	98-82-8	1
Bromoform	51	1		ug/L	1	75-25-2	1
1,3-Dichlorobenzene	49	1		ug/L	1	541-73-1	1
1,4-Dichlorobenzene	49	1		ug/L	1	106-46-7	1
1,2-Dichlorobenzene	50	1		ug/L	1	95-50-1	1
1,2,4-Trichlorobenzene	48	1		ug/L	1	120-82-1	1

1-Spiked at 50ug/L

Lab Sample ID: S97534.12
Sample Tag: MW-03-05_120618 MSD
Collected Date/Time: 12/06/2018 11:12
Matrix: Groundwater
COC Reference: 102376

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/12/18 14:00	JML	

Organics - Volatiles

Method: SW5030C/8260C, Run Date: 12/13/18 05:11, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromo-3-chloropropane	47	1		ug/L	1	96-12-8	1
1,2-Dibromoethane	52	1		ug/L	1	106-93-4	1

Method: SW8260B - SIM, Run Date: 12/11/18 23:46, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	43	1		ug/L	1	123-91-1	1

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/13/18 05:11, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,1,2-Trichloro-1,2,2-trifluoroethane	52	1		ug/L	1	76-13-1	1
Acetone	44	10		ug/L	1	67-64-1	1
Carbon disulfide	50	1		ug/L	1	75-15-0	1
Methyl Acetate	39	10		ug/L	1	79-20-9	1
tert-Methyl butyl ether (MTBE)	48	1		ug/L	1	1634-04-4	1
2-Butanone (MEK)	43	10		ug/L	1	78-93-3	1
Dichlorodifluoromethane	57	1		ug/L	1	75-71-8	1
Chloromethane	51	1		ug/L	1	74-87-3	1
Vinyl chloride	52	1		ug/L	1	75-01-4	1
Bromomethane	57	1		ug/L	1	74-83-9	1
Chloroethane	50	1		ug/L	1	75-00-3	1
Trichlorofluoromethane	53	1		ug/L	1	75-69-4	1
1,1-Dichloroethene	48	1		ug/L	1	75-35-4	1
Methylene chloride	49	1		ug/L	1	75-09-2	1
trans-1,2-Dichloroethene	50	1		ug/L	1	156-60-5	1
1,1-Dichloroethane	50	1		ug/L	1	75-34-3	1
cis-1,2-Dichloroethene	51	1		ug/L	1	156-59-2	1
Chloroform	51	1		ug/L	1	67-66-3	1
1,1,1-Trichloroethane	52	1		ug/L	1	71-55-6	1
Cyclohexane	51	1		ug/L	1	110-82-7	1
4-Methyl-2-pentanone (MIBK)	47	10		ug/L	1	108-10-1	1
2-Hexanone	45	10		ug/L	1	591-78-6	1
Carbon tetrachloride	56	1		ug/L	1	56-23-5	1
Benzene	52	1		ug/L	1	71-43-2	1
1,2-Dichloroethane	51	1		ug/L	1	107-06-2	1
Trichloroethene	52	1		ug/L	1	79-01-6	1
1,2-Dichloropropane	53	1		ug/L	1	78-87-5	1

1-Spiked at 50ug/L

Lab Sample ID: S97534.12 (continued)
Sample Tag: MW-03-05_120618 MSD

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/13/18 05:11, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Bromodichloromethane	52	1		ug/L	1	75-27-4	1
Methyl cyclohexane	51	1		ug/L	1	108-87-2	1
cis-1,3-Dichloropropene	52	1		ug/L	1	10061-01-5	1
Toluene	54	1		ug/L	1	108-88-3	1
trans-1,3-Dichloropropene	51	1		ug/L	1	10061-02-6	1
1,1,2-Trichloroethane	52	1		ug/L	1	79-00-5	1
Tetrachloroethene	42	1		ug/L	1	127-18-4	1
Dibromochloromethane	54	1		ug/L	1	124-48-1	1
Chlorobenzene	54	1		ug/L	1	108-90-7	1
1,1,2,2-Tetrachloroethane	52	1		ug/L	1	79-34-5	1
Ethylbenzene	54	1		ug/L	1	100-41-4	1
p,m-Xylene*	109	2		ug/L	1		1
o-Xylene	54	1		ug/L	1	95-47-6	1
Styrene	55	1		ug/L	1	100-42-5	1
Isopropylbenzene	56	1		ug/L	1	98-82-8	1
Bromoform	53	1		ug/L	1	75-25-2	1
1,3-Dichlorobenzene	52	1		ug/L	1	541-73-1	1
1,4-Dichlorobenzene	52	1		ug/L	1	106-46-7	1
1,2-Dichlorobenzene	53	1		ug/L	1	95-50-1	1
1,2,4-Trichlorobenzene	51	1		ug/L	1	120-82-1	1

1-Spiked at 50ug/L

Lab Sample ID: S97534.13
Sample Tag: MW-12-12_120618
Collected Date/Time: 12/06/2018 13:27
Matrix: Groundwater
COC Reference: 102376

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	125ml Plastic	HNO3	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion	Completed	SW3015A	12/14/18 13:45	CCM	
Metal Digestion	Completed	SW3015A	12/14/18 13:45	CCM	

Metals

Method: SW6020A, Run Date: 12/14/18 15:43, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	Not detected	0.002		mg/L	5	7440-38-2	
Chromium	0.010	0.005		mg/L	5	7440-47-3	
Copper	0.006	0.005		mg/L	5	7440-50-8	
Lead	0.004	0.003		mg/L	5	7439-92-1	
Nickel	0.016	0.005		mg/L	5	7440-02-0	
Vanadium	0.008	0.005		mg/L	5	7440-62-2	

Method: SW6020A, Run Date: 12/14/18 15:44, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic, Dissolved	Not detected	0.002		mg/L	5	7440-38-2	
Chromium, Dissolved	Not detected	0.005		mg/L	5	7440-47-3	
Copper, Dissolved	Not detected	0.005		mg/L	5	7440-50-8	
Lead, Dissolved	Not detected	0.003		mg/L	5	7439-92-1	
Nickel, Dissolved	Not detected	0.005		mg/L	5	7440-02-0	
Vanadium, Dissolved	Not detected	0.005		mg/L	5	7440-62-2	

Lab Sample ID: S97534.14
Sample Tag: MW-12-13_120618
Collected Date/Time: 12/06/2018 14:47
Matrix: Groundwater
COC Reference: 102376

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125ml Plastic	HNO3	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion	Completed	SW3015A	12/14/18 13:45	CCM	

Metals

Method: SW6020A, Run Date: 12/14/18 15:46, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	Not detected	0.002		mg/L	5	7440-38-2	
Chromium	Not detected	0.005		mg/L	5	7440-47-3	
Copper	Not detected	0.005		mg/L	5	7440-50-8	
Lead	Not detected	0.003		mg/L	5	7439-92-1	
Nickel	0.009	0.005		mg/L	5	7440-02-0	
Vanadium	Not detected	0.005		mg/L	5	7440-62-2	

Lab Sample ID: S97534.15
Sample Tag: MW-18-90_120618
Collected Date/Time: 12/06/2018 10:45
Matrix: Groundwater
COC Reference: 120373

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.4	IR
1	1L Plastic	None	Yes	3.4	IR
1	500ml Plastic	None	Yes	3.4	IR
1	40ml Glass	H2SO4	Yes	3.4	IR
1	250ml Plastic	H2SO4	Yes	3.4	IR
1	125ml Plastic	NaOH	Yes	3.4	IR
2	125ml Plastic	HNO3	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
TBOD5 - Set*	Completed	HACH 10360	12/08/18 10:30	ASB	
pH check for VOCs*	<2	N/A	12/10/18 12:30	JML	
Metal Digestion	Completed	SW3015A	12/18/18 09:00	JRH	
Metal Digestion	Completed	SW3015A	12/18/18 09:00	JRH	

Inorganics

Method: E300.0, Run Date: 12/07/18 11:29, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chloride	Not detected	10	0.38	mg/L	10	16887-00-6	
Nitrate-N	Not detected	0.5	0.07	mg/L	10	14797-55-8	
Nitrite-N	Not detected	0.5	0.08	mg/L	10	14797-65-0	
Sulfate	10	10	0.42	mg/L	10	14808-79-8	

Method: E365.3, Run Date: 12/19/18 17:22, Analyst: MJC

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Phosphate*	Not detected	0.1	0.01	mg/L	1		

Method: E410.4, Run Date: 12/13/18 13:14, Analyst: MJC

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
COD	22	10	6	mg/L	1		

Method: HACH 10360, Run Date: 12/13/18 10:18, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
TBOD5*	Not detected	3		mg/L	1.5		

Method: SM2540C, Run Date: 12/10/18 19:15, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Dissolved Solids	606	20		mg/L	2		

Method: SM2540D, Run Date: 12/10/18 18:00, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Suspended Solids	Not detected	3		mg/L	1		

Lab Sample ID: S97534.15 (continued)
Sample Tag: MW-18-90_120618

Method: SM4500-S2 D, Run Date: 12/07/18 13:20, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	Not detected	0.04	0.006	mg/L	2	18496-25-8	

Method: SM5310C, Run Date: 12/11/18 14:32, Analyst: JKB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
TOC	3.9	1		mg/L	1		

Alkalinity, Method: SM2320B, Run Date: 12/10/18 13:16, Analyst: JKB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Alkalinity as CaCO3	604	2		mg/L	2		
Bicarbonate Alkalinity as CaCO3	Not detected	2		mg/L	2		
Carbonate Alkalinity as CaCO3	76	2		mg/L	2		

Metals

Method: SW6020A, Run Date: 12/18/18 12:37, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Aluminum	1.25	0.010		mg/L	5	7429-90-5	
Arsenic	Not detected	0.002		mg/L	5	7440-38-2	
Barium	0.192	0.005		mg/L	5	7440-39-3	
Chromium	Not detected	0.005		mg/L	5	7440-47-3	
Cobalt	Not detected	0.005		mg/L	5	7440-48-4	
Copper	Not detected	0.005		mg/L	5	7440-50-8	
Iron	0.08	0.02		mg/L	5	7439-89-6	
Lead	Not detected	0.003		mg/L	5	7439-92-1	
Manganese	0.043	0.005		mg/L	5	7439-96-5	
Nickel	0.005	0.005		mg/L	5	7440-02-0	
Selenium	Not detected	0.004		mg/L	5	7782-49-2	
Vanadium	Not detected	0.005		mg/L	5	7440-62-2	
Zinc	Not detected	0.005		mg/L	5	7440-66-6	

Method: SW6020A, Run Date: 12/18/18 12:41, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Aluminum, Dissolved	1.16	0.010		mg/L	5	7429-90-5	
Arsenic, Dissolved	Not detected	0.002		mg/L	5	7440-38-2	
Barium, Dissolved	0.196	0.005		mg/L	5	7440-39-3	
Chromium, Dissolved	Not detected	0.005		mg/L	5	7440-47-3	
Cobalt, Dissolved	Not detected	0.005		mg/L	5	7440-48-4	
Copper, Dissolved	Not detected	0.005		mg/L	5	7440-50-8	
Iron, Dissolved	0.03	0.02		mg/L	5	7439-89-6	
Lead, Dissolved	Not detected	0.003		mg/L	5	7439-92-1	
Manganese, Dissolved	Not detected	0.005		mg/L	5	7439-96-5	
Nickel, Dissolved	0.006	0.005		mg/L	5	7440-02-0	
Selenium, Dissolved	Not detected	0.004		mg/L	5	7782-49-2	
Vanadium, Dissolved	Not detected	0.005		mg/L	5	7440-62-2	
Zinc, Dissolved	Not detected	0.005		mg/L	5	7440-66-6	

Method: SW6020A, Run Date: 12/19/18 11:06, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium, Dissolved	232	2.5		mg/L	5	7440-70-2	
Magnesium, Dissolved	Not detected	2.5		mg/L	5	7439-95-4	
Potassium, Dissolved	25.8	2.5		mg/L	5	7440-09-7	

Lab Sample ID: S97534.15 (continued)
Sample Tag: MW-18-90_120618

Method: SW6020A, Run Date: 12/19/18 11:06, Analyst: JRH (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sodium, Dissolved	27.3	2.5		mg/L	5	7440-23-5	

Method: SW6020A, Run Date: 12/19/18 11:16, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium	216	2.5		mg/L	5	7440-70-2	
Magnesium	Not detected	2.5		mg/L	5	7439-95-4	
Potassium	24.1	2.5		mg/L	5	7440-09-7	
Sodium	25.5	2.5		mg/L	5	7440-23-5	

Organics - Volatiles

Method: SW5030C/8260C, Run Date: 12/08/18 03:11, Analyst: JGH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromo-3-chloropropane	Not detected	1		ug/L	1	96-12-8	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
Acetone	Not detected	10		ug/L	1	67-64-1	
Carbon disulfide	Not detected	1		ug/L	1	75-15-0	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	1		ug/L	1	1634-04-4	
2-Butanone (MEK)	Not detected	10		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	1		ug/L	1	75-71-8	
Chloromethane	Not detected	1		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	1		ug/L	1	74-83-9	
Chloroethane	Not detected	1		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	1		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	
Chloroform	Not detected	1		ug/L	1	67-66-3	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	10		ug/L	1	108-10-1	
2-Hexanone	Not detected	10		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	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
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	
Dibromochloromethane	Not detected	1		ug/L	1	124-48-1	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	

Lab Sample ID: S97534.15 (continued)

Sample Tag: MW-18-90_120618

Method: SW5030C/8260C, Run Date: 12/08/18 03:11, Analyst: JGH (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
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	1		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
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	
1,2,4-Trichlorobenzene	Not detected	1		ug/L	1	120-82-1	

Lab Sample ID: S97534.16
Sample Tag: MW-18-91_120618
Collected Date/Time: 12/06/2018 12:15
Matrix: Groundwater
COC Reference: 120373

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.4	IR
1	1L Plastic	None	Yes	3.4	IR
1	500ml Plastic	None	Yes	3.4	IR
2	40ml Glass	H2SO4	Yes	3.4	IR
1	250ml Plastic	H2SO4	Yes	3.4	IR
1	125ml Plastic	NaOH	Yes	3.4	IR
2	125ml Plastic	HNO3	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
TBOD5 - Set*	Completed	HACH 10360	12/08/18 10:30	ASB	
pH check for VOCs*	<2	N/A	12/10/18 12:30	JML	
Metal Digestion	Completed	SW3015A	12/18/18 09:00	JRH	
Metal Digestion	Completed	SW3015A	12/18/18 09:00	JRH	

Inorganics

Method: E300.0, Run Date: 12/07/18 11:42, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chloride	25	10	0.38	mg/L	10	16887-00-6	
Nitrate-N	Not detected	0.5	0.07	mg/L	10	14797-55-8	
Nitrite-N	Not detected	0.5	0.08	mg/L	10	14797-65-0	
Sulfate	31	10	0.42	mg/L	10	14808-79-8	

Method: E365.3, Run Date: 12/19/18 17:26, Analyst: MJC

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Phosphate*	0.2	0.1	0.01	mg/L	1		

Method: E410.4, Run Date: 12/13/18 13:14, Analyst: MJC

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
COD	25	10	6	mg/L	1		

Method: HACH 10360, Run Date: 12/13/18 10:18, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
TBOD5*	Not detected	3		mg/L	1.5		

Method: SM2540C, Run Date: 12/10/18 19:15, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Dissolved Solids	386	20		mg/L	2		

Method: SM2540D, Run Date: 12/10/18 18:00, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Suspended Solids	9	3		mg/L	1		

Lab Sample ID: S97534.16 (continued)
Sample Tag: MW-18-91_120618

Method: SM4500-S2 D, Run Date: 12/07/18 13:22, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	Not detected	0.04	0.006	mg/L	2	18496-25-8	

Method: SM5310C, Run Date: 12/11/18 14:55, Analyst: JKB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
TOC	7.0	1		mg/L	1		

Alkalinity, Method: SM2320B, Run Date: 12/10/18 13:18, Analyst: JKB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Alkalinity as CaCO3	302	2		mg/L	2		
Bicarbonate Alkalinity as CaCO3	302	2		mg/L	2		
Carbonate Alkalinity as CaCO3	Not detected	2		mg/L	2		

Metals

Method: SW6020A, Run Date: 12/18/18 12:45, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Aluminum	0.100	0.010		mg/L	5	7429-90-5	
Arsenic	0.011	0.002		mg/L	5	7440-38-2	
Barium	0.098	0.005		mg/L	5	7440-39-3	
Chromium	Not detected	0.005		mg/L	5	7440-47-3	
Cobalt	Not detected	0.005		mg/L	5	7440-48-4	
Copper	Not detected	0.005		mg/L	5	7440-50-8	
Iron	1.93	0.02		mg/L	5	7439-89-6	
Lead	Not detected	0.003		mg/L	5	7439-92-1	
Manganese	1.23	0.005		mg/L	5	7439-96-5	
Nickel	0.008	0.005		mg/L	5	7440-02-0	
Selenium	Not detected	0.004		mg/L	5	7782-49-2	
Vanadium	Not detected	0.005		mg/L	5	7440-62-2	
Zinc	Not detected	0.005		mg/L	5	7440-66-6	

Method: SW6020A, Run Date: 12/18/18 12:49, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Aluminum, Dissolved	0.015	0.010		mg/L	5	7429-90-5	
Arsenic, Dissolved	0.004	0.002		mg/L	5	7440-38-2	
Barium, Dissolved	0.088	0.005		mg/L	5	7440-39-3	
Chromium, Dissolved	Not detected	0.005		mg/L	5	7440-47-3	
Cobalt, Dissolved	Not detected	0.005		mg/L	5	7440-48-4	
Copper, Dissolved	Not detected	0.005		mg/L	5	7440-50-8	
Iron, Dissolved	0.46	0.02		mg/L	5	7439-89-6	
Lead, Dissolved	Not detected	0.003		mg/L	5	7439-92-1	
Manganese, Dissolved	1.15	0.005		mg/L	5	7439-96-5	
Nickel, Dissolved	0.006	0.005		mg/L	5	7440-02-0	
Selenium, Dissolved	Not detected	0.004		mg/L	5	7782-49-2	
Vanadium, Dissolved	Not detected	0.005		mg/L	5	7440-62-2	
Zinc, Dissolved	Not detected	0.005		mg/L	5	7440-66-6	

Method: SW6020A, Run Date: 12/19/18 11:09, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium	55.5	2.5		mg/L	5	7440-70-2	
Magnesium	12.2	2.5		mg/L	5	7439-95-4	
Potassium	10.4	2.5		mg/L	5	7440-09-7	

Lab Sample ID: S97534.16 (continued)
Sample Tag: MW-18-91_120618

Method: SW6020A, Run Date: 12/19/18 11:09, Analyst: JRH (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sodium	85.9	2.5		mg/L	5	7440-23-5	

Method: SW6020A, Run Date: 12/19/18 11:11, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium, Dissolved	57.8	2.5		mg/L	5	7440-70-2	
Magnesium, Dissolved	12.2	2.5		mg/L	5	7439-95-4	
Potassium, Dissolved	10.0	2.5		mg/L	5	7440-09-7	
Sodium, Dissolved	81.2	2.5		mg/L	5	7440-23-5	

Organics - Volatiles

Method: SW5030C/8260C, Run Date: 12/08/18 03:30, Analyst: JGH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromo-3-chloropropane	Not detected	1		ug/L	1	96-12-8	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
Acetone	Not detected	10		ug/L	1	67-64-1	
Carbon disulfide	Not detected	1		ug/L	1	75-15-0	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	1		ug/L	1	1634-04-4	
2-Butanone (MEK)	Not detected	10		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	1		ug/L	1	75-71-8	
Chloromethane	Not detected	1		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	1		ug/L	1	74-83-9	
Chloroethane	Not detected	1		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	1		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	
Chloroform	Not detected	1		ug/L	1	67-66-3	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	10		ug/L	1	108-10-1	
2-Hexanone	Not detected	10		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	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
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	
Dibromochloromethane	Not detected	1		ug/L	1	124-48-1	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	

Lab Sample ID: S97534.16 (continued)

Sample Tag: MW-18-91_120618

Method: SW5030C/8260C, Run Date: 12/08/18 03:30, Analyst: JGH (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
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	1		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
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	
1,2,4-Trichlorobenzene	Not detected	1		ug/L	1	120-82-1	

Lab Sample ID: S97534.17
Sample Tag: CH-14-RO_120618
Collected Date/Time: 12/06/2018 14:40
Matrix: Groundwater
COC Reference: 120373

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.4	IR
1	1L Plastic	None	Yes	3.4	IR
1	125ml Plastic	None	Yes	3.4	IR
2	40ml Glass	H2SO4	Yes	3.4	IR
1	250ml Plastic	H2SO4	Yes	3.4	IR
1	125ml Plastic	NaOH	Yes	3.4	IR
3	125ml Plastic	HNO3	Yes	3.4	IR
1	500ml Plastic	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
TBOD5 - Set*	Completed	HACH 10360	12/08/18 10:30	ASB	
pH check for VOCs*	<2	N/A	12/10/18 12:30	JML	
Metal Digestion	Completed	SW3015A	12/18/18 09:00	JRH	
Metal Digestion	Completed	SW3015A	12/18/18 09:00	JRH	

Inorganics

Method: E300.0, Run Date: 12/07/18 11:55, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chloride	Not detected	10	0.38	mg/L	10	16887-00-6	
Nitrate-N	8.2	0.5	0.07	mg/L	10	14797-55-8	
Nitrite-N	Not detected	0.5	0.08	mg/L	10	14797-65-0	
Sulfate	80	10	0.42	mg/L	10	14808-79-8	

Method: E365.3, Run Date: 12/19/18 17:30, Analyst: MJC

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Phosphate*	Not detected	0.1	0.01	mg/L	1		

Method: E410.4, Run Date: 12/13/18 13:15, Analyst: MJC

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
COD	14	10	6	mg/L	1		

Method: HACH 10360, Run Date: 12/13/18 10:18, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
TBOD5*	Not detected	3		mg/L	1.5		

Method: SM2540C, Run Date: 12/10/18 19:15, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Dissolved Solids	480	20		mg/L	2		

Method: SM2540D, Run Date: 12/10/18 18:00, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Suspended Solids	Not detected	3		mg/L	1		

Lab Sample ID: S97534.17 (continued)
Sample Tag: CH-14-RO_120618

Method: SM3500-Cr B, Run Date: 12/07/18 13:20, Analyst: JKB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chromium VI	6.68	0.25		mg/L	25	18540-29-9	

Method: SM4500-S2 D, Run Date: 12/07/18 13:24, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	Not detected	0.04	0.006	mg/L	2	18496-25-8	

Method: SM5310C, Run Date: 12/11/18 15:29, Analyst: JKB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
TOC	2.2	1		mg/L	1		

Alkalinity, Method: SM2320B, Run Date: 12/10/18 13:20, Analyst: JKB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Alkalinity as CaCO3	306	2		mg/L	2		
Bicarbonate Alkalinity as CaCO3	306	2		mg/L	2		
Carbonate Alkalinity as CaCO3	Not detected	2		mg/L	2		

Metals

Method: SW6020A, Run Date: 12/18/18 12:53, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Aluminum	0.025	0.010		mg/L	5	7429-90-5	
Arsenic	Not detected	0.002		mg/L	5	7440-38-2	
Barium	0.050	0.005		mg/L	5	7440-39-3	
Chromium	7.23	0.005		mg/L	5	7440-47-3	
Cobalt	Not detected	0.005		mg/L	5	7440-48-4	
Copper	Not detected	0.005		mg/L	5	7440-50-8	
Iron	0.10	0.02		mg/L	5	7439-89-6	
Lead	Not detected	0.003		mg/L	5	7439-92-1	
Manganese	0.007	0.005		mg/L	5	7439-96-5	
Nickel	0.014	0.005		mg/L	5	7440-02-0	
Selenium	Not detected	0.004		mg/L	5	7782-49-2	
Vanadium	Not detected	0.005		mg/L	5	7440-62-2	
Zinc	Not detected	0.005		mg/L	5	7440-66-6	

Method: SW6020A, Run Date: 12/18/18 12:57, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Aluminum, Dissolved	0.020	0.010		mg/L	5	7429-90-5	
Arsenic, Dissolved	Not detected	0.002		mg/L	5	7440-38-2	
Barium, Dissolved	0.048	0.005		mg/L	5	7440-39-3	
Chromium, Dissolved	7.04	0.005		mg/L	5	7440-47-3	
Cobalt, Dissolved	Not detected	0.005		mg/L	5	7440-48-4	
Copper, Dissolved	Not detected	0.005		mg/L	5	7440-50-8	
Iron, Dissolved	Not detected	0.02		mg/L	5	7439-89-6	
Lead, Dissolved	Not detected	0.003		mg/L	5	7439-92-1	
Manganese, Dissolved	0.007	0.005		mg/L	5	7439-96-5	
Nickel, Dissolved	0.014	0.005		mg/L	5	7440-02-0	
Selenium, Dissolved	0.004	0.004		mg/L	5	7782-49-2	
Vanadium, Dissolved	Not detected	0.005		mg/L	5	7440-62-2	
Zinc, Dissolved	Not detected	0.005		mg/L	5	7440-66-6	

Lab Sample ID: S97534.17 (continued)
Sample Tag: CH-14-RO_120618

Method: SW6020A, Run Date: 12/19/18 11:18, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium	100	2.5		mg/L	5	7440-70-2	
Magnesium	34.6	2.5		mg/L	5	7439-95-4	
Potassium	Not detected	2.5		mg/L	5	7440-09-7	
Sodium	37.9	2.5		mg/L	5	7440-23-5	

Method: SW6020A, Run Date: 12/19/18 11:21, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium, Dissolved	98.2	2.5		mg/L	5	7440-70-2	
Magnesium, Dissolved	32.4	2.5		mg/L	5	7439-95-4	
Potassium, Dissolved	Not detected	2.5		mg/L	5	7440-09-7	
Sodium, Dissolved	35.7	2.5		mg/L	5	7440-23-5	

Organics - Volatiles

Method: SW5030C/8260C, Run Date: 12/08/18 03:49, Analyst: JGH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromo-3-chloropropane	Not detected	1		ug/L	1	96-12-8	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
Acetone	Not detected	10		ug/L	1	67-64-1	
Carbon disulfide	Not detected	1		ug/L	1	75-15-0	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	1		ug/L	1	1634-04-4	
2-Butanone (MEK)	Not detected	10		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	1		ug/L	1	75-71-8	
Chloromethane	Not detected	1		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	1		ug/L	1	74-83-9	
Chloroethane	Not detected	1		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	1		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	
Chloroform	Not detected	1		ug/L	1	67-66-3	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	10		ug/L	1	108-10-1	
2-Hexanone	Not detected	10		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	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
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	

Lab Sample ID: S97534.17 (continued)
Sample Tag: CH-14-RO_120618

Method: SW5030C/8260C, Run Date: 12/08/18 03:49, Analyst: JGH (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Dibromochloromethane	Not detected	1		ug/L	1	124-48-1	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
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	1		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
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	
1,2,4-Trichlorobenzene	Not detected	1		ug/L	1	120-82-1	

Lab Sample ID: S97534.18
Sample Tag: Dup-04
Collected Date/Time: 12/06/2018 14:40
Matrix: Groundwater
COC Reference: 120373

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125ml Plastic	HNO3	Yes	3.4	IR
1	125ml Plastic	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion	Completed	SW3015A	12/14/18 13:45	CCM	

Inorganics

Method: SM3500-Cr B, Run Date: 12/07/18 13:30, Analyst: JKB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chromium VI	6.60	0.25		mg/L	25	18540-29-9	

Metals

Method: SW6020A, Run Date: 12/14/18 15:57, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chromium	6.89	0.005		mg/L	50	7440-47-3	

Method: SW6020A, Run Date: 12/14/18 15:48, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	Not detected	0.002		mg/L	5	7440-38-2	
Copper	Not detected	0.005		mg/L	5	7440-50-8	
Lead	Not detected	0.003		mg/L	5	7439-92-1	
Nickel	0.014	0.005		mg/L	5	7440-02-0	
Vanadium	Not detected	0.005		mg/L	5	7440-62-2	

Lab Sample ID: S97534.19
Sample Tag: UNK-10_120618
Collected Date/Time: 12/06/2018 09:35
Matrix: Groundwater
COC Reference: 120373

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/10/18 12:30	JML	

Organics - Volatiles

Method: SW5030C/8260C, Run Date: 12/08/18 04:08, Analyst: JGH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromo-3-chloropropane	Not detected	1		ug/L	1	96-12-8	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
Acetone	Not detected	10		ug/L	1	67-64-1	
Carbon disulfide	Not detected	1		ug/L	1	75-15-0	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	1		ug/L	1	1634-04-4	
2-Butanone (MEK)	Not detected	10		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	1		ug/L	1	75-71-8	
Chloromethane	Not detected	1		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	1		ug/L	1	74-83-9	
Chloroethane	Not detected	1		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	1		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	
Chloroform	Not detected	1		ug/L	1	67-66-3	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	10		ug/L	1	108-10-1	
2-Hexanone	Not detected	10		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	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
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	
Dibromochloromethane	Not detected	1		ug/L	1	124-48-1	

Lab Sample ID: S97534.19 (continued)

Sample Tag: UNK-10_120618

Method: SW5030C/8260C, Run Date: 12/08/18 04:08, Analyst: JGH (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
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	1		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
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	
1,2,4-Trichlorobenzene	Not detected	1		ug/L	1	120-82-1	

Lab Sample ID: S97534.20
Sample Tag: EB-03_120618
Collected Date/Time: 12/06/2018 09:45
Matrix: Groundwater
COC Reference: 120373

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125ml Plastic	HNO3	Yes	3.4	IR
3	40ml Glass	HCL	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/10/18 12:30	JML	
Metal Digestion	Completed	SW3015A	12/14/18 13:45	CCM	

Metals

Method: SW6020A, Run Date: 12/14/18 15:33, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	Not detected	0.002		mg/L	2	7440-38-2	
Chromium	Not detected	0.005		mg/L	2	7440-47-3	
Copper	Not detected	0.005		mg/L	2	7440-50-8	
Lead	Not detected	0.003		mg/L	2	7439-92-1	
Nickel	Not detected	0.005		mg/L	2	7440-02-0	
Vanadium	Not detected	0.005		mg/L	2	7440-62-2	

Organics - Volatiles

Method: SW5030C/8260C, Run Date: 12/08/18 04:27, Analyst: JGH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromo-3-chloropropane	Not detected	1		ug/L	1	96-12-8	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
Acetone	Not detected	10		ug/L	1	67-64-1	
Carbon disulfide	Not detected	1		ug/L	1	75-15-0	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	1		ug/L	1	1634-04-4	
2-Butanone (MEK)	Not detected	10		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	1		ug/L	1	75-71-8	
Chloromethane	Not detected	1		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	1		ug/L	1	74-83-9	
Chloroethane	Not detected	1		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	1		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	
Chloroform	Not detected	1		ug/L	1	67-66-3	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	10		ug/L	1	108-10-1	
2-Hexanone	Not detected	10		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	

Lab Sample ID: S97534.20 (continued)
Sample Tag: EB-03_120618

Method: SW5030C/8260C, Run Date: 12/08/18 04:27, Analyst: JGH (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
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	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
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	
Dibromochloromethane	Not detected	1		ug/L	1	124-48-1	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
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	1		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
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	
1,2,4-Trichlorobenzene	Not detected	1		ug/L	1	120-82-1	

Lab Sample ID: S97534.21
Sample Tag: MW-22_120618
Collected Date/Time: 12/06/2018 14:00
Matrix: Groundwater
COC Reference: 120373

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	125ml Plastic	HNO3	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion	Completed	SW3015A	12/14/18 13:45	CCM	
Metal Digestion	Completed	SW3015A	12/14/18 13:45	CCM	

Metals

Method: SW6020A, Run Date: 12/14/18 15:55, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	0.003	0.002		mg/L	5	7440-38-2	
Chromium	Not detected	0.005		mg/L	5	7440-47-3	
Copper	Not detected	0.005		mg/L	5	7440-50-8	
Lead	Not detected	0.003		mg/L	5	7439-92-1	
Nickel	0.013	0.005		mg/L	5	7440-02-0	
Vanadium	Not detected	0.005		mg/L	5	7440-62-2	

Method: SW6020A, Run Date: 12/18/18 13:01, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic, Dissolved	Not detected	0.002		mg/L	5	7440-38-2	
Chromium, Dissolved	Not detected	0.005		mg/L	5	7440-47-3	
Copper, Dissolved	Not detected	0.005		mg/L	5	7440-50-8	
Lead, Dissolved	Not detected	0.003		mg/L	5	7439-92-1	
Nickel, Dissolved	Not detected	0.005		mg/L	5	7440-02-0	
Vanadium, Dissolved	Not detected	0.005		mg/L	5	7440-62-2	

Lab Sample ID: S97534.22
Sample Tag: MW-14-65_120618
Collected Date/Time: 12/06/2018 15:00
Matrix: Groundwater
COC Reference: 120373

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/10/18 12:30	JML	

Organics - Volatiles

Method: SW5030C/8260C, Run Date: 12/08/18 04:46, Analyst: JGH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromo-3-chloropropane	Not detected	1		ug/L	1	96-12-8	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
Acetone	Not detected	10		ug/L	1	67-64-1	
Carbon disulfide	Not detected	1		ug/L	1	75-15-0	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	1		ug/L	1	1634-04-4	
2-Butanone (MEK)	Not detected	10		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	1		ug/L	1	75-71-8	
Chloromethane	Not detected	1		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	1		ug/L	1	74-83-9	
Chloroethane	Not detected	1		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	1		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	
Chloroform	Not detected	1		ug/L	1	67-66-3	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	10		ug/L	1	108-10-1	
2-Hexanone	Not detected	10		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	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
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	
Dibromochloromethane	Not detected	1		ug/L	1	124-48-1	

Lab Sample ID: S97534.22 (continued)

Sample Tag: MW-14-65_120618

Method: SW5030C/8260C, Run Date: 12/08/18 04:46, Analyst: JGH (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
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	1		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
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	
1,2,4-Trichlorobenzene	Not detected	1		ug/L	1	120-82-1	

Lab Sample ID: S97534.23
Sample Tag: Trip Blank
Collected Date/Time: 12/06/2018 00:01
Matrix: Water
COC Reference: 120373

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/10/18 12:30	JML	

Organics - Volatiles

Method: SW5030C/8260C, Run Date: 12/08/18 01:54, Analyst: JGH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromo-3-chloropropane	Not detected	1		ug/L	1	96-12-8	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
Acetone	Not detected	10		ug/L	1	67-64-1	
Carbon disulfide	Not detected	1		ug/L	1	75-15-0	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	1		ug/L	1	1634-04-4	
2-Butanone (MEK)	Not detected	10		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	1		ug/L	1	75-71-8	
Chloromethane	Not detected	1		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	1		ug/L	1	74-83-9	
Chloroethane	Not detected	1		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	1		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	
Chloroform	Not detected	1		ug/L	1	67-66-3	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	10		ug/L	1	108-10-1	
2-Hexanone	Not detected	10		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	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
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	
Dibromochloromethane	Not detected	1		ug/L	1	124-48-1	

Lab Sample ID: S97534.23 (continued)

Sample Tag: Trip Blank

Method: SW5030C/8260C, Run Date: 12/08/18 01:54, Analyst: JGH (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
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	1		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
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	
1,2,4-Trichlorobenzene	Not detected	1		ug/L	1	120-82-1	

Merit Laboratories Login Checklist

Lab Set ID: S97534
Client: ARCADIS_NOVI (ARCADIS U.S., Inc.)
Project: B0064479.2018.00603 / RACER Lansing
Submitted: 12/07/2018 08:15 Login User: MMC

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

Phone: 734-585-7817 FAX: 248-994-2241
Email: christine.gregg@arcadis.com

Selection				Description	Note
Sample Receiving					
01.	[X] Yes	[ ] No	[ ] N/A	Samples are received at 4C +/- 2C Thermometer #	IR 3.4
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.	[ ] Yes	[X] No	[ ] N/A	COC adequately filled out	MS/MSD not marked
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.	[X] Yes	[ ] No	[ ] 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	[ ] No	[X] 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 Bottle Preservation Check

Lab Set ID: S97534 Initials: MMC

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

Project: B0064479.2018.00603 / RACER Lansing

Submitted: 12/07/2018 08:15 Login User:

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

Phone: 734-585-7817 FAX: 248-994-2241
Email: christine.gregg@arcadis.com

Lab ID	125 ml Plastic HNO_3	250 ml Plastic HNO_3	1 L Plastic HNO_3	250 ml Plastic H_2SO_4	125 ml Amber H_2SO_4	32 oz Glass HCl	125 ml Plastic NaOH	125 ml Amber $PbCO_3$ NaOH	pH					Notes
									<2	>12	other	ml add	new pH	
S97534.13	X								X					
S97534.13	X								X					
S97534.14	X								X					
S97534.15	X								X					
S97534.15	X								X					
S97534.15				X					X					
S97534.15							X			X				
S97534.16	X								X					
S97534.16	X								X					
S97534.16				X					X					
S97534.16							X			X				
S97534.17	X								X					
S97534.17	X								X					
S97534.17	X								X					
S97534.17				X					X					
S97534.17							X			X				
S97534.18	X								X					
S97534.20	X								X					
S97534.21	X								X					
S97534.21	X								X					

Prepared by Merit Laboratories

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 2

102376

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME: Christene Gregg
COMPANY: Arcadis
ADDRESS: 28550 Cabot Dr, Ste 500
CITY: Novi STATE: MI ZIP CODE: 48377
PHONE NO.: 248-994-2295 FAX NO.:
E-MAIL ADDRESS: christine.gregge@arcadis.com
P.O. NO.:
QUOTE NO.:

INVOICE TO

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

PROJECT NO./NAME: 30064479.2018 / Racer Lansing
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Jake Pisalnieniuw

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	VOCs (8260)	1,4 Dioxane (8270D) SIM	Total Select Metals	Dissolved Select Metals	Special Instructions
97534.01	12-6-18	0930	MW-12-09_120618	GW	3		3							X			
.02	12-6-18	1045	MW-14-56_120618	GW	3		3							X			
.03	12-6-18	1200	MW-14-57_120618	GW	3		3						X	X			
.04	12-6-18	0930	MW-16-75_120618	GW	3		3						X	X			
.05	12-6-18	1105	MW-16-77_120618	GW	3		3						X	X			
.06	12-6-18	1205	MW-16-74_120618	GW	3		3						X	X			
.07	12-6-18	1350	~~DUP~~ P2-SB-20_120618	GW	3		3							X			
.08	12-6-18	1500	MW-14-55_120618	GW	3		3						X				
.09	12-6-18	0932	MW-03-06_120618	GW	3		3						X	X			
.10/.11/.12	12-6-18	1112	MW-03-05_120618	GW	9		9						X	X			*Select Metals
.13	12-6-18	1327	MW-12-12_120618	GW	2			2							X	X	Arsenic, Nickel, Lead,
.14	12-6-18	1447	MW-12-13_120618	GW	1			1							X		Vanadium, Chromium, Copper

RELINQUISHED BY: SIGNATURE/ORGANIZATION	~~Sampler~~	DATE 12/6/18	TIME 1630
RECEIVED BY: SIGNATURE/ORGANIZATION	Arcadis	DATE 12/6/18	TIME 1630
RELINQUISHED BY: SIGNATURE/ORGANIZATION	Merit Drop Box	DATE 12/7/18	TIME 0815
RECEIVED BY: SIGNATURE/ORGANIZATION	M Delcato	DATE 12/7/18	TIME 0815

RELINQUISHED BY: SIGNATURE/ORGANIZATION	Arcadis	DATE 12/6/18	TIME 1720
RECEIVED BY: SIGNATURE/ORGANIZATION	Merit Storage Lockers	DATE 12/6/18	TIME 1720

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

NOTES: TEMP. ON ARRIVAL 3.4

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

Rev. 5.18.12

Merit Laboratories, Inc.
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C.O.C. PAGE # 2 OF 2

120373

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME: Christine Gregg
COMPANY: Arcadis of Michigan, LLC
ADDRESS: 28550 Cabot Drive, Suite 500
CITY: Novi STATE: MI ZIP CODE: 48377
PHONE NO.: 248-483-6634 FAX NO.: 248-994-2241 P.O. NO.: B0064479.2018.00603
E-MAIL ADDRESS: Christine.Gregg@arcadis.com QUOTE NO.:

INVOICE TO

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

PROJECT NO./NAME: B0064479.2018.00603/RACER Lansing
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Austin Westhuis / Austin Westhuis
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	VOCs	1,4-Dioxane 8260B SIMS	Total Select Metals *	Diss Select Metals *	Hexavalent Chromium	Total and Diss. Metals **	Alkalinity, BOD, Chloride, Nitrate, Nitrite, TSS, TDS, Phosphate *	COD	Sulfide	TOC	Special Instructions
97534.15	12/6/18	1045	MW-18-90_120618	GW	11	2	3	2	3	1			X					X	X	X	X	X	* Select Metals: Arsenic, Nickel, Lead, Vanadium, Chromium, and Copper.
.16	12/6/18	1215	MW-18-91_120618	GW	11	2	3	2	3	1			X					X	X	X	X	X	
.17	12/6/18	1440	CH-14-RO_120618	GW	13	3	3	3	3	1			X		X		X	X	X	X	X	X	
.18	12/6/18	—	Dup-04	GW	2	1		1							X		X						
.19	12/6/18	0935	MW-10_120618	GW	3		3						X										** Total and Diss. Metals: Aluminum, Arsenic, Barium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Nickel, Potassium, Selenium, Sodium, Vanadium, Zinc.
.20	12/6/18	0945	EB-03_120618	GW	4		3	1					X		X								
.21	12/6/18	1400	MW-22_120618	GW	2			2							X	X							
.22	12/6/18	1500	MW-14-65_120618	GW	3		3						X										
.23	12/6/18	—	Trip Blank	GW	1		1						X										* Phosphate as PO4
																							* Diss. Metals field filtered

RELINQUISHED BY: SIGNATURE/ORGANIZATION	Arcadis ☒ Sampler	DATE 12/6/18	TIME 1720
RECEIVED BY: SIGNATURE/ORGANIZATION	Merit Storage Lockers	DATE 12/6/18	TIME 1720
RELINQUISHED BY: SIGNATURE/ORGANIZATION	Merit Drop Box	DATE 12/7/18	TIME 0815
RECEIVED BY: SIGNATURE/ORGANIZATION	M Mulcahy	DATE 12/7/18	TIME 0815

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 3.4

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

Rev. 5.18.12

Analytical Laboratory Report

Report ID: S97598.01(01)
Generated on 12/17/2018

Report to

Attention: Christine Gregg
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 734-585-7817 FAX: 248-994-2241
Email: christine.gregg@arcadis.com

Addtional Contacts: Alex Villhauer, Kristen Padron, Randy Christensen

Report produced by

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Contacts for report questions:
John Laverty (johnlaverty@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S97598.01-S97598.15
Project: B0064479.2018.00603 / RACER Lansing
Collected Date: 12/07/2018
Submitted Date/Time: 12/07/2018 15:45
Sampled by: Jake Pisarkiewicz
P.O. #: B0064479.2018.00603

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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).
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

Method Summary

Method	Version
N/A	Not Applicable
SW3015A	SW 846 Method 3015A Revision 1 February 2007
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003
SW6020A	SW 846 Method 6020A Revision 1 February 2007
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs

Sample Summary (15 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S97598.01	MW-13-45_120718	Groundwater	12/07/18 09:45
S97598.02	MW-14-59_120718	Groundwater	12/07/18 10:50
S97598.03	Dup-01	Groundwater	12/07/18 00:01
S97598.04	MW-16-85_120718	Groundwater	12/07/18 12:40
S97598.05	MW-14-60_120718	Groundwater	12/07/18 14:05
S97598.06	EB-05_120718	Water	12/07/18 14:30
S97598.07	MW-13-36R_120718	Groundwater	12/07/18 10:07
S97598.08	MWBP-12A-USTI-4_120718	Groundwater	12/07/18 12:07
S97598.09	MWBP-12-USTI-4_120718	Groundwater	12/07/18 13:32
S97598.10	MW-13-32_120718	Groundwater	12/07/18 10:20
S97598.11	MW-13-32_120718 MS	Groundwater	12/07/18 10:20
S97598.12	MW-13-32_120718 MSD	Groundwater	12/07/18 10:20
S97598.13	MW-13-31_120718	Groundwater	12/07/18 12:30
S97598.14	MW-19_120718	Groundwater	12/07/18 14:40
S97598.15	Trip Blank	Water	12/07/18 00:01

Analytical Laboratory Report

Lab Sample ID: S97598.01
Sample Tag: MW-13-45_120718
Collected Date/Time: 12/07/2018 09:45
Matrix: Groundwater
COC Reference: 102377

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/12/18 14:00	JML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 12/11/18 18:53, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	52	1		ug/L	1	123-91-1	

Lab Sample ID: S97598.02
Sample Tag: MW-14-59_120718
Collected Date/Time: 12/07/2018 10:50
Matrix: Groundwater
COC Reference: 102377

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/11/18 14:20	JML	

Organics - Volatiles

Method: SW5030C/8260C, Run Date: 12/11/18 11:45, Analyst: WAT

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromo-3-chloropropane	Not detected	1	0.47	ug/L	1	96-12-8	
1,2-Dibromoethane	Not detected	1	0.30	ug/L	1	106-93-4	

Method: SW8260B - SIM, Run Date: 12/11/18 19:14, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	60	1		ug/L	1	123-91-1	

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/11/18 11:45, Analyst: WAT

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1	0.18	ug/L	1	76-13-1	
Acetone	Not detected	10	0.56	ug/L	1	67-64-1	
Carbon disulfide	Not detected	1	0.24	ug/L	1	75-15-0	
Methyl Acetate	Not detected	10	0.25	ug/L	1	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	1	0.19	ug/L	1	1634-04-4	
2-Butanone (MEK)	Not detected	10	0.26	ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	1	0.50	ug/L	1	75-71-8	
Chloromethane	Not detected	1	0.26	ug/L	1	74-87-3	
Vinyl chloride	Not detected	1	0.31	ug/L	1	75-01-4	
Bromomethane	Not detected	1	0.32	ug/L	1	74-83-9	
Chloroethane	Not detected	1	0.34	ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1	0.33	ug/L	1	75-69-4	
1,1-Dichloroethene	24	1	0.27	ug/L	1	75-35-4	
Methylene chloride	Not detected	1	0.29	ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1	0.20	ug/L	1	156-60-5	
1,1-Dichloroethane	4	1	0.20	ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1	0.26	ug/L	1	156-59-2	
Chloroform	Not detected	1	0.20	ug/L	1	67-66-3	
1,1,1-Trichloroethane	Not detected	1	0.28	ug/L	1	71-55-6	
Cyclohexane	Not detected	1	0.29	ug/L	1	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	10	0.14	ug/L	1	108-10-1	
2-Hexanone	Not detected	10	0.29	ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1	0.20	ug/L	1	56-23-5	
Benzene	Not detected	1	0.20	ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1	0.16	ug/L	1	107-06-2	
Trichloroethene	Not detected	1	0.23	ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1	0.20	ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1	0.23	ug/L	1	75-27-4	

Lab Sample ID: S97598.02 (continued)
Sample Tag: MW-14-59_120718

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/11/18 11:45, Analyst: WAT (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Methyl cyclohexane	Not detected	1	0.21	ug/L	1	108-87-2	
cis-1,3-Dichloropropene	Not detected	1	0.19	ug/L	1	10061-01-5	
Toluene	Not detected	1	0.25	ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1	0.25	ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1	0.28	ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1	0.20	ug/L	1	127-18-4	
Dibromochloromethane	Not detected	1	0.24	ug/L	1	124-48-1	
Chlorobenzene	Not detected	1	0.17	ug/L	1	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	1	0.18	ug/L	1	79-34-5	
Ethylbenzene	Not detected	1	0.26	ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2	0.41	ug/L	1		
o-Xylene	Not detected	1	0.25	ug/L	1	95-47-6	
Styrene	Not detected	1	0.18	ug/L	1	100-42-5	
Isopropylbenzene	Not detected	1	0.25	ug/L	1	98-82-8	
Bromoform	Not detected	1	0.22	ug/L	1	75-25-2	
1,3-Dichlorobenzene	Not detected	1	0.24	ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1	0.23	ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1	0.28	ug/L	1	95-50-1	
1,2,4-Trichlorobenzene	Not detected	1	0.19	ug/L	1	120-82-1	

Lab Sample ID: S97598.03
Sample Tag: Dup-01
Collected Date/Time: 12/07/2018 00:01
Matrix: Groundwater
COC Reference: 102377

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/11/18 14:20	JML	

Organics - Volatiles

Method: SW5030C/8260C, Run Date: 12/11/18 12:05, Analyst: WAT

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromo-3-chloropropane	Not detected	1	0.47	ug/L	1	96-12-8	
1,2-Dibromoethane	Not detected	1	0.30	ug/L	1	106-93-4	

Method: SW8260B - SIM, Run Date: 12/11/18 19:35, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	60	1		ug/L	1	123-91-1	

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/11/18 12:05, Analyst: WAT

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1	0.18	ug/L	1	76-13-1	
Acetone	Not detected	10	0.56	ug/L	1	67-64-1	
Carbon disulfide	Not detected	1	0.24	ug/L	1	75-15-0	
Methyl Acetate	Not detected	10	0.25	ug/L	1	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	1	0.19	ug/L	1	1634-04-4	
2-Butanone (MEK)	Not detected	10	0.26	ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	1	0.50	ug/L	1	75-71-8	
Chloromethane	Not detected	1	0.26	ug/L	1	74-87-3	
Vinyl chloride	Not detected	1	0.31	ug/L	1	75-01-4	
Bromomethane	Not detected	1	0.32	ug/L	1	74-83-9	
Chloroethane	Not detected	1	0.34	ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1	0.33	ug/L	1	75-69-4	
1,1-Dichloroethene	25	1	0.27	ug/L	1	75-35-4	
Methylene chloride	Not detected	1	0.29	ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1	0.20	ug/L	1	156-60-5	
1,1-Dichloroethane	4	1	0.20	ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1	0.26	ug/L	1	156-59-2	
Chloroform	Not detected	1	0.20	ug/L	1	67-66-3	
1,1,1-Trichloroethane	Not detected	1	0.28	ug/L	1	71-55-6	
Cyclohexane	Not detected	1	0.29	ug/L	1	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	10	0.14	ug/L	1	108-10-1	
2-Hexanone	Not detected	10	0.29	ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1	0.20	ug/L	1	56-23-5	
Benzene	Not detected	1	0.20	ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1	0.16	ug/L	1	107-06-2	
Trichloroethene	Not detected	1	0.23	ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1	0.20	ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1	0.23	ug/L	1	75-27-4	

Lab Sample ID: S97598.03 (continued)
Sample Tag: Dup-01

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/11/18 12:05, Analyst: WAT (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Methyl cyclohexane	Not detected	1	0.21	ug/L	1	108-87-2	
cis-1,3-Dichloropropene	Not detected	1	0.19	ug/L	1	10061-01-5	
Toluene	Not detected	1	0.25	ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1	0.25	ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1	0.28	ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1	0.20	ug/L	1	127-18-4	
Dibromochloromethane	Not detected	1	0.24	ug/L	1	124-48-1	
Chlorobenzene	Not detected	1	0.17	ug/L	1	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	1	0.18	ug/L	1	79-34-5	
Ethylbenzene	Not detected	1	0.26	ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2	0.41	ug/L	1		
o-Xylene	Not detected	1	0.25	ug/L	1	95-47-6	
Styrene	Not detected	1	0.18	ug/L	1	100-42-5	
Isopropylbenzene	Not detected	1	0.25	ug/L	1	98-82-8	
Bromoform	Not detected	1	0.22	ug/L	1	75-25-2	
1,3-Dichlorobenzene	Not detected	1	0.24	ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1	0.23	ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1	0.28	ug/L	1	95-50-1	
1,2,4-Trichlorobenzene	Not detected	1	0.19	ug/L	1	120-82-1	

Lab Sample ID: S97598.04
Sample Tag: MW-16-85_120718
Collected Date/Time: 12/07/2018 12:40
Matrix: Groundwater
COC Reference: 102377

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/11/18 14:20	JML	

Organics - Volatiles

Method: SW5030C/8260C, Run Date: 12/11/18 12:24, Analyst: WAT

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromo-3-chloropropane	Not detected	1	0.47	ug/L	1	96-12-8	
1,2-Dibromoethane	Not detected	1	0.30	ug/L	1	106-93-4	

Method: SW8260B - SIM, Run Date: 12/11/18 19:57, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	7	1		ug/L	1	123-91-1	

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/11/18 12:24, Analyst: WAT

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1	0.18	ug/L	1	76-13-1	
Acetone	Not detected	10	0.56	ug/L	1	67-64-1	
Carbon disulfide	Not detected	1	0.24	ug/L	1	75-15-0	
Methyl Acetate	Not detected	10	0.25	ug/L	1	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	1	0.19	ug/L	1	1634-04-4	
2-Butanone (MEK)	Not detected	10	0.26	ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	1	0.50	ug/L	1	75-71-8	
Chloromethane	Not detected	1	0.26	ug/L	1	74-87-3	
Vinyl chloride	Not detected	1	0.31	ug/L	1	75-01-4	
Bromomethane	Not detected	1	0.32	ug/L	1	74-83-9	
Chloroethane	Not detected	1	0.34	ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1	0.33	ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1	0.27	ug/L	1	75-35-4	
Methylene chloride	Not detected	1	0.29	ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1	0.20	ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1	0.20	ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1	0.26	ug/L	1	156-59-2	
Chloroform	Not detected	1	0.20	ug/L	1	67-66-3	
1,1,1-Trichloroethane	Not detected	1	0.28	ug/L	1	71-55-6	
Cyclohexane	Not detected	1	0.29	ug/L	1	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	10	0.14	ug/L	1	108-10-1	
2-Hexanone	Not detected	10	0.29	ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1	0.20	ug/L	1	56-23-5	
Benzene	Not detected	1	0.20	ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1	0.16	ug/L	1	107-06-2	
Trichloroethene	Not detected	1	0.23	ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1	0.20	ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1	0.23	ug/L	1	75-27-4	

Lab Sample ID: S97598.04 (continued)
Sample Tag: MW-16-85_120718

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/11/18 12:24, Analyst: WAT (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Methyl cyclohexane	Not detected	1	0.21	ug/L	1	108-87-2	
cis-1,3-Dichloropropene	Not detected	1	0.19	ug/L	1	10061-01-5	
Toluene	Not detected	1	0.25	ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1	0.25	ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1	0.28	ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1	0.20	ug/L	1	127-18-4	
Dibromochloromethane	Not detected	1	0.24	ug/L	1	124-48-1	
Chlorobenzene	Not detected	1	0.17	ug/L	1	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	1	0.18	ug/L	1	79-34-5	
Ethylbenzene	Not detected	1	0.26	ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2	0.41	ug/L	1		
o-Xylene	Not detected	1	0.25	ug/L	1	95-47-6	
Styrene	Not detected	1	0.18	ug/L	1	100-42-5	
Isopropylbenzene	Not detected	1	0.25	ug/L	1	98-82-8	
Bromoform	Not detected	1	0.22	ug/L	1	75-25-2	
1,3-Dichlorobenzene	Not detected	1	0.24	ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1	0.23	ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1	0.28	ug/L	1	95-50-1	
1,2,4-Trichlorobenzene	Not detected	1	0.19	ug/L	1	120-82-1	

Lab Sample ID: S97598.05
Sample Tag: MW-14-60_120718
Collected Date/Time: 12/07/2018 14:05
Matrix: Groundwater
COC Reference: 102377

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/11/18 14:20	JML	

Organics - Volatiles

Method: SW5030C/8260C, Run Date: 12/12/18 21:59, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromo-3-chloropropane	Not detected	1		ug/L	1	96-12-8	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	

Method: SW8260B - SIM, Run Date: 12/11/18 20:18, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	115	1		ug/L	1	123-91-1	

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/12/18 21:59, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
Acetone	Not detected	10		ug/L	1	67-64-1	
Carbon disulfide	Not detected	1		ug/L	1	75-15-0	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	1		ug/L	1	1634-04-4	
2-Butanone (MEK)	Not detected	10		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	1		ug/L	1	75-71-8	
Chloromethane	Not detected	1		ug/L	1	74-87-3	
Vinyl chloride	9	1		ug/L	1	75-01-4	
Bromomethane	Not detected	1		ug/L	1	74-83-9	
Chloroethane	42	1		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	1		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	
Chloroform	Not detected	1		ug/L	1	67-66-3	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	10		ug/L	1	108-10-1	
2-Hexanone	Not detected	10		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	1	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	

Lab Sample ID: S97598.05 (continued)
Sample Tag: MW-14-60_120718

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/12/18 21:59, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
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	
Dibromochloromethane	Not detected	1		ug/L	1	124-48-1	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
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	1		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
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	
1,2,4-Trichlorobenzene	Not detected	1		ug/L	1	120-82-1	

Lab Sample ID: S97598.06
Sample Tag: EB-05_120718
Collected Date/Time: 12/07/2018 14:30
Matrix: Water
COC Reference: 102377

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.0	IR
1	125ml Plastic	HNO3	Yes	3.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/11/18 14:20	JML	
Metal Digestion	Completed	SW3015A	12/14/18 13:45	CCM	

Metals

Method: SW6020A, Run Date: 12/14/18 16:05, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	Not detected	0.002		mg/L	2	7440-38-2	
Chromium	Not detected	0.005		mg/L	2	7440-47-3	
Copper	Not detected	0.005		mg/L	2	7440-50-8	
Lead	Not detected	0.003		mg/L	2	7439-92-1	
Nickel	Not detected	0.005		mg/L	2	7440-02-0	
Vanadium	Not detected	0.005		mg/L	2	7440-62-2	

Organics - Volatiles

Method: SW5030C/8260C, Run Date: 12/11/18 11:07, Analyst: WAT

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromo-3-chloropropane	Not detected	1	0.47	ug/L	1	96-12-8	
1,2-Dibromoethane	Not detected	1	0.30	ug/L	1	106-93-4	

Method: SW8260B - SIM, Run Date: 12/11/18 16:47, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/11/18 11:07, Analyst: WAT

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1	0.18	ug/L	1	76-13-1	
Acetone	Not detected	10	0.56	ug/L	1	67-64-1	
Carbon disulfide	Not detected	1	0.24	ug/L	1	75-15-0	
Methyl Acetate	Not detected	10	0.25	ug/L	1	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	1	0.19	ug/L	1	1634-04-4	
2-Butanone (MEK)	Not detected	10	0.26	ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	1	0.50	ug/L	1	75-71-8	
Chloromethane	Not detected	1	0.26	ug/L	1	74-87-3	
Vinyl chloride	Not detected	1	0.31	ug/L	1	75-01-4	
Bromomethane	Not detected	1	0.32	ug/L	1	74-83-9	
Chloroethane	Not detected	1	0.34	ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1	0.33	ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1	0.27	ug/L	1	75-35-4	
Methylene chloride	Not detected	1	0.29	ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1	0.20	ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1	0.20	ug/L	1	75-34-3	

Lab Sample ID: S97598.06 (continued)
Sample Tag: EB-05_120718

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/11/18 11:07, Analyst: WAT (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
cis-1,2-Dichloroethene	Not detected	1	0.26	ug/L	1	156-59-2	
Chloroform	Not detected	1	0.20	ug/L	1	67-66-3	
1,1,1-Trichloroethane	Not detected	1	0.28	ug/L	1	71-55-6	
Cyclohexane	Not detected	1	0.29	ug/L	1	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	10	0.14	ug/L	1	108-10-1	
2-Hexanone	Not detected	10	0.29	ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1	0.20	ug/L	1	56-23-5	
Benzene	Not detected	1	0.20	ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1	0.16	ug/L	1	107-06-2	
Trichloroethene	Not detected	1	0.23	ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1	0.20	ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1	0.23	ug/L	1	75-27-4	
Methyl cyclohexane	Not detected	1	0.21	ug/L	1	108-87-2	
cis-1,3-Dichloropropene	Not detected	1	0.19	ug/L	1	10061-01-5	
Toluene	Not detected	1	0.25	ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1	0.25	ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1	0.28	ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1	0.20	ug/L	1	127-18-4	
Dibromochloromethane	Not detected	1	0.24	ug/L	1	124-48-1	
Chlorobenzene	Not detected	1	0.17	ug/L	1	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	1	0.18	ug/L	1	79-34-5	
Ethylbenzene	Not detected	1	0.26	ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2	0.41	ug/L	1		
o-Xylene	Not detected	1	0.25	ug/L	1	95-47-6	
Styrene	Not detected	1	0.18	ug/L	1	100-42-5	
Isopropylbenzene	Not detected	1	0.25	ug/L	1	98-82-8	
Bromoform	Not detected	1	0.22	ug/L	1	75-25-2	
1,3-Dichlorobenzene	Not detected	1	0.24	ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1	0.23	ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1	0.28	ug/L	1	95-50-1	
1,2,4-Trichlorobenzene	Not detected	1	0.19	ug/L	1	120-82-1	

Lab Sample ID: S97598.07
Sample Tag: MW-13-36R_120718
Collected Date/Time: 12/07/2018 10:07
Matrix: Groundwater
COC Reference: 102377

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	125ml Plastic	HNO3	Yes	3.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion	Completed	SW3015A	12/14/18 13:45	CCM	
Metal Digestion	Completed	SW3015A	12/14/18 13:45	CCM	

Metals

Method: SW6020A, Run Date: 12/14/18 16:09, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	Not detected	0.002		mg/L	5	7440-38-2	
Chromium	Not detected	0.005		mg/L	5	7440-47-3	
Copper	0.005	0.005		mg/L	5	7440-50-8	
Lead	Not detected	0.003		mg/L	5	7439-92-1	
Nickel	Not detected	0.005		mg/L	5	7440-02-0	
Vanadium	0.011	0.005		mg/L	5	7440-62-2	

Method: SW6020A, Run Date: 12/14/18 16:11, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic, Dissolved	Not detected	0.002		mg/L	5	7440-38-2	
Chromium, Dissolved	Not detected	0.005		mg/L	5	7440-47-3	
Copper, Dissolved	Not detected	0.005		mg/L	5	7440-50-8	
Lead, Dissolved	Not detected	0.003		mg/L	5	7439-92-1	
Nickel, Dissolved	Not detected	0.005		mg/L	5	7440-02-0	
Vanadium, Dissolved	0.011	0.005		mg/L	5	7440-62-2	

Lab Sample ID: S97598.08
Sample Tag: MWBP-12A-USTI-4_120718
Collected Date/Time: 12/07/2018 12:07
Matrix: Groundwater
COC Reference: 102377

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/12/18 14:00	JML	

Organics - Volatiles

Method: SW5030C/8260C, Run Date: 12/11/18 16:37, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromo-3-chloropropane	Not detected	1		ug/L	1	96-12-8	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
Acetone	Not detected	10		ug/L	1	67-64-1	
Carbon disulfide	Not detected	1		ug/L	1	75-15-0	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	1		ug/L	1	1634-04-4	
2-Butanone (MEK)	Not detected	10		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	1		ug/L	1	75-71-8	
Chloromethane	Not detected	1		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	1		ug/L	1	74-83-9	
Chloroethane	Not detected	1		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	1		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	
Chloroform	Not detected	1		ug/L	1	67-66-3	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	10		ug/L	1	108-10-1	
2-Hexanone	Not detected	10		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	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
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	
Dibromochloromethane	Not detected	1		ug/L	1	124-48-1	

Lab Sample ID: S97598.08 (continued)
Sample Tag: MWBP-12A-USTI-4_120718

Method: SW5030C/8260C, Run Date: 12/11/18 16:37, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
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	1		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
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	
1,2,4-Trichlorobenzene	Not detected	1		ug/L	1	120-82-1	

Lab Sample ID: S97598.09
Sample Tag: MWBP-12-USTI-4_120718
Collected Date/Time: 12/07/2018 13:32
Matrix: Groundwater
COC Reference: 102377

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/12/18 14:00	JML	

Organics - Volatiles

Method: SW5030C/8260C, Run Date: 12/11/18 16:57, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromo-3-chloropropane	Not detected	1		ug/L	1	96-12-8	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
Acetone	Not detected	10		ug/L	1	67-64-1	
Carbon disulfide	Not detected	1		ug/L	1	75-15-0	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	1		ug/L	1	1634-04-4	
2-Butanone (MEK)	Not detected	10		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	1		ug/L	1	75-71-8	
Chloromethane	Not detected	1		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	1		ug/L	1	74-83-9	
Chloroethane	Not detected	1		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	1		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	
Chloroform	Not detected	1		ug/L	1	67-66-3	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	10		ug/L	1	108-10-1	
2-Hexanone	Not detected	10		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	6	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	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
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	
Dibromochloromethane	Not detected	1		ug/L	1	124-48-1	

Lab Sample ID: S97598.09 (continued)
Sample Tag: MWBP-12-USTI-4_120718

Method: SW5030C/8260C, Run Date: 12/11/18 16:57, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
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	1		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
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	
1,2,4-Trichlorobenzene	Not detected	1		ug/L	1	120-82-1	

Lab Sample ID: S97598.10
Sample Tag: MW-13-32_120718
Collected Date/Time: 12/07/2018 10:20
Matrix: Groundwater
COC Reference: 102377

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125ml Plastic	HNO3	Yes	3.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion	Completed	SW3015A	12/14/18 13:45	CCM	

Metals

Method: SW6020A, Run Date: 12/14/18 16:21, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	Not detected	0.002		mg/L	5	7440-38-2	
Chromium	0.244	0.005		mg/L	5	7440-47-3	
Copper	0.012	0.005		mg/L	5	7440-50-8	
Lead	Not detected	0.003		mg/L	5	7439-92-1	
Nickel	0.761	0.005		mg/L	5	7440-02-0	
Vanadium	Not detected	0.005		mg/L	5	7440-62-2	

Lab Sample ID: S97598.11
Sample Tag: MW-13-32_120718 MS
Collected Date/Time: 12/07/2018 10:20
Matrix: Groundwater
COC Reference: 102377

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125ml Plastic	HNO3	Yes	3.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion	Completed	SW3015A	12/14/18 13:45	CCM	

Metals

Method: SW6020A, Run Date: 12/14/18 16:23, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	0.248	0.002		mg/L	5	7440-38-2	
Chromium	0.601	0.005		mg/L	5	7440-47-3	
Copper	0.257	0.005		mg/L	5	7440-50-8	
Lead	0.242	0.003		mg/L	5	7439-92-1	
Nickel	1.12	0.005		mg/L	5	7440-02-0	
Vanadium	0.270	0.005		mg/L	5	7440-62-2	

Lab Sample ID: S97598.12
Sample Tag: MW-13-32_120718 MSD
Collected Date/Time: 12/07/2018 10:20
Matrix: Groundwater
COC Reference: 102377

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125ml Plastic	HNO3	Yes	3.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion	Completed	SW3015A	12/14/18 13:45	CCM	

Metals

Method: SW6020A, Run Date: 12/14/18 16:24, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	0.255	0.002		mg/L	5	7440-38-2	
Chromium	0.361	0.005		mg/L	5	7440-47-3	
Copper	0.262	0.005		mg/L	5	7440-50-8	
Lead	0.247	0.003		mg/L	5	7439-92-1	
Nickel	0.946	0.005		mg/L	5	7440-02-0	
Vanadium	0.263	0.005		mg/L	5	7440-62-2	

Lab Sample ID: S97598.13
Sample Tag: MW-13-31_120718
Collected Date/Time: 12/07/2018 12:30
Matrix: Groundwater
COC Reference: 102377

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	125ml Plastic	HNO3	Yes	3.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion	Completed	SW3015A	12/14/18 13:45	CCM	
Metal Digestion	Completed	SW3015A	12/14/18 13:45	CCM	

Metals

Method: SW6020A, Run Date: 12/14/18 16:12, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	Not detected	0.002		mg/L	5	7440-38-2	
Chromium	0.497	0.005		mg/L	5	7440-47-3	
Copper	0.017	0.005		mg/L	5	7440-50-8	
Lead	0.010	0.003		mg/L	5	7439-92-1	
Nickel	0.209	0.005		mg/L	5	7440-02-0	
Vanadium	Not detected	0.005		mg/L	5	7440-62-2	

Method: SW6020A, Run Date: 12/14/18 16:14, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic, Dissolved	Not detected	0.002		mg/L	5	7440-38-2	
Chromium, Dissolved	Not detected	0.005		mg/L	5	7440-47-3	
Copper, Dissolved	Not detected	0.005		mg/L	5	7440-50-8	
Lead, Dissolved	Not detected	0.003		mg/L	5	7439-92-1	
Nickel, Dissolved	0.118	0.005		mg/L	5	7440-02-0	
Vanadium, Dissolved	Not detected	0.005		mg/L	5	7440-62-2	

Analytical Laboratory Report

Lab Sample ID: S97598.14
Sample Tag: MW-19_120718
Collected Date/Time: 12/07/2018 14:40
Matrix: Groundwater
COC Reference: 102377

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/12/18 14:00	JML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 12/12/18 13:31, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

Lab Sample ID: S97598.15
Sample Tag: Trip Blank
Collected Date/Time: 12/07/2018 00:01
Matrix: Water
COC Reference: 102377

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	3.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/11/18 14:20	JML	

Organics - Volatiles

Method: SW5030C/8260C, Run Date: 12/11/18 11:26, Analyst: WAT

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromo-3-chloropropane	Not detected	1	0.47	ug/L	1	96-12-8	
1,2-Dibromoethane	Not detected	1	0.30	ug/L	1	106-93-4	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1	0.18	ug/L	1	76-13-1	
Acetone	Not detected	10	0.56	ug/L	1	67-64-1	
Carbon disulfide	Not detected	1	0.24	ug/L	1	75-15-0	
Methyl Acetate	Not detected	10	0.25	ug/L	1	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	1	0.19	ug/L	1	1634-04-4	
2-Butanone (MEK)	Not detected	10	0.26	ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	1	0.50	ug/L	1	75-71-8	
Chloromethane	Not detected	1	0.26	ug/L	1	74-87-3	
Vinyl chloride	Not detected	1	0.31	ug/L	1	75-01-4	
Bromomethane	Not detected	1	0.32	ug/L	1	74-83-9	
Chloroethane	Not detected	1	0.34	ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1	0.33	ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1	0.27	ug/L	1	75-35-4	
Methylene chloride	Not detected	1	0.29	ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1	0.20	ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1	0.20	ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1	0.26	ug/L	1	156-59-2	
Chloroform	Not detected	1	0.20	ug/L	1	67-66-3	
1,1,1-Trichloroethane	Not detected	1	0.28	ug/L	1	71-55-6	
Cyclohexane	Not detected	1	0.29	ug/L	1	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	10	0.14	ug/L	1	108-10-1	
2-Hexanone	Not detected	10	0.29	ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1	0.20	ug/L	1	56-23-5	
Benzene	Not detected	1	0.20	ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1	0.16	ug/L	1	107-06-2	
Trichloroethene	Not detected	1	0.23	ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1	0.20	ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1	0.23	ug/L	1	75-27-4	
Methyl cyclohexane	Not detected	1	0.21	ug/L	1	108-87-2	
cis-1,3-Dichloropropene	Not detected	1	0.19	ug/L	1	10061-01-5	
Toluene	Not detected	1	0.25	ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1	0.25	ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1	0.28	ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1	0.20	ug/L	1	127-18-4	
Dibromochloromethane	Not detected	1	0.24	ug/L	1	124-48-1	

Lab Sample ID: S97598.15 (continued)

Sample Tag: Trip Blank

Method: SW5030C/8260C, Run Date: 12/11/18 11:26, Analyst: WAT (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chlorobenzene	Not detected	1	0.17	ug/L	1	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	1	0.18	ug/L	1	79-34-5	
Ethylbenzene	Not detected	1	0.26	ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2	0.41	ug/L	1		
o-Xylene	Not detected	1	0.25	ug/L	1	95-47-6	
Styrene	Not detected	1	0.18	ug/L	1	100-42-5	
Isopropylbenzene	Not detected	1	0.25	ug/L	1	98-82-8	
Bromoform	Not detected	1	0.22	ug/L	1	75-25-2	
1,3-Dichlorobenzene	Not detected	1	0.24	ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1	0.23	ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1	0.28	ug/L	1	95-50-1	
1,2,4-Trichlorobenzene	Not detected	1	0.19	ug/L	1	120-82-1	

Merit Laboratories Login Checklist

Lab Set ID: S97598
Client: ARCADIS_NOVI (ARCADIS U.S., Inc.)
Project: B0064479.2018.00603 / RACER Lansing
Submitted: 12/07/2018 15:45 Login User: SRS

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

Phone: 734-585-7817 FAX: 248-994-2241
Email: christine.gregg@arcadis.com

Selection				Description	Note
Sample Receiving					
01.	[X] Yes	[ ] No	[ ] N/A	Samples are received at 4C +/- 2C Thermometer #	IR 3.0
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.	[ ] Yes	[X] No	[ ] N/A	COC adequately filled out	Trip blank not listed on COC
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.	[X] Yes	[ ] No	[ ] 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: _____

Prepared by Merit Laboratories

Merit Laboratories Bottle Preservation Check

Lab Set ID: S97598 Initials: SRS

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

Project: B0064479.2018.00603 / RACER Lansing

Submitted: 12/07/2018 15:45 Login User:

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

Phone: 734-585-7817 FAX: 248-994-2241
Email: christine.gregg@arcadis.com

Lab ID	125 ml Plastic HNO_3	250 ml Plastic HNO_3	1 L Plastic HNO_3	250 ml Plastic H_2SO_4	125 ml Amber H_2SO_4	32 oz Glass HCl	125 ml Plastic NaOH	125 ml Amber $PbCO_3$ NaOH	pH					Notes
									<2	>12	other	ml add	new pH	
S97598.06	X								X					
S97598.07	X								X					
S97598.07	X								X					
S97598.10	X								X					
S97598.11	X								X					
S97598.12	X								X					
S97598.13	X								X					
S97598.13	X								X					

Prepared by Merit Laboratories

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

102377

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME: Christene Gregg
COMPANY: Arcadis
ADDRESS: 28550 Cabot Dr, Ste 500
CITY: Novi STATE: MI ZIP CODE: 48377
PHONE NO.: 248-994-2295 FAX NO.: P.O. NO.:
E-MAIL ADDRESS: christene.gregg@arcadis.com QUOTE NO.:

INVOICE TO

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

PROJECT NO./NAME: B00644479.2018 / Racer Lansing
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Jake Pisarkiewicz

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	TIME	SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives: NONE	HCl	HNO_3	H_2SO_4	NaOH	MeOH	OTHER	VOCs (8260)	1,4 Dioxane (8260B SIM)	total Metals *	* Dissolved Metals
97598.01	12-7-18	0945	MW-13-45_120718	GW	3		3							X		
.02	12-7-18	1050	MW-14-59_120718	GW	3		3						X	X		
.03	12-7-18	AM	Dup-01	GW	3		3						X	X		
.04	12-7-18	1240	MW-116-85_120718	GW	3		3						X	X		
.05	12-7-18	1405	MW-14-60_120718	GW	3		3						X	X		
.06	12-7-18	1430	EB-05_120718	GW	4		3	1					X	X	X	
.07	12-7-18	1007	MW-13-36R_120718	GW	2			2							X	X
.08	12-7-18	1207	MWBP-12A-UST1-4_120718	GW	3		3						X			
.09	12-7-18	1332	MWBP-12-UST1-4_120718	GW	3		3						X			
10.11.12	12/7/18	1020	MW-13-32_120718	GW	3			3							X	
.13	12/7/18	1230	MW-13-31_120718	GW	2			2							X	X
.14	12/7/18	1440	MW-19-120718	GW	3		3						X	X		

Certifications:
* Metals: Sb, As, Ba, B, Cd, Cr, Co, Cu, Pb, Mn, Hg, Ni, Se, V, Zn. 12-7-18
* Metals: As, Ni, Pb, V, Cr, Cu
* Note: MW-1332_120718 also MS/MSD

RELINQUISHED BY: SIGNATURE/ORGANIZATION	☐ Sampler	DATE 12-7-18	TIME 1545
RECEIVED BY: SIGNATURE/ORGANIZATION		DATE 12/7/18	TIME 1545
RELINQUISHED BY: SIGNATURE/ORGANIZATION		DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION		DATE	TIME

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 3.0

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

Rev. 5.18.12

Analytical Laboratory Report

Report ID: S97666.01(01)
Generated on 12/14/2018

Report to

Attention: Christine Gregg
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 734-585-7817 FAX: 248-994-2241
Email: christine.gregg@arcadis.com

Addtional Contacts: Alex Villhauer, Kristen Padron, Randy Christensen

Report produced by

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

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Contacts for report questions:
John Laverty (johnlaverty@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S97666.01-S97666.21
Project: B0064479.2018.00603 / RACER Lansing
Collected Date: 12/10/2018
Submitted Date/Time: 12/10/2018 16:55
Sampled by: Pisarkiewicz/ Stockard
P.O. #: B0064479.2018.00603

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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).
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

Method Summary

Method	Version
N/A	Not Applicable
SW3015A	SW 846 Method 3015A Revision 1 February 2007
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003
SW6020A	SW 846 Method 6020A Revision 1 February 2007
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs

Sample Summary (21 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S97666.01	MW-16-84_121018	Groundwater	12/10/18 10:15
S97666.02	MW-17-86_121018	Groundwater	12/10/18 11:35
S97666.03	MW-14-61_121018	Groundwater	12/10/18 13:25
S97666.04	MW-12-06_121018	Groundwater	12/10/18 14:30
S97666.05	MW-16-78_121018	Groundwater	12/10/18 15:45
S97666.06	MWBP-11-UST1-4_121018	Groundwater	12/10/18 10:52
S97666.07	MW-13-35_121018	Groundwater	12/10/18 12:32
S97666.08	MW-12-16_121018	Groundwater	12/10/18 13:52
S97666.09	EB-06_121018	Water	12/10/18 14:13
S97666.10	MW-13-46_121018	Groundwater	12/10/18 13:00
S97666.11	MW-91-6_121018	Groundwater	12/10/18 14:30
S97666.12	MW-13-49_121018	Groundwater	12/10/18 15:50
S97666.13	MW-14-54_121018	Groundwater	12/10/18 10:35
S97666.14	MW-12-01_121018	Groundwater	12/10/18 12:30
S97666.15	MW-16-76_121018	Groundwater	12/10/18 14:00
S97666.16	MW-12-18_121018	Groundwater	12/10/18 15:35
S97666.17	Trip Blank	Water	12/10/18 00:01
S97666.18	MW-13-38_121018	Groundwater	12/10/18 10:25
S97666.19	MW-13-41_121018	Groundwater	12/10/18 12:30
S97666.20	MW-02-02(3)_121018	Groundwater	12/10/18 14:15
S97666.21	MW-13-29_121018	Groundwater	12/10/18 16:10

Analytical Laboratory Report

Lab Sample ID: S97666.01
Sample Tag: MW-16-84_121018
Collected Date/Time: 12/10/2018 10:15
Matrix: Groundwater
COC Reference: 102378

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/12/18 14:00	JML	

Organics - Volatiles

Method: SW5030C/8260C, Run Date: 12/12/18 07:19, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromo-3-chloropropane	Not detected	1		ug/L	1	96-12-8	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	

Method: SW8260B - SIM, Run Date: 12/11/18 21:00, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	77	1		ug/L	1	123-91-1	

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/12/18 07:19, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
Acetone	Not detected	10		ug/L	1	67-64-1	
Carbon disulfide	Not detected	1		ug/L	1	75-15-0	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	1		ug/L	1	1634-04-4	
2-Butanone (MEK)	Not detected	10		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	1		ug/L	1	75-71-8	
Chloromethane	Not detected	1		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	1		ug/L	1	74-83-9	
Chloroethane	Not detected	1		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	1		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	
Chloroform	Not detected	1		ug/L	1	67-66-3	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	10		ug/L	1	108-10-1	
2-Hexanone	Not detected	10		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	

Lab Sample ID: S97666.01 (continued)
Sample Tag: MW-16-84_121018

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/12/18 07:19, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
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	
Dibromochloromethane	Not detected	1		ug/L	1	124-48-1	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
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	1		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
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	
1,2,4-Trichlorobenzene	Not detected	1		ug/L	1	120-82-1	

Lab Sample ID: S97666.02
Sample Tag: MW-17-86_121018
Collected Date/Time: 12/10/2018 11:35
Matrix: Groundwater
COC Reference: 102378

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/12/18 14:00	JML	

Organics - Volatiles

Method: SW5030C/8260C, Run Date: 12/12/18 07:38, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromo-3-chloropropane	Not detected	1		ug/L	1	96-12-8	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	

Method: SW8260B - SIM, Run Date: 12/11/18 21:21, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	75	1		ug/L	1	123-91-1	

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/12/18 07:38, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
Acetone	Not detected	10		ug/L	1	67-64-1	
Carbon disulfide	Not detected	1		ug/L	1	75-15-0	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	1		ug/L	1	1634-04-4	
2-Butanone (MEK)	Not detected	10		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	1		ug/L	1	75-71-8	
Chloromethane	Not detected	1		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	1		ug/L	1	74-83-9	
Chloroethane	17	1		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	1		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	1	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Chloroform	Not detected	1		ug/L	1	67-66-3	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	10		ug/L	1	108-10-1	
2-Hexanone	Not detected	10		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	

Lab Sample ID: S97666.02 (continued)
Sample Tag: MW-17-86_121018

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/12/18 07:38, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
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	
Dibromochloromethane	Not detected	1		ug/L	1	124-48-1	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
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	1		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
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	
1,2,4-Trichlorobenzene	Not detected	1		ug/L	1	120-82-1	

Lab Sample ID: S97666.03
Sample Tag: MW-14-61_121018
Collected Date/Time: 12/10/2018 13:25
Matrix: Groundwater
COC Reference: 102378

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/12/18 14:00	JML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 12/11/18 21:42, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	142	1		ug/L	1	123-91-1	

Lab Sample ID: S97666.04
Sample Tag: MW-12-06_121018
Collected Date/Time: 12/10/2018 14:30
Matrix: Groundwater
COC Reference: 102378

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/12/18 14:00	JML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 12/11/18 22:03, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

Lab Sample ID: S97666.05
Sample Tag: MW-16-78_121018
Collected Date/Time: 12/10/2018 15:45
Matrix: Groundwater
COC Reference: 102378

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/12/18 14:00	JML	

Organics - Volatiles

Method: SW5030C/8260C, Run Date: 12/12/18 07:57, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromo-3-chloropropane	Not detected	1		ug/L	1	96-12-8	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	

Method: SW8260B - SIM, Run Date: 12/11/18 22:24, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/12/18 07:57, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
Acetone	Not detected	10		ug/L	1	67-64-1	
Carbon disulfide	Not detected	1		ug/L	1	75-15-0	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	1		ug/L	1	1634-04-4	
2-Butanone (MEK)	Not detected	10		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	1		ug/L	1	75-71-8	
Chloromethane	Not detected	1		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	1		ug/L	1	74-83-9	
Chloroethane	Not detected	1		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	1		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	
Chloroform	Not detected	1		ug/L	1	67-66-3	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	10		ug/L	1	108-10-1	
2-Hexanone	Not detected	10		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	

Lab Sample ID: S97666.05 (continued)
Sample Tag: MW-16-78_121018

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/12/18 07:57, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
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	
Dibromochloromethane	Not detected	1		ug/L	1	124-48-1	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
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	1		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
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	
1,2,4-Trichlorobenzene	Not detected	1		ug/L	1	120-82-1	

Lab Sample ID: S97666.06
Sample Tag: MWBP-11-UST1-4_121018
Collected Date/Time: 12/10/2018 10:52
Matrix: Groundwater
COC Reference: 102378

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/12/18 14:00	JML	

Organics - Volatiles

Method: SW5030C/8260C, Run Date: 12/13/18 09:35, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromo-3-chloropropane	Not detected	1		ug/L	1	96-12-8	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
Acetone	Not detected	10		ug/L	1	67-64-1	
Carbon disulfide	Not detected	1		ug/L	1	75-15-0	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	1		ug/L	1	1634-04-4	
2-Butanone (MEK)	Not detected	10		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	1		ug/L	1	75-71-8	
Chloromethane	Not detected	1		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	1		ug/L	1	74-83-9	
Chloroethane	Not detected	1		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	1		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	
Chloroform	Not detected	1		ug/L	1	67-66-3	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	10		ug/L	1	108-10-1	
2-Hexanone	Not detected	10		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	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
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	
Dibromochloromethane	Not detected	1		ug/L	1	124-48-1	

Lab Sample ID: S97666.06 (continued)
Sample Tag: MWBP-11-UST1-4_121018

Method: SW5030C/8260C, Run Date: 12/13/18 09:35, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
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	1		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
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	
1,2,4-Trichlorobenzene	Not detected	1		ug/L	1	120-82-1	

Lab Sample ID: S97666.07
Sample Tag: MW-13-35_121018
Collected Date/Time: 12/10/2018 12:32
Matrix: Groundwater
COC Reference: 102378

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	125ml Plastic	HNO3	Yes	4.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion	Completed	SW3015A	12/14/18 13:45	CCM	
Metal Digestion	Completed	SW3015A	12/14/18 13:45	CCM	

Metals

Method: SW6020A, Run Date: 12/14/18 16:16, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	0.002	0.002		mg/L	5	7440-38-2	
Chromium	Not detected	0.005		mg/L	5	7440-47-3	
Copper	Not detected	0.005		mg/L	5	7440-50-8	
Lead	Not detected	0.003		mg/L	5	7439-92-1	
Nickel	Not detected	0.005		mg/L	5	7440-02-0	
Vanadium	0.006	0.005		mg/L	5	7440-62-2	

Method: SW6020A, Run Date: 12/14/18 16:18, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic, Dissolved	Not detected	0.002		mg/L	5	7440-38-2	
Chromium, Dissolved	Not detected	0.005		mg/L	5	7440-47-3	
Copper, Dissolved	Not detected	0.005		mg/L	5	7440-50-8	
Lead, Dissolved	Not detected	0.003		mg/L	5	7439-92-1	
Nickel, Dissolved	Not detected	0.005		mg/L	5	7440-02-0	
Vanadium, Dissolved	Not detected	0.005		mg/L	5	7440-62-2	

Lab Sample ID: S97666.08
Sample Tag: MW-12-16_121018
Collected Date/Time: 12/10/2018 13:52
Matrix: Groundwater
COC Reference: 102378

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125ml Plastic	HNO3	Yes	4.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion	Completed	SW3015A	12/14/18 13:45	CCM	

Metals

Method: SW6020A, Run Date: 12/14/18 16:20, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	0.013	0.002		mg/L	5	7440-38-2	
Chromium	Not detected	0.005		mg/L	5	7440-47-3	
Copper	Not detected	0.005		mg/L	5	7440-50-8	
Lead	Not detected	0.003		mg/L	5	7439-92-1	
Nickel	Not detected	0.005		mg/L	5	7440-02-0	
Vanadium	Not detected	0.005		mg/L	5	7440-62-2	

Lab Sample ID: S97666.09
Sample Tag: EB-06_121018
Collected Date/Time: 12/10/2018 14:13
Matrix: Water
COC Reference: 102378

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.0	IR
1	125ml Plastic	HNO3	Yes	4.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/12/18 14:00	JML	
Metal Digestion	Completed	SW3015A	12/14/18 13:45	CCM	

Metals

Method: SW6020A, Run Date: 12/14/18 16:07, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	Not detected	0.002		mg/L	2	7440-38-2	
Chromium	Not detected	0.005		mg/L	2	7440-47-3	
Copper	Not detected	0.005		mg/L	2	7440-50-8	
Lead	Not detected	0.003		mg/L	2	7439-92-1	
Nickel	Not detected	0.005		mg/L	2	7440-02-0	
Vanadium	Not detected	0.005		mg/L	2	7440-62-2	

Organics - Volatiles

Method: SW5030C/8260C, Run Date: 12/12/18 01:51, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromo-3-chloropropane	Not detected	1		ug/L	1	96-12-8	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
Acetone	10	10		ug/L	1	67-64-1	
Carbon disulfide	Not detected	1		ug/L	1	75-15-0	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	1		ug/L	1	1634-04-4	
2-Butanone (MEK)	Not detected	10		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	1		ug/L	1	75-71-8	
Chloromethane	Not detected	1		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	1		ug/L	1	74-83-9	
Chloroethane	Not detected	1		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	1		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	
Chloroform	Not detected	1		ug/L	1	67-66-3	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	10		ug/L	1	108-10-1	
2-Hexanone	Not detected	10		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	

Lab Sample ID: S97666.09 (continued)
Sample Tag: EB-06_121018

Method: SW5030C/8260C, Run Date: 12/12/18 01:51, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
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	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
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	
Dibromochloromethane	Not detected	1		ug/L	1	124-48-1	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
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	1		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
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	
1,2,4-Trichlorobenzene	Not detected	1		ug/L	1	120-82-1	

Lab Sample ID: S97666.10
Sample Tag: MW-13-46_121018
Collected Date/Time: 12/10/2018 13:00
Matrix: Groundwater
COC Reference: 102378

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/13/18 14:30	JML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 12/12/18 13:52, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

Lab Sample ID: S97666.11
Sample Tag: MW-91-6_121018
Collected Date/Time: 12/10/2018 14:30
Matrix: Groundwater
COC Reference: 102378

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/13/18 14:30	JML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 12/12/18 14:13, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

Lab Sample ID: S97666.12
Sample Tag: MW-13-49_121018
Collected Date/Time: 12/10/2018 15:50
Matrix: Groundwater
COC Reference: 102378

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/13/18 14:30	JML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 12/12/18 14:35, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

Lab Sample ID: S97666.13
Sample Tag: MW-14-54_121018
Collected Date/Time: 12/10/2018 10:35
Matrix: Groundwater
COC Reference: 120330

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/12/18 14:00	JML	

Organics - Volatiles

Method: SW5030C/8260C, Run Date: 12/12/18 02:52, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromo-3-chloropropane	Not detected	1		ug/L	1	96-12-8	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/13/18 02:08, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	10		ug/L	10	76-13-1	Y
Acetone	Not detected	100		ug/L	10	67-64-1	Y
Carbon disulfide	Not detected	10		ug/L	10	75-15-0	Y
Methyl Acetate	Not detected	100		ug/L	10	79-20-9	Y
tert-Methyl butyl ether (MTBE)	Not detected	10		ug/L	10	1634-04-4	Y
2-Butanone (MEK)	Not detected	100		ug/L	10	78-93-3	Y
Dichlorodifluoromethane	Not detected	10		ug/L	10	75-71-8	Y
Chloromethane	Not detected	10		ug/L	10	74-87-3	Y
Vinyl chloride	Not detected	10		ug/L	10	75-01-4	Y
Bromomethane	Not detected	10		ug/L	10	74-83-9	Y
Chloroethane	Not detected	10		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	10		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	Not detected	10		ug/L	10	156-59-2	Y
Chloroform	Not detected	10		ug/L	10	67-66-3	Y
1,1,1-Trichloroethane	Not detected	10		ug/L	10	71-55-6	Y
Cyclohexane	50	10		ug/L	10	110-82-7	Y
4-Methyl-2-pentanone (MIBK)	Not detected	100		ug/L	10	108-10-1	Y
2-Hexanone	Not detected	100		ug/L	10	591-78-6	Y
Carbon tetrachloride	Not detected	10		ug/L	10	56-23-5	Y
Benzene	260	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
Methyl cyclohexane	Not detected	10		ug/L	10	108-87-2	Y
cis-1,3-Dichloropropene	Not detected	10		ug/L	10	10061-01-5	Y
Toluene	100	10		ug/L	10	108-88-3	Y

Y-Elevated reporting limit due to high target concentration

Lab Sample ID: S97666.13 (continued)
Sample Tag: MW-14-54_121018

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/13/18 02:08, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
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	Not detected	10		ug/L	10	127-18-4	Y
Dibromochloromethane	Not detected	10		ug/L	10	124-48-1	Y
Chlorobenzene	Not detected	10		ug/L	10	108-90-7	Y
1,1,2,2-Tetrachloroethane	Not detected	10		ug/L	10	79-34-5	Y
Ethylbenzene	1,200	10		ug/L	10	100-41-4	Y
p,m-Xylene*	780	20		ug/L	10		Y
o-Xylene	50	10		ug/L	10	95-47-6	Y
Styrene	Not detected	10		ug/L	10	100-42-5	Y
Isopropylbenzene	50	10		ug/L	10	98-82-8	Y
Bromoform	Not detected	10		ug/L	10	75-25-2	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
1,2,4-Trichlorobenzene	Not detected	10		ug/L	10	120-82-1	Y

Y-Elevated reporting limit due to high target concentration

Lab Sample ID: S97666.14
Sample Tag: MW-12-01_121018
Collected Date/Time: 12/10/2018 12:30
Matrix: Groundwater
COC Reference: 120330

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/13/18 14:30	JML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 12/12/18 14:55, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

Lab Sample ID: S97666.15
Sample Tag: MW-16-76_121018
Collected Date/Time: 12/10/2018 14:00
Matrix: Groundwater
COC Reference: 120330

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/12/18 14:00	JML	

Organics - Volatiles

Method: SW5030C/8260C, Run Date: 12/12/18 03:13, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromo-3-chloropropane	Not detected	1		ug/L	1	96-12-8	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	

Method: SW8260B - SIM, Run Date: 12/12/18 15:17, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	5	1		ug/L	1	123-91-1	

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/12/18 23:54, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
Acetone	Not detected	10		ug/L	1	67-64-1	
Carbon disulfide	Not detected	1		ug/L	1	75-15-0	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	1		ug/L	1	1634-04-4	
2-Butanone (MEK)	Not detected	10		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	1		ug/L	1	75-71-8	
Chloromethane	Not detected	1		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	1		ug/L	1	74-83-9	
Chloroethane	Not detected	1		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	1		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	
Chloroform	Not detected	1		ug/L	1	67-66-3	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	10		ug/L	1	108-10-1	
2-Hexanone	Not detected	10		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	

Lab Sample ID: S97666.15 (continued)
Sample Tag: MW-16-76_121018

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/12/18 23:54, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
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	
Dibromochloromethane	Not detected	1		ug/L	1	124-48-1	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
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	1		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
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	
1,2,4-Trichlorobenzene	Not detected	1		ug/L	1	120-82-1	

Lab Sample ID: S97666.16
Sample Tag: MW-12-18_121018
Collected Date/Time: 12/10/2018 15:35
Matrix: Groundwater
COC Reference: 120330

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/12/18 14:00	JML	

Organics - Volatiles

Method: SW5030C/8260C, Run Date: 12/12/18 03:33, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromo-3-chloropropane	Not detected	1		ug/L	1	96-12-8	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
Acetone	Not detected	10		ug/L	1	67-64-1	
Carbon disulfide	Not detected	1		ug/L	1	75-15-0	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	1		ug/L	1	1634-04-4	
2-Butanone (MEK)	Not detected	10		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	1		ug/L	1	75-71-8	
Chloromethane	Not detected	1		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	1		ug/L	1	74-83-9	
Chloroethane	Not detected	1		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	1		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	2	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Chloroform	Not detected	1		ug/L	1	67-66-3	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	10		ug/L	1	108-10-1	
2-Hexanone	Not detected	10		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	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
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	
Dibromochloromethane	Not detected	1		ug/L	1	124-48-1	

Lab Sample ID: S97666.16 (continued)
Sample Tag: MW-12-18_121018

Method: SW5030C/8260C, Run Date: 12/12/18 03:33, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
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	1		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
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	
1,2,4-Trichlorobenzene	Not detected	1		ug/L	1	120-82-1	

Lab Sample ID: S97666.17
Sample Tag: Trip Blank
Collected Date/Time: 12/10/2018 00:01
Matrix: Water
COC Reference: 120330

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	4.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/12/18 14:00	JML	

Organics - Volatiles

Method: SW5030C/8260C, Run Date: 12/12/18 02:11, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromo-3-chloropropane	Not detected	1		ug/L	1	96-12-8	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
Acetone	Not detected	10		ug/L	1	67-64-1	
Carbon disulfide	Not detected	1		ug/L	1	75-15-0	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	1		ug/L	1	1634-04-4	
2-Butanone (MEK)	Not detected	10		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	1		ug/L	1	75-71-8	
Chloromethane	Not detected	1		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	1		ug/L	1	74-83-9	
Chloroethane	Not detected	1		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	1		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	
Chloroform	Not detected	1		ug/L	1	67-66-3	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	10		ug/L	1	108-10-1	
2-Hexanone	Not detected	10		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	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
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	
Dibromochloromethane	Not detected	1		ug/L	1	124-48-1	

Lab Sample ID: S97666.17 (continued)

Sample Tag: Trip Blank

Method: SW5030C/8260C, Run Date: 12/12/18 02:11, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
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	1		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
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	
1,2,4-Trichlorobenzene	Not detected	1		ug/L	1	120-82-1	

Lab Sample ID: S97666.18
Sample Tag: MW-13-38_121018
Collected Date/Time: 12/10/2018 10:25
Matrix: Groundwater
COC Reference: 120330

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/13/18 14:30	JML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 12/12/18 15:37, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

Lab Sample ID: S97666.19
Sample Tag: MW-13-41_121018
Collected Date/Time: 12/10/2018 12:30
Matrix: Groundwater
COC Reference: 120330

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/13/18 14:30	JML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 12/12/18 15:58, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	18	1		ug/L	1	123-91-1	

Lab Sample ID: S97666.20
Sample Tag: MW-02-02(3)_121018
Collected Date/Time: 12/10/2018 14:15
Matrix: Groundwater
COC Reference: 120330

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/13/18 14:30	JML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 12/12/18 16:20, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

Analytical Laboratory Report

Lab Sample ID: S97666.21
Sample Tag: MW-13-29_121018
Collected Date/Time: 12/10/2018 16:10
Matrix: Groundwater
COC Reference: 120330

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/13/18 14:30	JML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 12/12/18 16:41, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	16	1		ug/L	1	123-91-1	

Merit Laboratories Login Checklist

Lab Set ID: S97666
Client: ARCADIS_NOVI (ARCADIS U.S., Inc.)
Project: B0064479.2018.00603 / RACER Lansing
Submitted: 12/10/2018 16:55 Login User: MMC

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

Phone: 734-585-7817 FAX: 248-994-2241
Email: christine.gregg@arcadis.com

Selection				Description	Note
Sample Receiving					
01.	[X] Yes	[ ] No	[ ] N/A	Samples are received at 4C +/- 2C Thermometer #	IR 4.0
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.	[X] Yes	[ ] No	[ ] 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	[ ] No	[X] 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 Bottle Preservation Check

Lab Set ID: S97666 Initials: MMC

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

Project: B0064479.2018.00603 / RACER Lansing

Submitted: 12/10/2018 16:55 Login User:

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

Phone: 734-585-7817 FAX: 248-994-2241
Email: christine.gregg@arcadis.com

Lab ID	125 ml Plastic HNO_3	250 ml Plastic HNO_3	1 L Plastic HNO_3	250 ml Plastic H_2SO_4	125 ml Amber H_2SO_4	32 oz Glass HCl	125 ml Plastic NaOH	125 ml Amber $PbCO_3$ NaOH	pH					Notes
									<2	>12	other	ml add	new pH	
S97666.07	X								X					
S97666.07	X								X					
S97666.08	X								X					
S97666.09	X								X					

Prepared by Merit Laboratories

Merit Laboratories, Inc.

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www.meritlabs.com

C.O.C. PAGE # 1 OF 2

102378

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME: Christine Gregg
COMPANY: Arcadis
ADDRESS: 28550 Cabot Dr, Ste 500
CITY: Novi STATE: MI ZIP CODE: 48377
PHONE NO.: 248-994-2295 FAX NO.:
P.O. NO.:
E-MAIL ADDRESS: christene.gregg@arcadis.com
QUOTE NO.:

INVOICE TO

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

PROJECT NO./NAME: B006447.2018 / Roger Lansing
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Jake Pisarkiewicz

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~~ Water

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	VOC's	1,4 Dioxane	Total Select Metals*	Dissolved Select Metals*
97666.01	12-10-18	1015	MW-16-84_121018	GW	3		3						X	X		
.02	12-10-18	1135	MW-17-86_121018	GW	3		3						X	X		
.03	12-10-18	1325	MW-14-61_121018	GW	3		3							X		
.04	12-10-18	1430	MW-12-06_121018	GW	3		3							X		
.05	12-10-18	1545	MW-16-78_121018	GW	3		3						X	X		
.06	12-10-18	1052	MWBP-11-UST1-4_121018	GW	3		3						X			
.07	12-10-18	1232	MW-13-35_121018	GW	2			2							X	X
.08	12-10-18	1352	MW-12-16_121018	GW	1			1							X	
.09	12-10-18	1413	EB-06_121018	W	4		3	1					X		X	
.10	12-10-18	1300	MW-13-46_121018	GW	3		3							X		
.11	12-10-18	1430	MW-91-6_121018	GW	3		3							X		
.12	12-10-18	1550	MW-13-49_121018	GW	3		3							X		

* Select Metals Arsenic, Nickel, Lead, Vanadium, Chromium, Copper

RELINQUISHED BY: SIGNATURE/ORGANIZATION	~~A~~ Sampler	DATE 12-10-18	TIME 1655
RECEIVED BY: SIGNATURE/ORGANIZATION	M Arcadis	DATE 12/10/18	TIME 1655
RELINQUISHED BY: SIGNATURE/ORGANIZATION		DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION		DATE	TIME

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 4.0

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

Rev. 5.18.12

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C.O.C. PAGE # 2 OF 2 120330

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME: Christine Gregg
COMPANY: Arcadis
ADDRESS: 28550 Cabot Dr. #500
CITY: Novi STATE: MI ZIP CODE: 48377
PHONE NO.: 248-483-6634 FAX NO.:
P.O. NO.: B006447A.2018
E-MAIL ADDRESS: christine.gregg@arcadis.com
QUOTE NO.:

INVOICE TO

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

PROJECT NO./NAME: RACER Lansing
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Daniel Stockard / Daniel Stockard

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	VOCs 8260	1,4-D 8260B SIMS
97666.13	12/10/18	10:35	MW-14-54-121018	GW	3		3						X	
.14		12:30	MW-12-01_121018	GW	3		3							X
.15		14:00	MW-16-76_121018	GW	3		3						X	X
.16		15:35	MW-12-18_121018	GW	3		3						X	
.17			Trip Blank										X	
.18	12.10.18	1025	MW-13-38_121018	GW	3		3							X
.19		1230	MW-13-41-121018	GW	3		3							X
.20		1415	MW-02-02_3_121018	GW	3		3							X
.21		1610	MW-13-29_121018	GW	3		3							X

RELINQUISHED BY: SIGNATURE/ORGANIZATION	Daniel Stockard / ☒ Sampler	DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION		12/10/18	16:25
RELINQUISHED BY: SIGNATURE/ORGANIZATION		12/10/18	1625
RECEIVED BY: SIGNATURE/ORGANIZATION		DATE	TIME
RELINQUISHED BY: SIGNATURE/ORGANIZATION		DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION		DATE	TIME

RELINQUISHED BY: SIGNATURE/ORGANIZATION		12-10-18	1655
RECEIVED BY: SIGNATURE/ORGANIZATION	M Chilcote	12/10/18	1655

SEAL NO. SEAL INTACT YES ☐ NO ☐ INITIALS

SEAL NO. SEAL INTACT YES ☐ NO ☐ INITIALS

NOTES: TEMP. ON ARRIVAL 4.0

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

Rev. 5.18.12

Analytical Laboratory Report

Report ID: S97739.01(01)
Generated on 12/21/2018

Report to

Attention: Christine Gregg
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Suite 500
Novi, MI 48377

Phone: 734-585-7817 FAX: 248-994-2241
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Addtional Contacts: Alex Villhauer, Kristen Padron, Randy Christensen

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

Report Summary

Lab Sample ID(s): S97739.01-S97739.20
Project: B0064479.2018.00603 / RACER Lansing
Collected Date: 12/11/2018
Submitted Date/Time: 12/11/2018 16:50
Sampled by: Pisarkiewicz/ Stockard
P.O. #: B0064479.2018.00603

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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).
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

Method Summary

Method	Version
N/A	Not Applicable
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs

Sample Summary (20 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S97739.01	MW-16-79_121118	Groundwater	12/11/18 10:00
S97739.02	MW-13-43_121118	Groundwater	12/11/18 11:30
S97739.03	MW-13-44_121118	Groundwater	12/11/18 14:05
S97739.04	PW-14-02_121118	Groundwater	12/11/18 15:20
S97739.05	PW-14-03_121118	Groundwater	12/11/18 09:50
S97739.06	FB-02_121118	Water	12/11/18 10:40
S97739.07	MW-13-23_121118	Groundwater	12/11/18 11:25
S97739.08	MW-13-28_121118	Groundwater	12/11/18 13:10
S97739.09	MW-12-21_121118	Groundwater	12/11/18 15:50
S97739.10	MW-16-81_121118	Groundwater	12/11/18 09:55
S97739.11	MW-14-62_121118	Groundwater	12/11/18 10:55
S97739.12	MW-01(2)_121118	Groundwater	12/11/18 12:35
S97739.13	MW-12-05R_121118	Groundwater	12/11/18 13:55
S97739.14	MW-16-82_121118	Groundwater	12/11/18 15:05
S97739.15	Trip Blank	Water	12/11/18 00:01
S97739.16	MW-13-48_121118	Groundwater	12/11/18 10:05
S97739.17	MW-13-47_121118	Groundwater	12/11/18 12:00
S97739.18	MW-13-34_121118	Groundwater	12/11/18 13:30
S97739.19	MW-91-5_121118	Groundwater	12/11/18 15:40
S97739.20	DUP_06	Groundwater	12/11/18 00:01

Analytical Laboratory Report

Lab Sample ID: S97739.01
Sample Tag: MW-16-79_121118
Collected Date/Time: 12/11/2018 10:00
Matrix: Groundwater
COC Reference: 102379

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	6.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/13/18 14:30	JML	

Organics - Volatiles

Method: SW5030C/8260C, Run Date: 12/13/18 00:52, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromo-3-chloropropane	Not detected	1		ug/L	1	96-12-8	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	

Method: SW8260B - SIM, Run Date: 12/12/18 17:02, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/13/18 00:52, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
Acetone	Not detected	10		ug/L	1	67-64-1	
Carbon disulfide	Not detected	1		ug/L	1	75-15-0	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	1		ug/L	1	1634-04-4	
2-Butanone (MEK)	Not detected	10		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	1		ug/L	1	75-71-8	
Chloromethane	Not detected	1		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	1		ug/L	1	74-83-9	
Chloroethane	Not detected	1		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	1		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	
Chloroform	Not detected	1		ug/L	1	67-66-3	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	10		ug/L	1	108-10-1	
2-Hexanone	Not detected	10		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	

Lab Sample ID: S97739.01 (continued)
Sample Tag: MW-16-79_121118

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/13/18 00:52, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
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	
Dibromochloromethane	Not detected	1		ug/L	1	124-48-1	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
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	1		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
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	
1,2,4-Trichlorobenzene	Not detected	1		ug/L	1	120-82-1	

Lab Sample ID: S97739.02
Sample Tag: MW-13-43_121118
Collected Date/Time: 12/11/2018 11:30
Matrix: Groundwater
COC Reference: 102379

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	6.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/13/18 14:30	JML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 12/20/18 21:22, Analyst: JML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	320	5		ug/L	5	123-91-1	Y

Y-Elevated reporting limit due to high target concentration

Lab Sample ID: S97739.03
Sample Tag: MW-13-44_121118
Collected Date/Time: 12/11/2018 14:05
Matrix: Groundwater
COC Reference: 102379

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	6.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/13/18 14:30	JML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 12/20/18 15:47, Analyst: JML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

Lab Sample ID: S97739.04
Sample Tag: PW-14-02_121118
Collected Date/Time: 12/11/2018 15:20
Matrix: Groundwater
COC Reference: 102379

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	6.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/13/18 14:30	JML	

Organics - Volatiles

Method: SW5030C/8260C, Run Date: 12/13/18 01:11, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromo-3-chloropropane	Not detected	1		ug/L	1	96-12-8	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	

Method: SW8260B - SIM, Run Date: 12/20/18 21:43, Analyst: JML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	240	5		ug/L	5	123-91-1	Y

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/13/18 01:11, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
Acetone	Not detected	10		ug/L	1	67-64-1	
Carbon disulfide	Not detected	1		ug/L	1	75-15-0	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	1		ug/L	1	1634-04-4	
2-Butanone (MEK)	Not detected	10		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	1		ug/L	1	75-71-8	
Chloromethane	Not detected	1		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	1		ug/L	1	74-83-9	
Chloroethane	Not detected	1		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	1		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	
Chloroform	Not detected	1		ug/L	1	67-66-3	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	10		ug/L	1	108-10-1	
2-Hexanone	Not detected	10		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	

Y-Elevated reporting limit due to high target concentration

Lab Sample ID: S97739.04 (continued)
Sample Tag: PW-14-02_121118

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/13/18 01:11, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
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	
Dibromochloromethane	Not detected	1		ug/L	1	124-48-1	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
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	1		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
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	
1,2,4-Trichlorobenzene	Not detected	1		ug/L	1	120-82-1	

Lab Sample ID: S97739.05
Sample Tag: PW-14-03_121118
Collected Date/Time: 12/11/2018 09:50
Matrix: Groundwater
COC Reference: 102379

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	6.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/13/18 14:30	JML	

Organics - Volatiles

Method: SW5030C/8260C, Run Date: 12/14/18 14:35, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromo-3-chloropropane	Not detected	1		ug/L	1	96-12-8	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	

Method: SW8260B - SIM, Run Date: 12/20/18 22:04, Analyst: JML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	378	5		ug/L	5	123-91-1	Y

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/14/18 14:35, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
Acetone	Not detected	10		ug/L	1	67-64-1	
Carbon disulfide	Not detected	1		ug/L	1	75-15-0	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	1		ug/L	1	1634-04-4	
2-Butanone (MEK)	Not detected	10		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	1		ug/L	1	75-71-8	
Chloromethane	Not detected	1		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	1		ug/L	1	74-83-9	
Chloroethane	Not detected	1		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	1		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	
Chloroform	Not detected	1		ug/L	1	67-66-3	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	10		ug/L	1	108-10-1	
2-Hexanone	Not detected	10		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	

Y-Elevated reporting limit due to high target concentration

Lab Sample ID: S97739.05 (continued)
Sample Tag: PW-14-03_121118

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/14/18 14:35, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
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	
Dibromochloromethane	Not detected	1		ug/L	1	124-48-1	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
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	1		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
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	
1,2,4-Trichlorobenzene	Not detected	1		ug/L	1	120-82-1	

Lab Sample ID: S97739.06
Sample Tag: FB-02_121118
Collected Date/Time: 12/11/2018 10:40
Matrix: Water
COC Reference: 102379

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	6.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/13/18 14:30	JML	

Organics - Volatiles

Method: SW5030C/8260C, Run Date: 12/13/18 08:19, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromo-3-chloropropane	Not detected	1		ug/L	1	96-12-8	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
Acetone	Not detected	10		ug/L	1	67-64-1	
Carbon disulfide	Not detected	1		ug/L	1	75-15-0	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	1		ug/L	1	1634-04-4	
2-Butanone (MEK)	Not detected	10		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	1		ug/L	1	75-71-8	
Chloromethane	Not detected	1		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	1		ug/L	1	74-83-9	
Chloroethane	Not detected	1		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	1		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	
Chloroform	Not detected	1		ug/L	1	67-66-3	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	10		ug/L	1	108-10-1	
2-Hexanone	Not detected	10		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	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
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	
Dibromochloromethane	Not detected	1		ug/L	1	124-48-1	

Lab Sample ID: S97739.06 (continued)
Sample Tag: FB-02_121118

Method: SW5030C/8260C, Run Date: 12/13/18 08:19, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
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	1		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
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	
1,2,4-Trichlorobenzene	Not detected	1		ug/L	1	120-82-1	

Lab Sample ID: S97739.07
Sample Tag: MW-13-23_121118
Collected Date/Time: 12/11/2018 11:25
Matrix: Groundwater
COC Reference: 102379

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	6.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/13/18 14:30	JML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 12/20/18 16:08, Analyst: JML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	4	1		ug/L	1	123-91-1	

Lab Sample ID: S97739.08
Sample Tag: MW-13-28_121118
Collected Date/Time: 12/11/2018 13:10
Matrix: Groundwater
COC Reference: 102379

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	6.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/13/18 14:30	JML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 12/12/18 19:09, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

Analytical Laboratory Report

Lab Sample ID: S97739.09
Sample Tag: MW-12-21_121118
Collected Date/Time: 12/11/2018 15:50
Matrix: Groundwater
COC Reference: 102379

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	6.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/13/18 14:30	JML	

Organics - Volatiles

Method: SW5030C/8260C, Run Date: 12/13/18 09:54, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromo-3-chloropropane	Not detected	1		ug/L	1	96-12-8	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	

Method: SW8260B - SIM, Run Date: 12/20/18 22:25, Analyst: JML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	251	5		ug/L	5	123-91-1	Y

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/13/18 09:54, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
Acetone	Not detected	10		ug/L	1	67-64-1	
Carbon disulfide	Not detected	1		ug/L	1	75-15-0	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	1		ug/L	1	1634-04-4	
2-Butanone (MEK)	Not detected	10		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	1		ug/L	1	75-71-8	
Chloromethane	Not detected	1		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	1		ug/L	1	74-83-9	
Chloroethane	Not detected	1		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	1		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	
Chloroform	Not detected	1		ug/L	1	67-66-3	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	10		ug/L	1	108-10-1	
2-Hexanone	Not detected	10		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	

Y-Elevated reporting limit due to high target concentration

Lab Sample ID: S97739.09 (continued)
Sample Tag: MW-12-21_121118

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/13/18 09:54, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
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	
Dibromochloromethane	Not detected	1		ug/L	1	124-48-1	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
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	1		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
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	
1,2,4-Trichlorobenzene	Not detected	1		ug/L	1	120-82-1	

Lab Sample ID: S97739.10
Sample Tag: MW-16-81_121118
Collected Date/Time: 12/11/2018 09:55
Matrix: Groundwater
COC Reference: 120331

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	6.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/13/18 14:30	JML	

Organics - Volatiles

Method: SW5030C/8260C, Run Date: 12/13/18 10:14, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromo-3-chloropropane	Not detected	1		ug/L	1	96-12-8	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	

Method: SW8260B - SIM, Run Date: 12/20/18 22:46, Analyst: JML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	2,100	100		ug/L	100	123-91-1	Y

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/13/18 10:14, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
Acetone	Not detected	10		ug/L	1	67-64-1	
Carbon disulfide	Not detected	1		ug/L	1	75-15-0	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	1		ug/L	1	1634-04-4	
2-Butanone (MEK)	Not detected	10		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	1		ug/L	1	75-71-8	
Chloromethane	Not detected	1		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	1		ug/L	1	74-83-9	
Chloroethane	Not detected	1		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	1		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	
Chloroform	Not detected	1		ug/L	1	67-66-3	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	10		ug/L	1	108-10-1	
2-Hexanone	Not detected	10		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	

Y-Elevated reporting limit due to high target concentration

Lab Sample ID: S97739.10 (continued)
Sample Tag: MW-16-81_121118

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/13/18 10:14, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
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	
Dibromochloromethane	Not detected	1		ug/L	1	124-48-1	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
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	1		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
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	
1,2,4-Trichlorobenzene	Not detected	1		ug/L	1	120-82-1	

Lab Sample ID: S97739.11
Sample Tag: MW-14-62_121118
Collected Date/Time: 12/11/2018 10:55
Matrix: Groundwater
COC Reference: 120331

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	6.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/13/18 14:30	JML	

Organics - Volatiles

Method: SW5030C/8260C, Run Date: 12/13/18 10:33, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromo-3-chloropropane	Not detected	1		ug/L	1	96-12-8	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	

Method: SW8260B - SIM, Run Date: 12/20/18 16:28, Analyst: JML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	59	1		ug/L	1	123-91-1	

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/13/18 10:33, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
Acetone	Not detected	10		ug/L	1	67-64-1	
Carbon disulfide	Not detected	1		ug/L	1	75-15-0	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	1		ug/L	1	1634-04-4	
2-Butanone (MEK)	Not detected	10		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	1		ug/L	1	75-71-8	
Chloromethane	Not detected	1		ug/L	1	74-87-3	
Vinyl chloride	1	1		ug/L	1	75-01-4	
Bromomethane	Not detected	1		ug/L	1	74-83-9	
Chloroethane	4	1		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	1		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	84	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Chloroform	Not detected	1		ug/L	1	67-66-3	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	10		ug/L	1	108-10-1	
2-Hexanone	Not detected	10		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	

Lab Sample ID: S97739.11 (continued)
Sample Tag: MW-14-62_121118

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/13/18 10:33, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
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	
Dibromochloromethane	Not detected	1		ug/L	1	124-48-1	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
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	1		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
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	
1,2,4-Trichlorobenzene	Not detected	1		ug/L	1	120-82-1	

Lab Sample ID: S97739.12
Sample Tag: MW-01(2)_121118
Collected Date/Time: 12/11/2018 12:35
Matrix: Groundwater
COC Reference: 120331

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	6.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/13/18 14:30	JML	

Organics - Volatiles

Method: SW5030C/8260C, Run Date: 12/13/18 10:53, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromo-3-chloropropane	Not detected	1		ug/L	1	96-12-8	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
Acetone	Not detected	10		ug/L	1	67-64-1	
Carbon disulfide	Not detected	1		ug/L	1	75-15-0	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
tert-Methyl butyl ether (MTBE)	14	1		ug/L	1	1634-04-4	
2-Butanone (MEK)	Not detected	10		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	1		ug/L	1	75-71-8	
Chloromethane	Not detected	1		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	1		ug/L	1	74-83-9	
Chloroethane	Not detected	1		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	1		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	
Chloroform	Not detected	1		ug/L	1	67-66-3	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	10		ug/L	1	108-10-1	
2-Hexanone	Not detected	10		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	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
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	
Dibromochloromethane	Not detected	1		ug/L	1	124-48-1	

Lab Sample ID: S97739.12 (continued)
Sample Tag: MW-01(2)_121118

Method: SW5030C/8260C, Run Date: 12/13/18 10:53, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
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	1		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
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	
1,2,4-Trichlorobenzene	Not detected	1		ug/L	1	120-82-1	

Lab Sample ID: S97739.13
Sample Tag: MW-12-05R_121118
Collected Date/Time: 12/11/2018 13:55
Matrix: Groundwater
COC Reference: 120331

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	6.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/21/18 13:00	JML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 12/20/18 16:50, Analyst: JML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

Lab Sample ID: S97739.14
Sample Tag: MW-16-82_121118
Collected Date/Time: 12/11/2018 15:05
Matrix: Groundwater
COC Reference: 120331

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	6.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/13/18 14:30	JML	

Organics - Volatiles

Method: SW5030C/8260C, Run Date: 12/13/18 11:12, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromo-3-chloropropane	Not detected	1		ug/L	1	96-12-8	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	

Method: SW8260B - SIM, Run Date: 12/20/18 17:11, Analyst: JML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/13/18 11:12, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
Acetone	Not detected	10		ug/L	1	67-64-1	
Carbon disulfide	Not detected	1		ug/L	1	75-15-0	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	1		ug/L	1	1634-04-4	
2-Butanone (MEK)	Not detected	10		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	1		ug/L	1	75-71-8	
Chloromethane	Not detected	1		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	1		ug/L	1	74-83-9	
Chloroethane	Not detected	1		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	1		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	
Chloroform	Not detected	1		ug/L	1	67-66-3	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	10		ug/L	1	108-10-1	
2-Hexanone	Not detected	10		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	

Lab Sample ID: S97739.14 (continued)
Sample Tag: MW-16-82_121118

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/13/18 11:12, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
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	
Dibromochloromethane	Not detected	1		ug/L	1	124-48-1	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
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	1		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
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	
1,2,4-Trichlorobenzene	Not detected	1		ug/L	1	120-82-1	

Lab Sample ID: S97739.15
Sample Tag: Trip Blank
Collected Date/Time: 12/11/2018 00:01
Matrix: Water
COC Reference: 120331

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	6.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/13/18 14:30	JML	

Organics - Volatiles

Method: SW5030C/8260C, Run Date: 12/13/18 08:00, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromo-3-chloropropane	Not detected	1		ug/L	1	96-12-8	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
Acetone	Not detected	10		ug/L	1	67-64-1	
Carbon disulfide	Not detected	1		ug/L	1	75-15-0	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	1		ug/L	1	1634-04-4	
2-Butanone (MEK)	Not detected	10		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	1		ug/L	1	75-71-8	
Chloromethane	Not detected	1		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	1		ug/L	1	74-83-9	
Chloroethane	Not detected	1		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	1		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	
Chloroform	Not detected	1		ug/L	1	67-66-3	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	10		ug/L	1	108-10-1	
2-Hexanone	Not detected	10		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	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
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	
Dibromochloromethane	Not detected	1		ug/L	1	124-48-1	

Lab Sample ID: S97739.15 (continued)

Sample Tag: Trip Blank

Method: SW5030C/8260C, Run Date: 12/13/18 08:00, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
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	1		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
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	
1,2,4-Trichlorobenzene	Not detected	1		ug/L	1	120-82-1	

Lab Sample ID: S97739.16
Sample Tag: MW-13-48_121118
Collected Date/Time: 12/11/2018 10:05
Matrix: Groundwater
COC Reference: 120331

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	6.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/13/18 14:30	JML	

Organics - Volatiles

Method: SW5030C/8260C, Run Date: 12/13/18 11:31, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromo-3-chloropropane	Not detected	1		ug/L	1	96-12-8	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	

Method: SW8260B - SIM, Run Date: 12/20/18 17:33, Analyst: JML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	117	1		ug/L	1	123-91-1	

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/13/18 11:31, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
Acetone	Not detected	10		ug/L	1	67-64-1	
Carbon disulfide	Not detected	1		ug/L	1	75-15-0	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	1		ug/L	1	1634-04-4	
2-Butanone (MEK)	Not detected	10		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	1		ug/L	1	75-71-8	
Chloromethane	Not detected	1		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	1		ug/L	1	74-83-9	
Chloroethane	Not detected	1		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	1		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	
Chloroform	Not detected	1		ug/L	1	67-66-3	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	10		ug/L	1	108-10-1	
2-Hexanone	Not detected	10		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	

Lab Sample ID: S97739.16 (continued)
Sample Tag: MW-13-48_121118

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/13/18 11:31, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
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	
Dibromochloromethane	Not detected	1		ug/L	1	124-48-1	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
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	1		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
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	
1,2,4-Trichlorobenzene	Not detected	1		ug/L	1	120-82-1	

Lab Sample ID: S97739.17
Sample Tag: MW-13-47_121118
Collected Date/Time: 12/11/2018 12:00
Matrix: Groundwater
COC Reference: 120331

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	6.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/21/18 13:00	JML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 12/20/18 17:54, Analyst: JML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

Lab Sample ID: S97739.18
Sample Tag: MW-13-34_121118
Collected Date/Time: 12/11/2018 13:30
Matrix: Groundwater
COC Reference: 120331

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	6.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/13/18 14:30	JML	

Organics - Volatiles

Method: SW5030C/8260C, Run Date: 12/13/18 11:50, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromo-3-chloropropane	Not detected	1		ug/L	1	96-12-8	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	

Method: SW8260B - SIM, Run Date: 12/20/18 18:15, Analyst: JML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	70	1		ug/L	1	123-91-1	

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/13/18 11:50, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
Acetone	Not detected	10		ug/L	1	67-64-1	
Carbon disulfide	Not detected	1		ug/L	1	75-15-0	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	1		ug/L	1	1634-04-4	
2-Butanone (MEK)	Not detected	10		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	1		ug/L	1	75-71-8	
Chloromethane	Not detected	1		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	1		ug/L	1	74-83-9	
Chloroethane	Not detected	1		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	1		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	
Chloroform	Not detected	1		ug/L	1	67-66-3	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	10		ug/L	1	108-10-1	
2-Hexanone	Not detected	10		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	

Lab Sample ID: S97739.18 (continued)
Sample Tag: MW-13-34_121118

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/13/18 11:50, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
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	
Dibromochloromethane	Not detected	1		ug/L	1	124-48-1	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
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	1		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
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	
1,2,4-Trichlorobenzene	Not detected	1		ug/L	1	120-82-1	

Lab Sample ID: S97739.19
Sample Tag: MW-91-5_121118
Collected Date/Time: 12/11/2018 15:40
Matrix: Groundwater
COC Reference: 120331

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	6.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/21/18 13:00	JML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 12/20/18 18:55, Analyst: JML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

Lab Sample ID: S97739.20
Sample Tag: DUP_06
Collected Date/Time: 12/11/2018 00:01
Matrix: Groundwater
COC Reference: 120331

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	6.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/13/18 14:30	JML	

Organics - Volatiles

Method: SW5030C/8260C, Run Date: 12/13/18 12:09, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromo-3-chloropropane	Not detected	1		ug/L	1	96-12-8	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	

Method: SW8260B - SIM, Run Date: 12/20/18 19:16, Analyst: JML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	105	1		ug/L	1	123-91-1	

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/13/18 12:09, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
Acetone	Not detected	10		ug/L	1	67-64-1	
Carbon disulfide	Not detected	1		ug/L	1	75-15-0	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	1		ug/L	1	1634-04-4	
2-Butanone (MEK)	Not detected	10		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	1		ug/L	1	75-71-8	
Chloromethane	Not detected	1		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	1		ug/L	1	74-83-9	
Chloroethane	Not detected	1		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	1		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	
Chloroform	Not detected	1		ug/L	1	67-66-3	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	10		ug/L	1	108-10-1	
2-Hexanone	Not detected	10		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	

Lab Sample ID: S97739.20 (continued)
Sample Tag: DUP_06

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/13/18 12:09, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
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	
Dibromochloromethane	Not detected	1		ug/L	1	124-48-1	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
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	1		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
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	
1,2,4-Trichlorobenzene	Not detected	1		ug/L	1	120-82-1	

Merit Laboratories Login Checklist

Lab Set ID: S97739
Client: ARCADIS_NOVI (ARCADIS U.S., Inc.)
Project: B0064479.2018.00603 / RACER Lansing
Submitted: 12/11/2018 16:50 Login User: SRS

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

Phone: 734-585-7817 FAX: 248-994-2241
Email: christine.gregg@arcadis.com

Selection				Description	Note
Sample Receiving					
01.	[X] Yes	[ ] No	[ ] N/A	Samples are received at 4C +/- 2C Thermometer #	IR 6.0
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 2

102379

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME: Christine Gregg
COMPANY: Arcadis
ADDRESS: 28550 Cabot Dr. Ste 500
CITY: Novi STATE: MI ZIP CODE: 48377
PHONE NO.: 248 994 2295 FAX NO.: P.O. NO.:
E-MAIL ADDRESS: christine.gregg@arcadis.com QUOTE NO.:

INVOICE TO

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

PROJECT NO./NAME: B0064479.2018 / Racer Lansing
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Jake Pisarkiewicz

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	VOCs	1,4-Dioxane
97139.01	12-11-18	1000	MW-16-79_121118	GW	3		3						X	X
.02	12-11-18	1130	MW-13-43_121118	GW	3		3							X
.03	12-11-18	1405	MW-13-44_121118	GW	3		3							X
.04	12-11-18	1520	PW-14-02_121118	GW	3		3						X	X
.05	12-11-18	0950	PW-14-03_121118	GW	3		3						X	X
.06	12-11-18	1040	FB-02_121118	W	3		3						X	
.07	12-11-18	1125	MW-13-23_121118	GW	3		3							X
.08	12-11-18	1310	MW-13-28_121118	GW	3		3							X
.09	12-11-18	1550	MW-12-21_121118	GW	3		3						X	X

RELINQUISHED BY: SIGNATURE/ORGANIZATION	☒ Sampler	DATE 12-11-18	TIME 1650
RECEIVED BY: SIGNATURE/ORGANIZATION		DATE 12/11	TIME 1650
RELINQUISHED BY: SIGNATURE/ORGANIZATION		DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION		DATE	TIME

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 6.0

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

Rev. 5.18.12

Merit Laboratories, Inc.
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C.O.C. PAGE # 2 OF 2 — 120331

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME: Christine Gregg
COMPANY: Arcadis
ADDRESS: 28550 Cabot Dr. #500
CITY: Novi STATE: MI ZIP CODE: 48377
PHONE NO.: 248-483-6634 FAX NO.:
P.O. NO.: B006474.2018
E-MAIL ADDRESS: christine.gregg@arcadis.com
QUOTE NO.:

INVOICE TO

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

PROJECT NO./NAME: RACER Lansing
SAMPLER(S) - PLEASE PRINT/SIGN NAME: David Stockard David Stockard

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	VOCs 8260	1,4-D 8260 SIM
97739.10	12/11/18	9:55	MW-16-81_121118	GW	3		3						X	X
.11		10:55	MW-14-62_121118	GW	3		3						X	X
.12		12:35	MW-01(2)_121118	GW	3		3						X	
.13		13:55	MW-12-05R_121118	GW	3		3							X
.14		15:05	MW-16-82_121118	GW	3		3						X	X
.15			Trip Blank	W	1		1						X	
.16	12/11/18	1005	MW-13-48_121118	GW	3		3						X	X
.17		1200	MW-13-47_121118	GW	3		3							X
.18		1330	MW-13-34_121118	GW	3		3						X	X
.19		1540	MW-91-5_121118	GW	3		3							X
.20	↓	—	DUP-06	GW	3		3						X	X

RELINQUISHED BY: SIGNATURE/ORGANIZATION: David Stockard ☒ Sampler — DATE: 12/11/18 TIME: 15:35
RECEIVED BY: SIGNATURE/ORGANIZATION: — DATE: 12-11-18 TIME: 1535

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

RELINQUISHED BY: SIGNATURE/ORGANIZATION: — DATE: 12-11-18 TIME: 1650
RECEIVED BY: SIGNATURE/ORGANIZATION: M Chilcote — DATE: 12/11/18 TIME: 1680

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

NOTES: TEMP. ON ARRIVAL: 4.0

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

Rev. 5

Analytical Laboratory Report

Report ID: S97777.01(01)
Generated on 12/21/2018

Report to

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Report Summary

Lab Sample ID(s): S97777.01-S97777.08
Project: B0064479.2018 / RACER Lansing
Collected Date: 12/12/2018
Submitted Date/Time: 12/12/2018 15:20
Sampled by: Jake Pisarkiewicz
P.O. #: B0064479.2018

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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).
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

Method Summary

Method	Version
N/A	Not Applicable
SW3015A	SW 846 Method 3015A Revision 1 February 2007
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003
SW6020A	SW 846 Method 6020A Revision 1 February 2007
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs

Sample Summary (8 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S97777.01	Trip Blank	Water	12/12/18 00:01
S97777.02	MW-15-71_121218	Groundwater	12/12/18 09:35
S97777.03	MW-13-24_121218	Groundwater	12/12/18 11:05
S97777.04	MW-13-24_121218 MS	Groundwater	12/12/18 11:05
S97777.05	MW-13-24_121218 MSD	Groundwater	12/12/18 11:05
S97777.06	MW-14-64_121218	Groundwater	12/12/18 09:40
S97777.07	MW-13-22_121218	Groundwater	12/12/18 11:20
S97777.08	EB-07_121218	Water	12/12/18 11:45

Analytical Laboratory Report

Lab Sample ID: S97777.01
Sample Tag: Trip Blank
Collected Date/Time: 12/12/2018 00:01
Matrix: Water
COC Reference: 102380

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	4.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/13/18 14:30	JML	

Organics - Volatiles

Method: SW5030C/8260C, Run Date: 12/12/18 21:02, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromo-3-chloropropane	Not detected	1		ug/L	1	96-12-8	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
Acetone	Not detected	10		ug/L	1	67-64-1	
Carbon disulfide	Not detected	1		ug/L	1	75-15-0	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	1		ug/L	1	1634-04-4	
2-Butanone (MEK)	Not detected	10		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	1		ug/L	1	75-71-8	
Chloromethane	Not detected	1		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	1		ug/L	1	74-83-9	
Chloroethane	Not detected	1		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	1		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	
Chloroform	Not detected	1		ug/L	1	67-66-3	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	10		ug/L	1	108-10-1	
2-Hexanone	Not detected	10		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	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
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	
Dibromochloromethane	Not detected	1		ug/L	1	124-48-1	

Lab Sample ID: S97777.01 (continued)
Sample Tag: Trip Blank

Method: SW5030C/8260C, Run Date: 12/12/18 21:02, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
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	1		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
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	
1,2,4-Trichlorobenzene	Not detected	1		ug/L	1	120-82-1	

Analytical Laboratory Report

Lab Sample ID: S97777.02
Sample Tag: MW-15-71_121218
Collected Date/Time: 12/12/2018 09:35
Matrix: Groundwater
COC Reference: 102380

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/21/18 13:00	JML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 12/20/18 19:37, Analyst: JML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

Analytical Laboratory Report

Lab Sample ID: S97777.03
Sample Tag: MW-13-24_121218
Collected Date/Time: 12/12/2018 11:05
Matrix: Groundwater
COC Reference: 102380

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/21/18 13:00	JML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 12/20/18 15:26, Analyst: JML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

Lab Sample ID: S97777.04
Sample Tag: MW-13-24_121218 MS
Collected Date/Time: 12/12/2018 11:05
Matrix: Groundwater
COC Reference: 102380

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/21/18 13:00	JML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 12/20/18 14:04, Analyst: JML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	65	1		ug/L	1	123-91-1	1

1-spiked at 50ug/L

Analytical Laboratory Report

Lab Sample ID: S97777.05
Sample Tag: MW-13-24_121218 MSD
Collected Date/Time: 12/12/2018 11:05
Matrix: Groundwater
COC Reference: 102380

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/21/18 13:00	JML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 12/20/18 23:06, Analyst: JML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	49	1		ug/L	1	123-91-1	1

1-spiked at 50ug/L

Lab Sample ID: S97777.06
Sample Tag: MW-14-64_121218
Collected Date/Time: 12/12/2018 09:40
Matrix: Groundwater
COC Reference: 102380

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/21/18 13:00	JML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 12/20/18 19:58, Analyst: JML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

Lab Sample ID: S97777.07
Sample Tag: MW-13-22_121218
Collected Date/Time: 12/12/2018 11:20
Matrix: Groundwater
COC Reference: 102380

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/13/18 14:30	JML	

Organics - Volatiles

Method: SW5030C/8260C, Run Date: 12/14/18 14:54, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromo-3-chloropropane	Not detected	1		ug/L	1	96-12-8	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	

Method: SW8260B - SIM, Run Date: 12/20/18 20:19, Analyst: JML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	160	1		ug/L	1	123-91-1	

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/14/18 14:54, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
Acetone	Not detected	10		ug/L	1	67-64-1	
Carbon disulfide	Not detected	1		ug/L	1	75-15-0	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	1		ug/L	1	1634-04-4	
2-Butanone (MEK)	Not detected	10		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	1		ug/L	1	75-71-8	
Chloromethane	Not detected	1		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	1		ug/L	1	74-83-9	
Chloroethane	Not detected	1		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	1		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	
Chloroform	Not detected	1		ug/L	1	67-66-3	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	10		ug/L	1	108-10-1	
2-Hexanone	Not detected	10		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	

Lab Sample ID: S97777.07 (continued)
Sample Tag: MW-13-22_121218

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/14/18 14:54, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
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	
Dibromochloromethane	Not detected	1		ug/L	1	124-48-1	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
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	1		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
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	
1,2,4-Trichlorobenzene	Not detected	1		ug/L	1	120-82-1	

Lab Sample ID: S97777.08
Sample Tag: EB-07_121218
Collected Date/Time: 12/12/2018 11:45
Matrix: Water
COC Reference: 102380

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125ml Plastic	HNO3	Yes	4.5	IR
3	40ml Glass	HCL	Yes	4.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/13/18 14:30	JML	
Metal Digestion	Completed	SW3015A	12/18/18 09:00	JRH	

Metals

Method: SW6020A, Run Date: 12/18/18 11:56, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	Not detected	0.002		mg/L	2	7440-38-2	
Chromium	Not detected	0.005		mg/L	2	7440-47-3	
Copper	Not detected	0.005		mg/L	2	7440-50-8	
Lead	Not detected	0.003		mg/L	2	7439-92-1	
Nickel	0.007	0.005		mg/L	2	7440-02-0	
Vanadium	Not detected	0.005		mg/L	2	7440-62-2	

Organics - Volatiles

Method: SW5030C/8260C, Run Date: 12/13/18 07:40, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromo-3-chloropropane	Not detected	1		ug/L	1	96-12-8	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
Acetone	Not detected	10		ug/L	1	67-64-1	
Carbon disulfide	Not detected	1		ug/L	1	75-15-0	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	1		ug/L	1	1634-04-4	
2-Butanone (MEK)	Not detected	10		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	1		ug/L	1	75-71-8	
Chloromethane	Not detected	1		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	1		ug/L	1	74-83-9	
Chloroethane	Not detected	1		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	3	1		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	
Chloroform	Not detected	1		ug/L	1	67-66-3	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	10		ug/L	1	108-10-1	
2-Hexanone	Not detected	10		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	

Lab Sample ID: S97777.08 (continued)
Sample Tag: EB-07_121218

Method: SW5030C/8260C, Run Date: 12/13/18 07:40, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
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	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
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	
Dibromochloromethane	Not detected	1		ug/L	1	124-48-1	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
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	1		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
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	
1,2,4-Trichlorobenzene	Not detected	1		ug/L	1	120-82-1	

Merit Laboratories Login Checklist

Lab Set ID: S97777
Client: ARCADIS_NOVI (ARCADIS U.S., Inc.)
Project: B0064479.2018 / RACER Lansing
Submitted: 12/12/2018 15:20 Login User: SRS

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

Phone: 734-585-7817 FAX: 248-994-2241
Email: christine.gregg@arcadis.com

Selection				Description	Note
Sample Receiving					
01.	[X] Yes	[ ] No	[ ] N/A	Samples are received at 4C +/- 2C Thermometer #	IR 4.5
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.	[X] Yes	[ ] No	[ ] 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 Bottle Preservation Check

Lab Set ID: S97777 Initials: SRS

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

Project: B0064479.2018 / RACER Lansing

Submitted: 12/12/2018 15:20 Login User:

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

Phone: 734-585-7817 FAX: 248-994-2241
Email: christine.gregg@arcadis.com

Lab ID	125 ml Plastic HNO_3	250 ml Plastic HNO_3	1 L Plastic HNO_3	250 ml Plastic H_2SO_4	125 ml Amber H_2SO_4	32 oz Glass HCl	125 ml Plastic NaOH	125 ml Amber $PbCO_3$ NaOH	pH					Notes
									<2	>12	other	ml add	new pH	
S97777.08	X								X					

Prepared by Merit Laboratories

Merit Laboratories, Inc.

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Phone (517) 332-0167 Fax (517) 332-4034
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C.O.C. PAGE # 1 OF 1

102380

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME: Christine Gregg
COMPANY: Arcadis
ADDRESS: 28550 Cabot Dr #500
CITY: Novi STATE: MI ZIP CODE: 48377
PHONE NO.: 248 483 6634 FAX NO.: P.O. NO.:
E-MAIL ADDRESS: christine.gregg@arcadis.com QUOTE NO.:

INVOICE TO

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

PROJECT NO./NAME: BOD04479.2018 / Razer Lansing
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Jake P. Sarkowski

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

MERIT LAB NO. (FOR LAB USE ONLY)	YEAR DATE	TIME	SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives: NONE	HCl	HNO_3	H_2SO_4	NaOH	MeOH	OTHER	VOC's	14 Diox	Select Total Metals *	Special Instructions
97777.01	12.12.18	AM	Trip Blank	W	1		1						X			
.02	12.12.18	0935	MW-15-71_121218	GW	3		3							X		
.03/.04/.05	12.12.18	1105	MW-13-24_121218	GW	9		9							X		MS/MSD
.06	12.12.18	0940	MW-14-64_121218	GW	3		3							X		
.07	12.12.18	1120	MW-13-22_121218	GW	3		3						X	X		
.08	12.12.18	1145	EB-07_121218	W	4		3	1					X		X	* Select Metals: Arsenic, Nickel, Lead, Vanadium, Chromium, Copper.

RELINQUISHED BY: SIGNATURE/ORGANIZATION	DATE	TIME
Sampler	12.12.18	1520
RECEIVED BY: SIGNATURE/ORGANIZATION	12/12/18	1520
RELINQUISHED BY: SIGNATURE/ORGANIZATION		
RECEIVED BY: SIGNATURE/ORGANIZATION		

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 4.5

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

Rev. 5.18.12

Analytical Laboratory Report

Report ID: S97789.01(01)
Generated on 12/26/2018

Report to

Attention: Alex Villhauer
ARCADIS U.S., Inc.
300 S. Washington Square
Suite 315
Lansing, MI 48933

Phone: 616-780-3277 FAX: 248-994-2241
Email: alex.villhauer@arcadis.com

Addtional Contacts: Christine Gregg

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): S97789.01-S97789.07
Project: B0064479.2018.03100 / RACER Lansing
Collected Date: 12/12/2018
Submitted Date/Time: 12/13/2018 08:15
Sampled by: Austin Westhuis
P.O. #: B0064479.2018.03100

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

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

Method Summary

Method	Version
N/A	Not Applicable
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs

Analytical Laboratory Report

Sample Summary (7 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S97789.01	PMW-02_12122018	Groundwater	12/12/18 13:30
S97789.02	LMW-12-03D_12122018	Groundwater	12/12/18 14:30
S97789.03	LMW-15-16D_12122018	Groundwater	12/12/18 15:10
S97789.04	LMW-12-08_12122018	Groundwater	12/12/18 13:15
S97789.05	PL-SB-37_12122018	Groundwater	12/12/18 14:30
S97789.06	PMW-01_12122018	Groundwater	12/12/18 15:20
S97789.07	LMW-12-5_12122018	Groundwater	12/12/18 16:05

Analytical Laboratory Report

Lab Sample ID: S97789.01
Sample Tag: PMW-02_12122018
Collected Date/Time: 12/12/2018 13:30
Matrix: Groundwater
COC Reference: 120338

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	12/17/18 16:10	JML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 12/21/18 17:05, Analyst: JML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	2,120	50		ug/L	50	123-91-1	Y

Y-Elevated reporting limit due to high target concentration

Analytical Laboratory Report

Lab Sample ID: S97789.02
Sample Tag: LMW-12-03D_12122018
Collected Date/Time: 12/12/2018 14:30
Matrix: Groundwater
COC Reference: 120338

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	12/21/18 13:00	JML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 12/21/18 15:19, Analyst: JML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	160	1		ug/L	1	123-91-1	

Lab Sample ID: S97789.03
Sample Tag: LMW-15-16D_12122018
Collected Date/Time: 12/12/2018 15:10
Matrix: Groundwater
COC Reference: 120338

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	12/21/18 13:00	JML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 12/21/18 17:26, Analyst: JML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	790	50		ug/L	50	123-91-1	Y

Y-Elevated reporting limit due to high target concentration

Analytical Laboratory Report

Lab Sample ID: S97789.04
Sample Tag: LMW-12-08_12122018
Collected Date/Time: 12/12/2018 13:15
Matrix: Groundwater
COC Reference: 120338

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	12/21/18 13:00	JML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 12/21/18 16:44, Analyst: JML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	2,060	50		ug/L	50	123-91-1	Y

Y-Elevated reporting limit due to high target concentration

Analytical Laboratory Report

Lab Sample ID: S97789.05
Sample Tag: PL-SB-37_12122018
Collected Date/Time: 12/12/2018 14:30
Matrix: Groundwater
COC Reference: 120338

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	12/21/18 13:00	JML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 12/21/18 16:02, Analyst: JML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	244	5		ug/L	5	123-91-1	Y

Y-Elevated reporting limit due to high target concentration

Analytical Laboratory Report

Lab Sample ID: S97789.06
Sample Tag: PMW-01_12122018
Collected Date/Time: 12/12/2018 15:20
Matrix: Groundwater
COC Reference: 120338

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	12/21/18 13:00	JML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 12/21/18 15:41, Analyst: JML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	87	1		ug/L	1	123-91-1	

Analytical Laboratory Report

Lab Sample ID: S97789.07
Sample Tag: LMW-12-5_12122018
Collected Date/Time: 12/12/2018 16:05
Matrix: Groundwater
COC Reference: 120338

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	12/21/18 13:00	JML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 12/21/18 16:23, Analyst: JML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	710	10		ug/L	10	123-91-1	Y

Y-Elevated reporting limit due to high target concentration

Merit Laboratories Login Checklist

Lab Set ID: S97789
Client: ARCADIS_NOVI (ARCADIS U.S., Inc.)
Project: B0064479.2018.03100 / RACER Lansing
Submitted: 12/13/2018 08:15 Login User: MMC

Attention: Alex Villhauer
Address: ARCADIS U.S., Inc.
300 S. Washington Square
Suite 315
Lansing, MI 48933

Phone: 616-780-3277 FAX: 248-994-2241
Email: alex.villhauer@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	[ ] No	[X] 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

120338

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME: Alex Villhauer
COMPANY: Arcadis of Michigan, LLC
ADDRESS: 300 S. Washington Square, Suite 315
CITY: Lansing STATE: MI ZIP CODE: 48933
PHONE NO.: 616-780-3277 FAX NO.: P.O. NO.: B0064479.2018.03100
E-MAIL ADDRESS: Alex.Villhauer@arcadis.com QUOTE NO.:

INVOICE TO

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

PROJECT NO./NAME: B0064479.2018.03100 / RACER Lansing
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Austin Westhuis / [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)

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	1,4-Dioxane 8260B SIMS
97789.01	12/12/18	1330	PMW-02_12122018	GW	3		3						X
~~.02~~	~~12/12/18~~	~~1345~~	~~Dup-01_12122018~~	~~GW~~	~~3~~		~~3~~						~~X~~
.02	12/12/18	1430	LMW-12-03D_12122018	GW	3		3						X
.03	12/12/18	1510	LMW-15-16D_12122018	GW	3		3						X
.04	12/12/18	1315	LMW-12-08_12122018	GW	3		3						X
.05	12/12/18	1430	PZ-SB-37_12122018	GW	3		3						X
.06	12/12/18	1520	PMW-01_12122018	GW	3		3						X
.07	12/12/18	1605	LMW-17-5_12122018	GW	3		3						X

	SIGNATURE/ORGANIZATION	DATE	TIME
RELINQUISHED BY:	Brett Perfetto / Arcadis ☐ Sampler	12/12/18	1745
RECEIVED BY:	Drop/Lock box / Merit	12/12/18	1745
RELINQUISHED BY:			
RECEIVED BY:			

	SIGNATURE/ORGANIZATION	DATE	TIME
RELINQUISHED BY:	Merit Drop Box	12/13/18	0815
RECEIVED BY:	M Chilcott	12/13/18	0815

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. 5.18.12

APPENDIX D

Low Flow Logs

(On attached CD)

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018.01301 | Page: 1 of 2

Site Location: Plant | Date: 3/5/18

Site/Well No.: MW-16-81 | Replicate No.: NA | Code No.: NA

Weather: Cloudy, = 35°F | Sampling Time: Begin 1455 End 1500

Evacuation Data

Measuring Point	TOC
MP Elevation (ft)	NA
Land Surface Elevation (ft)	NA
Sounded Well Depth (ft bmp)	77.38
Depth to Water (ft bmp)	67.95
Water-Level Elevation (ft)	NA
Water Column in Well (ft)	9.43
Casing Diameter/Type	2"/pvc
Gallons in Well	= 1.51
Gallons Pumped/Bailed Prior to Sampling	= 1.00
Sample Pump Intake Setting (ft bmp)	= 74.88
Purge Time	begin 1410 end 1500
Pumping Rate (ml/min)	100
Evacuation Method	Bladder Pump

Field Parameters

Temperature (°C)	10.92
SpC (mS/cm)	3.062
CND (mS/cm)	2.238
Dissolved Oxygen (%)	4.2
Dissolved Oxygen (mg/L)	0.46
pH (s.u.)	6.96
ORP (mV)	48.5
Turbidity (NTU)	8.59
Color	Clear
Odor	None
Appearance	Clear
Sampling Method	Low Flow
Remarks	Dup-01_030518 collected here

Constituents Sampled	Container Description	Number	Preservative
1,4-Dioxane 8260B SIM	40ml voa	3 6	HCl

Sampling Personnel: A. Westhuis

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-16-81 PROJ #: B0064479.2018.01301

DATE : 3/5/18 LOC: RACER Lansing - Plant

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1415	10.87	3.039	2.220	18.0	1.93	6.99	93.3	100	21.3	68.21
1420	11.45	3.046	2.258	8.7	0.95	6.98	75.6	100	16.7	68.49
1425	11.36	3.059	2.262	7.4	0.79	6.96	68.0	100	14.3	68.51
1430	11.22	3.052	2.250	6.0	0.66	6.94	64.0	100	12.9	68.53
1435	11.55	3.054	2.271	5.2	0.54	6.94	54.9	100	11.3	68.58
1440	11.53	3.062	2.273	4.5	0.50	6.94	51.9	100	9.83	68.63
1445	11.11	3.062	2.250	4.4	0.48	6.94	49.9	100	9.16	68.66
1450	10.92	3.062	2.238	4.2	0.46	6.96	48.5	100	8.59	68.68
1455	Sample Collected									
Total Depth of Well: 77.38										
Depth To Water Before Purging: 67.95										
Depth To Water After Purging: 68.68										

ARCADIS

Water Sampling Log

Project	RACER Lansing	Project No.	B0064479.2018.01301	Page	1 of 2
Site Location	Plant			Date	3/5/18
Site/Well No.	~~MW-16-84~~ aw MW-16-84	Replicate No.	NA	Code No.	NA
Weather	Cloudy, ~35 °F	Sampling Time:	Begin 1625	End	1630

Evacuation Data

Measuring Point	TOC
MP Elevation (ft)	NA
Land Surface Elevation (ft)	NA
Sounded Well Depth (ft bmp)	~~77.27~~ aw 81.19
Depth to Water (ft bmp)	70.61
Water-Level Elevation (ft)	NA
Water Column in Well (ft)	~~6.66~~ aw 10.58
Casing Diameter/Type	2"/PVC
Gallons in Well	~~=1.06~~ aw 1.69
Gallons Pumped/Bailed Prior to Sampling	=1.00
Sample Pump Intake Setting (ft bmp)	~~=74.71~~ aw =78.69
Purge Time	begin 1535 end 1630
Pumping Rate (ml/min)	100
Evacuation Method	Bladder Pump

Field Parameters

Temperature (°C)	10.43
SpC (mS/cm)	1.309
CND (mS/cm)	0.946
Dissolved Oxygen (%)	4.7
Dissolved Oxygen (mg/L)	0.53
pH (s.u.)	7.60
ORP (mV)	-3.6
Turbidity (NTU)	1.50
Color	Clear
Odor	None
Appearance	Clear
Sampling Method	Low Flow
Remarks	

Constituents Sampled	Container Description	Number	Preservative
1,4-Dioxane 8260B SIMS	40ml voa	3	HCl

Sampling Personnel: A. Westhuis

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : ~~MW-16-84~~ aw MW-16-84 PROJ #: B0064479.2018.01301

DATE : 8/5/18 LOC: RACER Lansing - Plant

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1540	11.72	1.068	0.798	8.5	0.93	7.43	12.3	100	5.62	71.75
1545	10.83	1.092	0.797	6.9	0.75	7.49	7.5	100	4.81	71.73
1550	10.59	1.168	0.850	6.4	0.71	7.36	14.9	100	3.69	71.70
1555	10.57	1.257	0.911	5.6	0.61	7.33	16.0	100	2.68	71.69
1600	10.46	1.283	0.927	4.0	0.44	7.39	11.1	100	2.22	71.69
1605	10.50	1.291	0.935	4.2	0.47	7.46	5.6	100	2.11	71.69
1610	10.59	1.300	0.943	4.4	0.49	7.52	-3.2	100	2.01	71.69
1615	10.48	1.307	0.945	4.6	0.51	7.59	-3.5	100	1.71	71.69
1620	10.43	1.309	0.946	4.7	0.53	7.60	-3.6	100	1.50	71.69
1625	Sample	Collected								
			aw							
Total Depth of Well:			~~77.21~~ 81.19							
Depth To Water Before Purging:			70.61							
Depth To Water After Purging:			71.69							

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018.01301 | Page: 1 of 2

Site Location: Plant 2 | Date: 3/6/18

Site/Well No.: MW-16-82 | Replicate No.: NA | Code No.: NA

Weather: Cloudy, light snow, =30°F | Sampling Time: Begin 0935 End 0940

Evacuation Data

Measuring Point	TOC
MP Elevation (ft)	NA
Land Surface Elevation (ft)	NA
Sounded Well Depth (ft bmp)	77.21
Depth to Water (ft bmp)	67.45
Water-Level Elevation (ft)	NA
Water Column in Well (ft)	9.76
Casing Diameter/Type	2"/PVC
Gallons in Well	=1.56
Gallons Pumped/Bailed Prior to Sampling	=1.00
Sample Pump Intake Setting (ft bmp)	=74.81
Purge Time	begin 0850 end 0940
Pumping Rate (ml/min)	100
Evacuation Method	Bladder Pump

Field Parameters

Temperature (°C)	10.58
SpC (mS/cm)	1.112
CND (mS/cm)	0.805
Dissolved Oxygen (%)	5.6
Dissolved Oxygen (mg/L)	0.62
pH (s.u.)	7.25
ORP (mV)	-12.6
Turbidity (NTU)	0.78
Color	Clear
Odor	None
Appearance	Clear
Sampling Method	Low Flow
Remarks	MS/MSD collected here.

Constituents Sampled	Container Description	Number	Preservative
1,4-Dioxane 8260 SIMS	40ml voa	9	HCl

Sampling Personnel: A. Westhuis

Well Casing Volumes

Gal./Ft.				
0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-16-82 PROJ #: B0064479.2018.01801

DATE : 3/6/18 LOC: RACER Lansing - Plant

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
0855	10.51	1.099	0.795	9.6	1.07	7.45	-8.3	100	16.4	68.45
0900	10.57	1.107	0.801	7.7	0.86	7.43	-9.3	100	12.1	68.49
0905	10.59	1.106	0.802	8.3	0.92	7.42	-9.3	100	8.65	68.53
0910	10.52	1.113	0.803	7.6	0.85	7.40	-10.5	100	3.21	68.53
0915	10.53	1.113	0.805	5.8	0.66	7.35	-11.1	100	2.68	68.53
0920	10.55	1.113	0.806	5.4	0.60	7.32	-11.9	100	1.15	68.53
0925	10.56	1.113	0.806	5.7	0.63	7.28	-12.4	100	1.01	68.53
0930	10.58	1.112	0.805	5.6	0.62	7.25	-12.6	100	0.78	68.53
0935	Sample	Collected								

Total Depth of Well: 77.21

Depth To Water Before Purging: 67.45

Depth To Water After Purging: 68.53

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018.01205 | Page: 1 of 2

Site Location: Plant 3 | Date: 3/6/18

Site/Well No.: MW-02-04(3) | Replicate No.: NA | Code No.: NA

Weather: Cloudy, = 35°F | Sampling Time: Begin 1455 End 1510

Evacuation Data

Measuring Point	TOC
MP Elevation (ft)	NA
Land Surface Elevation (ft)	NA
Sounded Well Depth (ft bmp)	84.09
Depth to Water (ft bmp)	62.46
Water-Level Elevation (ft)	NA
Water Column in Well (ft)	21.63
Casing Diameter/Type	2"/PVC
Gallons in Well	=3.46
Gallons Pumped/Bailed Prior to Sampling	=1.50
Sample Pump Intake Setting (ft bmp)	=79.09
Purge Time	begin 1320 end 1510
Pumping Rate (ml/min)	100
Evacuation Method	Bladder Pump

Field Parameters

Temperature (°C)	9.83
SpC (mS/cm)	5.423
CND (mS/cm)	3.853
Dissolved Oxygen (%)	6.2
Dissolved Oxygen (mg/L)	0.64
pH (s.u.)	7.27
ORP (mV)	31.5
Turbidity (NTU)	66.3
Color	Clear
Odor	None
Appearance	Clear
Sampling Method	Low Flow
Remarks	MS/MSD collected here

Constituents Sampled	Container Description	Number	Preservative
PFAS	250ml plastic	6	None

Sampling Personnel: A. Westhuis

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-02-04(3) PROJ #: B0064479.2018.01205

DATE : 3/6/18 LOC: RACER Lansing - Plant

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1325	10.06	5.397	3.860	29.0	3.14	7.22	90.6	100	364	62.59
1330	10.26	5.400	3.881	21.3	2.33	7.24	82.1	100	282	62.59
1335	11.14	5.405	3.977	17.8	1.91	7.28	73.8	100	239	62.59
1340	11.42	5.407	3.992	15.1	1.68	7.31	62.2	100	196	62.60
1345	11.95	5.408	4.066	13.1	1.44	7.34	54.7	100	161	62.61
1350	11.70	5.412	4.040	12.9	1.34	7.32	47.4	100	151	62.61
1355	11.45	5.428	4.028	12.2	1.30	7.31	42.4	100	131	62.61
1400	11.40	5.446	4.030	11.5	1.23	7.29	40.2	100	125	62.62
1405	11.31	5.461	4.032	10.6	1.18	7.27	34.9	100	112	62.62
1410	11.11	5.458	4.002	10.7	1.15	7.24	35.2	100	108	62.62
1415	10.49	5.454	3.939	10.8	1.18	7.23	35.5	100	102	62.62
1420	10.34	5.443	3.919	10.2	1.12	7.25	37.0	100	97.3	62.62
1425	10.39	5.452	3.926	8.6	0.93	7.23	36.8	100	94.1	62.62
1430	10.37	5.467	3.937	7.0	0.77	7.22	36.5	100	91.6	62.62
1435	10.21	5.421	3.901	6.5	0.71	7.21	36.4	100	86.3	62.62
1440	9.92	5.407	3.850	6.3	0.69	7.20	36.3	100	77.1	62.62
1445	10.14	5.399	3.868	6.1	0.66	7.25	32.0	100	71.7	62.62
1450	9.83	5.423	3.853	6.2	0.64	7.27	31.5	100	66.3	62.62
1455	Sample Collected									
Total Depth of Well: 84.09										
Depth To Water Before Purging: 62.46										
Depth To Water After Purging: 62.62										

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018.01205 | Page: 1 of 2

Site Location: Plant 3 | Date: 3/6/18

Site/Well No.: MW-91-2 | Replicate No.: NA | Code No.: NA

Weather: Cloudy, light snow, 35°F | Sampling Time: Begin 1625 End 1630

Evacuation Data

Measuring Point	TOC
MP Elevation (ft)	NA
Land Surface Elevation (ft)	NA
Sounded Well Depth (ft bmp)	76.66
Depth to Water (ft bmp)	59.70
Water-Level Elevation (ft)	NA
Water Column in Well (ft)	16.96
Casing Diameter/Type	~~2"~~ 4"/PVC
Gallons in Well	=11.02
Gallons Pumped/Bailed Prior to Sampling	= 0.75
Sample Pump Intake Setting (ft bmp)	=71.66
Purge Time	begin 1545 end 1630
Pumping Rate (ml/min)	100
Evacuation Method	Bladder Pump

Field Parameters

Temperature (°C)	12.33
SpC (mS/cm)	1.493
CND (mS/cm)	1.134
Dissolved Oxygen (%)	8.1
Dissolved Oxygen (mg/L)	0.84
pH (s.u.)	7.56
ORP (mV)	-5.2
Turbidity (NTU)	5.14
Color	Clear
Odor	None
Appearance	Clear
Sampling Method	Low Flow
Remarks	Dup-02-030618 collected here.

Constituents Sampled	Container Description	Number	Preservative
PFAS	250 ml poly	4	None

Sampling Personnel: A. Westhuis

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-91-2 PROJ #: B0064479.2018.01205

DATE : 3/6/18 LOC: RACER Lansing - Plant

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1550	12.09	1.460	1.103	13.2	1.42	7.60	-10.9	100	16.1	59.79
1555	12.32	1.486	1.126	10.5	1.12	7.59	-9.2	100	9.50	59.87
1600	12.31	1.488	1.127	9.5	1.02	7.58	-6.8	100	7.96	59.89
1605	12.21	1.492	1.127	9.3	0.99	7.57	-5.8	100	8.42	59.90
1610	12.29	1.489	1.126	8.4	0.89	7.60	-5.5	100	6.24	59.91
1615	12.36	1.492	1.132	8.3	0.86	7.59	-5.3	100	5.54	59.91
1620	12.33	1.493	1.134	8.1	0.84	7.56	-5.2	100	5.14	59.91
1625	Sample Collected									
Total Depth of Well: 76.66										
Depth To Water Before Purging: 59.70										
Depth To Water After Purging: 59.91										

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018.0125 | Page: 1 of 2

Site Location: Plant 3 | Date: 3/7/18

Site/Well No.: CH-14-RO | Replicate No.: NA | Code No.: NA

Weather: Cloudy, light snow showers, ~30°F | Sampling Time: Begin 1140 End 1145

Evacuation Data

Measuring Point	TOC
MP Elevation (ft)	NA
Land Surface Elevation (ft)	NA
Sounded Well Depth (ft bmp)	14.84
Depth to Water (ft bmp)	6.87
Water-Level Elevation (ft)	NA
Water Column in Well (ft)	7.97
Casing Diameter/Type	2" / PVC
Gallons in Well	~1.28
Gallons Pumped/Bailed Prior to Sampling	~1.00
Sample Pump Intake Setting (ft bmp)	~12.34
Purge Time	begin 1056 end 1145
Pumping Rate (ml/min)	100
Evacuation Method	Bladder Pump

Field Parameters

Temperature (°C)	7.68
SpC (mS/cm)	0.890
CND (mS/cm)	0.596
Dissolved Oxygen (%)	3.9
Dissolved Oxygen (mg/L)	0.49
pH (s.u.)	6.99
ORP (mV)	69.0
Turbidity (NTU)	0.35
Color	Slight yellow
Odor	None
Appearance	Slight yellow
Sampling Method	Low Flow
Remarks	

Constituents Sampled	Container Description	Number	Preservative
PFAS	250 ml poly	2	None

Sampling Personnel: A. Westhuis

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : CH-14-RO

PROJ #: B0064479.2018.01205

DATE : 3/7/18

LOC: RACER Lansing - Plant 3

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1100	6.85	0.897	0.586	3.6	0.43	7.24	92.3	100	3.50	7.24
1105	7.53	0.900	0.599	3.2	0.41	7.33	81.4	100	2.98	7.28
1110	7.44	0.901	0.598	5.7	0.70	7.27	79.0	100	2.57	7.31
1115	7.46	0.896	0.596	5.2	0.62	7.16	76.4	100	0.65	7.35
1120	7.85	0.898	0.604	5.1	0.60	7.12	73.3	100	0.60	7.35
1125	7.83	0.891	0.602	4.8	0.56	7.06	71.2	100	0.52	7.35
1130	7.81	0.893	0.600	4.4	0.52	7.00	69.7	100	0.39	7.35
1135	7.68	0.890	0.596	3.9	0.49	6.99	69.0	100	0.35	7.35
1140	Sample	Collected								

Total Depth of Well:	14.84
Depth To Water Before Purging:	6.87
Depth To Water After Purging:	7.35

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018.01301 | Page: 1 of 2

Site Location: Plant 2 | Date: 3/7/18

Site/Well No.: MW-13-44 | Replicate No.: NA | Code No.: NA

Weather: Cloudy, windy, =30°F | Sampling Time: Begin 1430 End 1435

Evacuation Data

Measuring Point	TOC
MP Elevation (ft)	NA
Land Surface Elevation (ft)	NA
Sounded Well Depth (ft bmp)	119.13
Depth to Water (ft bmp)	74.44
Water-Level Elevation (ft)	NA
Water Column in Well (ft)	44.69
Casing Diameter/Type	4" / Steel
Gallons in Well	=29.05
Gallons Pumped/Bailed Prior to Sampling	= 1.00
Sample Pump Intake Setting (ft bmp)	=114.13
Purge Time	begin 1335 end 1435
Pumping Rate (ml/min)	100
Evacuation Method	Bladder Pump

Field Parameters

Temperature (°C)	8.05
SpC (mS/cm)	1.333
CND (mS/cm)	0.902
Dissolved Oxygen (%)	24.8
Dissolved Oxygen (mg/L)	2.90
pH (s.u.)	7.00
ORP (mV)	57.7
Turbidity (NTU)	8.80
Color	clear
Odor	None
Appearance	Clear
Sampling Method	Low Flow
Remarks	

Constituents Sampled	Container Description	Number	Preservative
Low level 1,4-Dioxane	250 ml amber	2	HCl

Sampling Personnel: A. Westhuis

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-13-44 PROJ #: B0064479.2018.01301

DATE : 3/7/18 LOC: RACER Lansing - Plant

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1340	8.48	1.348	0.921	51.1	5.95	6.40	85.6	100	8.14	74.65
1345	8.28	1.345	0.915	47.8	5.58	6.30	79.5	100	7.19	74.72
1350	7.67	1.347	0.902	44.8	5.33	6.27	78.3	100	6.63	74.81
1355	7.88	1.335	0.899	40.9	4.84	6.32	78.2	100	6.40	74.83
1400	8.00	1.335	0.902	36.0	4.20	6.68	68.2	100	6.38	74.85
1405	8.01	1.340	0.904	35.7	4.20	6.74	66.0	100	6.33	74.86
1410	7.91	1.336	0.899	31.9	3.73	6.81	64.2	100	6.89	74.88
1415	7.90	1.333	0.904	29.6	3.42	6.94	58.2	100	7.60	74.89
1420	8.15	1.340	0.907	27.2	3.19	7.01	56.7	100	9.43	74.90
1425	8.05	1.333	0.902	24.8	2.90	7.00	57.7	100	8.80	74.96
1430	Sample Collected									

Total Depth of Well: 119.13

Depth To Water Before Purging: 74.44

Depth To Water After Purging: 74.90

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018.01301 | Page: 1 of 2

Site Location: Plant 2 | Date: 3/7/18

Site/Well No.: MW-12-05R | Replicate No.: NA | Code No.: NA

Weather: Cloudy, = 30°F | Sampling Time: Begin 1620 End 1625

Evacuation Data

Measuring Point	TOC
MP Elevation (ft)	NA
Land Surface Elevation (ft)	NA
Sounded Well Depth (ft bmp)	112.32
Depth to Water (ft bmp)	73.19
Water-Level Elevation (ft)	NA
Water Column in Well (ft)	39.13
Casing Diameter/Type	4" / Steel
Gallons in Well	=25.44
Gallons Pumped/Bailed Prior to Sampling	=1.00
Sample Pump Intake Setting (ft bmp)	=107.32
Purge Time	begin 1620 end 1625
Pumping Rate (ml/min)	100
Evacuation Method	Bladder Pump

Field Parameters

Temperature (°C)	6.25
SpC (mS/cm)	2.082
CND (mS/cm)	1.333
Dissolved Oxygen (%)	10.1
Dissolved Oxygen (mg/L)	1.24
pH (s.u.)	8.11
ORP (mV)	-133.9
Turbidity (NTU)	12.2
Color	Clear
Odor	None
Appearance	Clear
Sampling Method	Low Flow
Remarks	

Constituents Sampled	Container Description	Number	Preservative
Low level 1,4-Dioxane	250 ml poly	1	HCl

Sampling Personnel: A. Westhuis

Well Casing Volumes

Gal./Ft.				
0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-12-05R PROJ #: B0064479.2018.01301

DATE : 3/7/18 LOC: RACER Lansing - Plant 2

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1525	5.54	1.534	0.999	53.4	6.71	8.60	121.4	100	40.0	73.24
1530	5.60	1.927	1.215	18.8	2.30	7.61	40.4	100	28.5	73.29
1535	5.41	2.023	1.267	13.8	1.71	7.73	36.9	100	16.9	73.32
1540	5.46	2.029	1.273	13.4	1.66	7.83	-42.5	100	15.1	73.33
1545	5.54	2.028	1.274	13.8	1.70	7.91	-54.2	100	14.4	73.34
1550	5.87	2.027	1.290	13.9	1.74	8.02	-71.1	100	25.2	73.34
1555	6.35	2.050	1.318	13.6	1.65	8.15	-94.3	100	13.7	73.32
1600	6.24	2.053	1.320	13.2	1.66	8.19	-109.9	100	12.9	73.34
1605	6.90	2.052	1.341	11.0	1.31	8.21	-121.2	100	12.6	73.33
1610	7.18	2.048	1.353	10.9	1.33	8.18	-132.3	100	13.5	73.33
1615	6.25	2.082	1.333	10.1	1.24	8.11	-133.9	100	12.2	73.33
1620	Sample Collected									

Total Depth of Well: 112.32

Depth To Water Before Purging: 73.19

Depth To Water After Purging: 73.33

ARCADIS

Water Sampling Log

Project	RACER Lansing	Project No.	B0064479.2018	Page	1 of 2
Site Location	Lansing, MI			Date	5/8/18
Site/Well No.	MW-13-25	Replicate No.	DUP-06	Code No.	—
Weather	Sunny 65°F	Sampling Time: Begin	1235	End	1245

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	75.00
Depth to Water (ft bmp)	68.18
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	6.82
Casing Diameter/Type	2" PVC
Gallons in Well	1.09
Gallons Pumped/Bailed Prior to Sampling	1.5
Sample Pump Intake Setting (ft bmp)	~72.00
Purge Time	begin ~~1040~~ 1145 end
Pumping Rate (ml/min)	
Evacuation Method	Bladder Pump

Field Parameters

Temperature (°C)	17.4
SpC (mS/cm)	1.82
CND (mS/cm)	1.56
Dissolved Oxygen (%)	17.9
Dissolved Oxygen (mg/L)	1.69
pH (s.u.)	6.61
ORP (mV)	-16.9
Turbidity (NTU)	7.32
Color	clear
Odor	none
Appearance	clear
Sampling Method	grab low flow
Remarks	—

Constituents Sampled	Container Description	Number	Preservative
VOCs	40 ml VOCs	6	HCL
1,4-Dioxane			
~~Select Metals~~			
~~PFAS~~			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel Sam Dunne

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-13-25 PROJ #: B0064479.2018

DATE : 5/08/18 LOC: RACER Lansing, MI

	Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
150	~~1200~~	15.8	2.09	1.74	72.3	7.09	7.22	20.1	150	66.7	Hit pump 68.90
55	~~1205~~	15.9	2.07	1.71	66.7	6.52	7.04	20.6	150	29.8	Hit pump
200	~~1210~~	15.5	1.99	1.62	36.7	3.59	6.69	-3.2	150	20.2	"
205	~~1215~~	16.7	1.92	1.62	32.7	3.15	6.67	-6.8	150	19.4	"
210	~~1220~~	16.7	1.92	1.62	28.9	2.78	6.65	-9.8	150	14.9	"
215	~~1225~~	17.1	1.89	1.60	25.3	2.44	6.63	-10.8	150	12.4	"
	1220	17.3	1.85	1.58	22.2	2.15	6.62	-13.0	150	9.54	"
	1225	17.4	1.83	1.57	20.2	1.91	6.61	-14.7	150	8.38	"
	1230	17.4	1.82	1.56	17.9	1.69	6.61	-16.9	150	7.32	"

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page: 1 of 2

Site Location: Lansing, MI | Date: 5/8/18

Site/Well No.: MW-12-21 | Replicate No.: — | Code No.: —

Weather: Sunny 75°F | Sampling Time: Begin 1425 End 1440

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	78.04
Depth to Water (ft bmp)	65.97
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	12.07
Casing Diameter/Type	2" PVC
Gallons in Well	1.93
Gallons Pumped/Bailed Prior to Sampling	~2
Sample Pump Intake Setting (ft bmp)	~72.5
Purge Time	begin 1345 end 1440
Pumping Rate (ml/min)	
Evacuation Method	Bladder Pump

Field Parameters

Temperature (°C)	20.3
SpC (mS/cm)	1.44
CND (mS/cm)	1.31
Dissolved Oxygen (%)	13.3
Dissolved Oxygen (mg/L)	1.21
pH (s.u.)	6.70
ORP (mV)	-47.6
Turbidity (NTU)	22.7
Color	clear
Odor	none
Appearance	clear
Sampling Method	grab (low flow)
Remarks	Sampled while well parameters stable but well was drawing down significantly

Constituents Sampled	Container Description	Number	Preservative
~~VOCs~~			
1,4-Dioxane	40ml VOA	3	HCL
Select Metals	250 ml plastic	2	NHO_3 * Disolved + Total
~~PFAS~~			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: Sam Dunne

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-12-21 PROJ #: B0064479.2018

DATE : 5/8/18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1355	15.6	1.48	1.21	5.7	0.54	6.67	-65.0	200	14.7	67.65
1400	15.3	1.47	1.20	9.2	0.91	6.64	-53.2	150*	16.4	68.35
1405	16.7	1.44	1.21	12.2	1.17	6.66	-45.0	150	20.1	69.60
1410	16.9	1.44	1.22	13.7	1.32	6.68	-42.5	150*	21.2	Top of pump 70.00
1415	19.8	1.44	1.30	14.1	1.28	6.70	-45.0	100	21.0	Top of pump.
1420	20.3	1.44	1.31	13.3	1.21	6.70	-47.6	100	22.7	top of pump
Total Depth of Well:										
Depth To Water Before Purging:										
Depth To Water After Purging:										

* Slowed pump to slow drawdown

ARCADIS

Water Sampling Log

Project	RACER Lansing	Project No.	B0064479.2018	Page	1 of 2
Site Location	Lansing, MI			Date	5/8/18
Site/Well No.	MW-12-20	Replicate No.	—	Code No.	—
Weather	Sunny 80°F	Sampling Time: Begin	1635	End	1640

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	79.48
Depth to Water (ft bmp)	65.62
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	13.86
Casing Diameter/Type	2" PVC
Gallons in Well	2.22
Gallons Pumped/Bailed Prior to Sampling	1.5
Sample Pump Intake Setting (ft bmp)	~77
Purge Time	begin 1545 end 1640
Pumping Rate (ml/min)	150
Evacuation Method	Bladder pump

Field Parameters

Temperature (°C)	19.9
SpC (mS/cm)	1.25
CND (mS/cm)	1.11
Dissolved Oxygen (%)	14.7
Dissolved Oxygen (mg/L)	1.34
pH (s.u.)	6.88
ORP (mV)	-63.7
Turbidity (NTU)	31.8
Color	clear
Odor	none
Appearance	clear w/ fine white turbidity
Sampling Method	grab low flow
Remarks	

Constituents Sampled	Container Description	Number	Preservative
VOCs	40ml VOA	3	HCL
1,4-Dioxane	[redacted]		
~~Select Metals~~			
~~PFAS~~			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: Sam Dunne

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-12-20 PROJ #: B0064479.2018

DATE : 05/08/18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1555	20.1	1.30	1.17	12.8	1.14	6.82	-82.2	150	29.4	66.22
1600	19.7	1.21	1.14	14.9	1.37	6.81	-65.7	150	31.4	66.82
1605	19.3	1.25	1.11	24.5	2.24	6.85	-49.1	150	28.8	67.54
1610	18.8	1.23	1.09	28.5	2.60	6.87	-38.2	150	31.0	68.05
1615	19.4	1.22	1.10	31.5	2.87	6.88	-33.3	150	30.8	68.93
1620	20.2	1.22	1.11	31.3	2.81	6.88	-36.1	150	32.6	69.21
1625	19.4	1.25	1.11	26.9	2.42	6.87	-50.2	150	32.4	70.11
1630	19.9	1.25	1.11	14.7	1.34	6.88	-63.7	150	31.8	70.93
Total Depth of Well:										
Depth To Water Before Purging:										
Depth To Water After Purging:										

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page: 1 of ____

Site Location: Lansing, MI | Date: 5/09/18

Site/Well No.: PW-14-03 | Replicate No.: — | Code No.: ____

Weather: Sunny 65°F | Sampling Time: Begin 1035 End 1040

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	95.80
Depth to Water (ft bmp)	69.24
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	26.56
Casing Diameter/Type	~~SS~~ 6" PVC
Gallons in Well	39.04
Gallons Pumped/Bailed Prior to Sampling	3
Sample Pump Intake Setting (ft bmp)	82 (screen 79.6-89.6)
Purge Time	begin 0948 end ____
Pumping Rate (ml/min)	200
Evacuation Method	Bladder pump

Field Parameters

Temperature (°C)	15.4
SpC (mS/cm)	2.88
CND (mS/cm)	2.35
Dissolved Oxygen (%)	2.9
Dissolved Oxygen (mg/L)	0.29
pH (s.u.)	6.64
ORP (mV)	5.4
Turbidity (NTU)	15.3
Color	clear
Odor	none
Appearance	clear very fine turbidity
Sampling Method	grab low flow
Remarks	—

Constituents Sampled	Container Description	Number	Preservative
~~VOCs~~			
1,4-Dioxane	40ml VOAs	3	HCl
~~Select Metals~~			
~~PFAS~~			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: Sam Dunne

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : PW-14-03 PROJ #: B0064479.2018

DATE : 5/09/18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
0955	15.2	2.89	2.34	4.5	0.45	6.55	30.8	300	17.4	69.41
1000	15.1	2.88	2.34	3.8	0.39	6.57	29.0	300	16.8	69.
1005	15.6	2.88	2.34	4.1	0.41	6.59	27.8	300	15.2	69.52
1010	15.2	2.88	2.34	3.9	0.37	6.61	25.8	300	15.6	69.56
1015	15.2	2.88	2.34	4.0	0.40	6.62	24.5	300	15.9	69.62
1020	15.2	2.88	2.34	3.5	0.35	6.64	21.1	300	15.6	69.66
1025	15.3	2.88	2.35	3.0	0.30	6.64	15.2	300	15.9	69.68
1030	15.4	2.88	2.35	2.9	0.29	6.64	5.4	300	15.3	69.68

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page: 1 of 2

Site Location: Lansing, MI | Date: 05/09/16

Site/Well No.: MW-14-64 | Replicate No.: — | Code No.: —

Weather: Sunny 65°F wind | Sampling Time: Begin 1215 End 1220

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	106.58
Depth to Water (ft bmp)	67.35
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	39.23
Casing Diameter/Type	2" PVC
Gallons in Well	6.27
Gallons Pumped/Bailed Prior to Sampling	
Sample Pump Intake Setting (ft bmp)	~100 (screen 98.6-108.6)
Purge Time	begin 1128 end
Pumping Rate (ml/min)	
Evacuation Method	Bladder pump

Field Parameters

Temperature (°C)	15.01
SpC (mS/cm)	1.94
CND (mS/cm)	1.57
Dissolved Oxygen (%)	2.4
Dissolved Oxygen (mg/L)	0.24
pH (s.u.)	6.83
ORP (mV)	-83.6
Turbidity (NTU)	1.31
Color	clear
Odor	none
Appearance	clear
Sampling Method	grab - low flow
Remarks	—

Constituents Sampled	Container Description	Number	Preservative
VOCs	40 ml VOAs	3	HCl
~~1,4-Dioxane~~			
~~Select Metals~~			
~~PFAS~~			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: Sam Dunne

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-14-64 PROJ #: B0064479.2018

DATE : 05/09/18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1135	15.0	1.67	1.35	10.9	1.09	6.98	88.5	250	5.88	67.53
1140	15.0	1.66	1.34	6.6	0.66	6.89	47.7	250	7.57	67.58
1145	14.8	1.71	1.38	3.4	0.34	6.80	-45.6	250	2.96	67.58
1150	15.2	1.75	1.42	10.1	1.02	6.88	-62.2	250	5.78	67.58
1155	15.0	1.75	1.41	10.4	1.03	6.87	-59.9	250	4.84	67.58
1200	14.9	1.85	1.49	4.7	0.45	6.83	-73.7	250	2.73	67.59
1205	14.7	1.93	1.55	2.8	0.28	6.82	-80.6	250	1.60	67.58
1210	15.01	1.94	1.57	2.4	0.24	6.83	-83.6	250	1.31	67.58
Total Depth of Well:										
Depth To Water Before Purging:										
Depth To Water After Purging:										

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page: 1 of 2

Site Location: Lansing, MI | Date: 05/09/18

Site/Well No.: MW-13-30 | Replicate No.: MS/MSD | Code No.: —

Weather: overcast windy 61°F | Sampling Time: Begin 1415 End 1425

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	79.80
Depth to Water (ft bmp)	66.35
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	13.45
Casing Diameter/Type	2" PVC
Gallons in Well	2.152
Gallons Pumped/Bailed Prior to Sampling	~~0~~ 2
Sample Pump Intake Setting (ft bmp)	~74 (72-77)
Purge Time	begin 1321 end 1425
Pumping Rate (ml/min)	
Evacuation Method	Bladder Pump

Field Parameters

Temperature (°C)	20.8
SpC (mS/cm)	1.57
CND (mS/cm)	1.44
Dissolved Oxygen (%)	4.8
Dissolved Oxygen (mg/L)	0.41
pH (s.u.)	6.63
ORP (mV)	-71.3
Turbidity (NTU)	7.70
Color	clear
Odor	none
Appearance	clear fine turbidity
Sampling Method	grab - low flow
Remarks	—

Constituents Sampled	Container Description	Number	Preservative
VOCs	40ml VOA's	9	HCl
1,4-Dioxane			
~~Select Metals~~			
~~PFAS~~			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: Sam Dunne

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-13-36 PROJ #: B0064479.2018

DATE : 05/09/18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1325	17.8	1.55	1.33	13.6	1.27	6.75	-28.0	250	1.31	66.95
1330	18.3	1.53	1.34	12.9	1.19	6.74	-25.9	250	15.5	67.13
1335	20.6	1.54	1.41	12.5	1.12	6.72	-41.2	250	17.1	67.18
1340	21.0	1.55	1.43	9.2	0.81	6.66	-53.2	250	19.7	67.22
1345	21.1	1.56	1.44	10.1	0.90	6.69	-60.6	250	19.1	67.23
1350	21.1	1.56	1.44	16.4	1.45	6.78	-57.1	250	18.9	67.23
1355	19.9	1.56	1.41	13.6	1.23	6.71	-66.6	250	15.4	67.25
1400	20.7	1.56	1.42	7.3	0.66	6.64	-66.6	250	9.91	67.30
1405	20.9	1.58	1.45	5.1	0.47	6.63	-68.9	250	8.25	67.33
1410	20.8	1.57	1.44	4.8	0.41	6.63	-71.3	250	7.70	67.36
Total Depth of Well:										
Depth To Water Before Purging:										
Depth To Water After Purging:										

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page: 1 of 2

Site Location: Lansing, MI | Date: 05/09/18

Site/Well No.: MW-98-1 | Replicate No.: — | Code No.: —

Weather: Overcast 65°F | Sampling Time: Begin 1600 End 1605

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	127.15
Depth to Water (ft bmp)	61.76
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	65.39
Casing Diameter/Type	2" PVC
Gallons in Well	10.46
Gallons Pumped/Bailed Prior to Sampling	2
Sample Pump Intake Setting (ft bmp)	~120 (12-124)
Purge Time	begin 1518 end 1605
Pumping Rate (ml/min)	300
Evacuation Method	Bladder Pump

Field Parameters

Temperature (°C)	14.2
SpC (mS/cm)	1.30
CND (mS/cm)	1.03
Dissolved Oxygen (%)	2.6
Dissolved Oxygen (mg/L)	0.26
pH (s.u.)	6.97
ORP (mV)	-97.2
Turbidity (NTU)	1.09
Color	clear
Odor	none
Appearance	clear
Sampling Method	grab low flow
Remarks	

Constituents Sampled	Container Description	Number	Preservative
VOCs	40ml VOA's	3	HCL
1,4-Dioxane			
~~Select Metals~~			
~~PFAS~~			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: Sam Dunne

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-91-5 PROJ #: B0064479.2018

DATE : 05/09/18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1525	14.7	1.26	1.01	18.0	1.80	6.97	-93.9	300	3.81	61.85
1530	13.7	1.31	1.02	5.0	0.52	6.94	-93.5	300	3.49	61.85
1535	14.1	1.30	1.03	3.3	0.35	6.95	-94.4	300	1.41	61.85
1540	14.0	1.31	1.03	2.9	0.30	6.96	-95.8	300	1.20	61.85
1545	13.9	1.31	1.03	2.5	0.26	6.96	-96.2	300	0.96	61.85
1550	14.3	1.30	1.04	2.5	0.25	6.97	-96.6	300	1.01	61.85
1555	14.2	1.30	1.03	2.6	0.26	6.97	-97.2	300	1.09	61.85

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page: 1 of 2

Site Location: Lansing, MI | Date: 05/10/18

Site/Well No.: MW-19 | Replicate No.: — | Code No.: —

Weather: Overcast 60°F | Sampling Time: Begin 1030 End 1035

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	64.38
Depth to Water (ft bmp)	52.35
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	12.03
Casing Diameter/Type	2" PVC
Gallons in Well	1.92
Gallons Pumped/Bailed Prior to Sampling	2.5
Sample Pump Intake Setting (ft bmp)	~59
Purge Time	begin 0920 end
Pumping Rate (ml/min)	150
Evacuation Method	Bladder pump

Field Parameters

Temperature (°C)	14.6
SpC (mS/cm)	0.374
CND (mS/cm)	0.298
Dissolved Oxygen (%)	48.3
Dissolved Oxygen (mg/L)	4.87
pH (s.u.)	7.20
ORP (mV)	139.0
Turbidity (NTU)	9.76
Color	clear
Odor	none
Appearance	turbid → clear
Sampling Method	grab - low flow
Remarks	parameters not stabalized collected it to sample after 1hr of recording readings

Constituents Sampled	Container Description	Number	Preservative
VOCs	40 ml VOA's	3	HCL
~~1,4-Dioxane~~			
~~Select Metals~~			
~~PFAS~~			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: Sam Devine

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

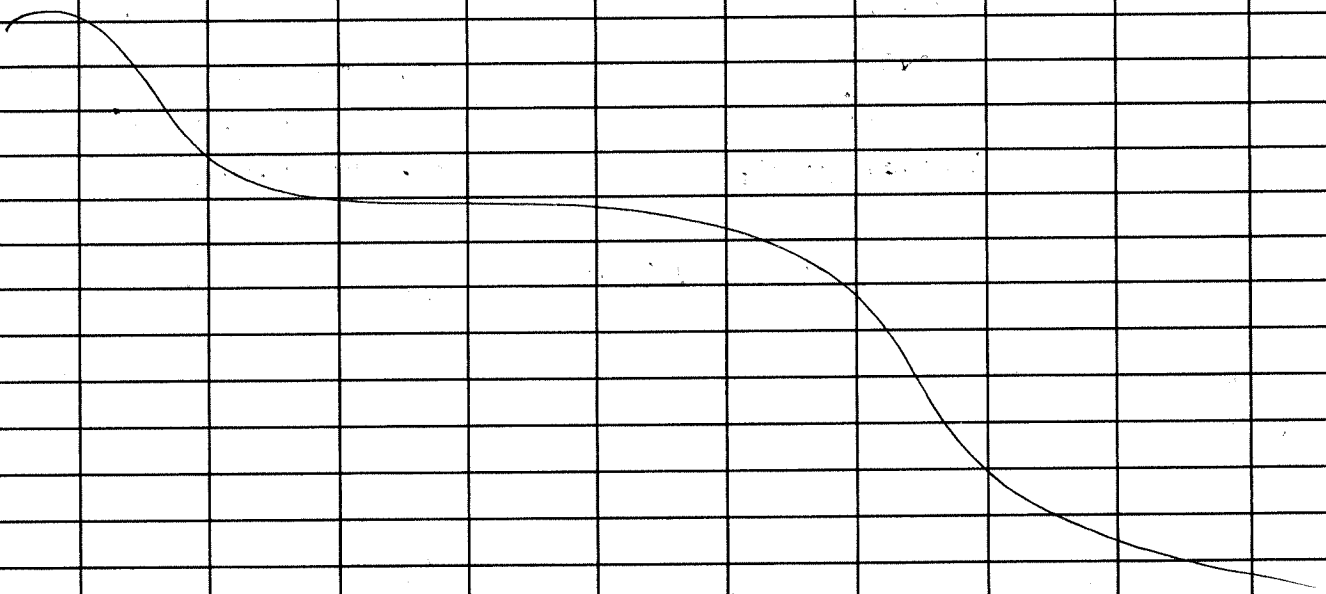
ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-19 PROJ #: B0064479.2018

DATE : 05/10/18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
0930	14.0	0.139	0.110	66.7	6.89	6.31	141.3	200	404	52.83
0935	14.6	0.145	0.116	68.2	6.89	6.54	138.3	~~200~~ 150	185	52.90
0940	14.5	0.159	0.127	70.2	7.10	6.68	138.3	150	127	52.99
0945	14.1	0.167	0.133	67.7	6.96	6.83	138.3	150	93.1	53.08
0950	14.1	0.171	0.135	69.2	6.73	6.88	139.1	150	74.2	53.16
0955	14.3	0.179	0.142	65.2	6.72	6.93	140.4	150	50.5	53.20
1000	14.4	0.190	0.151	62.0	6.31	6.98	141.1	150	42.8	53.30
1005	14.4	0.199	0.159	59.1	5.92	7.02	141.7	150	35.6	53.30
1010	14.3	0.210	0.167	60.9	6.18	7.05	142.2	150	33.9	53.32
1015	14.5	0.244	0.195	55.6	5.63	7.05	143.1	150	19.5	53.34
1020	14.7	0.297	0.239	51.4	5.16	7.13	14.2	150	12.6	53.36
1025	14.6	0.374	0.298	48.3	4.87	7.20	139.0	150	9.76	53.36
Total Depth of Well:										
Depth To Water Before Purging:										
Depth To Water After Purging:										



ARCADIS

Water Sampling Log

Project	RACER Lansing	Project No.	B0064479.2018	Page	1 of 2
Site Location	Lansing, MI			Date	05/10/18
Site/Well No.	MW-23	Replicate No.	—	Code No.	—
Weather	Overcast wind 60°F	Sampling Time: Begin	1220	End	1225

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	61.34
Depth to Water (ft bmp)	50.87
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	10.47
Casing Diameter/Type	2" PVC
Gallons in Well	1.67
Gallons Pumped/Bailed Prior to Sampling	1.5
Sample Pump Intake Setting (ft bmp)	~ 54
Purge Time	begin 1132 end 1225
Pumping Rate (ml/min)	200
Evacuation Method	Bladder pump

Field Parameters

Temperature (°C)	14.9
SpC (mS/cm)	1.51
CND (mS/cm)	1.22
Dissolved Oxygen (%)	2.6
Dissolved Oxygen (mg/L)	0.26
pH (s.u.)	6.90
ORP (mV)	-76.5
Turbidity (NTU)	1.25
Color	clear
Odor	none
Appearance	clear
Sampling Method	grab low flow
Remarks	—

Constituents Sampled	Container Description	Number	Preservative
VOCs	40ml VOA's	3	HCL
1,4-Dioxane			
~~Select Metals~~			
~~PFAS~~			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel Sam Dunne

Well Casing Volumes

Gal./Ft.				
0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-23 PROJ #: B0064479.2018

DATE : 05/10/18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1140	15.0	1.08	0.82	15.1	1.52	6.77	154.5	200	8.77	51.01
1145	15.1	1.10	0.89	9.8	0.99	6.77	112.3	200	5.76	51.05
1150	14.9	1.25	1.01	6.2	0.62	6.73	-9.5	200	5.54	51.06
1155	14.7	1.43	1.14	3.4	0.34	6.78	-58.2	200	2.48	51.06
1200	14.8	1.48	1.19	2.8	0.28	6.85	-69.2	200	1.65	51.06
1205	14.7	1.50	1.20	2.6	0.26	6.87	-72.3	200	1.29	51.06
1210	14.7	1.50	1.21	2.7	0.27	6.89	-74.5	200	1.43	51.06
1215	14.9	1.51	1.22	2.6	0.26	6.90	-76.5	200	1.25	51.06
Total Depth of Well:										
Depth To Water Before Purging:										
Depth To Water After Purging:										

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page: 1 of 2

Site Location: Lansing, MI | Date: 05/10/18

Site/Well No.: MW-22 | Replicate No.: DUP-7 | Code No.:

Weather: Overcast windy 60°F | Sampling Time: Begin 1410 | End 1420

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	63.42
Depth to Water (ft bmp)	51.62
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	11.8
Casing Diameter/Type	2" PVC
Gallons in Well	1.84
Gallons Pumped/Bailed Prior to Sampling	1.5
Sample Pump Intake Setting (ft bmp)	~~53~~ 53*
Purge Time	begin 1309 end ~~1415~~ 1415
Pumping Rate (ml/min)	150
Evacuation Method	Bladder Pump

Field Parameters

Temperature (°C)	15.1
SpC (mS/cm)	2.40
CND (mS/cm)	1.94
Dissolved Oxygen (%)	2.2
Dissolved Oxygen (mg/L)	0.21
pH (s.u.)	6.75
ORP (mV)	72.2
Turbidity (NTU)	8.16
Color	clear
Odor	none
Appearance	clear w/ some debris floating in tube
Sampling Method	grab - low flow
Remarks	* Pump seems to stop at top of screen once

Constituents Sampled	Container Description	Number	Preservative
VOCs	40ml VOC's	6	HCl
1,4-Dioxane			
~~Select Metals~~			
~~PFAS~~			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: Sam Dunne

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-22 PROJ #: B0064479.2018

DATE : 05/10/18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1315	15.3	1.46	1.19	15.9	1.58	6.87	104.2	150	62.3	~~Below~~ Top of pump
1320	15.3	1.47	1.20	9.5	0.95	6.79	101.1	150	55.6	Top of pump
1325	15.4	1.54	1.25	7.8	0.78	6.77	99.3	150	39.5	"
1330	15.2	1.61	1.31	5.7	0.58	6.76	98.1	150	29.4	"
1335	15.0	1.70	1.37	4.6	0.47	6.75	97.6	150	18.3	"
1340	15.0	1.80	1.46	3.8	0.38	6.74	96.5	150	14.0	"
1345	15.2	2.06	1.67	4.7	0.46	6.73	91.7	150	22.9	"
1350	15.3	2.23	1.87	3.4	0.33	6.74	83.5	150	15.0	"
1355	15.1	2.35	1.90	3.2	0.32	6.74	74.8	150	9.96	"
1400	15.2	2.38	1.93	2.1	0.21	6.74	73.5	150	7.80	"
1405	15.1	2.40	1.94	2.2	0.21	6.75	72.2	150	8.16	"
Total Depth of Well:										
Depth To Water Before Purging:										
Depth To Water After Purging:										

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page: 1 of 2

Site Location: Lansing, MI | Date: 05/10/18

Site/Well No.: MW-04-03(3) | Replicate No.: — | Code No.: —

Weather: Sunny 65°F | Sampling Time: Begin 1620 End 1625

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	87.35
Depth to Water (ft bmp)	62.25
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	25.10
Casing Diameter/Type	2" PVC
Gallons in Well	4.016
Gallons Pumped/Bailed Prior to Sampling	~2
Sample Pump Intake Setting (ft bmp)	84
Purge Time	begin ~~09~~ 1538 end 1625
Pumping Rate (ml/min)	300
Evacuation Method	Bladder

Field Parameters

Temperature (°C)	13.5
SpC (mS/cm)	1.59
CND (mS/cm)	1.23
Dissolved Oxygen (%)	2.0
Dissolved Oxygen (mg/L)	0.20
pH (s.u.)	6.77
ORP (mV)	-62.3
Turbidity (NTU)	1.69
Color	clear
Odor	none
Appearance	clear
Sampling Method	grab - Low flow
Remarks	—

Constituents Sampled	Container Description	Number	Preservative
VOCs	40mL VOA's	3	HCl
~~1,4-Dioxane~~			
~~Select Metals~~			
~~PFAS~~			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: Sam Dunne

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-04-03(3) PROJ #: B0064479.2018

DATE : 05/10/18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1545	15.2	0.70	0.57	36.1	3.61	6.83	78.1	300	15.4	62.
1550	13.9	[illegible]	[illegible]	3.6	0.36	6.60	-39.0	300	5.79	62.30
1555	13.4	1.541	1.20	2.2	0.24	6.71	-54.1	300	2.36	62.30
1600	13.4	1.57	1.22	2.2	0.23	6.75	-59.0	300	3.61	62.30
1605	13.2	1.58	1.22	2.3	0.23	6.76	-60.1	300	2.04	62.30
1610	13.7	1.58	1.23	2.1	0.21	6.77	-61.2	300	2.28	62.30
1615	13.5	1.59	1.23	2.0	0.20	6.77	-62.3	300	1.69	62.30

Total Depth of Well:	
Depth To Water Before Purging:	
Depth To Water After Purging:	

ARCADIS

Water Sampling Log

Project	RACER Lansing	Project No.	B0064479.2018	Page	1 of 2
Site Location	Lansing, MI			Date	05/11/18
Site/Well No.	MW-13-41	Replicate No.	—	Code No.	
Weather	Overcast 41°F	Sampling Time: Begin	1010	End	1015

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	84.69
Depth to Water (ft bmp)	63.33
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	21.36
Casing Diameter/Type	2" PVC
Gallons in Well	3.42
Gallons Pumped/Bailed Prior to Sampling	3.5
Sample Pump Intake Setting (ft bmp)	~79
Purge Time	begin 0900 end 1015
Pumping Rate (ml/min)	
Evacuation Method	Bladder Pump

Field Parameters

Temperature (°C)	12.4
SpC (mS/cm)	5.72
CND (mS/cm)	4.35
Dissolved Oxygen (%)	1.2
Dissolved Oxygen (mg/L)	0.12
pH (s.u.)	7.07
ORP (mV)	-107.8
Turbidity (NTU)	57.2
Color	clear
Odor	none
Appearance	clear then to cloudy
Sampling Method	grab low flow
Remarks	—

Constituents Sampled	Container Description	Number	Preservative
~~VOCs~~			
~~1,4-Dioxane~~			
Select Metals	250 ml plastic	2	HNO_3
~~PFAS~~			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: Sam Dunne

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-13-411 PROJ #: B0064479.2018

DATE : 05/11/18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
0910	11.6	5.30	3.94	7.8	0.83	6.89	-16.4	200	9.49	63.38
0915	11.9	5.31	3.98	4.0	0.42	6.81	-57.2	200	8.67	63.38
0920	12.3	5.32	4.03	2.6	0.26	6.86	-79.1	200	6.83	63.38
0925	12.2	5.53	4.20	2.0	0.21	6.92	-89.1	200	7.33	63.38
0930	12.4	5.63	4.28	1.7	0.18	6.94	-91.1	200	9.93	63.38
0935	12.7	5.66	4.33	1.3	0.13	6.98	-93.7	200	8.30	63.38
0940	12.7	5.67	4.34	1.3	0.13	6.97	-95.6	200	125	63.38
0945	12.6	5.71	4.35	1.3	0.13	7.02	-102.2	200	142	63.41
0950	12.7	5.70	4.37	1.2	0.12	7.04	-104.6	200	140	63.41
0955	12.5	5.71	4.35	1.1	0.11	7.05	-106.0	200	98.6	63.41
1000	12.5	5.72	4.35	1.1	0.11	7.07	-107.4	200	73.3	63.41
1005	12.4	5.72	4.35	1.2	0.12	7.07	-107.8	200	57.2	63.41
Total Depth of Well:										
Depth To Water Before Purging:										
Depth To Water After Purging:										

ARCADIS

Water Sampling Log

Project	RACER Lansing	Project No.	B0064479.2018	Page	1 of 2
Site Location	Lansing, MI			Date	05/11/18
Site/Well No.	MW-13-38	Replicate No.	DUP-08	Code No.	—
Weather	Rain 40°F	Sampling Time: Begin	1120	End	1138

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	129.10
Depth to Water (ft bmp)	70.05
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	59.05
Casing Diameter/Type	3" steel
Gallons in Well	21.84
Gallons Pumped/Bailed Prior to Sampling	~1.5
Sample Pump Intake Setting (ft bmp)	~115
Purge Time	begin 1040 end 1130
Pumping Rate (ml/min)	250
Evacuation Method	Bladder pump

Field Parameters

Temperature (°C)	9.8
SpC (mS/cm)	2.65
CND (mS/cm)	1.84
Dissolved Oxygen (%)	3.3
Dissolved Oxygen (mg/L)	0.36
pH (s.u.)	6.97
ORP (mV)	-91.0
Turbidity (NTU)	2.27
Color	clear
Odor	none
Appearance	clear some heavy dark turbidity
Sampling Method	grab low flow
Remarks	—

Constituents Sampled	Container Description	Number	Preservative
VOCs	40 ml VOAs	6	HCL
1,4-Dioxane			
~~Select Metals~~			
~~PFAS~~			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: Sam Dunne

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

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YSI/LOW FLOW SAMPLING LOG

WELL : MW-13-38 PROJ #: B0064479.2018

DATE : 05/11/18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1050	10.0	2.59	1.85	45.0	5.04	6.95	-84.5	250	16.6	70.35
1055	10.1	2.65	1.89	4.8	0.52	6.96	-90.0	250	6.61	70.35
1100	9.5	2.65	1.87	4.3	0.48	6.65	-90.1	250	3.49	70.35
1105	9.7	2.65	1.88	3.9	0.45	6.97	-70.3	250	2.36	70.35
1110	9.8	2.64	1.88	3.4	0.38	6.97	-90.6	250	2.86	70.35
1115	9.8	2.65	1.88	3.3	0.36	6.97	-91.0	250	2.27	70.35
Total Depth of Well:										
Depth To Water Before Purging:										
Depth To Water After Purging:										

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page: 1 of 2

Site Location: Lansing, MI | Date: 5/11/18

Site/Well No.: ~~MW-91-1~~ MW-91-1 | Replicate No.: — | Code No.: —

Weather: ~~Rain~~ 40°F | Sampling Time: Begin 1330 End 1335

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	132.28
Depth to Water (ft bmp)	58.01
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	44.27
Casing Diameter/Type	~~2"~~ 2" PVC
Gallons in Well	7.08
Gallons Pumped/Bailed Prior to Sampling	2.5
Sample Pump Intake Setting (ft bmp)	~120
Purge Time	begin ~~1336~~ 1330 end 1335
Pumping Rate (ml/min)	300
Evacuation Method	Bladder pump

Field Parameters

Temperature (°C)	11.2
SpC (mS/cm)	1.68
CND (mS/cm)	1.23
Dissolved Oxygen (%)	4.0
Dissolved Oxygen (mg/L)	0.39
pH (s.u.)	6.83
ORP (mV)	-53.4
Turbidity (NTU)	6.60
Color	clear
Odor	none
Appearance	clear
Sampling Method	grab low flow
Remarks	—

Constituents Sampled	Container Description	Number	Preservative
VOCs	40ml VOA's	3	HCl
~~1,4-Dioxane~~			
~~Select Metals~~			
~~PFAS~~			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: Sam Divine

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

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YSI/LOW FLOW SAMPLING LOG

WELL : ~~MW-91-4~~ MW-91-4 PROJ #: B0064479.2018

DATE : 05/11/18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1245	10.7	1.59	1.16	40.7	4.46	6.93	-43.1	300	17.1	58.12
1250	11.0	1.64	1.20	27.0	2.96	6.97	-51.9	300	16.5	58.12
1255	11.0	1.64	1.20	12.3	1.34	6.95	-56.7	300	15.1	58.12
1300	11.1	1.64	1.21	10.0	1.09	6.95	-57.9	300	13.0	58.12
1305	11.0	1.65	1.21	6.9	0.69	6.93	-59.6	300	15.0	58.12
1310	11.0	1.67	1.22	6.7	0.68	6.87	-53.8	300	10.8	58.12
1315	11.0	1.68	1.23	4.7	0.48	6.83	-53.2	300	7.80	58.12
1320	11.1	1.68	1.23	4.1	0.42	6.83	-53.1	300	7.15	58.12
1325	11.2	1.68	1.23	4.0	0.39	6.83	-53.4	300	6.60	58.12
Total Depth of Well:										
Depth To Water Before Purging:										
Depth To Water After Purging:										

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Water Sampling Log

Project	RACER Lansing	Project No.	B0064479.2018	Page	1 of 2
Site Location	Lansing, MI			Date	05/11/18
Site/Well No.	MW-04-04(3)	Replicate No.	—	Code No.	—
Weather	Rain 40°F	Sampling Time: Begin	1450	End	1455

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	81.87
Depth to Water (ft bmp)	57.12
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	24.75
Casing Diameter/Type	2" PVC
Gallons in Well	3.96
Gallons Pumped/Bailed Prior to Sampling	1.8
Sample Pump Intake Setting (ft bmp)	~76
Purge Time	begin 1408 end 1455
Pumping Rate (ml/min)	250
Evacuation Method	Bladder pump

Field Parameters

Temperature (°C)	11.3
SpC (mS/cm)	1.62
CND (mS/cm)	1.20
Dissolved Oxygen (%)	2.0
Dissolved Oxygen (mg/L)	0.21
pH (s.u.)	6.79
ORP (mV)	-41.9
Turbidity (NTU)	13.1
Color	clear
Odor	none
Appearance	clear fine turbidity
Sampling Method	low flow grab
Remarks	—

Constituents Sampled	Container Description	Number	Preservative
VOCs	40ml VOAs	3	HCl
~~1,4-Dioxane~~			
~~Select Metals~~			
~~PFAS~~			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: Sam Dunne

Well Casing Volumes

Gal./Ft.				
0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

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YSI/LOW FLOW SAMPLING LOG

WELL : MW-04-04(3)

PROJ #: B0064479.2018

DATE : 05/11/18

LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1415	10.5	1.52	1.11	7.3	0.81	6.83	-23.3	250	63.1	57.18
1420	10.9	1.56	1.14	4.0	0.44	6.78	-29.2	250	25.4	57.18
1425	10.9	1.59	1.17	3.1	0.35	6.78	-31.0	250	19.5	57.18
1430	11.1	1.60	1.18	2.7	0.29	6.78	-31.8	250	13.7	57.18
1435	11.4	1.61	1.19	2.3	0.24	6.78	-33.0	250	18.0	57.18
1440	11.2	1.61	1.20	2.1	0.21	6.79	-39.8	250	16.2	57.18
1445	11.3	1.62	1.20	2.0	0.21	6.79	-41.9	250	13.1	57.18
Total Depth of Well:										
Depth To Water Before Purging:										
Depth To Water After Purging:										

ARCADIS

Water Sampling Log

Project	RACER Lansing	Project No.	B0064479.2018	Page	1 of 2
Site Location	Lansing, MI			Date	05/14/18
Site/Well No.	MW-13-28	Replicate No.	—	Code No.	—
Weather	Rain 55°F	Sampling Time: Begin	1105	End	1110

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	129.10
Depth to Water (ft bmp)	67.75
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	61.35
Casing Diameter/Type	2" 3" Steel
Gallons in Well	22.69
Gallons Pumped/Bailed Prior to Sampling	3
Sample Pump Intake Setting (ft bmp)	~110 (99-115)
Purge Time	begin 1000 end 1100
Pumping Rate (ml/min)	
Evacuation Method	Bladder pump

Field Parameters

Temperature (°C)	14.3
SpC (mS/cm)	0.599
CND (mS/cm)	0.476
Dissolved Oxygen (%)	61.0
Dissolved Oxygen (mg/L)	6.17
pH (s.u.)	7.15
ORP (mV)	-21.7
Turbidity (NTU)	17.5
Color	clear
Odor	none
Appearance	mild turbidity
Sampling Method	grab low flow
Remarks	—

Constituents Sampled	Container Description	Number	Preservative
VOCs	40ml VOA	3	HCl
1,4-Dioxane			
~~Select Metals~~			
~~PFAS~~			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel S. Dunne

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-13-28 PROJ #: B0064479.2018

DATE : 05/14/18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1010	14.3	1.24	0.99	24.9	2.48	6.63	-56.1	250	15.5	67.81
1015	14.3	1.35	1.07	6.1	0.62	6.58	-68.1	250	12.9	67.81
1020	14.3	1.37	1.09	2.9	6.30	6.68	-72.8	250	13.8	67.81
1025	14.3	1.37	1.09	2.8	0.29	6.71	-73.8	250	14.4	67.81
1030	14.3	1.10	0.88	4.9	0.50	6.79	-76.1	250	20.1	67.81
1035	14.3	0.83	0.67	18.9	1.96	6.92	-59.9	250	22.1	67.81
1040	14.2	0.68	6.53	46.2	4.70	07.03	-44.0	250	35.2	67.81
1045	14.1	0.613	0.488	50.4	5.13	7.08	-33.4	250	18.2	67.81
1050	14.2	0.605	0.481	52.3	5.33	7.13	-27.8	250	17.7	67.81
1055	14.2	0.599	0.475	52.8	5.35	7.15	-24.5	250	17.6	67.81
1100	14.3	0.599	0.476	61.0	6.17	7.15	-21.7	250	17.5	67.81
Total Depth of Well:										
Depth To Water Before Purging:										
Depth To Water After Purging:										

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page: 1 of 7

Site Location: Lansing, MI | Date: 05/14/18

Site/Well No.: MW-04-02(3) | Replicate No.: — | Code No.: —

Weather: Rain 60°F | Sampling Time: Begin 1230 End 1235

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	132.60
Depth to Water (ft bmp)	63.13
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	69.47
Casing Diameter/Type	~~PREP~~ 2" PVC
Gallons in Well	16.11
Gallons Pumped/Bailed Prior to Sampling	2
Sample Pump Intake Setting (ft bmp)	~130
Purge Time	begin 1150 end 1235
Pumping Rate (ml/min)	
Evacuation Method	Bladder pump

Field Parameters

Temperature (°C)	14.6
SpC (mS/cm)	1.62
CND (mS/cm)	1.30
Dissolved Oxygen (%)	2.3
Dissolved Oxygen (mg/L)	0.23
pH (s.u.)	6.75
ORP (mV)	-57.0
Turbidity (NTU)	1.32
Color	clear
Odor	none
Appearance	clear
Sampling Method	grab - low flow
Remarks	—

Constituents Sampled	Container Description	Number	Preservative
VOCs	40ml VOA	3	HCL
~~1,4-Dioxane~~			
~~Select Metals~~			
~~PFAS~~			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: Sam Dunne

Well Casing Volumes

Gal./Ft.				
0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-04-02(3) PROJ #: B0064479.2018

DATE : 05/14/18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1200	14.6	1.50	1.21	8.7	0.87	6.65	-57.7	250	8.87	63.71
1205	14.4	1.58	1.26	3.1	0.31	6.73	-59.3	250	3.50	63.71
1210	14.5	1.60	1.28	2.5	0.26	6.74	-59.9	250	1.88	63.71
1215	14.3	1.61	1.28	2.4	0.24	6.75	-59.4	250	1.12	63.71
1220	14.5	1.62	1.29	2.4	0.24	6.75	-58.7	250	1.04	63.71
1225	14.6	1.62	1.30	2.3	0.23	6.75	-57.0	250	1.32	63.71
Total Depth of Well:										
Depth To Water Before Purging:										
Depth To Water After Purging:										

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Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page: 1 of 7

Site Location: Lansing, MI | Date: 05/14/18

Site/Well No.: MW-02-0203 | Replicate No.: — | Code No.: —

Weather: Sunny 66°F | Sampling Time: Begin 1420 End 1425

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	83.71
Depth to Water (ft bmp)	64.55
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	19.16
Casing Diameter/Type	2" PVC
Gallons in Well	3.06
Gallons Pumped/Bailed Prior to Sampling	~1.8
Sample Pump Intake Setting (ft bmp)	~80
Purge Time	begin 1330 end 1425
Pumping Rate (ml/min)	200
Evacuation Method	Bladder pump

Field Parameters

Temperature (°C)	19.0
SpC (mS/cm)	6.33
CND (mS/cm)	5.63
Dissolved Oxygen (%)	2.7
Dissolved Oxygen (mg/L)	0.26
pH (s.u.)	6.48
ORP (mV)	-14.4
Turbidity (NTU)	0.65
Color	clear
Odor	none
Appearance	clear
Sampling Method	grab low flow
Remarks	—

Constituents Sampled	Container Description	Number	Preservative
VOCs	40ml VOA	3	HCl
~~1,4-Dioxane~~			
~~Select Metals~~ Select Metals	250 ml plastic	1	HNO_3
~~PFAS~~			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: Sam Duane

Well Casing Volumes

Gal./Ft.				
0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

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YSI/LOW FLOW SAMPLING LOG

WELL : MW-02-02(3) PROJ #: B0064479.2018

DATE : 05/14/18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
340	18.3	5.57	4.85	18.5	1.71	6.53	-16.8	200	8.37	65.71
345	18.6	5.65	4.97	19.0	1.73	6.51	-21.9	200	6.18	66.03
350	19.3	5.77	5.15	13.5	1.26	6.51	-26.8	200	3.79	66.05
355	20.0	6.16	5.56	5.8	0.52	6.48	-24.5	200	2.11	66.05
400	19.9	6.26	5.65	3.7	0.33	6.48	-19.5	200	1.38	66.05
405	19.3	6.30	5.62	3.0	0.27	6.48	-17.1	200	1.24	66.05
410	19.3	6.31	5.62	2.6	0.25	6.48	-15.8	200	0.63	66.05
1415	19.0	6.33	5.63	2.7	0.26	6.48	-14.4	200	0.65	66.05

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Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page: 1 of 2

Site Location: Lansing, MI | Date: 05/15/18

Site/Well No.: UNK-11 | Replicate No.: — | Code No.: —

Weather: Rain 60°F | Sampling Time: Begin 0950 End 0955

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	11.75
Depth to Water (ft bmp)	3.94
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	7.81
Casing Diameter/Type	2" PVC
Gallons in Well	1.24
Gallons Pumped/Bailed Prior to Sampling	~3
Sample Pump Intake Setting (ft bmp)	~9.75
Purge Time	begin 0910 end 0955
Pumping Rate (ml/min)	100-300-100
Evacuation Method	peristaltic

Field Parameters

Temperature (°C)	13.6
SpC (mS/cm)	0.74
CND (mS/cm)	0.58
Dissolved Oxygen (%)	1.6
Dissolved Oxygen (mg/L)	0.16
pH (s.u.)	6.95
ORP (mV)	-95.1
Turbidity (NTU)	4.64
Color	clear
Odor	mild
Appearance	clear
Sampling Method	low flow - grab
Remarks	see page 2

Constituents Sampled	Container Description	Number	Preservative
~~VOCs~~			
~~1,4-Dioxane~~			
Select Metals	250 mL plastic	1	HNO_3
~~PFAS~~			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: Sam Dunne

Well Casing Volumes

Gal./Ft.				
0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : UNK-11 PROJ #: B0064479.2018

DATE : 05/15/18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
0915	13.3	0.741	0.58	1.4	0.14	6.64	-94.6	150	12.9	5.70
0920	13.9	0.74	0.58	1.3	0.13	6.84	-101.8	100 *	8.15	6.91
0925	14.4	0.74	0.59	1.5	0.15	6.91	-103.0	100	4.52	7.40
0930	12.0	0.74	0.56	2.6	0.30	6.95	-91.4	350 **	3.99	8.40
0935	13.1	0.73	0.56	2.1	0.21	6.94	-92.8	100	5.67	8.65
0940	13.8	0.73	0.58	1.7	0.17	6.95	-94.1	100	5.01	8.68
0945	13.6	0.74	0.58	1.6	0.16	6.95	-95.1	100	4.64	8.72
Total Depth of Well:										
Depth To Water Before Purging:										
Depth To Water After Purging:										

* Dropped flow rate due to draw down.

** Attempted to decrease. well drew down. then started to stabalize

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page: 1 of 2

Site Location: Lansing, MI | Date: 05/15/18

Site/Well No.: P3-SB-28 | Replicate No.: DUP-05 | Code No.: —

Weather: Rain 60° | Sampling Time: Begin 1120 End 1125

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	10.26
Depth to Water (ft bmp)	3.87
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	6.39
Casing Diameter/Type	2" pvc
Gallons in Well	1.02
Gallons Pumped/Bailed Prior to Sampling	~2
Sample Pump Intake Setting (ft bmp)	~8
Purge Time	begin 1040 end 1125
Pumping Rate (ml/min)	150
Evacuation Method	peristaltic

Field Parameters

Temperature (°C)	13.6
SpC (mS/cm)	0.311
CND (mS/cm)	0.243
Dissolved Oxygen (%)	4.0
Dissolved Oxygen (mg/L)	0.40
pH (s.u.)	7.66
ORP (mV)	82.3
Turbidity (NTU)	1.07
Color	clear
Odor	none
Appearance	clear
Sampling Method	low flow - grab
Remarks	—

Constituents Sampled	Container Description	Number	Preservative
VOCs	40 ml VOA's	6	HCl
~~1,4-Dioxane~~			
~~Select Metals~~			
~~PFAS~~			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: Sam Dunne

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : P3-SB-28 PROJ #: B0064479.2018

DATE : 05/15/18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1045	13.9	0.290	0.228	6-7	0.68	7.81	84.9	150	2.68	4.37
1050	14.0	0.295	0.234	4.7	0.47	7.73	84.3	150	2.12	4.40
1055	14.1	0.306	0.242	4.4	0.44	7.69	83.0	150	1.64	4.40
1100	13.9	0.310	0.244	4.6	0.47	7.68	82.8	150	1.28	4.40
1105	13.6	0.310	0.242	4.0	0.41	7.67	82.6	150	2.29	4.40
1110	13.6	0.311	0.243	4.1	0.41	7.67	82.4	150	WU	4.40
1115	13.6	0.311	0.243	4.0	0.40	7.66	82.3	150	1.07	4.40
Total Depth of Well:										
Depth To Water Before Purging:										
Depth To Water After Purging:										

ARCADIS

Water Sampling Log

Project	Racerlansing	Project No.	B0064479.2018	Page	1 of 2
Site Location	Lansing MI			Date	05/15/18
Site/Well No.	MW-13-31	Replicate No.	—	Code No.	—
Weather	Sunny 60°F	Sampling Time: Begin	1235	End	1240

Evacuation Data

Measuring Point	TOC
MP Elevation (ft)	—
Land Surface Elevation (ft)	—
Sounded Well Depth (ft bmp)	12.79
Depth to Water (ft bmp)	6.33
Water-Level Elevation (ft)	—
Water Column in Well (ft)	6.46
Casing Diameter/Type	2" PVC
Gallons in Well	1.033
Gallons Pumped/Bailed Prior to Sampling	2
Sample Pump Intake Setting (ft bmp)	~10
Purge Time	begin 1200 end 1240
Pumping Rate (ml/min)	150
Evacuation Method	pristaltic

Field Parameters

Temperature (°C)	12.5
SpC (mS/cm)	0.85
CND (mS/cm)	0.64
Dissolved Oxygen (%)	6.9
Dissolved Oxygen (mg/L)	0.09
pH (s.u.)	6.89
ORP (mV)	97.6
Turbidity (NTU)	2.64
Color	clear
Odor	none
Appearance	clear
Sampling Method	dowflow-grab
Remarks	—

Constituents Sampled	Container Description	Number	Preservative
Select metals	250ml plastic	1	HNO3

Sampling Personnel: Sam Duane

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-13-31 PROJ #: B0064479 2018

DATE : 05/15/18 LOC: Racer Landfill

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1205	12.8	0.85	0.65	1.8	0.17	6.86	85.9	150	5.12	6.36
1210	12.5	0.85	0.64	1.3	0.13	6.86	94.6	150	3.29	6.36
1215	12.9	0.85	0.66	1.2	0.12	6.87	95.6	150	1.99	6.36
1220	13.0	0.84	0.65	1.2	0.12	6.89	95.1	150	2.94	6.36
1225	12.9	0.85	0.65	1.6	0.10	6.90	95.1	150	3.01	6.36
1230	12.5	0.85	0.64	0.9	0.09	6.89	97.6	150	2.64	6.36
Total Depth of Well:										
Depth To Water Before Purging:										
Depth To Water After Purging:										

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page: 1 of 2

Site Location: Lansing, MI | Date: 05/15/18

Site/Well No.: MW-13-33 | Replicate No.: — | Code No.: —

Weather: Sunny 70°F | Sampling Time: Begin 1335 End 1340

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	19.19
Depth to Water (ft bmp)	7.25
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	11.94
Casing Diameter/Type	2" PVC
Gallons in Well	1.9
Gallons Pumped/Bailed Prior to Sampling	~2
Sample Pump Intake Setting (ft bmp)	~15
Purge Time	begin 1258 end 1340
Pumping Rate (ml/min)	150
Evacuation Method	peristaltic

Field Parameters

Temperature (°C)	14.7
SpC (mS/cm)	0.75
CND (mS/cm)	0.60
Dissolved Oxygen (%)	6.7
Dissolved Oxygen (mg/L)	0.67
pH (s.u.)	6.77
ORP (mV)	111.5
Turbidity (NTU)	3.47
Color	clear
Odor	none
Appearance	clear
Sampling Method	lowflow grab
Remarks	—

Constituents Sampled	Container Description	Number	Preservative
~~VOCs~~			
~~1,4-Dioxane~~			
Select Metals	250ml Plastic	1	HNO3
~~PFAS~~			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: Sam Dunne

Well Casing Volumes

Gal./Ft.				
0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-13-33 PROJ #: B0064479.2018

DATE : 05/15/18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1300	12.0	0.73	055	6.7	0.71	6.82	113.5	150	1.19	8.57
1305	13.3	0.73	0.57	6.2	0.64	6.76	111.9	150	2.36	9.43
1310	14.2	0.73	0.58	5.9	0.58	6.75	110.4	150	2.79	9.83
1315	14.1	0.76	0.60	5.5	0.56	6.77	109.1	150	3.28	10.31
1320	13.8	0.76	0.60	5.5	0.59	6.76	109.9	150	2.58	10.55
1325	14.3	0.75	0.60	5.5	0.67	6.76	110.4	150	2.91	10.83
1330	14.7	0.75	0.60	6.7	0.67	6.77	111.5	150	3.47	10.99
Total Depth of Well:										
Depth To Water Before Purging:										
Depth To Water After Purging:										

ARCADIS

Water Sampling Log

Project: RacerLansing | Project No.: B0064479.2018 | Page: 1 of 2

Site Location: Lansing MI | Date: 05/15/18

Site/Well No.: MW-13-32 | Replicate No.: — | Code No.: —

Weather: Sunny 75°F | Sampling Time: Begin 1510 | End 1515

Evacuation Data

Measuring Point	TOC
MP Elevation (ft)	—
Land Surface Elevation (ft)	—
Sounded Well Depth (ft bmp)	12.63
Depth to Water (ft bmp)	5.13
Water-Level Elevation (ft)	—
Water Column in Well (ft)	7.50
Casing Diameter/Type	2" PVC
Gallons in Well	1.2
Gallons Pumped/Bailed Prior to Sampling	2
Sample Pump Intake Setting (ft bmp)	~10
Purge Time	begin 05/14/18 end 1515
Pumping Rate (ml/min)	150
Evacuation Method	peristaltic

Field Parameters

Temperature (°C)	14.5
SpC (mS/cm)	0.89
CND (mS/cm)	0.70
Dissolved Oxygen (%)	14.0
Dissolved Oxygen (mg/L)	1.42
pH (s.u.)	7.63
ORP (mV)	124.0
Turbidity (NTU)	3.81
Color	clear
Odor	none
Appearance	turbid → clear
Sampling Method	low flow grab
Remarks	—

Constituents Sampled	Container Description	Number	Preservative
Select metals	250ml plastic	1	HNO_3

Sampling Personnel: Sean Dunne

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-13-32 PROJ #: B0064479.2018

DATE : 5/15/18 LOC: Racer Lansing

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1425	13.9	1.51	1.19	2.6	0.26	7.32	101.8	150	43.2	5.35
1430	15.8	1.47	1.21	3.4	0.38	7.43	88.2	150	16.1	5.35
1435	15.7	1.35	1.11	7.4	0.73	7.46	107.3	150	15.7	5.35
1440	15.5	1.28	1.04	7.7	0.78	7.51	110.9	156	17.3	5.35
1445	14.6	1.17	0.91	10.1	1.04	7.58	117.8	150	12.12	5.35
1450	13.7	1.02	0.81	11.4	1.17	7.60	119.8	150	5.86	5.35
1455	14.1	0.92	0.73	13.2	1.37	7.63	122.4	150	6.01	5.35
1500	14.5	0.90	0.72	13.3	1.35	7.64	123.2	150	3.73	5.35
1505	14.5	0.89	0.70	14.0	1.42	7.63	124.0	150	3.81	5.35
Total Depth of Well:										
Depth To Water Before Purging:										
Depth To Water After Purging:										

ARCADIS

Water Sampling Log

Project	RacerLansing	Project No.	B0064479.2018	Page	1 of 2
Site Location	Lansing MI			Date	05/16/18
Site/Well No.	MW-04-01(3)	Replicate No.	—	Code No.	—
Weather	Sunny 70°F	Sampling Time: Begin	1115	End	1120

Evacuation Data

Measuring Point	TOC
MP Elevation (ft)	—
Land Surface Elevation (ft)	—
Sounded Well Depth (ft bmp)	104.50
Depth to Water (ft bmp)	52.98
Water-Level Elevation (ft)	—
Water Column in Well (ft)	51.52
Casing Diameter/Type	2" PVC
Gallons in Well	8.24
Gallons Pumped/Bailed Prior to Sampling	1.5
Sample Pump Intake Setting (ft bmp)	~98
Purge Time	begin 1030 end 1120
Pumping Rate (ml/min)	250
Evacuation Method	Bladder pump

Field Parameters

Temperature (°C)	12.8
SpC (mS/cm)	1.05
CND (mS/cm)	0.80
Dissolved Oxygen (%)	3.1
Dissolved Oxygen (mg/L)	0.33
pH (s.u.)	6.76
ORP (mV)	-39.0
Turbidity (NTU)	5.86
Color	clear
Odor	none
Appearance	clear very low turbidity
Sampling Method	low flow grab
Remarks	—

Constituents Sampled	Container Description	Number	Preservative
VOC's	40ml VOA's	3	HCL
1,4-Dioxane			

Sampling Personnel: Sam Dunne

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-04-01(3) PROJ #: B006447.2018

DATE : 05/16/18 LOC: Racer Lansing

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1035	13.7	1.05	0.82	82.2	8.41	6.94	173.3	250	11.1	53.17
1040	12.7	1.03	0.79	16.7	1.75	6.83	79.1	250	15.5	53.17
1045	12.8	1.05	0.80	7.7	0.81	6.74	-6.0	250	19.7	53.17
1050	12.9	1.05	0.80	5.4	0.57	6.74	-23.4	250	17.0	53.17
1055	12.7	1.05	0.80	3.8	0.41	6.73	-32.6	250	11.7	53.17
1100	12.3	1.05	0.80	3.2	0.34	6.75	-35.5	250	8.71	53.17
1105	12.5	1.05	0.80	3.0	0.32	6.75	-37.0	250	7.15	53.17
1110	12.6	1.05	0.80	3.1	0.33	6.76	-39.0	250	5.86	53.17
Total Depth of Well:										
Depth To Water Before Purging:										
Depth To Water After Purging:										

ARCADIS

Water Sampling Log

Project: RacerLansing | Project No. 30064479.2018 | Page 1 of 2

Site Location: Lansing MI | Date: 05/16/18

Site/Well No.: MW-16-78 | Replicate No.: MS/MSD | Code No.: —

Weather: Sunny 75°F | Sampling Time: Begin 1340 End 1350

Evacuation Data

Measuring Point	TOC
MP Elevation (ft)	—
Land Surface Elevation (ft)	—
Sounded Well Depth (ft bmp)	76.20
Depth to Water (ft bmp)	65.68
Water-Level Elevation (ft)	—
Water Column in Well (ft)	10.52
Casing Diameter/Type	2" PVC
Gallons in Well	1.68
Gallons Pumped/Bailed Prior to Sampling	1.5
Sample Pump Intake Setting (ft bmp)	~70
Purge Time	begin 1305 end 1350
Pumping Rate (ml/min)	~150
Evacuation Method	Bladder pump

Field Parameters

Temperature (°C)	16.9
SpC (mS/cm)	6.97
CND (mS/cm)	1.60
Dissolved Oxygen (%)	1.7
Dissolved Oxygen (mg/L)	0.17
pH (s.u.)	6.74
ORP (mV)	-83.7
Turbidity (NTU)	0.86
Color	clear
Odor	none
Appearance	clear
Sampling Method	low flow/grab
Remarks	—

Constituents Sampled	Container Description	Number	Preservative
1,4-Dioxane	40mL VOAs	9	HCl

Sampling Personnel: Sam Duane

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-16-78 PROJ #: B0064479.2018

DATE : 05/14/18 LOC: Racer Lansing

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1310	15.5	1.77	1.45	3.4	0.33	6.85	-118.5	150	3.69	65.79
1315	15.0	1.80	1.45	2.6	0.26	6.78	-123.8	150	1.47	65.79
1320	14.9	1.87	1.51	1.8	0.18	6.76	-112.4	150	1.14	65.79
1325	14.8	1.97	1.58	1.7	0.18	6.74	-92.9	150	0.60	65.79
1330	14.8	1.98	1.59	1.8	0.18	6.74	-82.3	150	0.87	65.79
1335	14.9	1.97	1.60	1.7	0.17	6.74	-83.7	150	0.86	65.79
Total Depth of Well:										
Depth To Water Before Purging:										
Depth To Water After Purging:										

ARCADIS

Water Sampling Log

Project: Racer Lansing | Project No.: B0064479.2008 | Page: 1 of 2

Site Location: Lansing MI | Date: 05/16/18

Site/Well No.: MW-03-02 | Replicate No.: — | Code No.: —

Weather: Sunny 75°F | Sampling Time: Begin 1600 End 1605

Evacuation Data

Measuring Point	TOC
MP Elevation (ft)	—
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	39.25
Depth to Water (ft bmp)	21.78
Water-Level Elevation (ft)	—
Water Column in Well (ft)	17.47
Casing Diameter/Type	2" PVC
Gallons in Well	2.79
Gallons Pumped/Bailed Prior to Sampling	3.5
Sample Pump Intake Setting (ft bmp)	~34
Purge Time	begin 1450 end 1605
Pumping Rate (ml/min)	150
Evacuation Method	peristaltic

Field Parameters

Temperature (°C)	16.2
SpC (mS/cm)	5.62
CND (mS/cm)	4.67
Dissolved Oxygen (%)	2.0
Dissolved Oxygen (mg/L)	0.20
pH (s.u.)	6.77
ORP (mV)	-66.1
Turbidity (NTU)	12.1
Color	clear
Odor	none
Appearance	cloudy w/ turbidity to clear w small tubs.
Sampling Method	low flow w/ grab
Remarks	collected sample after >1 hr purging turbidity clear enough to collect

Constituents Sampled	Container Description	Number	Preservative
Select Metals	250 ml plastic	1	HNO3

Sampling Personnel: Sam Dunne

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-03-02 PROJ #: B006444.79.2018

DATE : 05/16/18 LOC: Racer Lansing

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1455	16.1	5.85	4.86	2.8	0.27	6.70	-59.5	150	180	23.01
1500	16.1	5.73	4.73	5.4	6.53	6.74	-59.4	150	164	23.10
1505	16.2	4.52	3.76	16.7	1.63	6.77	-50.3	150	102	23.25
1510	16.0	4.65	3 85	16.2	1.59	6.76	-50.3	150	97.2	23.30
1515	16.4	4.82	4.04	11.9	1.14	6.75	-52.1	150	69.1	23.32
1520	16.4	5.13	4.28	8.8	0.85	6.76	-55.0	150	51.3	23.34
1525	16.3	5.28	4.41	6.8	0.69	6.76	-57.2	150	37.8	23.34
1530	16.2	5.39	4.48	5.3	0.50	6.76	-58.2	150	30.0	23.34
1535	16.4	5.44	4.55	4.2	6.41	6.76	-59.9	150	25.2	23.34
1540	16.5	5.55	4.64	2.9	0.28	6.77	-61.7	150	18.0	23.34
1545	16.1	5.65	4.66	2.1	0.22	6.77	-63.0	150	15.0	23.34
1550	15.9	5.64	4.66	2.3	0.22	6.77	-63.3	150	13.2	23.34
1555	16.2	5.62	4.67	2.0	0.20	6.77	-64.1	150	12.1	23.34
Total Depth of Well:										
Depth To Water Before Purging:										
Depth To Water After Purging:										

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page: 1 of 2

Site Location: Lansing, MI | Date: 5/14/18

Site/Well No.: MW-12-15 | Replicate No.: | Code No.:

Weather: Sunny / 74°F | Sampling Time: Begin 1600 End 1605

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	22.65
Depth to Water (ft bmp)	19.48
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	3.17
Casing Diameter/Type	2" PVC
Gallons in Well	0.50
Gallons Pumped/Bailed Prior to Sampling	1 gal
Sample Pump Intake Setting (ft bmp)	
Purge Time	begin 1515 end 1600
Pumping Rate (ml/min)	150 ml/min
Evacuation Method	peristaltic pump

Field Parameters

Temperature (°C)	15.7
SpC (mS/cm)	1.35
CND (mS/cm)	1.11
Dissolved Oxygen (%)	1.1
Dissolved Oxygen (mg/L)	1.11
pH (s.u.)	6.71
ORP (mV)	-142.8
Turbidity (NTU)	7.24
Color	None
Odor	None
Appearance	clear
Sampling Method	Low flow - Grab
Remarks	

Constituents Sampled	Container Description	Number	Preservative
VOCs	40 ml VOA	3	HCl
1,4-Dioxane			
Select Metals			
PFAS			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: DRR

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-12-15 PROJ #: B0064479.2018

DATE : 5/14/18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1515	16.2	1.39	1.15	36.0	3.32	6.75	-49.7	150	126	19.48
1520	15.2	1.36	1.10	4.8	0.48	6.72	-51.4	↓	47.0	19.51
1525	15.1	1.36	1.10	3.6	0.35	6.69	-95.7		42.2	19.51
1530	15.8	1.35	1.11	3.6	0.35	6.69	-83.5		28.6	↓
1535	15.7	1.35	1.11	2.6	0.26	6.70	-112.9		22.8	
1540	15.8	1.35	1.11	1.1	0.14	6.71	-119.3		18.5	
1545	16.1	1.35	1.12	1.1	0.11	6.72	-115.0		15.7	
1550	16.0	1.36	1.13	1.3	0.13	6.71	-130.5		9.42	
1555	15.9	1.35	1.11	1.2	0.12	6.71	-130.8		8.41	
1600	15.7	1.35	1.11	1.1	1.11	6.71	-142.8		7.24	
Total Depth of Well:		22.65								
Depth To Water Before Purging:			19.48							
Depth To Water After Purging:			19.51							

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page: 1 of 2

Site Location: Lansing, MI | Date: 5/14/18

Site/Well No.: MWBP-10-UST5-6 | Replicate No.: | Code No.:

Weather: 69°F / Overcast | Sampling Time: Begin 1440 End 1445

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	36.83
Depth to Water (ft bmp)	30.28
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	6.55
Casing Diameter/Type	2" PVC
Gallons in Well	1.048
Gallons Pumped/Bailed Prior to Sampling	1 gal
Sample Pump Intake Setting (ft bmp)	
Purge Time	begin 1350 end 1440
Pumping Rate (ml/min)	150 ml/min
Evacuation Method	peristaltic pump

Field Parameters

Temperature (°C)	14.8
SpC (mS/cm)	4.34
CND (mS/cm)	3.50
Dissolved Oxygen (%)	1.3
Dissolved Oxygen (mg/L)	0.13
pH (s.u.)	6.75
ORP (mV)	-319.3
Turbidity (NTU)	1.69
Color	None
Odor	None
Appearance	Clear
Sampling Method	Low Flow - Grab
Remarks	

Constituents Sampled	Container Description	Number	Preservative
VOCs			
1,4-Dioxane			
Select Metals	125ml plastic	1	HNO_3
PFAS			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: DRR

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MWBP-10-UST5-6 PROJ #: B0064479.2018

DATE : 5/14/18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1400	15.0	4.30	3.47	39.3	3.84	6.73	-309.1	150	37.8	30.28
1405	14.8	4.32	3.48	20.0	1.88	6.71	-333.7	↓	36.8	30.40
1410	15.1	4.32	3.51	3.7	0.36	6.73	-325.1		39.0	30.29
1415	15.1	4.33	3.51	3.0	0.30	6.74	-321.4		29.3	30.29
1420	15.1	4.36	3.53	2.3	0.24	6.75	-320.0		7.66	30.29
1425	14.9	4.36	3.52	2.2	0.22	6.74	-322.0		5.53	↓
1430	14.9	4.35	3.52	1.3	0.13	6.75	-326.2		3.54	
1435	14.9	4.34	3.50	1.3	0.13	6.75	-324.2		2.39	
1440	14.8	4.34	3.50	1.3	0.13	6.75	-319.3		1.69	

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page: 1 of 2

Site Location: Lansing, MI | Date: 5/14/18

Site/Well No.: MW-13-53 | Replicate No.: | Code No.:

Weather: 61°F / Overcast | Sampling Time: Begin 1250 End 1255

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	85.44
Depth to Water (ft bmp)	74.69
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	10.45
Casing Diameter/Type	2" PVC
Gallons in Well	1.672
Gallons Pumped/Bailed Prior to Sampling	1 gal
Sample Pump Intake Setting (ft bmp)	
Purge Time	begin 1150 end 1250
Pumping Rate (ml/min)	150 ml/min
Evacuation Method	Bladder pump

Field Parameters

Temperature (°C)	18.1
SpC (mS/cm)	2.38
CND (mS/cm)	2.07
Dissolved Oxygen (%)	5.3
Dissolved Oxygen (mg/L)	0.52
pH (s.u.)	6.67
ORP (mV)	-316.6
Turbidity (NTU)	30.8
Color	None
Odor	None
Appearance	Clear
Sampling Method	Low Flow Grab
Remarks	

Constituents Sampled	Container Description	Number	Preservative
VOCs	40 ml Voa	3	HCl
1,4-Dioxane	40 ml Voa		
Select Metals			
PFAS			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: DRR

Well Casing Volumes

Gal./Ft.				
0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-13-53 PROJ #: B0064479.2018

DATE : 5/14/18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1200	17.4	2.30	1.97	39.0	3.48	6.69	-298.9	150	352	74.69
1205	18.0	2.35	2.05	10.2	0.95	6.70	-310.0	↓	139	74.74
1210	19.2	2.36	2.10	9.6	0.87	6.71	-303.0		113	74.74
1215	19.2	2.40	2.14	9.0	0.84	6.71	-301.9		119	↓
1220	19.3	2.40	2.14	8.3	0.76	6.70	-306.3		93.2	
1225	18.4	2.38	2.08	6.7	0.61	6.69	-309.6		79.2	
1230	18.2	2.39	2.08	6.4	0.61	6.68	-312.2		63.2	
1235	19.0	2.43	2.15	6.6	0.61	6.70	-313.2		62.1	
1240	17.1	2.44	2.08	6.4	0.62	6.68	-311.0		69.4	
1245	17.6	2.43	2.09	6.4	0.60	6.68	[illegible] 307.5		59.6	
1250	18.1	2.38	2.07	5.3	0.52	6.67	[illegible]		30.8	
							-316.4			
Total Depth of Well:		85.44								
Depth To Water Before Purging:			74.69							
Depth To Water After Purging:			74.74							

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page: 1 of 2

Site Location: Lansing, MI | Date: 5/14/18

Site/Well No.: MW-13-52 | Replicate No.: | Code No.:

Weather: Overcast/Rain/58°F | Sampling Time: Begin 1100 End 1105

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	81.43
Depth to Water (ft bmp)	69.55
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	11.88
Casing Diameter/Type	2" pvc
Gallons in Well	1.9008
Gallons Pumped/Bailed Prior to Sampling	2.5 gal
Sample Pump Intake Setting (ft bmp)	
Purge Time	begin 0945 end 1100
Pumping Rate (ml/min)	150 ml/min
Evacuation Method	Bladder pump

Field Parameters

Temperature (°C)	13.6
SpC (mS/cm)	1.72
CND (mS/cm)	1.34
Dissolved Oxygen (%)	3.7
Dissolved Oxygen (mg/L)	0.39
pH (s.u.)	6.83
ORP (mV)	-311.6
Turbidity (NTU)	52.1
Color	None
Odor	None
Appearance	clear
Sampling Method	Low Flow - Grab
Remarks	FB-01 Taken

Constituents Sampled	Container Description	Number	Preservative
VOCs	40 ml Voa	3	
1,4-Dioxane	40 ml Voa	3	HCl
Select Metals			
PFAS			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: DRR

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-13-52 PROJ #: B0064479.2018

DATE : 5/14/18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
[redacted]	13.9	1.75	1.38	55.3	5.69	6.81	-249.7	150	Err-high	69.55
1005	13.6	1.74	1.36	13.9	1.45	6.75	-253.9	↓	381	69.56
1010	13.6	1.74	1.36	12.0	1.23	6.75	-259.7		268	69.56
1015	13.7	1.74	1.36	11.4	1.22	6.78	-263.0		227	↓
1020	13.8	1.74	1.37	11.9	1.20	6.80	-267.1		214	
1025	13.7	1.74	1.37	11.3	1.18	6.83	-274.2		190	
1030	13.4	1.74	1.35	10.8	1.14	6.81	-286.8		155	
1035	13.2	1.74	1.34	7.7	0.83	6.79	[redacted] 291	1.4	138	
1040	13.2	1.73	1.34	[redacted] 6.2	0.64	6.81	-309.6		132	
1045	13.3	1.73	1.34	4.7	0.48	6.82	-316.4		84.5	
1050	13.5	1.73	1.35	4.7	0.47	6.83	-316.4		64.0	
1055	13.5	1.72	1.34	3.6	0.38	6.82	-319.0		62.4	
1100	13.6	1.72	1.34	3.7	0.39	6.83	-311.6		52.1	
Total Depth of Well:		81.43								
Depth To Water Before Purging:			69.55							
Depth To Water After Purging:			69.56							

ARCADIS

Water Sampling Log

Project	RACER Lansing	Project No.	B0064479.2018	Page	1 of 2
Site Location	Lansing, MI			Date	5/8/18
Site/Well No.	MW-16-81	Replicate No.	NA	Code No.	NA
Weather	Sunny, ≈55°F	Sampling Time: Begin	1015	End	1020

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	77.31
Depth to Water (ft bmp)	67.69
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	9.62
Casing Diameter/Type	2" / PVC
Gallons in Well	1.54
Gallons Pumped/Bailed Prior to Sampling	≈1.00
Sample Pump Intake Setting (ft bmp)	≈ 72.31
Purge Time	begin 0925 end 1020
Pumping Rate (ml/min)	100
Evacuation Method	Bladder Pump

Field Parameters

Temperature (°C)	15.2
SpC (mS/cm)	3.18
CND (mS/cm)	2.59
Dissolved Oxygen (%)	2.6
Dissolved Oxygen (mg/L)	0.26
pH (s.u.)	6.57
ORP (mV)	-355.9
Turbidity (NTU)	2.00
Color	Clear
Odor	None
Appearance	Clear
Sampling Method	Low Flow
Remarks	

Constituents Sampled	Container Description	Number	Preservative
VOCs	40 ml voa	3	HCl
1,4-Dioxane	40 ml voa		
Select Metals	~~250 ml poly~~	~~2~~	~~None~~ AW 5/8/18
PFAS	250 ml poly	2	None

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel A. Westhuis

Well Casing Volumes

Gal./Ft.				
0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-16-81 PROJ #: B0064479.2018

DATE : 5/8/18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
0930	14.9	3.15	2.55	11.5	1.11	6.54	-306.1	100	12.1	68.11
0935	15.0	3.14	2.56	4.7	0.47	6.53	-311.7	100	6.75	68.55
0940	15.1	3.18	2.56	4.1	0.39	6.54	-341.7	100	4.32	68.57
0945	15.1	3.18	2.57	3.5	0.35	6.55	-348.0	100	3.60	68.57
0950	15.1	3.17	2.57	3.1	0.31	6.55	-351.2	100	3.13	68.57
0955	15.1	3.17	2.58	2.9	0.30	6.56	-353.3	100	2.71	68.57
1000	15.1	3.17	2.58	2.7	0.27	6.56	-354.6	100	2.43	68.57
1006	15.1	3.17	2.58	2.6	0.26	6.56	-355.3	100	2.06	68.57
1010	15.2	3.18	2.59	2.6	0.26	6.57	-355.9	100	2.00	68.57
1015	Sample Collected									
Total Depth of Well:		77.31								
Depth To Water Before Purging:			67.69							
Depth To Water After Purging:			68.57							

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page: 1 of 2

Site Location: Lansing, MI | Date: 5/8/18

Site/Well No.: MW-14-02 | Replicate No.: NA | Code No.: NA

Weather: Sunny, ≈65°F | Sampling Time: Begin 1215 End 1220

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	74.43
Depth to Water (ft bmp)	63.33
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	11.10
Casing Diameter/Type	2"/PVC
Gallons in Well	=1.78
Gallons Pumped/Bailed Prior to Sampling	≈ 1.3
Sample Pump Intake Setting (ft bmp)	= 71.93
Purge Time	begin 1105 end 1220
Pumping Rate (ml/min)	100
Evacuation Method	Bladder Pump

Field Parameters

Temperature (°C)	16.3
SpC (mS/cm)	3.08
CND (mS/cm)	2.57
Dissolved Oxygen (%)	131.9
Dissolved Oxygen (mg/L)	13.21
pH (s.u.)	7.65
ORP (mV)	-270.1
Turbidity (NTU)	2.20
Color	Clear
Odor	None
Appearance	Clear
Sampling Method	Low Flow
Remarks	

Constituents Sampled	Container Description	Number	Preservative
VOCs			
1,4-Dioxane	40 ml voa	3	HCl
Select Metals			
PFAS	250 ml poly	2	None

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: A. Westhuis

Well Casing Volumes

Gal./Ft.				
0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : TW-14-02 PROJ #: B0064479.2018

DATE : 6/8/18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1110	15.9	2.99	2.48	1.1	0.11	6.77	-321.5	100	14.2	64.14
1115	15.7	3.04	2.48	-1.8	—	6.74	-295.1	100	11.6	64.23
1120	16.6	3.05	2.56	3.6	0.39	6.75	-271.0	100	9.41	64.29
1125	16.5	3.10	2.59	9.3	0.92	6.76	-284.2	100	8.91	64.32
1130	16.9	3.11	2.64	32.1	3.08	6.94	-295.1	100	6.41	64.32
1135	17.3	3.09	2.64	61.1	5.61	7.31	-321.2	100	5.08	64.33
1140	17.7	3.07	2.65	92.1	8.70	7.60	-348.4	100	4.69	64.32
1145	18.2	3.07	2.68	96.3	8.88	7.60	-341.1	100	3.68	64.32
1150	18.7	3.08	2.71	99.8	9.15	7.59	-334.3	100	3.21	64.33
1155	17.1	3.09	2.66	111.6	11.01	7.62	-302.1	100	3.08	64.33
1200	16.3	3.10	2.57	129.6	12.34	7.65	-272.6	100	2.91	64.33
1205	16.3	3.09	2.59	130.1	13.30	7.67	-268.2	100	2.60	64.33
1210	16.3	3.08	2.57	131.9	13.21	7.65	-270.1	100	2.20	64.33
1215	Sample	Collected								
Total Depth of Well:		74.43								
Depth To Water Before Purging:			63.33							
Depth To Water After Purging:			64.33							

ARCADIS

Water Sampling Log

Project	RACER Lansing	Project No.	B0064479.2018	Page	1 of 2
Site Location	Lansing, MI			Date	5/8/18
Site/Well No.	MW-15-72	Replicate No.	NA	Code No.	NA
Weather	Sunny, ≈75°F	Sampling Time: Begin	1345	End	1350

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	70.39
Depth to Water (ft bmp)	59.02
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	11.37
Casing Diameter/Type	2"/PVC
Gallons in Well	1.82
Gallons Pumped/Bailed Prior to Sampling	≈1.0
Sample Pump Intake Setting (ft bmp)	≈67.89
Purge Time	begin 1300 end 1350
Pumping Rate (ml/min)	≈100
Evacuation Method	Bladder Pump

Field Parameters

Temperature (°C)	15.3
SpC (mS/cm)	1.64
CND (mS/cm)	1.33
Dissolved Oxygen (%)	2.5
Dissolved Oxygen (mg/L)	0.25
pH (s.u.)	6.83
ORP (mV)	-312.3
Turbidity (NTU)	1.03
Color	Clear
Odor	None
Appearance	Clear
Sampling Method	Low Flow
Remarks	

Constituents Sampled	Container Description	Number	Preservative
VOCs			
1,4-Dioxane	40 ml voa	3	HCl
Select Metals			
PFAS	250 ml poly	2	None

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel A. Westhuis

Well Casing Volumes

Gal./Ft.				
0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-15-72 PROJ #: B0064479.2018

DATE : 5/8/18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1305	15.5	1.46	1.20	6.1	0.59	6.83	-317.2	100	16.9	59.91
1310	15.6	1.46	1.19	5.3	0.50	6.79	-303.6	100	9.80	59.93
1315	15.7	1.50	1.23	3.2	0.33	6.76	-320.3	100	6.81	59.94
1320	15.8	1.56	1.28	3.0	0.30	6.79	-327.9	100	3.06	59.96
1325	15.7	1.59	1.30	2.9	0.29	6.80	-320.0	100	1.66	59.96
1330	15.5	1.60	1.32	2.8	0.28	6.81	-319.6	100	1.51	59.97
1335	15.4	1.62	1.33	2.6	0.26	6.83	-316.6	100	1.18	59.97
1340	15.3	1.64	1.33	2.5	0.25	6.83	-312.3	100	1.03	59.98
1345	Sample	Collected.								

ARCADIS

Water Sampling Log

Project	RACER Lansing	Project No.	B0064479.2018	Page	1 of 2
Site Location	Lansing, MI			Date	5/8/18
Site/Well No.	MW-13-43	Replicate No.	NA	Code No.	NA
Weather	Sunny, ≈ 75°F	Sampling Time: Begin	1520	End	1529

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	79.70
Depth to Water (ft bmp)	67.92
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	11.78
Casing Diameter/Type	2"/pvc
Gallons in Well	≈1.88
Gallons Pumped/Bailed Prior to Sampling	≈1.0
Sample Pump Intake Setting (ft bmp)	≈77.20
Purge Time	begin 1430 end 1529
Pumping Rate (ml/min)	100
Evacuation Method	Bladder Pump

Field Parameters

Temperature (°C)	15.2
SpC (mS/cm)	2.74
CND (mS/cm)	2.23
Dissolved Oxygen (%)	4.8
Dissolved Oxygen (mg/L)	0.49
pH (s.u.)	6.69
ORP (mV)	-184.2
Turbidity (NTU)	4.79
Color	Clear
Odor	None
Appearance	Clear
Sampling Method	
Remarks	Dup-04 collected here

Constituents Sampled	Container Description	Number	Preservative
VOCs			
1,4-Dioxane	40 ml voa	3	HCl
Select Metals			
PFAS	250 ml poly	2	None

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: A. Westhuis

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-13-43 PROJ #: B0064479.2018

DATE : 5/8/18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1435	16.2	2.01	1.68	19.4	1.96	6.92	-284.9	100	32.4	68.15
1440	15.6	2.50	2.05	10.7	1.08	6.73	-320.1	100	19.1	68.18
1445	15.6	2.60	2.13	9.0	0.89	6.71	-296.4	100	11.6	68.18
1450	15.4	2.71	2.21	8.1	0.79	6.70	-268.1	100	7.61	68.18
1455	15.2	2.72	2.21	6.8	0.68	6.69	-221.3	100	6.61	68.18
1500	15.1	2.73	2.22	5.6	0.54	6.69	-197.1	100	6.13	68.18
1505	14.9	2.75	2.22	5.1	0.51	6.70	-187.6	100	5.59	68.18
1510	15.3	2.74	2.23	4.9	0.49	6.69	-185.1	100	5.01	68.18
1515	15.2	2.74	2.23	4.8	0.49	6.69	-184.2	100	4.79	68.18
1520	Sample	Collected								
Total Depth of Well:		79.70								
Depth To Water Before Purging:			67.92							
Depth To Water After Purging:			68.18							

ARCADIS

Water Sampling Log

Project	RACER Lansing	Project No.	B0064479.2018	Page	1 of 2
Site Location	Lansing, MI			Date	5/8/18
Site/Well No.	MW-16-80	Replicate No.	NA	Code No.	NA
Weather	Sunny, ≈ 75°F	Sampling Time: Begin	1635	End	1640

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	73.41
Depth to Water (ft bmp)	61.66
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	11.75
Casing Diameter/Type	2"/pvc
Gallons in Well	= 1.88
Gallons Pumped/Bailed Prior to Sampling	= 0.75
Sample Pump Intake Setting (ft bmp)	= 70.91
Purge Time	begin 1600 end 1640
Pumping Rate (ml/min)	100
Evacuation Method	Bladder Pump

Field Parameters

Temperature (°C)	12.3
SpC (mS/cm)	2.48
CND (mS/cm)	1.88
Dissolved Oxygen (%)	5.7
Dissolved Oxygen (mg/L)	0.58
pH (s.u.)	6.79
ORP (mV)	-308.0
Turbidity (NTU)	2.01
Color	Clear
Odor	None
Appearance	Clear
Sampling Method	Low Flow
Remarks	

Constituents Sampled	Container Description	Number	Preservative
VOCs			
1,4-Dioxane	40ml voa	3	HCl
Select Metals			
PFAS	250 ml poly	2	None

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: A. Westhuis

Well Casing Volumes

Gal./Ft.				
0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-16-80 PROJ #: B0064479.2018

DATE : 5/8/18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1605	13.0	2.46	1.89	10.4	1.09	6.81	-300.8	100	7.02	62.69
1610	12.5	2.46	1.87	6.8	0.70	6.77	-298.8	100	5.49	62.75
1615	12.4	2.46	1.87	6.6	0.66	6.78	-302.6	100	3.20	62.84
1620	12.4	2.47	1.88	6.3	0.63	6.79	-305.1	100	2.76	62.87
1625	12.3	2.48	1.88	5.9	0.61	6.79	-307.1	100	2.22	62.89
1630	12.3	2.48	1.88	5.7	0.58	6.79	-308.0	100	2.01	62.90
1635	Sample	Collected								

ARCADIS

Water Sampling Log

Project	RACER Lansing	Project No.	B0064479.2018	Page	1 of 2
Site Location	Lansing, MI			Date	5/9/18
Site/Well No.	MW-14-60	Replicate No.	NA	Code No.	NA
Weather	Sunny, ≈ 60°F	Sampling Time: Begin	0900	End	0905

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	23.57
Depth to Water (ft bmp)	12.70
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	10.87
Casing Diameter/Type	2"/PVC
Gallons in Well	≈1.74
Gallons Pumped/Bailed Prior to Sampling	≈0.50
Sample Pump Intake Setting (ft bmp)	≈21.07
Purge Time	begin 0825 end 0905
Pumping Rate (ml/min)	100
Evacuation Method	5/9/18 GW ~~Bladder~~ Pump Peristaltic

Field Parameters

Temperature (°C)	13.0
SpC (mS/cm)	1.27
CND (mS/cm)	0.98
Dissolved Oxygen (%)	4.2
Dissolved Oxygen (mg/L)	0.43
pH (s.u.)	7.15
ORP (mV)	-344.1
Turbidity (NTU)	3.29
Color	Clear
Odor	None
Appearance	Clear
Sampling Method	Low Flow
Remarks	

Constituents Sampled	Container Description	Number	Preservative
VOCs			
1,4-Dioxane			
Select Metals			
PFAS	250 ml poly	2	None

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: A. Westhuis

Well Casing Volumes

Gal./Ft.				
0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-14-60 PROJ #: B0064479.2018

DATE : 5/9/18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
0830	12.8	1.29	0.99	37.0	3.88	7.23	-281.9	100	46.0	12.72
0835	12.9	1.28	0.98	8.5	0.89	7.18	-327.2	100	21.6	12.72
0840	12.8	1.28	0.98	6.3	0.64	7.14	-340.2	100	12.3	12.72
0845	12.7	1.27	0.98	4.7	0.52	7.14	-347.1	100	7.16	12.72
0850	12.7	1.27	0.97	4.3	0.46	7.14	-351.1	100	5.48	12.72
0855	13.0	1.27	0.98	4.2	0.43	7.15	-344.1	100	3.29	12.72
0900	Sample	Collected								
Total Depth of Well:		23.57								
Depth To Water Before Purging:			12.70							
Depth To Water After Purging:			12.72							

ARCADIS

Water Sampling Log

Project	RACER Lansing	Project No.	B0064479.2018	Page	1 of 2
Site Location	Lansing, MI			Date	5/9/18
Site/Well No.	MW-14-62	Replicate No.	NA	Code No.	NA
Weather	Sunny, ≈ 60°F	Sampling Time:	Begin 1020	End	1025

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	19.63
Depth to Water (ft bmp)	6.41
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	13.22
Casing Diameter/Type	2"/PVC
Gallons in Well	=2.12
Gallons Pumped/Bailed Prior to Sampling	=1.00
Sample Pump Intake Setting (ft bmp)	=17.13
Purge Time	begin 0940 end 1025
Pumping Rate (ml/min)	100
Evacuation Method	Peristaltic Pump

Field Parameters

Temperature (°C)	12.7
SpC (mS/cm)	0.647
CND (mS/cm)	0.495
Dissolved Oxygen (%)	2.6
Dissolved Oxygen (mg/L)	0.25
pH (s.u.)	11.34
ORP (mV)	-375.7
Turbidity (NTU)	2.61
Color	Clear
Odor	None
Appearance	Clear
Sampling Method	Low flow
Remarks	

Constituents Sampled	Container Description	Number	Preservative
VOCs			
1,4-Dioxane			
Select Metals			
PFAS	250 ml poly	2	None

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel A. Westhuis

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-14-62 PROJ #: B0064479.2018

DATE : 5/9/18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
0945	13.5	0.546	0.426	8.9	0.88	11.32	-381.7	100	6.63	6.50
0950	13.2	0.585	0.453	4.4	0.46	11.27	-369.1	100	5.21	6.50
0955	13.1	0.599	0468	3.6	0.37	11.25	-363.9	100	4.74	6.50
1000	13.0	0.631	0.487	2.8	0.31	11.27	-366.7	100	4.11	6.50
1005	12.8	0.640	0.491	2.4	0.26	11.33	-376.1	100	3.60	6.50
1010	12.7	0.643	0.493	2.5	0.26	11.33	-375.9	100	3.03	6.50
1015	12.7	0.647	0.495	2.6	0.25	11.34	-375.7	100	2.61	6.50
1020	Sample Collected									
Total Depth of Well:		19.63								
Depth To Water Before Purging:			6.41							
Depth To Water After Purging:			6.50							

ARCADIS

Water Sampling Log

Project	RACER Lansing	Project No.	B0064479.2018	Page	1 of 2
Site Location	Lansing, MI			Date	5/9/18
Site/Well No.	P2-MW-02	Replicate No.	NA	Code No.	NA
Weather		Sampling Time: Begin	1150	End	1155

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	40.21
Depth to Water (ft bmp)	37.09
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	3.12
Casing Diameter/Type	2" / pvc
Gallons in Well	= 0.50
Gallons Pumped/Bailed Prior to Sampling	= 1.5
Sample Pump Intake Setting (ft bmp)	= 39.21
Purge Time	begin 1055 end 1155
Pumping Rate (ml/min)	100
Evacuation Method	Bladder Pump

Field Parameters

Temperature (°C)	15.6
SpC (mS/cm)	1.00
CND (mS/cm)	0.83
Dissolved Oxygen (%)	3.5
Dissolved Oxygen (mg/L)	0.34
pH (s.u.)	6.93
ORP (mV)	-346.6
Turbidity (NTU)	23.6
Color	Clear
Odor	None
Appearance	Clear
Sampling Method	Low Flow
Remarks	

Constituents Sampled	Container Description	Number	Preservative
VOCs	40 ml voa	3	HCl
1,4-Dioxane			
Select Metals			
PFAS	250 ml poly	2	None

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel A. Westhuis

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : PZ-MW-02 PROJ #: B0064479.2018

DATE : 5/9/18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1100	14.5	1.08	0.76	10.9	1.26	6.82	-294.4	100	364	37.44
1105	14.6	0.90	0.72	5.7	0.56	6.70	-332.7	100	153	37.63
1110	13.7	0.90	0.70	4.7	0.48	6.70	-334.2	100	106	37.79
1115	14.5	0.89	0.71	3.3	0.31	6.76	-340.6	100	82.7	NA *
1120	15.1	0.92	0.75	2.7	0.25	6.84	-346.3	100	78.6	NA
1125	15.5	0.95	0.77	3.0	0.30	6.87	-350.6	100	41.3	NA
1130	15.8	0.97	0.80	3.3	0.34	6.90	-355.5	100	26.6	NA
1135	16.2	0.99	0.82	3.2	0.32	6.91	-351.1	100	21.1	NA
1140	15.9	0.99	0.83	3.5	0.33	6.92	-348.8	100	19.6	NA
1145	15.6	1.00	0.83	3.5	0.34	6.93	-346.6	100	23.6	NA
1150	Sample Collected									
Total Depth of Well:		40.21								
Depth To Water Before Purging:										
Depth To Water After Purging:										

* Water Level drops below top of bladder pump. Unable to gauge.

ARCADIS

Water Sampling Log

Project	RACER Lansing	Project No.	B0064479.2018	Page	1 of 2
Site Location	Lansing, MI			Date	5/9/18
Site/Well No.	MW-12-08	Replicate No.	NA	Code No.	NA
Weather	Cloudy, ~60°F	Sampling Time: Begin	1345	End	1350

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	27.39
Depth to Water (ft bmp)	6.49
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	20.90
Casing Diameter/Type	2"/pvc
Gallons in Well	3.34
Gallons Pumped/Bailed Prior to Sampling	~1.5
Sample Pump Intake Setting (ft bmp)	~24.89
Purge Time	begin 1255 end 1350
Pumping Rate (ml/min)	~100
Evacuation Method	Peristaltic Pump

Field Parameters

Temperature (°C)	14.1
SpC (mS/cm)	15.61
CND (mS/cm)	12.41
Dissolved Oxygen (%)	4.7
Dissolved Oxygen (mg/L)	0.47
pH (s.u.)	6.62
ORP (mV)	-328.1
Turbidity (NTU)	19.1
Color	Clear
Odor	None
Appearance	Clear
Sampling Method	Low flow
Remarks	

Constituents Sampled	Container Description	Number	Preservative
VOCs			
1,4-Dioxane			
Select Metals			
PFAS	250 ml poly	2	None

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel A. Westhuis

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-12-08 PROJ #: B0064479.2018

DATE : 5/9/18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1300	15.2	15.63	12.69	5.9	0.55	6.59	-298.1	100	45.7	7.22
1305	15.2	15.61	12.69	5.2	0.51	6.60	-308.3	100	41.3	7.66
1310	15.2	15.62	12.69	3.5	0.33	6.60	-320.0	100	32.1	7.91
1315	14.6	15.67	12.67	6.4	0.61	6.61	-322.3	100	29.9	8.10
1320	14.5	15.65	12.59	6.1	0.61	6.62	-322.2	100	28.6	8.17
1325	14.4	15.63	12.46	6.0	0.60	6.62	-322.1	100	27.5	8.21
1330	14.3	15.66	12.44	5.1	0.52	6.62	-324.1	100	22.1	8.23
1335	14.2	15.67	12.42	4.9	0.49	6.62	-326.3	100	19.6	8.23
1340	14.1	15.67	12.41	4.7	0.47	6.62	-328.1	100	19.1	8.24
1345	Sample Collected									
Total Depth of Well:		27.39								
Depth To Water Before Purging:			6.49							
Depth To Water After Purging:			8.24							

ARCADIS

Water Sampling Log

Project	RACER Lansing	Project No.	B0064479.2018	Page	1 of 2
Site Location	Lansing, MI			Date	5/9/18
Site/Well No.	MW-14-54	Replicate No.	NA	Code No.	NA
Weather	Cloudy, ≈60°F	Sampling Time: Begin	1450	End	1455

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	19.03
Depth to Water (ft bmp)	13.73
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	≈ 5.30
Casing Diameter/Type	2"/pvc
Gallons in Well	0.85
Gallons Pumped/Bailed Prior to Sampling	≈ 1.00
Sample Pump Intake Setting (ft bmp)	≈ 16.53
Purge Time	begin 1415 end 1455
Pumping Rate (ml/min)	100
Evacuation Method	Peristaltic Pump

Field Parameters

Temperature (°C)	13.5
SpC (mS/cm)	1.60
CND (mS/cm)	1.25
Dissolved Oxygen (%)	0.7
Dissolved Oxygen (mg/L)	0.07
pH (s.u.)	8.11
ORP (mV)	-327.4
Turbidity (NTU)	0.71
Color	Clear
Odor	None
Appearance	Clear
Sampling Method	Low Flow
Remarks	

Constituents Sampled	Container Description	Number	Preservative
VOCs			
1,4-Dioxane			
Select Metals			
PFAS	250 ml poly	2	None

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: A. Westhuis

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-14-54 PROJ #: B0064479.2018

DATE : 5/9/18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1420	13.9	1.83	1.41	2.4	0.25	8.21	-304.6	100	2.25	13.81
1425	14.5	1.71	1.37	1.0	0.10	8.17	-304.9	100	1.60	13.81
1430	13.8	1.64	1.20	1.0	0.10	8.10	-310.0	100	1.21	13.81
1435	13.7	1.63	1.22	0.8	0.08	8.10	-316.6	100	1.06	13.81
1440	13.3	1.61	1.23	0.7	0.07	8.11	-322.1	100	0.96	13.81
1445	13.5	1.60	1.25	0.7	0.07	8.11	-327.4	100	0.71	13.81
1450	Sample	Collected								
Total Depth of Well:		19.03								
Depth To Water Before Purging:			13.73							
Depth To Water After Purging:			13.81							

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Water Sampling Log

Project	RACER Lansing	Project No.	B0064479.2018	Page	1 of 2
Site Location	Lansing, MI			Date	5/9/18
Site/Well No.	MW-14-58	Replicate No.	NA	Code No.	NA
Weather	Cloudy, ≈60°F	Sampling Time: Begin	1600	End	1605

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	29.93
Depth to Water (ft bmp)	14.23
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	15.70
Casing Diameter/Type	2" / PVC
Gallons in Well	≈2.51
Gallons Pumped/Bailed Prior to Sampling	≈ 0.75
Sample Pump Intake Setting (ft bmp)	≈27.43
Purge Time	begin 1520 end 1605
Pumping Rate (ml/min)	100
Evacuation Method	Bladder Pump

Field Parameters

Temperature (°C)	15.1
SpC (mS/cm)	5.96
CND (mS/cm)	4.89
Dissolved Oxygen (%)	2.5
Dissolved Oxygen (mg/L)	0.25
pH (s.u.)	6.53
ORP (mV)	-323.0
Turbidity (NTU)	9.89
Color	Clear
Odor	None
Appearance	Clear
Sampling Method	Low Flow
Remarks	

Constituents Sampled	Container Description	Number	Preservative
VOCs			
1,4-Dioxane	40 ml voa	3	HCl
Select Metals			
PFAS	250 ml poly	2	None

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: A. Westhuis

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-14-58 PROJ #: B0064479.2018

DATE : 5/9/18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1525	15.3	5.81	4.74	9.0	0.88	6.51	-276.1	100	135	14.23
1530	15.3	5.93	4.83	4.0	0.40	6.51	-318.4	100	101	14.23
1535	15.4	5.96	4.86	3.8	0.40	6.52	-327.7	100	70.3	14.23
1540	15.4	5.97	4.87	2.7	0.26	6.52	-331.0	100	48.8	14.23
1545	15.6	5.96	4.89	2.6	0.26	6.53	-327.9	100	21.2	14.23
1550	15.3	5.96	4.89	2.6	0.26	6.53	-325.1	100	14.3	14.23
1555	15.1	5.96	4.89	2.5	0.25	6.53	-323.0	100	9.89	14.23
1600	Sample	Collected								
Total Depth of Well:		29.93								
Depth To Water Before Purging:			14.23							
Depth To Water After Purging:			14.23							

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Water Sampling Log

Project	RACER Lansing	Project No.	B0064479.2018	Page	1 of 2
Site Location	Lansing, MI			Date	5/10/18
Site/Well No.	P2-MW-03	Replicate No.	NA	Code No.	NA
Weather	Cloudy, ~60°F	Sampling Time: Begin	1025	End	1030

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	27.19
Depth to Water (ft bmp)	9.41
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	17.78
Casing Diameter/Type	2"/PVC
Gallons in Well	= 2.85
Gallons Pumped/Bailed Prior to Sampling	= 1.00
Sample Pump Intake Setting (ft bmp)	~24.69
Purge Time	begin 0940 end 1030
Pumping Rate (ml/min)	100
Evacuation Method	Peristaltic Pump

Field Parameters

Temperature (°C)	11.4
SpC (mS/cm)	1.32
CND (mS/cm)	1.00
Dissolved Oxygen (%)	2.7
Dissolved Oxygen (mg/L)	0.28
pH (s.u.)	6.94
ORP (mV)	-294.1
Turbidity (NTU)	8.64
Color	Clear
Odor	None
Appearance	Clear
Sampling Method	low flow
Remarks	

Constituents Sampled	Container Description	Number	Preservative
VOCs			
1,4-Dioxane			
Select Metals			
PFAS	250 ml poly	2	None

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : P2-MW-03 PROJ #: B0064479.2018

DATE : 5/10/18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
0945	11.4	1.18	0.87	10.1	1.04	6.83	-171.6	100	165	10.23
0950	11.4	1.19	0.86	6.3	0.66	6.88	-220.7	100	81.6	10.78
0955	11.3	1.23	0.90	4.9	0.49	6.90	-221.6	100	32.3	11.01
1000	11.3	1.28	0.93	3.5	0.37	6.93	-264.3	100	26.6	11.17
1005	11.5	1.30	0.97	2.9	0.30	6.95	-291.0	100	24.9	11.20
1010	11.5	1.31	0.99	2.7	0.28	6.95	-293.0	100	23.1	11.21
1015	11.4	1.32	1.00	2.7	0.28	6.94	-293.6	100	15.2	11.22
1020	11.4	1.32	1.00	2.7	0.28	6.94	-294.1	100	8.64	11.22
1025	Sample Collected									
Total Depth of Well:		27.19								
Depth To Water Before Purging:			9.41							
Depth To Water After Purging:			11.22							

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Water Sampling Log

Project	RACER Lansing	Project No.	B0064479.2018	Page	1 of 2
Site Location	Lansing, MI			Date	5/10/18
Site/Well No.	MWBP-12A-UST1-4	Replicate No.	NA	Code No.	NA
Weather	Cloudy, ≈60°F	Sampling Time: Begin	1135	End	1140

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	36.65
Depth to Water (ft bmp)	28.51
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	8.14
Casing Diameter/Type	2"/pvc
Gallons in Well	≈1.30
Gallons Pumped/Bailed Prior to Sampling	≈0.75
Sample Pump Intake Setting (ft bmp)	≈34.15
Purge Time	begin 1100 end 1140
Pumping Rate (ml/min)	100
Evacuation Method	Peristaltic Pump

Field Parameters

Temperature (°C)	13.3
SpC (mS/cm)	4.62
CND (mS/cm)	3.62
Dissolved Oxygen (%)	4.6
Dissolved Oxygen (mg/L)	0.46
pH (s.u.)	6.67
ORP (mV)	-262.1
Turbidity (NTU)	3.31
Color	Clear/yellowish
Odor	None
Appearance	Clear/yellowish
Sampling Method	Low Flow
Remarks	

Constituents Sampled	Container Description	Number	Preservative
VOCs			
1,4-Dioxane			
Select Metals	125 ml poly	1	HNO_3
PFAS	250 ml poly	2	None

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel A. Westhuis

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MWBP-12A-UST1-4 PROJ #: B0064479.2018

DATE : 5/10/18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1105	13.4	4.45	3.46	8.1	0.87	6.67	-147.4	100	17.7	28.53
1110	13.1	4.51	3.49	5.2	0.54	6.68	-170.5	100	11.6	28.53
1115	13.3	4.54	3.53	4.9	0.51	6.68	-207.1	100	9.21	28.53
1120	13.5	4.61	3.59	4.7	0.49	6.68	-245.9	100	7.33	28.53
1125	13.3	4.62	3.61	4.6	0.47	6.67	-261.1	100	4.91	28.53
1130	13.3	4.62	3.62	4.6	0.46	6.67	-262.1	100	3.31	28.53
1135	Sample Collected									
Total Depth of Well:		36.65								
Depth To Water Before Purging:			28.51							
Depth To Water After Purging:			28.53							

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Water Sampling Log

Project	RACER Lansing	Project No.	B0064479.2018	Page	1 of 2
Site Location	Lansing, MI			Date	5/10/18
Site/Well No.	MW-14-70	Replicate No.	NA	Code No.	NA
Weather	Cloudy, ~60°F	Sampling Time: Begin	1255	End	1300

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	23.11
Depth to Water (ft bmp)	10.40
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	12.71
Casing Diameter/Type	2"/pvc
Gallons in Well	2.03
Gallons Pumped/Bailed Prior to Sampling	~1.00
Sample Pump Intake Setting (ft bmp)	~20.61
Purge Time	begin 1215 end 1300
Pumping Rate (ml/min)	100
Evacuation Method	Peristaltic Pump

Field Parameters

Temperature (°C)	11.0
SpC (mS/cm)	1.52
CND (mS/cm)	1.11
Dissolved Oxygen (%)	1.5
Dissolved Oxygen (mg/L)	0.16
pH (s.u.)	7.33
ORP (mV)	-190.1
Turbidity (NTU)	5.22
Color	Clear
Odor	None
Appearance	Clear
Sampling Method	Low flow
Remarks	

Constituents Sampled	Container Description	Number	Preservative
VOCs			
1,4-Dioxane			
Select Metals			
PFAS	250 ml poly	2	None

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: A. Westhuis

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-14-70 PROJ #: B0064479.2018

DATE : 5/10/18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1220	11.6	1.60	1.19	10.9	1.17	7.49	-164.0	100	21.6	10.76
1225	11.2	1.54	1.13	3.7	0.42	7.35	-129.0	100	14.3	10.97
1230	11.0	1.52	1.11	2.4	0.28	7.31	-179.6	100	10.1	11.10
1235	10.9	1.51	1.10	2.0	0.20	7.34	-182.1	100	8.39	11.11
1240	10.8	1.51	1.10	1.7	0.17	7.34	-185.6	100	7.78	11.11
1245	10.9	1.52	1.11	1.6	0.17	7.33	-188.9	100	6.41	11.11
1250	11.0	1.52	1.11	1.5	0.16	7.33	-190.1	100	5.22	11.11
1255	Sample	Collected								
Total Depth of Well:		23.11								
Depth To Water Before Purging:			10.40							
Depth To Water After Purging:			11.11							

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Water Sampling Log

Project	RACER Lansing	Project No.	B0064479.2018	Page	1 of 2
Site Location	Lansing, MI			Date	5/10/18
Site/Well No.	P6-SB-35	Replicate No.	NA	Code No.	NA
Weather	Cloudy, ≈60°F	Sampling Time: Begin	1400	End	1405

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	11.96
Depth to Water (ft bmp)	4.49
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	7.47
Casing Diameter/Type	2" / PVC
Gallons in Well	≈1.20
Gallons Pumped/Bailed Prior to Sampling	≈0.75
Sample Pump Intake Setting (ft bmp)	≈9.46
Purge Time	begin 1330 end 1405
Pumping Rate (ml/min)	100
Evacuation Method	Peristaltic Pump

Field Parameters

Temperature (°C)	12.0
SpC (mS/cm)	0.302
CND (mS/cm)	0.228
Dissolved Oxygen (%)	2.9
Dissolved Oxygen (mg/L)	0.29
pH (s.u.)	9.39
ORP (mV)	-346.1
Turbidity (NTU)	0.62
Color	Clear
Odor	None
Appearance	Clear
Sampling Method	Low Flow
Remarks	

Constituents Sampled	Container Description	Number	Preservative
VOCs			
1,4-Dioxane			
Select Metals			
PFAS	250 ml poly	2	None

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: A. Westhuis

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : P6-SB-35 PROJ #: B0064479.2018

DATE : 5/10/18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1335	12.4	0.299	0.226	2.6	0.28	9.40	-341.3	100	2.52	5.51
1340	12.4	0.294	0.224	3.0	0.33	9.41	-351.6	100	1.63	5.89
1345	12.4	0.296	0.225	3.2	0.31	9.40	-347.2	100	1.14	6.09
1350	12.1	0.301	0.227	2.8	0.29	9.40	-347.0	100	0.81	6.11
1355	12.0	0.302	0.228	2.9	0.29	9.39	-346.1	100	0.62	6.11
1400	Sample	Collected								
Total Depth of Well:		11.96								
Depth To Water Before Purging:			4.49							
Depth To Water After Purging:			6.11							

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page: 1 of 2

Site Location: Lansing, MI | Date: 5/10/18

Site/Well No.: P6-SB-21 | Replicate No.: NA | Code No.: NA

Weather: Cloudy, ~60°F | Sampling Time: Begin 1605 End 1610

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	11.11
Depth to Water (ft bmp)	2.85
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	8.26
Casing Diameter/Type	2" / pvc
Gallons in Well	=1.32
Gallons Pumped/Bailed Prior to Sampling	=1.00
Sample Pump Intake Setting (ft bmp)	=8.61
Purge Time	begin 1520 end 1610
Pumping Rate (ml/min)	100
Evacuation Method	Peristaltic Pump

Field Parameters

Temperature (°C)	11.3
SpC (mS/cm)	1.72
CND (mS/cm)	1.27
Dissolved Oxygen (%)	7.7
Dissolved Oxygen (mg/L)	0.83
pH (s.u.)	8.06
ORP (mV)	-293.1
Turbidity (NTU)	2.41
Color	Clear
Odor	None
Appearance	Clear
Sampling Method	Low Flow
Remarks	

Constituents Sampled	Container Description	Number	Preservative
VOCs			
1,4-Dioxane			
Select Metals			
PFAS	250 ml poly	2	None

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: A. Westhuis

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-SB-21 PROJ #: B0064479.2018

DATE : 5/10/18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1525	11.3	3.25	2.40	14.5	1.35	8.47	-297.0	100	13.6	3.15
1530	11.7	3.00	2.23	2.8	0.31	8.32	-298.0	100	10.1	3.17
1535	11.6	2.37	1.76	2.0	0.21	8.14	-300.2	100	8.60	3.19
1540	11.6	2.12	1.50	4.1	0.42	8.09	-296.6	100	6.14	3.19
1545	11.6	1.90	1.41	5.6	0.64	8.04	-292.3	100	3.96	3.20
1550	11.5	1.84	1.36	8.1	0.87	8.07	-288.3	100	3.14	3.21
1555	11.3	1.75	1.29	7.8	0.86	8.05	-290.1	100	2.80	3.21
1600	11.3	1.72	1.27	7.7	0.83	8.06	-293.1	100	2.41	3.21
1605	Sample	Collected								
Total Depth of Well:		11.11								
Depth To Water Before Purging:			2.85							
Depth To Water After Purging:			3.21							

ARCADIS

Water Sampling Log

Project	RACER Lansing	Project No.	B0064479.2018	Page	1 of 2
Site Location	Lansing, MI			Date	5/11/18
Site/Well No.	MW-02-04(3)	Replicate No.	NA	Code No.	NA
Weather		Sampling Time: Begin	1020	End	1025

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	83.98
Depth to Water (ft bmp)	61.23
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	22.75
Casing Diameter/Type	2"/pvc
Gallons in Well	=3.64
Gallons Pumped/Bailed Prior to Sampling	= 1.00
Sample Pump Intake Setting (ft bmp)	= 70.98
Purge Time	begin 0935 end 1025
Pumping Rate (ml/min)	100
Evacuation Method	Bladder Pump

Field Parameters

Temperature (°C)	12.3
SpC (mS/cm)	6.14
CND (mS/cm)	4.63
Dissolved Oxygen (%)	2.3
Dissolved Oxygen (mg/L)	0.25
pH (s.u.)	6.81
ORP (mV)	-194.3
Turbidity (NTU)	5.31
Color	Clear
Odor	None
Appearance	Clear
Sampling Method	Low flow
Remarks	Dup-09_051118 collected here.

Constituents Sampled	Container Description	Number	Preservative
VOCs			
1,4-Dioxane			
Select Metals	125 ml poly	1	HNO3
PFAS	250 ml poly	2	None

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: A. Westhuis

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-02-04 (3) PROJ #: B0064479.2018

DATE : 5/11/18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
0940	12.4	5.54	4.22	35.3	3.64	6.81	-147.0	100	55.1	62.02
0945	12.5	5.79	4.41	7.1	0.75	6.81	-178.8	100	44.6	62.11
0950	12.6	6.04	4.61	4.4	0.46	6.80	-189.1	100	32.9	62.13
0955	12.6	6.10	4.66	3.4	0.35	6.80	-194.9	100	20.1	62.15
1000	12.4	6.18	4.68	2.9	0.31	6.80	-154.3	100	12.1	62.17
1005	12.1	6.14	4.64	2.4	0.26	6.80	-200.9	100	9.64	62.19
1010	12.2	6.14	4.63	2.3	0.25	6.80	-197.6	100	7.61	62.20
1015	12.3	6.14	4.63	2.3	0.25	6.81	-194.3	100	5.31	62.21
1020	Sample	Collected								
Total Depth of Well:		83.98								
Depth To Water Before Purging:			61.23							
Depth To Water After Purging:			62.21							

ARCADIS

Water Sampling Log

Project	RACER Lansing	Project No.	B0064479.2018	Page	1 of 2
Site Location	Lansing, MI			Date	
Site/Well No.	MW-91-2	Replicate No.	NA	Code No.	NA
Weather	Cloudy, light rain	Sampling Time:	Begin	End	

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	76.58
Depth to Water (ft bmp)	59.82
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	16.76
Casing Diameter/Type	4" / Steel
Gallons in Well	=10.89
Gallons Pumped/Bailed Prior to Sampling	=0.75
Sample Pump Intake Setting (ft bmp)	~71.58
Purge Time	begin 1110 end
Pumping Rate (ml/min)	100
Evacuation Method	Bladder Pump

Field Parameters

Temperature (°C)	12.7
SpC (mS/cm)	1.53
CND (mS/cm)	1.19
Dissolved Oxygen (%)	1.0
Dissolved Oxygen (mg/L)	0.10
pH (s.u.)	7.04
ORP (mV)	-82.1
Turbidity (NTU)	2.80
Color	Clear
Odor	None
Appearance	Clear
Sampling Method	Low Flow
Remarks	

Constituents Sampled	Container Description	Number	Preservative
VOCs	40 ml voa	3	HCl
1,4-Dioxane			
Select Metals			
PFAS	250 ml poly	2	None

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel A. Westhuis

Well Casing Volumes

Gal./Ft.				
0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-91-2 PROJ #: B0064479.2018

DATE : 5/11/18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1115	12.6	2463	0.125	4.5	0.49	6.02	-126.0	100	12.6	59.87
1120	12.8	0.378	0.310	2.4	0.24	6.33	-174.0	100	8.40	59.87
1125	12.5	0.942	0.761	1.7	0.16	6.81	-179.1	100	6.11	59.87
1130	12.6	1.51	1.16	1.2	0.12	7.03	-183.4	100	4.76	59.87
1135	12.7	1.53	1.18	1.1	0.11	7.04	-183.9	100	3.22	59.87
1140	12.7	1.53	1.19	1.0	0.10	7.04	-182.1	100	2.80	59.88
1145	Sample Collected									
Total Depth of Well:		76.58								
Depth To Water Before Purging:			59.82							
Depth To Water After Purging:			59.88							

ARCADIS

Water Sampling Log

Project	RACER Lansing	Project No.	B0064479.2018	Page	1 of 2
Site Location	Lansing, MI			Date	
Site/Well No.	CH-14-R0	Replicate No.	NA	Code No.	NA
Weather	cloudy, ≈40°F	Sampling Time: Begin	1250	End	1255

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	14.84
Depth to Water (ft bmp)	7.51
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	7.33
Casing Diameter/Type	2"/pvc
Gallons in Well	=1.17
Gallons Pumped/Bailed Prior to Sampling	=1.00
Sample Pump Intake Setting (ft bmp)	=12.34
Purge Time	begin 1210 end 1255
Pumping Rate (ml/min)	100
Evacuation Method	Peristaltic Pump

Field Parameters

Temperature (°C)	10.4
SpC (mS/cm)	0.97
CND (mS/cm)	0.70
Dissolved Oxygen (%)	1.4
Dissolved Oxygen (mg/L)	0.14
pH (s.u.)	7.08
ORP (mV)	-83.3
Turbidity (NTU)	1.09
Color	clear/green
Odor	None
Appearance	clear/green
Sampling Method	Low flow
Remarks	

Constituents Sampled	Container Description	Number	Preservative
VOCs	40 ml voa	3	HCl
1,4-Dioxane			
Select Metals			
PFAS	250 ml poly	2	None

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: A. Westhuis

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : CH-14-R0 PROJ #: B0064479.2018

DATE : 5/11/18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1215	10.3	0.99	0.71	5.2	0.54	7.09	-156.6	100	3.13	8.08
1220	10.4	0.98	0.70	3.2	0.31	7.09	-172.2	100	2.76	8.09
1225	10.3	0.97	0.70	2.0	0.22	7.09	-162.0	100	2.51	8.11
1230	10.3	0.97	0.70	1.9	0.19	7.09	-181.0	100	2.17	8.11
1235	10.4	0.97	0.70	1.7	0.16	7.09	-196.6	100	1.63	8.11
1240	10.5	0.97	0.70	1.4	0.14	7.08	-186.6	100	1.33	8.11
1245	10.4	0.97	0.70	1.4	0.14	7.08	-183.3	100	1.09	8.11
1250	Sample Collected									
Total Depth of Well:		14.84								
Depth To Water Before Purging:			7.51							
Depth To Water After Purging:			8.11							

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page: 1 of 2

Site Location: Lansing, MI | Date: 5/15/18

Site/Well No.: MW-03-04 | Replicate No.: | Code No.:

Weather: 61°F / Rain | Sampling Time: Begin 1145 End 1155

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	42.65
Depth to Water (ft bmp)	22.06
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	20.59
Casing Diameter/Type	2" PVC
Gallons in Well	3.29
Gallons Pumped/Bailed Prior to Sampling	
Sample Pump Intake Setting (ft bmp)	
Purge Time	begin 1045 end 1145
Pumping Rate (ml/min)	150 ml/min
Evacuation Method	Bladder pump

Field Parameters

Temperature (°C)	14.6
SpC (mS/cm)	2.05
CND (mS/cm)	1.64
Dissolved Oxygen (%)	4.3
Dissolved Oxygen (mg/L)	0.45
pH (s.u.)	7.04
ORP (mV)	-289.9
Turbidity (NTU)	7.02
Color	None
Odor	None
Appearance	clear
Sampling Method	Low flow - Grab
Remarks	Dup-10 Tohun

Constituents Sampled	Container Description	Number	Preservative
VOCs	40 ml Vox	3	HCl
1,4-Dioxane			
Select Metals	125 ml plastic	1	HNO_3
PFAS		1	

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: DRR

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-03-04 PROJ #: B0064479.2018

DATE : 5/15/18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1045	14.C	2.12	1.70	28.4	2.85	7.07	-244.9	150	484	22.06
1050	14.8	2.09	1.68	4.8	0.46	7.05	-282.1	↓	163	22.51
1055	14.9	2.03	1.63	8.2	0.82	7.05	-279.7		83.4	22.80
1100	14.5	2.06	1.64	5.0	0.53	7.04	-281.0		40.1	22.98
1105	14.4	2.04	1.63	6.0	0.64	7.03	-282.2		24.3	23.02
1110	14.3	2.05	1.63	5.5	0.55	7.01	-285.0		15.0	22.75
1115	14.4	2.04	1.63	5.5	0.57	7.02	-286.0		11.3	23.01
1120	14.4	2.05	1.64	5.0	0.50	7.03	-289.4		12.7	23.18
1125	14.4	2.01	1.60	7.8	0.77	7.04	-277.2		8.56	22.92
1130	14.6	2.03	1.63	6.5	0.65	7.04	-283.0		8.09	23.17
1135	14.8	2.05	1.65	4.9	0.47	7.04	-285.0		6.38	23.10
1140	14.9	2.06	1.65	4.C	0.45	7.04	-286.0		5.17	23.11
1145	14.6	2.05	1.64	4.3	0.45	7.04	-289.9		7.02	23.23
Total Depth of Well:		42.65								
Depth To Water Before Purging:			22.06							
Depth To Water After Purging:			23.23							

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page: 1 of 2

Site Location: Lansing, MI | Date: 5/15/18

Site/Well No.: MWBP-13A-UST1-4 | Replicate No.: | Code No.:

Weather: 61°F / Rain | Sampling Time: Begin 0945 End 0955

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	38.00
Depth to Water (ft bmp)	31.96
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	6.04
Casing Diameter/Type	2" PVC
Gallons in Well	0.966
Gallons Pumped/Bailed Prior to Sampling	4 gal
Sample Pump Intake Setting (ft bmp)	
Purge Time	begin 0840 end 0945
Pumping Rate (ml/min)	150 ml/min
Evacuation Method	bladder pump

Field Parameters

Temperature (°C)	13.9
SpC (mS/cm)	4.62
CND (mS/cm)	3.64
Dissolved Oxygen (%)	0.7
Dissolved Oxygen (mg/L)	0.07
pH (s.u.)	6.72
ORP (mV)	-293.4
Turbidity (NTU)	1.94
Color	None
Odor	None
Appearance	clear
Sampling Method	Low flow - Grab
Remarks	

Constituents Sampled	Container Description	Number	Preservative
VOCs	40ml voa	3	HCl
1,4-Dioxane			
Select Metals	125ml plastics	1	HNO_3
PFAS			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: DRR

Well Casing Volumes

Gal./Ft.				
0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MUBP-13A-UST 2-4 PROJ #: B0064479.2018

DATE : 5/15/18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
0845	14.0	6.81	5.38	6.6	0.65	6.61	-163.0	150	71.2	31.96
0850	14.1	6.16	4.86	3.6	0.36	6.65	-182.0	↓	118	32.20
0855	14.0	6.09	4.81	3.6	0.35	6.66	-195.6		62.6	32.20
0900	14.1	5.66	4.47	2.6	0.27	6.68	-217.7		44.4	32.20
0905	14.1	5.46	4.32	2.2	0.21	6.69	-227.4		25.0	32.20
0910	14.0	5.29	4.18	1.7	0.17	6.70	-242.3		17.1	↓
0915	14.0	5.20	4.10	1.5	0.15	6.70	-246.9		9.95	
0920	13.9	5.10	4.02	1.5	0.15	6.71	-253.3		7.29	
0925	14.0	4.93	3.90	1.1	0.11	6.71	-263.3		4.46	
0930	13.9	4.82	3.80	1.1	0.11	6.72	-272.3		2.99	
0935	13.9	4.76	3.74	0.7	0.07	6.72	-280.2		1.67	
0940	13.9	4.73	3.73	0.7	0.07	6.72	-284.5		1.85	
0945	13.9	4.62	3.64	0.7	0.07	6.72	-293.4		1.94	
Total Depth of Well:		38.00								
Depth To Water Before Purging:			31.96							
Depth To Water After Purging:			32.20							

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page: 1 of 2

Site Location: Lansing, MI | Date: 5/10/18

Site/Well No.: MW-04-01(6) | Replicate No.: — | Code No.:

Weather: 60's overcast | Sampling Time: Begin 1145 End 1150

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	88.85
Depth to Water (ft bmp)	72.85
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	18.00
Casing Diameter/Type	2" PVC
Gallons in Well	2.88
Gallons Pumped/Bailed Prior to Sampling	1.5
Sample Pump Intake Setting (ft bmp)	85.25
Purge Time	begin 1105 end 1150
Pumping Rate (ml/min)	140
Evacuation Method	Bladder Pump

Field Parameters

Temperature (°C)	13.0
SpC (mS/cm)	1.81
CND (mS/cm)	1.39
Dissolved Oxygen (%)	4.7
Dissolved Oxygen (mg/L)	0.49
pH (s.u.)	6.86
ORP (mV)	8.8
Turbidity (NTU)	1.92
Color	none
Odor	None
Appearance	Turbid
Sampling Method	Low flow
Remarks	—

Constituents Sampled	Container Description	Number	Preservative
VOCs	40 ml VOA	3	HCl
1,4-Dioxane	" "	"	"
~~Select Metals~~			
PFAS			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: DM

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-04-01(6) PROJ #: B0064479.2018

DATE : 5/10/18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1110	13.2	1.88	1.45	16.2	1.69	6.82	86.2	140	>1000	70.90
1115	13.1	1.89	1.46	3.8	0.40	6.82	60.6	140	863	70.90
1120	13.1	1.87	1.44	4.3	0.44	6.85	45.6	140	711	70.90
1125	13.1	1.82	1.40	4.9	0.51	6.86	33.3	140	329	70.90
1130	12.9	1.82	1.40	4.6	0.48	6.86	22.5	140	603	70.90
1135	12.9	1.82	1.40	4.6	0.48	6.86	17.4	140	327	70.90
1140	13.0	1.81	1.40	4.8	0.50	6.86	13.6	140	210	70.90
1145	13.0	1.81	1.39	4.7	0.49	6.82	8.8	140	192	70.90
Total Depth of Well:		88.85								
Depth To Water Before Purging:			70.85							
Depth To Water After Purging:			70.90							

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page: 1 of 2

Site Location: Lansing, MI | Date: 5/10/22

Site/Well No.: MW-04-042R | Replicate No.: Dup-12 | Code No.: Dup-12

Weather: 60's overcast | Sampling Time: Begin: 1215 | End: 1300

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	111.08
Depth to Water (ft bmp)	76.50
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	34.58
Casing Diameter/Type	4" Steel
Gallons in Well	~~5.53~~ 22.48
Gallons Pumped/Bailed Prior to Sampling	1
Sample Pump Intake Setting (ft bmp)	109.50
Purge Time	begin 1215 end 1300
Pumping Rate (ml/min)	180
Evacuation Method	Bladder pump

Field Parameters

Temperature (°C)	14.7
SpC (mS/cm)	1.42
CND (mS/cm)	1.15
Dissolved Oxygen (%)	68.7
Dissolved Oxygen (mg/L)	7.01
pH (s.u.)	6.88
ORP (mV)	-34.2
Turbidity (NTU)	26.8
Color	None
Odor	None
Appearance	~~Clear~~ Small Black flecks
Sampling Method	Low flow
Remarks	* Dup-12 taken *

Constituents Sampled	Container Description	Number	Preservative
VOCs	40 ml VOA	3	HCl
1,4-Dioxane	" "	3	HCl
~~Select Metals~~			
~~PFAS~~			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: DMR

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-04-04R PROJ #: B0064479.2018

DATE : 5/10/18 LOC: RACER Lansing, MI

Time	Temp Degree C.	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1220	14.5	1.43	1.17	88.4	8.94	6.89	-31.3	120	72.1	76.55
1225	14.8	1.43	1.15	84.4	8.52	6.89	-30.7	120	61.9	76.60
1230	14.8	1.43	1.15	79.4	8.01	6.88	-27.1	120	49.8	76.64
1235	14.6	1.43	1.15	78.2	7.92	6.88	-28.0	120	37.2	76.65
1240	14.5	1.43	1.15	74.8	7.59	6.88	-30.7	120	30.9	76.65
1245	14.7	1.42	1.14	72.2	7.29	6.88	-32.9	120	33.6	76.65
1250	14.5	1.43	1.14	70.3	7.18	6.88	-33.8	120	31.1	76.65
1255	14.7	1.42	1.15	68.7	7.01	6.88	-34.2	120	26.9	76.65
Total Depth of Well:		111.08								
Depth To Water Before Purging:			76.50							
Depth To Water After Purging:										

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page: 1 of 2

Site Location: Lansing, MI | Date: 5/10/18

Site/Well No.: MW-04-06R | Replicate No.: — | Code No.: —

Weather: 60's overcast | Sampling Time: Begin 1430 End 1435

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	77.91
Depth to Water (ft bmp)	65.75
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	12.16
Casing Diameter/Type	4" Steel
Gallons in Well	7.90
Gallons Pumped/Bailed Prior to Sampling	2.25
Sample Pump Intake Setting (ft bmp)	75.50
Purge Time	begin 1330 end 1435
Pumping Rate (ml/min)	125
Evacuation Method	Bladder pump

Field Parameters

Temperature (°C)	~~13.9~~ 14.3
SpC (mS/cm)	~~4.42~~ 5.20
CND (mS/cm)	~~3.48~~ 4.15
Dissolved Oxygen (%)	0.4
Dissolved Oxygen (mg/L)	0.24
pH (s.u.)	7.39
ORP (mV)	-198.0
Turbidity (NTU)	33.0
Color	Tan
Odor	Tan
Appearance	
Sampling Method	Low flow
Remarks	—

Constituents Sampled	Container Description	Number	Preservative
VOCs			
1,4-Dioxane			
~~Select Metals~~			
PFAS			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: DMA

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL: MW-04-06R PROJ #: B0064479.2018

DATE: 5/10/18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1335	13.9	4.42	3.48	2.4	0.25	7.98	-201.0	125	33.1	65.80
1340	14.2	4.43	3.52	1.9	0.19	7.95	-208.3	125	30.6	65.85
1345	14.2	4.51	3.58	1.6	0.16	7.90	-235.1	125	29.1	65.85
1350	14.2	4.57	3.62	1.5	0.15	7.86	-242.2	125	29.6	65.85
1355	14.1	4.65	3.69	1.7	0.17	7.83	-249.1	125	31.2	65.85
1400	14.2	4.72	3.75	1.6	0.16	7.74	-247.8	125	33.9	65.85
1405	14.2	4.81	3.82	1.7	0.17	7.66	-239.2	125	32.0	65.85
1410	14.1	4.92	3.91	1.8	0.18	7.57	-227.7	125	33.5	65.85
1415	14.2	5.10	4.05	2.0	0.20	7.44	-210.7	125	34.3	65.85
1420	14.5	5.14	4.12	2.2	0.22	7.40	-204.1	125	39.0	65.85
1425	14.3	5.21	4.14	2.3	0.23	7.39	-198.7	125	38.4	65.85
1430	14.3	5.20	4.85	2.4	0.24	7.39	-195.0	125	33.0	65.85
Total Depth of Well:		71.95								
Depth To Water Before Purging:			65.75							
Depth To Water After Purging:			65.85							

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page: 1 of 2

Site Location: Lansing, MI | Date: 5/10/18

Site/Well No.: MW-13-50 | Replicate No.: MS/MSD | Code No.: MS/MSD

Weather: 60's overcast | Sampling Time: Begin 1600 | End 1610

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	110.00
Depth to Water (ft bmp)	76.28
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	33.72
Casing Diameter/Type	4" steel
Gallons in Well	21.92
Gallons Pumped/Bailed Prior to Sampling	1.75
Sample Pump Intake Setting (ft bmp)	107.5
Purge Time	begin 1505 end 1610
Pumping Rate (ml/min)	100
Evacuation Method	Bladder pump

Field Parameters

Temperature (°C)	14.3
SpC (mS/cm)	1.17
CND (mS/cm)	0.93
Dissolved Oxygen (%)	51.1
Dissolved Oxygen (mg/L)	5.22
pH (s.u.)	7.16
ORP (mV)	-149.6
Turbidity (NTU)	40.0
Color	none
Odor	none
Appearance	
Sampling Method	Low flow
Remarks	* MS/MSD taken *

Constituents Sampled	Container Description	Number	Preservative
VOCs	40ml VOA	9	HCl
1,4-Dioxane	40ml VOA	9	HCl
~~Select Metals~~			
~~PFAS~~			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: DMM

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-13-50 PROJ #: B0064479.2018

DATE : 5/10/18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1510	14.2	1.17	0.93	78.3	8.01	7.19	-140.1	100	85.3	76.37
1515	14.7	1.16	0.94	74.2	7.44	7.18	-150.6	100	85.9	76.37
1520	14.3	1.17	0.93	68.0	6.94	7.18	-153.0	100	48.7	76.41
1525	14.6	1.17	0.93	65.2	6.63	7.17	-154.2	100	42.9	76.43
1530	14.7	1.17	0.94	63.1	6.41	7.17	-154.6	100	47.2	76.43
1535	14.8	1.17	0.95	61.1	6.15	7.17	-154.7	100	49.0	76.43
1540	14.7	1.17	0.94	59.1	5.84	7.17	-153.2	100	40.6	76.43
1545	14.4	1.17	0.94	55.8	5.68	7.17	-153.4	100	40.9	76.43
1550	14.4	1.17	0.93	58.2	5.53	7.19	-152.9	100	40.2	76.43
1555	14.2	1.17	0.93	52.9	5.47	7.17	-152.4	100	38.1	76.43
1600	14.3	1.17	0.93	51.1	5.22	7.16	-149.6	100	40.0	76.43
Total Depth of Well:		110								
Depth To Water Before Purging:			76.38							
Depth To Water After Purging:			76.37							

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page: 1 of 2

Site Location: Lansing, MI | Date: 7/11/19

Site/Well No.: MW-12-11 | Replicate No.: — | Code No.: —

Weather: 40's overcast | Sampling Time: Begin 940 | End 945

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	16.80
Depth to Water (ft bmp)	3.81
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	12.99
Casing Diameter/Type	2" PVC
Gallons in Well	2.08
Gallons Pumped/Bailed Prior to Sampling	~~2.75~~ 2.5
Sample Pump Intake Setting (ft bmp)	14.25
Purge Time	begin 850 end 945
Pumping Rate (ml/min)	125
Evacuation Method	P. Pump

Field Parameters

Temperature (°C)	9.5
SpC (mS/cm)	5.46
CND (mS/cm)	3.83
Dissolved Oxygen (%)	0.4
Dissolved Oxygen (mg/L)	0.05
pH (s.u.)	6.63
ORP (mV)	-55.0
Turbidity (NTU)	6.69
Color	None
Odor	None
Appearance	clear
Sampling Method	Low flow
Remarks	—

Constituents Sampled	Container Description	Number	Preservative
~~VOCs~~			
~~1,4-Dioxane~~			
Select Metals	125 ml plastic	1	HNO_3
~~PFAS~~			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: DMM

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-12-11 PROJ #: B0064479.2018

DATE : 5/11/18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
855	9.3	4.91	3.43	9.6	1.07	6.65	-51.7	225	66.9	4.80
900	9.3	5.05	3.54	4.7	0.53	6.65	-52.7	225	41.4	5.40
905	9.4	5.30	3.72	2.1	0.23	6.64	-54.1	225	22.5	5.70
910	9.5	5.38	3.78	0.7	0.08	6.63	-54.6	225	18.7	6.00
915	9.5	5.42	3.82	0.6	0.07	6.63	-55.3	225	11.9	6.18
920	9.5	5.40	3.80	0.1	0.01	6.63	-55.2	225	9.87	6.35
925	9.4	5.49	3.85	0.4	0.05	6.63	-55.6	125	8.42	6.20
930	9.5	5.44	3.84	0.3	0.04	6.62	-55.2	125	8.61	6.35
935	9.5	5.47	3.85	0.4	0.05	6.62	-55.2	125	7.28	6.35
940	9.5	5.46	3.83	0.4	0.05	6.63	-55.0	125	6.69	6.35
Total Depth of Well:		16.80								
Depth To Water Before Purging:			3.81							
Depth To Water After Purging:										

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page: 1 of 2

Site Location: Lansing, MI | Date: 5/16/18

Site/Well No.: MW-13-35 | Replicate No.: MS/MSD | Code No.: MS/MSD

Weather: 40's Rain | Sampling Time: Begin 1045 | End ~~1050~~ 1055

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	29.50
Depth to Water (ft bmp)	23.81
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	5.99
Casing Diameter/Type	2" PVC
Gallons in Well	0.96
Gallons Pumped/Bailed Prior to Sampling	2
Sample Pump Intake Setting (ft bmp)	27.00
Purge Time	begin 1005 end ~~1050~~ 1055
Pumping Rate (ml/min)	200
Evacuation Method	P. Pump

Field Parameters

Temperature (°C)	12.1
SpC (mS/cm)	1.69
CND (mS/cm)	1.28
Dissolved Oxygen (%)	0.4
Dissolved Oxygen (mg/L)	0.05
pH (s.u.)	6.88
ORP (mV)	-89.0
Turbidity (NTU)	3.10
Color	None
Odor	None
Appearance	clear
Sampling Method	Low flow
Remarks	* MS/MSD Taken *

Constituents Sampled	Container Description	Number	Preservative
VOCs	40ml Vial	9	HCl
~~1,4-Dioxane~~			
Select Metals	125 ml Plastic	3	HNO_3
~~PFAS~~			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: DMA

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-13-35 PROJ #: B0064479.2018

DATE : 5/11/17 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1010	12.3	2.04	1.54	4.0	0.42	6.97	-83.0	200	22.9	23.82
1015	12.4	2.00	1.51	3.0	0.32	6.94	-84.6	200	24.5	23.82
1020	12.4	1.93	1.47	1.9	0.20	6.93	-85.8	200	16.0	23.82
1025	12.2	1.89	1.43	1.4	0.15	6.92	-86.1	200	16.4	23.82
1030	12.0	1.84	1.39	0.3	0.04	6.91	-86.8	200	9.12	23.82
1035	12.0	1.77	1.33	0.4	0.05	6.89	-87.4	200	6.74	23.82
1040	12.1	1.72	1.30	0.4	0.05	6.89	-88.0	200	4.24	23.82
1045	12.1	1.69	1.28	0.4	0.05	6.88	-89.0	200	3.10	23.82
Total Depth of Well:		29.50								
Depth To Water Before Purging:		23.81								
Depth To Water After Purging:										

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page 1 of 2

Site Location: Lansing, MI | Date: 5/11/18

Site/Well No.: MW-12-16 | Replicate No.: — | Code No.: —

Weather: 40's Rain | Sampling Time: Begin ~~H20~~ 1135 End 1140

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	32.10
Depth to Water (ft bmp)	23.04
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	9.06
Casing Diameter/Type	2" PVC
Gallons in Well	1.45
Gallons Pumped/Bailed Prior to Sampling	2
Sample Pump Intake Setting (ft bmp)	29.50
Purge Time	begin 1035 end 1140
Pumping Rate (ml/min)	190
Evacuation Method	P. Pump

Field Parameters

Temperature (°C)	11.6
SpC (mS/cm)	1.78
CND (mS/cm)	1.37
Dissolved Oxygen (%)	3.7
Dissolved Oxygen (mg/L)	0.40
pH (s.u.)	6.87
ORP (mV)	-63.7
Turbidity (NTU)	1.85
Color	none
Odor	none
Appearance	clear
Sampling Method	Low Flow
Remarks	—

Constituents Sampled	Container Description	Number	Preservative
VOCs	40ml VOA	3	HCl
~~1,4-Dioxane~~			
Select Metals	125 ml Plastic	1	HNO_3
~~PFAS~~			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: DMA

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-12-16 PROJ #: B0064479.2018

DATE : 5/11/18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
~~1055~~ 1100	11.4	2.04	1.51	7.0	0.76	6.84	-69.1	190	12.0	23.05
1105	11.4	1.91	1.41	4.4	0.48	6.87	-69.2	190	4.94	23.05
1110	11.4	1.86	1.37	4.2	0.46	6.88	-67.9	190	1.53	23.05
1115	11.6	1.82	1.35	4.9	0.53	6.89	-66.4	190	1.67	23.05
1120	11.6	1.81	1.34	3.6	0.39	6.88	-65.5	190	1.87	23.05
1125	11.5	1.80	1.34	3.9	0.42	6.87	-65.0	190	1.31	23.05
1130	11.5	1.80	1.33	3.5	0.38	6.87	-64.2	190	1.82	23.05
1135	11.6	1.78	1.33	3.7	0.40	6.87	-63.7	190	1.85	23.05
Total Depth of Well:		32.10								
Depth To Water Before Purging:			23.04							
Depth To Water After Purging:			23.05							

ARCADIS

Water Sampling Log

Project	RACER Lansing	Project No.	B0064479.2018	Page	1 of 2
Site Location	Lansing, MI			Date	5/11/18
Site/Well No.	MWBP-11-US71-4	Replicate No.	—	Code No.	—
Weather	40's Rain	Sampling Time: Begin	1245	End	1250

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	11.20
Depth to Water (ft bmp)	2.79
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	8.41
Casing Diameter/Type	4" PVC
Gallons in Well	~~8~~ 5.47
Gallons Pumped/Bailed Prior to Sampling	2.5
Sample Pump Intake Setting (ft bmp)	~~8~~ 8.75
Purge Time	begin 1200 end 1250
Pumping Rate (ml/min)	~~150~~ 150
Evacuation Method	P.P.mp

Field Parameters

Temperature (°C)	10.5
SpC (mS/cm)	0.84
CND (mS/cm)	0.61
Dissolved Oxygen (%)	2.8
Dissolved Oxygen (mg/L)	0.61
pH (s.u.)	10.08
ORP (mV)	-176.3
Turbidity (NTU)	4.91
Color	None
Odor	None
Appearance	clear
Sampling Method	Low flow
Remarks	—

Constituents Sampled	Container Description	Number	Preservative
~~VOCs~~			
~~1,4-Dioxane~~			
Select Metals	125ml plastic	1	HNO_3
~~PFAS~~			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS.

YSI/LOW FLOW SAMPLING LOG

WELL : MW BP-11-VST1-4 PROJ #: B0064479.2018

DATE : 5/11/18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1205	10.9	0.84	0.61	4.2	0.47	9.89	-138.4	240	7.52	3.07
1210	10.8	0.83	0.60	4.6	0.50	9.95	-137.1	240	4.47	3.27
1215	10.8	0.81	0.59	5.4	0.60	10.01	-132.5	240	3.50	3.38
1220	10.8	0.81	0.59	6.4	0.71	10.05	-130.1	240	5.31	3.48
1225	10.8	0.82	0.60	6.8	0.75	10.06	-118.5	240	3.23	3.52
1230	10.8	0.83	0.60	4.1	0.45	10.09	-117.8	150	6.68	3.51
1235	10.6	0.83	0.60	2.9	0.32	10.07	-116.9	150	5.40	3.51
1240	10.4	0.84	0.60	2.9	0.32	10.09	-116.5	150	4.95	3.51
1245	~~10.0~~	0.84	0.61	2.8	0.31	10.08	-116.3	150	4.71	3.51
Total Depth of Well:		11.20								
Depth To Water Before Purging:			2.79							
Depth To Water After Purging:										

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page: 1 of 2

Site Location: Lansing, MI | Date: 5/11/18

Site/Well No.: MWBP-12-VS71-4 | Replicate No.: — | Code No.: —

Weather: 40's Rain | Sampling Time: Begin 1335 End 1340

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	11.25
Depth to Water (ft bmp)	7.21
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	4.04
Casing Diameter/Type	4" PVC
Gallons in Well	0.63
Gallons Pumped/Bailed Prior to Sampling	2.25
Sample Pump Intake Setting (ft bmp)	9.50
Purge Time	begin 1255 end 1340
Pumping Rate (ml/min)	160
Evacuation Method	P. Pump

Field Parameters

Temperature (°C)	9.0
SpC (mS/cm)	2.43
CND (mS/cm)	1.69
Dissolved Oxygen (%)	0.5
Dissolved Oxygen (mg/L)	0.05
pH (s.u.)	7.34
ORP (mV)	-140.4
Turbidity (NTU)	2.17
Color	None
Odor	Present
Appearance	clear
Sampling Method	Low Flow
Remarks	→

Constituents Sampled	Container Description	Number	Preservative
~~VOCs~~			
~~1,4-Dioxane~~			
Select Metals	125 ml plastic	1	HNO_3
~~PFAS~~			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: DMT

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW BP-12-UST1-4 PROJ #: B0064479.2018

DATE : 5/11/18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1300	9.2	2.30	1.60	3.0	0.34	7.43	-122.0	225	4.21	7.30
1305	9.1	2.32	1.61	2.2	0.25	7.38	-129.6	225	3.72	7.40
1310	9.2	2.36	1.65	2.0	0.23	7.36	-133.5	225	1.63	7.47
1315	9.0	2.39	1.66	0.7	0.08	7.35	-135.3	225	1.74	7.52
1320	8.9	2.42	1.69	0.5	0.05	7.34	-136.7	160	1.64	7.50
1325	9.0	2.44	1.70	0.6	0.06	7.34	-138.5	160	2.57	7.50
1330	9.0	2.44	1.69	0.4	0.04	7.34	-139.8	160	1.49	7.50
1335	9.0	2.43	1.69	0.5	0.05	7.34	-140.4	160	2.17	7.50
Total Depth of Well:		11.25								
Depth To Water Before Purging:			7.12							
Depth To Water After Purging:			7.50							

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page: 1 of 2

Site Location: Lansing, MI | Date: 5/11/18

Site/Well No.: MW-04-05(6) | Replicate No.: — | Code No.: —

Weather: 40's Light Rain | Sampling Time: Begin 1450 End 1455

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	29.64
Depth to Water (ft bmp)	9.90
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	19.74
Casing Diameter/Type	2" PVC
Gallons in Well	3.16
Gallons Pumped/Bailed Prior to Sampling	2
Sample Pump Intake Setting (ft bmp)	27.00
Purge Time	begin 1400 end 1455
Pumping Rate (ml/min)	100
Evacuation Method	Bl. Pump

Field Parameters

Temperature (°C)	11.2
SpC (mS/cm)	6.17
CND (mS/cm)	4.54
Dissolved Oxygen (%)	0.5
Dissolved Oxygen (mg/L)	0.05
pH (s.u.)	7.03
ORP (mV)	-22.8
Turbidity (NTU)	0.10
Color	None
Odor	None
Appearance	Clear
Sampling Method	Low Flow
Remarks	—

Constituents Sampled	Container Description	Number	Preservative
~~VOCs~~			
~~1,4-Dioxane~~			
Select Metals	125ml plastic	1	HNO_3
~~PFAS~~			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: RMA

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-04-05(6) PROJ #: B0064479.2018

DATE : 5/11/18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1405	11.2	6.29	4.64	3.8	0.40	7.01	-90.9	210	3.00	11.00
1410	11.3	6.31	4.66	1.3	0.14	7.02	-89.5	210	0.63	11.90
1415	11.2	6.18	4.55	0.1	0.01	7.03	-88.5	210	1.03	12.88
1420	11.1	6.03	4.43	0.2	0.02	7.03	-86.9	210	0.77	13.75
1425	11.2	6.02	4.44	0.4	0.04	7.03	-86.2	210	0.82	14.15
1430	11.3	6.06	4.47	0.4	0.05	7.03	-85.2	210	1.03	14.55
1435	11.2	6.10	4.50	0.5	0.06	7.03	-87.0	210	1.47	14.90
1440	11.2	6.13	4.50	0.4	0.05	7.03	-83.6	100	0.46	14.90
1445	11.2	6.15	4.52	0.4	0.04	7.03	-83.2	100	0.39	14.80
1450	11.2	6.17	4.54	0.5	0.05	7.03	-82.8	100	0.10	14.90
Total Depth of Well:		29.64								
Depth To Water Before Purging:			9.90							
Depth To Water After Purging:			14.90							

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page: 1 of 2

Site Location: Lansing, MI | Date: 5/14/18

Site/Well No.: TW-14-01 | Replicate No.: — | Code No.: —

Weather: 70's partly cloudy | Sampling Time: Begin 1610 End 1615

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	78.00
Depth to Water (ft bmp)	61.05
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	16.95
Casing Diameter/Type	2" PVC
Gallons in Well	2.71
Gallons Pumped/Bailed Prior to Sampling	1.5
Sample Pump Intake Setting (ft bmp)	75.50
Purge Time	begin 1510 end 1615
Pumping Rate (ml/min)	100
Evacuation Method	Bladder pump

Field Parameters

Temperature (°C)	17.0
SpC (mS/cm)	2.25
CND (mS/cm)	1.91
Dissolved Oxygen (%)	31.4
Dissolved Oxygen (mg/L)	2.10
pH (s.u.)	7.37
ORP (mV)	86.3
Turbidity (NTU)	40.8
Color	None
Odor	None
Appearance	Turbid
Sampling Method	Low flow
Remarks	difficult to get accurate DTW w/ Airspace system Pump - Pump goes on/off w/ air bubbles

Constituents Sampled	Container Description	Number	Preservative
~~VOCs~~			
1,4-Dioxane	40ml VOA	3	HCl
~~Select Metals~~			
~~PFAS~~			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: DMS

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL: ~~Tw~~ Tw-14-01 PROJ #: B0064479.2018

DATE: 5/14/19 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1515	16.7	2.14	1.80	65.8	6.36	7.39	154.1	100	800	61.20
1520	16.9	2.17	1.84	45.6	4.39	7.32	131.2	100	542	61.30
1525	16.5	2.20	1.85	39.0	3.77	7.36	122.2	100	175	61.40
1530	16.7	2.20	1.85	37.3	3.60	7.38	117.5	100	130	61.45
1535	16.8	2.21	1.86	36.9	3.54	7.37	117.0	100	105	61.50
1540	16.8	2.20	1.90	34.5	3.26	7.35	114.8	100	91.8	61.80
1545	16.9	2.24	1.91	30.4	2.88	7.33	121.3	100	67.5	61.70
1550	17.1	2.28	1.96	30.3	2.90	7.37	102.9	100	64.4	61.80
1555	17.0	2.24	1.91	40.4	3.87	7.45	114.9	100	99.8	61.90
1600	16.9	2.27	1.92	33.6	3.23	7.40	95.1	100	54.2	62.00
1605	12.2	2.27	1.93	34.7	3.41	7.37	89.1	100	47.8	62.10
1610	17.0	2.25	1.91	31.4	3.10	7.37	86.3	100	40.8	62.10
Total Depth of Well:		78.00								
Depth To Water Before Purging:			61.05							
Depth To Water After Purging:			62.10							

ARCADIS

Water Sampling Log

Project	RACER Lansing	Project No.	B0064479.2018	Page	1 of 2
Site Location	Lansing, MI			Date	5/14/18
Site/Well No.	PW-14-01	Replicate No.	—	Code No.	
Weather	70s partly cloudy	Sampling Time: Begin	1715	End	1720

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	81.85
Depth to Water (ft bmp)	63.58
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	18.27
Casing Diameter/Type	6" PVC
Gallons in Well	26.86
Gallons Pumped/Bailed Prior to Sampling	1.5
Sample Pump Intake Setting (ft bmp)	79.25
Purge Time	begin 1640 end 1720
Pumping Rate (ml/min)	150
Evacuation Method	Bladder Pump

Field Parameters

Temperature (°C)	16.5
SpC (mS/cm)	1.87
CND (mS/cm)	1.57
Dissolved Oxygen (%)	1.2
Dissolved Oxygen (mg/L)	0.12
pH (s.u.)	7.30
ORP (mV)	34.8
Turbidity (NTU)	6.95
Color	None
Odor	None
Appearance	clear
Sampling Method	Low Flow
Remarks	—

Constituents Sampled	Container Description	Number	Preservative
~~VOCs~~			
1,4-Dioxane	40ml VOA	3	HCl
~~Select Metals~~			
~~PFAS~~			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: DM

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : PW-14-01 PROJ #: B0064479.2018

DATE : 5/14/15 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1645	18.0	1.88	1.63	9.9	0.93	7.19	74.8	150	48.8	62.70
1650	16.4	1.88	1.57	5.2	0.50	7.24	63.1	150	23.5	63.79
1655	16.6	1.87	1.57	2.3	0.22	7.26	49.1	150	11.2	63.88
1700	16.3	1.87	1.56	1.4	0.14	7.30	39.0	150	8.57	63.97
1705	16.4	1.87	1.56	1.2	0.12	7.31	34.3	150	7.51	64.05
1710	16.8	1.87	1.58	1.1	0.12	7.30	33.2	150	8.61	64.13
1715	16.5	1.87	1.57	1.2	0.12	7.30	34.8	150	6.95	64.21
Total Depth of Well:		81.85								
Depth To Water Before Purging:			63.58							
Depth To Water After Purging:			64.21							

ARCADIS

YSI/LOW FLOW SAMPLING LOG

PAGE 1 OF 1

WELL : MW-16-85 PROJ #: B0064479.2018

DATE : 5-8-18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
0925	15.0	0.90	0.73	39.4	4.03	7.14	72.5	200	10	73.03
0930	14.6	0.89	0.72	41.1	4.10	7.21	64.9	200	9.42	73.45
0935	14.7	0.89	0.71	47.4	4.80	7.28	58.7	200	9.20	73.80
0940	14.7	0.90	0.72	42.9	4.33	7.23	35.0	200	11.4	74.50
0945	14.7	0.91	0.73	36.3	3.70	7.19	5.8	200	12.3	74.80
0950	14.9	0.92	0.75	31.0	3.07	7.15	-22.9	~~150~~	11.3	75.10
0955	15.3	0.93	0.78	23.1	2.25	7.12	-57.5	150	8.46	75.15
1000	15.4	0.96	0.79	16.2	1.60	7.06	-73.7	150	7.47	75.15
1005	15.9	0.97	0.80	17.6	1.70	7.05	-84.5	150	3.22	75.15
1010	16.0	0.97	0.80	18.1	1.81	7.06	-87.8	150	1.22	75.15
1015	16.0	0.97	0.80	18.5	1.82	7.05	-90.7	150	1.10	75.15
1020	16.0	0.97	0.80	18.3	1.81	7.05	-91.9	150	1.36	75.15
Total Depth of Well:		81.90								
Depth To Water Before Purging:			71.33							
Depth To Water After Purging:			75.15							

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page: 1 of 1

Site Location: Lansing, MI | Date: 5.8.18

Site/Well No.: MW-116-85 | Replicate No.: | Code No.:

Weather: Sunny, warm | Sampling Time: Begin 1020 End 1021

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	81.90
Depth to Water (ft bmp)	71.33
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	10.57
Casing Diameter/Type	2"
Gallons in Well	1.69
Gallons Pumped/Bailed Prior to Sampling	~2.5
Sample Pump Intake Setting (ft bmp)	77.0
Purge Time	begin 0920 end 1020
Pumping Rate (ml/min)	200 ml/min
Evacuation Method	Bladder Pump

Field Parameters

Temperature (°C)	16.0
SpC (mS/cm)	0.97
CND (mS/cm)	0.80
Dissolved Oxygen (%)	18.3
Dissolved Oxygen (mg/L)	1.81
pH (s.u.)	7.05
ORP (mV)	-91.9
Turbidity (NTU)	1.36
Color	clear
Odor	N
Appearance	normal
Sampling Method	Bladder Pump
Remarks	

Constituents Sampled	Container Description	Number	Preservative
VOCs			
1,4-Dioxane	3-40ml	3	HCl
Select Metals			
PFAS			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: Jake Pisarkiewicz

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-17-86 PROJ #: B0064479.2018

DATE : 5-8-18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1100	16.4	1.20	1.00	10.8	1.04	6.85	-89.0	200	~~0.45~~ ~~68.58~~	68.58
1105	16.7	1.24	1.04	6.8	12.67	6.86	-90.6	200	0.10	68.58
1110	16.7	1.24	1.04	5.9	0.57	6.86	-91.4	200	0.06	68.58
1115	16.9	1.24	1.05	5.3	0.51	6.86	-92.6	200	0.05	68.58
1120	16.9	1.25	1.05	5.1	0.50	6.86	-93.1	200	0.02	68.58
1125	16.8	1.25	1.05	5.0	0.48	6.86	-93.3	200	0.02	68.58
~~1130~~										
Total Depth of Well:		81.40								
Depth To Water Before Purging:			68.57							
Depth To Water After Purging:			68.58							

ARCADIS

Water Sampling Log

Project	RACER Lansing	Project No.	B0064479.2018	Page	1 of 1
Site Location	Lansing, MI			Date	5.8.18
Site/Well No.	MW-17-86	Replicate No.		Code No.	
Weather	Sunny, warm	Sampling Time:	Begin 1125	End	1126

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	81.40
Depth to Water (ft bmp)	68.57
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	12.83
Casing Diameter/Type	2" PVC
Gallons in Well	2.05
Gallons Pumped/Bailed Prior to Sampling	~1.5
Sample Pump Intake Setting (ft bmp)	77.0
Purge Time	begin 1055 end 1125
Pumping Rate (ml/min)	200 ml/min
Evacuation Method	Bladder Pump

Field Parameters

Temperature (°C)	16.8
SpC (mS/cm)	1.25
CND (mS/cm)	1.04
Dissolved Oxygen (%)	5.0
Dissolved Oxygen (mg/L)	0.48
pH (s.u.)	6.86
ORP (mV)	-93.3
Turbidity (NTU)	0.02
Color	clear
Odor	NO
Appearance	Normal
Sampling Method	Bladder pump
Remarks	

Constituents Sampled	Container Description	Number	Preservative
VOCs			
1,4-Dioxane	40ml	3	HCL
Select Metals			
PFAS			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: Jake Pisarkiewicz

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

PAGE 1 OF 1

WELL : MW-16-84 PROJ #: B0064479.2018

DATE : 5.8.18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1305	20.4	1.36	1.24	26.7	2.40	6.83	-80.7	200	10.8	70.75
1310	20.4	1.36	1.24	11.5	1.05	6.83	-86.9	200	8.82	70.80
1315	19.7	1.39	1.25	7.6	0.71	6.84	-88.4	200	3.94	70.80
1320	20.2	1.39	1.26	6.6	0.58	6.84	-90.4	200	2.20	70.80
1325	20.3	1.39	1.27	5.7	0.51	6.85	-91.5	200	2.02	70.80
1330	20.1	1.41	1.28	5.5	0.49	6.85	-93.1	200	1.90	70.80
1335	19.9	1.40	1.27	5.4	0.48	6.85	-92.8	200	1.76	70.80
Total Depth of Well:		81.20								
Depth To Water Before Purging:			70.30							
Depth To Water After Purging:			70.80							

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page: 1 of 1

Site Location: Lansing, MI | Date: 5-8-18

Site/Well No.: MW-116-84 | Replicate No.: | Code No.:

Weather: Sunny, warm | Sampling Time: Begin 1340 End 1341

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	81.20
Depth to Water (ft bmp)	70.30
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	10.90
Casing Diameter/Type	2" PVC
Gallons in Well	1.74
Gallons Pumped/Bailed Prior to Sampling	~1.5
Sample Pump Intake Setting (ft bmp)	78'
Purge Time	begin 1300 end 1340
Pumping Rate (ml/min)	200
Evacuation Method	Bladder Pump

Field Parameters

Temperature (°C)	19.9
SpC (mS/cm)	1.40
CND (mS/cm)	1.27
Dissolved Oxygen (%)	5.4
Dissolved Oxygen (mg/L)	0.48
pH (s.u.)	6.85
ORP (mV)	-92.8
Turbidity (NTU)	1.76
Color	clear
Odor	NO
Appearance	Normal
Sampling Method	Bladder Pump
Remarks	

Constituents Sampled	Container Description	Number	Preservative
VOCs	40 ml	3	HCl
1,4-Dioxane	40 ml	3	HCl
Select Metals			
PFAS			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: Jake Pisarkiewicz

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : P2-SB-20 PROJ #: B0064479.2018

DATE : 5-8-18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1425	16.5	0.33	0.27	9.4	0.92	9.27	17.5	200	6.30	10.32
1430	15.9	0.32	0.27	5.8	0.56	9.23	21.2	200	5.80	10.95
1435	16.4	0.31	0.27	4.5	0.44	9.25	20.7	200	5.42	11.25
1440	16.4	0.31	0.26	4.5	0.45	9.27	19.6	150	5.25	11.28
1445	16.1	0.30	0.25	4.4	0.43	9.28	19.6	150	6.51	11.28
1450	16.2	0.30	0.25	4.3	0.42	9.26	19.5	150	6.06	11.28
Total Depth of Well:		16.30								
Depth To Water Before Purging:			9.08							
Depth To Water After Purging:			11.28							

ARCADIS

Water Sampling Log

Project	RACER Lansing	Project No.	B0064479.2018	Page	1 of 1
Site Location	Lansing, MI			Date	5-8-18
Site/Well No.	P2-SB-20	Replicate No.		Code No.	
Weather	sunny, warm	Sampling Time:	Begin 1435	End	1456

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	10.30
Depth to Water (ft bmp)	9.08
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	7.22
Casing Diameter/Type	2" pvc
Gallons in Well	1.15
Gallons Pumped/Bailed Prior to Sampling	~1.5
Sample Pump Intake Setting (ft bmp)	13'
Purge Time	begin 1420 end 1450
Pumping Rate (ml/min)	200
Evacuation Method	Bladder Pump

Field Parameters

Temperature (°C)	16.2
SpC (mS/cm)	0.30
CND (mS/cm)	0.25
Dissolved Oxygen (%)	4.3
Dissolved Oxygen (mg/L)	0.42
pH (s.u.)	9.26
ORP (mV)	19.5
Turbidity (NTU)	6.06
Color	clear
Odor	ND
Appearance	normal
Sampling Method	Bladder Pump
Remarks	

Constituents Sampled	Container Description	Number	Preservative
VOCs	40ml	3	HCL
1,4-Dioxane			
Select Metals			
PFAS			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: Jake Pisarkiewicz

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

PAGE 1 OF 1

WELL : P2-SB-03 PROJ #: B0064479.2018

DATE : 5-8-18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1525	15.7	0.90	0.74	15.6	1.55	7.05	8.1	200	5.25	17.21
1530	16.0	0.89	0.74	11.7	1.15	7.05	9.2	200	10.5	17.40
1535	15.6	0.90	0.73	10.5	1.05	7.05	9.3	200	9.91	17.40
1540	14.9	0.89	0.71	10.3	1.04	7.04	11.4	200	9.20	17.40
1545	14.8	0.90	0.72	8.0	0.80	7.04	9.7	200	9.64	17.40
1550	14.8	0.90	0.74	7.8	0.77	7.05	6.5	200	9.10	17.40
1555	15.1	0.90	0.74	7.6	0.75	7.05	5.9	200	9.34	17.40
Total Depth of Well:		22.10								
Depth To Water Before Purging:			16.53							
Depth To Water After Purging:			17.40							

ARCADIS

Water Sampling Log

Project	RACER Lansing	Project No.	B0064479.2018	Page	1 of 1
Site Location	Lansing, MI			Date	5-8-18
Site/Well No.	P2-SB-03	Replicate No.		Code No.	
Weather	Sunny, warm	Sampling Time:	Begin 1000	End	1001

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	22.10
Depth to Water (ft bmp)	~~22.10~~ 16.53
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	5.57
Casing Diameter/Type	~~2" PVC~~ 2" PVC
Gallons in Well	~~2" PVC~~ 0.89
Gallons Pumped/Bailed Prior to Sampling	~1.5
Sample Pump Intake Setting (ft bmp)	19'
Purge Time	begin 1520 end 1555
Pumping Rate (ml/min)	200
Evacuation Method	Bladder Pump

Field Parameters

Temperature (°C)	15.1
SpC (mS/cm)	0.90
CND (mS/cm)	0.74
Dissolved Oxygen (%)	7.6
Dissolved Oxygen (mg/L)	0.75
pH (s.u.)	7.05
ORP (mV)	5.9
Turbidity (NTU)	9.34
Color	clear
Odor	NO
Appearance	normal
Sampling Method	Bladder Pump
Remarks	

Constituents Sampled	Container Description	Number	Preservative
VOCs	40ml	3	HCL
1,4-Dioxane	40ml	3	HCL
Select Metals			
PFAS			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: Jake Pisarkiewicz

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

PAGE 1 OF 1

WELL : MW-16-83 PROJ #: B0064479.2018

DATE : 5-9-18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1505	22.8	4.03	3.85	30.0	2.55	6.91	-129.6	200	10.2	70.10
1510	22.7	4.03	3.85	11.0	10.93	6.91	-136.0	200	6.13	70.20
1515	20.9	4.06	3.73	8.4	0.76	6.98	-136.9	200	4.40	70.20
1520	21.4	3.99	3.73	5.55	0.46	6.99	-138.1	200	3.88	70.20
1525	21.9	4.02	3.78	4.9	0.42	7.00	-138.3	200	3.20	70.20
1530	22.4	4.01	3.82	4.77	0.41	6.99	-138.8	200	2.90	70.20
1535	21.9	4.06	3.73	4.2	0.37	7.00	-136.8	200	4.85	70.20
1540	21.4	4.00	3.71	3.8	0.33	7.00	-137.7	200	4.71	70.20
1545	21.4	4.04	3.74	3.1	0.28	7.00	-136.9	200	5.05	70.20
1550	21.4	4.01	3.72	3.0	0.27	7.00	-136.7	200	4.90	70.20
1555	21.6	4.00	3.71	2.9	0.26	7.00	-137.1	200	4.76	70.20
Total Depth of Well:		79.00								
Depth To Water Before Purging:			69.80							
Depth To Water After Purging:			70.20							

ARCADIS

Water Sampling Log

Project	RACER Lansing	Project No.	B0064479.2018	Page	1 of 1
Site Location	Lansing, MI			Date	5·9·18
Site/Well No.	MW-16-83	Replicate No.		Code No.	
Weather	Cloudy, windy	Sampling Time:	Begin 1600	End	1601

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	79.00
Depth to Water (ft bmp)	69.80
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	9.20
Casing Diameter/Type	2" PVC
Gallons in Well	1.47
Gallons Pumped/Bailed Prior to Sampling	~2.5
Sample Pump Intake Setting (ft bmp)	75'
Purge Time	begin 1455 end 1555
Pumping Rate (ml/min)	200
Evacuation Method	Bladder Pump

Field Parameters

Temperature (°C)	21.6
SpC (mS/cm)	4.00
CND (mS/cm)	3.71
Dissolved Oxygen (%)	2.9
Dissolved Oxygen (mg/L)	0.26
pH (s.u.)	7.00
ORP (mV)	-137.1
Turbidity (NTU)	4.76
Color	clear
Odor	no
Appearance	normal
Sampling Method	Bladder Pump
Remarks	

Constituents Sampled	Container Description	Number	Preservative
VOCs			
1,4-Dioxane	40ml	3	HCl
Select Metals			
PFAS			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: Jake Pisarkiewicz

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-13-45 PROJ #: B0064479.2018

DATE : 5-9-18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1405	20.3	1.07	0.97	10.1	0.90	7.15	-76.2	200	7.36	67.71
1410	20.4	1.07	0.98	5.8	0.52	7.16	-82.1	200	4.45	67.71
1415	20.1	1.08	0.97	4.4	0.41	7.17	-87.2	200	2.91	67.71
1420	20.1	1.07	0.97	3.9	0.36	7.16	-84.4	200	2.10	67.71
1425	20.8	1.07	0.99	3.5	0.31	7.18	-87.6	200	1.26	67.71
1430	20.7	1.08	0.99	3.3	0.29	7.18	-88.6	200	1.10	67.71
1435	20.6	1.08	0.99	3.2	0.28	7.18	-89.1	200	0.97	67.71
Total Depth of Well:		78.35								
Depth To Water Before Purging:			67.71							
Depth To Water After Purging:			67.71							

ARCADIS

Water Sampling Log

Project	RACER Lansing	Project No.	B0064479.2018	Page	1 of 1
Site Location	Lansing, MI			Date	5-9-18
Site/Well No.	MW-13-45	Replicate No.		Code No.	
Weather	cloudy, windy	Sampling Time:	Begin 1435	End	1436

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	78.35
Depth to Water (ft bmp)	67.71
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	10.64
Casing Diameter/Type	2" Arc
Gallons in Well	1.70
Gallons Pumped/Bailed Prior to Sampling	~2
Sample Pump Intake Setting (ft bmp)	74'
Purge Time	begin 1355 end 1435
Pumping Rate (ml/min)	200
Evacuation Method	Bladder Pump

Field Parameters

Temperature (°C)	20.6
SpC (mS/cm)	1.08
CND (mS/cm)	0.99
Dissolved Oxygen (%)	3.2
Dissolved Oxygen (mg/L)	0.28
pH (s.u.)	7.18
ORP (mV)	-89.1
Turbidity (NTU)	0.97
Color	Clear
Odor	No
Appearance	Normal
Sampling Method	Bladder Pump
Remarks	

Constituents Sampled	Container Description	Number	Preservative
VOCs	40ml	3	HCL
1,4-Dioxane	40ml	3	HCL
Select Metals			
PFAS			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: Jake Pisachowicz

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-16-82 PROJ #: B0064479.2018

DATE : 5-9-18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1150	18.7	1.17	1.03	9.8	0.92	7.01	-98.2	200	0.53	67.80
1155	18.8	1.16	1.03	6.8	0.64	7.03	-99.6	200	0.28	68.10
1200	18.6	1.16	1.02	5.3	0.50	7.04	-99.0	200	0.39	68.20
1205	19.6	1.14	1.03	4.7	0.42	7.04	-98.7	150	0.79	68.20
1210	20.4	1.16	1.08	4.9	0.43	7.04	-100.5	150	0.97	68.20
1215	21.2	1.18	1.09	4.6	0.41	7.04	-102.6	150	0.34	68.20
1220	20.6	1.17	1.05	3.9	0.35	7.03	-100.2	150	0.02	68.20
1225	19.8	1.17	1.05	3.6	0.33	7.04	-98.8	150	0.02	68.20
1230	20.4	1.16	1.06	3.6	0.33	7.05	-99.8	150	0.02	68.20
1235	20.2	1.16	1.05	3.5	0.32	7.05	-99.9	150	0.02	68.20
Total Depth of Well:		77.20								
Depth To Water Before Purging:			67.80							
Depth To Water After Purging:			68.20							

ARCADIS

Water Sampling Log

Project	RACER Lansing	Project No.	B0064479.2018	Page	1 of 7
Site Location	Lansing, MI			Date	5-9-18
Site/Well No.	MW-110-82	Replicate No.		Code No.	
Weather	windy, cool	Sampling Time:	Begin 1240	End	1241

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	77.20
Depth to Water (ft bmp)	67.80
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	9.4
Casing Diameter/Type	2" pvc
Gallons in Well	1.54
Gallons Pumped/Bailed Prior to Sampling	~2.5
Sample Pump Intake Setting (ft bmp)	74'
Purge Time	begin 1145 end 1235
Pumping Rate (ml/min)	200
Evacuation Method	Bladder Pump

Field Parameters

Temperature (°C)	20.7
SpC (mS/cm)	1.16
CND (mS/cm)	1.05
Dissolved Oxygen (%)	3.5
Dissolved Oxygen (mg/L)	0.32
pH (s.u.)	7.05
ORP (mV)	-99.9
Turbidity (NTU)	0.02
Color	Clear
Odor	ND
Appearance	normal
Sampling Method	Bladder Pump
Remarks	

Constituents Sampled	Container Description	Number	Preservative
VOCs	40ml	3	HCl
1,4-Dioxane	40 ml	3	HCl
Select Metals			
PFAS			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: Jake Pisarkiewicz

Well Casing Volumes

Gal./Ft.				
0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-14-61 PROJ #: B0064479.2018

DATE : 5-9-18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1030	16.7	1.43	1.21	14.0	1.35	6.92	-69.3	200	2.24	69.54
1035	16.4	1.44	1.20	7.8	0.75	6.95	-77.1	200	0.90	69.54
1040	16.16	1.44	1.21	5.7	0.55	6.97	-80.8	200	0.05	69.54
1045	16.5	1.45	1.21	4.7	0.46	6.97	-80.6	200	0.04	69.54
1050	16.4	1.46	1.22	4.1	0.39	6.98	-79.6	200	0.02	69.54
1055	16.4	1.46	1.22	3.5	0.35	6.97	-78.4	200	0.02	69.54
1100	16.4	1.46	1.22	3.4	0.34	6.98	-78.2	200	0.02	69.54
Total Depth of Well:		77.50								
Depth To Water Before Purging:			69.54							
Depth To Water After Purging:			69.54							

ARCADIS

Water Sampling Log

Project	RACER Lansing	Project No.	B0064479.2018	Page	1 of 1
Site Location	Lansing, MI			Date	5-9-18
Site/Well No.	MW-14-101	Replicate No.		Code No.	
Weather	Sunny, warm	Sampling Time:	Begin 1100	End	1101

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	77.50
Depth to Water (ft bmp)	69.54
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	7.96
Casing Diameter/Type	2" PVC
Gallons in Well	1.27
Gallons Pumped/Bailed Prior to Sampling	~1.5
Sample Pump Intake Setting (ft bmp)	74'
Purge Time	begin 1020 end 1100
Pumping Rate (ml/min)	200
Evacuation Method	Bladder Pump

Field Parameters

Temperature (°C)	12.4
SpC (mS/cm)	1.46
CND (mS/cm)	1.27
Dissolved Oxygen (%)	3.4
Dissolved Oxygen (mg/L)	0.34
pH (s.u.)	6.98
ORP (mV)	-78.2
Turbidity (NTU)	0.02
Color	Clear
Odor	ND
Appearance	Normal
Sampling Method	Bladder Pump
Remarks	

Constituents Sampled	Container Description	Number	Preservative
VOCs	40 ml	3	HCl
1,4-Dioxane			
Select Metals			
PFAS			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: Jake Pisarkiewicz

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-12-06 PROJ #: B0064479.2018

DATE : 5-9-18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
0900	16.20	0.85	0.70	22.9	2.24	6.96	-88.5	200	9.13	71.85
0905	16.2	0.85	0.71	18.2	1.80	7.08	-115.0	200	4.10	71.85
0910	16.2	0.85	0.71	15.6	1.53	7.16	-130.5	200	2.84	71.85
0915	16.4	0.85	0.71	8.3	0.80	7.21	-139.5	200	3.28	71.85
0920	16.6	0.85	0.72	6.5	0.63	7.23	-143.2	200	2.91	71.85
0925	16.6	0.85	0.72	5.8	0.57	7.24	-145.1	200	2.58	71.85
0930	16.7	0.85	0.72	5.1	0.49	7.25	-147.5	200	2.34	71.85
0935	16.8	0.86	0.72	4.9	0.46	7.25	-148.3	200	2.20	71.85
0940	16.9	0.86	0.72	4.7	0.45	7.26	-148.8	200	2.10	71.85
0945	16.9	0.86	0.72	4.6	0.44	7.26	-149.9	200	2.02	71.85
Total Depth of Well:		107								
Depth To Water Before Purging:		71.85								
Depth To Water After Purging:		71.85								

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page 1 of 1

Site Location: Lansing, MI | Date: 5-9-18

Site/Well No.: MW-12-06 | Replicate No.: Dup-02 | Code No.:

Weather: Sunny, warm | Sampling Time: Begin 0950 End 0951

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	107
Depth to Water (ft bmp)	71.85
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	35.15
Casing Diameter/Type	4" steel
Gallons in Well	28.85
Gallons Pumped/Bailed Prior to Sampling	~2.5
Sample Pump Intake Setting (ft bmp)	99
Purge Time	begin 0845 end 0945
Pumping Rate (ml/min)	200
Evacuation Method	Bladder Pump

Field Parameters

Temperature (°C)	16.9
SpC (mS/cm)	0.86
CND (mS/cm)	0.72
Dissolved Oxygen (%)	4.6
Dissolved Oxygen (mg/L)	0.44
pH (s.u.)	7.26
ORP (mV)	-149.9
Turbidity (NTU)	2.02
Color	Clear
Odor	No
Appearance	Normal
Sampling Method	Bladder Pump
Remarks	

Constituents Sampled	Container Description	Number	Preservative
VOCs	40ml	3	HCl
1,4-Dioxane	40ml	3	HCl
Select Metals			
PFAS			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: Jake Pisarkiewicz

Well Casing Volumes

Gal./Ft.				
0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-12-05R PROJ #: B0064479.2018

DATE : 5-10-18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1425	16.6	1.65	1.38	4.5	0.44	7.48	-241.7	200	7.09	71.85
1430	16.4	1.66	1.39	2.9	0.29	7.67	-273.8	200	6.83	71.85
1435	16.7	1.67	1.40	2.3	0.22	7.81	-289.8	200	6.99	71.85
1440	16.7	1.68	1.42	1.8	0.17	7.90	-307.1	200	7.31	71.85
1445	16.9	1.70	1.44	1.6	0.16	7.94	-312.4	200	7.40	71.85
1450	16.9	1.71	1.44	1.5	0.14	8.00	-320.4	200	7.10	71.85
1455	17.0	1.71	1.45	1.4	0.13	8.01	-324.5	200	6.30	71.85
1500	17.1	1.71	1.46	1.2	0.12	8.00	-321.1	200	6.10	71.85
Total Depth of Well:		112								
Depth To Water Before Purging:			71.85							
Depth To Water After Purging:			71.85							

ARCADIS

Water Sampling Log

Project	RACER Lansing	Project No.	B0064479.2018	Page	1 of 1
Site Location	Lansing, MI			Date	5.10.18
Site/Well No.	MW-12-05R	Replicate No.		Code No.	
Weather	overcast, cool	Sampling Time:	Begin 1505	End	1506

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	112
Depth to Water (ft bmp)	71.85
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	40.15
Casing Diameter/Type	4" sta. 1
Gallons in Well	26.10
Gallons Pumped/Bailed Prior to Sampling	~ 2.0
Sample Pump Intake Setting (ft bmp)	100
Purge Time	begin 1420 end 1500
Pumping Rate (ml/min)	200
Evacuation Method	Bladder Pump

Field Parameters

Temperature (°C)	17.1
SpC (mS/cm)	1.71
CND (mS/cm)	1.46
Dissolved Oxygen (%)	1.2
Dissolved Oxygen (mg/L)	0.12
pH (s.u.)	8.00
ORP (mV)	-321.1
Turbidity (NTU)	6.10
Color	clear
Odor	no
Appearance	normal
Sampling Method	Bladder Pump
Remarks	

Constituents Sampled	Container Description	Number	Preservative
VOCs	40 ml	3	HCl
1,4-Dioxane	40 ml	3	HCl
Select Metals			
PFAS			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: Jake Piszczkiewicz

Well Casing Volumes

Gal./Ft.				
0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-15-73 PROJ #: B0064479.2018

DATE : 5-10-18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1250	14.4	2.54	2.02	12.2	1.22	6.78	-37.5	200	24.5	69.66
1255	13.8	2.58	2.03	10.7	1.09	6.80	-47.1	200	18.6	69.66
1300	13.7	2.61	2.04	7.2	0.73	6.80	-51.3	200	13.8	69.66
1305	13.5	2.66	2.08	5.6	0.58	6.79	-54.3	200	8.22	69.66
1310	13.6	2.69	2.10	4.4	0.46	6.80	-56.4	200	6.91	69.66
1315	13.3	2.69	2.10	3.8	0.40	6.80	-57.0	200	6.45	69.66
1320	13.7	2.66	2.11	3.4	0.34	6.80	-58.9	200	5.95	69.66
1325	14.0	2.70	2.14	3.1	0.32	6.80	-60.0	200	4.16	69.66
1330	14.1	2.70	2.15	3.0	0.31	6.80	-60.4	200	4.04	69.66
Total Depth of Well:		81.00								
Depth To Water Before Purging:			69.66							
Depth To Water After Purging:			69.66							

ARCADIS

Water Sampling Log

Project	RACER Lansing	Project No.	B0064479.2018	Page	1 of 1
Site Location	Lansing, MI			Date	5-10-18
Site/Well No.	MW-15-73	Replicate No.	MS/MSD	Code No.	
Weather	Overcast, cool	Sampling Time:	Begin 1335	End	1350

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	81.00
Depth to Water (ft bmp)	69.66
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	11.34
Casing Diameter/Type	2" pvc
Gallons in Well	1.81
Gallons Pumped/Bailed Prior to Sampling	~2.0
Sample Pump Intake Setting (ft bmp)	75'
Purge Time	begin 1245 end 1330
Pumping Rate (ml/min)	200
Evacuation Method	Bladder Pump

Field Parameters

Temperature (°C)	14.1
SpC (mS/cm)	2.70
CND (mS/cm)	2.15
Dissolved Oxygen (%)	3.0
Dissolved Oxygen (mg/L)	0.31
pH (s.u.)	6.80
ORP (mV)	-60.4
Turbidity (NTU)	4.04
Color	Clear
Odor	No
Appearance	Normal
Sampling Method	Bladder Pump
Remarks	MS/MSD collected

Constituents Sampled	Container Description	Number	Preservative
VOCs			
1,4-Dioxane	40 ml VOA	3	HCL
Select Metals	125 ml poly	1	HNO3
PFAS			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: Jake Pisalnicwicz

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

PAGE 1 OF 1

WELL : MW-13-44 PROJ #: B0064479.2018

DATE : 5-10-18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1035	16.4	1.39	1.16	28.6	2.73	7.13	-85.6	200	15.6	72.73
1040	15.9	1.41	1.16	13.6	1.34	7.12	-94.6	200	10.7	72.73
1045	15.8	1.41	1.16	10.5	1.04	7.13	-97.3	200	6.55	72.73
1050	15.8	1.40	1.16	8.7	0.85	7.14	-98.9	200	5.90	72.73
1055	16.1	1.40	1.16	7.6	0.75	7.15	-100.4	200	5.65	72.73
1100	16.8	1.39	1.17	6.9	0.66	7.15	-101.5	200	4.94	72.73
1105	16.8	1.40	1.18	6.8	0.65	7.15	-102.1	200	4.68	72.73
1110	16.6	1.40	1.18	6.8	0.65	7.15	-102.5	200	4.34	72.73
Total Depth of Well:		119								
Depth To Water Before Purging:			72.73							
Depth To Water After Purging:			72.73							

ARCADIS

Water Sampling Log

Project	RACER Lansing	Project No.	B0064479.2018	Page	1 of 1
Site Location	Lansing, MI			Date	5.10.18
Site/Well No.	MW-13-44	Replicate No.		Code No.	
Weather	Rainy cool	Sampling Time:	Begin 1105	End	1116

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	119
Depth to Water (ft bmp)	72.73
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	46.27
Casing Diameter/Type	4" steel
Gallons in Well	30.08
Gallons Pumped/Bailed Prior to Sampling	~2.0
Sample Pump Intake Setting (ft bmp)	105
Purge Time	begin 1020 end 1110
Pumping Rate (ml/min)	200
Evacuation Method	Bladder Pump

Field Parameters

Temperature (°C)	16.6
SpC (mS/cm)	1.40
CND (mS/cm)	1.18
Dissolved Oxygen (%)	6.8
Dissolved Oxygen (mg/L)	0.65
pH (s.u.)	7.15
ORP (mV)	-102.5
Turbidity (NTU)	4.34
Color	clear
Odor	None
Appearance	normal
Sampling Method	Bladder Pump
Remarks	

Constituents Sampled	Container Description	Number	Preservative
VOCs	40ml	3	HCl
1,4-Dioxane	40ml	3	HCl
Select Metals			
PFAS			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: Jake Pisarkiewicz

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

PAGE 1 OF 1

WELL : PW-14-02 PROJ #: B0064479.2018

DATE : 5-10-18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
0910	14.5	2.82	2.26	8.4	0.84	6.84	-59.2	200	4.48	67.79
0915	14.4	2.80	2.23	6.9	0.69	6.89	-72.6	200	1.45	67.79
0920	14.4	2.78	2.22	5.6	0.57	6.92	-79.5	200	0.32	67.79
0925	14.3	2.77	2.21	4.8	0.48	6.93	-83.8	200	0.10	67.79
0930	14.4	2.77	2.21	4.2	0.43	6.94	-86.6	200	0.03	67.79
0935	14.3	2.77	2.20	3.5	0.37	6.95	-90.7	200	0.02	67.79
0940	14.2	2.76	2.20	3.4	0.35	6.95	-92.8	200	0.02	67.79
0945	14.2	2.76	2.19	3.3	0.34	6.96	-94.1	200	0.02	67.79
Total Depth of Well:		85.00								
Depth To Water Before Purging:			67.79							
Depth To Water After Purging:			67.79							

ARCADIS

Water Sampling Log

Project	RACER Lansing	Project No.	B0064479.2018	Page	1 of 1
Site Location	Lansing, MI			Date	5-10-18
Site/Well No.	PW-14-02	Replicate No.		Code No.	
Weather	Cloudy, cool	Sampling Time:	Begin 0950	End	0951

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	85.00
Depth to Water (ft bmp)	67.79
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	17.21
Casing Diameter/Type	6" Steel
Gallons in Well	25.30
Gallons Pumped/Bailed Prior to Sampling	~2
Sample Pump Intake Setting (ft bmp)	80'
Purge Time	begin 0900 end 0945
Pumping Rate (ml/min)	200
Evacuation Method	Bladder

Field Parameters

Temperature (°C)	14.2
SpC (mS/cm)	2.76
CND (mS/cm)	2.19
Dissolved Oxygen (%)	3.3
Dissolved Oxygen (mg/L)	0.34
pH (s.u.)	6.96
ORP (mV)	-94.1
Turbidity (NTU)	0.02
Color	Clear
Odor	NO
Appearance	Normal
Sampling Method	Bladder Pump
Remarks	

Constituents Sampled	Container Description	Number	Preservative
VOCs			
1,4-Dioxane	40ml	3	HCl
Select Metals			
PFAS			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: Jake Pisarkiewicz

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

PAGE 1 OF 1

WELL : MW-13-49 PROJ #: B0064479.2018

DATE : 5-11-18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1325	10.8	1.72	1.25	11.8	1.28	6.93	-25.3	200	8.99	62.10
1330	10.9	1.72	1.26	6.6	0.74	6.98	-49.7	200	7.40	63.50
1335	10.9	1.73	1.26	5.8	0.68	6.98	-53.3	150	3.76	63.50
1340	11.0	1.73	1.27	5.2	0.59	6.99	-54.8	150	2.45	63.50
1345	11.0	1.74	1.27	4.9	0.53	6.99	-55.4	150	1.69	63.50
1350	10.8	1.74	1.27	4.6	0.49	6.98	-56.1	150	1.45	63.50
1355	11.0	1.74	1.28	4.2	0.46	6.98	-57.0	150	1.20	63.50
1400	11.1	1.74	1.28	4.0	0.43	6.99	-57.6	150	0.90	63.50
1405	11.2	1.74	1.28	4.0	0.42	6.99	-58.5	150	0.70	63.50
Total Depth of Well:		81.60								
Depth To Water Before Purging:			61.75							
Depth To Water After Purging:			63.50							

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page: 1 of 1

Site Location: Lansing, MI | Date: 5-11-18

Site/Well No.: MW-13-49 | Replicate No.: | Code No.:

Weather: Rainy, cool | Sampling Time: Begin 1410 End 1412

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	81.6
Depth to Water (ft bmp)	61.75
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	19.85
Casing Diameter/Type	2" PVC
Gallons in Well	3.18
Gallons Pumped/Bailed Prior to Sampling	~2.0
Sample Pump Intake Setting (ft bmp)	76'
Purge Time	begin 1315 end 1405
Pumping Rate (ml/min)	200
Evacuation Method	Bladder Pump

Field Parameters

Temperature (°C)	11.2
SpC (mS/cm)	1.74
CND (mS/cm)	1.28
Dissolved Oxygen (%)	4.0
Dissolved Oxygen (mg/L)	0.42
pH (s.u.)	6.99
ORP (mV)	-58.5
Turbidity (NTU)	0.70
Color	clear
Odor	no
Appearance	normal
Sampling Method	Bladder Pump
Remarks	

Constituents Sampled	Container Description	Number	Preservative
VOCs	40 ml VOA	3	HCl
1,4-Dioxane			
Select Metals			
PFAS			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: Jake Pisarkiewicz

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

PAGE 1 OF 1

WELL : MW-12-02 PROJ #: B0064479.2018

DATE : 5-11-18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1020	10.9	1.18	0.86	14.3	1.64	6.92	-38.7	200	20.7	63.01
1025	10.8	1.18	0.86	17.8	1.95	6.93	-49.7	200	20.0	63.01
1030	10.7	1.17	0.85	7.5	0.83	6.93	-56.5	200	19.3	63.01
1035	10.4	1.17	0.84	5.4	0.60	6.94	-61.0	200	19.9	63.01
1040	10.3	1.17	0.84	4.8	0.53	6.95	-63.1	200	19.6	63.01
1045	10.4	1.17	0.84	4.2	0.47	6.95	-64.7	200	20.4	63.01
1050	10.3	1.17	0.84	4.0	0.44	6.96	-66.3	200	20.1	63.01
1055	10.4	1.17	0.85	3.8	0.43	6.96	-67.2	200	19.7	63.01
1100	10.4	1.17	0.85	3.6	0.42	6.96	-68.4	200	21.9	63.01
1105	10.0	1.18	0.83	3.5	0.40	6.96	-68.5	200	22.7	63.01
1110	10.0	1.18	0.84	3.5	0.39	6.95	-69.0	200	20.3	63.01
1115	10.1	1.18	0.84	3.4	0.38	6.95	-69.4	200	19.4	63.01
1120	10.2	1.18	0.84	3.4	0.38	6.95	-70.1	200	19.9	63.01
Total Depth of Well:		93.30								
Depth To Water Before Purging:			63.01							
Depth To Water After Purging:			63.01							

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page: 1 of 1

Site Location: Lansing, MI | Date: 5-11-18

Site/Well No.: MW-12-02 | Replicate No.: | Code No.:

Weather: Cold, Rainy | Sampling Time: Begin 1125 End 1127

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	93.30
Depth to Water (ft bmp)	63.01
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	30.29
Casing Diameter/Type	4" Stl
Gallons in Well	19.69
Gallons Pumped/Bailed Prior to Sampling	~ 3.0
Sample Pump Intake Setting (ft bmp)	89'
Purge Time	begin 1010 end 1120
Pumping Rate (ml/min)	200
Evacuation Method	Bladder Pump

Field Parameters

Temperature (°C)	10.2
SpC (mS/cm)	1.18
CND (mS/cm)	0.84
Dissolved Oxygen (%)	3.4
Dissolved Oxygen (mg/L)	0.38
pH (s.u.)	6.95
ORP (mV)	-70.1
Turbidity (NTU)	19.9
Color	clear
Odor	no
Appearance	normal
Sampling Method	Bladder Pump
Remarks	

Constituents Sampled	Container Description	Number	Preservative
VOCs	40 ml	3	HCl
1,4-Dioxane	40 ml	3	HCl
Select Metals			
PFAS			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: Jake Pisarkiewicz

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

PAGE 1 OF 1

WELL : MW-14-603 PROJ #: B0064479.2018

DATE : 5-11-18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
0840	11.4	1.21	0.90	14.5	1.56	6.55	86.2	200	100	64.00
0845	11.3	1.21	0.89	10.1	1.10	6.70	69.1	200	88.6	64.00
0850	11.2	1.21	0.89	7.6	0.83	6.79	54.6	200	64.3	64.00
0855	11.6	1.20	0.90	5.6	0.61	6.81	36.2	200	55.1	64.00
0900	11.5	1.20	0.90	4.6	0.50	6.82	12.9	200	45.9	64.00
0905	11.5	1.21	0.90	4.1	0.45	6.83	4.3	200	40.4	64.00
0910	11.7	1.21	0.91	3.4	0.38	6.84	-12.3	200	35.4	64.00
0915	11.8	1.22	0.91	2.9	0.33	6.85	-25.3	200	32.9	64.00
0920	11.8	1.22	0.91	2.7	0.30	6.85	-35.5	200	25.9	64.00
0925	11.8	1.22	0.91	2.6	0.29	6.86	-40.3	200	16.8	64.00
0930	11.8	1.22	0.91	2.6	0.27	6.86	-46.4	200	12.8	64.00
0935	11.9	1.22	0.91	2.4	0.27	6.86	-50.1	200	10.3	64.00
0940	11.9	1.22	0.91	2.3	0.26	6.87	-52.7	200	9.2	64.00
Total Depth of Well:		76.80								
Depth To Water Before Purging:			63.47							
Depth To Water After Purging:			64.00							

ARCADIS

Water Sampling Log

Project	RACER Lansing	Project No.	B0064479.2018	Page	1 of 1
Site Location	Lansing, MI			Date	5-11-18
Site/Well No.	MW-14-603	Replicate No.		Code No.	
Weather	Cold, Rainy	Sampling Time:	Begin 0940	End	0942

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	76.80
Depth to Water (ft bmp)	63.47
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	13.33
Casing Diameter/Type	2" PVC
Gallons in Well	2.13
Gallons Pumped/Bailed Prior to Sampling	~ 3.0
Sample Pump Intake Setting (ft bmp)	72'
Purge Time	begin 0830 end 0940
Pumping Rate (ml/min)	200
Evacuation Method	Bladder Pump

Field Parameters

Temperature (°C)	11.9
SpC (mS/cm)	1.22
CND (mS/cm)	0.91
Dissolved Oxygen (%)	2.3
Dissolved Oxygen (mg/L)	0.26
pH (s.u.)	6.87
ORP (mV)	-52.7
Turbidity (NTU)	9.2
Color	clear
Odor	No
Appearance	Normal
Sampling Method	Bladder Pump
Remarks	

Constituents Sampled	Container Description	Number	Preservative
VOCs	40ml	3	HCL
1,4-Dioxane	40ml	3	HCL
Select Metals			
PFAS			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: Jake Pisarkiewicz

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

PAGE 1 OF 1

WELL : MW-13-36R PROJ #: B0064479.2018

DATE : 5-14-18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1000	11.4	1.29	1.30	19.1	2.09	11.34	121.6	200	15.5	4.11
1005	11.2	1.41	1.04	20.5	2.25	11.55	109.1	200	8.30	4.11
1010	11.2	1.43	1.016	20.9	2.28	11.58	106.7	200	5.65	4.11
1015	11.7	1.46	1.09	21.7	2.37	11.70	98.7	200	3.76	4.11
1020	11.7	1.48	1.10	22.3	2.41	11.75	94.7	200	3.05	4.11
1025	11.8	1.49	1.11	22.5	2.40	11.79	91.4	200	2.40	4.11
1030	11.8	1.49	1.12	22.3	2.39	11.80	90.3	200	2.37	4.11
Total Depth of Well:		12.80								
Depth To Water Before Purging:			4.11							
Depth To Water After Purging:			4.11							

ARCADIS

Water Sampling Log

Project	RACER Lansing	Project No.	B0064479.2018	Page	1 of 1
Site Location	Lansing, MI			Date	5-14-18
Site/Well No.	MW-13-36R	Replicate No.		Code No.	
Weather	Rainy, cool	Sampling Time:	Begin 1020	End	1035

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	12.8
Depth to Water (ft bmp)	4.11
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	8.69
Casing Diameter/Type	2" PVC
Gallons in Well	1.39
Gallons Pumped/Bailed Prior to Sampling	~2.0
Sample Pump Intake Setting (ft bmp)	10'
Purge Time	begin 0950 end 1030
Pumping Rate (ml/min)	200
Evacuation Method	Bladder Pump

Field Parameters

Temperature (°C)	11.8
SpC (mS/cm)	1.49
CND (mS/cm)	1.12
Dissolved Oxygen (%)	22.3
Dissolved Oxygen (mg/L)	2.39
pH (s.u.)	11.80
ORP (mV)	90.3
Turbidity (NTU)	2.37
Color	Clear
Odor	no
Appearance	normal
Sampling Method	Bladder Pump
Remarks	

Constituents Sampled	Container Description	Number	Preservative
VOCs			
1,4-Dioxane			
Select Metals	125-ml poly	1	HNO_3
PFAS			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: John Pisalkiewicz

Well Casing Volumes

Gal./Ft.	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

PAGE 1 OF 1

WELL : MW-14-67 PROJ #: B0064479.2018

DATE : 5-14-18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1115	12.5	1.46	1.11	10.4	1.10	7.71	84.2	200	9.54	5.40
1120	12.1	1.49	1.12	10.0	1.07	7.50	79.5	200	9.38	5.40
1125	12.0	1.55	1.16	8.8	0.90	7.41	78.3	200	9.50	5.40
1130	12.8	1.60	1.25	5.4	0.54	7.34	73.9	200	8.90	5.40
1135	13.5	1.69	1.31	4.5	0.44	7.29	70.6	200	4.93	5.40
1140	13.7	1.71	1.35	3.9	0.40	7.26	68.2	200	4.10	5.40
1145	14.0	1.72	1.36	3.6	0.37	7.24	64.5	200	3.76	5.40
1150	14.1	1.74	1.37	3.5	0.36	7.23	62.7	200	3.40	5.40
1155	14.0	1.75	1.38	3.3	0.33	7.23	61.1	200	3.20	5.40
1200	14.0	1.76	1.39	3.3	0.33	7.22	60.8	200	3.17	5.40
Total Depth of Well:		20.85								
Depth To Water Before Purging:			4.85							
Depth To Water After Purging:			5.40							

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page: 1 of 1

Site Location: Lansing, MI | Date: 5-14-18

Site/Well No.: MW-14-167 | Replicate No.: | Code No.:

Weather: Rainy, cool | Sampling Time: Begin 1200 End 1205

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	20.85
Depth to Water (ft bmp)	4.85
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	16.0
Casing Diameter/Type	2" PVC
Gallons in Well	2.56
Gallons Pumped/Bailed Prior to Sampling	~ 2.5
Sample Pump Intake Setting (ft bmp)	18'
Purge Time	begin 1105 end 1200
Pumping Rate (ml/min)	200
Evacuation Method	Bladder Pump

Field Parameters

Temperature (°C)	14.0
SpC (mS/cm)	1.76
CND (mS/cm)	1.39
Dissolved Oxygen (%)	3.3
Dissolved Oxygen (mg/L)	0.33
pH (s.u.)	7.22
ORP (mV)	60.8
Turbidity (NTU)	3.17
Color	Clear
Odor	No
Appearance	normal
Sampling Method	Bladder Pump
Remarks	

Constituents Sampled	Container Description	Number	Preservative
VOCs	40ml VOA	3	HCl
1,4-Dioxane			
Select Metals	125ml poly	1	HNO_3
PFAS			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: Jake Pisalkiewicz

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-14-66 PROJ #: B0064479.2018

DATE : 5-14-18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1340	15.4	0.96	0.78	15.2	1.48	7.45	166.9	200	24.6	5.10
1345	15.1	0.86	0.69	8.2	0.82	7.39	33.6	~~150~~	21.1	5.50
1350	16.9	0.88	0.75	4.5	0.43	7.41	1.6	150	12.5	5.50
1355	16.9	0.92	0.78	4.1	0.40	7.39	-7.9	150	10.9	5.50
1400	16.4	0.94	0.79	3.6	0.35	7.38	-25.2	150	8.90	5.50
1405	16.7	0.94	0.79	3.4	0.33	7.38	-31.8	150	7.43	5.50
1410	16.9	0.95	0.80	3.3	0.32	7.38	-37.7	150	7.56	5.50
1415	16.6	0.96	0.81	3.1	0.30	7.37	-41.6	150	7.13	5.50
1420	16.5	0.96	0.81	3.0	0.30	7.37	-43.3	150	7.07	5.50
Total Depth of Well:		22.20								
Depth To Water Before Purging:			4.30							
Depth To Water After Purging:			5.50							

ARCADIS

Water Sampling Log

Project	RACER Lansing	Project No.	B0064479.2018	Page	1 of 1
Site Location	Lansing, MI			Date	5.14.18
Site/Well No.	MW-14-66D	Replicate No.	Dup-11	Code No.	
Weather	Sunny, warm	Sampling Time:	Begin 1420	End	1425

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	22.20
Depth to Water (ft bmp)	4.30
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	17.9
Casing Diameter/Type	2" PVC
Gallons in Well	2.86
Gallons Pumped/Bailed Prior to Sampling	~2.0
Sample Pump Intake Setting (ft bmp)	20'
Purge Time	begin 1330 end 1420
Pumping Rate (ml/min)	200
Evacuation Method	Bladder Pump

Field Parameters

Temperature (°C)	16.5
SpC (mS/cm)	0.96
CND (mS/cm)	0.81
Dissolved Oxygen (%)	3.0
Dissolved Oxygen (mg/L)	0.30
pH (s.u.)	7.37
ORP (mV)	-43.3
Turbidity (NTU)	7.07
Color	clear
Odor	no
Appearance	normal
Sampling Method	Bladder Pump
Remarks	

Constituents Sampled	Container Description	Number	Preservative
VOCs	40ml	3	HCL
1,4-Dioxane			
Select Metals	125 ml	1	HNO3
PFAS			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: Jake Pisachiewicz

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

PAGE 1 OF 1

WELL : MW-12-13 PROJ #: B0064479.2018

DATE : 5-14-18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1455	13.8	1.35	1.06	45.5	4.25	7.23	25.6	200	7.25	9.50
1500	14.3	1.31	1.04	14.8	1.50	7.27	16.0	200	7.45	10.2
1505	14.4	1.28	1.02	12.0	1.20	7.26	5.6	200	7.57	10.2
1510	13.8	1.23	0.97	8.5	0.87	7.23	-3.7	150	5.98	10.2
1515	13.7	1.22	0.96	8.1	0.83	7.23	-14.5	150	5.26	10.2
1520	13.9	1.21	0.95	7.3	0.76	7.23	-24.0	150	4.74	10.2
1525	14.2	1.18	0.95	6.0	0.60	7.22	-32.9	150	4.46	10.2
1530	14.0	1.18	0.94	5.4	0.55	7.21	-40.1	150	4.10	10.2
1535	14.1	1.17	0.93	5.1	0.52	7.21	-44.6	150	3.78	10.2
1540	14.1	1.17	0.92	5.0	0.51	7.20	-46.9	150	3.50	10.2
1545	14.2	1.18	0.93	5.0	0.51	7.20	-48.1	150	3.10	10.2
Total Depth of Well:		25.40								
Depth To Water Before Purging:		9.25								
Depth To Water After Purging:		10.20								

ARCADIS

Water Sampling Log

Project	RACER Lansing	Project No.	B0064479.2018	Page	1 of 1
Site Location	Lansing, MI			Date	5-14-18
Site/Well No.	MW-12-13	Replicate No.		Code No.	
Weather	Hot, sunny	Sampling Time:	Begin 1545	End	1550

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	25.40
Depth to Water (ft bmp)	9.25
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	16.15
Casing Diameter/Type	2" PVC
Gallons in Well	2.58
Gallons Pumped/Bailed Prior to Sampling	~3
Sample Pump Intake Setting (ft bmp)	22'
Purge Time	begin 1545 end 1545
Pumping Rate (ml/min)	200
Evacuation Method	Bladder Pump

Field Parameters

Temperature (°C)	14.2
SpC (mS/cm)	1.18
CND (mS/cm)	0.93
Dissolved Oxygen (%)	5.0
Dissolved Oxygen (mg/L)	0.51
pH (s.u.)	7.20
ORP (mV)	-48.1
Turbidity (NTU)	3.10
Color	clear
Odor	no
Appearance	normal
Sampling Method	Bladder Pump
Remarks	

Constituents Sampled	Container Description	Number	Preservative
VOCs			
1,4-Dioxane			
Select Metals	125ml poly	1	HNO3
PFAS			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: Jake Pisachowicz

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

PAGE 1 OF 1

WELL : MW-03-D6 PROJ #: B0064479.2018

DATE : 5-15-18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1100	14.5	11.21	8.97	10.2	1.00	6.72	-23.7	150	19.0	36.25
1105	14.4	11.21	8.94	7.1	0.69	6.74	-36.2	150	10.04	36.25
1110	14.4	11.21	8.93	5.7	0.55	6.75	-41.3	150	5.41	36.25
1115	14.4	11.20	8.94	4.8	0.46	6.76	-44.3	150	5.05	36.25
1120	14.5	11.21	8.96	4.0	0.40	6.76	-46.9	150	3.10	36.25
1125	14.5	11.19	8.96	3.8	0.37	6.76	-48.0	150	2.20	36.25
1130	14.5	11.20	8.96	3.4	0.33	6.77	-49.5	150	2.02	36.25
1135	14.5	11.20	8.97	3.2	0.30	6.77	-50.1	150	2.04	36.25
1140	14.7	11.19	8.99	3.1	0.30	6.77	-50.4	150	1.74	36.25
Total Depth of Well:		40.55								
Depth To Water Before Purging:			36.23							
Depth To Water After Purging:			36.25							

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Water Sampling Log

Project	RACER Lansing	Project No.	B0064479.2018	Page	1 of 1
Site Location	Lansing, MI			Date	5-15-18
Site/Well No.	MW-03-06	Replicate No.		Code No.	
Weather	Rainy, cool	Sampling Time:	Begin 1140	End	1145

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	40.55
Depth to Water (ft bmp)	36.23
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	4.32
Casing Diameter/Type	2" pvc
Gallons in Well	0.69
Gallons Pumped/Bailed Prior to Sampling	~ 2.0
Sample Pump Intake Setting (ft bmp)	39'
Purge Time	begin 1050 end
Pumping Rate (ml/min)	150 ml
Evacuation Method	Bladder Pump

Field Parameters

Temperature (°C)	14.7
SpC (mS/cm)	11.19
CND (mS/cm)	8.99
Dissolved Oxygen (%)	3.1
Dissolved Oxygen (mg/L)	0.30
pH (s.u.)	6.77
ORP (mV)	-50.4
Turbidity (NTU)	1.74
Color	Clear
Odor	No
Appearance	Normal
Sampling Method	Bladder Pump
Remarks	

Constituents Sampled	Container Description	Number	Preservative
VOCs			
1,4-Dioxane			
Select Metals	1-125ml poly	1	HNO3
PFAS			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: John Pisarkiewicz

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

PAGE 1 OF 1

WELL : MW-12-12 PROJ #: B0064479.2018

DATE : 5-15-18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
0930	11.4	0.77	0.57	12.1	1.31	7.07	119.0	200	42.8	6.95
0935	11.8	0.80	0.60	8.8	0.94	7.25	104.9	200	36.3	7.10
0940	11.6	0.85	0.63	8.8	0.94	7.31	100.1	150	30.3	7.10
0945	12.0	0.89	0.67	8.9	0.94	7.34	93.9	150	27.4	7.10
0950	12.0	0.93	0.70	8.2	0.87	7.35	90.2	150	24.3	7.10
0955	12.6	0.97	0.76	6.4	0.67	7.34	88.3	150	21.1	7.10
1000	12.5	1.04	0.80	6.1	0.63	7.33	85.4	150	19.6	7.10
1005	12.6	1.08	0.82	5.8	0.63	7.34	81.1	150	18.1	7.10
1010	12.3	1.07	0.81	6.4	0.66	7.35	77.0	150	13.8	7.10
1015	12.5	1.05	0.80	6.4	0.65	7.36	75.2	150	10.4	7.10
1020	12.6	1.06	0.81	6.5	0.66	7.37	76.9	150	10.1	7.10
1025	12.10	1.07	0.82	6.6	0.67	7.37	77.1	150	9.45	7.10
1030	12.7	1.07	0.82	6.6	0.68	7.36	77.4	150	9.04	7.10
Total Depth of Well:		17.20								
Depth To Water Before Purging:			5.76							
Depth To Water After Purging:			7.10							

ARCADIS

Water Sampling Log

Project	RACER Lansing	Project No.	B0064479.2018	Page	1 of 1
Site Location	Lansing, MI			Date	5.15.18
Site/Well No.	MW-12-12	Replicate No.		Code No.	
Weather	Rainy, warm	Sampling Time:	Begin 1030	End	1035

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	17.20
Depth to Water (ft bmp)	5.76
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	11.4
Casing Diameter/Type	2" PVC
Gallons in Well	1.83
Gallons Pumped/Bailed Prior to Sampling	~2.5
Sample Pump Intake Setting (ft bmp)	14.0
Purge Time	begin 0910 end 1030
Pumping Rate (ml/min)	200
Evacuation Method	Bladder Pump

Field Parameters

Temperature (°C)	12.7
SpC (mS/cm)	1.07
CND (mS/cm)	0.82
Dissolved Oxygen (%)	6.6
Dissolved Oxygen (mg/L)	0.68
pH (s.u.)	7.36
ORP (mV)	77.4
Turbidity (NTU)	9.04
Color	Clear
Odor	ND
Appearance	Normal
Sampling Method	Bladder Pump
Remarks	

Constituents Sampled	Container Description	Number	Preservative
VOCs			
1,4-Dioxane			
Select Metals	125-ml poly	1	HNO3
PFAS			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: Jake Pisarkiewicz

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

PAGE ___ OF ___

WELL : MW-16-74 PROJ #: B0064479.2018

DATE : 05/08/18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1055	19.5	2.42	2.16	19.0	1.85	6.64	56.0	150	+++	67.42
1100	20.7	2.41	2.19	13.5	1.18	6.73	37.5		+++	67.42
1105	20.9	2.40	2.22	12.8	1.13	6.75	29.9		+++	67.42
1110	21.4	2.40	2.24	12.0	1.07	6.77	19.7		550	67.42
1115	21.6	2.39	2.24	12.8	1.10	6.77	16.7		519	67.42
1120	20.1	2.38	2.15	13.0	1.24	6.79	12.7		450	67.42
1125	19.2	2.37	2.10	12.9	1.18	6.80	10.5		317	67.42
1130	19.1	2.35	2.08	14.0	1.21	6.81	6.8		[illegible]	67.42
1135	19.1	2.35	2.08	14.0	1.25	6.81	3.7		[illegible]	67.42
1140	19.0	2.34	2.08	15.3	1.32	6.82	-0.4		71.8	67.42
1145	19.2	2.35	2.09	15.9	1.40	6.82	-1.1		62.1	67.42
1150	19.2	2.35	2.09	16.0	1.44	6.82	-2.1		59.7	67.42
1155	Sample									

Total Depth of Well:	73.68	
Depth To Water Before Purging:	67.35	
Depth To Water After Purging:	67.42	

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page ___ of ___

Site Location: Lansing, MI | Date: 5/8/18

Site/Well No.: MW-16-74 | Replicate No.: — | Code No.: —

Weather: Sun 70° | Sampling Time: Begin 1055 End 1155

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	73.68
Depth to Water (ft bmp)	67.35
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	6.33
Casing Diameter/Type	2"
Gallons in Well	1.01
Gallons Pumped/Bailed Prior to Sampling	~2.0
Sample Pump Intake Setting (ft bmp)	70'
Purge Time	begin 1055 end 1155
Pumping Rate (ml/min)	150
Evacuation Method	

Field Parameters

Temperature (°C)	19.2
SpC (mS/cm)	2.35
CND (mS/cm)	2.09
Dissolved Oxygen (%)	16.0
Dissolved Oxygen (mg/L)	1.44
pH (s.u.)	6.82
ORP (mV)	-2.1
Turbidity (NTU)	59.7
Color	—
Odor	—
Appearance	—
Sampling Method	
Remarks	—

Constituents Sampled	Container Description	Number	Preservative
VOCs			
1,4-Dioxane	40 mL VOA	3	HCL
Select Metals			
PFAS			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: BF

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

PAGE ___ OF ___

WELL : MW-16-75 PROJ #: B0064479.2018

DATE : 05/08/18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1325	20.9	2.05	1.84	93.6	3.82	6.86	88.5	150	31.6	62.42
1330	18.3	1.99	1.74	22.01	2.04	6.94	58.5		21.3	62.65
1335	20.3	1.97	1.80	14.4	1.25	6.93	35.5		20.7	62.75
1340	21.6	1.98	1.85	13.3	1.14	6.93	27.1		18.0	62.81
1345	21.5	1.99	1.86	12.8	1.11	6.92	19.0		13.4	62.75
1350	21.7	1.99	1.87	10.3	0.95	6.91	17.0		9.55	62.75
1355	21.7	2.00	1.88	9.6	0.93	6.90	15.1		9.89	62.75
1400	21.9	2.00	1.89	8.9	0.90	6.90	13.6		9.17	62.75

Total Depth of Well:	74.03	
Depth To Water Before Purging:	62.03	
Depth To Water After Purging:	62.75	

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page ___ of ___

Site Location: Lansing, MI | Date: 05/08/18

Site/Well No.: MW-16-75 | Replicate No.: — | Code No.: —

Weather: SUN 70° | Sampling Time: Begin 1325 End 1400

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	74.03
Depth to Water (ft bmp)	62.03
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	12.0
Casing Diameter/Type	2"
Gallons in Well	1.92
Gallons Pumped/Bailed Prior to Sampling	~1.5
Sample Pump Intake Setting (ft bmp)	70'
Purge Time	begin 1325 end 1400
Pumping Rate (ml/min)	150
Evacuation Method	

Field Parameters

Temperature (°C)	21.9
SpC (mS/cm)	2.00
CND (mS/cm)	1.89
Dissolved Oxygen (%)	8.9
Dissolved Oxygen (mg/L)	0.90
pH (s.u.)	6.90
ORP (mV)	13.6
Turbidity (NTU)	9.17
Color	—
Odor	—
Appearance	—
Sampling Method	Bladder
Remarks	—

Constituents Sampled	Container Description	Number	Preservative
VOCs			
1,4-Dioxane	40 mL VOA	3	HCL
Select Metals			
PFAS			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: BF

Well Casing Volumes

Gal./Ft.				
0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

PAGE ___ OF ___

WELL : MW-16-77 PROJ #: B0064479.2018

DATE : 05/08/18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1435	20.3	1.88	1.71	27.0	1.95	6.76	62.5	150	15.2	62.51
1440	19.2	1.86	1.66	21.4	1.90	6.99	52.8		8.51	62.51
1445	18.0	1.87	1.65	21.1	1.94	7.00	53.0		8.97	62.50
1450	19.0	1.86	1.65	22.7	2.05	7.01	52.7		5.51	62.50
1455	19.1	1.86	1.65	23.1	2.10	7.01	52.0		5.38	62.50
1500	19.1	1.87	1.65	24.4	2.21	7.01	41.5		4.97	62.50
Total Depth of Well:		74.02								
Depth To Water Before Purging:			62.32							
Depth To Water After Purging:			62.50							

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page ____ of ____

Site Location: Lansing, MI | Date: 5/8/18

Site/Well No.: MW-16-77 | Replicate No.: — | Code No.: —

Weather: Sun 70° | Sampling Time: Begin 1435 End 1500

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	74.02
Depth to Water (ft bmp)	62.32
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	11.3
Casing Diameter/Type	2"
Gallons in Well	1.80
Gallons Pumped/Bailed Prior to Sampling	~1.5
Sample Pump Intake Setting (ft bmp)	70'
Purge Time	begin 1435 end 1500
Pumping Rate (ml/min)	150
Evacuation Method	

Field Parameters

Temperature (°C)	19.1
SpC (mS/cm)	1.87
CND (mS/cm)	1.65
Dissolved Oxygen (%)	24.4
Dissolved Oxygen (mg/L)	2.21
pH (s.u.)	7.01
ORP (mV)	47.5
Turbidity (NTU)	4.97
Color	—
Odor	—
Appearance	—
Sampling Method	Bladder
Remarks	✓

Constituents Sampled	Container Description	Number	Preservative
VOCs			
1,4-Dioxane	40 mL VOA	3	HCl
Select Metals			
PFAS			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: BE

Well Casing Volumes

Gal./Ft.				
0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

PAGE ___ OF ___

WELL : **MW-14-56** PROJ #: B0064479.2018

DATE : 05/08/18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1515	19.0	5.94	5.25	32.1	2.83	6.68	105.9	150	8.31	68.20
1520	20.6	5.91	5.42	22.2	1.95	6.74	97.9		9.03	68.20
1525	23.5	5.87	5.68	21.9	1.86	6.73	94.6		8.75	68.20
1530	18.3	5.90	5.16	10.3	0.94	6.62	52.3		8.36	68.20
1535	18.2	5.95	5.15	8.7	0.76	6.63	54.5		8.77	68.20
1540	18.4	5.93	5.18	7.9	0.75	6.63	51.7		9.35	68.20

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page ____ of ____

Site Location: Lansing, MI | Date: 5/8/18

Site/Well No.: MW-14-56 | Replicate No.: — | Code No.: —

Weather: sun 70° | Sampling Time: Begin 1515 End 1540

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	78.95
Depth to Water (ft bmp)	67.55
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	11.65
Casing Diameter/Type	2"
Gallons in Well	1.86
Gallons Pumped/Bailed Prior to Sampling	~1.5
Sample Pump Intake Setting (ft bmp)	72'
Purge Time	begin ____ end ____
Pumping Rate (ml/min)	150
Evacuation Method	

Field Parameters

Temperature (°C)	18.4
SpC (mS/cm)	5.93
CND (mS/cm)	5.18
Dissolved Oxygen (%)	7.9
Dissolved Oxygen (mg/L)	0.75
pH (s.u.)	6.63
ORP (mV)	51.7
Turbidity (NTU)	9.35
Color	—
Odor	—
Appearance	—
Sampling Method	Bladder
Remarks	—

Constituents Sampled	Container Description	Number	Preservative
VOCs	✓ 40 mL VOA	3	HCl
1,4-Dioxane	✓ 40mL VOA	11	HCl
Select Metals	✓ Nitric Acid	1	Nitric
PFAS			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: BF

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

PAGE 1 OF ___

WELL : MW-16-79 PROJ #: B0064479.2018

DATE : 05/08/18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
0915	16.8	1.09	0.92	13.5	1.30	6.96	108.2	150	312	68.47
0920	16.9	1.09	0.92	10.5	1.22	6.60	96.2		217	68.66
0925	17.5	1.08	0.93	10.3	0.98	6.68	88.6		255	68.75
0930	19.6	1.08	0.97	9.8	0.93	6.81	71.1		201	68.85
0935	19.7	1.06	0.98	11.0	1.03	6.80	69.3		215	68.90
0940	20.0	1.08	0.97	14.0	1.15	6.83	58.9		197	68.95
0945	19.3	1.07	0.96	17.2	1.50	6.90	56.2		166	69.02
0950	18.8	1.09	0.94	19.0	1.60	6.91	56.0		192	69.10
0955	17.6	1.08	0.92	15.9	1.50	6.93	47.2		217	69.15
1000	17.7	1.08	0.92	15.8	1.55	6.94	46.3		209	69.25
1005	17.6	1.08	0.92	16.3	1.60	6.94	46.2		200	69.29
1010	17.4	1.08	0.92	16.4	1.62	6.94	46.0		197	69.40
1015	sample									

Total Depth of Well:		69.40								
Depth To Water Before Purging:			67.19							
Depth To Water After Purging:			N/A	75.69						

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page ___ of ___

Site Location: Lansing, MI | Date: 05/08/18

Site/Well No.: MW-16-79 | Replicate No.: — | Code No.: —

Weather: Sun 70° | Sampling Time: Begin 0915 End 1015

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	MA 75.69
Depth to Water (ft bmp)	67.19
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	Less 8.5
Casing Diameter/Type	2"
Gallons in Well	1.36
Gallons Pumped/Bailed Prior to Sampling	~2.0
Sample Pump Intake Setting (ft bmp)	70'
Purge Time	begin 0915 end 1015
Pumping Rate (ml/min)	150
Evacuation Method	

Field Parameters

Temperature (°C)	17.4
SpC (mS/cm)	1.08
CND (mS/cm)	0.92
Dissolved Oxygen (%)	16.4
Dissolved Oxygen (mg/L)	1.62
pH (s.u.)	6.94
ORP (mV)	46.0
Turbidity (NTU)	197
Color	Grey
Odor	—
Appearance	—
Sampling Method	Bladder
Remarks	—

Constituents Sampled	Container Description	Number	Preservative
VOCs			
1,4-Dioxane	40mL VOA	3	HCl
Select Metals			
PFAS			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: BF

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

PAGE ___ OF ___

WELL : MW-12-09 PROJ #: B0064479.2018

DATE : 5/9/18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1420	18.0	2.16	1.86	18.2	1.73	6.94	91.0	150	231	13.77
1425	16.7	2.12	1.79	8.3	0.77	6.98	86.0		206	13.77
1430	16.8	2.17	1.83	5.0	0.47	6.92	87.6		190	13.77
1435	17.0	2.21	1.87	4.5	0.43	6.92	85.5		97.5	13.77
1440	16.7	2.31	1.94	2.1	0.23	7.01	73.8		39.4	13.77
1445	16.3	2.42	2.02	2.0	0.20	7.01	67.1		30.9	13.77
1450	16.3	2.45	2.04	2.4	0.25	7.01	65.8		21.3	13.77
1455	16.2	2.45	2.05	2.4	0.25	7.01	64.2		13.0	13.77
1500	16.1	2.49	2.07	2.4	0.22	7.02	61.3		9.73	13.77
1505	15.9	2.50	2.07	2.3	0.23	7.02	61.1		8.98	13.77
Total Depth of Well:		21.55								
Depth To Water Before Purging:			13.77							
Depth To Water After Purging:			13.77							

ARCADIS

Water Sampling Log (MS/MSD)

Project: RACER Lansing | Project No.: B0064479.2018 | Page: ___ of ___

Site Location: Lansing, MI | Date: 5/9/18

Site/Well No.: MW-12-09 | Replicate No.: ✓ | Code No.: ✓

Weather: overcast 65° | Sampling Time: Begin 1420 End 1505

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	21.55
Depth to Water (ft bmp)	13.77
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	7.78
Casing Diameter/Type	2"
Gallons in Well	1.24
Gallons Pumped/Bailed Prior to Sampling	~1.5
Sample Pump Intake Setting (ft bmp)	19.0
Purge Time	begin 1420 end 1505
Pumping Rate (ml/min)	150
Evacuation Method	

Field Parameters

Temperature (°C)	15.9
SpC (mS/cm)	2.50
CND (mS/cm)	2.07
Dissolved Oxygen (%)	2.3
Dissolved Oxygen (mg/L)	0.23
pH (s.u.)	7.02
ORP (mV)	61.1
Turbidity (NTU)	8.98
Color	—
Odor	—
Appearance	—
Sampling Method	Bladder
Remarks	✓

Constituents Sampled	Container Description	Number	Preservative
VOCs	40 mL VOA	3	HCl
1,4-Dioxane			
Select Metals			
PFAS			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: BF

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

PAGE ___ OF ___

WELL : MW-12-07 PROJ #: B0064479.2018

DATE : 5/9/18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1255	13.2	0.72	0.55	46.4	4.95	7.37	64.9	150	10.8	8.63
1300	13.7	0.69	0.54	44.8	4.51	7.38	64.1	|	8.86	8.51
1305	13.5	0.70	0.54	46.4	4.89	7.39	64.2	|	8.64	8.70
1310	15.1	0.67	0.54	43.2	4.32	7.38	63.6	|	8.75	8.65
1315	16.0	0.67	0.56	41.6	4.12	7.37	63.4	|	8.50	8.65
1320	16.1	0.68	0.56	40.9	4.05	7.37	63.5		8.90	8.65
Total Depth of Well:		17.80								
Depth To Water Before Purging:			7.16							
Depth To Water After Purging:			8.65							

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page ___ of ___

Site Location: Lansing, MI | Date: 5/9/18

Site/Well No.: MW-12-07 | Replicate No.: / | Code No.: /

Weather: overcast 65° | Sampling Time: Begin 1255 End 1320

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	17.8
Depth to Water (ft bmp)	7.16
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	10.64
Casing Diameter/Type	2"
Gallons in Well	1.70
Gallons Pumped/Bailed Prior to Sampling	~1.5
Sample Pump Intake Setting (ft bmp)	13.0
Purge Time	begin 1255 end 1320
Pumping Rate (ml/min)	150
Evacuation Method	

Field Parameters

Temperature (°C)	16.1
SpC (mS/cm)	0.68
CND (mS/cm)	0.56
Dissolved Oxygen (%)	40.9
Dissolved Oxygen (mg/L)	4.05
pH (s.u.)	7.37
ORP (mV)	63.5
Turbidity (NTU)	8.90
Color	—
Odor	—
Appearance	—
Sampling Method	Bladder
Remarks	—

Constituents Sampled	Container Description	Number	Preservative
VOCs	40 mL VOA	3	HCl
1,4-Dioxane			
Select Metals			
PFAS			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: BF

Well Casing Volumes

Gal./Ft.				
0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

PAGE ___ OF ___

WELL : MW-12-18 PROJ #: B0064479.2018

DATE : 05/09 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1100	14.6	2.42	1.94	20.1	2.21	7.00	99.1	150	30.7	24.85
1105	14.8	2.42	1.95	8.3	0.80	7.09	93.6	|	2.75	24.85
1110	16.3	2.38	2.00	6.5	0.63	7.12	90.2	|	21.0	24.80
1115	18.3	2.40	2.10	4.3	0.41	7.13	83.2	|	14.3	24.80
1120	18.4	2.40	2.10	4.6	0.40	7.13	82.0	|	9.19	24.81
1125	18.0	2.42	2.10	4.0	0.39	7.13	81.5	|	8.90	24.81

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page ____ of ____

Site Location: Lansing, MI | Date: 5/9

Site/Well No.: MW-12-18 | Replicate No.: — | Code No.: —

Weather: overcast 65° | Sampling Time: Begin 1100 End 1125

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	34.73
Depth to Water (ft bmp)	23.39
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	11.34
Casing Diameter/Type	2"
Gallons in Well	1.81
Gallons Pumped/Bailed Prior to Sampling	~1.5
Sample Pump Intake Setting (ft bmp)	30'
Purge Time	begin 1100 end 1125
Pumping Rate (ml/min)	150
Evacuation Method	

Field Parameters

Temperature (°C)	18.0
SpC (mS/cm)	2.42
CND (mS/cm)	2.10
Dissolved Oxygen (%)	4.0
Dissolved Oxygen (mg/L)	0.39
pH (s.u.)	7.13
ORP (mV)	81.5
Turbidity (NTU)	8.90
Color	—
Odor	—
Appearance	—
Sampling Method	Bladder
Remarks	—

Constituents Sampled	Container Description	Number	Preservative
VOCs	40 mL VOA	3	HCl
1,4-Dioxane	"	"	"
Select Metals	100mL Nitric	1	Nitric
PFAS			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: BF

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

PAGE ___ OF ___

WELL : MW-12-01 PROJ #: B0064479.2018

DATE : 05/09/18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1000 [illegible]	17.7	1.61	1.39	6.2	0.60	7.86	82.1	150	[illegible] 20.6	72.56
1005 [illegible]	17.9	1.61	1.40	4.4	0.40	7.99	71.0	|	12.7	72.56
1010	17.8	1.62	1.40	3.8	0.35	7.99	64.5	|	13.6	72.56
1015	18.6	1.62	1.42	2.3	0.23	7.90	45.6	|	8.71	72.56
1020	18.6	1.62	1.42	2.3	0.22	7.90	44.7	|	8.41	72.56
1025	18.7	1.62	1.43	2.2	0.21	7.89	42.9	|	8.95	72.56
1030	18.5	1.63	1.42	2.2	0.23	7.89	42.2	|	9.10	72.56
1035	18.4	1.63	1.42	2.3	0.23	7.89	41.5	|	8.79	72.56

ARCADIS

Water Sampling Log

Project	RACER Lansing	Project No.	B0064479.2018	Page	of
Site Location	Lansing, MI			Date	5/9/18
Site/Well No.	MW-12-07	Replicate No.	—	Code No.	—
Weather	Sun 65°	Sampling Time:	Begin 1000	End	1035

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	111.15
Depth to Water (ft bmp)	72.46
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	38.69
Casing Diameter/Type	2"
Gallons in Well	6.19
Gallons Pumped/Bailed Prior to Sampling	~2.0
Sample Pump Intake Setting (ft bmp)	105'
Purge Time	begin 1000 end 1035
Pumping Rate (ml/min)	150
Evacuation Method	

Field Parameters

Temperature (°C)	18.4
SpC (mS/cm)	1.63
CND (mS/cm)	1.42
Dissolved Oxygen (%)	2.3
Dissolved Oxygen (mg/L)	0.23
pH (s.u.)	7.89
ORP (mV)	41.5
Turbidity (NTU)	8.79
Color	—
Odor	—
Appearance	—
Sampling Method	Bladder
Remarks	✓

Constituents Sampled	Container Description	Number	Preservative
VOCs	40 mL VOA	3	HCl
1,4-Dioxane	—	✓	✓
Select Metals			
PFAS			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel BF

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

PAGE ___ OF ___

WELL : MW-16-76 PROJ #: B0064479.2018

DATE : 05/08/18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
0845	14.2	2.09	1.86	17.7	1.81	7.02	140.0	150	17.8	66.13
0850	14.5	2.07	1.66	16.2	1.63	7.08	132.6	|	16.6	66.24
0855	15.4	2.06	1.70	19.5	1.88	7.11	124.2	|	13.5	66.18
0900	17.3	2.09	1.78	18.2	1.76	7.18	110.7	|	10.4	66.12
0905	17.5	2.08	1.78	18.2	1.76	7.18	109.1	|	9.15	66.15
0910	17.8	2.08	1.79	18.9	1.78	7.18	106.1	|	9.51	66.15
0915	16.9	2.11	1.76	18.4	1.78	7.18	104.8	|	9.35	66.18
Total Depth of Well:		82.10								
Depth To Water Before Purging:			64.42							
Depth To Water After Purging:			66.18							

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page ___ of ___

Site Location: Lansing, MI | Date: 5/9

Site/Well No.: MW-16-76 | Replicate No.: ~ | Code No.: ~

Weather: sun 65° | Sampling Time: Begin 0845 End 0915

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	82.10
Depth to Water (ft bmp)	64.42
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	17.68
Casing Diameter/Type	2"
Gallons in Well	2.83
Gallons Pumped/Bailed Prior to Sampling	~1.5
Sample Pump Intake Setting (ft bmp)	80'
Purge Time	begin 0845 end 0915
Pumping Rate (ml/min)	150
Evacuation Method	

Field Parameters

Temperature (°C)	16.9
SpC (mS/cm)	2.11
CND (mS/cm)	1.76
Dissolved Oxygen (%)	18.4
Dissolved Oxygen (mg/L)	1.78
pH (s.u.)	7.18
ORP (mV)	104.8
Turbidity (NTU)	9.35
Color	—
Odor	~
Appearance	~
Sampling Method	Bladder
Remarks	

Constituents Sampled	Container Description	Number	Preservative
VOCs			
1,4-Dioxane	40 mL VOA	3	HCl
Select Metals			
PFAS			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: BF

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

PAGE ___ OF ___

WELL : MW-17-87

PROJ #: B0064479.2018

DATE : 5/9/19

LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1540	19.7	2.66	2.39	2.02	1.32	9.30	97.0	150	7.47	69.55
1545	19.4	2.67	2.39	9.3	0.83	9.31	97.3		3.26	69.55
1550	19.2	2.68	2.38	4.8	0.45	9.33	97.7		3.66	69.55
1555	18.8	2.67	2.38	3.5	0.31	9.34	96.9		3.51	69.55
1600	18.3	2.68	2.39	3.4	0.29	9.34	98.3		3.25	69.55
1605	18.2	2.67	2.33	3.2	0.28	9.34	98.3		3.29	69.55
Total Depth of Well:		114								
Depth To Water Before Purging:			69.00							
Depth To Water After Purging:			69.55							

ARCADIS

Water Sampling Log

Project	RACER Lansing	Project No.	B0064479.2018	Page	___ of ___
Site Location	Lansing, MI			Date	5/9/18
Site/Well No.	MW-17-87	Replicate No.	—	Code No.	—
Weather	overcast 65°	Sampling Time: Begin	1540	End	1605

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	114.0
Depth to Water (ft bmp)	69.00
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	45'
Casing Diameter/Type	2"
Gallons in Well	7.2
Gallons Pumped/Bailed Prior to Sampling	~2
Sample Pump Intake Setting (ft bmp)	110'
Purge Time	begin 1540 end 1605
Pumping Rate (ml/min)	150 —
Evacuation Method	Bladder

Field Parameters

Temperature (°C)	18.2
SpC (mS/cm)	2.67
CND (mS/cm)	2.33
Dissolved Oxygen (%)	3.2
Dissolved Oxygen (mg/L)	0.28
pH (s.u.)	9.34
ORP (mV)	98.3
Turbidity (NTU)	3.29
Color	—
Odor	—
Appearance	—
Sampling Method	Bladder
Remarks	

Constituents Sampled	Container Description	Number	Preservative
VOCs	40 mL VOA	3	HCl
1,4-Dioxane	"	"	"
Select Metals			
PFAS			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel BC

Well Casing Volumes

Gal./Ft.				
0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

PAGE ___ OF ___

WELL : AS-16-01 PROJ #: B0064479.2018

DATE : 5/10/18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1055	15.6	0.97	0.79	100.7	9.96	6.65	150.9	150	23.4	60.95
1100	16.0	0.96	0.79	71.5	6.95	6.79	116.2		22.1	61.66
1105	16.7	0.95	0.80	68.4	6.60	6.82	111.2		26.8	61.95
1110	16.4	0.96	0.80	63.6	6.39	6.74	114.1		24.9	62.23
1115	16.2	0.97	0.80	64.0	6.26	6.68	117.6		25.0	62.91
1120	16.2	0.96	0.80	61.2	5.94	6.66	118.6		21.3	62.45
1125	16.2	0.97	0.80	58.9	5.69	6.64	119.5		24.70	62.36
1130	16.9	1.20 DUP	0.85	57.4	5.42	6.56	120.9		20.9	62.40
1135	16.4	1.03	0.86	56.7	5.38	6.50	126.8		19.1	62.40
1140	16.3	1.04	0.87	55.1	5.39	6.49	127.6		18.2	62.40
1145	16.1	1.06	0.88	51.3	4.92	6.49	129.9		17.5	62.38
1150	16.0	1.07	0.89	51.6	4.99	6.49	130.0		19.5	62.41
Total Depth of Well:		75.35								
Depth To Water Before Purging:			59.42							
Depth To Water After Purging:			62.41							

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page: ___ of ___

Site Location: Lansing, MI | Date: 5/11/18

Site/Well No.: AS-16-01 | Replicate No.: — | Code No.: —

Weather: Overcast 60° | Sampling Time: Begin 1055 End 1150

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	75.35
Depth to Water (ft bmp)	59.42
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	15.93
Casing Diameter/Type	2"
Gallons in Well	2.5458
Gallons Pumped/Bailed Prior to Sampling	~2.5
Sample Pump Intake Setting (ft bmp)	70'
Purge Time	begin 1055 end 1150
Pumping Rate (ml/min)	150
Evacuation Method	

Field Parameters

Temperature (°C)	16.0
SpC (mS/cm)	1.07
CND (mS/cm)	0.89
Dissolved Oxygen (%)	51.6
Dissolved Oxygen (mg/L)	4.99
pH (s.u.)	6.49
ORP (mV)	130.0
Turbidity (NTU)	19.5
Color	—
Odor	—
Appearance	—
Sampling Method	Bladder
Remarks	—

Constituents Sampled	Container Description	Number	Preservative
VOCs			
1,4-Dioxane	40 mL VOA	3	HCl
Select Metals			
PFAS			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: BF

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

PAGE ___ OF ___

WELL : TW-16-01 PROJ #: B0064479.2018

DATE : 5/10/18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1305	16.6	2.19	1.84	45.0	4.18	6.90	133.8	150	7.85	61.40
1310	16.1	2.21	1.84	10.9	1.05	6.87	122.0	|	6.93	61.59
1315	16.3	2.22	1.85	7.8	0.82	6.93	114.4	|	6.51	61.95
1320	16.1	2.26	1.85	7.5	0.79	6.93	113.5	|	6.40	62.10
1325	16.3	2.22	1.85	7.8	0.76	6.92	113.0	|	6.37	62.21
1330	16.2	2.23	1.85	7.5	0.75	6.92	114.0	|	6.05	62.32
Total Depth of Well:		76.01								
Depth To Water Before Purging:			60.65							
Depth To Water After Purging:			62.32							

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page ___ of ___

Site Location: Lansing, MI (Dup-03) | Date: 5/10/18

Site/Well No.: TW-16-01 | Replicate No.: – | Code No.: –

Weather: overcast 65° | Sampling Time: Begin 1305 End 1330

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	76.01
Depth to Water (ft bmp)	60.65
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	15.36
Casing Diameter/Type	2"
Gallons in Well	2.457
Gallons Pumped/Bailed Prior to Sampling	N2
Sample Pump Intake Setting (ft bmp)	71'
Purge Time	begin 1305 end 1330
Pumping Rate (ml/min)	150
Evacuation Method	

Field Parameters

Temperature (°C)	16.2
SpC (mS/cm)	2.23
CND (mS/cm)	1.85
Dissolved Oxygen (%)	7.5
Dissolved Oxygen (mg/L)	0.75
pH (s.u.)	6.92
ORP (mV)	119.0
Turbidity (NTU)	6.05
Color	–
Odor	–
Appearance	–
Sampling Method	Bladder
Remarks	None

Constituents Sampled	Container Description	Number	Preservative
VOCs			
1,4-Dioxane	40 mL VOA	3	HCl
Select Metals			
PFAS			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: BF

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

PAGE ___ OF ___

WELL : MW-02(2) PROJ #: B0064479.2018

DATE : 5/10/18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1400	11.8	0.75	0.56	40.0	4.55	7.06	112.8	150	4.17	10.60
1405	13.4	0.78	0.61	29.8	3.04	6.96	117.0		3.95	10.55
1410	13.5	0.81	0.64	26.8	2.71	6.95	117.9		2.53	10.55
1415	13.6	0.95	0.75	20.5	2.07	6.99	115.4		3.15	10.55
1420	13.6	0.95	0.83	19.5	2.00	6.99	114.9		3.47	10.55
1425	13.6	1.06	0.83	19.3	1.99	6.99	115.1		3.03	10.60
1430	13.5	1.07	0.84	18.6	1.97	6.99	115.4		2.91	10.65
Total Depth of Well:		21.15								
Depth To Water Before Purging:			8.60							
Depth To Water After Purging:			10.65							

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page ___ of ___

Site Location: Lansing, MI | Date: 5/10/18

Site/Well No.: MW-02(S) | Replicate No.: — | Code No.: —

Weather: overcast 65° | Sampling Time: Begin 1400 End 1430

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	21.15
Depth to Water (ft bmp)	8.60
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	12.55
Casing Diameter/Type	2"
Gallons in Well	2.008
Gallons Pumped/Bailed Prior to Sampling	~2.0
Sample Pump Intake Setting (ft bmp)	20'
Purge Time	begin 1400 end 1430
Pumping Rate (ml/min)	150
Evacuation Method	

Field Parameters

Temperature (°C)	13.5
SpC (mS/cm)	1.07
CND (mS/cm)	0.84
Dissolved Oxygen (%)	18.6
Dissolved Oxygen (mg/L)	1.97
pH (s.u.)	6.99
ORP (mV)	115.4
Turbidity (NTU)	2.91
Color	—
Odor	—
Appearance	—
Sampling Method	Bladder
Remarks	—

Constituents Sampled	Container Description	Number	Preservative
VOCs	40 mL VOA	3	HCl
1,4-Dioxane			
Select Metals			
PFAS			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: BF

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

PAGE ___ OF ___

WELL : MW-03(2) PROJ #: B0064479.2018

DATE : 5/10/18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1520	13.7	6.04	4.65	8.0	0.80	6.76	144.3	150	7.59	8.19
1525	12.6	6.47	4.93	4.9	0.49	6.81	142.0	|	4.19	8.15
1530	12.5	6.60	5.02	3.3	0.35	6.86	139.5	|	4.15	8.15
1535	12.5	6.64	5.05	2.5	0.28	6.88	137.7	|	5.05	8.15
1540	12.4	6.63	5.04	1.5	0.16	6.90	135.9	|	4.10	8.15
1545	12.6	6.47	4.94	0.7	0.12	6.83	136.7	|	1.15	8.15
1550	12.5	6.41	4.88	1.0	0.12	6.80	137.5	|	1.27	8.14
1555	12.4	6.32	4.79	1.2	0.07	6.76	139.5	|	1.05	8.15
1600	12.6	6.22	4.76	1.1	0.11	6.73	140.2	|	1.06	8.15
1605	12.6	6.19	4.73	0.5	0.05	6.73	139.9	|	1.10	8.15
1610	12.5	6.18	4.73	1.1	0.11	6.73	140.0	|	1.21	8.15
1615	12.6	6.17	4.71	1.0	0.10	6.72	140.0	|	1.15	8.15
1620	12.5	6.16	4.70	1.1	0.11	6.72	139.7	|	1.05	8.15
Total Depth of Well:		19.10								
Depth To Water Before Purging:			8.03							
Depth To Water After Purging:			8.15							

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page ____ of ____

Site Location: Lansing, MI | Date: 5/10/18

Site/Well No.: MW-03(2) | Replicate No.: — | Code No.: —

Weather: Sun 65° | Sampling Time: Begin 1520 End 1620

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	19.10
Depth to Water (ft bmp)	8.03
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	11.07
Casing Diameter/Type	2"
Gallons in Well	1.7712
Gallons Pumped/Bailed Prior to Sampling	~2.5
Sample Pump Intake Setting (ft bmp)	17'
Purge Time	begin 1520 end 1620
Pumping Rate (ml/min)	150
Evacuation Method	

Field Parameters

Temperature (°C)	12.5
SpC (mS/cm)	16.16
CND (mS/cm)	4.70
Dissolved Oxygen (%)	1.1
Dissolved Oxygen (mg/L)	0.11
pH (s.u.)	6.72
ORP (mV)	134.7
Turbidity (NTU)	1.05
Color	—
Odor	—
Appearance	—
Sampling Method	Bladder
Remarks	—

Constituents Sampled	Container Description	Number	Preservative
VOCs	40 mL VOA	3	HCl
1,4-Dioxane			
Select Metals	100 mL Poly	1	Nitric
PFAS			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: BF

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

PAGE ___ OF ___

WELL : MW-13-51 PROJ #: B0064479.2018

DATE : MW-13-51 05/10/18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
0925	15.0	1.56	1.26	95.8	9.52	6.93	143.7	150	10.3	71.77
0930	15.2	1.53	1.25	23.4	2.36	6.98	108.3	|	9.41	71.69
0935	15.1	1.52	1.24	16.9	1.67	6.99	98.1	|	9.02	71.69
0940	15.4	1.52	1.24	16.7	1.67	6.99	97.0	|	8.75	71.69
0945	15.3	1.52	1.24	16.3	1.66	6.99	96.5	|	8.54	71.69
0950	15.3	1.52	1.24	15.7	1.58	6.98	96.0	|	7.75	71.69
0955	15.6	1.52	1.25	15.0	1.50	6.98	13.5	|	7.31	71.69
Total Depth of Well:		40.50								
Depth To Water Before Purging:			71.61							
Depth To Water After Purging:			71.69							

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page ___ of ___

Site Location: Lansing, MI | Date: 5/10/19

Site/Well No.: MW-13-37 | Replicate No.: — | Code No.: F

Weather: OVERCAST 60° | Sampling Time: Begin 0925 End 0955

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	90.50
Depth to Water (ft bmp)	71.61
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	18.89
Casing Diameter/Type	2"
Gallons in Well	3.0224
Gallons Pumped/Bailed Prior to Sampling	~1.5
Sample Pump Intake Setting (ft bmp)	85.0
Purge Time	begin 0925 end 0955
Pumping Rate (ml/min)	150
Evacuation Method	

Field Parameters

Temperature (°C)	15.6
SpC (mS/cm)	1.52
CND (mS/cm)	1.25
Dissolved Oxygen (%)	15.0
Dissolved Oxygen (mg/L)	1.5
pH (s.u.)	6.98
ORP (mV)	43.5
Turbidity (NTU)	7.31
Color	—
Odor	—
Appearance	—
Sampling Method	Bladder
Remarks	—

Constituents Sampled	Container Description	Number	Preservative
VOCs			
1,4-Dioxane	40 mL VOA	3	HCl
Select Metals			
PFAS			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: BF

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

PAGE ___ OF ___

WELL : MW-12-17 PROJ #: B0064479.2018

DATE : 5/11/18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
0940	10.0	0.541	0.423	39.3	4.40	7.30	145.5	150	5.20	6.75
0945	10.1	0.598	0.427	28.0	3.13	7.35	137.2		5.01	6.75
0950	10.0	0.593	0.423	25.0	2.89	7.37	133.2		4.77	6.75
0955	9.5	0.597	0.402	23.2	2.07	7.41	122.9		4.38	6.75
1000	9.2	0.563	0.393	22.2	2.58	7.39	120.1		5.91	6.75
1005	9.3	0.557	0.383	22.1	2.53	7.42	118.9		5.50	6.75
1010	9.5	0.544	0.383	21.4	2.41	7.43	115.5		4.98	6.75
1015	9.2	0.539	0.377	20.9	2.39	7.44	114.4		4.60	6.75
1020	9.4	0.535	0.377	20.9	2.75	7.44	113.8		4.47	6.75
Total Depth of Well:		14.00								
Depth To Water Before Purging:			6.70							
Depth To Water After Purging:			6.75							

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page ___ of ___

Site Location: Lansing, MI | Date: 5/11/18

Site/Well No.: MW-12-17 | Replicate No.: — | Code No.: —

Weather: rain 45° | Sampling Time: Begin 0940 End 1020

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	14.00
Depth to Water (ft bmp)	6.70
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	7.3
Casing Diameter/Type	2"
Gallons in Well	1.168
Gallons Pumped/Bailed Prior to Sampling	~1.5
Sample Pump Intake Setting (ft bmp)	* None 13.0
Purge Time	begin 0940 end 1020
Pumping Rate (ml/min)	150
Evacuation Method	Bladder

Field Parameters

Temperature (°C)	9.4
SpC (mS/cm)	0.535
CND (mS/cm)	0.377
Dissolved Oxygen (%)	20.9
Dissolved Oxygen (mg/L)	2.35
pH (s.u.)	7.44
ORP (mV)	113.8
Turbidity (NTU)	4.47
Color	—
Odor	—
Appearance	—
Sampling Method	Bladder
Remarks	—

Constituents Sampled	Container Description	Number	Preservative
VOCs	40 mL VOA	3	HCl
1,4-Dioxane			
Select Metals			
PFAS			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: BF

Well Casing Volumes

Gal./Ft.				
0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

PAGE ___ OF ___

WELL : AS-16-02 PROJ #: B0064479.2018

DATE : 5/11/18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1140	10.0	2.54	1.81	9.4	1.05	6.69	156.9	150	13.1	61.50
1145	7.4	2.56	1.70	11.5	1.39	6.76	160.7		7.59	62.15
1150	7.4	2.55	1.69	11.3	1.34	6.77	161.5		7.13	62.10
1155	7.4	2.55	1.69	11.7	1.40	6.77	161.6		7.07	62.15
1200	7.4	2.55	1.69	11.9	1.41	6.77	161.9		6.88	62.15
1205	7.4	2.55	1.69	11.9	1.40	6.77	162.3		6.45	62.15
Total Depth of Well:		76.10								
Depth To Water Before Purging:			60.65							
Depth To Water After Purging:			62.15							

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page ____ of ____

Site Location: Lansing, MI | Date: 5/11/18

Site/Well No.: AS-16-02 | Replicate No.: — | Code No.: —

Weather: Overcast 45° | Sampling Time: Begin 1140 End 1205

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	76.10
Depth to Water (ft bmp)	60.65
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	15.45
Casing Diameter/Type	2"
Gallons in Well	2.472
Gallons Pumped/Bailed Prior to Sampling	~~NM~~ N1.5
Sample Pump Intake Setting (ft bmp)	72'
Purge Time	begin 1140 end 1205
Pumping Rate (ml/min)	150
Evacuation Method	Bladder

Field Parameters

Temperature (°C)	7.4
SpC (mS/cm)	2.55
CND (mS/cm)	1.69
Dissolved Oxygen (%)	11.9
Dissolved Oxygen (mg/L)	1.40
pH (s.u.)	6.79
ORP (mV)	162.3
Turbidity (NTU)	6.95
Color	—
Odor	—
Appearance	—
Sampling Method	Bladder
Remarks	—

Constituents Sampled	Container Description	Number	Preservative
VOCs	~~40 mL VOA~~	~~3~~	~~HCl~~
1,4-Dioxane	40 mL VOA - ~~40 mL VOA~~	~~3~~ 3	~~HCl~~ HCl
Select Metals			
PFAS			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: BE

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

PAGE ___ OF ___

WELL : mw-13-46 PROJ #: B0064479.2018

DATE : 5/11/18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1330	5.2	2.34	1.46	32.8	4.06	6.92	151.1	150	21.0	61.55
1335	5.1	2.35	1.46	23.6	2.90	6.91	144.9		19.7	61.55
1340	8.6	2.28	1.57	33.3	3.75	6.86	144.5		10.6	61.55
1345	8.4	2.25	1.54	6.6	0.73	6.89	138.8		9.31	61.55
1350	9.0	2.20	1.53	8.0	0.94	6.91	135.9		9.17	61.50
1355	8.4	2.19	1.52	10.4	1.15	6.92	134.4		9.09	61.50
1400	9.0	2.17	1.51	13.7	1.40	6.93	132.8		9.32	61.50
1405	9.1	2.17	1.51	14.0	1.45	6.94	132.3		8.70	61.50
1410	9.0	2.17	1.51	15.0	1.53	6.94	132.0		8.84	61.50
~~1415~~										
~~1420~~										
~~1425~~										
~~1430~~										
Total Depth of Well:		74.63								
Depth To Water Before Purging:			61.45							
Depth To Water After Purging:			61.50							

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page ___ of ___

Site Location: Lansing, MI | Date: 5/11/18

Site/Well No.: MW-13-96 | Replicate No.: ~ | Code No.: ~

Weather: rain 45° | Sampling Time: Begin 1330 End 1480

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	74.63
Depth to Water (ft bmp)	61.45
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	13.18
Casing Diameter/Type	2"
Gallons in Well	2.10
Gallons Pumped/Bailed Prior to Sampling	~1.5
Sample Pump Intake Setting (ft bmp)	70'
Purge Time	begin 1330 end 1480
Pumping Rate (ml/min)	150
Evacuation Method	Bladder

Field Parameters

Temperature (°C)	9.0
SpC (mS/cm)	2.17
CND (mS/cm)	1.51
Dissolved Oxygen (%)	15.0
Dissolved Oxygen (mg/L)	1.53
pH (s.u.)	6.94
ORP (mV)	132.0
Turbidity (NTU)	8.84
Color	-
Odor	-
Appearance	-
Sampling Method	Bladder
Remarks	-

Constituents Sampled	Container Description	Number	Preservative
VOCs	40 mL VOA	3	HCl
1,4-Dioxane	40 mL VOA	3	HCl
Select Metals			
PFAS			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: BF

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

PAGE ___ OF ___

WELL : MW-13-47 PROJ #: B0064479.2018

DATE : 5/14/18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1510	16.3	1.58	1.31	12.7	1.24	7.04	189.9	150	10.5	60.80
1515	16.1	1.57	1.30	7.6	0.74	7.00	156.7		11.4	60.80
1520	15.6	1.61	1.33	1.8	0.17	6.96	-34.3		9.02	60.90
1525	15.7	1.63	1.34	1.7	0.17	6.96	-76.4		3.85	60.95
1530	15.5	1.65	1.35	1.2	0.12	6.96	-91.0		3.59	60.95
1535	15.5	1.65	1.35	1.4	0.14	6.95	-93.8		3.42	60.95
1540	15.4	1.66	1.37	1.5	0.16	6.94	-102.9		3.59	60.90
Total Depth of Well:		113.65								
Depth To Water Before Purging:			60.75							
Depth To Water After Purging:			60.90							

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page ____ of ____

Site Location: Lansing, MI | Date: 5/14/18

Site/Well No.: MW-13-47 | Replicate No.: – | Code No.: –

Weather: overcast 70° | Sampling Time: Begin 1510 End 1540

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	113.65
Depth to Water (ft bmp)	60.75
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	52.9
Casing Diameter/Type	2"
Gallons in Well	8.464
Gallons Pumped/Bailed Prior to Sampling	~2.0
Sample Pump Intake Setting (ft bmp)	110
Purge Time	begin 1510 end 1540
Pumping Rate (ml/min)	150
Evacuation Method	Bladder

Field Parameters

Temperature (°C)	15.4
SpC (mS/cm)	1.66
CND (mS/cm)	1.37
Dissolved Oxygen (%)	1.5
Dissolved Oxygen (mg/L)	0.16
pH (s.u.)	6.04
ORP (mV)	-100.0
Turbidity (NTU)	3.59
Color	–
Odor	–
Appearance	–
Sampling Method	Bladder
Remarks	–

Constituents Sampled	Container Description	Number	Preservative
VOCs	40 mL VOA	3	HCl
1,4-Dioxane	"	"	"
Select Metals			
PFAS			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: BF

Well Casing Volumes

Gal./Ft.				
0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

PAGE ___ OF ___

WELL : MW-91-6 PROJ #: B0064479.2018

DATE : 5/14/18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
0950	14.7	1.41	1.14	85.7	8.52	6.84	196.7	150	23.3	58.10
0955	14.7	1.41	1.13	87.0	8.67	6.77	187.4		18.5	58.10
1000	14.9	1.41	1.13	85.9	8.58	6.71	185.1		13.2	58.10
1005	15.4	1.40	1.14	84.7	8.32	6.67	184.5		8.80	58.10
1010	15.6	1.41	1.15	86.2	8.53	6.67	181.2		8.58	58.10
1015	15.7	1.41	1.16	85.0	8.36	6.79	1766		7.35	58.10
1020	14.3	1.42	1.13	84.4	8.84	6.82	169.0		7.22	58.10
1025	14.2	1.42	1.13	75.9	7.80	6.65	170.6		6.51	58.10
1030	14.3	1.43	1.14	68.2	6.91	6.45	171.6		6.03	58.10
1035	14.3	1.43	1.14	55.5	5.51	6.40	172.5		6.19	58.10
1040	14.4	1.44	1.15	52.0	4.98	6.39	174.6		6.27	58.10
1045	14.5	1.44	1.15	51.5	4.90	6.38	176.9		6.24	58.10
Total Depth of Well:		95.56								
Depth To Water Before Purging:			58.08							
Depth To Water After Purging:			58.10							

ARCADIS

Water Sampling Log

Project	RACER Lansing	Project No.	B0064479.2018	Page	___ of ___
Site Location	Lansing, MI			Date	5/17/18
Site/Well No.	MW-91-6	Replicate No.	—	Code No.	—
Weather	Overcast 70°	Sampling Time: Begin	0950	End	1045

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	95.56
Depth to Water (ft bmp)	58.08
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	37.48
Casing Diameter/Type	2"
Gallons in Well	5.99
Gallons Pumped/Bailed Prior to Sampling	~2.0
Sample Pump Intake Setting (ft bmp)	90'
Purge Time	begin 0950 end 1045
Pumping Rate (ml/min)	150
Evacuation Method	Bladder

Field Parameters

Temperature (°C)	14.5
SpC (mS/cm)	1.44
CND (mS/cm)	1.15
Dissolved Oxygen (%)	51.5
Dissolved Oxygen (mg/L)	4.90
pH (s.u.)	6.38
ORP (mV)	176.9
Turbidity (NTU)	6.24
Color	—
Odor	—
Appearance	—
Sampling Method	Bladder
Remarks	—

Constituents Sampled	Container Description	Number	Preservative
VOCs	40 mL VOA	3	HCl
1,4-Dioxane	〃	〃	〃
Select Metals			
PFAS			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel BF

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

PAGE ___ OF ___

WELL : MW-13-48 PROJ #: B0064479.2018

DATE : 05-14-18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1105	15.9	2.21	1.82	17.2	1.63	6.80	106.8	150	6.68	59.82
1110	15.7	2.27	1.87	4.1	0.36	6.71	93.0		6.52	59.81
1115	15.8	2.31	1.90	3.1	0.31	6.66	84.8		6.39	59.81
1120	15.5	2.35	1.93	2.4	0.24	6.58	76.7		6.30	59.81
1125	15.4	2.39	1.96	2.2	0.23	6.51	74.5		6.15	59.81
1130	15.4	2.40	1.97	2.2	0.20	6.50	74.1		6.07	59.81
1135	15.7	2.41	1.98	2.4	0.24	6.50	73.8		5.91	59.81
Total Depth of Well:		83.07								
Depth To Water Before Purging:		59.81								
Depth To Water After Purging:		59.81								

ARCADIS

Water Sampling Log

Project	RACER Lansing	Project No.	B0064479.2018	Page	___ of ___
Site Location	Lansing, MI			Date	5/14/18
Site/Well No.	MW-13-48	Replicate No.	—	Code No.	—
Weather	Overcast 70°	Sampling Time: Begin	1105	End	1135

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	73.07
Depth to Water (ft bmp)	59.81
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	13.26
Casing Diameter/Type	2"
Gallons in Well	2.12
Gallons Pumped/Bailed Prior to Sampling	~2
Sample Pump Intake Setting (ft bmp)	70'
Purge Time	begin 1105 end 1135
Pumping Rate (ml/min)	150
Evacuation Method	

Field Parameters

Temperature (°C)	15.7
SpC (mS/cm)	2.41
CND (mS/cm)	1.98
Dissolved Oxygen (%)	2.4
Dissolved Oxygen (mg/L)	0.24
pH (s.u.)	6.50
ORP (mV)	73.8
Turbidity (NTU)	5.91
Color	—
Odor	—
Appearance	—
Sampling Method	Bladder
Remarks	—

Constituents Sampled	Container Description	Number	Preservative
VOCs			
1,4-Dioxane	40 mL VOA	3	HCl
Select Metals			
PFAS			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel BF

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

PAGE ___ OF ___

WELL : MW-13-34 PROJ #: B0064479.2018

DATE : 05-14-18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1255	18.8	1.84	1.63	76.4	7.12	3.81	218.9	150		
1300	YSI PH meter not working									
1305										
~~1310~~										
1405	18.3	1.72	1.50	46.0	4.35	6.96	200.4	150	6.80	61.50
1410	18.9	1.71	1.51	40.3	3.73	7.05	185.4	|	6.59	61.95
1415	18.9	1.71	1.51	40.0	3.67	7.05	184.9	|	6.32	61.97
1420	18.8	1.70	1.50	36.6	3.35	7.08	177.6	|	6.09	61.95
1425	19.4	1.69	1.51	37.6	3.42	7.08	176.5	|	6.05	61.95
1430	19.2	1.70	1.52	38.3	3.53	7.08	174.9	|	5.98	61.95
Total Depth of Well:		79.18								
Depth To Water Before Purging:			60.95							
Depth To Water After Purging:			61.95							

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page ___ of ___

Site Location: Lansing, MI | Date: 5/14/18

Site/Well No.: MW-13-34 | Replicate No.: – | Code No.: –

Weather: Overcast 70° | Sampling Time: Begin 1405 End 1430

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	79.88
Depth to Water (ft bmp)	60.95
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	18.93
Casing Diameter/Type	2"
Gallons in Well	3-0285
Gallons Pumped/Bailed Prior to Sampling	~1.5
Sample Pump Intake Setting (ft bmp)	73
Purge Time	begin 1405 end 1430
Pumping Rate (ml/min)	150
Evacuation Method	Bladder

Field Parameters

Temperature (°C)	14.2
SpC (mS/cm)	1.70
CND (mS/cm)	1.52
Dissolved Oxygen (%)	38.3
Dissolved Oxygen (mg/L)	3.53
pH (s.u.)	7.08
ORP (mV)	174.9
Turbidity (NTU)	5.98
Color	–
Odor	–
Appearance	–
Sampling Method	Bladder
Remarks	–

Constituents Sampled	Container Description	Number	Preservative
VOCs			
1,4-Dioxane	40 mL VOA	3	HCl
Select Metals			
PFAS			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: BF

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

PAGE ___ OF ___

WELL : MW-13-26 PROJ #: B0064479.2018

DATE : 5/15/17 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
0905	14.5	0.76	0.61	53.9	5.37	6.85	62.4	150	4.58	64.60
0910	14.4	0.82	0.65	40.4	4.23	6.70	66.7		4.35	64.63
0915	14.6	1.13	0.82	17.3	1.73	6.55	70.9		4.21	64.65
0920	14.5	1.17	0.92	16.0	1.62	6.55	71.4		4.30	64.65
0925	14.5	1.29	1.03	13.0	1.21	6.53	63.3		4.21	64.65
0930	14.6	1.34	1.09	12.1	1.22	6.54	60.0		4.59	64.65
0935	14.7	1.37	1.13	12.2	1.23	6.55	57.5		4.63	64.65
Total Depth of Well:		75.00								
Depth To Water Before Purging:			64.40							
Depth To Water After Purging:			64.65							

ARCADIS

Water Sampling Log

Project	RACER Lansing	Project No.	B0064479.2018	Page	___ of ___
Site Location	Lansing, MI			Date	5/15/18
Site/Well No.	MW-13-26	Replicate No.	–	Code No.	–
Weather	Overcast 75°	Sampling Time: Begin	0925	End	0935

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	75.00
Depth to Water (ft bmp)	64.40
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	Needs 10.6
Casing Diameter/Type	2"
Gallons in Well	1.696
Gallons Pumped/Bailed Prior to Sampling	~1.5
Sample Pump Intake Setting (ft bmp)	71.00
Purge Time	begin 0925 end 0935
Pumping Rate (ml/min)	~150
Evacuation Method	

Field Parameters

Temperature (°C)	14.7
SpC (mS/cm)	1.37
CND (mS/cm)	1.13
Dissolved Oxygen (%)	12.2
Dissolved Oxygen (mg/L)	1.23
pH (s.u.)	6.55
ORP (mV)	57.5
Turbidity (NTU)	4.63
Color	–
Odor	–
Appearance	–
Sampling Method	Bladder
Remarks	–

Constituents Sampled	Container Description	Number	Preservative
VOCs			
1,4-Dioxane	40 mL VOA	3	HCl
Select Metals			
PFAS			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: BF

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

PAGE ___ OF ___

WELL : P2-SB-06 PROJ #: B0064479.2018

DATE : 5/15/18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1245	15.6	1.18	0.96	38.4	3.79	7.13	-38.5	170	12.5	18.70
1250	15.9	1.05	0.87	32.4	3.27	7.14	-33.9		10.9	18.75
1255	15.8	1.07	0.88	27.5	2.68	7.13	-43.8		9.60	18.70
1300	15.9	1.12	0.92	20.4	2.00	7.10	-53.6		9.51	18.70
1305	16.1	1.14	0.95	17.8	1.74	7.09	-53.6		9.35	18.70
1310	16.1	1.15	0.95	17.6	1.72	7.09	-53.7		9.17	18.70
1315	16.0	1.16	0.96	17.3	1.71	7.09	-53.9		9.21	18.70
Total Depth of Well:		33.62								
Depth To Water Before Purging:			17.94							
Depth To Water After Purging:			18.70							

ARCADIS

Water Sampling Log

Project	RACER Lansing	Project No.	B0064479.2018	Page	___ of ___
Site Location	Lansing, MI			Date	5/15
Site/Well No.	P2-SB-06	Replicate No.	—	Code No.	—
Weather	Sun 75°	Sampling Time: Begin	1245	End	1315

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	33.60
Depth to Water (ft bmp)	~~33.60~~ 17.94
Water-Level Elevation (ft)	NM
Water Column in Well (ft)	15.65
Casing Diameter/Type	2"
Gallons in Well	2.504
Gallons Pumped/Bailed Prior to Sampling	~1.5
Sample Pump Intake Setting (ft bmp)	29.5
Purge Time	begin 1245 end 1315
Pumping Rate (ml/min)	120 ~
Evacuation Method	Peri Pump

Field Parameters

Temperature (°C)	16.0
SpC (mS/cm)	1.16
CND (mS/cm)	0.96
Dissolved Oxygen (%)	17.3
Dissolved Oxygen (mg/L)	1.71
pH (s.u.)	7.09
ORP (mV)	-53.9
Turbidity (NTU)	9.21
Color	—
Odor	—
Appearance	—
Sampling Method	Peristaltic
Remarks	—

Constituents Sampled	Container Description	Number	Preservative
VOCs			
1,4-Dioxane	40mL VOA	3	HCl
Select Metals			
PFAS			

*If collecting both 1,4-dioxane and VOCs, lab only needs one set of VOAs

Sampling Personnel: BF

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

Water-Level Measurement Form

Project No.: B0064479.2018
Site Location: **RACER Lansing Plant 2**
Instrument Model: Geotech water level meter Mini RAE 3000 PID

Field Personnel: Jake Pisarkiewicz
Date: 5-7-18
Instrument Serial No.: WLM - 5889
PID - SN: 592-908766

Well Number	Time	W.L. Measurements			Comments		
		TD (feet)	DTW (feet)	DTP (feet)	Well Locked	Lock Condition	PID Reading & Other Comments
AS-16-01	1135	75.35	60.76	-	yes	Good	0.0
AS-16-02	1130	76.10	62.03	-	yes	Good	0.0
MW-02(2)	1345	21.15	11.65	-	yes	Good	0.0
MW-03(2)	1350	19.10	9.40	-	yes	Good	0.0
MW-12-01	10.33	111.15	72.85	-	yes	Good	0.0
MW-12-02	1210	93.30	63.01	-	yes	Good	0.0
MW-12-05R	1145	112	71.85	-	yes	Good	0.0
MW-12-06	1010	107	71.48	-	yes	Good	0.0
MW-12-07	10.27	17.80	7.70	-	yes	Good	0.0
MW-12-09	1110	21.55	13.85	-	yes	Good	0.0
MW-12-17	13.55	14.00	6.52	-	yes	Good	0.0
MW-12-18	1455	34.73	23.39	-	yes	Good	0.0
MW-13-44	1100	119.0	72.73	-	yes	Good	0.0
MW-13-45	1050	78.35	67.71	-	yes	Good	0.0
MW-13-51	1640	90.50	71.61	-	yes	Good	0.0
MW-14-56	1105	78.95	67.55	-	yes	Good	0.0
MW-14-61	1020	77.50	69.54	-	yes	Good	0.0
MW-14-63	1215	76.80	63.47	-	yes	Good	0.0
MW-15-73	1120	81.00	69.66	-	yes	Good	0.2
MW-16-74	1007	73.68	67.42	-	yes	Good	0.0
MW-16-75	1020	74.03	62.05	-	yes	Good	0.0
MW-16-76	1037	82.10	62.58	-	yes	Good	0.0
MW-16-77	1011	74.07	62.32	-	yes	Good	0.0
MW-16-78	1005	76.20	66.00	-	yes	Good	0.0
MW-16-79	1001	75.69	67.87	-	yes	Good	0.0
MW-16-82	1155	77.20	67.80	-	yes	Good	0.0
MW-16-83	1130	79.00	69.80	-	yes	Good	145.5
MW-16-84	1030	81.20	70.30	-	yes	Good	0.0
MW-16-85	0950	81.90	71.33	-	NO	No Lock	0.0
MW-17-86	1000	81.40	68.57	-	yes	Good	0.0

W.L. Water Level
TD Total Depth
DTW Depth To Water
DTP Depth To Product

ARCADIS

Water-Level Measurement Form

Project No.: B0064479.2018
Site Location: **RACER Lansing Plant 2**
Instrument Model

Field Personnel: Jake Pisarkiewicz
Date: 5-7-18
Instrument Serial No.:

Well Number	Time	W.L. Measurements			Comments		
		TD (feet)	DTW (feet)	DTP (feet)	Well Locked	Lock Condition	Other Comments
MW-17-87	1135	114	69.98	-	yes	Good	0.0
P2-SB-03	1230	22.10	16.53	-	yes	Good	0.0
P2-SB-06	1410	33.60	18.62	-	yes	Good	0.0
P2-SB-20	1040	16.30	9.08	-	yes	Good	0.0
PW-14-01		33.6	18.36	-	yes	Good	0.0
PW-14-02	1105	85.00	67.79	-	yes	Good	0.0
TW-14-01							
TW-16-01	1400	76.10	61.76	-	yes	Good	0.0

W.L. Water Level
TD Total Depth
DTW Depth To Water
DTP Depth To Product

ARCADIS

Water-Level Measurement Form

Project No.: B0064479.2018
Site Location: **RACER Lansing Plant 6**
Instrument Model

Field Personnel: JSP / BF
Date: 5-7-18
Instrument Serial No.:

Well Number	Time	W.L. Measurements TD (feet)	DTW (feet)	DTP (feet)	Comments Well Locked	Lock Condition	PID Reading & Other Comments
MW-03-02	1535	39.25	22.04	-	yes	Good	0.0
MW-03-04							
MW-03-06	1540	40.55	36.23	-	yes	Good	0.0
MW-04-01(6)	1430	88.85	71.12	-	yes	Good	0.0
MW-04-04R	1515	111.08	76.90		/		0.0
MW-04-05(6)	1520	29.64	9.95	-			0.0
MW-04-06R	1525	77.95	106.18	-			0.0
MW-12-11	1550	16.80	3.15	-	yes	Good	0.0
MW-12-12	1540	17.20	7.26	-	yes	Good	0.0
MW-12-13	1520	25.40	10.23	-	yes	Good	0.0
MW-12-15	1605	22.65	19.76	-	yes	Good	0.0
MW-12-16	1600	32.10	23.05	-	yes	Good	0.0
MW-13-35	1545	29.50	23.80	-	yes	Good	0.0
MW-13-36R	1500	12.80	6.36	-	yes	Good	0.0
MW-13-50	1410	110	76.69	-	yes	Good	0.0
MW-13-52	1420	81.40	69.82	-	yes	Good	0.0
MW-13-53	1430	85.50	75.02	-	yes	Good	0.0
MW-14-66	1530	22.20	5.18	-	yes	Good	0.0
MW-14-67	1510	20.85	5.92	-	yes	Good	0.0
MWBP-10-UST5-6	1440	36.85	30.51	-	yes	Good	0.0
MWBP-11-UST1-4	1410	11.2	2.75	-	~~No~~	Good	0.0 J-Plug was out
MWBP-12-UST1-4	1405	11.25	9.11	-	yes	Good	0.0
MWBP-13A-UST1-4	1400	38.0	32.34	-	yes	Good	0.0
Storm Sewer							
P6-MH2-SW							

W.L. Water Level
TD Total Depth
DTW Depth To Water
DTP Depth To Product

ARCADIS

Water Sampling Log

Project	RACER Lansing	Project No.	B0064479.2018	Page	1 of 2
Site Location	2801 West Saginaw Street, Lansing Township, MI			Date	9/5/18
Site/Well No.	TW-14-02	Replicate No.	NA	Code No.	NA
Weather	80's clear	Sampling Time:	Begin 1325	End	1335

Evacuation Data

Measuring Point	TOC
MP Elevation (ft)	NA
Land Surface Elevation (ft)	NA
Sounded Well Depth (ft bmp)	74.60
Depth to Water (ft bmp)	~64.80
Water-Level Elevation (ft)	NA
Water Column in Well (ft)	9.8
Casing Diameter/Type	2" PVC
Gallons in Well	1.57
Gallons Pumped/Bailed Prior to Sampling	2.5
Sample Pump Intake Setting (ft bmp)	72.00
Purge Time	begin 1215 end 1335
Pumping Rate (ml/min)	110
Evacuation Method	Bladder pump

Field Parameters

Temperature (°C)	20.1
SpC (mS/cm)	2.91
CND (mS/cm)	2.64
Dissolved Oxygen (%)	82.0
Dissolved Oxygen (mg/L)	7.40
pH (s.u.)	7.27
ORP (mV)	113.2
Turbidity (NTU)	>1000
Color	None
Odor	None
Appearance	Turbid
Sampling Method	Low Flow
Remarks	AS-17-03 Running Prgm Sht 1045

Constituents Sampled	Container Description	Number	Preservative
PFAS	125 ml plastic	2	—
1,4-Dioxane	40 ml VOA	2	HCl
Prognam	40ml Vial	3	TSP
TKN & Total phosphorus	250 ml plastic	1	H_2SO_4
Nitrate	125 ml plastic	1	—

Sampling Personnel: DnA

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : TW-14-02 PROJ #: B0064479.2018

DATE : 9/5/18 LOC: RACER Lansing

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1220	18.3	2.87	2.51	85.0	7.88	6.91	133.0	175	>1000	~65.00
1225	18.1	2.86	2.48	92.4	8.58	7.22	122.5	175	>1000	~65.80
1230	18.4	2.84	2.48	91.1	8.48	7.30	125.7	175	>1000	~65.60
1235	18.5	2.84	2.49	92.2	8.58	7.30	125.2	175	>1000	~65.90
1240	20.8	2.85	2.68	87.1	7.57	7.28	123.9	110	>1000	~65.80
1245	20.2	2.88	2.64	91.1	8.23	7.24	123.5	110	>1000	~65.80
1250	19.8	2.85	2.57	90.3	8.14	7.31	121.1	110	>1000	~65.80
1255	20.5	2.87	2.62	88.6	7.96	7.32	121.2	110	>1000	~65.80
1300	20.0	2.86	2.58	87.6	7.91	7.31	119.2	110	>1000	~65.80
1305	19.9	2.88	2.59	87.2	7.90	7.30	117.0	110	>1000	~65.80
1310	19.8	2.88	2.59	87.9	7.96	7.31	116.2	110	>1000	~65.80
1315	20.1	2.90	2.63	84.9	7.63	7.28	115.8	110	>1000	~65.80
1320	20.1	2.90	2.63	82.0	7.39	7.26	115.0	110	>1000	~65.80
1325	20.1	2.91	2.64	82.0	7.40	7.27	113.2	110	>1000	~65.80
Total Depth of Well: 74.60										
Depth To Water Before Purging: ~64.80										
Depth To Water After Purging: ~65.80										

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page: 1 of 2

Site Location: 2801 West Saginaw Street, Lansing Township, MI | Date: 9/5/18

Site/Well No.: AS-16-01 | Replicate No.: NA | Code No.: NA

Weather: 80's Partly cloudy | Sampling Time: Begin ~~1405~~ 1505 End ~~1415~~ 1515

Evacuation Data

Measuring Point	TOC
MP Elevation (ft)	NA
Land Surface Elevation (ft)	NA
Sounded Well Depth (ft bmp)	75.25
Depth to Water (ft bmp)	60.40
Water-Level Elevation (ft)	NA
Water Column in Well (ft)	14.85
Casing Diameter/Type	2" PVC
Gallons in Well	~~14.85~~ 2.38
Gallons Pumped/Bailed Prior to Sampling	2
Sample Pump Intake Setting (ft bmp)	72.75
Purge Time	begin 1505 end 1515
Pumping Rate (ml/min)	100
Evacuation Method	B. pump

Field Parameters

Temperature (°C)	21.6
SpC (mS/cm)	0.85
CND (mS/cm)	0.79
Dissolved Oxygen (%)	54.7
Dissolved Oxygen (mg/L)	4.81
pH (s.u.)	6.58
ORP (mV)	80.3
Turbidity (NTU)	75.2
Color	None
Odor	None
Appearance	Slightly Turbid
Sampling Method	Low Flow
Remarks	AS-17-03 running program
	Start 1045

Constituents Sampled	Container Description	Number	Preservative
1,4-Dioxane	40ml VOA	2	HCl
Propane	40ml VOA	3	TSP
TKN, total phosphorus	250 ml plastic	1	H_2SO_4
Nitrate	125 ml plastic	1	—

Sampling Personnel: DMA

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : AS-16-01 PROJ #: B0064479.2018

DATE : 9/5/18 LOC: RACER Lansing

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1410	17.7	0.76	0.65	79.2	7.56	0.84	95.6	225	195	61.10
1415	17.2	0.77	0.66	60.8	5.82	6.81	98.5	225	210	61.55
1420	19.3	0.80	0.72	39.8	3.63	6.76	99.3	100	161	61.70
1425	21.0	0.81	0.75	33.0	2.92	6.73	98.9	100	122	61.70
1430	20.8	0.80	0.79	27.0	2.41	6.70	95.9	100	88.4	61.70
1435	20.9	0.87	0.80	24.7	2.20	6.69	91.5	100	79.2	61.70
1440	21.1	0.89	0.82	23.7	2.11	6.67	84.7	100	67.3	61.70
1445	21.1	0.89	0.83	23.6	2.10	6.67	82.2	100	56.1	61.70
1450	21.4	0.89	0.83	23.5	2.08	6.67	79.6	100	54.0	61.70
1455	21.6	0.89	0.83	27.6	2.43	6.65	78.2	100	56.1	61.70
1500	21.5	0.86	0.80	40.1	3.52	6.63	79.1	100	68.0	61.70
1505	21.6	0.85	0.79	54.7	4.81	6.58	80.8	100	75.2	61.70

Total Depth of Well: 75.25

Depth To Water Before Purging: 60.40

Depth To Water After Purging: 61.70

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page: 1 of 2

Site Location: 2801 West Saginaw Street, Lansing Township, MI | Date: 9/5/19

Site/Well No.: PW-14-01 | Replicate No.: NA | Code No.: NA

Weather: 80's & partly cloudy | Sampling Time: Begin 1615 End 1625

Evacuation Data

Measuring Point	TOC
MP Elevation (ft)	NA
Land Surface Elevation (ft)	NA
Sounded Well Depth (ft bmp)	81.85
Depth to Water (ft bmp)	63.38
Water-Level Elevation (ft)	NA
Water Column in Well (ft)	18.47
Casing Diameter/Type	6" PVC
Gallons in Well	~ 70.48
Gallons Pumped/Bailed Prior to Sampling	1.5
Sample Pump Intake Setting (ft bmp)	79.25
Purge Time	begin 1530 end 1625
Pumping Rate (ml/min)	100
Evacuation Method	B. Pump

Field Parameters

Temperature (°C)	22.1
SpC (mS/cm)	1.94
CND (mS/cm)	1.83
Dissolved Oxygen (%)	3.6
Dissolved Oxygen (mg/L)	0.32
pH (s.u.)	6.89
ORP (mV)	-48.5
Turbidity (NTU)	4.14
Color	None
Odor	None
Appearance	Clear
Sampling Method	Low Flow
Remarks	AS-17-03 Purging prgm Sm 1045

Constituents Sampled	Container Description	Number	Preservative
1,4-Dioxane	40 ml VOA	2	HCl
Propane	40 ml VOA	3	TSP
TKN: Total phosphorus	250 ml plastic	1	H_2SO_4
Nitrate	125 ml plastic	1	—

Sampling Personnel: DMT

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-14-01 PROJ #: B0064479.2018

DATE : 9/5/18 LOC: RACER Lansing

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1535	21.4	1.98	1.85	11.3	0.98	6.81	47.4	190	141	63.38
1540	20.1	1.95	1.77	3.2	0.29	6.86	48.1	196	20.5	63.60
1545	19.2	1.95	1.73	3.1	0.28	6.88	50.5	190	14.5	63.78
1550	21.7	1.93	1.81	3.1	0.27	6.89	51.5	100	8.51	63.80
1555	21.9	1.92	2.01	3.5	0.28	6.87	50.0	100	6.36	63.85
1600	22.0	1.96	1.84	3.8	0.33	6.88	50.2	100	6.08	63.90
1605	21.6	1.95	1.83	3.6	0.32	6.84	49.8	100	5.11	63.95
1610	22.1	1.94	1.83	3.5	0.31	6.84	49.1	100	4.67	64.00
1615	22.1	1.94	1.83	3.6	0.32	6.84	48.5	100	4.14	64.05

Total Depth of Well: 81.85

Depth To Water Before Purging: 63.38

Depth To Water After Purging: 64.05

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page: 1 of 2

Site Location: 2801 West Saginaw Street, Lansing Township, MI | Date: 8/5/18

Site/Well No.: MW-15-72 | Replicate No.: NA | Code No.: NA

Weather: 80's partly cloudy | Sampling Time: Begin 1740 End 1745

Evacuation Data

Measuring Point	TOC
MP Elevation (ft)	NA
Land Surface Elevation (ft)	NA
Sounded Well Depth (ft bmp)	70.37
Depth to Water (ft bmp)	58.73
Water-Level Elevation (ft)	NA
Water Column in Well (ft)	11.64
Casing Diameter/Type	2" PVC
Gallons in Well	1.86
Gallons Pumped/Bailed Prior to Sampling	2
Sample Pump Intake Setting (ft bmp)	77.75
Purge Time	begin 1655 end 1745
Pumping Rate (ml/min)	175
Evacuation Method	B. Pump

Field Parameters

Temperature (°C)	18.2
SpC (mS/cm)	1.45
CND (mS/cm)	1.26
Dissolved Oxygen (%)	0.6
Dissolved Oxygen (mg/L)	0.06
pH (s.u.)	6.86
ORP (mV)	-29.6
Turbidity (NTU)	52.9
Color	None
Odor	None
Appearance	Slightly Turbid
Sampling Method	Low Flow
Remarks	-

Constituents Sampled	Container Description	Number	Preservative
1,4-Dioxane	40ml VOA	2	HCl
Propane	40ml VOA	3	TSP

Sampling Personnel: DMR

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-85-72 PROJ #: B0064479.2018

DATE : 1/5/18 LOC: RACER Lansing

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1700	17.8	1.22	1.05	5.0	0.48	6.78	8.0	250	482	59.10
1705	17.4	1.23	1.05	2.0	0.19	6.82	-5.7	250	195	59.45
1710	18.4	1.27	1.11	1.6	0.15	6.82	-12.1	175	188	59.45
1715	18.3	1.31	1.14	1.7	0.16	6.83	-16.1	175	145	59.45
1720	18.4	1.36	1.19	1.4	0.13	6.84	-19.9	175	105	59.45
1725	18.1	1.41	1.22	0.8	0.07	6.85	-22.6	175	73.8	59.45
1730	18.3	1.42	1.24	0.8	0.08	6.85	-25.7	175	63.8	59.45
1735	18.4	1.44	1.26	0.7	0.07	6.85	-27.5	175	51.8	59.45
1740	18.2	1.45	1.26	0.6	0.06	6.86	-29.6	175	52.9	59.45

Total Depth of Well:	70.37
Depth To Water Before Purging:	58.73
Depth To Water After Purging:	59.45

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page: 1 of 2

Site Location: 2801 West Saginaw Street, Lansing Township, MI | Date: 9/5/18

Site/Well No.: TW-16-01 | Replicate No.: NA | Code No.: NA

Weather: 80's partly cloudy | Sampling Time: Begin 1905 End 1915

Evacuation Data

Measuring Point	TOC
MP Elevation (ft)	NA
Land Surface Elevation (ft)	NA
Sounded Well Depth (ft bmp)	77.75
Depth to Water (ft bmp)	60.87
Water-Level Elevation (ft)	NA
Water Column in Well (ft)	16.88
Casing Diameter/Type	2" PVC
Gallons in Well	2.70
Gallons Pumped/Bailed Prior to Sampling	2
Sample Pump Intake Setting (ft bmp)	75.25
Purge Time	begin 1805 end 1915
Pumping Rate (ml/min)	100
Evacuation Method	Bladder pump

Field Parameters

Temperature (°C)	18.3
SpC (mS/cm)	2.22
CND (mS/cm)	1.93
Dissolved Oxygen (%)	42.2
Dissolved Oxygen (mg/L)	3.74
pH (s.u.)	7.08
ORP (mV)	35.2
Turbidity (NTU)	91.8
Color	None
Odor	None
Appearance	Slightly cloudy
Sampling Method	Low Flow
Remarks	AS-17-04 Running Propane Start 1630

Constituents Sampled	Container Description	Number	Preservative
~~PFAS~~ 1,4-Dioxane	40ml VOA	2	HCl
Propane	40ml VOA	3	TSP
TKN-3 phosphorous	250ml plastic	1	H_2SO_4
Nitrate	125 ml plastic	1	—

Sampling Personnel: DMA

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : TW-16-01 PROJ #: B0064479.2018

DATE : 9/5/18 LOC: RACER Lansing

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1810	17.5	2.14	1.87	48.2	4.54	7.21	1.6	160	537	60.92
1815	17.3	2.13	1.81	52.7	5.13	7.20	10.8	160	164	61.35
1820	17.2	2.10	1.78	58.2	5.56	7.29	17.8	160	73.7	61.75
1825	18.4	2.09	1.83	56.3	5.26	7.27	24.5	100	51.3	61.95
1830	18.8	2.10	1.85	54.4	5.03	7.27	30.7	100	63.3	62.15
1835	18.7	2.12	1.86	56.8	5.28	7.25	34.1	100	91.8	62.35
1840	18.5	2.13	1.86	58.7	5.46	7.26	37.7	100	92.1	62.40
1845	18.7	2.14	1.89	57.7	5.37	7.24	40.0	100	89.0	62.55
1850	18.4	2.18	1.91	56.7	5.26	7.24	39.9	100	95.9	62.70
1855	18.6	2.19	1.42	48.1	4.47	7.12	37.6	100	93.7	62.85
1900	18.8	2.20	1.94	43.6	4.03	7.09	36.4	100	96.9	63.00
1905	18.3	2.22	1.93	42.2	3.94	7.08	35.2	100	91.8	63.15
Total Depth of Well: 77.75										
Depth To Water Before Purging: 60.87										
Depth To Water After Purging: 63.15										

ARCADIS

Water Sampling Log

Project	RACER Lansing	Project No.	B0064479.2018	Page	1 of 2
Site Location	2801 West Saginaw Street, Lansing Township, MI			Date	9/6/19
Site/Well No.	MW-16-77	Replicate No.	NA	Code No.	NA
Weather	60's overcast	Sampling Time: Begin	1105	End	1110

Evacuation Data

Measuring Point	TOC
MP Elevation (ft)	NA
Land Surface Elevation (ft)	NA
Sounded Well Depth (ft bmp)	74.06
Depth to Water (ft bmp)	61.76
Water-Level Elevation (ft)	NA
Water Column in Well (ft)	12.74
Casing Diameter/Type	2" PVC
Gallons in Well	2.04
Gallons Pumped/Bailed Prior to Sampling	~~7.50~~ 1.5
Sample Pump Intake Setting (ft bmp)	71.50
Purge Time	begin 1035 end 1110
Pumping Rate (ml/min)	100
Evacuation Method	B. Pump

Field Parameters

Temperature (°C)	14.9
SpC (mS/cm)	1.70
CND (mS/cm)	1.31
Dissolved Oxygen (%)	3.1
Dissolved Oxygen (mg/L)	0.31
pH (s.u.)	7.02
ORP (mV)	16.1
Turbidity (NTU)	5.31
Color	None
Odor	None
Appearance	Turbid
Sampling Method	Low Flow
Remarks	—

Constituents Sampled	Container Description	Number	Preservative
Program	40ml VOA	3	TSP

Sampling Personnel: DMA

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-16-77 PROJ #: B0064479.2018

DATE : 9/6/18 LOC: RACER Lansing

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1040	13.8	1.70	1.33	4.5	0.46	6.96	23.2	240	55.7	62.62
1045	13.7	1.69	1.33	2.9	0.30	7.02	21.6	240	27.7	63.95
1050	15.4	1.67	1.36	2.9	0.28	7.03	20.2	100	19.5	64.50
1055	15.2	1.70	1.38	3.1	0.31	7.03	19.3	100	19.7	65.00
1100	15.0	1.69	1.36	3.2	0.32	7.04	18.5	100	19.1	65.50
1105	14.9	1.70	1.37	3.1	0.31	7.02	16.1	100	5.31	66.00

Total Depth of Well: 74.00

Depth To Water Before Purging: 61.26

Depth To Water After Purging: 66.0

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page: 1 of 2

Site Location: 2801 West Saginaw Street, Lansing Township, MI | Date: 9/6/17

Site/Well No.: MW-16-75 | Replicate No.: NA | Code No.: NA

Weather: 80's overcast | Sampling Time: Begin 1210 End 1215

Evacuation Data

Measuring Point	TOC
MP Elevation (ft)	NA
Land Surface Elevation (ft)	NA
Sounded Well Depth (ft bmp)	74.18
Depth to Water (ft bmp)	61.39
Water-Level Elevation (ft)	NA
Water Column in Well (ft)	12.79
Casing Diameter/Type	2" PVC
Gallons in Well	2.05
Gallons Pumped/Bailed Prior to Sampling	1.75
Sample Pump Intake Setting (ft bmp)	71.75
Purge Time	begin 1135 end 1215
Pumping Rate (ml/min)	100
Evacuation Method	B. pump

Field Parameters

Temperature (°C)	15.5
SpC (mS/cm)	1.92
CND (mS/cm)	1.57
Dissolved Oxygen (%)	1.4
Dissolved Oxygen (mg/L)	0.14
pH (s.u.)	6.97
ORP (mV)	-9.9
Turbidity (NTU)	104
Color	None
Odor	None
Appearance	Turbid
Sampling Method	Low Flow
Remarks	—

Constituents Sampled	Container Description	Number	Preservative
propane	40ml VOA	3	HCl

Sampling Personnel: DMA

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-16-75 PROJ #: B0064479.2018

DATE : 9/6/18 LOC: RACER Lansing

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1140	14.5	1.90	1.52	2.0	0.20	6.98	17.0	225	348	62.65
1145	14.5	1.89	1.54	2.6	0.26	6.98	12.1	225	152	63.25
1150	15.5	1.89	1.54	2.7	0.27	6.98	5.4	100	111	63.22
1155	15.5	1.90	1.55	2.0	0.20	6.98	2.0	100	100	63.22
1200	15.5	1.91	1.56	1.5	0.15	6.97	-3.1	100	108	63.22
1205	15.5	1.92	1.57	1.4	0.14	6.97	-8.2	100	110	63.22
1210	15.5	1.92	1.57	1.4	0.14	6.97	-9.9	100	104	63.22

Total Depth of Well: 74.18

Depth To Water Before Purging: 61.39

Depth To Water After Purging: 63.22

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page: 1 of 2

Site Location: 2801 West Saginaw Street, Lansing Township, MI | Date: 9/6/18

Site/Well No.: MW-16-74 | Replicate No.: NA | Code No.: NA

Weather: 60's overcast | Sampling Time: Begin 1315 End 1320

Evacuation Data

Measuring Point	TOC
MP Elevation (ft)	NA
Land Surface Elevation (ft)	NA
Sounded Well Depth (ft bmp)	73.70
Depth to Water (ft bmp)	66.41
Water-Level Elevation (ft)	NA
Water Column in Well (ft)	7.29
Casing Diameter/Type	2" PVC
Gallons in Well	1.67
Gallons Pumped/Bailed Prior to Sampling	2
Sample Pump Intake Setting (ft bmp)	71.25
Purge Time	begin 1235 end 1320
Pumping Rate (ml/min)	200
Evacuation Method	B. Pump

Field Parameters

Temperature (°C)	15.3
SpC (mS/cm)	2.24
CND (mS/cm)	1.83
Dissolved Oxygen (%)	1.4
Dissolved Oxygen (mg/L)	0.11
pH (s.u.)	6.89
ORP (mV)	-12.9
Turbidity (NTU)	9.41
Color	None
Odor	None
Appearance	
Sampling Method	Low Flow
Remarks	—

Constituents Sampled	Container Description	Number	Preservative
Pioglaze	40ml VOA	3	TSP

Sampling Personnel: DMA

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-16-74 PROJ #: B0064479.2018

DATE : 9/6/18 LOC: RACER Lansing

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1240	15.5	2.25	1.84	4.4	0.44	6.88	-6.9	200	>1000	66.71
1245	15.2	2.22	1.81	3.6	0.36	6.91	-8.9	200	409	66.71
1250	15.1	2.23	1.81	2.2	0.22	6.90	-9.4	200	96.1	66.71
1255	15.1	2.24	1.81	1.3	0.13	6.90	-10.3	200	48.3	66.71
1300	15.1	2.24	1.82	1.3	0.13	6.90	-11.0	200	30.1	66.71
1305	15.2	2.24	1.82	1.2	0.12	6.84	-11.6	200	20.6	66.71
1310	15.2	2.24	1.82	1.2	0.12	6.84	-12.4	200	13.0	66.71
1315	15.3	2.24	1.83	1.1	0.11	6.89	-12.9	200	9.41	66.71

Total Depth of Well: 73.70

Depth To Water Before Purging: 66.41

Depth To Water After Purging: 66.71

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page: 1 of 2

Site Location: 2801 West Saginaw Street, Lansing Township, MI | Date: 9/6/17

Site/Well No.: AS-16-02 | Replicate No.: NA | Code No.: NA

Weather: 60's overcast | Sampling Time: Begin 1405 End 1415

Evacuation Data

Measuring Point	TOC
MP Elevation (ft)	NA
Land Surface Elevation (ft)	NA
Sounded Well Depth (ft bmp)	76.10
Depth to Water (ft bmp)	61.32
Water-Level Elevation (ft)	NA
Water Column in Well (ft)	14.78
Casing Diameter/Type	2" PVC
Gallons in Well	2.36
Gallons Pumped/Bailed Prior to Sampling	1.25
Sample Pump Intake Setting (ft bmp)	73.50
Purge Time	begin 1335 end 1415
Pumping Rate (ml/min)	100
Evacuation Method	B. Pump

Field Parameters

Temperature (°C)	16.5
SpC (mS/cm)	2.77
CND (mS/cm)	2.32
Dissolved Oxygen (%)	70.3
Dissolved Oxygen (mg/L)	6.80
pH (s.u.)	6.44
ORP (mV)	46.5
Turbidity (NTU)	43.7
Color	None
Odor	None
Appearance	turbid
Sampling Method	Low Flow
Remarks	AS-17-07 rinsate w/ grab sample
	Silver 1000

Constituents Sampled	Container Description	Number	Preservative
1,4-Dioxane	40ml VOA	2	HCl
Propane	40ml VOA	3	TSP
TKN; total phosphorus, nitrate	250ml plastic	1	H_2SO_4
	125ml plastic	1	—

Sampling Personnel: DM

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : AS-16-02 PROJ #: B0064479.2018

DATE : 9/6/18 LOC: RACER Lansing

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1340	16.9	2.77	2.34	41.3	3.97	6.43	18.8	100	225	62.05
1345	16.6	2.79	2.34	61.6	5.96	6.42	26.2	100	87.0	62.15
1350	16.4	2.77	2.32	71.5	6.95	6.36	32.2	100	38.9	62.40
1355	16.5	2.78	2.32	68.2	6.62	6.37	38.5	100	58.3	63.00
1400	16.5	2.79	2.32	71.6	6.92	6.43	42.6	100	35.7	63.50
1405	16.5	2.77	2.32	70.3	6.80	6.44	46.5	100	43.7	64.25
~~1410~~								~~100~~		

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page: 1 of 2

Site Location: 2801 West Saginaw Street, Lansing Township, MI | Date: 9/6/18

Site/Well No.: TW-14-01 | Replicate No.: NA | Code No.: NA

Weather: 60's overcast | Sampling Time: Begin 1505 End 1515

Evacuation Data

Measuring Point	TOC
MP Elevation (ft)	NA
Land Surface Elevation (ft)	NA
Sounded Well Depth (ft bmp)	78.10
Depth to Water (ft bmp)	65.10
Water-Level Elevation (ft)	NA
Water Column in Well (ft)	13.00
Casing Diameter/Type	2" PVC
Gallons in Well	2.08
Gallons Pumped/Bailed Prior to Sampling	1.25
Sample Pump Intake Setting (ft bmp)	75.50
Purge Time	begin 1430 end 1515
Pumping Rate (ml/min)	125
Evacuation Method	B. Pump

Field Parameters

Temperature (°C)	16.1
SpC (mS/cm)	2.40
CND (mS/cm)	1.99
Dissolved Oxygen (%)	61.2
Dissolved Oxygen (mg/L)	6.12
pH (s.u.)	7.25
ORP (mV)	47.2
Turbidity (NTU)	76.2
Color	None
Odor	None
Appearance	Turbid
Sampling Method	Low Flow
Remarks	AS-17-05 running w/ propane Silica Gel

Constituents Sampled	Container Description	Number	Preservative
1,4-Dioxane	40ml VOA	2	HCl
Propane	40ml VOA	3	TSP
TKN; Total phosphorous	250 ml plastic	1	H_2SO_4
Nitrate	125 ml plastic	1	—

Sampling Personnel: DMS

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : TW-14-01 PROJ #: B0064479.2018

DATE : 9/6/18 LOC: RACER Lansing

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1435	16.4	2.39	1.99	47.3	4.59	7.25	39.6	125	71000	~66.10
1440	16.2	2.39	1.99	60.3	5.91	7.38	38.3	125	800	~66.10
1445	16.2	2.40	2.00	72.5	7.05	7.43	48.0	125	208	~66.10
1450	16.1	2.41	2.00	67.4	6.62	7.34	52.0	125	130	~66.10
1455	16.1	2.41	2.00	61.4	6.15	7.29	50.4	125	94.7	~66.10
1500	16.0	2.40	1.99	62.7	6.14	7.27	49.0	125	83.6	~66.10
1505	16.0	2.40	1.99	61.2	6.12	7.25	47.2	125	76.1	~66.10

Total Depth of Well: 79.10

Depth To Water Before Purging: 65.80

Depth To Water After Purging: ~66.10

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page: 1 of 2

Site Location: 2801 West Saginaw Street, Lansing Township, MI | Date:

Site/Well No.: MW-16-82 | Replicate No.: NA Dup-01 | Code No.: ~~NA~~ Dup-01

Weather: 60's overcast | Sampling Time: Begin ~~Dup-01~~ 1740 End ~~Dup-01~~ 1745

Evacuation Data

Measuring Point	TOC
MP Elevation (ft)	NA
Land Surface Elevation (ft)	NA
Sounded Well Depth (ft bmp)	—
Depth to Water (ft bmp)	66.90
Water-Level Elevation (ft)	NA
Water Column in Well (ft)	—
Casing Diameter/Type	2" PVC
Gallons in Well	—
Gallons Pumped/Bailed Prior to Sampling	1.5
Sample Pump Intake Setting (ft bmp)	~ 2.5' off Bottom
Purge Time	begin 1700 end 1745
Pumping Rate (ml/min)	100
Evacuation Method	Bladder pump

Field Parameters

Temperature (°C)	17.8
SpC (mS/cm)	1.08
CND (mS/cm)	0.93
Dissolved Oxygen (%)	1.8
Dissolved Oxygen (mg/L)	0.17
pH (s.u.)	7.00
ORP (mV)	-41.2
Turbidity (NTU)	86.4
Color	None
Odor	None
Appearance	Cloudy
Sampling Method	Low Flow
Remarks	* Dup-01 taken *

Constituents Sampled	Container Description	Number	Preservative
1,4-Dioxane	40ml VOA	4	HCl

Sampling Personnel: DMA

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-16-82 PROJ #: B0064479.2018

DATE : 9/6/18 LOC: RACER Lansing

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1705	17.8	1.08	0.93	9.7	0.92	7.06	-30.1	175	742	67.75
1710	16.9	1.07	0.90	2.5	0.24	7.02	-28.4	175	499	67.65
1715	17.4	1.07	0.92	2.1	0.20	7.01	-29.2	100	338	67.80
1720	17.9	1.07	0.93	2.9	0.27	7.01	-31.7	100	321	67.80
1725	17.9	1.08	0.93	2.1	0.20	7.00	-34.7	100	245	67.80
1730	17.9	1.08	0.93	1.8	0.17	7.00	-37.4	100	282	67.80
1735	17.9	1.08	0.93	1.8	0.17	7.00	-39.2	100	124	67.80
1740	17.8	1.08	0.93	1.8	0.17	7.00	-41.2	100	86.4	67.80

Total Depth of Well: —

Depth To Water Before Purging: 66.90

Depth To Water After Purging: 67.80

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page: 1 of 2

Site Location: 2801 West Saginaw Street, Lansing Township, MI | Date: 9/6/18

Site/Well No.: MW-16-84 | Replicate No.: NA MS/MSD | Code No.: NA MS/MSD

Weather: 60's overcast | Sampling Time: Begin 1845 | End 1855

Evacuation Data

Measuring Point	TOC
MP Elevation (ft)	NA
Land Surface Elevation (ft)	NA
Sounded Well Depth (ft bmp)	—
Depth to Water (ft bmp)	68.57
Water-Level Elevation (ft)	NA
Water Column in Well (ft)	—
Casing Diameter/Type	2" PVC
Gallons in Well	—
Gallons Pumped/Bailed Prior to Sampling	2
Sample Pump Intake Setting (ft bmp)	~ 25' off Bottom
Purge Time	begin 1840 end 1855
Pumping Rate (ml/min)	110
Evacuation Method	Bladder pump

Field Parameters

Temperature (°C)	16.3
SpC (mS/cm)	1.30
CND (mS/cm)	1.08
Dissolved Oxygen (%)	0.9
Dissolved Oxygen (mg/L)	0.09
pH (s.u.)	7.02
ORP (mV)	-26.6
Turbidity (NTU)	118
Color	Tan
Odor	Tan
Appearance	turbid
Sampling Method	Low Flow
Remarks	* MS/MSD taken *

Constituents Sampled	Container Description	Number	Preservative
1,4-Dioxane	40ml VOA	6	HCl

Sampling Personnel: DMA

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-16-84 PROJ #: B0064479.2018

DATE : 9/6/18 LOC: RACER Lansing

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1805	18.7	1.27	1.12	35.3	3.31	7.00	6.1	160	86.4	68.57
1810	16.1	1.27	1.05	2.9	0.28	7.02	-3.7	160	590	69.40
1815	16.1	1.28	1.06	1.9	0.19	7.02	-6.6	110	603	69.60
1820	16.3	1.29	1.08	2.0	0.20	7.02	-12.2	110	>1000	69.60
1825	16.2	1.29	1.08	0.9	0.09	7.02	-18.7	110	605	69.60
1830	16.4	1.29	1.08	0.8	0.08	7.02	-21.4	110	509	69.60
1835	16.8	1.29	1.09	1.0	0.10	7.02	-23.9	110	357	69.60
1840	16.4	1.31	1.09	0.8	0.08	7.01	-25.5	110	214	69.60
1845	16.3	1.30	1.08	0.9	0.09	7.02	-26.6	110	118	69.60
~~1850~~								112		~~69.80~~

Total Depth of Well: —

Depth To Water Before Purging: 68.57

Depth To Water After Purging: 69.60

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page: 1 of 2

Site Location: 2801 West Saginaw Street, Lansing Township, MI | Date: 9/4/18

Site/Well No.: MW-13-37 | Replicate No.: NA | Code No.: NA

Weather: Sunny, ≈ 85°F | Sampling Time: Begin 1440 End 1445

Evacuation Data

Measuring Point	TOC
MP Elevation (ft)	NA
Land Surface Elevation (ft)	NA
Sounded Well Depth (ft bmp)	114.46
Depth to Water (ft bmp)	68.67
Water-Level Elevation (ft)	NA
Water Column in Well (ft)	45.79
Casing Diameter/Type	4" / SS
Gallons in Well	≈29.76
Gallons Pumped/Bailed Prior to Sampling	≈109.46 = 0.75
Sample Pump Intake Setting (ft bmp)	≈109.46
Purge Time	begin 1405 end
Pumping Rate (ml/min)	100
Evacuation Method	Bladder Pump

Field Parameters

Temperature (°C)	17.5
SpC (mS/cm)	0.99
CND (mS/cm)	0.85
Dissolved Oxygen (%)	44.0
Dissolved Oxygen (mg/L)	4.21
pH (s.u.)	7.09
ORP (mV)	-89.4
Turbidity (NTU)	4.69
Color	Clear
Odor	None
Appearance	Clear
Sampling Method	Low Flow
Remarks	

Constituents Sampled	Container Description	Number	Preservative
PFAS	125ml poly	2	None

Sampling Personnel: A. Westhuis

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-13-37 PROJ #: B0064479.2018

DATE : 9/4/18 LOC: RACER Lansing

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1410	18.1	1.00	0.87	96.2	8.14	6.99	-54.9	100	—	68.88
1415	18.1	0.98	0.85	75.8	6.85	7.03	-85.9	100	—	68.93
1420	18.0	0.98	0.85	61.3	5.81	7.06	-88.6	100	—	68.95
1425	17.9	0.99	0.85	50.8	4.82	7.09	-91.1	100	5.52	68.95
1430	17.5	0.99	0.85	47.1	4.45	7.09	-90.4	100	5.10	68.95
1435	17.5	0.99	0.85	44.0	4.21	7.09	-89.4	100	4.69	68.95
1440	Sample Collected									
Total Depth of Well: 114.46										
Depth To Water Before Purging: 68.67										
Depth To Water After Purging: 68.95										

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page: 1 of 2

Site Location: 2801 West Saginaw Street, Lansing Township, MI | Date: 9/4/18

Site/Well No.: MW-13-38 | Replicate No.: NA | Code No.: NA

Weather: Sunny, ≈85°F | Sampling Time: Begin 1615 End 1620

Evacuation Data

Measuring Point	TOC
MP Elevation (ft)	NA
Land Surface Elevation (ft)	NA
Sounded Well Depth (ft bmp)	126.32
Depth to Water (ft bmp)	69.56
Water-Level Elevation (ft)	NA
Water Column in Well (ft)	56.76
Casing Diameter/Type	4" / SS
Gallons in Well	=36.89
Gallons Pumped/Bailed Prior to Sampling	= 1.3
Sample Pump Intake Setting (ft bmp)	=121.32
Purge Time	begin 1505 end 1620
Pumping Rate (ml/min)	100
Evacuation Method	Bladder Pump

Field Parameters

Temperature (°C)	20.7
SpC (mS/cm)	2.41
CND (mS/cm)	2.22
Dissolved Oxygen (%)	33.1
Dissolved Oxygen (mg/L)	2.81
pH (s.u.)	7.02
ORP (mV)	-14.9
Turbidity (NTU)	4.01
Color	Clear
Odor	None
Appearance	Clear
Sampling Method	Low Flow
Remarks	

Constituents Sampled	Container Description	Number	Preservative
PFAS	125ml poly	2	None

Sampling Personnel: A. Westhuis

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-13-38 PROJ #: B0064479.2018

DATE : 9/4/18 LOC: RACER Lansing

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1510	22.3	2.03	1.98	82.9	7.20	7.01	-86.4	100	8.81	69.63
1515	21.5	2.37	2.22	77.3	6.78	6.94	-100.8	100	7.64	69.63
1520	21.0	2.40	2.21	69.2	6.10	6.99	-107.8	100	6.77	69.63
1525	21.2	2.42	2.25	63.0	6.53	7.01	-107.0	100	6.13	69.63
1530	21.1	2.41	2.23	58.0	5.16	7.01	-104.9	100	5.74	69.63
1535	20.9	2.40	2.22	51.9	4.62	7.02	-97.2	100	5.50	69.63
1540	21.1	2.39	2.21	49.5	4.39	7.02	-76.4	100	5.31	69.63
1545	18.9	2.42	2.14	45.1	4.17	7.04	-44.1	100	5.10	69.63
1550	20.8	2.41	2.22	39.6	8.53	7.04	-70.8	100	4.76	69.63
1555	20.8	2.43	2.24	36.7	3.25	7.03	-36.6	100	4.44	69.63
1600	21.1	2.41	2.23	34.0	3.00	7.03	-18.2	100	4.36	69.63
1605	20.9	2.41	2.23	33.6	2.91	7.03	-16.1	100	4.11	69.63
1610	20.7	2.41	2.22	33.1	2.81	7.02	-14.9	100	4.01	69.63
1615	Sample Collected									
Total Depth of Well: 126.32										
Depth To Water Before Purging: 69.56										
Depth To Water After Purging: 69.63										

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page: 1 of 2

Site Location: 2801 West Saginaw Street, Lansing Township, MI | Date: 9/4/18

Site/Well No.: MW-91-2 | Replicate No.: NA | Code No.: NA

Weather: Sunny, ~85°F | Sampling Time: Begin 1710 End 1715

Evacuation Data

Measuring Point	TOC
MP Elevation (ft)	NA
Land Surface Elevation (ft)	NA
Sounded Well Depth (ft bmp)	76.58
Depth to Water (ft bmp)	59.18
Water-Level Elevation (ft)	NA
Water Column in Well (ft)	17.4
Casing Diameter/Type	4" / SS
Gallons in Well	=11.31
Gallons Pumped/Bailed Prior to Sampling	= 0.75
Sample Pump Intake Setting (ft bmp)	= 71.58
Purge Time	begin 1635 end 1715
Pumping Rate (ml/min)	100
Evacuation Method	Bladder Pump

Field Parameters

Temperature (°C)	16.7
SpC (mS/cm)	1.33
CND (mS/cm)	1.11
Dissolved Oxygen (%)	21.7
Dissolved Oxygen (mg/L)	2.17
pH (s.u.)	7.00
ORP (mV)	-69.2
Turbidity (NTU)	7.13
Color	~~clear~~ cloudy
Odor	None
Appearance	clear
Sampling Method	Low Flow
Remarks	

Constituents Sampled	Container Description	Number	Preservative
PFAS	125ml poly	2	None

Sampling Personnel: A. Westhuis

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-91-2 PROJ #: B0064479.2018

DATE : 9/4/18 LOC: RACER Lansing

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1640	16.6	0.85	0.72	40.4	3.94	6.81	-40.0	100	12.2	59.29
1645	16.5	1.02	0.97	35.1	3.43	6.89	-48.9	100	10.1	59.41
1650	16.4	1.20	1.01	30.2	2.94	6.94	-57.9	100	9.61	59.51
1655	16.7	1.26	1.05	27.2	2.71	6.97	-62.6	100	9.06	59.55
1700	16.7	1.31	1.09	22.4	2.16	6.99	-67.4	100	8.01	59.56
1705	16.7	1.33	1.11	21.7	2.17	7.00	-69.2	100	7.13	59.56
1710	Sample	Collected								

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page: 1 of 2

Site Location: 2801 West Saginaw Street, Lansing Township, MI | Date: 9/4/18

Site/Well No.: MW-02-04(3) | Replicate No.: NA | Code No.: NA

Weather: Sunny, ≈85°F | Sampling Time: Begin 1815 End 1820

Evacuation Data

Measuring Point	TOC
MP Elevation (ft)	NA
Land Surface Elevation (ft)	NA
Sounded Well Depth (ft bmp)	84.00
Depth to Water (ft bmp)	60.40
Water-Level Elevation (ft)	NA
Water Column in Well (ft)	23.60
Casing Diameter/Type	2" / PVC
Gallons in Well	=3.78
Gallons Pumped/Bailed Prior to Sampling	= 0.75
Sample Pump Intake Setting (ft bmp)	= 81.50
Purge Time	begin 1740 end
Pumping Rate (ml/min)	100
Evacuation Method	Bladder Pump

Field Parameters

Temperature (°C)	16.5
SpC (mS/cm)	5.76
CND (mS/cm)	4.82
Dissolved Oxygen (%)	40.6
Dissolved Oxygen (mg/L)	3.85
pH (s.u.)	6.85
ORP (mV)	-56.2
Turbidity (NTU)	4.11
Color	Clear
Odor	None
Appearance	Clear
Sampling Method	Low Flow
Remarks	MS/MSD collected

Constituents Sampled	Container Description	Number MW	Preservative
PFAS	125 ml poly	2 4	HCl

Sampling Personnel: A. Westhuis

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-02-04(3) PROJ #: B0064479.2018

DATE : 9/4/18 LOC: RACER Lansing

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1745	16.8	4.77	4.02	60.1	5.79	6.87	13.5	100	6.62	61.65
1750	16.7	4.91	4.51	52.1	5.06	6.84	-19.2	100	6.14	61.70
1755	16.5	5.88	4.90	44.1	4.25	6.82	-50.4	100	5.71	61.73
1800	16.3	5.85	4.88	40.4	3.95	6.84	-53.7	100	5.42	61.75
1805	16.4	5.81	4.86	40.5	3.90	6.84	-55.1	100	4.68	61.76
1810	16.5	5.76	4.82	40.6	3.85	6.85	-56.2	100	4.11	61.76
1815	Sample Collected									
Total Depth of Well: 84.00										
Depth To Water Before Purging: 60.40										
Depth To Water After Purging: 61.76										

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page 1 of 2

Site Location: 2801 West Saginaw Street, Lansing Township, MI | Date: 9/5/18

Site/Well No.: MW-18-92 | Replicate No.: NA | Code No.: NA

Weather: Sunny, ≈80°F | Sampling Time: Begin 0935 End 0940

Evacuation Data

Measuring Point	TOC
MP Elevation (ft)	NA
Land Surface Elevation (ft)	NA
Sounded Well Depth (ft bmp)	30.13
Depth to Water (ft bmp)	20.19
Water-Level Elevation (ft)	NA
Water Column in Well (ft)	9.94
Casing Diameter/Type	2" / PVC
Gallons in Well	=1.59
Gallons Pumped/Bailed Prior to Sampling	=0.75
Sample Pump Intake Setting (ft bmp)	=28.63
Purge Time	begin 0900 end 0940
Pumping Rate (ml/min)	100
Evacuation Method	Peristaltic

Field Parameters

Temperature (°C)	15.6
SpC (mS/cm)	1.17
CND (mS/cm)	0.96
Dissolved Oxygen (%)	2.9
Dissolved Oxygen (mg/L)	0.29
pH (s.u.)	6.90
ORP (mV)	8.3
Turbidity (NTU)	2.71
Color	Clear
Odor	None
Appearance	Clear
Sampling Method	Low Flow
Remarks	

Constituents Sampled	Container Description	Number	Preservative
PFAS	125ml poly	2	None

Sampling Personnel: A. Westhuis

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-18-92 PROJ #: B0064479.2018

DATE : 9/5/18 LOC: RACER Lansing

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
0905	15.6	1.18	0.97	3.5	0.35	6.91	-2.7	100	4.14	21.27
0910	15.7	1.18	0.96	3.2	0.32	6.90	-0.5	100	3.90	21.41
0915	15.7	1.18	0.96	3.1	0.31	6.90	5.1	100	3.60	21.77
0920	15.7	1.17	0.96	3.0	0.30	6.90	7.6	100	3.13	22.11
0925	15.7	1.17	0.96	2.9	0.29	6.90	8.1	100	2.91	22.21
0930	15.6	1.17	0.96	2.9	0.29	6.90	8.3	100	2.71	22.26
0935	Sample Collected									
Total Depth of Well: 30.13										
Depth To Water Before Purging: 20.19										
Depth To Water After Purging: 22.24										

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page: 1 of 2

Site Location: 2801 West Saginaw Street, Lansing Township, MI | Date: 9/5/18

Site/Well No.: MW-18-88 | Replicate No.: NA | Code No.: NA

Weather: Sunny, ≈80°F | Sampling Time: Begin 1035 End 1040

Evacuation Data

Measuring Point	TOC
MP Elevation (ft)	NA
Land Surface Elevation (ft)	NA
Sounded Well Depth (ft bmp)	15.06
Depth to Water (ft bmp)	7.02
Water-Level Elevation (ft)	NA
Water Column in Well (ft)	8.04
Casing Diameter/Type	2" / PVC
Gallons in Well	≈1.29
Gallons Pumped/Bailed Prior to Sampling	≈ 0.75
Sample Pump Intake Setting (ft bmp)	≈ 12.56
Purge Time	begin 1005 end 1040
Pumping Rate (ml/min)	100
Evacuation Method	Peristaltic

Field Parameters

Temperature (°C)	21.5
SpC (mS/cm)	0.530
CND (mS/cm)	0.495
Dissolved Oxygen (%)	1.3
Dissolved Oxygen (mg/L)	0.13
pH (s.u.)	6.98
ORP (mV)	-3.3
Turbidity (NTU)	3.06
Color	clear
Odor	None
Appearance	Clear
Sampling Method	Low Flow
Remarks	

Constituents Sampled	Container Description	Number	Preservative
PFAS	125 ml poly	2	None

Sampling Personnel: A. Westhuis

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-18-88 PROJ #: B0064479.2018

DATE : 9/5/18 LOC: RACER Lansing

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1010	21.9	0.54	0.51	2.4	0.21	7.00	1.4	100	6.40	7.16
1015	21.8	0.54	0.50	1.4	0.12	6.99	-1.0	100	4.38	7.16
1020	21.8	0.532	0.499	1.4	0.13	6.99	-3.0	100	3.76	7.17
1025	21.7	0.530	0.497	1.3	0.13	6.99	-3.2	100	3.41	7.17
1030	21.5	0.530	0.495	1.3	0.13	6.98	-3.3	100	3.06	7.17
1035	Sample Collected									
Total Depth of Well: 15.06										
Depth To Water Before Purging: 7.02										
Depth To Water After Purging: 7.17										

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page: 1 of 2

Site Location: 2801 West Saginaw Street, Lansing Township, MI | Date: 9/5/18

Site/Well No.: MW-18-89 | Replicate No.: NA | Code No.: NA

Weather: Sunny, ≈80°F | Sampling Time: Begin 1200 End 1205

Evacuation Data

Measuring Point	TOC
MP Elevation (ft)	NA
Land Surface Elevation (ft)	NA
Sounded Well Depth (ft bmp)	15.68
Depth to Water (ft bmp)	8.91
Water-Level Elevation (ft)	NA
Water Column in Well (ft)	6.77
Casing Diameter/Type	2"/PVC
Gallons in Well	=1.08
Gallons Pumped/Bailed Prior to Sampling	=0.75
Sample Pump Intake Setting (ft bmp)	=13.18
Purge Time	begin 1055 end 1140
Pumping Rate (ml/min)	100
Evacuation Method	Peristaltic

Field Parameters

Temperature (°C)	23.1
SpC (mS/cm)	0.66
CND (mS/cm)	0.64
Dissolved Oxygen (%)	2.6
Dissolved Oxygen (mg/L)	0.26
pH (s.u.)	8.21
ORP (mV)	58.3
Turbidity (NTU)	3.64
Color	Clear
Odor	None
Appearance	Clear
Sampling Method	Low Flow
Remarks	Dup-02 collected - Well purged dry @ 1140. Wait for recharge before sampling

Constituents Sampled	Container Description	Number	Preservative
PFAS	125 ml poly	4	None

Sampling Personnel: A. Westhuis

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-18-89 PROJ #: B0064479.2018

DATE : 9/5/18 LOC: RACER Lansing

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1100	22.5	0.75	0.72	1.9	0.16	8.11	30.6	100	3.97	10.37
1105	22.7	0.73	0.70	1.4	0.12	8.11	32.6	100	2.80	10.88
1110	22.5	0.68	0.65	0.8	0.08	8.19	44.4	100	2.16	11.32
1115	22.6	0.66	0.62	0.6	0.07	8.24	48.4	100	1.68	11.76
1120	23.0	0.64	0.62	1.5	0.13	8.28	52.7	100	1.51	12.65
1125	23.1	0.64	0.62	1.2	0.11	8.24	56.0	100	1.79	13.40
1130	23.1	0.65	0.63	2.0	0.20	8.23	57.4	100	2.18	14.31
1135	23.1	0.66	0.64	2.6	0.26	8.21	58.3	100	3.64	15.09
1140	Well purged dry. Wait for recharge before sampling.									
1200	Sample Collected									
Total Depth of Well: 15.68										
Depth To Water Before Purging: 8.91										
Depth To Water After Purging: 15.09										

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page: 1 of 2

Site Location: 2801 West Saginaw Street, Lansing Township, MI | Date: 9/5/18

Site/Well No.: MW-18-90 | Replicate No.: NA | Code No.: NA

Weather: Sunny, ≈80°F | Sampling Time: Begin 1315 End 1320

Evacuation Data

Measuring Point	TOC
MP Elevation (ft)	NA
Land Surface Elevation (ft)	NA
Sounded Well Depth (ft bmp)	15.68
Depth to Water (ft bmp)	11.58
Water-Level Elevation (ft)	NA
Water Column in Well (ft)	4.10
Casing Diameter/Type	2" / PVC
Gallons in Well	≈0.66
Gallons Pumped/Bailed Prior to Sampling	≈1.00
Sample Pump Intake Setting (ft bmp)	≈13.18
Purge Time	begin 1230 end 1320
Pumping Rate (ml/min)	100
Evacuation Method	Peristaltic

Field Parameters

Temperature (°C)	20.3
SpC (mS/cm)	2.41
CND (mS/cm)	2.20
Dissolved Oxygen (%)	1.8
Dissolved Oxygen (mg/L)	0.18
pH (s.u.)	11.96
ORP (mV)	-90.9
Turbidity (NTU)	7.60
Color	clear
Odor	None
Appearance	clear
Sampling Method	Low Flow
Remarks	

Constituents Sampled	Container Description	Number	Preservative
PFAS	125 ml poly	2	None

Sampling Personnel: A. Westhuis

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-18-90 PROJ #: B0064479.2018

DATE : 9/5/18 LOC: RACER Lansing

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1235	20.6	2.05	1.88	3.9	0.34	11.56	-5.3	100	16.4	11.59
1240	20.6	2.26	2.07	3.3	0.29	11.75	-22.2	100	12.2	11.59
1245	20.5	2.30	2.10	2.6	0.23	11.81	-37.9	100	11.1	11.59
1250	20.4	2.33	2.13	2.0	0.18	11.87	-57.9	100	9.86	11.59
1255	20.2	2.36	2.15	1.5	0.14	11.91	-74.8	100	9.81	11.59
1300	20.1	2.37	2.16	1.6	0.16	11.93	-84.3	100	8.76	11.59
1305	20.4	2.39	2.18	1.7	0.17	11.95	-89.1	100	8.16	11.59
1310	20.3	2.41	2.20	1.8	0.18	11.96	-90.9	100	7.60	11.59
1315	Sample	Collected								
Total Depth of Well: 15.68										
Depth To Water Before Purging: 11.58										
Depth To Water After Purging: 11.59										

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page: 1 of 2

Site Location: 2801 West Saginaw Street, Lansing Township, MI | Date: 9/5/18

Site/Well No.: MW-18-91 | Replicate No.: NA | Code No.: NA

Weather: Sunny, ~85°F | Sampling Time: Begin 1410 End 1415

Evacuation Data

Measuring Point	TOC
MP Elevation (ft)	NA
Land Surface Elevation (ft)	NA
Sounded Well Depth (ft bmp)	15.10
Depth to Water (ft bmp)	8.08
Water-Level Elevation (ft)	NA
Water Column in Well (ft)	7.02
Casing Diameter/Type	2" / PVC
Gallons in Well	~1.12
Gallons Pumped/Bailed Prior to Sampling	~0.75
Sample Pump Intake Setting (ft bmp)	~12.60
Purge Time	begin 1330 end 1415
Pumping Rate (ml/min)	100
Evacuation Method	Peristaltic

Field Parameters

Temperature (°C)	20.9
SpC (mS/cm)	0.77
CND (mS/cm)	0.71
Dissolved Oxygen (%)	1.3
Dissolved Oxygen (mg/L)	0.12
pH (s.u.)	7.74
ORP (mV)	-176.2
Turbidity (NTU)	2.10
Color	clear
Odor	None
Appearance	Clear
Sampling Method	Low Flow
Remarks	

Constituents Sampled	Container Description	Number	Preservative
PFAS	125 ml poly	2	None

Sampling Personnel: A. Westhuis

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-18-91 PROJ #: B0064479.2018

DATE : 9/5/18 LOC: RACER Lansing

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1335	21.3	0.84	0.78	2.4	0.21	7.57	-201.9	100	9.64	8.38
1340	21.2	0.82	0.77	1.8	0.17	7.60	-199.6	100	7.12	8.72
1345	21.2	0.81	0.76	1.3	0.11	7.64	-196.9	100	5.31	9.41
1350	21.0	0.80	0.74	1.0	0.10	7.68	-191.0	100	3.20	10.25
1355	21.0	0.79	0.73	1.0	0.09	7.70	-188.1	100	2.81	10.31
1400	20.9	0.78	0.71	1.1	0.11	7.73	-179.1	100	2-50	10.33
1405	20.9	0.77	0.71	1.3	0.12	7.74	-176.2	100	2.10	10.34
1410	Sample Collected									

Total Depth of Well: 15.10

Depth To Water Before Purging: 8.08

Depth To Water After Purging: 10.34

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page: 1 of 2

Site Location: 2801 West Saginaw Street, Lansing Township, MI | Date: 9/5/18

Site/Well No.: CH-14-RO | Replicate No.: NA | Code No.: NA

Weather: Sunny, ~85°F | Sampling Time: Begin 1445 End 1450

Evacuation Data

Measuring Point	TOC
MP Elevation (ft)	NA
Land Surface Elevation (ft)	NA
Sounded Well Depth (ft bmp)	14.83
Depth to Water (ft bmp)	8.97
Water-Level Elevation (ft)	NA
Water Column in Well (ft)	5.86
Casing Diameter/Type	2"/PVC
Gallons in Well	=0.94
Gallons Pumped/Bailed Prior to Sampling	=12.33
Sample Pump Intake Setting (ft bmp)	=12.33
Purge Time	begin 1420 end 1450
Pumping Rate (ml/min)	100
Evacuation Method	Peristaltic

Field Parameters

Temperature (°C)	22.8
SpC (mS/cm)	0.80
CND (mS/cm)	0.76
Dissolved Oxygen (%)	5.4
Dissolved Oxygen (mg/L)	0.47
pH (s.u.)	7.13
ORP (mV)	45.0
Turbidity (NTU)	1.20
Color	Clear/Slightly green
Odor	None
Appearance	Clear/Slightly green
Sampling Method	Low Flow
Remarks	

Constituents Sampled	Container Description	Number	Preservative
PFAS	125 ml poly	2	None

Sampling Personnel: A. Westhuis

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : CH-14-R0 PROJ #: B0064479.2018

DATE : 9/5/18 LOC: RACER Lansing

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1425	22.9	0.80	0.77	5.0	0.43	7.08	40.8	100	3.11	8.97
1430	22.8	0.80	0.76	5.1	0.45	7.11	42.2	100	2.29	8.97
1435	22.8	0.80	0.76	5.3	0.46	7.13	44.3	100	1.64	8.97
1440	22.8	0.80	0.76	5.4	0.47	7.13	45.0	100	1.20	8.97
1445	Sample	Collected								
Total Depth of Well: 14.83										
Depth To Water Before Purging: 8.97										
Depth To Water After Purging: 8.97										

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page: 1 of 2

Site Location: 2801 West Saginaw Street, Lansing Township, MI | Date: 9-5-18

Site/Well No.: MW-04-04R | Replicate No.: NA | Code No.: NA

Weather: | Sampling Time: Begin 1523 End 1525

Evacuation Data

Measuring Point	TOC
MP Elevation (ft)	NA
Land Surface Elevation (ft)	NA
Sounded Well Depth (ft bmp)	111.05
Depth to Water (ft bmp)	75.11
Water-Level Elevation (ft)	NA
Water Column in Well (ft)	35.94
Casing Diameter/Type	4" STEEL
Gallons in Well	5.75
Gallons Pumped/Bailed Prior to Sampling	
Sample Pump Intake Setting (ft bmp)	106.05
Purge Time	begin 1430 end 1525
Pumping Rate (ml/min)	200
Evacuation Method	BLADDER PUMP

Field Parameters

Temperature (°C)	19.5
SpC (mS/cm)	1.32
CND (mS/cm)	1.18
Dissolved Oxygen (%)	4.6
Dissolved Oxygen (mg/L)	0.41
pH (s.u.)	6.93
ORP (mV)	-78.6
Turbidity (NTU)	7.62
Color	NONE
Odor	NONE
Appearance	CLEAR
Sampling Method	Low Flow
Remarks	

Constituents Sampled	Container Description	Number	Preservative
PFAS	125mL PLASTIC	2	NONE

Sampling Personnel: C. Zilio

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

PAGE ___ OF ___

WELL : MW-04-04R PROJ #: B0064479.2018

DATE : 9.5.18 LOC: RACER Lansing

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1435	19.3	1.38	1.23	6.1	0.56	6.94	-72.1	200	86.2	75.31
1440	19.8	1.34	1.21	4.4	0.40	6.91	-72.4	200	25.0	75.37
1445	19.8	1.32	1.19	7.4	0.67	6.92	-70.7	200	18.0	75.37
1450	19.7	1.32	1.18	5.7	0.54	6.89	-71.4	200	14.6	75.37
1455	19.4	1.32	1.18	4.7	0.43	6.91	-74.8	200	16.6	75.37
1500	19.3	1.31	1.17	4.6	0.41	6.90	-75.4	200	15.4	75.37
1505	19.6	1.31	1.18	4.9	0.45	6.92	-77.7	200	12.8	75.37
1510	19.5	1.32	1.18	4.5	0.40	6.92	-78.0	200	10.8	75.37
1515	19.4	1.31	1.17	4.7	0.41	6.93	-78.3	200	9.91	75.37
1520	19.5	1.32	1.18	4.6	0.41	6.93	-78.6	200	7.62	75.37
1523	Sample MW-04-04R-090518									
Total Depth of Well: 111.05										
Depth To Water Before Purging: 75.11										
Depth To Water After Purging: 75.37										

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page: 1 of 2

Site Location: 2801 West Saginaw Street, Lansing Township, MI | Date: 9·5·18

Site/Well No.: MW-04-06R | Replicate No.: NA | Code No.: NA

Weather: | Sampling Time: Begin 1408 End 1410

Evacuation Data

Measuring Point	TOC
MP Elevation (ft)	NA
Land Surface Elevation (ft)	NA
Sounded Well Depth (ft bmp)	77.95
Depth to Water (ft bmp)	64.23
Water-Level Elevation (ft)	NA
Water Column in Well (ft)	13.72
Casing Diameter/Type	~~2" PVC~~ 4" STEEL
Gallons in Well	3.20
Gallons Pumped/Bailed Prior to Sampling	
Sample Pump Intake Setting (ft bmp)	75.45
Purge Time	begin 1300 end 1410
Pumping Rate (ml/min)	200
Evacuation Method	BLADDER PUMP

Field Parameters

Temperature (°C)	18.5
SpC (mS/cm)	4.83
CND (mS/cm)	4.22
Dissolved Oxygen (%)	0.7
Dissolved Oxygen (mg/L)	0.07
pH (s.u.)	7.42
ORP (mV)	-195.0
Turbidity (NTU)	18.2
Color	NONE
Odor	NONE
Appearance	CLEAR
Sampling Method	Low Flow
Remarks	

Constituents Sampled	Container Description	Number	Preservative
PFAS	125ML PLASTIC	2	NONE

Sampling Personnel: C. Zillo

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

PAGE ___ OF ___

WELL : MW-04-06R PROJ #: B0064479.2018

DATE : 9.5.18 LOC: RACER Lansing

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1305	19.1	4.08	3.61	2.9	0.27	7.51	-191.2	200	53.6	64.45
1310	18.6	4.11	3.61	0.9	0.08	7.63	-222.1	200	36.1	64.48
1315	18.5	4.17	3.66	0.4	0.03	7.65	-230.2	200	25.0	64.48
1320	18.3	4.24	3.70	0.2	0.02	7.64	-212.7	200	18.6	64.48
1325	18.3	4.31	3.76	0.1	0.01	7.63	-217.0	200	20.2	64.48
1330	18.3	4.35	3.79	0.2	0.02	7.61	-200.0	200	25.0	64.48
1335	18.2	4.43	3.86	0.2	0.02	7.57	-217.8	200	20.1	64.48
1340	18.1	4.53	3.94	0.3	0.02	7.54	-206.2	200	23.2	64.48
1345	18.0	4.65	4.04	0.3	0.03	7.49	-208.1	200	22.7	64.48
1350	18.4	4.77	4.17	0.4	0.04	7.46	-199.1	200	22.0	64.48
1355	18.5	4.84	4.24	0.7	0.06	7.44	-196.2	200	20.2	64.48
1400	18.4	4.82	4.21	0.7	0.07	7.43	-194.9	200	18.6	64.48
1405	18.5	4.83	4.22	0.7	0.07	7.42	-195.0	200	18.2	64.48
1408	Sample MW-04-06R_090518									
Total Depth of Well: 77.95										
Depth To Water Before Purging: 64.23										
Depth To Water After Purging: 64.48										

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page: 1 of 2

Site Location: 2801 West Saginaw Street, Lansing Township, MI | Date: 9.5.18

Site/Well No.: MW-15-73 | Replicate No.: NA | Code No.: NA

Weather: | Sampling Time: Begin 1243 End 1245

Evacuation Data

Measuring Point	TOC
MP Elevation (ft)	NA
Land Surface Elevation (ft)	NA
Sounded Well Depth (ft bmp)	81.02
Depth to Water (ft bmp)	66.70
Water-Level Elevation (ft)	NA
Water Column in Well (ft)	14.32
Casing Diameter/Type	2" PVC
Gallons in Well	2.29
Gallons Pumped/Bailed Prior to Sampling	
Sample Pump Intake Setting (ft bmp)	78.52
Purge Time	begin 1135 end 1245
Pumping Rate (ml/min)	200
Evacuation Method	Bladder Pump

Field Parameters

Temperature (°C)	17.5
SpC (mS/cm)	2.0
CND (mS/cm)	1.70
Dissolved Oxygen (%)	0.9
Dissolved Oxygen (mg/L)	0.10
pH (s.u.)	6.80
ORP (mV)	-59.0
Turbidity (NTU)	89.9
Color	Grey
Odor	None
Appearance	Cloudy
Sampling Method	Low Flow
Remarks	

Constituents Sampled	Container Description	Number	Preservative
PFAS	125mL Plastic	2	None

Sampling Personnel: C. Zulu

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

PAGE ___ OF ___

WELL : MW-15-73 PROJ #: B0064479.2018

DATE : 9.5.18 LOC: RACER Lansing

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1140	18.2	1.97	1.71	11.9	1.11	6.80	-54.6	200	435	67.72
1145	17.3	1.97	1.68	5.0	0.45	6.74	-49.3	200	444	67.72
1150	17.0	1.97	1.67	2.4	0.25	6.75	-51.9	200	418	67.72
1155	17.0	1.98	1.67	1.9	0.18	6.77	-54.3	200	353	67.72
1200	17.0	1.98	1.68	1.5	0.15	6.78	-56.3	200	226	67.72
1205	17.0	1.99	1.68	1.4	0.11	6.79	-57.9	200	206	67.72
1210	17.0	2.00	1.69	1.2	0.11	6.80	-58.7	200	230	67.72
1215	17.0	2.00	1.70	1.0	0.10	6.80	-59.4	200	263	67.72
1220	17.3	2.00	1.70	1.1	0.10	6.80	-59.5	200	202	67.72
1225	17.4	2.00	1.71	1.1	0.10	6.80	-59.0	200	147	67.72
1230	17.5	2.00	1.71	1.0	0.10	6.80	-58.9	200	120	67.72
1235	17.4	2.00	1.71	0.9	0.10	6.80	-58.8	200	[illegible]	67.72
1240	17.5	2.00	1.70	0.9	0.10	6.80	-59.0	200	89.9	67.72
1243	Sample MW-15-73.090518									

Total Depth of Well: 81.02

Depth To Water Before Purging: 66.70

Depth To Water After Purging: 67.72

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page 1 of 2

Site Location: 2801 West Saginaw Street, Lansing Township, MI | Date: 9-5-18

Site/Well No.: MW-16-81 | Replicate No.: NA | Code No.: NA

Weather: | Sampling Time: Begin 1118 End 1120

Evacuation Data

Measuring Point	TOC
MP Elevation (ft)	NA
Land Surface Elevation (ft)	NA
Sounded Well Depth (ft bmp)	77.33
Depth to Water (ft bmp)	66.32
Water-Level Elevation (ft)	NA
Water Column in Well (ft)	11.01
Casing Diameter/Type	2" PVC
Gallons in Well	1.76
Gallons Pumped/Bailed Prior to Sampling	
Sample Pump Intake Setting (ft bmp)	74.83
Purge Time	begin 1010 end 1120
Pumping Rate (ml/min)	200
Evacuation Method	Bladder Pump

Field Parameters

Temperature (°C)	20.0
SpC (mS/cm)	2.80
CND (mS/cm)	2.53
Dissolved Oxygen (%)	1.6
Dissolved Oxygen (mg/L)	0.15
pH (s.u.)	6.66
ORP (mV)	-27.7
Turbidity (NTU)	14.2
Color	NONE
Odor	NONE
Appearance	CLEAR
Sampling Method	Low Flow
Remarks	

Constituents Sampled	Container Description	Number	Preservative
PFAS	125mL Plastic	2	NONE
1,4-Dioxane	40mL VOA	3	

Sampling Personnel: C. Zilia

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

PAGE ___ OF ___

WELL : MW-14-81 PROJ #: B0064479.2018

DATE : 9.5.18 LOC: RACER Lansing

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1015	19.8	2.81	2.53	13.1	1.18	6.70	-23.0	200	187	67.22
1020	19.2	2.79	2.48	7.3	0.66	6.68	-22.6	200	101	67.36
1025	19.2	2.79	2.48	5.4	0.49	6.67	-23.0	200	51.0	67.61
1030	19.3	2.80	2.49	3.9	0.36	6.67	-23.9	200	50.1	67.80
1035	19.5	2.80	2.51	3.1	0.27	6.67	-24.4	200	46.7	67.98
1040	19.8	2.80	2.52	2.9	0.24	6.67	-25.4	200	42.8	67.98
1045	19.9	2.80	2.53	2.4	0.21	6.67	-26.0	200	44.1	67.98
1050	20.2	2.80	2.54	2.2	0.19	6.67	-27.0	200	38.6	67.98
1055	20.0	2.80	2.53	1.9	0.17	6.67	-27.0	200	33.5	67.98
1100	20.1	2.80	2.53	1.7	0.15	6.66	-27.2	200	28.0	67.98
1105	20.1	2.80	2.54	1.7	0.15	6.66	-27.4	200	24.9	67.98
1110	20.1	2.80	2.53	1.6	0.14	6.66	-27.5	200	17.6	67.98
1115	20.0	2.80	2.53	1.6	0.15	6.66	-27.7	200	14.2	67.98
1118	Sample MW-14-81_090518									

Total Depth of Well:	77.33
Depth To Water Before Purging:	66.32
Depth To Water After Purging:	67.98

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page: 1 of 2

Site Location: 2801 West Saginaw Street, Lansing Township, MI | Date: 9.5.18

Site/Well No.: MW-13-43 | Replicate No.: NA | Code No.: NA

Weather: | Sampling Time: Begin 0957 End 0955

Evacuation Data

Measuring Point	TOC
MP Elevation (ft)	NA
Land Surface Elevation (ft)	NA
Sounded Well Depth (ft bmp)	79.71
Depth to Water (ft bmp)	66.67
Water-Level Elevation (ft)	NA
Water Column in Well (ft)	13.09
Casing Diameter/Type	2" PVC
Gallons in Well	2.10
Gallons Pumped/Bailed Prior to Sampling	
Sample Pump Intake Setting (ft bmp)	77.21
Purge Time	begin 0845 end 0955
Pumping Rate (ml/min)	200
Evacuation Method	Bladder pump

Field Parameters

Temperature (°C)	17.7
SpC (mS/cm)	2.50
CND (mS/cm)	2.16
Dissolved Oxygen (%)	2.2
Dissolved Oxygen (mg/L)	0.27
pH (s.u.)	6.88
ORP (mV)	-8.1
Turbidity (NTU)	58.7
Color	None
Odor	None
Appearance	Clear
Sampling Method	Low Flow
Remarks	

Constituents Sampled	Container Description	Number	Preservative
PFAS	125mL Plastic	2	None

Sampling Personnel: C. Zillo

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

PAGE ___ OF ___

WELL : MW-13-43 PROJ #: B0064479.2018

DATE : 9.5.18 LOC: RACER Lansing

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
0850	19.4	2.16	1.93	24.5	2.28	6.87	38.7	200	980	66.87
0855	18.1	~~1.37~~ 1.41	1.98	10.1	0.93	6.88	29.8	200	698	66.93
0900	18.5	2.50	2.19	5.9	0.54	6.83	13.2	200	427	66.93
0905	18.3	2.51	2.19	4.6	0.42	6.85	8.2	200	350	66.93
0910	18.5	2.49	2.19	3.9	0.35	6.87	2.1	200	241	66.93
0915	18.9	2.50	2.21	3.6	0.32	6.89	-2.7	200	131	66.93
0920	18.2	2.51	2.18	3.4	0.32	6.88	-4.9	200	101.1	66.93
0925	18.1	2.50	2.17	3.0	0.28	6.88	-6.2	200	89.9	66.93
0930	17.9	2.50	2.17	2.5	0.24	6.88	-6.8	200	82.1	66.93
0935	17.8	2.50	2.16	2.2	0.23	6.88	-7.1	200	72.9	66.93
0940	17.7	2.51	2.16	2.3	0.23	6.88	-7.5	200	67.8	66.93
0945	17.8	2.51	2.16	2.2	0.23	6.88	-7.9	200	61.9	66.93
0950	17.7	2.50	2.16	2.2	0.27	6.88	-8.1	200	58.9	66.93
0953	Sample MW-13-43_090518									
Total Depth of Well: 79.71										
Depth To Water Before Purging: 66.67										
Depth To Water After Purging: 66.93										

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page: 1 of 2

Site Location: 2801 West Saginaw Street, Lansing Township, MI | Date: 9.4.18

Site/Well No.: MW-12-14 | Replicate No.: NA | Code No.: NA

Weather: | Sampling Time: Begin 1603 End 1605

Evacuation Data

Measuring Point	TOC
MP Elevation (ft)	NA
Land Surface Elevation (ft)	NA
Sounded Well Depth (ft bmp)	32.04
Depth to Water (ft bmp)	25.54
Water-Level Elevation (ft)	NA
Water Column in Well (ft)	6.50
Casing Diameter/Type	2" PVC
Gallons in Well	1.04
Gallons Pumped/Bailed Prior to Sampling	1.6 L
Sample Pump Intake Setting (ft bmp)	29.54
Purge Time	begin 1520 end 1605
Pumping Rate (ml/min)	200
Evacuation Method	PERISTALTIC

Field Parameters

Temperature (°C)	16.0
SpC (mS/cm)	0.98
CND (mS/cm)	0.81
Dissolved Oxygen (%)	0.7
Dissolved Oxygen (mg/L)	0.07
pH (s.u.)	6.79
ORP (mV)	73.1
Turbidity (NTU)	4.20
Color	NONE
Odor	NONE
Appearance	CLEAR
Sampling Method	Low Flow
Remarks	DUP-03 ~~X~~

Constituents Sampled	Container Description	Number	Preservative
PFAS	125 mL PLASTIC	~~X~~ 4	NONE

Sampling Personnel: C. Zilo

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

PAGE ___ OF ___

WELL : MW-12-14 PROJ #: B0064479.2018

DATE : 9-4-18 LOC: RACER Lansing

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1525	16.2	0.99	0.82	4.3	0.41	6.81	69.8	200	23.0	25.57
1530	16.5	0.98	0.83	2.7	0.26	6.76	71.7	200	17.8	25.57
1535	17.0	0.98	0.83	1.7	0.16	6.78	70.0	200	14.3	25.57
1540	17.0	0.99	0.84	1.1	0.13	6.79	70.0	200	12.6	25.57
1545	17.1	0.99	0.84	0.9	0.08	6.80	70.8	200	10.1	25.57
1550	16.8	0.98	0.81	0.6	0.07	6.79	70.9	200	7.81	25.57
1555	16.3	0.98	0.82	0.6	0.07	6.79	72.1	200	5.57	25.57
1600	16.0	0.98	0.81	0.7	0.07	6.79	73.1	200	4.20	25.57
1603	Sample MW-12-14_090418									
Total Depth of Well: 52.04										
Depth To Water Before Purging: 25.54										
Depth To Water After Purging: 25.57										

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page: 1 of 2

Site Location: 2801 West Saginaw Street, Lansing Township, MI | Date: 9.4.18

Site/Well No.: MW-12-10R | Replicate No.: NA | Code No.: NA

Weather: | Sampling Time: Begin 1508 End 1510

Evacuation Data

Measuring Point	TOC
MP Elevation (ft)	NA
Land Surface Elevation (ft)	NA
Sounded Well Depth (ft bmp)	17.97
Depth to Water (ft bmp)	12.23
Water-Level Elevation (ft)	NA
Water Column in Well (ft)	5.74
Casing Diameter/Type	2" PVC
Gallons in Well	0.92
Gallons Pumped/Bailed Prior to Sampling	1.4 L
Sample Pump Intake Setting (ft bmp)	15.47
Purge Time	begin 1430 end 1510
Pumping Rate (ml/min)	200
Evacuation Method	PERISTALTIC

Field Parameters

Temperature (°C)	19.1
SpC (mS/cm)	2.27
CND (mS/cm)	2.02
Dissolved Oxygen (%)	2.1
Dissolved Oxygen (mg/L)	0.20
pH (s.u.)	6.73
ORP (mV)	36.4
Turbidity (NTU)	1.51
Color	NONE
Odor	NONE
Appearance	CLEAR
Sampling Method	Low Flow
Remarks	

Constituents Sampled	Container Description	Number	Preservative
PFAS	125 CLEAR	2	NONE

Sampling Personnel: C. Zulio

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

PAGE ___ OF ___

WELL : MW-12-10R PROJ #: B0064479.2018

DATE : 9.4.18 LOC: RACER Lansing

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1435	19.3	2.56	2.28	2.1	0.19	6.70	28.3	200	7.26	12.75
1440	19.2	2.53	2.25	1.7	0.16	6.70	30.0	200	3.21	12.80
1445	19.3	2.54	2.26	2.3	0.21	6.70	32.2	200	1.63	12.84
1450	19.2	2.46	2.18	2.4	0.24	6.71	33.0	200	1.50	12.88
1455	19.2	2.37	2.11	2.1	0.20	6.72	35.1	200	1.55	12.88
1500	18.8	2.31	2.04	2.0	0.19	6.73	36.8	200	1.62	12.88
1505	19.1	2.27	2.02	2.1	0.20	6.73	36.4	200	1.51	12.88
1508	Sample MW-12-10R 090418									
Total Depth of Well: 17.97										
Depth To Water Before Purging: 12.23										
Depth To Water After Purging:										

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page: 1 of 2

Site Location: 2801 West Saginaw Street, Lansing Township, MI | Date: 9.4.18

Site/Well No.: MW-14-66 | Replicate No.: NA | Code No.: NA

Weather: | Sampling Time: Begin 1423 End 1425

Evacuation Data

Measuring Point	TOC
MP Elevation (ft)	NA
Land Surface Elevation (ft)	NA
Sounded Well Depth (ft bmp)	22.22
Depth to Water (ft bmp)	5.64
Water-Level Elevation (ft)	NA
Water Column in Well (ft)	16.58
Casing Diameter/Type	2" PVC
Gallons in Well	2.65
Gallons Pumped/Bailed Prior to Sampling	2.2 L
Sample Pump Intake Setting (ft bmp)	19.72
Purge Time	begin 1325 end 1425
Pumping Rate (ml/min)	200
Evacuation Method	PERISTALTIC

Field Parameters

Temperature (°C)	19.5
SpC (mS/cm)	0.96
CND (mS/cm)	0.85
Dissolved Oxygen (%)	0.9
Dissolved Oxygen (mg/L)	0.09
pH (s.u.)	7.26
ORP (mV)	-56.1
Turbidity (NTU)	1.90
Color	NONE
Odor	NONE
Appearance	CLEAR
Sampling Method	Low Flow
Remarks	

Constituents Sampled	Container Description	Number	Preservative
PFAS	125mL PLASTIC	2	NONE

Sampling Personnel: C. Ellis

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

PAGE ___ OF ___

WELL : mw-14-66 PROJ #: B0064479.2018

DATE : 9.4.18 LOC: RACER Lansing

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1330	20.8	0.96	0.88	4.6	0.38	7.14	8.2	200	4.08	7.01
1335	20.2	0.92	0.84	1.6	0.14	7.13	-16.0	200	3.15	7.18
1340	20.3	0.92	0.84	1.4	0.11	7.17	-36.9	200	3.57	7.33
1345	19.9	0.93	0.84	0.8	0.08	7.19	-53.3	200	5.17	7.48
1350	19.6	0.95	0.84	2.7	0.26	7.21	-57.5	200	2.52	7.65
1355	19.3	0.94	0.83	1.9	0.18	7.20	-57.3	200	2.09	7.77
1400	19.3	0.94	0.84	1.5	0.14	7.22	-56.3	200	2.02	7.86
1405	19.8	0.95	0.85	1.5	0.14	7.27	-57.1	200	2.24	7.95
1410	19.0	0.95	0.85	1.0	0.08	7.26	-55.9	200	1.90	8.05
1415	19.3	0.95	0.84	1.0	0.09	7.27	-55.8	200	1.87	8.14
1420	19.5	0.96	0.85	0.9	0.09	7.26	-56.1	200	1.90	8.20
1423	Sample		mw-14-66		090418					
Total Depth of Well: 22.22										
Depth To Water Before Purging: 5.64										
Depth To Water After Purging: 8.20										

ARCADIS

Water Sampling Log

Project: RACER Lansing | Project No.: B0064479.2018 | Page: 1 of 2

Site Location: 2801 West Saginaw Street, Lansing Township, MI | Date: 9-4-18

Site/Well No.: MW-12-11 | Replicate No.: NA | Code No.: NA

Weather: | Sampling Time: Begin 1713 End 1715

Evacuation Data

Measuring Point	TOC
MP Elevation (ft)	NA
Land Surface Elevation (ft)	NA
Sounded Well Depth (ft bmp)	16.78
Depth to Water (ft bmp)	9.99
Water-Level Elevation (ft)	NA
Water Column in Well (ft)	6.79
Casing Diameter/Type	2" PVC
Gallons in Well	1.09
Gallons Pumped/Bailed Prior to Sampling	2.0 L
Sample Pump Intake Setting (ft bmp)	14.28
Purge Time	begin 1620 end 1715
Pumping Rate (ml/min)	200
Evacuation Method	PERISTALTIC

Field Parameters

Temperature (°C)	15.3
SpC (mS/cm)	5.30
CND (mS/cm)	4.33
Dissolved Oxygen (%)	2.9
Dissolved Oxygen (mg/L)	0.28
pH (s.u.)	6.67
ORP (mV)	-34.8
Turbidity (NTU)	5.01
Color	NONE
Odor	NONE
Appearance	CLEAR
Sampling Method	Low Flow
Remarks	

Constituents Sampled	Container Description	Number	Preservative
PFAS	125mL PLASTIC	2	NONE

Sampling Personnel: C. Zick

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

PAGE ___ OF ___

WELL : MW-12-11 PROJ #: B0064479.2018

DATE : 9.4.18 LOC: RACER Lansing

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1625	16.3	5.21	4.33	1.1	0.10	6.71	-37.7	200	32.8	11.20
1630	15.6	4.72	3.87	0.7	0.06	6.76	-46.7	200	22.6	11.50
1635	15.4	4.73	3.86	0.9	0.09	6.72	-45.8	200	10.8	11.87
1640	15.0	5.01	4.05	1.1	0.11	6.69	-42.9	200	8.09	12.29
1645	15.1	5.01	4.06	1.9	0.19	6.69	-40.5	200	6.35	12.67
1650	15.6	5.04	4.15	3.0	0.29	6.68	-37.1	200	5.21	12.67
1655	15.6	5.22	4.28	3.2	0.32	6.67	-35.0	200	5.30	12.67
1700	15.5	5.30	4.33	2.9	0.29	6.67	-34.8	200	5.86	12.67
1705	15.2	5.33	4.33	2.9	0.29	6.67	-34.7	200	5.20	12.67
1710	15.3	5.30	4.33	2.9	0.28	6.67	-34.8	200	5.01	12.67
1715	Sample MW-12-11-090418									
Total Depth of Well: 16.78										
Depth To Water Before Purging: 9.99										
Depth To Water After Purging:										

2018-12-04, TW-14-01

Created	2018-12-04 11:45:57 EST by Daniel Stockard
Updated	2018-12-04 14:21:16 EST by Daniel Stockard
Location	42.7367194276701, -84.5857169386787
Status	Field Draft
Project Number	B0064479.2018
Project Name / Location	RACER Lansing, MI
Sampler Name	Daniel Stockard
Date	2018-12-04
Well ID	TW-14-01
Are you able to purge and/or sample this well? If not, explain why in the Comments section below.	Yes
Replicate No. (e.g. Dup)	None
Weather	Sunny, 30s

Evacuation Details

Measuring Point (mp) Description	Top of Casing
Casing Diameter (inches)	2
Static Water Level (ft-bmp)	58.19
Total Depth (ft-bmp)	79.4
Water Column	21.21
Gallons in Well	3.45

Reference Note: Well Volume Calculation [$\pi r^2 h$, where h= 1foot] Well radius (inch):Volume (Gal./foot):Volume (mL/foot) 0.5" = 0.04 gal/ft = 154 mL/ft 1" = 0.16 gal/ft = 617 mL/ft 2" = 0.65 gal/ft = 2470 mL/ft 3" = 1.47 gal/ft = 5557 mL/ft

Purge Method	Low-Flow
Type of Equipment used	Bladder
Sample Method	Grab
Sample Depth (ft-bmp) (e.g. pump intake)	73
Purge Start	12:25

@12:25, DTW:57.4, pH:7.07, temp:11.2, cond:2.36, turb:324, DO:4.59, redox:203.1

Reading Time	12:25
Rate (mL/min)	125
Depth to Water (ft)	57.4
pH	7.07
Conductivity (mS/cm)	2.36
Turbidity (NTU)	324
Dissolved Oxygen (mg/L)	4.59
Temperature (Degrees Celsius)	11.2
Redox (ORP mV)	203.1
parameters	@12:25, DTW:57.4, pH:7.07, temp:11.2, cond:2.36, turb:324, DO:4.59, redox:203.1

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:30, DTW:57.4, pH:7.05, temp:13.2, cond:1.83, turb:276, DO:4.17, redox:193.8

Reading Time	12:30
Minutes Elapsed between readings	5
Rate (mL/min)	125
Depth to Water (ft)	57.4
pH	7.05
Conductivity (mS/cm)	1.83
Turbidity (NTU)	276
Dissolved Oxygen (mg/L)	4.17
Temperature (Degrees Celsius)	13.2
Redox (ORP mV)	193.8
parameters	@12:30, DTW:57.4, pH:7.05, temp:13.2, cond:1.83, turb:276, DO:4.17, redox:193.8

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:35, DTW:57.5, pH:7.07, temp:13.4, cond:1.86, turb:176, DO:5.01, redox:190.8

Reading Time	12:35
Minutes Elapsed between readings	5
Rate (mL/min)	125
Depth to Water (ft)	57.5
pH	7.07
Conductivity (mS/cm)	1.86
Turbidity (NTU)	176
Dissolved Oxygen (mg/L)	5.01
Temperature (Degrees Celsius)	13.4
Redox (ORP mV)	190.8
parameters	@12:35, DTW:57.5, pH:7.07, temp:13.4, cond:1.86, turb:176, DO:5.01, redox:190.8

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:46, DTW:57.5, pH:7.11, temp:13.3, cond:1.85, turb:172, DO:5.67, redox:190.1

Reading Time	12:46
Minutes Elapsed between readings	11
Rate (mL/min)	125
Depth to Water (ft)	57.5
pH	7.11
Conductivity (mS/cm)	1.85
Turbidity (NTU)	172
Dissolved Oxygen (mg/L)	5.67
Temperature (Degrees Celsius)	13.3
Redox (ORP mV)	190.1
parameters	@12:46, DTW:57.5, pH:7.11, temp:13.3, cond:1.85, turb:172, DO:5.67, redox:190.1

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:51, DTW:61.5, pH:7.11, temp:12.5, cond:1.83, turb:161, DO:5.62, redox:188.3

Reading Time	12:51
Minutes Elapsed between readings	5
Rate (mL/min)	125
Depth to Water (ft)	61.5
pH	7.11
Conductivity (mS/cm)	1.83
Turbidity (NTU)	161
Dissolved Oxygen (mg/L)	5.62
Temperature (Degrees Celsius)	12.5
Redox (ORP mV)	188.3
parameters	@12:51, DTW:61.5, pH:7.11, temp:12.5, cond:1.83, turb:161, DO:5.62, redox:188.3

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:58, DTW:62.5, pH:7.08, temp:12.3, cond:1.8, turb:167, DO:5.57, redox:185.3

Reading Time	12:58
Minutes Elapsed between readings	7
Rate (mL/min)	125
Depth to Water (ft)	62.5
Milliliters Purged (total)	2.5
pH	7.08
Conductivity (mS/cm)	1.8
Turbidity (NTU)	167
Dissolved Oxygen (mg/L)	5.57
Temperature (Degrees Celsius)	12.3
Redox (ORP mV)	185.3
parameters	@12:58, DTW:62.5, pH:7.08, temp:12.3, cond:1.8, turb:167, DO:5.57, redox:185.3

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

Purge End	13:00

Sample Information

Sample Time	13:00
Color	Clear
Notable odors	None

1,4-D

Constituent Sampled	1,4-D
Container Type	40 mL Vial
Number of Containers	3
Preservative	HCL

TKN TP

Constituent Sampled	TKN TP

Container Type	250 mL Plastic
Number of Containers	1
Preservative	H2SO4

NO3

Constituent Sampled	NO3
Container Type	125 mL Plastic
Number of Containers	1
Preservative	None

Propane

Constituent Sampled	Propane
Container Type	40 mL Vial
Number of Containers	3
Preservative	TSP

Well Information

Condition of Well	Good
Well Locked at Arrival	Yes
Well Locked at Departure	Yes
Comments	Decent yield

Signature

Signed 2018-12-04 14:19:13 EST

2018-12-07, P3-MH-NE

Created	2018-12-07 19:49:58 UTC by Dale Arnett
Updated	2018-12-07 20:13:25 UTC by Dale Arnett
Location	42.7480855817373, -84.582908246745
Status	Field Draft
Project Number	B0064479.2018
Project Name / Location	RACER Lansing, MI
Sampler Name	Dale Arnett
Date	2018-12-07
Well ID	P3-MH-NE
Are you able to purge and/or sample this well? If not, explain why in the Comments section below.	Yes

Evacuation Details

Measuring Point (mp) Description	Ground Surface
Static Water Level (ft-bmp)	0

Reference Note: Well Volume Calculation [$\pi r^2 h$, where h= 1foot] Well radius (inch):Volume (Gal./foot):Volume (mL/foot) 0.5" = 0.04 gal/ft = 154 mL/ft 1" = 0.16 gal/ft = 617 mL/ft 2" = 0.65 gal/ft = 2470 mL/ft 3" = 1.47 gal/ft = 5557 mL/ft

Purge Start	15:00

@15:10, DTW:, pH:7.82, temp:13.7, cond:0.496, turb:0.02, DO:10.55, redox:116.4

Reading Time	15:10
pH	7.82
Conductivity (mS/cm)	0.496
Turbidity (NTU)	0.02
Dissolved Oxygen (mg/L)	10.55
Temperature (Degrees Celsius)	13.7
Redox (ORP mV)	116.4
parameters	@15:10, DTW:, pH:7.82, temp:13.7, cond:0.496, turb:0.02, DO:10.55, redox:116.4

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

Purge End	15:15

Sample Information

Sample Time	15:10
Color	None
Notable odors	None

VOCs

Constituent Sampled	VOCs
Container Type	40 mL Vial
Number of Containers	3
Preservative	HCL

1,4-Dioxane

Constituent Sampled	1,4-Dioxane

Container Type	40 mL Vial
Number of Containers	3
Preservative	HCL

PFAS

Constituent Sampled	PFAS
Container Type	250 mL Plastic
Number of Containers	2
Preservative	None

Metals

Constituent Sampled	Metals
Container Type	125 mL Plastic
Number of Containers	1
Preservative	HNO3

Well Information

Well Location	Plant 3

Photo of Well

Signature

Signed 2018-12-07 20:13:10 UTC

2018-12-05, MW-03-04

Created	2018-12-05 15:51:24 UTC by Erik Pietrzak
Updated	2018-12-05 17:03:36 UTC by Erik Pietrzak
Location	42.7381622884821, -84.5816251450075
Status	Field Draft
Project Number	B0064479.2018
Project Name / Location	RACER Lansing, MI
Sampler Name	Erik Pietrzak
Date	2018-12-05
Well ID	MW-03-04
Are you able to purge and/or sample this well? If not, explain why in the Comments section below.	Yes
Weather	Flurries, 29

Evacuation Details

Measuring Point (mp) Description	Top of Casing
Casing Diameter (inches)	2
Static Water Level (ft-bmp)	22.17
Total Depth (ft-bmp)	43.3
Water Column	21.13
Gallons in Well	3.43

Reference Note: Well Volume Calculation [$\pi r^2 h$, where h= 1foot] Well radius (inch):Volume (Gal./foot):Volume (mL/foot) 0.5" = 0.04 gal/ft = 154 mL/ft 1" = 0.16 gal/ft = 617 mL/ft 2" = 0.65 gal/ft = 2470 mL/ft 3" = 1.47 gal/ft = 5557 mL/ft

Purge Method	Low-Flow
Type of Equipment used	Bladder
Sample Method	Low-Flow
Sample Depth (ft-bmp) (e.g. pump intake)	41
Purge Start	10:50

@10:55, DTW:21.29, pH:7.24, temp:9.7, cond:1.98, turb:263, DO:10.18, redox:19.9

Reading Time	10:55
Rate (mL/min)	100
Depth to Water (ft)	21.29
pH	7.24
Conductivity (mS/cm)	1.98
Turbidity (NTU)	263
Dissolved Oxygen (mg/L)	10.18
Temperature (Degrees Celsius)	9.7
Redox (ORP mV)	19.9
parameters	@10:55, DTW:21.29, pH:7.24, temp:9.7, cond:1.98, turb:263, DO:10.18, redox:19.9

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:00, DTW:21.04, pH:7.23, temp:9.6, cond:2.09, turb:197, DO:10.62, redox:16

Reading Time	11:00

Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	21.04
pH	7.23
Conductivity (mS/cm)	2.09
Turbidity (NTU)	197
Dissolved Oxygen (mg/L)	10.62
Temperature (Degrees Celsius)	9.6
Redox (ORP mV)	16
parameters	@11:00, DTW:21.04, pH:7.23, temp:9.6, cond:2.09, turb:197, DO:10.62, redox:16

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:05, DTW:21.04, pH:7.23, temp:8.5, cond:2.12, turb:89.4, DO:11.01, redox:14

Reading Time	11:05
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	21.04
pH	7.23
Conductivity (mS/cm)	2.12
Turbidity (NTU)	89.4
Dissolved Oxygen (mg/L)	11.01
Temperature (Degrees Celsius)	8.5
Redox (ORP mV)	14
parameters	@11:05, DTW:21.04, pH:7.23, temp:8.5, cond:2.12, turb:89.4, DO:11.01, redox:14

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:10, DTW:21.04, pH:7.25, temp:9.1, cond:2.1, turb:45.3, DO:10.3, redox:13.2

Reading Time	11:10
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	21.04
pH	7.25
Conductivity (mS/cm)	2.1
Turbidity (NTU)	45.3
Dissolved Oxygen (mg/L)	10.3
Temperature (Degrees Celsius)	9.1
Redox (ORP mV)	13.2
parameters	@11:10, DTW:21.04, pH:7.25, temp:9.1, cond:2.1, turb:45.3, DO:10.3, redox:13.2

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:15, DTW:21.04, pH:7.27, temp:6.5, cond:2.14, turb:41.7, DO:11.92, redox:14.2

Reading Time	11:15
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	21.04
pH	7.27
Conductivity (mS/cm)	2.14
Turbidity (NTU)	41.7
Dissolved Oxygen (mg/L)	11.92
Temperature (Degrees Celsius)	6.5
Redox (ORP mV)	14.2
parameters	@11:15, DTW:21.04, pH:7.27, temp:6.5, cond:2.14, turb:41.7, DO:11.92, redox:14.2

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:20, DTW:21.07, pH:7.32, temp:9.8, cond:2.08, turb:28.2, DO:9.5, redox:13.2

Reading Time	11:20
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	21.07
pH	7.32
Conductivity (mS/cm)	2.08
Turbidity (NTU)	28.2
Dissolved Oxygen (mg/L)	9.5
Temperature (Degrees Celsius)	9.8
Redox (ORP mV)	13.2
parameters	@11:20, DTW:21.07, pH:7.32, temp:9.8, cond:2.08, turb:28.2, DO:9.5, redox:13.2

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:25, DTW:21.07, pH:7.37, temp:10.5, cond:2.07, turb:12.4, DO:9.51, redox:13.5

Reading Time	11:25
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	21.07
pH	7.37
Conductivity (mS/cm)	2.07
Turbidity (NTU)	12.4
Dissolved Oxygen (mg/L)	9.51
Temperature (Degrees Celsius)	10.5
Redox (ORP mV)	13.5
parameters	@11:25, DTW:21.07, pH:7.37, temp:10.5, cond:2.07, turb:12.4, DO:9.51, redox:13.5

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:30, DTW:21.07, pH:7.38, temp:10.5, cond:2.06, turb:8.98, DO:9.53, redox:14.4

Reading Time	11:30
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	21.07
pH	7.38
Conductivity (mS/cm)	2.06
Turbidity (NTU)	8.98
Dissolved Oxygen (mg/L)	9.53
Temperature (Degrees Celsius)	10.5
Redox (ORP mV)	14.4
parameters	@11:30, DTW:21.07, pH:7.38, temp:10.5, cond:2.06, turb:8.98, DO:9.53, redox:14.4
Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit	
Purge End	11:30
Total Volume Measured (units)	Gallons
Total Gallons Purged	0.75
Well Volumes Purged	0.22

Sample Information

Sample Time	11:32
Color	Clear
Notable odors	None

1,4 dioxane

Constituent Sampled	1,4 dioxane
Container Type	40 mL Vial
Number of Containers	3
Preservative	HCL

Well Information

Condition of Well	Good
Well Locked at Arrival	No
Well Locked at Departure	No

Signature

Signed 2018-12-05 17:03:34 UTC

2018-12-10, MW-13-46

Created	2018-12-10 11:21:38 EST by Christine Gregg
Updated	2018-12-10 12:59:10 EST by Christine Gregg
Location	,
Status	Field Draft
Project Number	B0064479.2018
Project Name / Location	RACER Lansing, MI
Sampler Name	Christine Gregg
Date	2018-12-10
Well ID	MW-13-46
Are you able to purge and/or sample this well? If not, explain why in the Comments section below.	Yes
Weather	30s overcast

Evacuation Details

Measuring Point (mp) Description	Top of Casing
Casing Diameter (inches)	2
Static Water Level (ft-bmp)	57.3
Total Depth (ft-bmp)	74.6
Water Column	17.3
Gallons in Well	2.81

Reference Note: Well Volume Calculation [$\pi r^2 h$, where h= 1foot] Well radius (inch):Volume (Gal./foot):Volume (mL/foot) 0.5" = 0.04 gal/ft = 154 mL/ft 1" = 0.16 gal/ft = 617 mL/ft 2" = 0.65 gal/ft = 2470 mL/ft 3" = 1.47 gal/ft = 5557 mL/ft

Purge Method	Low-Flow
Type of Equipment used	Bladder
Sample Method	Low-Flow
Sample Depth (ft-bmp) (e.g. pump intake)	72.5
Purge Start	11:51

@12:00, DTW:57.3, pH:6.54, temp:8.9, cond:2.22, turb:75.3, DO:5.12, redox:131.6

Reading Time	12:00
Rate (mL/min)	150
Depth to Water (ft)	57.3
pH	6.54
Conductivity (mS/cm)	2.22
Turbidity (NTU)	75.3
Dissolved Oxygen (mg/L)	5.12
Temperature (Degrees Celsius)	8.9
Redox (ORP mV)	131.6
parameters	@12:00, DTW:57.3, pH:6.54, temp:8.9, cond:2.22, turb:75.3, DO:5.12, redox:131.6

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:05, DTW:58.85, pH:6.69, temp:10.8, cond:2.32, turb:55, DO:3.57, redox:52.1

Reading Time	12:05

Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	58.85
pH	6.69
Conductivity (mS/cm)	2.32
Turbidity (NTU)	55
Dissolved Oxygen (mg/L)	3.57
Temperature (Degrees Celsius)	10.8
Redox (ORP mV)	52.1
parameters	@12:05, DTW:58.85, pH:6.69, temp:10.8, cond:2.32, turb:55, DO:3.57, redox:52.1

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:10, DTW:58.9, pH:6.73, temp:10.9, cond:2.3, turb:43.3, DO:3.68, redox:37.8

Reading Time	12:10
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	58.9
pH	6.73
Conductivity (mS/cm)	2.3
Turbidity (NTU)	43.3
Dissolved Oxygen (mg/L)	3.68
Temperature (Degrees Celsius)	10.9
Redox (ORP mV)	37.8
parameters	@12:10, DTW:58.9, pH:6.73, temp:10.9, cond:2.3, turb:43.3, DO:3.68, redox:37.8

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:15, DTW:58.98, pH:6.75, temp:11.1, cond:2.32, turb:39.8, DO:3.23, redox:17.8

Reading Time	12:15
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	58.98
pH	6.75
Conductivity (mS/cm)	2.32
Turbidity (NTU)	39.8
Dissolved Oxygen (mg/L)	3.23
Temperature (Degrees Celsius)	11.1
Redox (ORP mV)	17.8
parameters	@12:15, DTW:58.98, pH:6.75, temp:11.1, cond:2.32, turb:39.8, DO:3.23, redox:17.8

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:20, DTW:59.04, pH:6.76, temp:10.9, cond:2.32, turb:42.3, DO:3.22, redox:13.2

Reading Time	12:20
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	59.04
pH	6.76
Conductivity (mS/cm)	2.32
Turbidity (NTU)	42.3
Dissolved Oxygen (mg/L)	3.22
Temperature (Degrees Celsius)	10.9
Redox (ORP mV)	13.2
parameters	@12:20, DTW:59.04, pH:6.76, temp:10.9, cond:2.32, turb:42.3, DO:3.22, redox:13.2

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:25, DTW:59.1, pH:6.77, temp:9.8, cond:2.31, turb:44.2, DO:3.29, redox:33

Reading Time	12:25
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	59.1
pH	6.77
Conductivity (mS/cm)	2.31
Turbidity (NTU)	44.2
Dissolved Oxygen (mg/L)	3.29
Temperature (Degrees Celsius)	9.8
Redox (ORP mV)	33
parameters	@12:25, DTW:59.1, pH:6.77, temp:9.8, cond:2.31, turb:44.2, DO:3.29, redox:33

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:30, DTW:59.1, pH:6.77, temp:11.2, cond:2.28, turb:49.4, DO:3.06, redox:32.8

Reading Time	12:30
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	59.1
pH	6.77
Conductivity (mS/cm)	2.28
Turbidity (NTU)	49.4
Dissolved Oxygen (mg/L)	3.06
Temperature (Degrees Celsius)	11.2
Redox (ORP mV)	32.8
parameters	@12:30, DTW:59.1, pH:6.77, temp:11.2, cond:2.28, turb:49.4, DO:3.06, redox:32.8

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:35, DTW:59.1, pH:6.77, temp:11.1, cond:2.28, turb:54.2, DO:2.98, redox:37.7

Reading Time	12:35
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	59.1
pH	6.77
Conductivity (mS/cm)	2.28
Turbidity (NTU)	54.2
Dissolved Oxygen (mg/L)	2.98
Temperature (Degrees Celsius)	11.1
Redox (ORP mV)	37.7
parameters	@12:35, DTW:59.1, pH:6.77, temp:11.1, cond:2.28, turb:54.2, DO:2.98, redox:37.7

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:40, DTW:59.1, pH:6.78, temp:11, cond:2.25, turb:49.9, DO:2.97, redox:55

Reading Time	12:40
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	59.1
pH	6.78
Conductivity (mS/cm)	2.25
Turbidity (NTU)	49.9
Dissolved Oxygen (mg/L)	2.97
Temperature (Degrees Celsius)	11
Redox (ORP mV)	55
parameters	@12:40, DTW:59.1, pH:6.78, temp:11, cond:2.25, turb:49.9, DO:2.97, redox:55

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:45, DTW:59.1, pH:6.77, temp:11, cond:2.23, turb:51.1, DO:2.99, redox:56.6

Reading Time	12:45
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	59.1
pH	6.77
Conductivity (mS/cm)	2.23
Turbidity (NTU)	51.1
Dissolved Oxygen (mg/L)	2.99
Temperature (Degrees Celsius)	11
Redox (ORP mV)	56.6
parameters	@12:45, DTW:59.1, pH:6.77, temp:11, cond:2.23, turb:51.1, DO:2.99, redox:56.6

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:50, DTW:59.1, pH:6.77, temp:10.9, cond:2.22, turb:53.4, DO:2.95, redox:60.4

Reading Time	12:50
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	59.1
pH	6.77
Conductivity (mS/cm)	2.22
Turbidity (NTU)	53.4
Dissolved Oxygen (mg/L)	2.95
Temperature (Degrees Celsius)	10.9
Redox (ORP mV)	60.4
parameters	@12:50, DTW:59.1, pH:6.77, temp:10.9, cond:2.22, turb:53.4, DO:2.95, redox:60.4

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:55, DTW:59.1, pH:6.77, temp:11.1, cond:2.21, turb:58.4, DO:3.01, redox:62.6

Reading Time	12:55
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	59.1
pH	6.77
Conductivity (mS/cm)	2.21
Turbidity (NTU)	58.4
Dissolved Oxygen (mg/L)	3.01
Temperature (Degrees Celsius)	11.1
Redox (ORP mV)	62.6
parameters	@12:55, DTW:59.1, pH:6.77, temp:11.1, cond:2.21, turb:58.4, DO:3.01, redox:62.6

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:00, DTW:59.1, pH:6.77, temp:11.2, cond:2.21, turb:53.1, DO:3.09, redox:62.6

Reading Time	13:00
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	59.1
pH	6.77
Conductivity (mS/cm)	2.21
Turbidity (NTU)	53.1
Dissolved Oxygen (mg/L)	3.09
Temperature (Degrees Celsius)	11.2
Redox (ORP mV)	62.6

parameters	@13:00, DTW:59.1, pH:6.77, temp:11.2, cond:2.21, turb:53.1, DO:3.09, redox:62.6

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

Purge End	13:00
Total Volume Measured (units)	Gallons
Total Gallons Purged	3
Well Volumes Purged	1.07

Sample Information

Sample Time	13:00
Color	Clear
Notable odors	None

1,4-Dioxane

Constituent Sampled	1,4-Dioxane
Container Type	40 mL Vial
Number of Containers	3
Preservative	HCL

Well Information

Well Location	Plant 3
Condition of Well	Good
Well Locked at Arrival	Yes
Well Locked at Departure	Yes
Comments	Stick up

Signature

Signed 2018-12-10 12:49:43 EST

2018-12-11, MW-13-48

Created	2018-12-11 09:13:32 EST by Christine Gregg
Updated	2018-12-11 10:06:10 EST by Christine Gregg
Location	42.7412599884372, -84.5871152915848
Status	Field Draft
Project Number	B0064479.2018
Project Name / Location	RACER Lansing, MI
Sampler Name	Christine Gregg
Date	2018-12-11
Well ID	MW-13-48
Are you able to purge and/or sample this well? If not, explain why in the Comments section below.	Yes
Replicate No. (e.g. Dup)	DUP-06
Weather	30s overcast

Evacuation Details

Measuring Point (mp) Description	Top of Casing
Casing Diameter (inches)	2
Static Water Level (ft-bmp)	58.08
Total Depth (ft-bmp)	72.98
Water Column	14.9
Gallons in Well	2.42

Reference Note: Well Volume Calculation [$\pi r^2 h$, where h= 1foot] Well radius (inch):Volume (Gal./foot):Volume (mL/foot) 0.5" = 0.04 gal/ft = 154 mL/ft 1" = 0.16 gal/ft = 617 mL/ft 2" = 0.65 gal/ft = 2470 mL/ft 3" = 1.47 gal/ft = 5557 mL/ft

Purge Method	Low-Flow
Type of Equipment used	Bladder
Sample Method	Low-Flow
Sample Depth (ft-bmp) (e.g. pump intake)	70
Purge Start	09:23

@09:25, DTW:58.08, pH:6.54, temp:9.1, cond:2.44, turb:6.47, DO:8.65, redox:108.5

Reading Time	09:25
Rate (mL/min)	150
Depth to Water (ft)	58.08
pH	6.54
Conductivity (mS/cm)	2.44
Turbidity (NTU)	6.47
Dissolved Oxygen (mg/L)	8.65
Temperature (Degrees Celsius)	9.1
Redox (ORP mV)	108.5
parameters	@09:25, DTW:58.08, pH:6.54, temp:9.1, cond:2.44, turb:6.47, DO:8.65, redox:108.5

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:30, DTW:58.1, pH:6.66, temp:9.6, cond:2.68, turb:4.46, DO:2.1, redox:34.3

Reading Time	09:30
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	58.1
pH	6.66
Conductivity (mS/cm)	2.68
Turbidity (NTU)	4.46
Dissolved Oxygen (mg/L)	2.1
Temperature (Degrees Celsius)	9.6
Redox (ORP mV)	34.3
parameters	@09:30, DTW:58.1, pH:6.66, temp:9.6, cond:2.68, turb:4.46, DO:2.1, redox:34.3

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:35, DTW:58.1, pH:6.72, temp:9.7, cond:2.67, turb:4.47, DO:1.8, redox:22.3

Reading Time	09:35
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	58.1
pH	6.72
Conductivity (mS/cm)	2.67
Turbidity (NTU)	4.47
Dissolved Oxygen (mg/L)	1.8
Temperature (Degrees Celsius)	9.7
Redox (ORP mV)	22.3
parameters	@09:35, DTW:58.1, pH:6.72, temp:9.7, cond:2.67, turb:4.47, DO:1.8, redox:22.3

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:40, DTW:58.1, pH:6.77, temp:10.2, cond:2.64, turb:4.25, DO:1.39, redox:9.5

Reading Time	09:40
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	58.1
pH	6.77
Conductivity (mS/cm)	2.64
Turbidity (NTU)	4.25
Dissolved Oxygen (mg/L)	1.39
Temperature (Degrees Celsius)	10.2
Redox (ORP mV)	9.5
parameters	@09:40, DTW:58.1, pH:6.77, temp:10.2, cond:2.64, turb:4.25, DO:1.39, redox:9.5

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:45, DTW:58.1, pH:6.8, temp:9.4, cond:2.65, turb:5, DO:1.47, redox:3.8

Reading Time	09:45
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	58.1
pH	6.8
Conductivity (mS/cm)	2.65
Turbidity (NTU)	5
Dissolved Oxygen (mg/L)	1.47
Temperature (Degrees Celsius)	9.4
Redox (ORP mV)	3.8
parameters	@09:45, DTW:58.1, pH:6.8, temp:9.4, cond:2.65, turb:5, DO:1.47, redox:3.8

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:50, DTW:58.1, pH:6.83, temp:9.8, cond:2.65, turb:4.44, DO:1.68, redox:-2.7

Reading Time	09:50
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	58.1
pH	6.83
Conductivity (mS/cm)	2.65
Turbidity (NTU)	4.44
Dissolved Oxygen (mg/L)	1.68
Temperature (Degrees Celsius)	9.8
Redox (ORP mV)	-2.7
parameters	@09:50, DTW:58.1, pH:6.83, temp:9.8, cond:2.65, turb:4.44, DO:1.68, redox:-2.7

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:55, DTW:58.1, pH:6.84, temp:10, cond:2.65, turb:5.21, DO:1.7, redox:-5.1

Reading Time	09:55
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	58.1
pH	6.84
Conductivity (mS/cm)	2.65
Turbidity (NTU)	5.21
Dissolved Oxygen (mg/L)	1.7
Temperature (Degrees Celsius)	10
Redox (ORP mV)	-5.1
parameters	@09:55, DTW:58.1, pH:6.84, temp:10, cond:2.65, turb:5.21, DO:1.7, redox:-5.1

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:00, DTW:58.1, pH:6.84, temp:10.3, cond:2.64, turb:5.36, DO:1.76, redox:-5.8

Reading Time	10:00
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	58.1
pH	6.84
Conductivity (mS/cm)	2.64
Turbidity (NTU)	5.36
Dissolved Oxygen (mg/L)	1.76
Temperature (Degrees Celsius)	10.3
Redox (ORP mV)	-5.8
parameters	@10:00, DTW:58.1, pH:6.84, temp:10.3, cond:2.64, turb:5.36, DO:1.76, redox:-5.8

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:05, DTW:58.1, pH:6.84, temp:10.6, cond:2.64, turb:4.84, DO:1.83, redox:-6

Reading Time	10:05
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	58.1
pH	6.84
Conductivity (mS/cm)	2.64
Turbidity (NTU)	4.84
Dissolved Oxygen (mg/L)	1.83
Temperature (Degrees Celsius)	10.6
Redox (ORP mV)	-6
parameters	@10:05, DTW:58.1, pH:6.84, temp:10.6, cond:2.64, turb:4.84, DO:1.83, redox:-6

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

Purge End	10:05
Total Volume Measured (units)	Gallons
Total Gallons Purged	1.5
Well Volumes Purged	0.62

Sample Information

Sample Time	10:05
Color	Clear
Notable odors	None

VOCs + 1,4-D

Constituent Sampled	VOCs + 1,4-D

Container Type	40 mL Vial
Number of Containers	6
Preservative	HCL

Well Information

Well Location	Plant 3
Condition of Well	Good
Well Locked at Arrival	Yes
Well Locked at Departure	Yes
Comments	Stick up

Signature

Signed 2018-12-11 09:26:52 EST

2018-12-06, MW-18-91

Created	2018-12-06 16:27:23 UTC by Austin Westhuis
Updated	2018-12-06 17:43:21 UTC by Austin Westhuis
Location	42.7447676472764, -84.5842375327689
Status	Field Draft
Project Number	B0064479.2018
Project Name / Location	RACER Lansing, MI
Sampler Name	Austin Westhuis
Date	2018-12-06
Well ID	MW-18-91
Are you able to purge and/or sample this well? If not, explain why in the Comments section below.	Yes
Weather	Cloudy, light freezing rain, 30F

Evacuation Details

Measuring Point (mp) Description	Top of Casing
Casing Diameter (inches)	2
Static Water Level (ft-bmp)	5.76
Total Depth (ft-bmp)	15.04
Water Column	9.28
Gallons in Well	1.51

Reference Note: Well Volume Calculation [$\pi r^2 h$, where h= 1foot] Well radius (inch):Volume (Gal./foot):Volume (mL/foot) 0.5" = 0.04 gal/ft = 154 mL/ft 1" = 0.16 gal/ft = 617 mL/ft 2" = 0.65 gal/ft = 2470 mL/ft 3" = 1.47 gal/ft = 5557 mL/ft

Purge Method	Low-Flow
Type of Equipment used	Peristaltic
Sample Method	Low-Flow
Sample Depth (ft-bmp) (e.g. pump intake)	12.54
Purge Start	11:35

@11:40, DTW:6.16, pH:8.39, temp:8, cond:0.425, turb:6.28, DO:0.74, redox:7.9

Reading Time	11:40
Rate (mL/min)	100
Depth to Water (ft)	6.16
Milliliters Purged (total)	500
pH	8.39
Conductivity (mS/cm)	0.425
Turbidity (NTU)	6.28
Dissolved Oxygen (mg/L)	0.74
Temperature (Degrees Celsius)	8
Redox (ORP mV)	7.9
parameters	@11:40, DTW:6.16, pH:8.39, temp:8, cond:0.425, turb:6.28, DO:0.74, redox:7.9

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:45, DTW:6.61, pH:8.21, temp:8.3, cond:0.426, turb:4.33, DO:0.44, redox:-2.3

Reading Time	11:45
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	6.61
Milliliters Purged (total)	1000
pH	8.21
Conductivity (mS/cm)	0.426
Turbidity (NTU)	4.33
Dissolved Oxygen (mg/L)	0.44
Temperature (Degrees Celsius)	8.3
Redox (ORP mV)	-2.3
parameters	@11:45, DTW:6.61, pH:8.21, temp:8.3, cond:0.426, turb:4.33, DO:0.44, redox:-2.3

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:50, DTW:6.85, pH:7.84, temp:8.6, cond:0.428, turb:3.76, DO:0.33, redox:-6.5

Reading Time	11:50
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	6.85
Milliliters Purged (total)	1500
pH	7.84
Conductivity (mS/cm)	0.428
Turbidity (NTU)	3.76
Dissolved Oxygen (mg/L)	0.33
Temperature (Degrees Celsius)	8.6
Redox (ORP mV)	-6.5
parameters	@11:50, DTW:6.85, pH:7.84, temp:8.6, cond:0.428, turb:3.76, DO:0.33, redox:-6.5

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:55, DTW:6.98, pH:7.7, temp:8.9, cond:0.43, turb:2.21, DO:0.2, redox:-19.1

Reading Time	11:55
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	6.98
Milliliters Purged (total)	2000
pH	7.7
Conductivity (mS/cm)	0.43
Turbidity (NTU)	2.21
Dissolved Oxygen (mg/L)	0.2
Temperature (Degrees Celsius)	8.9
Redox (ORP mV)	-19.1
parameters	@11:55, DTW:6.98, pH:7.7, temp:8.9, cond:0.43, turb:2.21, DO:0.2, redox:-19.1

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:00, DTW:7.06, pH:7.7, temp:9, cond:0.43, turb:2.01, DO:0.18, redox:-23

Reading Time	12:00
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	7.06
Milliliters Purged (total)	2500
pH	7.7
Conductivity (mS/cm)	0.43
Turbidity (NTU)	2.01
Dissolved Oxygen (mg/L)	0.18
Temperature (Degrees Celsius)	9
Redox (ORP mV)	-23
parameters	@12:00, DTW:7.06, pH:7.7, temp:9, cond:0.43, turb:2.01, DO:0.18, redox:-23

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:05, DTW:7.13, pH:7.7, temp:9, cond:0.432, turb:1.89, DO:0.18, redox:-25.1

Reading Time	12:05
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	7.13
Milliliters Purged (total)	3000
pH	7.7
Conductivity (mS/cm)	0.432
Turbidity (NTU)	1.89
Dissolved Oxygen (mg/L)	0.18
Temperature (Degrees Celsius)	9
Redox (ORP mV)	-25.1
parameters	@12:05, DTW:7.13, pH:7.7, temp:9, cond:0.432, turb:1.89, DO:0.18, redox:-25.1

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:10, DTW:7.19, pH:7.68, temp:9.4, cond:0.434, turb:1.68, DO:0.14, redox:-26.9

Reading Time	12:10
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	7.19
Milliliters Purged (total)	3500
pH	7.68
Conductivity (mS/cm)	0.434
Turbidity (NTU)	1.68

Dissolved Oxygen (mg/L)	0.14
Temperature (Degrees Celsius)	9.4
Redox (ORP mV)	-26.9
parameters	@12:10, DTW:7.19, pH:7.68, temp:9.4, cond:0.434, turb:1.68, DO:0.14, redox:-26.9
Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit	
Total Volume Measured (units)	Gallons

Sample Information

Sample Time	12:15
Color	Clear
Notable odors	None

PFAS

Constituent Sampled	PFAS
Container Type	250 mL Plastic
Number of Containers	2
Preservative	None

Alkalinity, BOD, Chloride, Nitrate, Nitrite, Phosphate, Sulfate, TSS, TDS

Constituent Sampled	Alkalinity, BOD, Chloride, Nitrate, Nitrite, Phosphate, Sulfate, TSS, TDS
Container Type	1L Plastic
Number of Containers	1
Preservative	None

COD

Constituent Sampled	COD
Container Type	250 mL Plastic
Number of Containers	1
Preservative	H2SO4

Sulfide

Constituent Sampled	Sulfide
Container Type	125 mL Plastic
Number of Containers	1
Preservative	NaOH

TOC

Constituent Sampled	TOC
Container Type	40 mL Vial
Number of Containers	2
Preservative	H2SO4

Metals

Constituent Sampled	Metals
Container Type	125 mL Plastic

Number of Containers	1
Preservative	HNO3

Dissolved Metals

Constituent Sampled	Dissolved Metals
Container Type	125 mL Plastic
Number of Containers	1
Preservative	HNO3

Well Information

Condition of Well	Good
Well Locked at Arrival	No
Well Locked at Departure	No

Signature

Signed 2018-12-06 16:28:59 UTC

2018-12-10, MW-12-01

Created	2018-12-10 11:29:42 EST by Daniel Stockard
Updated	2018-12-10 12:31:06 EST by Daniel Stockard
Location	42.736660844049, -84.5877205060383
Status	Field Draft
Project Number	B0064479.2018
Project Name / Location	RACER Lansing, MI
Sampler Name	Daniel Stockard
Date	2018-12-10
Well ID	MW-12-01
Are you able to purge and/or sample this well? If not, explain why in the Comments section below.	Yes
Replicate No. (e.g. Dup)	None
Weather	Overcast, 20s

Evacuation Details

Measuring Point (mp) Description	Top of Casing
Casing Diameter (inches)	4
Static Water Level (ft-bmp)	69.64
Total Depth (ft-bmp)	95
Water Column	25.36
Gallons in Well	16.48

Reference Note: Well Volume Calculation [$\pi r^2 h$, where h= 1foot] Well radius (inch):Volume (Gal./foot):Volume (mL/foot) 0.5" = 0.04 gal/ft = 154 mL/ft 1" = 0.16 gal/ft = 617 mL/ft 2" = 0.65 gal/ft = 2470 mL/ft 3" = 1.47 gal/ft = 5557 mL/ft

Purge Method	Low-Flow
Type of Equipment used	Bladder
Sample Method	Grab
Sample Depth (ft-bmp) (e.g. pump intake)	90
Purge Start	11:30

@11:35, DTW:14.77, pH:7.12, temp:8.2, cond:1.39, turb:1100, DO:0.29, redox:-69.9

Reading Time	11:35
Rate (mL/min)	150
Depth to Water (ft)	14.77
pH	7.12
Conductivity (mS/cm)	1.39
Turbidity (NTU)	1100
Dissolved Oxygen (mg/L)	0.29
Temperature (Degrees Celsius)	8.2
Redox (ORP mV)	-69.9
parameters	@11:35, DTW:14.77, pH:7.12, temp:8.2, cond:1.39, turb:1100, DO:0.29, redox:-69.9

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:40, DTW:68.74, pH:7.11, temp:8.1, cond:1.47, turb:1100, DO:0.21, redox:-65

Reading Time	11:40
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	68.74
pH	7.11
Conductivity (mS/cm)	1.47
Turbidity (NTU)	1100
Dissolved Oxygen (mg/L)	0.21
Temperature (Degrees Celsius)	8.1
Redox (ORP mV)	-65
parameters	@11:40, DTW:68.74, pH:7.11, temp:8.1, cond:1.47, turb:1100, DO:0.21, redox:-65

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:50, DTW:68.75, pH:7.11, temp:6.5, cond:1.5, turb:227, DO:, redox:-32.1

Reading Time	11:50
Minutes Elapsed between readings	10
Rate (mL/min)	100
Depth to Water (ft)	68.75
pH	7.11
Conductivity (mS/cm)	1.5
Turbidity (NTU)	227
Temperature (Degrees Celsius)	6.5
Redox (ORP mV)	-32.1
parameters	@11:50, DTW:68.75, pH:7.11, temp:6.5, cond:1.5, turb:227, DO:, redox:-32.1

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:55, DTW:68.75, pH:7.14, temp:5.9, cond:1.45, turb:234, DO:4.3, redox:-21.5

Reading Time	11:55
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	68.75
pH	7.14
Conductivity (mS/cm)	1.45
Turbidity (NTU)	234
Dissolved Oxygen (mg/L)	4.3
Temperature (Degrees Celsius)	5.9
Redox (ORP mV)	-21.5
parameters	@11:55, DTW:68.75, pH:7.14, temp:5.9, cond:1.45, turb:234, DO:4.3, redox:-21.5

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:05, DTW:68.72, pH:7.12, temp:7.9, cond:1.5, turb:107, DO:1.8, redox:-18.7

Reading Time	12:05
Minutes Elapsed between readings	10
Rate (mL/min)	100
Depth to Water (ft)	68.72
pH	7.12
Conductivity (mS/cm)	1.5
Turbidity (NTU)	107
Dissolved Oxygen (mg/L)	1.8
Temperature (Degrees Celsius)	7.9
Redox (ORP mV)	-18.7
parameters	@12:05, DTW:68.72, pH:7.12, temp:7.9, cond:1.5, turb:107, DO:1.8, redox:-18.7

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:10, DTW:68.72, pH:7.12, temp:8.2, cond:1.51, turb:75.8, DO:1.26, redox:-21.9

Reading Time	12:10
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	68.72
pH	7.12
Conductivity (mS/cm)	1.51
Turbidity (NTU)	75.8
Dissolved Oxygen (mg/L)	1.26
Temperature (Degrees Celsius)	8.2
Redox (ORP mV)	-21.9
parameters	@12:10, DTW:68.72, pH:7.12, temp:8.2, cond:1.51, turb:75.8, DO:1.26, redox:-21.9

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:15, DTW:68.72, pH:7.12, temp:8.6, cond:1.54, turb:55.1, DO:0.98, redox:-24.1

Reading Time	12:15
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	68.72
pH	7.12
Conductivity (mS/cm)	1.54
Turbidity (NTU)	55.1
Dissolved Oxygen (mg/L)	0.98
Temperature (Degrees Celsius)	8.6
Redox (ORP mV)	-24.1
parameters	@12:15, DTW:68.72, pH:7.12, temp:8.6, cond:1.54, turb:55.1, DO:0.98, redox:-24.1

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:20, DTW:68.72, pH:7.11, temp:8.3, cond:1.53, turb:50.2, DO:1.34, redox:-26.2

Reading Time	12:20
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	68.72
pH	7.11
Conductivity (mS/cm)	1.53
Turbidity (NTU)	50.2
Dissolved Oxygen (mg/L)	1.34
Temperature (Degrees Celsius)	8.3
Redox (ORP mV)	-26.2
parameters	@12:20, DTW:68.72, pH:7.11, temp:8.3, cond:1.53, turb:50.2, DO:1.34, redox:-26.2

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:25, DTW:68.72, pH:7.12, temp:8.5, cond:1.53, turb:43.2, DO:0.8, redox:-27.7

Reading Time	12:25
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	68.72
pH	7.12
Conductivity (mS/cm)	1.53
Turbidity (NTU)	43.2
Dissolved Oxygen (mg/L)	0.8
Temperature (Degrees Celsius)	8.5
Redox (ORP mV)	-27.7
parameters	@12:25, DTW:68.72, pH:7.12, temp:8.5, cond:1.53, turb:43.2, DO:0.8, redox:-27.7

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:30, DTW:68.74, pH:7.12, temp:8.5, cond:1.54, turb:40.6, DO:0.75, redox:-27.9

Reading Time	12:30
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	68.74
pH	7.12
Conductivity (mS/cm)	1.54
Turbidity (NTU)	40.6
Dissolved Oxygen (mg/L)	0.75
Temperature (Degrees Celsius)	8.5
Redox (ORP mV)	-27.9
parameters	@12:30, DTW:68.74, pH:7.12, temp:8.5, cond:1.54, turb:40.6, DO:0.75, redox:-27.9

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

Total Volume Measured (units)	Gallons
Total Gallons Purged	1.5
Well Volumes Purged	0.09

Sample Information

Sample Time	12:30
Color	None
Notable odors	None

1,4-D

Constituent Sampled	1,4-D
Container Type	40 mL Vial
Number of Containers	3
Preservative	HCL

Well Information

Well Location	P2
Condition of Well	Good
Well Locked at Arrival	Yes
Well Locked at Departure	Yes

Signature

Signed 2018-12-10 12:31:05 EST

2018-12-07, P2-MH-NW

Created	2018-12-07 20:25:40 UTC by Dale Arnett
Updated	2018-12-07 20:48:13 UTC by Dale Arnett
Location	42.7399462508436, -84.5869607292903
Status	Field Draft
Project Number	B0064479.2018
Project Name / Location	RACER Lansing, MI
Sampler Name	Dale Arnett
Date	2018-12-07
Well ID	P2-MH-NW
Are you able to purge and/or sample this well? If not, explain why in the Comments section below.	Yes

Evacuation Details

Measuring Point (mp) Description	Ground Surface
Static Water Level (ft-bmp)	0

Reference Note: Well Volume Calculation [$\pi r^2 h$, where h= 1foot] Well radius (inch):Volume (Gal./foot):Volume (mL/foot) 0.5" = 0.04 gal/ft = 154 mL/ft 1" = 0.16 gal/ft = 617 mL/ft 2" = 0.65 gal/ft = 2470 mL/ft 3" = 1.47 gal/ft = 5557 mL/ft

Purge Method	Grab
Type of Equipment used	Peristaltic
Sample Method	Grab
Purge Start	15:30

@15:39, DTW:, pH:7.93, temp:11.1, cond:0.51, turb:0.02, DO:9.76, redox:89

Reading Time	15:39
pH	7.93
Conductivity (mS/cm)	0.51
Turbidity (NTU)	0.02
Dissolved Oxygen (mg/L)	9.76
Temperature (Degrees Celsius)	11.1
Redox (ORP mV)	89
parameters	@15:39, DTW:, pH:7.93, temp:11.1, cond:0.51, turb:0.02, DO:9.76, redox:89

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

Sample Information

Sample Time	15:40
Color	None
Notable odors	None

VOCs

Constituent Sampled	VOCs
Container Type	40 mL Vial
Number of Containers	3
Preservative	HCL

1,4-Dioxane

Constituent Sampled	1,4-Dioxane
Container Type	40 mL Vial
Number of Containers	3
Preservative	HCL

Metals

Constituent Sampled	Metals
Container Type	125 mL Plastic
Number of Containers	1
Preservative	HNO3

PFAS

Constituent Sampled	PFAS
Container Type	250 mL Plastic
Number of Containers	2
Preservative	None

Well Information

Well Location	Plant 3
Photo of Well	

Signature

Signed 2018-12-07 20:36:10 UTC

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2018-12-04, TW-16-01

Created	2018-12-04 15:41:41 EST by Daniel Stockard
Updated	2018-12-04 18:57:49 EST by Daniel Stockard
Location	42.7368045458968, -84.5856922958834
Status	Field Draft
Project Number	B0064479.2018
Project Name / Location	RACER Lansing, MI
Sampler Name	Daniel Stockard
Date	2018-12-04
Well ID	TW-16-01
Are you able to purge and/or sample this well? If not, explain why in the Comments section below.	Yes
Replicate No. (e.g. Dup)	None
Weather	Sunny, 30s

Evacuation Details

Measuring Point (mp) Description	Top of Casing
Casing Diameter (inches)	2
Static Water Level (ft-bmp)	58.44
Total Depth (ft-bmp)	74.75
Water Column	16.31
Gallons in Well	2.65

Reference Note: Well Volume Calculation [$\pi r^2 h$, where h= 1foot] Well radius (inch):Volume (Gal./foot):Volume (mL/foot) 0.5" = 0.04 gal/ft = 154 mL/ft 1" = 0.16 gal/ft = 617 mL/ft 2" = 0.65 gal/ft = 2470 mL/ft 3" = 1.47 gal/ft = 5557 mL/ft

Purge Method	Low-Flow
Type of Equipment used	Bladder
Sample Method	Grab
Sample Depth (ft-bmp) (e.g. pump intake)	73
Purge Start	15:44

@15:40, DTW:63.3, pH:6.88, temp:10.8, cond:1.63, turb:214, DO:3.63, redox:37.9

Reading Time	15:40
Rate (mL/min)	100
Depth to Water (ft)	63.3
pH	6.88
Conductivity (mS/cm)	1.63
Turbidity (NTU)	214
Dissolved Oxygen (mg/L)	3.63
Temperature (Degrees Celsius)	10.8
Redox (ORP mV)	37.9
parameters	@15:40, DTW:63.3, pH:6.88, temp:10.8, cond:1.63, turb:214, DO:3.63, redox:37.9

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@15:46, DTW:58.45, pH:6.91, temp:11.7, cond:1.63, turb:205, DO:2.67, redox:30.3

Reading Time	15:46
Minutes Elapsed between readings	6
Rate (mL/min)	100
Depth to Water (ft)	58.45
pH	6.91
Conductivity (mS/cm)	1.63
Turbidity (NTU)	205
Dissolved Oxygen (mg/L)	2.67
Temperature (Degrees Celsius)	11.7
Redox (ORP mV)	30.3
parameters	@15:46, DTW:58.45, pH:6.91, temp:11.7, cond:1.63, turb:205, DO:2.67, redox:30.3

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@15:50, DTW:58.61, pH:6.97, temp:13.1, cond:1.76, turb:164, DO:2.3, redox:10.2

Reading Time	15:50
Minutes Elapsed between readings	4
Rate (mL/min)	100
Depth to Water (ft)	58.61
pH	6.97
Conductivity (mS/cm)	1.76
Turbidity (NTU)	164
Dissolved Oxygen (mg/L)	2.3
Temperature (Degrees Celsius)	13.1
Redox (ORP mV)	10.2
parameters	@15:50, DTW:58.61, pH:6.97, temp:13.1, cond:1.76, turb:164, DO:2.3, redox:10.2

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@15:55, DTW:59.02, pH:7.2, temp:13.2, cond:1.75, turb:65.9, DO:5.33, redox:-2.4

Reading Time	15:55
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	59.02
pH	7.2
Conductivity (mS/cm)	1.75
Turbidity (NTU)	65.9
Dissolved Oxygen (mg/L)	5.33
Temperature (Degrees Celsius)	13.2
Redox (ORP mV)	-2.4
parameters	@15:55, DTW:59.02, pH:7.2, temp:13.2, cond:1.75, turb:65.9, DO:5.33, redox:-2.4

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@16:00, DTW:59.13, pH:6.85, temp:13.2, cond:1.75, turb:39.4, DO:6.94, redox:-9.2

Reading Time	16:00
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	59.13
pH	6.85
Conductivity (mS/cm)	1.75
Turbidity (NTU)	39.4
Dissolved Oxygen (mg/L)	6.94
Temperature (Degrees Celsius)	13.2
Redox (ORP mV)	-9.2
parameters	@16:00, DTW:59.13, pH:6.85, temp:13.2, cond:1.75, turb:39.4, DO:6.94, redox:-9.2

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@16:07, DTW:59.67, pH:7.32, temp:13.4, cond:1.76, turb:38.4, DO:7.45, redox:-21.1

Reading Time	16:07
Minutes Elapsed between readings	7
Rate (mL/min)	100
Depth to Water (ft)	59.67
pH	7.32
Conductivity (mS/cm)	1.76
Turbidity (NTU)	38.4
Dissolved Oxygen (mg/L)	7.45
Temperature (Degrees Celsius)	13.4
Redox (ORP mV)	-21.1
parameters	@16:07, DTW:59.67, pH:7.32, temp:13.4, cond:1.76, turb:38.4, DO:7.45, redox:-21.1

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@16:11, DTW:59.78, pH:7.28, temp:13.4, cond:1.76, turb:37.8, DO:7.13, redox:-26.3

Reading Time	16:11
Minutes Elapsed between readings	4
Rate (mL/min)	100
Depth to Water (ft)	59.78
pH	7.28
Conductivity (mS/cm)	1.76
Turbidity (NTU)	37.8
Dissolved Oxygen (mg/L)	7.13
Temperature (Degrees Celsius)	13.4
Redox (ORP mV)	-26.3
parameters	@16:11, DTW:59.78, pH:7.28, temp:13.4, cond:1.76, turb:37.8, DO:7.13, redox:-26.3

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@16:18, DTW:60.71, pH:7.21, temp:13.2, cond:1.74, turb:38, DO:6.67, redox:-32.4

Reading Time	16:18
Minutes Elapsed between readings	7
Rate (mL/min)	100
Depth to Water (ft)	60.71
pH	7.21
Conductivity (mS/cm)	1.74
Turbidity (NTU)	38
Dissolved Oxygen (mg/L)	6.67
Temperature (Degrees Celsius)	13.2
Redox (ORP mV)	-32.4
parameters	@16:18, DTW:60.71, pH:7.21, temp:13.2, cond:1.74, turb:38, DO:6.67, redox:-32.4

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@16:24, DTW:61.32, pH:7.21, temp:13.1, cond:1.74, turb:36.5, DO:6.65, redox:-32.6

Reading Time	16:24
Minutes Elapsed between readings	6
Rate (mL/min)	100
Depth to Water (ft)	61.32
pH	7.21
Conductivity (mS/cm)	1.74
Turbidity (NTU)	36.5
Dissolved Oxygen (mg/L)	6.65
Temperature (Degrees Celsius)	13.1
Redox (ORP mV)	-32.6
parameters	@16:24, DTW:61.32, pH:7.21, temp:13.1, cond:1.74, turb:36.5, DO:6.65, redox:-32.6

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

Purge End	16:30
Total Volume Measured (units)	Gallons
Total Gallons Purged	2
Well Volumes Purged	0.75

Sample Information

Sample Time	16:30
Color	Clear
Notable odors	None

1,4-D

Constituent Sampled	1,4-D

Container Type	40 mL Vial
Number of Containers	3
Preservative	HCL

TKN,TP

Constituent Sampled	TKN,TP
Container Type	250 mL Plastic
Number of Containers	1
Preservative	H2SO4

Nitrate

Constituent Sampled	Nitrate
Container Type	125 mL Plastic
Number of Containers	1
Preservative	None

Propane

Constituent Sampled	Propane
Container Type	40 mL Vial
Number of Containers	3
Preservative	TSP

Well Information

Well Location	P2 Biosparge
Condition of Well	Great
Well Locked at Arrival	No
Well Locked at Departure	No
Comments	Good yield

Signature

Signed 2018-12-04 16:26:52 EST

2018-12-11, MW-13-28

Created	2018-12-11 16:55:43 UTC by Marina Samp
Updated	2018-12-11 18:08:48 UTC by Marina Samp
Location	42.7424513502445, -84.5883042645497
Status	Field Draft
Project Number	B0064479.2018
Project Name / Location	RACER Lansing, MI
Sampler Name	Marina Samp
Date	2018-12-11
Well ID	MW-13-28
Are you able to purge and/or sample this well? If not, explain why in the Comments section below.	Yes
Weather	30, cloudy

Evacuation Details

Measuring Point (mp) Description	Top of Casing
Casing Diameter (inches)	4
Static Water Level (ft-bmp)	64.65
Total Depth (ft-bmp)	115
Water Column	50.35
Gallons in Well	32.73

Reference Note: Well Volume Calculation [$\pi r^2 h$, where h= 1foot] Well radius (inch):Volume (Gal./foot):Volume (mL/foot) 0.5" = 0.04 gal/ft = 154 mL/ft 1" = 0.16 gal/ft = 617 mL/ft 2" = 0.65 gal/ft = 2470 mL/ft 3" = 1.47 gal/ft = 5557 mL/ft

Purge Method	Low-Flow
Type of Equipment used	Bladder
Sample Method	Low-Flow
Sample Depth (ft-bmp) (e.g. pump intake)	112
Purge Start	12:00

@12:05, DTW:64.76, pH:7.09, temp:10.3, cond:1, turb:356, DO:2.55, redox:54.2

Reading Time	12:05
Rate (mL/min)	300
Depth to Water (ft)	64.76
pH	7.09
Conductivity (mS/cm)	1
Turbidity (NTU)	356
Dissolved Oxygen (mg/L)	2.55
Temperature (Degrees Celsius)	10.3
Redox (ORP mV)	54.2
parameters	@12:05, DTW:64.76, pH:7.09, temp:10.3, cond:1, turb:356, DO:2.55, redox:54.2

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:10, DTW:64.71, pH:7.1, temp:10.3, cond:1, turb:254, DO:0.43, redox:47.6

Reading Time	12:10

Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	64.71
pH	7.1
Conductivity (mS/cm)	1
Turbidity (NTU)	254
Dissolved Oxygen (mg/L)	0.43
Temperature (Degrees Celsius)	10.3
Redox (ORP mV)	47.6
parameters	@12:10, DTW:64.71, pH:7.1, temp:10.3, cond:1, turb:254, DO:0.43, redox:47.6

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:15, DTW:64.71, pH:7.1, temp:10.1, cond:1, turb:161, DO:0.34, redox:42.2

Reading Time	12:15
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	64.71
pH	7.1
Conductivity (mS/cm)	1
Turbidity (NTU)	161
Dissolved Oxygen (mg/L)	0.34
Temperature (Degrees Celsius)	10.1
Redox (ORP mV)	42.2
parameters	@12:15, DTW:64.71, pH:7.1, temp:10.1, cond:1, turb:161, DO:0.34, redox:42.2

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:20, DTW:64.71, pH:7.11, temp:9.3, cond:0.98, turb:96.5, DO:0.37, redox:37.3

Reading Time	12:20
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	64.71
pH	7.11
Conductivity (mS/cm)	0.98
Turbidity (NTU)	96.5
Dissolved Oxygen (mg/L)	0.37
Temperature (Degrees Celsius)	9.3
Redox (ORP mV)	37.3
parameters	@12:20, DTW:64.71, pH:7.11, temp:9.3, cond:0.98, turb:96.5, DO:0.37, redox:37.3

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:25, DTW:64.71, pH:7.11, temp:10.1, cond:0.99, turb:72.5, DO:0.33, redox:34

Reading Time	12:25
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	64.71
pH	7.11
Conductivity (mS/cm)	0.99
Turbidity (NTU)	72.5
Dissolved Oxygen (mg/L)	0.33
Temperature (Degrees Celsius)	10.1
Redox (ORP mV)	34
parameters	@12:25, DTW:64.71, pH:7.11, temp:10.1, cond:0.99, turb:72.5, DO:0.33, redox:34

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:30, DTW:64.71, pH:7.11, temp:10.1, cond:0.99, turb:64.1, DO:0.3, redox:30.8

Reading Time	12:30
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	64.71
pH	7.11
Conductivity (mS/cm)	0.99
Turbidity (NTU)	64.1
Dissolved Oxygen (mg/L)	0.3
Temperature (Degrees Celsius)	10.1
Redox (ORP mV)	30.8
parameters	@12:30, DTW:64.71, pH:7.11, temp:10.1, cond:0.99, turb:64.1, DO:0.3, redox:30.8

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:35, DTW:64.71, pH:7.11, temp:10, cond:0.98, turb:45.3, DO:0.35, redox:26.8

Reading Time	12:35
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	64.71
pH	7.11
Conductivity (mS/cm)	0.98
Turbidity (NTU)	45.3
Dissolved Oxygen (mg/L)	0.35
Temperature (Degrees Celsius)	10
Redox (ORP mV)	26.8
parameters	@12:35, DTW:64.71, pH:7.11, temp:10, cond:0.98, turb:45.3, DO:0.35, redox:26.8

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:40, DTW:64.71, pH:7.11, temp:10.1, cond:0.97, turb:38.5, DO:0.41, redox:24.1

Reading Time	12:40
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	64.71
pH	7.11
Conductivity (mS/cm)	0.97
Turbidity (NTU)	38.5
Dissolved Oxygen (mg/L)	0.41
Temperature (Degrees Celsius)	10.1
Redox (ORP mV)	24.1
parameters	@12:40, DTW:64.71, pH:7.11, temp:10.1, cond:0.97, turb:38.5, DO:0.41, redox:24.1

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:45, DTW:64.71, pH:7.11, temp:10.3, cond:0.97, turb:31.7, DO:0.51, redox:22.1

Reading Time	12:45
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	64.71
pH	7.11
Conductivity (mS/cm)	0.97
Turbidity (NTU)	31.7
Dissolved Oxygen (mg/L)	0.51
Temperature (Degrees Celsius)	10.3
Redox (ORP mV)	22.1
parameters	@12:45, DTW:64.71, pH:7.11, temp:10.3, cond:0.97, turb:31.7, DO:0.51, redox:22.1

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:50, DTW:64.71, pH:7.11, temp:9.7, cond:0.95, turb:29.3, DO:0.57, redox:20.5

Reading Time	12:50
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	64.71
pH	7.11
Conductivity (mS/cm)	0.95
Turbidity (NTU)	29.3
Dissolved Oxygen (mg/L)	0.57
Temperature (Degrees Celsius)	9.7
Redox (ORP mV)	20.5
parameters	@12:50, DTW:64.71, pH:7.11, temp:9.7, cond:0.95, turb:29.3, DO:0.57, redox:20.5

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:55, DTW:64.71, pH:7.12, temp:9.8, cond:0.95, turb:23.2, DO:0.59, redox:18.5

Reading Time	12:55
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	64.71
pH	7.12
Conductivity (mS/cm)	0.95
Turbidity (NTU)	23.2
Dissolved Oxygen (mg/L)	0.59
Temperature (Degrees Celsius)	9.8
Redox (ORP mV)	18.5
parameters	@12:55, DTW:64.71, pH:7.12, temp:9.8, cond:0.95, turb:23.2, DO:0.59, redox:18.5

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:00, DTW:64.71, pH:7.12, temp:10.2, cond:0.96, turb:23.4, DO:0.65, redox:16.6

Reading Time	13:00
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	64.71
pH	7.12
Conductivity (mS/cm)	0.96
Turbidity (NTU)	23.4
Dissolved Oxygen (mg/L)	0.65
Temperature (Degrees Celsius)	10.2
Redox (ORP mV)	16.6
parameters	@13:00, DTW:64.71, pH:7.12, temp:10.2, cond:0.96, turb:23.4, DO:0.65, redox:16.6

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:05, DTW:64.71, pH:7.12, temp:10.3, cond:0.95, turb:26.2, DO:0.65, redox:15.2

Reading Time	13:05
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	64.71
pH	7.12
Conductivity (mS/cm)	0.95
Turbidity (NTU)	26.2
Dissolved Oxygen (mg/L)	0.65
Temperature (Degrees Celsius)	10.3
Redox (ORP mV)	15.2

parameters	@13:05, DTW:64.71, pH:7.12, temp:10.3, cond:0.95, turb:26.2, DO:0.65, redox:15.2

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

Purge End	13:05
Total Volume Measured (units)	Gallons
Total Gallons Purged	1.5
Well Volumes Purged	0.05

Sample Information

Sample Time	13:10
Color	None
Notable odors	None

1,4-dioxane

Constituent Sampled	1,4-dioxane
Container Type	40 mL Vial
Number of Containers	3
Preservative	HCL

Well Information

Well Location	Plant 3
Condition of Well	Good
Well Locked at Arrival	Yes
Well Locked at Departure	Yes

Signature

Signed 2018-12-11 18:08:47 UTC

2018-12-06, MW-14-65

Created	2018-12-06 19:29:05 UTC by Marina Samp
Updated	2018-12-06 20:19:20 UTC by Marina Samp
Location	42.7443817025449, -84.5840545558227
Status	Field Draft
Project Number	B0064479.2018
Project Name / Location	RACER Lansing, MI
Sampler Name	Marina Samp
Date	2018-12-06
Well ID	MW-14-65
Are you able to purge and/or sample this well? If not, explain why in the Comments section below.	Yes
Weather	30, cloudy

Evacuation Details

Measuring Point (mp) Description	Top of Casing
Casing Diameter (inches)	2
Static Water Level (ft-bmp)	5.9
Total Depth (ft-bmp)	13
Water Column	7.1
Gallons in Well	1.15

Reference Note: Well Volume Calculation [$\pi r^2 h$, where h= 1foot] Well radius (inch):Volume (Gal./foot):Volume (mL/foot) 0.5" = 0.04 gal/ft = 154 mL/ft 1" = 0.16 gal/ft = 617 mL/ft 2" = 0.65 gal/ft = 2470 mL/ft 3" = 1.47 gal/ft = 5557 mL/ft

Purge Method	Low-Flow
Type of Equipment used	Bladder
Sample Method	Low-Flow
Sample Depth (ft-bmp) (e.g. pump intake)	10
Purge Start	14:25

@14:30, DTW:7.44, pH:7.38, temp:7.2, cond:0.473, turb:96.9, DO:1.91, redox:127.9

Reading Time	14:30
Rate (mL/min)	300
Depth to Water (ft)	7.44
pH	7.38
Conductivity (mS/cm)	0.473
Turbidity (NTU)	96.9
Dissolved Oxygen (mg/L)	1.91
Temperature (Degrees Celsius)	7.2
Redox (ORP mV)	127.9
parameters	@14:30, DTW:7.44, pH:7.38, temp:7.2, cond:0.473, turb:96.9, DO:1.91, redox:127.9

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@14:35, DTW:7.55, pH:7.36, temp:4.1, cond:0.434, turb:74.5, DO:2.13, redox:129.2

Reading Time	14:35

Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	7.55
pH	7.36
Conductivity (mS/cm)	0.434
Turbidity (NTU)	74.5
Dissolved Oxygen (mg/L)	2.13
Temperature (Degrees Celsius)	4.1
Redox (ORP mV)	129.2
parameters	@14:35, DTW:7.55, pH:7.36, temp:4.1, cond:0.434, turb:74.5, DO:2.13, redox:129.2

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@14:40, DTW:7.61, pH:7.38, temp:2.2, cond:0.406, turb:54.3, DO:2.16, redox:130.2

Reading Time	14:40
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	7.61
pH	7.38
Conductivity (mS/cm)	0.406
Turbidity (NTU)	54.3
Dissolved Oxygen (mg/L)	2.16
Temperature (Degrees Celsius)	2.2
Redox (ORP mV)	130.2
parameters	@14:40, DTW:7.61, pH:7.38, temp:2.2, cond:0.406, turb:54.3, DO:2.16, redox:130.2

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@14:45, DTW:7.68, pH:7.4, temp:1.7, cond:0.392, turb:44.1, DO:2.2, redox:130.6

Reading Time	14:45
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	7.68
pH	7.4
Conductivity (mS/cm)	0.392
Turbidity (NTU)	44.1
Dissolved Oxygen (mg/L)	2.2
Temperature (Degrees Celsius)	1.7
Redox (ORP mV)	130.6
parameters	@14:45, DTW:7.68, pH:7.4, temp:1.7, cond:0.392, turb:44.1, DO:2.2, redox:130.6

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@14:50, DTW:7.75, pH:7.41, temp:1.7, cond:0.383, turb:41.1, DO:2.13, redox:131.5

Reading Time	14:50
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	7.75
pH	7.41
Conductivity (mS/cm)	0.383
Turbidity (NTU)	41.1
Dissolved Oxygen (mg/L)	2.13
Temperature (Degrees Celsius)	1.7
Redox (ORP mV)	131.5
parameters	@14:50, DTW:7.75, pH:7.41, temp:1.7, cond:0.383, turb:41.1, DO:2.13, redox:131.5
Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit	

@14:55, DTW:7.83, pH:7.41, temp:1.9, cond:0.384, turb:43.4, DO:2.11, redox:131.7

Reading Time	14:55
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	7.83
pH	7.41
Conductivity (mS/cm)	0.384
Turbidity (NTU)	43.4
Dissolved Oxygen (mg/L)	2.11
Temperature (Degrees Celsius)	1.9
Redox (ORP mV)	131.7
parameters	@14:55, DTW:7.83, pH:7.41, temp:1.9, cond:0.384, turb:43.4, DO:2.11, redox:131.7
Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit	
Purge End	14:55
Total Volume Measured (units)	Gallons
Total Gallons Purged	0.75
Well Volumes Purged	0.65

Sample Information

Sample Time	15:00
Color	None
Notable odors	None

VOCs

Constituent Sampled	VOCs
Container Type	40 mL Vial
Number of Containers	3
Preservative	HCL

Well Information

Well Location	Plant 3
Condition of Well	Good
Well Locked at Arrival	Yes
Well Locked at Departure	Yes

Signature

Signed 2018-12-06 19:59:06 UTC

2018-12-12, MW-13-22

Created	2018-12-12 10:13:19 EST by Christine Gregg
Updated	2018-12-12 11:19:21 EST by Christine Gregg
Location	42.7424189122792, -84.5885216072989
Status	Field Draft
Project Number	B0064479.2018
Project Name / Location	RACER Lansing, MI
Sampler Name	Christine Gregg
Date	2018-12-12
Well ID	MW-13-22
Are you able to purge and/or sample this well? If not, explain why in the Comments section below.	Yes
Weather	30s partly cloudy

Evacuation Details

Measuring Point (mp) Description	Top of Casing
Casing Diameter (inches)	2
Static Water Level (ft-bmp)	64.04
Total Depth (ft-bmp)	96.15
Water Column	32.11
Gallons in Well	5.22

Reference Note: Well Volume Calculation [$\pi r^2 h$, where h= 1foot] Well radius (inch):Volume (Gal./foot):Volume (mL/foot) 0.5" = 0.04 gal/ft = 154 mL/ft 1" = 0.16 gal/ft = 617 mL/ft 2" = 0.65 gal/ft = 2470 mL/ft 3" = 1.47 gal/ft = 5557 mL/ft

Purge Method	Low-Flow
Type of Equipment used	Bladder
Sample Method	Low-Flow
Sample Depth (ft-bmp) (e.g. pump intake)	94
Purge Start	10:19

@10:25, DTW:64.04, pH:6.99, temp:9.3, cond:1.83, turb:5.15, DO:2.07, redox:-25.5

Reading Time	10:25
Rate (mL/min)	100
Depth to Water (ft)	64.04
pH	6.99
Conductivity (mS/cm)	1.83
Turbidity (NTU)	5.15
Dissolved Oxygen (mg/L)	2.07
Temperature (Degrees Celsius)	9.3
Redox (ORP mV)	-25.5
parameters	@10:25, DTW:64.04, pH:6.99, temp:9.3, cond:1.83, turb:5.15, DO:2.07, redox:-25.5

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:30, DTW:64.08, pH:6.95, temp:8.3, cond:1.86, turb:3.13, DO:1.36, redox:-26.6

Reading Time	10:30

Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	64.08
pH	6.95
Conductivity (mS/cm)	1.86
Turbidity (NTU)	3.13
Dissolved Oxygen (mg/L)	1.36
Temperature (Degrees Celsius)	8.3
Redox (ORP mV)	-26.6
parameters	@10:30, DTW:64.08, pH:6.95, temp:8.3, cond:1.86, turb:3.13, DO:1.36, redox:-26.6

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:35, DTW:64.08, pH:6.93, temp:9.7, cond:1.84, turb:3.48, DO:1.15, redox:-29.1

Reading Time	10:35
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	64.08
pH	6.93
Conductivity (mS/cm)	1.84
Turbidity (NTU)	3.48
Dissolved Oxygen (mg/L)	1.15
Temperature (Degrees Celsius)	9.7
Redox (ORP mV)	-29.1
parameters	@10:35, DTW:64.08, pH:6.93, temp:9.7, cond:1.84, turb:3.48, DO:1.15, redox:-29.1

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:40, DTW:64.08, pH:6.93, temp:10.2, cond:1.85, turb:4.88, DO:1.08, redox:-25

Reading Time	10:40
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	64.08
pH	6.93
Conductivity (mS/cm)	1.85
Turbidity (NTU)	4.88
Dissolved Oxygen (mg/L)	1.08
Temperature (Degrees Celsius)	10.2
Redox (ORP mV)	-25
parameters	@10:40, DTW:64.08, pH:6.93, temp:10.2, cond:1.85, turb:4.88, DO:1.08, redox:-25

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:45, DTW:64.08, pH:6.93, temp:10.7, cond:1.87, turb:5.33, DO:1.13, redox:-21.4

Reading Time	10:45
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	64.08
pH	6.93
Conductivity (mS/cm)	1.87
Turbidity (NTU)	5.33
Dissolved Oxygen (mg/L)	1.13
Temperature (Degrees Celsius)	10.7
Redox (ORP mV)	-21.4
parameters	@10:45, DTW:64.08, pH:6.93, temp:10.7, cond:1.87, turb:5.33, DO:1.13, redox:-21.4

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:50, DTW:64.08, pH:6.92, temp:9.8, cond:1.86, turb:5.32, DO:1.09, redox:-10.4

Reading Time	10:50
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	64.08
pH	6.92
Conductivity (mS/cm)	1.86
Turbidity (NTU)	5.32
Dissolved Oxygen (mg/L)	1.09
Temperature (Degrees Celsius)	9.8
Redox (ORP mV)	-10.4
parameters	@10:50, DTW:64.08, pH:6.92, temp:9.8, cond:1.86, turb:5.32, DO:1.09, redox:-10.4

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:55, DTW:64.08, pH:6.93, temp:10.2, cond:1.86, turb:3.98, DO:1.05, redox:-7.6

Reading Time	10:55
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	64.08
pH	6.93
Conductivity (mS/cm)	1.86
Turbidity (NTU)	3.98
Dissolved Oxygen (mg/L)	1.05
Temperature (Degrees Celsius)	10.2
Redox (ORP mV)	-7.6
parameters	@10:55, DTW:64.08, pH:6.93, temp:10.2, cond:1.86, turb:3.98, DO:1.05, redox:-7.6

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:00, DTW:64.08, pH:6.92, temp:10.2, cond:1.86, turb:2.25, DO:1.09, redox:-2.1

Reading Time	11:00
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	64.08
pH	6.92
Conductivity (mS/cm)	1.86
Turbidity (NTU)	2.25
Dissolved Oxygen (mg/L)	1.09
Temperature (Degrees Celsius)	10.2
Redox (ORP mV)	-2.1
parameters	@11:00, DTW:64.08, pH:6.92, temp:10.2, cond:1.86, turb:2.25, DO:1.09, redox:-2.1

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:05, DTW:64.08, pH:6.92, temp:9.8, cond:1.87, turb:7.88, DO:1.12, redox:4.9

Reading Time	11:05
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	64.08
pH	6.92
Conductivity (mS/cm)	1.87
Turbidity (NTU)	7.88
Dissolved Oxygen (mg/L)	1.12
Temperature (Degrees Celsius)	9.8
Redox (ORP mV)	4.9
parameters	@11:05, DTW:64.08, pH:6.92, temp:9.8, cond:1.87, turb:7.88, DO:1.12, redox:4.9

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:10, DTW:64.08, pH:6.92, temp:9.2, cond:1.88, turb:1.97, DO:1.12, redox:7.7

Reading Time	11:10
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	64.08
pH	6.92
Conductivity (mS/cm)	1.88
Turbidity (NTU)	1.97
Dissolved Oxygen (mg/L)	1.12
Temperature (Degrees Celsius)	9.2
Redox (ORP mV)	7.7
parameters	@11:10, DTW:64.08, pH:6.92, temp:9.2, cond:1.88, turb:1.97, DO:1.12, redox:7.7

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:15, DTW:64.08, pH:6.92, temp:9.1, cond:1.89, turb:2.06, DO:1.16, redox:8.2

Reading Time	11:15
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	64.08
pH	6.92
Conductivity (mS/cm)	1.89
Turbidity (NTU)	2.06
Dissolved Oxygen (mg/L)	1.16
Temperature (Degrees Celsius)	9.1
Redox (ORP mV)	8.2
parameters	@11:15, DTW:64.08, pH:6.92, temp:9.1, cond:1.89, turb:2.06, DO:1.16, redox:8.2

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:20, DTW:64.08, pH:6.92, temp:9.1, cond:1.88, turb:4.73, DO:1.11, redox:7.6

Reading Time	11:20
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	64.08
pH	6.92
Conductivity (mS/cm)	1.88
Turbidity (NTU)	4.73
Dissolved Oxygen (mg/L)	1.11
Temperature (Degrees Celsius)	9.1
Redox (ORP mV)	7.6
parameters	@11:20, DTW:64.08, pH:6.92, temp:9.1, cond:1.88, turb:4.73, DO:1.11, redox:7.6

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

Purge End	11:20
Total Volume Measured (units)	Gallons
Total Gallons Purged	1.5
Well Volumes Purged	0.29

Sample Information

Sample Time	11:20
Color	Clear
Notable odors	None

VOCs + 1,4-Dioxane

Constituent Sampled	VOCs + 1,4-Dioxane

Container Type	40 mL Vial
Number of Containers	3
Preservative	HCL

Well Information

Well Location	Plant 3
Condition of Well	Good
Well Locked at Arrival	Yes
Well Locked at Departure	Yes
Comments	Stick up

Signature

Signed 2018-12-12 10:34:49 EST

2018-12-10, MW-03-08

Created	2018-12-10 19:26:44 UTC by Erik Pietrzak
Updated	2018-12-10 19:28:09 UTC by Erik Pietrzak
Location	42.733936216722, -84.5818765182836
Status	Field Draft
Project Number	B0064479.2018
Project Name / Location	RACER Lansing, MI
Sampler Name	Erik Pietrzak
Date	2018-12-10
Well ID	MW-03-08
Are you able to purge and/or sample this well? If not, explain why in the Comments section below.	No

Evacuation Details

Reference Note: Well Volume Calculation [$\pi r^2 h$, where h= 1foot] Well radius (inch):Volume (Gal./foot):Volume (mL/foot) 0.5" = 0.04 gal/ft = 154 mL/ft 1" = 0.16 gal/ft = 617 mL/ft 2" = 0.65 gal/ft = 2470 mL/ft 3" = 1.47 gal/ft = 5557 mL/ft

Comments	The well and the surrounding area is completely covered by water.

Signature

Signed 2018-12-10 19:28:06 UTC

2018-12-10, MW-13-38

Created	2018-12-10 14:51:10 UTC by Marina Samp
Updated	2018-12-10 15:52:18 UTC by Marina Samp
Location	42.7458893135588, -84.5843312424464
Status	Field Draft
Project Number	B0064479.2018
Project Name / Location	RACER Lansing, MI
Sampler Name	Marina Samp
Date	2018-12-10
Well ID	MW-13-38
Are you able to purge and/or sample this well? If not, explain why in the Comments section below.	Yes
Weather	26, cloudy

Evacuation Details

Measuring Point (mp) Description	Top of Casing
Casing Diameter (inches)	4
Static Water Level (ft-bmp)	67.85
Total Depth (ft-bmp)	128.35
Water Column	60.5
Gallons in Well	39.32

Reference Note: Well Volume Calculation [$\pi r^2 h$, where h= 1foot] Well radius (inch):Volume (Gal./foot):Volume (mL/foot) 0.5" = 0.04 gal/ft = 154 mL/ft 1" = 0.16 gal/ft = 617 mL/ft 2" = 0.65 gal/ft = 2470 mL/ft 3" = 1.47 gal/ft = 5557 mL/ft

Purge Method	Low-Flow
Type of Equipment used	Bladder
Sample Method	Low-Flow
Sample Depth (ft-bmp) (e.g. pump intake)	120
Purge Start	09:50

@09:55, DTW:68.24, pH:7.17, temp:9.7, cond:1.73, turb:48.2, DO:2.24, redox:133

Reading Time	09:55
Rate (mL/min)	300
Depth to Water (ft)	68.24
pH	7.17
Conductivity (mS/cm)	1.73
Turbidity (NTU)	48.2
Dissolved Oxygen (mg/L)	2.24
Temperature (Degrees Celsius)	9.7
Redox (ORP mV)	133
parameters	@09:55, DTW:68.24, pH:7.17, temp:9.7, cond:1.73, turb:48.2, DO:2.24, redox:133

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:00, DTW:68.32, pH:7.19, temp:9.9, cond:1.74, turb:9.31, DO:1.37, redox:117.2

Reading Time	10:00

Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	68.32
pH	7.19
Conductivity (mS/cm)	1.74
Turbidity (NTU)	9.31
Dissolved Oxygen (mg/L)	1.37
Temperature (Degrees Celsius)	9.9
Redox (ORP mV)	117.2
parameters	@10:00, DTW:68.32, pH:7.19, temp:9.9, cond:1.74, turb:9.31, DO:1.37, redox:117.2

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:05, DTW:68.31, pH:7.2, temp:9.4, cond:1.74, turb:6.16, DO:0.8, redox:104.4

Reading Time	10:05
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	68.31
pH	7.2
Conductivity (mS/cm)	1.74
Turbidity (NTU)	6.16
Dissolved Oxygen (mg/L)	0.8
Temperature (Degrees Celsius)	9.4
Redox (ORP mV)	104.4
parameters	@10:05, DTW:68.31, pH:7.2, temp:9.4, cond:1.74, turb:6.16, DO:0.8, redox:104.4

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:10, DTW:68.32, pH:7.2, temp:9.4, cond:1.74, turb:5.33, DO:0.7, redox:94

Reading Time	10:10
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	68.32
pH	7.2
Conductivity (mS/cm)	1.74
Turbidity (NTU)	5.33
Dissolved Oxygen (mg/L)	0.7
Temperature (Degrees Celsius)	9.4
Redox (ORP mV)	94
parameters	@10:10, DTW:68.32, pH:7.2, temp:9.4, cond:1.74, turb:5.33, DO:0.7, redox:94

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:15, DTW:68.32, pH:7.2, temp:9.4, cond:1.73, turb:5.68, DO:0.64, redox:85

Reading Time	10:15
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	68.32
pH	7.2
Conductivity (mS/cm)	1.73
Turbidity (NTU)	5.68
Dissolved Oxygen (mg/L)	0.64
Temperature (Degrees Celsius)	9.4
Redox (ORP mV)	85
parameters	@10:15, DTW:68.32, pH:7.2, temp:9.4, cond:1.73, turb:5.68, DO:0.64, redox:85

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:20, DTW:68.32, pH:7.21, temp:9.2, cond:1.73, turb:4.97, DO:0.61, redox:78.5

Reading Time	10:20
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	68.32
pH	7.21
Conductivity (mS/cm)	1.73
Turbidity (NTU)	4.97
Dissolved Oxygen (mg/L)	0.61
Temperature (Degrees Celsius)	9.2
Redox (ORP mV)	78.5
parameters	@10:20, DTW:68.32, pH:7.21, temp:9.2, cond:1.73, turb:4.97, DO:0.61, redox:78.5

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

Purge End	10:20
Total Volume Measured (units)	Gallons
Total Gallons Purged	1.5
Well Volumes Purged	0.04

Sample Information

Sample Time	10:25
Color	None
Notable odors	None

1,4-dioxane

Constituent Sampled	1,4-dioxane
Container Type	40 mL Vial
Number of Containers	3
Preservative	HCL

Well Information

Well Location	Plant 3
Condition of Well	Missing lid, covered with garbage bag and brick
Well Locked at Arrival	No
Well Locked at Departure	No

Signature

Signed 2018-12-10 15:21:19 UTC

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2018-12-06, MW-16-75

Created	2018-12-06 08:33:49 EST by Daniel Stockard
Updated	2018-12-06 10:10:26 EST by Daniel Stockard
Location	42.7373125000413, -84.5876437167387
Status	Field Draft
Project Number	B0064479.2018
Project Name / Location	RACER Lansing, MI
Sampler Name	Daniel Stockard
Date	2018-12-06
Well ID	MW-16-75
Are you able to purge and/or sample this well? If not, explain why in the Comments section below.	Yes
Replicate No. (e.g. Dup)	None
Weather	Cloudy, sad, 20s

Evacuation Details

Measuring Point (mp) Description	Top of Casing
Casing Diameter (inches)	2
Static Water Level (ft-bmp)	60.29
Total Depth (ft-bmp)	71
Water Column	10.71
Gallons in Well	1.74

Reference Note: Well Volume Calculation [$\pi r^2 h$, where h= 1foot] Well radius (inch):Volume (Gal./foot):Volume (mL/foot) 0.5" = 0.04 gal/ft = 154 mL/ft 1" = 0.16 gal/ft = 617 mL/ft 2" = 0.65 gal/ft = 2470 mL/ft 3" = 1.47 gal/ft = 5557 mL/ft

Purge Method	Low-Flow
Type of Equipment used	Bladder
Sample Method	Grab
Sample Depth (ft-bmp) (e.g. pump intake)	67
Purge Start	08:30

@08:30, DTW:59.62, pH:7.09, temp:10.4, cond:1.42, turb:249, DO:0.43, redox:-11.8

Reading Time	08:30
Rate (mL/min)	100
Depth to Water (ft)	59.62
pH	7.09
Conductivity (mS/cm)	1.42
Turbidity (NTU)	249
Dissolved Oxygen (mg/L)	0.43
Temperature (Degrees Celsius)	10.4
Redox (ORP mV)	-11.8
parameters	@08:30, DTW:59.62, pH:7.09, temp:10.4, cond:1.42, turb:249, DO:0.43, redox:-11.8

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@08:35, DTW:61.81, pH:7.09, temp:10.3, cond:1.43, turb:144, DO:0.4, redox:-16.4

Reading Time	08:35
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	61.81
pH	7.09
Conductivity (mS/cm)	1.43
Turbidity (NTU)	144
Dissolved Oxygen (mg/L)	0.4
Temperature (Degrees Celsius)	10.3
Redox (ORP mV)	-16.4
parameters	@08:35, DTW:61.81, pH:7.09, temp:10.3, cond:1.43, turb:144, DO:0.4, redox:-16.4

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@08:40, DTW:61.92, pH:7.1, temp:10, cond:1.41, turb:114, DO:0.37, redox:-20.7

Reading Time	08:40
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	61.92
pH	7.1
Conductivity (mS/cm)	1.41
Turbidity (NTU)	114
Dissolved Oxygen (mg/L)	0.37
Temperature (Degrees Celsius)	10
Redox (ORP mV)	-20.7
parameters	@08:40, DTW:61.92, pH:7.1, temp:10, cond:1.41, turb:114, DO:0.37, redox:-20.7

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@08:45, DTW:62.13, pH:7.1, temp:9.9, cond:1.4, turb:90.6, DO:0.38, redox:-27.5

Reading Time	08:45
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	62.13
pH	7.1
Conductivity (mS/cm)	1.4
Turbidity (NTU)	90.6
Dissolved Oxygen (mg/L)	0.38
Temperature (Degrees Celsius)	9.9
Redox (ORP mV)	-27.5
parameters	@08:45, DTW:62.13, pH:7.1, temp:9.9, cond:1.4, turb:90.6, DO:0.38, redox:-27.5

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@08:50, DTW:62.15, pH:7.1, temp:10.1, cond:1.4, turb:62.8, DO:0.33, redox:-31.3

Reading Time	08:50
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	62.15
pH	7.1
Conductivity (mS/cm)	1.4
Turbidity (NTU)	62.8
Dissolved Oxygen (mg/L)	0.33
Temperature (Degrees Celsius)	10.1
Redox (ORP mV)	-31.3
parameters	@08:50, DTW:62.15, pH:7.1, temp:10.1, cond:1.4, turb:62.8, DO:0.33, redox:-31.3

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@08:56, DTW:62.38, pH:7.1, temp:9.9, cond:1.4, turb:55.7, DO:0.33, redox:-34.8

Reading Time	08:56
Minutes Elapsed between readings	6
Rate (mL/min)	100
Depth to Water (ft)	62.38
pH	7.1
Conductivity (mS/cm)	1.4
Turbidity (NTU)	55.7
Dissolved Oxygen (mg/L)	0.33
Temperature (Degrees Celsius)	9.9
Redox (ORP mV)	-34.8
parameters	@08:56, DTW:62.38, pH:7.1, temp:9.9, cond:1.4, turb:55.7, DO:0.33, redox:-34.8

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:00, DTW:62.48, pH:7.1, temp:10.3, cond:1.41, turb:64.3, DO:0.31, redox:-38.7

Reading Time	09:00
Minutes Elapsed between readings	4
Rate (mL/min)	100
Depth to Water (ft)	62.48
pH	7.1
Conductivity (mS/cm)	1.41
Turbidity (NTU)	64.3
Dissolved Oxygen (mg/L)	0.31
Temperature (Degrees Celsius)	10.3
Redox (ORP mV)	-38.7
parameters	@09:00, DTW:62.48, pH:7.1, temp:10.3, cond:1.41, turb:64.3, DO:0.31, redox:-38.7

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:06, DTW:62.65, pH:7.1, temp:10.7, cond:1.44, turb:80.2, DO:0.3, redox:-40.4

Reading Time	09:06
Minutes Elapsed between readings	6
Rate (mL/min)	100
Depth to Water (ft)	62.65
pH	7.1
Conductivity (mS/cm)	1.44
Turbidity (NTU)	80.2
Dissolved Oxygen (mg/L)	0.3
Temperature (Degrees Celsius)	10.7
Redox (ORP mV)	-40.4
parameters	@09:06, DTW:62.65, pH:7.1, temp:10.7, cond:1.44, turb:80.2, DO:0.3, redox:-40.4

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:12, DTW:62.55, pH:7.1, temp:9.3, cond:1.36, turb:103, DO:0.29, redox:-41.1

Reading Time	09:12
Minutes Elapsed between readings	6
Rate (mL/min)	100
Depth to Water (ft)	62.55
pH	7.1
Conductivity (mS/cm)	1.36
Turbidity (NTU)	103
Dissolved Oxygen (mg/L)	0.29
Temperature (Degrees Celsius)	9.3
Redox (ORP mV)	-41.1
parameters	@09:12, DTW:62.55, pH:7.1, temp:9.3, cond:1.36, turb:103, DO:0.29, redox:-41.1

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:19, DTW:63.5, pH:7.1, temp:11.2, cond:1.45, turb:116, DO:0.23, redox:-45.5

Reading Time	09:19
Minutes Elapsed between readings	7
Rate (mL/min)	100
Depth to Water (ft)	63.5
pH	7.1
Conductivity (mS/cm)	1.45
Turbidity (NTU)	116
Dissolved Oxygen (mg/L)	0.23
Temperature (Degrees Celsius)	11.2
Redox (ORP mV)	-45.5

parameters	@09:19, DTW:63.5, pH:7.1, temp:11.2, cond:1.45, turb:116, DO:0.23, redox:-45.5

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:25, DTW:63.5, pH:7.1, temp:11.2, cond:1.45, turb:128, DO:0.26, redox:-46

Reading Time	09:25
Minutes Elapsed between readings	6
Rate (mL/min)	100
Depth to Water (ft)	63.5
pH	7.1
Conductivity (mS/cm)	1.45
Turbidity (NTU)	128
Dissolved Oxygen (mg/L)	0.26
Temperature (Degrees Celsius)	11.2
Redox (ORP mV)	-46
parameters	@09:25, DTW:63.5, pH:7.1, temp:11.2, cond:1.45, turb:128, DO:0.26, redox:-46

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:30, DTW:64.1, pH:7.1, temp:11.1, cond:1.44, turb:125, DO:0.28, redox:-46.3

Reading Time	09:30
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	64.1
pH	7.1
Conductivity (mS/cm)	1.44
Turbidity (NTU)	125
Dissolved Oxygen (mg/L)	0.28
Temperature (Degrees Celsius)	11.1
Redox (ORP mV)	-46.3
parameters	@09:30, DTW:64.1, pH:7.1, temp:11.1, cond:1.44, turb:125, DO:0.28, redox:-46.3

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

Purge End	09:30
Total Volume Measured (units)	Gallons
Total Gallons Purged	2.5
Well Volumes Purged	1.44

Sample Information

Sample Time	09:30
Color	Slightly grey
Notable odors	None

VOCs and 1,4-D

Constituent Sampled	VOCs and 1,4-D
Container Type	40 mL Vial
Number of Containers	3
Preservative	HCL

Propane

Constituent Sampled	Propane
Container Type	40 mL Vial
Number of Containers	3
Preservative	HCL

Well Information

Well Location	P2
Condition of Well	Good
Well Locked at Arrival	Yes
Well Locked at Departure	Yes
Comments	Decent yield

Signature

Signed 2018-12-06 09:29:23 EST

2018-12-07, MW-13-31

Created	2018-12-07 16:11:26 UTC by Marina Samp
Updated	2018-12-07 17:26:56 UTC by Marina Samp
Location	42.7419313369717, -84.5829133597059
Status	Field Draft
Project Number	B0064479.2018
Project Name / Location	RACER Lansing, MI
Sampler Name	Marina Samp
Date	2018-12-07
Well ID	MW-13-31
Are you able to purge and/or sample this well? If not, explain why in the Comments section below.	Yes
Weather	26, cloudy

Evacuation Details

Measuring Point (mp) Description	Top of Casing
Casing Diameter (inches)	2
Static Water Level (ft-bmp)	8.67
Total Depth (ft-bmp)	12.8
Water Column	4.13
Gallons in Well	0.67

Reference Note: Well Volume Calculation [$\pi r^2 h$, where h= 1foot] Well radius (inch):Volume (Gal./foot):Volume (mL/foot) 0.5" = 0.04 gal/ft = 154 mL/ft 1" = 0.16 gal/ft = 617 mL/ft 2" = 0.65 gal/ft = 2470 mL/ft 3" = 1.47 gal/ft = 5557 mL/ft

Purge Method	Low-Flow
Type of Equipment used	Bladder
Sample Method	Low-Flow
Sample Depth (ft-bmp) (e.g. pump intake)	10
Purge Start	11:10

@11:15, DTW:8.67, pH:6.78, temp:4.5, cond:0.56, turb:346, DO:1.02, redox:127.8

Reading Time	11:15
Rate (mL/min)	300
Depth to Water (ft)	8.67
pH	6.78
Conductivity (mS/cm)	0.56
Turbidity (NTU)	346
Dissolved Oxygen (mg/L)	1.02
Temperature (Degrees Celsius)	4.5
Redox (ORP mV)	127.8
parameters	@11:15, DTW:8.67, pH:6.78, temp:4.5, cond:0.56, turb:346, DO:1.02, redox:127.8

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:20, DTW:8.67, pH:6.8, temp:3.3, cond:0.53, turb:245, DO:0.59, redox:124.9

Reading Time	11:20

Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	8.67
pH	6.8
Conductivity (mS/cm)	0.53
Turbidity (NTU)	245
Dissolved Oxygen (mg/L)	0.59
Temperature (Degrees Celsius)	3.3
Redox (ORP mV)	124.9
parameters	@11:20, DTW:8.67, pH:6.8, temp:3.3, cond:0.53, turb:245, DO:0.59, redox:124.9

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:25, DTW:8.67, pH:6.82, temp:2.5, cond:0.52, turb:205, DO:0.48, redox:123.2

Reading Time	11:25
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	8.67
pH	6.82
Conductivity (mS/cm)	0.52
Turbidity (NTU)	205
Dissolved Oxygen (mg/L)	0.48
Temperature (Degrees Celsius)	2.5
Redox (ORP mV)	123.2
parameters	@11:25, DTW:8.67, pH:6.82, temp:2.5, cond:0.52, turb:205, DO:0.48, redox:123.2

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:30, DTW:8.67, pH:6.82, temp:2.1, cond:0.51, turb:166, DO:0.43, redox:121.6

Reading Time	11:30
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	8.67
pH	6.82
Conductivity (mS/cm)	0.51
Turbidity (NTU)	166
Dissolved Oxygen (mg/L)	0.43
Temperature (Degrees Celsius)	2.1
Redox (ORP mV)	121.6
parameters	@11:30, DTW:8.67, pH:6.82, temp:2.1, cond:0.51, turb:166, DO:0.43, redox:121.6

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:35, DTW:8.67, pH:6.83, temp:1.9, cond:0.51, turb:156, DO:0.41, redox:120.5

Reading Time	11:35
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	8.67
pH	6.83
Conductivity (mS/cm)	0.51
Turbidity (NTU)	156
Dissolved Oxygen (mg/L)	0.41
Temperature (Degrees Celsius)	1.9
Redox (ORP mV)	120.5
parameters	@11:35, DTW:8.67, pH:6.83, temp:1.9, cond:0.51, turb:156, DO:0.41, redox:120.5

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:40, DTW:8.67, pH:6.83, temp:2, cond:0.51, turb:129, DO:0.39, redox:119.3

Reading Time	11:40
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	8.67
pH	6.83
Conductivity (mS/cm)	0.51
Turbidity (NTU)	129
Dissolved Oxygen (mg/L)	0.39
Temperature (Degrees Celsius)	2
Redox (ORP mV)	119.3
parameters	@11:40, DTW:8.67, pH:6.83, temp:2, cond:0.51, turb:129, DO:0.39, redox:119.3

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:45, DTW:8.67, pH:6.83, temp:1.4, cond:0.5, turb:114, DO:0.38, redox:118.2

Reading Time	11:45
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	8.67
pH	6.83
Conductivity (mS/cm)	0.5
Turbidity (NTU)	114
Dissolved Oxygen (mg/L)	0.38
Temperature (Degrees Celsius)	1.4
Redox (ORP mV)	118.2
parameters	@11:45, DTW:8.67, pH:6.83, temp:1.4, cond:0.5, turb:114, DO:0.38, redox:118.2

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:50, DTW:8.67, pH:6.83, temp:1.3, cond:0.499, turb:115, DO:0.39, redox:117.7

Reading Time	11:50
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	8.67
pH	6.83
Conductivity (mS/cm)	0.499
Turbidity (NTU)	115
Dissolved Oxygen (mg/L)	0.39
Temperature (Degrees Celsius)	1.3
Redox (ORP mV)	117.7
parameters	@11:50, DTW:8.67, pH:6.83, temp:1.3, cond:0.499, turb:115, DO:0.39, redox:117.7

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:55, DTW:8.67, pH:6.83, temp:1.7, cond:0.499, turb:117, DO:0.41, redox:116.9

Reading Time	11:55
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	8.67
pH	6.83
Conductivity (mS/cm)	0.499
Turbidity (NTU)	117
Dissolved Oxygen (mg/L)	0.41
Temperature (Degrees Celsius)	1.7
Redox (ORP mV)	116.9
parameters	@11:55, DTW:8.67, pH:6.83, temp:1.7, cond:0.499, turb:117, DO:0.41, redox:116.9

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:00, DTW:8.67, pH:6.8, temp:7.2, cond:0.59, turb:126, DO:2.4, redox:112.2

Reading Time	12:00
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	8.67
pH	6.8
Conductivity (mS/cm)	0.59
Turbidity (NTU)	126
Dissolved Oxygen (mg/L)	2.4
Temperature (Degrees Celsius)	7.2
Redox (ORP mV)	112.2
parameters	@12:00, DTW:8.67, pH:6.8, temp:7.2, cond:0.59, turb:126, DO:2.4, redox:112.2

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:05, DTW:8.69, pH:6.78, temp:9.4, cond:0.62, turb:76.2, DO:0.2, redox:110.4

Reading Time	12:05
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	8.69
pH	6.78
Conductivity (mS/cm)	0.62
Turbidity (NTU)	76.2
Dissolved Oxygen (mg/L)	0.2
Temperature (Degrees Celsius)	9.4
Redox (ORP mV)	110.4
parameters	@12:05, DTW:8.69, pH:6.78, temp:9.4, cond:0.62, turb:76.2, DO:0.2, redox:110.4

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:10, DTW:8.67, pH:6.77, temp:9.2, cond:0.62, turb:28.4, DO:0.23, redox:110

Reading Time	12:10
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	8.67
pH	6.77
Conductivity (mS/cm)	0.62
Turbidity (NTU)	28.4
Dissolved Oxygen (mg/L)	0.23
Temperature (Degrees Celsius)	9.2
Redox (ORP mV)	110
parameters	@12:10, DTW:8.67, pH:6.77, temp:9.2, cond:0.62, turb:28.4, DO:0.23, redox:110

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:15, DTW:8.69, pH:6.77, temp:9.4, cond:0.63, turb:21.9, DO:0.24, redox:109.4

Reading Time	12:15
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	8.69
pH	6.77
Conductivity (mS/cm)	0.63
Turbidity (NTU)	21.9
Dissolved Oxygen (mg/L)	0.24
Temperature (Degrees Celsius)	9.4
Redox (ORP mV)	109.4

parameters	@12:15, DTW:8.69, pH:6.77, temp:9.4, cond:0.63, turb:21.9, DO:0.24, redox:109.4

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:20, DTW:8.69, pH:6.77, temp:9.3, cond:0.62, turb:25.9, DO:0.24, redox:108.8

Reading Time	12:20
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	8.69
pH	6.77
Conductivity (mS/cm)	0.62
Turbidity (NTU)	25.9
Dissolved Oxygen (mg/L)	0.24
Temperature (Degrees Celsius)	9.3
Redox (ORP mV)	108.8
parameters	@12:20, DTW:8.69, pH:6.77, temp:9.3, cond:0.62, turb:25.9, DO:0.24, redox:108.8

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:25, DTW:8.69, pH:6.77, temp:8.5, cond:0.61, turb:40, DO:0.27, redox:109

Reading Time	12:25
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	8.69
pH	6.77
Conductivity (mS/cm)	0.61
Turbidity (NTU)	40
Dissolved Oxygen (mg/L)	0.27
Temperature (Degrees Celsius)	8.5
Redox (ORP mV)	109
parameters	@12:25, DTW:8.69, pH:6.77, temp:8.5, cond:0.61, turb:40, DO:0.27, redox:109

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

Purge End	12:25
Total Volume Measured (units)	Gallons
Total Gallons Purged	2
Well Volumes Purged	2.99

Sample Information

Sample Time	12:30
Color	None
Notable odors	None

Metals

Constituent Sampled	Metals
Container Type	125 mL Plastic
Number of Containers	2
Preservative	HNO3

Well Information

Well Location	Plant 3
Condition of Well	Good
Well Locked at Arrival	Yes
Well Locked at Departure	Yes

Signature

Signed 2018-12-07 17:26:55 UTC

2018-12-05, AS-16-01

Created	2018-12-05 09:50:41 EST by Daniel Stockard
Updated	2018-12-05 11:13:27 EST by Daniel Stockard
Location	42.7368744482973, -84.5877273073772
Status	Field Draft
Project Number	B0064479.2018
Project Name / Location	RACER Lansing, MI
Sampler Name	Daniel Stockard
Date	2018-12-05
Well ID	AS-16-01
Are you able to purge and/or sample this well? If not, explain why in the Comments section below.	Yes
Replicate No. (e.g. Dup)	None
Weather	20s, snowy

Evacuation Details

Measuring Point (mp) Description	Top of Casing
Casing Diameter (inches)	2
Static Water Level (ft-bmp)	57.61
Total Depth (ft-bmp)	71.5
Water Column	13.89
Gallons in Well	2.26

Reference Note: Well Volume Calculation [$\pi r^2 h$, where h= 1foot] Well radius (inch):Volume (Gal./foot):Volume (mL/foot) 0.5" = 0.04 gal/ft = 154 mL/ft 1" = 0.16 gal/ft = 617 mL/ft 2" = 0.65 gal/ft = 2470 mL/ft 3" = 1.47 gal/ft = 5557 mL/ft

Purge Method	Low-Flow
Type of Equipment used	Bladder
Sample Method	Grab
Sample Depth (ft-bmp) (e.g. pump intake)	68
Purge Start	09:50

@09:50, DTW:57.61, pH:6.71, temp:12.4, cond:0.74, turb:73.8, DO:7.11, redox:63.1

Reading Time	09:50
Rate (mL/min)	100
Depth to Water (ft)	57.61
pH	6.71
Conductivity (mS/cm)	0.74
Turbidity (NTU)	73.8
Dissolved Oxygen (mg/L)	7.11
Temperature (Degrees Celsius)	12.4
Redox (ORP mV)	63.1
parameters	@09:50, DTW:57.61, pH:6.71, temp:12.4, cond:0.74, turb:73.8, DO:7.11, redox:63.1

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:56, DTW:59.08, pH:6.7, temp:12.2, cond:0.74, turb:42.8, DO:6.9, redox:64.7

Reading Time	09:56
Minutes Elapsed between readings	6
Rate (mL/min)	100
Depth to Water (ft)	59.08
pH	6.7
Conductivity (mS/cm)	0.74
Turbidity (NTU)	42.8
Dissolved Oxygen (mg/L)	6.9
Temperature (Degrees Celsius)	12.2
Redox (ORP mV)	64.7
parameters	@09:56, DTW:59.08, pH:6.7, temp:12.2, cond:0.74, turb:42.8, DO:6.9, redox:64.7

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:00, DTW:59.62, pH:6.7, temp:11.6, cond:0.73, turb:43.5, DO:6.77, redox:66.3

Reading Time	10:00
Minutes Elapsed between readings	4
Rate (mL/min)	100
Depth to Water (ft)	59.62
pH	6.7
Conductivity (mS/cm)	0.73
Turbidity (NTU)	43.5
Dissolved Oxygen (mg/L)	6.77
Temperature (Degrees Celsius)	11.6
Redox (ORP mV)	66.3
parameters	@10:00, DTW:59.62, pH:6.7, temp:11.6, cond:0.73, turb:43.5, DO:6.77, redox:66.3

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:07, DTW:59.62, pH:6.7, temp:11.4, cond:0.73, turb:36.9, DO:6.78, redox:66.8

Reading Time	10:07
Minutes Elapsed between readings	7
Rate (mL/min)	100
Depth to Water (ft)	59.62
pH	6.7
Conductivity (mS/cm)	0.73
Turbidity (NTU)	36.9
Dissolved Oxygen (mg/L)	6.78
Temperature (Degrees Celsius)	11.4
Redox (ORP mV)	66.8
parameters	@10:07, DTW:59.62, pH:6.7, temp:11.4, cond:0.73, turb:36.9, DO:6.78, redox:66.8

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:11, DTW:60.17, pH:6.81, temp:11.4, cond:0.7, turb:36, DO:7.51, redox:69.4

Reading Time	10:11
Minutes Elapsed between readings	4
Rate (mL/min)	100
Depth to Water (ft)	60.17
pH	6.81
Conductivity (mS/cm)	0.7
Turbidity (NTU)	36
Dissolved Oxygen (mg/L)	7.51
Temperature (Degrees Celsius)	11.4
Redox (ORP mV)	69.4
parameters	@10:11, DTW:60.17, pH:6.81, temp:11.4, cond:0.7, turb:36, DO:7.51, redox:69.4

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:16, DTW:60.35, pH:6.97, temp:11.6, cond:0.69, turb:40, DO:8.38, redox:71.4

Reading Time	10:16
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	60.35
pH	6.97
Conductivity (mS/cm)	0.69
Turbidity (NTU)	40
Dissolved Oxygen (mg/L)	8.38
Temperature (Degrees Celsius)	11.6
Redox (ORP mV)	71.4
parameters	@10:16, DTW:60.35, pH:6.97, temp:11.6, cond:0.69, turb:40, DO:8.38, redox:71.4

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:22, DTW:60.75, pH:7.19, temp:11.7, cond:0.69, turb:40.7, DO:9.03, redox:73.9

Reading Time	10:22
Minutes Elapsed between readings	6
Rate (mL/min)	100
Depth to Water (ft)	60.75
pH	7.19
Conductivity (mS/cm)	0.69
Turbidity (NTU)	40.7
Dissolved Oxygen (mg/L)	9.03
Temperature (Degrees Celsius)	11.7
Redox (ORP mV)	73.9
parameters	@10:22, DTW:60.75, pH:7.19, temp:11.7, cond:0.69, turb:40.7, DO:9.03, redox:73.9

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:29, DTW:60.87, pH:7.24, temp:10.1, cond:0.68, turb:44, DO:10.05, redox:78.2

Reading Time	10:29
Minutes Elapsed between readings	7
Rate (mL/min)	100
Depth to Water (ft)	60.87
pH	7.24
Conductivity (mS/cm)	0.68
Turbidity (NTU)	44
Dissolved Oxygen (mg/L)	10.05
Temperature (Degrees Celsius)	10.1
Redox (ORP mV)	78.2
parameters	@10:29, DTW:60.87, pH:7.24, temp:10.1, cond:0.68, turb:44, DO:10.05, redox:78.2

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:33, DTW:60.9, pH:7.26, temp:10.1, cond:0.68, turb:41.4, DO:9.67, redox:79.2

Reading Time	10:33
Minutes Elapsed between readings	4
Rate (mL/min)	100
Depth to Water (ft)	60.9
pH	7.26
Conductivity (mS/cm)	0.68
Turbidity (NTU)	41.4
Dissolved Oxygen (mg/L)	9.67
Temperature (Degrees Celsius)	10.1
Redox (ORP mV)	79.2
parameters	@10:33, DTW:60.9, pH:7.26, temp:10.1, cond:0.68, turb:41.4, DO:9.67, redox:79.2

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

Purge End	10:35
Total Volume Measured (units)	Gallons
Total Gallons Purged	2
Well Volumes Purged	0.88

Sample Information

Sample Time	10:35
Color	Yellow tinge
Notable odors	None

1,4-D

Constituent Sampled	1,4-D

Container Type	40 mL Vial
Number of Containers	3
Preservative	HCL

Propane

Constituent Sampled	Propane
Container Type	40 mL Vial
Number of Containers	3
Preservative	TSP

TKN, TP

Constituent Sampled	TKN, TP
Container Type	250 mL Plastic
Number of Containers	1
Preservative	H2SO4

Nitrate

Constituent Sampled	Nitrate
Container Type	125 mL Plastic
Number of Containers	1
Preservative	None

Well Information

Well Location	P2 Biosparge
Condition of Well	Good
Well Locked at Arrival	No
Well Locked at Departure	No

Signature

Signed 2018-12-05 11:13:26 EST

2018-12-05, TW-14-02

Created	2018-12-05 11:15:17 EST by Daniel Stockard
Updated	2018-12-05 13:24:15 EST by Daniel Stockard
Location	42.7368366066764, -84.5855928026927
Status	Field Draft
Project Number	B0064479.2018
Project Name / Location	RACER Lansing, MI
Sampler Name	Daniel Stockard
Date	2018-12-05
Well ID	TW-14-02
Are you able to purge and/or sample this well? If not, explain why in the Comments section below.	Yes
Replicate No. (e.g. Dup)	DUP-03
Weather	Flurries20s

Evacuation Details

Measuring Point (mp) Description	Top of Casing
Casing Diameter (inches)	2
Static Water Level (ft-bmp)	59.7
Total Depth (ft-bmp)	74
Water Column	14.3
Gallons in Well	2.32

Reference Note: Well Volume Calculation [$\pi r^2 h$, where h= 1foot] Well radius (inch):Volume (Gal./foot):Volume (mL/foot) 0.5" = 0.04 gal/ft = 154 mL/ft 1" = 0.16 gal/ft = 617 mL/ft 2" = 0.65 gal/ft = 2470 mL/ft 3" = 1.47 gal/ft = 5557 mL/ft

Purge Method	Low-Flow
Type of Equipment used	Bladder
Sample Method	Grab
Sample Depth (ft-bmp) (e.g. pump intake)	72
Purge Start	11:05

@11:05, DTW:59.7, pH:6.76, temp:11.9, cond:2.43, turb:1000, DO:7.14, redox:90.6

Reading Time	11:05
Rate (mL/min)	100
Depth to Water (ft)	59.7
pH	6.76
Conductivity (mS/cm)	2.43
Turbidity (NTU)	1000
Dissolved Oxygen (mg/L)	7.14
Temperature (Degrees Celsius)	11.9
Redox (ORP mV)	90.6
parameters	@11:05, DTW:59.7, pH:6.76, temp:11.9, cond:2.43, turb:1000, DO:7.14, redox:90.6

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:55, DTW:61.4, pH:7.14, temp:8.6, cond:2.12, turb:1100, DO:10.06, redox:94.5

Reading Time	11:55
Minutes Elapsed between readings	50
Rate (mL/min)	100
Depth to Water (ft)	61.4
pH	7.14
Conductivity (mS/cm)	2.12
Turbidity (NTU)	1100
Dissolved Oxygen (mg/L)	10.06
Temperature (Degrees Celsius)	8.6
Redox (ORP mV)	94.5
parameters	@11:55, DTW:61.4, pH:7.14, temp:8.6, cond:2.12, turb:1100, DO:10.06, redox:94.5

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:01, DTW:61.32, pH:7.06, temp:10.8, cond:2.21, turb:1100, DO:7.39, redox:93.4

Reading Time	12:01
Minutes Elapsed between readings	6
Rate (mL/min)	100
Depth to Water (ft)	61.32
pH	7.06
Conductivity (mS/cm)	2.21
Turbidity (NTU)	1100
Dissolved Oxygen (mg/L)	7.39
Temperature (Degrees Celsius)	10.8
Redox (ORP mV)	93.4
parameters	@12:01, DTW:61.32, pH:7.06, temp:10.8, cond:2.21, turb:1100, DO:7.39, redox:93.4

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:08, DTW:61.15, pH:7.07, temp:12.3, cond:2.31, turb:1020, DO:7.37, redox:94.6

Reading Time	12:08
Minutes Elapsed between readings	7
Rate (mL/min)	100
Depth to Water (ft)	61.15
pH	7.07
Conductivity (mS/cm)	2.31
Turbidity (NTU)	1020
Dissolved Oxygen (mg/L)	7.37
Temperature (Degrees Celsius)	12.3
Redox (ORP mV)	94.6
parameters	@12:08, DTW:61.15, pH:7.07, temp:12.3, cond:2.31, turb:1020, DO:7.37, redox:94.6

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:16, DTW:61.15, pH:7.1, temp:12.2, cond:2.3, turb:998, DO:8.51, redox:94.9

Reading Time	12:16
Minutes Elapsed between readings	8
Rate (mL/min)	100
Depth to Water (ft)	61.15
pH	7.1
Conductivity (mS/cm)	2.3
Turbidity (NTU)	998
Dissolved Oxygen (mg/L)	8.51
Temperature (Degrees Celsius)	12.2
Redox (ORP mV)	94.9
parameters	@12:16, DTW:61.15, pH:7.1, temp:12.2, cond:2.3, turb:998, DO:8.51, redox:94.9

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:22, DTW:61.15, pH:7.21, temp:12.3, cond:2.32, turb:986, DO:9.33, redox:95.6

Reading Time	12:22
Minutes Elapsed between readings	6
Rate (mL/min)	100
Depth to Water (ft)	61.15
pH	7.21
Conductivity (mS/cm)	2.32
Turbidity (NTU)	986
Dissolved Oxygen (mg/L)	9.33
Temperature (Degrees Celsius)	12.3
Redox (ORP mV)	95.6
parameters	@12:22, DTW:61.15, pH:7.21, temp:12.3, cond:2.32, turb:986, DO:9.33, redox:95.6

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:30, DTW:61.15, pH:7.24, temp:12.5, cond:2.32, turb:995, DO:9.33, redox:96.2

Reading Time	12:30
Minutes Elapsed between readings	8
Rate (mL/min)	100
Depth to Water (ft)	61.15
pH	7.24
Conductivity (mS/cm)	2.32
Turbidity (NTU)	995
Dissolved Oxygen (mg/L)	9.33
Temperature (Degrees Celsius)	12.5
Redox (ORP mV)	96.2
parameters	@12:30, DTW:61.15, pH:7.24, temp:12.5, cond:2.32, turb:995, DO:9.33, redox:96.2

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

Sample Information

Sample Time	12:35
Color	Grey
Notable odors	None

VOCs

Constituent Sampled	VOCs
Container Type	40 mL Vial
Number of Containers	3
Preservative	HCL

TKN,TP

Constituent Sampled	TKN,TP
Container Type	250 mL Plastic
Number of Containers	1
Preservative	H2SO4

Nitrate

Constituent Sampled	Nitrate
Container Type	125 mL Plastic
Number of Containers	1
Preservative	None

Propane

Constituent Sampled	Propane
Container Type	40 mL Vial
Number of Containers	3
Preservative	TSP

1,4-D

Constituent Sampled	1,4-D
Container Type	40 mL Vial
Number of Containers	3
Preservative	HCL

Well Information

Well Location	Biosparge P2
Condition of Well	Good
Well Locked at Arrival	Yes
Well Locked at Departure	Yes
Comments	Well levels and DO vary by sparge cycle, very turbid

Signature

Signed 2018-12-05 13:23:47 EST

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2018-12-06, MW-12-13

Created	2018-12-06 19:18:50 UTC by Erik Pietrzak
Updated	2018-12-06 20:14:52 UTC by Erik Pietrzak
Location	42.7379469992991, -84.5774811320795
Status	Field Draft
Project Number	B0064479.2018
Project Name / Location	RACER Lansing, MI
Sampler Name	Erik Pietrzak
Date	2018-12-06
Well ID	MW-12-13
Are you able to purge and/or sample this well? If not, explain why in the Comments section below.	Yes
Weather	Cloudy, 30s

Evacuation Details

Measuring Point (mp) Description	Top of Casing
Casing Diameter (inches)	2
Static Water Level (ft-bmp)	9.57
Total Depth (ft-bmp)	25.6
Water Column	16.03
Gallons in Well	2.6

Reference Note: Well Volume Calculation [$\pi r^2 h$, where h= 1foot] Well radius (inch):Volume (Gal./foot):Volume (mL/foot) 0.5" = 0.04 gal/ft = 154 mL/ft 1" = 0.16 gal/ft = 617 mL/ft 2" = 0.65 gal/ft = 2470 mL/ft 3" = 1.47 gal/ft = 5557 mL/ft

Purge Method	Low-Flow
Type of Equipment used	Bladder
Sample Method	Low-Flow
Sample Depth (ft-bmp) (e.g. pump intake)	20
Purge Start	14:15

@14:20, DTW:9.89, pH:7.67, temp:9.8, cond:1.04, turb:15.9, DO:4.61, redox:24.3

Reading Time	14:20
Rate (mL/min)	100
Depth to Water (ft)	9.89
pH	7.67
Conductivity (mS/cm)	1.04
Turbidity (NTU)	15.9
Dissolved Oxygen (mg/L)	4.61
Temperature (Degrees Celsius)	9.8
Redox (ORP mV)	24.3
parameters	@14:20, DTW:9.89, pH:7.67, temp:9.8, cond:1.04, turb:15.9, DO:4.61, redox:24.3

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@14:25, DTW:10.08, pH:7.62, temp:9.7, cond:1.03, turb:11.2, DO:4.34, redox:23.6

Reading Time	14:25

Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	10.08
pH	7.62
Conductivity (mS/cm)	1.03
Turbidity (NTU)	11.2
Dissolved Oxygen (mg/L)	4.34
Temperature (Degrees Celsius)	9.7
Redox (ORP mV)	23.6
parameters	@14:25, DTW:10.08, pH:7.62, temp:9.7, cond:1.03, turb:11.2, DO:4.34, redox:23.6

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@14:30, DTW:10.18, pH:7.6, temp:9.6, cond:1.04, turb:10.2, DO:4.11, redox:23.8

Reading Time	14:30
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	10.18
pH	7.6
Conductivity (mS/cm)	1.04
Turbidity (NTU)	10.2
Dissolved Oxygen (mg/L)	4.11
Temperature (Degrees Celsius)	9.6
Redox (ORP mV)	23.8
parameters	@14:30, DTW:10.18, pH:7.6, temp:9.6, cond:1.04, turb:10.2, DO:4.11, redox:23.8

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@14:35, DTW:10.26, pH:7.6, temp:9.7, cond:1.04, turb:9.38, DO:4.18, redox:23.9

Reading Time	14:35
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	10.26
pH	7.6
Conductivity (mS/cm)	1.04
Turbidity (NTU)	9.38
Dissolved Oxygen (mg/L)	4.18
Temperature (Degrees Celsius)	9.7
Redox (ORP mV)	23.9
parameters	@14:35, DTW:10.26, pH:7.6, temp:9.7, cond:1.04, turb:9.38, DO:4.18, redox:23.9

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@14:40, DTW:10.26, pH:7.6, temp:8.6, cond:1.04, turb:11.3, DO:4.24, redox:24.7

Reading Time	14:40
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	10.26
pH	7.6
Conductivity (mS/cm)	1.04
Turbidity (NTU)	11.3
Dissolved Oxygen (mg/L)	4.24
Temperature (Degrees Celsius)	8.6
Redox (ORP mV)	24.7
parameters	@14:40, DTW:10.26, pH:7.6, temp:8.6, cond:1.04, turb:11.3, DO:4.24, redox:24.7

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@14:45, DTW:10.33, pH:7.59, temp:9.8, cond:1.04, turb:9.21, DO:4.07, redox:24.6

Reading Time	14:45
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	10.33
pH	7.59
Conductivity (mS/cm)	1.04
Turbidity (NTU)	9.21
Dissolved Oxygen (mg/L)	4.07
Temperature (Degrees Celsius)	9.8
Redox (ORP mV)	24.6
parameters	@14:45, DTW:10.33, pH:7.59, temp:9.8, cond:1.04, turb:9.21, DO:4.07, redox:24.6

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

Purge End	14:45
Total Volume Measured (units)	Gallons
Total Gallons Purged	0.5
Well Volumes Purged	0.19

Sample Information

Sample Time	14:47
Color	Clear
Notable odors	None

Metals

Constituent Sampled	Metals
Container Type	125 mL Plastic
Number of Containers	1
Preservative	HNO3

Well Information

Condition of Well	Good
Well Locked at Arrival	Yes
Well Locked at Departure	Yes

Signature

Signed 2018-12-06 20:14:46 UTC

2018-12-04, MW-12-11

Created	2018-12-04 20:22:25 UTC by Erik Pietrzak
Updated	2018-12-05 12:57:14 UTC by Erik Pietrzak
Location	42.7401593188222, -84.5870193187935
Status	Field Draft
Project Number	B0064479.2018
Project Name / Location	RACER Lansing, MI
Sampler Name	Erik Pietrzak
Date	2018-12-04
Well ID	MW-12-11
Are you able to purge and/or sample this well? If not, explain why in the Comments section below.	Yes
Weather	Partly cloudy, 30s

Evacuation Details

Measuring Point (mp) Description	Top of Casing
Casing Diameter (inches)	2
Static Water Level (ft-bmp)	6.15
Total Depth (ft-bmp)	16.8
Water Column	10.65
Gallons in Well	1.73

Reference Note: Well Volume Calculation [$\pi r^2 h$, where h= 1foot] Well radius (inch):Volume (Gal./foot):Volume (mL/foot) 0.5" = 0.04 gal/ft = 154 mL/ft 1" = 0.16 gal/ft = 617 mL/ft 2" = 0.65 gal/ft = 2470 mL/ft 3" = 1.47 gal/ft = 5557 mL/ft

Purge Method	Low-Flow
Type of Equipment used	Bladder
Sample Method	Low-Flow
Sample Depth (ft-bmp) (e.g. pump intake)	14.8
Purge Start	15:20

@15:25, DTW:6.77, pH:6.74, temp:12, cond:5.94, turb:169, DO:9.61, redox:29.4

Reading Time	15:25
Rate (mL/min)	150
Depth to Water (ft)	6.77
pH	6.74
Conductivity (mS/cm)	5.94
Turbidity (NTU)	169
Dissolved Oxygen (mg/L)	9.61
Temperature (Degrees Celsius)	12
Redox (ORP mV)	29.4
parameters	@15:25, DTW:6.77, pH:6.74, temp:12, cond:5.94, turb:169, DO:9.61, redox:29.4

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@15:30, DTW:6.43, pH:6.72, temp:10.3, cond:6.07, turb:169, DO:10.27, redox:25

Reading Time	15:30

Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	6.43
pH	6.72
Conductivity (mS/cm)	6.07
Turbidity (NTU)	169
Dissolved Oxygen (mg/L)	10.27
Temperature (Degrees Celsius)	10.3
Redox (ORP mV)	25
parameters	@15:30, DTW:6.43, pH:6.72, temp:10.3, cond:6.07, turb:169, DO:10.27, redox:25

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@15:35, DTW:6.45, pH:6.82, temp:10.1, cond:5.9, turb:200, DO:9.61, redox:20.3

Reading Time	15:35
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	6.45
pH	6.82
Conductivity (mS/cm)	5.9
Turbidity (NTU)	200
Dissolved Oxygen (mg/L)	9.61
Temperature (Degrees Celsius)	10.1
Redox (ORP mV)	20.3
parameters	@15:35, DTW:6.45, pH:6.82, temp:10.1, cond:5.9, turb:200, DO:9.61, redox:20.3

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@15:40, DTW:6.6, pH:6.93, temp:10.5, cond:5.65, turb:146, DO:9.45, redox:16.3

Reading Time	15:40
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	6.6
pH	6.93
Conductivity (mS/cm)	5.65
Turbidity (NTU)	146
Dissolved Oxygen (mg/L)	9.45
Temperature (Degrees Celsius)	10.5
Redox (ORP mV)	16.3
parameters	@15:40, DTW:6.6, pH:6.93, temp:10.5, cond:5.65, turb:146, DO:9.45, redox:16.3

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@15:45, DTW:6.59, pH:7.01, temp:10.5, cond:5.59, turb:119, DO:9.47, redox:12.8

Reading Time	15:45
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	6.59
pH	7.01
Conductivity (mS/cm)	5.59
Turbidity (NTU)	119
Dissolved Oxygen (mg/L)	9.47
Temperature (Degrees Celsius)	10.5
Redox (ORP mV)	12.8
parameters	@15:45, DTW:6.59, pH:7.01, temp:10.5, cond:5.59, turb:119, DO:9.47, redox:12.8

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@15:50, DTW:6.65, pH:7.07, temp:10.7, cond:5.59, turb:103, DO:9.35, redox:10.1

Reading Time	15:50
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	6.65
pH	7.07
Conductivity (mS/cm)	5.59
Turbidity (NTU)	103
Dissolved Oxygen (mg/L)	9.35
Temperature (Degrees Celsius)	10.7
Redox (ORP mV)	10.1
parameters	@15:50, DTW:6.65, pH:7.07, temp:10.7, cond:5.59, turb:103, DO:9.35, redox:10.1

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@15:55, DTW:6.57, pH:7.12, temp:10.5, cond:5.63, turb:77.9, DO:9.81, redox:7.1

Reading Time	15:55
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	6.57
pH	7.12
Conductivity (mS/cm)	5.63
Turbidity (NTU)	77.9
Dissolved Oxygen (mg/L)	9.81
Temperature (Degrees Celsius)	10.5
Redox (ORP mV)	7.1
parameters	@15:55, DTW:6.57, pH:7.12, temp:10.5, cond:5.63, turb:77.9, DO:9.81, redox:7.1

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@16:00, DTW:6.75, pH:7.16, temp:11.6, cond:5.62, turb:75.4, DO:9.58, redox:4.6

Reading Time	16:00
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	6.75
pH	7.16
Conductivity (mS/cm)	5.62
Turbidity (NTU)	75.4
Dissolved Oxygen (mg/L)	9.58
Temperature (Degrees Celsius)	11.6
Redox (ORP mV)	4.6
parameters	@16:00, DTW:6.75, pH:7.16, temp:11.6, cond:5.62, turb:75.4, DO:9.58, redox:4.6

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@16:05, DTW:6.87, pH:7.2, temp:11.5, cond:5.65, turb:68.7, DO:9.36, redox:1.7

Reading Time	16:05
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	6.87
pH	7.2
Conductivity (mS/cm)	5.65
Turbidity (NTU)	68.7
Dissolved Oxygen (mg/L)	9.36
Temperature (Degrees Celsius)	11.5
Redox (ORP mV)	1.7
parameters	@16:05, DTW:6.87, pH:7.2, temp:11.5, cond:5.65, turb:68.7, DO:9.36, redox:1.7

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@16:10, DTW:7.02, pH:7.23, temp:11.7, cond:5.69, turb:59.6, DO:9.37, redox:-1.3

Reading Time	16:10
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	7.02
pH	7.23
Conductivity (mS/cm)	5.69
Turbidity (NTU)	59.6
Dissolved Oxygen (mg/L)	9.37
Temperature (Degrees Celsius)	11.7
Redox (ORP mV)	-1.3
parameters	@16:10, DTW:7.02, pH:7.23, temp:11.7, cond:5.69, turb:59.6, DO:9.37, redox:-1.3

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@16:15, DTW:7.05, pH:7.24, temp:11.9, cond:5.71, turb:54.8, DO:9.3, redox:-3

Reading Time	16:15
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	7.05
pH	7.24
Conductivity (mS/cm)	5.71
Turbidity (NTU)	54.8
Dissolved Oxygen (mg/L)	9.3
Temperature (Degrees Celsius)	11.9
Redox (ORP mV)	-3
parameters	@16:15, DTW:7.05, pH:7.24, temp:11.9, cond:5.71, turb:54.8, DO:9.3, redox:-3

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@16:20, DTW:7.11, pH:7.25, temp:11.9, cond:5.74, turb:50.2, DO:9.34, redox:-4.1

Reading Time	16:20
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	7.11
pH	7.25
Conductivity (mS/cm)	5.74
Turbidity (NTU)	50.2
Dissolved Oxygen (mg/L)	9.34
Temperature (Degrees Celsius)	11.9
Redox (ORP mV)	-4.1
parameters	@16:20, DTW:7.11, pH:7.25, temp:11.9, cond:5.74, turb:50.2, DO:9.34, redox:-4.1

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

Purge End	16:20
Total Volume Measured (units)	Gallons
Total Gallons Purged	1.6
Well Volumes Purged	0.92

Sample Information

Sample Time	16:22
Color	Cloudy
Notable odors	None

Metals

Constituent Sampled	Metals

Container Type	125 mL Plastic
Number of Containers	1
Preservative	HNO3

Well Information

Condition of Well	Good
Well Locked at Arrival	No
Well Locked at Departure	No
Comments	ORP didn't stabilize

Signature

Signed 2018-12-04 22:08:07 UTC

2018-12-10, MW-16-76

Created	2018-12-10 12:55:26 EST by Daniel Stockard
Updated	2018-12-10 14:36:22 EST by Daniel Stockard
Location	42.7366521628972, -84.5870310534579
Status	Field Draft
Project Number	B0064479.2018
Project Name / Location	RACER Lansing, MI
Sampler Name	Daniel Stockard
Date	2018-12-10
Well ID	MW-16-76
Are you able to purge and/or sample this well? If not, explain why in the Comments section below.	Yes
Replicate No. (e.g. Dup)	None
Weather	20s, overcast

Evacuation Details

Measuring Point (mp) Description	Top of Casing
Casing Diameter (inches)	2
Static Water Level (ft-bmp)	62.39
Total Depth (ft-bmp)	80
Water Column	17.61
Gallons in Well	2.86

Reference Note: Well Volume Calculation [$\pi r^2 h$, where h= 1foot] Well radius (inch):Volume (Gal./foot):Volume (mL/foot) 0.5" = 0.04 gal/ft = 154 mL/ft 1" = 0.16 gal/ft = 617 mL/ft 2" = 0.65 gal/ft = 2470 mL/ft 3" = 1.47 gal/ft = 5557 mL/ft

Purge Method	Low-Flow
Type of Equipment used	Bladder
Sample Method	Grab
Sample Depth (ft-bmp) (e.g. pump intake)	76
Purge Start	12:50

@13:00, DTW:62.39, pH:7.26, temp:8.6, cond:1.31, turb:473, DO:4.39, redox:9.9

Reading Time	13:00
Rate (mL/min)	100
Depth to Water (ft)	62.39
pH	7.26
Conductivity (mS/cm)	1.31
Turbidity (NTU)	473
Dissolved Oxygen (mg/L)	4.39
Temperature (Degrees Celsius)	8.6
Redox (ORP mV)	9.9
parameters	@13:00, DTW:62.39, pH:7.26, temp:8.6, cond:1.31, turb:473, DO:4.39, redox:9.9

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:05, DTW:63.68, pH:11.2, temp:8.1, cond:1.57, turb:673, DO:3.6, redox:12.2

Reading Time	13:05
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	63.68
pH	11.2
Conductivity (mS/cm)	1.57
Turbidity (NTU)	673
Dissolved Oxygen (mg/L)	3.6
Temperature (Degrees Celsius)	8.1
Redox (ORP mV)	12.2
parameters	@13:05, DTW:63.68, pH:11.2, temp:8.1, cond:1.57, turb:673, DO:3.6, redox:12.2

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:10, DTW:64.21, pH:7.14, temp:9.4, cond:1.62, turb:517, DO:1.85, redox:16.8

Reading Time	13:10
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	64.21
pH	7.14
Conductivity (mS/cm)	1.62
Turbidity (NTU)	517
Dissolved Oxygen (mg/L)	1.85
Temperature (Degrees Celsius)	9.4
Redox (ORP mV)	16.8
parameters	@13:10, DTW:64.21, pH:7.14, temp:9.4, cond:1.62, turb:517, DO:1.85, redox:16.8

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:15, DTW:64.64, pH:7.14, temp:9.3, cond:1.62, turb:269, DO:0.72, redox:4.1

Reading Time	13:15
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	64.64
pH	7.14
Conductivity (mS/cm)	1.62
Turbidity (NTU)	269
Dissolved Oxygen (mg/L)	0.72
Temperature (Degrees Celsius)	9.3
Redox (ORP mV)	4.1
parameters	@13:15, DTW:64.64, pH:7.14, temp:9.3, cond:1.62, turb:269, DO:0.72, redox:4.1

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:20, DTW:65.39, pH:7.15, temp:10.3, cond:1.55, turb:124, DO:0.45, redox:-8

Reading Time	13:20
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	65.39
pH	7.15
Conductivity (mS/cm)	1.55
Turbidity (NTU)	124
Dissolved Oxygen (mg/L)	0.45
Temperature (Degrees Celsius)	10.3
Redox (ORP mV)	-8
parameters	@13:20, DTW:65.39, pH:7.15, temp:10.3, cond:1.55, turb:124, DO:0.45, redox:-8

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:25, DTW:65.39, pH:7.15, temp:10.6, cond:1.54, turb:58.9, DO:0.39, redox:-11.2

Reading Time	13:25
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	65.39
pH	7.15
Conductivity (mS/cm)	1.54
Turbidity (NTU)	58.9
Dissolved Oxygen (mg/L)	0.39
Temperature (Degrees Celsius)	10.6
Redox (ORP mV)	-11.2
parameters	@13:25, DTW:65.39, pH:7.15, temp:10.6, cond:1.54, turb:58.9, DO:0.39, redox:-11.2

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:30, DTW:66.44, pH:7.16, temp:10.4, cond:1.5, turb:41.4, DO:0.45, redox:-14.7

Reading Time	13:30
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	66.44
pH	7.16
Conductivity (mS/cm)	1.5
Turbidity (NTU)	41.4
Dissolved Oxygen (mg/L)	0.45
Temperature (Degrees Celsius)	10.4
Redox (ORP mV)	-14.7
parameters	@13:30, DTW:66.44, pH:7.16, temp:10.4, cond:1.5, turb:41.4, DO:0.45, redox:-14.7

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:35, DTW:66.96, pH:7.16, temp:10.4, cond:1.48, turb:30, DO:0.38, redox:-17

Reading Time	13:35
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	66.96
pH	7.16
Conductivity (mS/cm)	1.48
Turbidity (NTU)	30
Dissolved Oxygen (mg/L)	0.38
Temperature (Degrees Celsius)	10.4
Redox (ORP mV)	-17
parameters	@13:35, DTW:66.96, pH:7.16, temp:10.4, cond:1.48, turb:30, DO:0.38, redox:-17

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:40, DTW:67.54, pH:7.15, temp:10.5, cond:1.49, turb:26.2, DO:0.32, redox:-17.9

Reading Time	13:40
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	67.54
pH	7.15
Conductivity (mS/cm)	1.49
Turbidity (NTU)	26.2
Dissolved Oxygen (mg/L)	0.32
Temperature (Degrees Celsius)	10.5
Redox (ORP mV)	-17.9
parameters	@13:40, DTW:67.54, pH:7.15, temp:10.5, cond:1.49, turb:26.2, DO:0.32, redox:-17.9

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:45, DTW:67.84, pH:7.15, temp:10.5, cond:1.5, turb:25.1, DO:0.31, redox:-19

Reading Time	13:45
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	67.84
pH	7.15
Conductivity (mS/cm)	1.5
Turbidity (NTU)	25.1
Dissolved Oxygen (mg/L)	0.31
Temperature (Degrees Celsius)	10.5
Redox (ORP mV)	-19

parameters	@13:45, DTW:67.84, pH:7.15, temp:10.5, cond:1.5, turb:25.1, DO:0.31, redox:-19

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:50, DTW:67.88, pH:7.15, temp:10.6, cond:1.51, turb:27.5, DO:0.3, redox:-19.3

Reading Time	13:50
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	67.88
pH	7.15
Conductivity (mS/cm)	1.51
Turbidity (NTU)	27.5
Dissolved Oxygen (mg/L)	0.3
Temperature (Degrees Celsius)	10.6
Redox (ORP mV)	-19.3
parameters	@13:50, DTW:67.88, pH:7.15, temp:10.6, cond:1.51, turb:27.5, DO:0.3, redox:-19.3

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

Purge End	14:00
Total Volume Measured (units)	Gallons
Total Gallons Purged	2
Well Volumes Purged	0.7

Sample Information

Sample Time	14:00
Color	None
Notable odors	None

VOCs and 1,4-D

Constituent Sampled	VOCs and 1,4-D
Container Type	40 mL Vial
Number of Containers	3
Preservative	HCL

Well Information

Well Location	P2
Condition of Well	Good
Well Locked at Arrival	Yes
Well Locked at Departure	Yes

Signature

Signed 2018-12-10 13:50:01 EST

2018-12-07, P2-MH-W

Created	2018-12-07 20:49:47 UTC by Dale Arnett
Updated	2018-12-07 21:07:49 UTC by Dale Arnett
Location	42.7364701693296, -84.5874281521617
Status	Field Draft
Project Number	B0064479.2018
Project Name / Location	RACER Lansing, MI
Sampler Name	Dale Arnett
Date	2018-12-07
Well ID	P2-MH-W
Are you able to purge and/or sample this well? If not, explain why in the Comments section below.	No
Weather	20s overcast

Evacuation Details

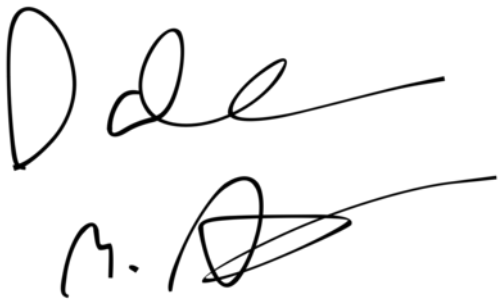
Reference Note: Well Volume Calculation [πr²h, where h= 1foot] Well radius (inch):Volume (Gal./foot):Volume (mL/foot) 0.5" = 0.04 gal/ft = 154 mL/ft 1" = 0.16 gal/ft = 617 mL/ft 2" = 0.65 gal/ft = 2470 mL/ft 3" = 1.47 gal/ft = 5557 mL/ft

Well Information

Well Location	Plane w
Photo of Well	

Comments	Storm line is dry

Signature



Signed 2018-12-07 21:07:43 UTC

2018-12-05, MW-23

Created	2018-12-05 14:06:12 UTC by Marina Samp
Updated	2018-12-05 16:03:42 UTC by Marina Samp
Location	42.7452391712393, -84.5838282444371
Status	Field Draft
Project Number	B0064479.2018
Project Name / Location	RACER Lansing, MI
Sampler Name	Marina Samp
Date	2018-12-05
Well ID	MW-23
Are you able to purge and/or sample this well? If not, explain why in the Comments section below.	Yes
Weather	28, snowing

Evacuation Details

Measuring Point (mp) Description	Top of Casing
Casing Diameter (inches)	2
Static Water Level (ft-bmp)	50.32
Total Depth (ft-bmp)	62
Water Column	11.68
Gallons in Well	1.9

Reference Note: Well Volume Calculation [$\pi r^2 h$, where h= 1foot] Well radius (inch):Volume (Gal./foot):Volume (mL/foot) 0.5" = 0.04 gal/ft = 154 mL/ft 1" = 0.16 gal/ft = 617 mL/ft 2" = 0.65 gal/ft = 2470 mL/ft 3" = 1.47 gal/ft = 5557 mL/ft

Purge Method	Low-Flow
Type of Equipment used	Bladder
Sample Method	Low-Flow
Sample Depth (ft-bmp) (e.g. pump intake)	59.5
Purge Start	09:00

@09:05, DTW:50.43, pH:7.17, temp:10.5, cond:1.06, turb:320, DO:0.88, redox:55.6

Reading Time	09:05
Rate (mL/min)	300
Depth to Water (ft)	50.43
pH	7.17
Conductivity (mS/cm)	1.06
Turbidity (NTU)	320
Dissolved Oxygen (mg/L)	0.88
Temperature (Degrees Celsius)	10.5
Redox (ORP mV)	55.6
parameters	@09:05, DTW:50.43, pH:7.17, temp:10.5, cond:1.06, turb:320, DO:0.88, redox:55.6

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:10, DTW:50.41, pH:7.21, temp:10.2, cond:1.06, turb:161, DO:0.83, redox:47.3

Reading Time	09:10

Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	50.41
pH	7.21
Conductivity (mS/cm)	1.06
Turbidity (NTU)	161
Dissolved Oxygen (mg/L)	0.83
Temperature (Degrees Celsius)	10.2
Redox (ORP mV)	47.3
parameters	@09:10, DTW:50.41, pH:7.21, temp:10.2, cond:1.06, turb:161, DO:0.83, redox:47.3

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:15, DTW:50.39, pH:7.23, temp:9.6, cond:1.04, turb:128, DO:1, redox:36.9

Reading Time	09:15
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	50.39
pH	7.23
Conductivity (mS/cm)	1.04
Turbidity (NTU)	128
Dissolved Oxygen (mg/L)	1
Temperature (Degrees Celsius)	9.6
Redox (ORP mV)	36.9
parameters	@09:15, DTW:50.39, pH:7.23, temp:9.6, cond:1.04, turb:128, DO:1, redox:36.9

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:20, DTW:50.4, pH:7.23, temp:9.7, cond:1.05, turb:116, DO:1.39, redox:28.2

Reading Time	09:20
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	50.4
pH	7.23
Conductivity (mS/cm)	1.05
Turbidity (NTU)	116
Dissolved Oxygen (mg/L)	1.39
Temperature (Degrees Celsius)	9.7
Redox (ORP mV)	28.2
parameters	@09:20, DTW:50.4, pH:7.23, temp:9.7, cond:1.05, turb:116, DO:1.39, redox:28.2

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:25, DTW:50.4, pH:7.23, temp:9.7, cond:1.05, turb:106, DO:1.43, redox:22.1

Reading Time	09:25
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	50.4
pH	7.23
Conductivity (mS/cm)	1.05
Turbidity (NTU)	106
Dissolved Oxygen (mg/L)	1.43
Temperature (Degrees Celsius)	9.7
Redox (ORP mV)	22.1
parameters	@09:25, DTW:50.4, pH:7.23, temp:9.7, cond:1.05, turb:106, DO:1.43, redox:22.1

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:30, DTW:50.39, pH:7.23, temp:9.7, cond:1.05, turb:97.7, DO:1.21, redox:18.3

Reading Time	09:30
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	50.39
pH	7.23
Conductivity (mS/cm)	1.05
Turbidity (NTU)	97.7
Dissolved Oxygen (mg/L)	1.21
Temperature (Degrees Celsius)	9.7
Redox (ORP mV)	18.3
parameters	@09:30, DTW:50.39, pH:7.23, temp:9.7, cond:1.05, turb:97.7, DO:1.21, redox:18.3

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:35, DTW:50.39, pH:7.23, temp:9.8, cond:1.05, turb:86.7, DO:1.21, redox:15.5

Reading Time	09:35
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	50.39
pH	7.23
Conductivity (mS/cm)	1.05
Turbidity (NTU)	86.7
Dissolved Oxygen (mg/L)	1.21
Temperature (Degrees Celsius)	9.8
Redox (ORP mV)	15.5
parameters	@09:35, DTW:50.39, pH:7.23, temp:9.8, cond:1.05, turb:86.7, DO:1.21, redox:15.5

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:40, DTW:50.39, pH:7.23, temp:9.8, cond:1.05, turb:86.6, DO:1.58, redox:13.4

Reading Time	09:40
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	50.39
pH	7.23
Conductivity (mS/cm)	1.05
Turbidity (NTU)	86.6
Dissolved Oxygen (mg/L)	1.58
Temperature (Degrees Celsius)	9.8
Redox (ORP mV)	13.4
parameters	@09:40, DTW:50.39, pH:7.23, temp:9.8, cond:1.05, turb:86.6, DO:1.58, redox:13.4

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:45, DTW:50.39, pH:7.24, temp:9.7, cond:1.04, turb:74.2, DO:1.09, redox:10.5

Reading Time	09:45
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	50.39
pH	7.24
Conductivity (mS/cm)	1.04
Turbidity (NTU)	74.2
Dissolved Oxygen (mg/L)	1.09
Temperature (Degrees Celsius)	9.7
Redox (ORP mV)	10.5
parameters	@09:45, DTW:50.39, pH:7.24, temp:9.7, cond:1.04, turb:74.2, DO:1.09, redox:10.5

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:50, DTW:50.39, pH:7.24, temp:9.7, cond:1.04, turb:73, DO:0.92, redox:9.3

Reading Time	09:50
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	50.39
pH	7.24
Conductivity (mS/cm)	1.04
Turbidity (NTU)	73
Dissolved Oxygen (mg/L)	0.92
Temperature (Degrees Celsius)	9.7
Redox (ORP mV)	9.3
parameters	@09:50, DTW:50.39, pH:7.24, temp:9.7, cond:1.04, turb:73, DO:0.92, redox:9.3

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:55, DTW:50.39, pH:7.24, temp:6.6, cond:1.01, turb:63.9, DO:1.16, redox:8.8

Reading Time	09:55
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	50.39
pH	7.24
Conductivity (mS/cm)	1.01
Turbidity (NTU)	63.9
Dissolved Oxygen (mg/L)	1.16
Temperature (Degrees Celsius)	6.6
Redox (ORP mV)	8.8
parameters	@09:55, DTW:50.39, pH:7.24, temp:6.6, cond:1.01, turb:63.9, DO:1.16, redox:8.8

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:00, DTW:50.39, pH:7.26, temp:6.3, cond:0.95, turb:68.1, DO:0.97, redox:10.6

Reading Time	10:00
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	50.39
pH	7.26
Conductivity (mS/cm)	0.95
Turbidity (NTU)	68.1
Dissolved Oxygen (mg/L)	0.97
Temperature (Degrees Celsius)	6.3
Redox (ORP mV)	10.6
parameters	@10:00, DTW:50.39, pH:7.26, temp:6.3, cond:0.95, turb:68.1, DO:0.97, redox:10.6

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:05, DTW:50.39, pH:7.26, temp:7.5, cond:0.96, turb:61, DO:0.98, redox:11.3

Reading Time	10:05
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	50.39
pH	7.26
Conductivity (mS/cm)	0.96
Turbidity (NTU)	61
Dissolved Oxygen (mg/L)	0.98
Temperature (Degrees Celsius)	7.5
Redox (ORP mV)	11.3

parameters	@10:05, DTW:50.39, pH:7.26, temp:7.5, cond:0.96, turb:61, DO:0.98, redox:11.3

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:10, DTW:50.39, pH:7.26, temp:7.1, cond:0.96, turb:57.2, DO:1.06, redox:11.8

Reading Time	10:10
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	50.39
pH	7.26
Conductivity (mS/cm)	0.96
Turbidity (NTU)	57.2
Dissolved Oxygen (mg/L)	1.06
Temperature (Degrees Celsius)	7.1
Redox (ORP mV)	11.8
parameters	@10:10, DTW:50.39, pH:7.26, temp:7.1, cond:0.96, turb:57.2, DO:1.06, redox:11.8

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:15, DTW:50.39, pH:7.26, temp:6.6, cond:0.95, turb:51.7, DO:0.95, redox:12.1

Reading Time	10:15
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	50.39
pH	7.26
Conductivity (mS/cm)	0.95
Turbidity (NTU)	51.7
Dissolved Oxygen (mg/L)	0.95
Temperature (Degrees Celsius)	6.6
Redox (ORP mV)	12.1
parameters	@10:15, DTW:50.39, pH:7.26, temp:6.6, cond:0.95, turb:51.7, DO:0.95, redox:12.1

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:20, DTW:50.39, pH:7.27, temp:2.7, cond:0.9, turb:46.2, DO:1.07, redox:14.1

Reading Time	10:20
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	50.39
pH	7.27
Conductivity (mS/cm)	0.9
Turbidity (NTU)	46.2
Dissolved Oxygen (mg/L)	1.07
Temperature (Degrees Celsius)	2.7

Redox (ORP mV)	14.1
parameters	@10:20, DTW:50.39, pH:7.27, temp:2.7, cond:0.9, turb:46.2, DO:1.07, redox:14.1

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:25, DTW:50.39, pH:7.28, temp:2.9, cond:0.87, turb:47.5, DO:0.96, redox:15.5

Reading Time	10:25
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	50.39
pH	7.28
Conductivity (mS/cm)	0.87
Turbidity (NTU)	47.5
Dissolved Oxygen (mg/L)	0.96
Temperature (Degrees Celsius)	2.9
Redox (ORP mV)	15.5
parameters	@10:25, DTW:50.39, pH:7.28, temp:2.9, cond:0.87, turb:47.5, DO:0.96, redox:15.5

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

Purge End	10:25
Total Volume Measured (units)	Gallons
Total Gallons Purged	1.25
Well Volumes Purged	0.66

Sample Information

Sample Time	10:30
Color	None
Notable odors	None

Metals

Constituent Sampled	Metals
Container Type	125 mL Plastic
Number of Containers	2
Preservative	HNO3

Well Information

Well Location	Plant 3
Condition of Well	Good
Well Locked at Arrival	Yes
Well Locked at Departure	Yes
Comments	Had to field filter

Signature

Signed 2018-12-05 16:03:42 UTC

2018-12-07, MWBP-12A-UST1-4

Created	2018-12-07 16:09:19 UTC by Erik Pietrzak
Updated	2018-12-07 17:39:11 UTC by Erik Pietrzak
Location	42.734213741536, -84.5816775319023
Status	Field Draft
Project Number	B0064479.2018
Project Name / Location	RACER Lansing, MI
Sampler Name	Erik Pietrzak
Date	2018-12-07
Well ID	MWBP-12A-UST1-4
Are you able to purge and/or sample this well? If not, explain why in the Comments section below.	Yes
Weather	Cloudy, 20s

Evacuation Details

Measuring Point (mp) Description	Top of Casing
Casing Diameter (inches)	2
Static Water Level (ft-bmp)	28.8
Total Depth (ft-bmp)	37.25
Water Column	8.45
Gallons in Well	1.37

Reference Note: Well Volume Calculation [$\pi r^2 h$, where h= 1foot] Well radius (inch):Volume (Gal./foot):Volume (mL/foot) 0.5" = 0.04 gal/ft = 154 mL/ft 1" = 0.16 gal/ft = 617 mL/ft 2" = 0.65 gal/ft = 2470 mL/ft 3" = 1.47 gal/ft = 5557 mL/ft

Purge Method	Low-Flow
Type of Equipment used	Bladder
Sample Method	Low-Flow
Sample Depth (ft-bmp) (e.g. pump intake)	35
Purge Start	11:05

@11:10, DTW:28.8, pH:6.9, temp:11.4, cond:3.63, turb:43.1, DO:4.54, redox:44.6

Reading Time	11:10
Rate (mL/min)	100
Depth to Water (ft)	28.8
pH	6.9
Conductivity (mS/cm)	3.63
Turbidity (NTU)	43.1
Dissolved Oxygen (mg/L)	4.54
Temperature (Degrees Celsius)	11.4
Redox (ORP mV)	44.6
parameters	@11:10, DTW:28.8, pH:6.9, temp:11.4, cond:3.63, turb:43.1, DO:4.54, redox:44.6

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:15, DTW:28.83, pH:6.93, temp:10.9, cond:3.65, turb:35.5, DO:4.65, redox:28.2

Reading Time	11:15

Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	28.83
pH	6.93
Conductivity (mS/cm)	3.65
Turbidity (NTU)	35.5
Dissolved Oxygen (mg/L)	4.65
Temperature (Degrees Celsius)	10.9
Redox (ORP mV)	28.2
parameters	@11:15, DTW:28.83, pH:6.93, temp:10.9, cond:3.65, turb:35.5, DO:4.65, redox:28.2

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:20, DTW:28.75, pH:6.93, temp:10.6, cond:3.64, turb:29.4, DO:6.41, redox:18

Reading Time	11:20
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	28.75
pH	6.93
Conductivity (mS/cm)	3.64
Turbidity (NTU)	29.4
Dissolved Oxygen (mg/L)	6.41
Temperature (Degrees Celsius)	10.6
Redox (ORP mV)	18
parameters	@11:20, DTW:28.75, pH:6.93, temp:10.6, cond:3.64, turb:29.4, DO:6.41, redox:18

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:25, DTW:28.77, pH:6.93, temp:5.5, cond:3.85, turb:27.4, DO:7.45, redox:13.8

Reading Time	11:25
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	28.77
pH	6.93
Conductivity (mS/cm)	3.85
Turbidity (NTU)	27.4
Dissolved Oxygen (mg/L)	7.45
Temperature (Degrees Celsius)	5.5
Redox (ORP mV)	13.8
parameters	@11:25, DTW:28.77, pH:6.93, temp:5.5, cond:3.85, turb:27.4, DO:7.45, redox:13.8

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:30, DTW:28.77, pH:6.91, temp:4.8, cond:3.64, turb:25.5, DO:7.26, redox:13

Reading Time	11:30
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	28.77
pH	6.91
Conductivity (mS/cm)	3.64
Turbidity (NTU)	25.5
Dissolved Oxygen (mg/L)	7.26
Temperature (Degrees Celsius)	4.8
Redox (ORP mV)	13
parameters	@11:30, DTW:28.77, pH:6.91, temp:4.8, cond:3.64, turb:25.5, DO:7.26, redox:13

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:35, DTW:28.77, pH:6.91, temp:5.7, cond:3.59, turb:21.8, DO:6.86, redox:10.9

Reading Time	11:35
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	28.77
pH	6.91
Conductivity (mS/cm)	3.59
Turbidity (NTU)	21.8
Dissolved Oxygen (mg/L)	6.86
Temperature (Degrees Celsius)	5.7
Redox (ORP mV)	10.9
parameters	@11:35, DTW:28.77, pH:6.91, temp:5.7, cond:3.59, turb:21.8, DO:6.86, redox:10.9

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:40, DTW:28.77, pH:6.92, temp:6.4, cond:3.61, turb:17, DO:6.57, redox:8.3

Reading Time	11:40
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	28.77
pH	6.92
Conductivity (mS/cm)	3.61
Turbidity (NTU)	17
Dissolved Oxygen (mg/L)	6.57
Temperature (Degrees Celsius)	6.4
Redox (ORP mV)	8.3
parameters	@11:40, DTW:28.77, pH:6.92, temp:6.4, cond:3.61, turb:17, DO:6.57, redox:8.3

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:45, DTW:28.83, pH:6.92, temp:4.7, cond:3.68, turb:15.1, DO:7.32, redox:7.3

Reading Time	11:45
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	28.83
pH	6.92
Conductivity (mS/cm)	3.68
Turbidity (NTU)	15.1
Dissolved Oxygen (mg/L)	7.32
Temperature (Degrees Celsius)	4.7
Redox (ORP mV)	7.3
parameters	@11:45, DTW:28.83, pH:6.92, temp:4.7, cond:3.68, turb:15.1, DO:7.32, redox:7.3

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:50, DTW:28.75, pH:6.92, temp:5.4, cond:3.64, turb:12.1, DO:6.61, redox:6.3

Reading Time	11:50
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	28.75
pH	6.92
Conductivity (mS/cm)	3.64
Turbidity (NTU)	12.1
Dissolved Oxygen (mg/L)	6.61
Temperature (Degrees Celsius)	5.4
Redox (ORP mV)	6.3
parameters	@11:50, DTW:28.75, pH:6.92, temp:5.4, cond:3.64, turb:12.1, DO:6.61, redox:6.3

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:55, DTW:28.75, pH:6.92, temp:5.5, cond:3.66, turb:9.66, DO:6.93, redox:5.3

Reading Time	11:55
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	28.75
pH	6.92
Conductivity (mS/cm)	3.66
Turbidity (NTU)	9.66
Dissolved Oxygen (mg/L)	6.93
Temperature (Degrees Celsius)	5.5
Redox (ORP mV)	5.3
parameters	@11:55, DTW:28.75, pH:6.92, temp:5.5, cond:3.66, turb:9.66, DO:6.93, redox:5.3

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:00, DTW:28.75, pH:6.92, temp:5.6, cond:3.65, turb:6.81, DO:6.88, redox:4.4

Reading Time	12:00
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	28.75
pH	6.92
Conductivity (mS/cm)	3.65
Turbidity (NTU)	6.81
Dissolved Oxygen (mg/L)	6.88
Temperature (Degrees Celsius)	5.6
Redox (ORP mV)	4.4
parameters	@12:00, DTW:28.75, pH:6.92, temp:5.6, cond:3.65, turb:6.81, DO:6.88, redox:4.4

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:05, DTW:28.75, pH:6.92, temp:5.7, cond:3.66, turb:5.35, DO:6.8, redox:3.6

Reading Time	12:05
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	28.75
pH	6.92
Conductivity (mS/cm)	3.66
Turbidity (NTU)	5.35
Dissolved Oxygen (mg/L)	6.8
Temperature (Degrees Celsius)	5.7
Redox (ORP mV)	3.6
parameters	@12:05, DTW:28.75, pH:6.92, temp:5.7, cond:3.66, turb:5.35, DO:6.8, redox:3.6

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

Total Volume Measured (units)	Gallons
Total Gallons Purged	1.5
Well Volumes Purged	1.09

Sample Information

Sample Time	12:07
Color	Clear
Notable odors	None

VOCs

Constituent Sampled	VOCs
Container Type	40 mL Vial

Number of Containers	3
Preservative	HCL

Well Information

Condition of Well	Good
Well Locked at Arrival	Yes
Well Locked at Departure	Yes

Signature

Signed 2018-12-07 17:39:09 UTC

2018-12-06, MW-16-74

Created	2018-12-06 11:35:25 EST by Daniel Stockard
Updated	2018-12-06 12:08:14 EST by Daniel Stockard
Location	42.7368157357375, -84.5845869743122
Status	Field Draft
Project Number	B0064479.2018
Project Name / Location	RACER Lansing, MI
Sampler Name	Daniel Stockard
Date	2018-12-06
Well ID	MW-16-74
Are you able to purge and/or sample this well? If not, explain why in the Comments section below.	Yes
Replicate No. (e.g. Dup)	None
Weather	Freezing rain, 20s

Evacuation Details

Measuring Point (mp) Description	Top of Casing
Casing Diameter (inches)	2
Static Water Level (ft-bmp)	65.41
Total Depth (ft-bmp)	71
Water Column	5.59
Gallons in Well	0.91

Reference Note: Well Volume Calculation [$\pi r^2 h$, where h= 1foot] Well radius (inch):Volume (Gal./foot):Volume (mL/foot) 0.5" = 0.04 gal/ft = 154 mL/ft 1" = 0.16 gal/ft = 617 mL/ft 2" = 0.65 gal/ft = 2470 mL/ft 3" = 1.47 gal/ft = 5557 mL/ft

Purge Method	Low-Flow
Type of Equipment used	Bladder
Sample Method	Grab
Sample Depth (ft-bmp) (e.g. pump intake)	69
Purge Start	11:30

@11:30, DTW:65.29, pH:7.06, temp:5.6, cond:1.53, turb:469, DO:0.72, redox:-5.1

Reading Time	11:30
Rate (mL/min)	100
Depth to Water (ft)	65.29
pH	7.06
Conductivity (mS/cm)	1.53
Turbidity (NTU)	469
Dissolved Oxygen (mg/L)	0.72
Temperature (Degrees Celsius)	5.6
Redox (ORP mV)	-5.1
parameters	@11:30, DTW:65.29, pH:7.06, temp:5.6, cond:1.53, turb:469, DO:0.72, redox:-5.1

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:40, DTW:65.5, pH:7.06, temp:11.3, cond:1.51, turb:417, DO:0.52, redox:-15.7

Reading Time	11:40
Minutes Elapsed between readings	10
Rate (mL/min)	100
Depth to Water (ft)	65.5
pH	7.06
Conductivity (mS/cm)	1.51
Turbidity (NTU)	417
Dissolved Oxygen (mg/L)	0.52
Temperature (Degrees Celsius)	11.3
Redox (ORP mV)	-15.7
parameters	@11:40, DTW:65.5, pH:7.06, temp:11.3, cond:1.51, turb:417, DO:0.52, redox:-15.7

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:45, DTW:65.69, pH:7.05, temp:11.7, cond:1.75, turb:103, DO:0.48, redox:-18.4

Reading Time	11:45
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	65.69
pH	7.05
Conductivity (mS/cm)	1.75
Turbidity (NTU)	103
Dissolved Oxygen (mg/L)	0.48
Temperature (Degrees Celsius)	11.7
Redox (ORP mV)	-18.4
parameters	@11:45, DTW:65.69, pH:7.05, temp:11.7, cond:1.75, turb:103, DO:0.48, redox:-18.4

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:50, DTW:65.69, pH:7.03, temp:11.6, cond:1.76, turb:44.4, DO:0.24, redox:-27.9

Reading Time	11:50
Minutes Elapsed between readings	5
Rate (mL/min)	175
Depth to Water (ft)	65.69
pH	7.03
Conductivity (mS/cm)	1.76
Turbidity (NTU)	44.4
Dissolved Oxygen (mg/L)	0.24
Temperature (Degrees Celsius)	11.6
Redox (ORP mV)	-27.9
parameters	@11:50, DTW:65.69, pH:7.03, temp:11.6, cond:1.76, turb:44.4, DO:0.24, redox:-27.9

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:55, DTW:65.7, pH:7.03, temp:11.9, cond:1.76, turb:42.7, DO:0.24, redox:-30.1

Reading Time	11:55
Minutes Elapsed between readings	5
Rate (mL/min)	200
Depth to Water (ft)	65.7
pH	7.03
Conductivity (mS/cm)	1.76
Turbidity (NTU)	42.7
Dissolved Oxygen (mg/L)	0.24
Temperature (Degrees Celsius)	11.9
Redox (ORP mV)	-30.1
parameters	@11:55, DTW:65.7, pH:7.03, temp:11.9, cond:1.76, turb:42.7, DO:0.24, redox:-30.1

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:00, DTW:65.7, pH:7.03, temp:11.7, cond:1.76, turb:41.3, DO:0.24, redox:-32.2

Reading Time	12:00
Minutes Elapsed between readings	5
Rate (mL/min)	200
Depth to Water (ft)	65.7
pH	7.03
Conductivity (mS/cm)	1.76
Turbidity (NTU)	41.3
Dissolved Oxygen (mg/L)	0.24
Temperature (Degrees Celsius)	11.7
Redox (ORP mV)	-32.2
parameters	@12:00, DTW:65.7, pH:7.03, temp:11.7, cond:1.76, turb:41.3, DO:0.24, redox:-32.2

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:05, DTW:65.7, pH:7.02, temp:11.9, cond:1.77, turb:39.1, DO:0.22, redox:-33.5

Reading Time	12:05
Minutes Elapsed between readings	5
Rate (mL/min)	200
Depth to Water (ft)	65.7
pH	7.02
Conductivity (mS/cm)	1.77
Turbidity (NTU)	39.1
Dissolved Oxygen (mg/L)	0.22
Temperature (Degrees Celsius)	11.9
Redox (ORP mV)	-33.5
parameters	@12:05, DTW:65.7, pH:7.02, temp:11.9, cond:1.77, turb:39.1, DO:0.22, redox:-33.5

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

Purge End	12:05
Total Volume Measured (units)	Gallons
Total Gallons Purged	1.5
Well Volumes Purged	1.65

Sample Information

Sample Time	12:05
Color	None
Notable odors	None

1,4-D and VOCs

Constituent Sampled	1,4-D and VOCs
Container Type	40 mL Vial
Number of Containers	3
Preservative	HCL

Propane

Constituent Sampled	Propane
Container Type	40 mL Vial
Number of Containers	3
Preservative	TSP

Well Information

Well Location	P2
Condition of Well	Good
Well Locked at Arrival	Yes
Well Locked at Departure	Yes
Comments	Well yield is 😊😊😊

Signature

Signed 2018-12-06 12:08:09 EST

2018-12-06, MW-12-12

Created	2018-12-06 17:19:04 UTC by Erik Pietrzak
Updated	2018-12-06 19:00:09 UTC by Erik Pietrzak
Location	42.7387791965555, -84.5783999563051
Status	Field Draft
Project Number	B0064479.2018
Project Name / Location	RACER Lansing, MI
Sampler Name	Erik Pietrzak
Date	2018-12-06
Well ID	MW-12-12
Are you able to purge and/or sample this well? If not, explain why in the Comments section below.	Yes
Weather	Flurries, 30s

Evacuation Details

Measuring Point (mp) Description	Top of Casing
Casing Diameter (inches)	2
Static Water Level (ft-bmp)	6.3
Total Depth (ft-bmp)	17.21
Water Column	10.91
Gallons in Well	1.77

Reference Note: Well Volume Calculation [$\pi r^2 h$, where h= 1foot] Well radius (inch):Volume (Gal./foot):Volume (mL/foot) 0.5" = 0.04 gal/ft = 154 mL/ft 1" = 0.16 gal/ft = 617 mL/ft 2" = 0.65 gal/ft = 2470 mL/ft 3" = 1.47 gal/ft = 5557 mL/ft

Purge Method	Low-Flow
Type of Equipment used	Bladder
Sample Method	Low-Flow
Sample Depth (ft-bmp) (e.g. pump intake)	15
Purge Start	12:15

@12:20, DTW:6.57, pH:8.09, temp:8, cond:0.658, turb:251, DO:6.91, redox:23.4

Reading Time	12:20
Rate (mL/min)	100
Depth to Water (ft)	6.57
pH	8.09
Conductivity (mS/cm)	0.658
Turbidity (NTU)	251
Dissolved Oxygen (mg/L)	6.91
Temperature (Degrees Celsius)	8
Redox (ORP mV)	23.4
parameters	@12:20, DTW:6.57, pH:8.09, temp:8, cond:0.658, turb:251, DO:6.91, redox:23.4

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:25, DTW:6.55, pH:8.22, temp:8.7, cond:0.653, turb:280, DO:8.65, redox:22.6

Reading Time	12:25

Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	6.55
pH	8.22
Conductivity (mS/cm)	0.653
Turbidity (NTU)	280
Dissolved Oxygen (mg/L)	8.65
Temperature (Degrees Celsius)	8.7
Redox (ORP mV)	22.6
parameters	@12:25, DTW:6.55, pH:8.22, temp:8.7, cond:0.653, turb:280, DO:8.65, redox:22.6

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:30, DTW:7, pH:8.32, temp:9, cond:0.649, turb:290, DO:9.61, redox:22.8

Reading Time	12:30
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	7
pH	8.32
Conductivity (mS/cm)	0.649
Turbidity (NTU)	290
Dissolved Oxygen (mg/L)	9.61
Temperature (Degrees Celsius)	9
Redox (ORP mV)	22.8
parameters	@12:30, DTW:7, pH:8.32, temp:9, cond:0.649, turb:290, DO:9.61, redox:22.8

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:35, DTW:7, pH:8.35, temp:9, cond:0.655, turb:292, DO:9.34, redox:23

Reading Time	12:35
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	7
pH	8.35
Conductivity (mS/cm)	0.655
Turbidity (NTU)	292
Dissolved Oxygen (mg/L)	9.34
Temperature (Degrees Celsius)	9
Redox (ORP mV)	23
parameters	@12:35, DTW:7, pH:8.35, temp:9, cond:0.655, turb:292, DO:9.34, redox:23

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:40, DTW:7.39, pH:8.38, temp:8.2, cond:0.661, turb:292, DO:9.61, redox:23.9

Reading Time	12:40
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	7.39
pH	8.38
Conductivity (mS/cm)	0.661
Turbidity (NTU)	292
Dissolved Oxygen (mg/L)	9.61
Temperature (Degrees Celsius)	8.2
Redox (ORP mV)	23.9
parameters	@12:40, DTW:7.39, pH:8.38, temp:8.2, cond:0.661, turb:292, DO:9.61, redox:23.9

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:45, DTW:7.48, pH:8.39, temp:8.5, cond:0.668, turb:298, DO:9.27, redox:24.3

Reading Time	12:45
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	7.48
pH	8.39
Conductivity (mS/cm)	0.668
Turbidity (NTU)	298
Dissolved Oxygen (mg/L)	9.27
Temperature (Degrees Celsius)	8.5
Redox (ORP mV)	24.3
parameters	@12:45, DTW:7.48, pH:8.39, temp:8.5, cond:0.668, turb:298, DO:9.27, redox:24.3

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:50, DTW:7.48, pH:8.38, temp:8.2, cond:0.671, turb:269, DO:8.91, redox:25.2

Reading Time	12:50
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	7.48
pH	8.38
Conductivity (mS/cm)	0.671
Turbidity (NTU)	269
Dissolved Oxygen (mg/L)	8.91
Temperature (Degrees Celsius)	8.2
Redox (ORP mV)	25.2
parameters	@12:50, DTW:7.48, pH:8.38, temp:8.2, cond:0.671, turb:269, DO:8.91, redox:25.2

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:55, DTW:7.58, pH:8.38, temp:8.3, cond:0.684, turb:254, DO:9.04, redox:25.5

Reading Time	12:55
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	7.58
pH	8.38
Conductivity (mS/cm)	0.684
Turbidity (NTU)	254
Dissolved Oxygen (mg/L)	9.04
Temperature (Degrees Celsius)	8.3
Redox (ORP mV)	25.5
parameters	@12:55, DTW:7.58, pH:8.38, temp:8.3, cond:0.684, turb:254, DO:9.04, redox:25.5

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:00, DTW:7.63, pH:8.37, temp:7.8, cond:0.699, turb:236, DO:9.05, redox:26.5

Reading Time	13:00
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	7.63
pH	8.37
Conductivity (mS/cm)	0.699
Turbidity (NTU)	236
Dissolved Oxygen (mg/L)	9.05
Temperature (Degrees Celsius)	7.8
Redox (ORP mV)	26.5
parameters	@13:00, DTW:7.63, pH:8.37, temp:7.8, cond:0.699, turb:236, DO:9.05, redox:26.5

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:05, DTW:7.9, pH:8.36, temp:8.1, cond:0.704, turb:219, DO:9.15, redox:26.8

Reading Time	13:05
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	7.9
pH	8.36
Conductivity (mS/cm)	0.704
Turbidity (NTU)	219
Dissolved Oxygen (mg/L)	9.15
Temperature (Degrees Celsius)	8.1
Redox (ORP mV)	26.8
parameters	@13:05, DTW:7.9, pH:8.36, temp:8.1, cond:0.704, turb:219, DO:9.15, redox:26.8

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:10, DTW:7.88, pH:8.35, temp:8.3, cond:0.715, turb:208, DO:8.84, redox:27.3

Reading Time	13:10
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	7.88
pH	8.35
Conductivity (mS/cm)	0.715
Turbidity (NTU)	208
Dissolved Oxygen (mg/L)	8.84
Temperature (Degrees Celsius)	8.3
Redox (ORP mV)	27.3
parameters	@13:10, DTW:7.88, pH:8.35, temp:8.3, cond:0.715, turb:208, DO:8.84, redox:27.3

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:15, DTW:7.85, pH:8.35, temp:8.4, cond:0.722, turb:190, DO:9.03, redox:27.4

Reading Time	13:15
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	7.85
pH	8.35
Conductivity (mS/cm)	0.722
Turbidity (NTU)	190
Dissolved Oxygen (mg/L)	9.03
Temperature (Degrees Celsius)	8.4
Redox (ORP mV)	27.4
parameters	@13:15, DTW:7.85, pH:8.35, temp:8.4, cond:0.722, turb:190, DO:9.03, redox:27.4

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:20, DTW:7.85, pH:8.34, temp:8.1, cond:0.726, turb:200, DO:9.1, redox:27.8

Reading Time	13:20
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	7.85
pH	8.34
Conductivity (mS/cm)	0.726
Turbidity (NTU)	200
Dissolved Oxygen (mg/L)	9.1
Temperature (Degrees Celsius)	8.1
Redox (ORP mV)	27.8

parameters	@13:20, DTW:7.85, pH:8.34, temp:8.1, cond:0.726, turb:200, DO:9.1, redox:27.8

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:25, DTW:7.87, pH:8.33, temp:8.3, cond:0.74, turb:179, DO:8.85, redox:28.1

Reading Time	13:25
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	7.87
pH	8.33
Conductivity (mS/cm)	0.74
Turbidity (NTU)	179
Dissolved Oxygen (mg/L)	8.85
Temperature (Degrees Celsius)	8.3
Redox (ORP mV)	28.1
parameters	@13:25, DTW:7.87, pH:8.33, temp:8.3, cond:0.74, turb:179, DO:8.85, redox:28.1

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

Purge End	13:25
Total Volume Measured (units)	Gallons
Total Gallons Purged	1
Well Volumes Purged	0.56

Sample Information

Sample Time	13:27
Color	Cloudy
Notable odors	None

Metals

Constituent Sampled	Metals
Container Type	125 mL Plastic
Number of Containers	1
Preservative	HNO3

Well Information

Condition of Well	Good
Well Locked at Arrival	No
Well Locked at Departure	No
Comments	Unable to stabilize conductivity

Signature

Signed 2018-12-06 19:00:05 UTC

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2018-12-04, MW-91-2

Created	2018-12-04 18:55:49 UTC by Austin Westhuis
Updated	2018-12-04 20:45:16 UTC by Austin Westhuis
Location	42.7452801168363, -84.5848246850861
Status	Field Draft
Project Number	B0064479.2018
Project Name / Location	RACER Lansing
Sampler Name	Austin Westhuis
Date	2018-12-04
Well ID	MW-91-2
Are you able to purge and/or sample this well? If not, explain why in the Comments section below.	Yes
Weather	Sunny, 25F

Evacuation Details

Measuring Point (mp) Description	Top of Casing
Casing Diameter (inches)	4
Static Water Level (ft-bmp)	58.42
Total Depth (ft-bmp)	76.6
Water Column	18.18
Gallons in Well	11.82

Reference Note: Well Volume Calculation [$\pi r^2 h$, where h= 1foot] Well radius (inch):Volume (Gal./foot):Volume (mL/foot) 0.5" = 0.04 gal/ft = 154 mL/ft 1" = 0.16 gal/ft = 617 mL/ft 2" = 0.65 gal/ft = 2470 mL/ft 3" = 1.47 gal/ft = 5557 mL/ft

Purge Method	Low-Flow
Type of Equipment used	Bladder
Sample Method	Low-Flow
Sample Depth (ft-bmp) (e.g. pump intake)	74.1
Purge Start	13:55

@14:00, DTW:58.42, pH:7.14, temp:13, cond:1.11, turb:14.6, DO:6.95, redox:48

Reading Time	14:00
Rate (mL/min)	100
Depth to Water (ft)	58.42
Milliliters Purged (total)	500
pH	7.14
Conductivity (mS/cm)	1.11
Turbidity (NTU)	14.6
Dissolved Oxygen (mg/L)	6.95
Temperature (Degrees Celsius)	13
Redox (ORP mV)	48
parameters	@14:00, DTW:58.42, pH:7.14, temp:13, cond:1.11, turb:14.6, DO:6.95, redox:48

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@14:05, DTW:58.42, pH:7.15, temp:12.9, cond:1.13, turb:11.6, DO:6.81, redox:28.3

Reading Time	14:05
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	58.42
Milliliters Purged (total)	1000
pH	7.15
Conductivity (mS/cm)	1.13
Turbidity (NTU)	11.6
Dissolved Oxygen (mg/L)	6.81
Temperature (Degrees Celsius)	12.9
Redox (ORP mV)	28.3
parameters	@14:05, DTW:58.42, pH:7.15, temp:12.9, cond:1.13, turb:11.6, DO:6.81, redox:28.3

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@14:10, DTW:58.42, pH:7.16, temp:13.2, cond:1.14, turb:7.87, DO:5.98, redox:-12.1

Reading Time	14:10
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	58.42
Milliliters Purged (total)	1500
pH	7.16
Conductivity (mS/cm)	1.14
Turbidity (NTU)	7.87
Dissolved Oxygen (mg/L)	5.98
Temperature (Degrees Celsius)	13.2
Redox (ORP mV)	-12.1
parameters	@14:10, DTW:58.42, pH:7.16, temp:13.2, cond:1.14, turb:7.87, DO:5.98, redox:-12.1

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@14:15, DTW:58.42, pH:7.16, temp:13.1, cond:1.14, turb:6.54, DO:6.03, redox:-15.5

Reading Time	14:15
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	58.42
Milliliters Purged (total)	2000
pH	7.16
Conductivity (mS/cm)	1.14
Turbidity (NTU)	6.54
Dissolved Oxygen (mg/L)	6.03
Temperature (Degrees Celsius)	13.1
Redox (ORP mV)	-15.5
parameters	@14:15, DTW:58.42, pH:7.16, temp:13.1, cond:1.14, turb:6.54, DO:6.03, redox:-15.5

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@14:20, DTW:58.42, pH:7.16, temp:13.7, cond:1.15, turb:6.44, DO:5.37, redox:-33.8

Reading Time	14:20
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	58.42
Milliliters Purged (total)	2500
pH	7.16
Conductivity (mS/cm)	1.15
Turbidity (NTU)	6.44
Dissolved Oxygen (mg/L)	5.37
Temperature (Degrees Celsius)	13.7
Redox (ORP mV)	-33.8
parameters	@14:20, DTW:58.42, pH:7.16, temp:13.7, cond:1.15, turb:6.44, DO:5.37, redox:-33.8

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@14:25, DTW:58.42, pH:7.16, temp:13.9, cond:1.16, turb:5.54, DO:5.16, redox:-36.2

Reading Time	14:25
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	58.42
Milliliters Purged (total)	3000
pH	7.16
Conductivity (mS/cm)	1.16
Turbidity (NTU)	5.54
Dissolved Oxygen (mg/L)	5.16
Temperature (Degrees Celsius)	13.9
Redox (ORP mV)	-36.2
parameters	@14:25, DTW:58.42, pH:7.16, temp:13.9, cond:1.16, turb:5.54, DO:5.16, redox:-36.2

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@14:30, DTW:58.42, pH:7.16, temp:13.1, cond:1.14, turb:3.76, DO:5.04, redox:-37.8

Reading Time	14:30
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	58.42
Milliliters Purged (total)	3500
pH	7.16
Conductivity (mS/cm)	1.14
Turbidity (NTU)	3.76

Dissolved Oxygen (mg/L)	5.04
Temperature (Degrees Celsius)	13.1
Redox (ORP mV)	-37.8
parameters	@14:30, DTW:58.42, pH:7.16, temp:13.1, cond:1.14, turb:3.76, DO:5.04, redox:-37.8
Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit	
Purge End	14:50
Total Volume Measured (units)	Gallons

Sample Information

Sample Time	14:35
Color	Clear
Notable odors	None

1,4-Dioxane

Constituent Sampled	1,4-Dioxane
Container Type	40 mL Vial
Number of Containers	3
Preservative	HCL

Metals

Constituent Sampled	Metals
Container Type	125 mL Plastic
Number of Containers	1
Preservative	HNO3

Hexavalent Chromium

Constituent Sampled	Hexavalent Chromium
Container Type	125 mL Plastic
Number of Containers	1
Preservative	None

PFAS

Constituent Sampled	PFAS
Container Type	250 mL Plastic
Number of Containers	2
Preservative	None

Well Information

Well Location	Plant 3
Condition of Well	Poor
Well Locked at Arrival	No
Well Locked at Departure	No

Photo of Well

Signature

Signed 2018-12-04 18:58:20 UTC

2018-12-11, MW-13-47

Created	2018-12-11 10:51:21 EST by Christine Gregg
Updated	2018-12-11 11:59:43 EST by Christine Gregg
Location	42.7412226470585, -84.5870582946433
Status	Field Draft
Project Number	B0064479.2018
Project Name / Location	RACER Lansing, MI
Sampler Name	Christine Gregg
Date	2018-12-11
Well ID	MW-13-47
Are you able to purge and/or sample this well? If not, explain why in the Comments section below.	Yes
Weather	30s overcast

Evacuation Details

Measuring Point (mp) Description	Top of Casing
Casing Diameter (inches)	2
Static Water Level (ft-bmp)	56.52
Total Depth (ft-bmp)	113.61
Water Column	57.09
Gallons in Well	9.28

Reference Note: Well Volume Calculation [$\pi r^2 h$, where h= 1foot] Well radius (inch):Volume (Gal./foot):Volume (mL/foot) 0.5" = 0.04 gal/ft = 154 mL/ft 1" = 0.16 gal/ft = 617 mL/ft 2" = 0.65 gal/ft = 2470 mL/ft 3" = 1.47 gal/ft = 5557 mL/ft

Purge Method	Low-Flow
Type of Equipment used	Bladder
Sample Method	Low-Flow
Sample Depth (ft-bmp) (e.g. pump intake)	110
Purge Start	10:46

@10:55, DTW:56.52, pH:7.25, temp:8.6, cond:1.64, turb:22.1, DO:6.15, redox:-69.1

Reading Time	10:55
Rate (mL/min)	100
Depth to Water (ft)	56.52
pH	7.25
Conductivity (mS/cm)	1.64
Turbidity (NTU)	22.1
Dissolved Oxygen (mg/L)	6.15
Temperature (Degrees Celsius)	8.6
Redox (ORP mV)	-69.1
parameters	@10:55, DTW:56.52, pH:7.25, temp:8.6, cond:1.64, turb:22.1, DO:6.15, redox:-69.1

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:00, DTW:56.53, pH:7.21, temp:10.5, cond:1.69, turb:23.7, DO:3.82, redox:-58.3

Reading Time	11:00

Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	56.53
pH	7.21
Conductivity (mS/cm)	1.69
Turbidity (NTU)	23.7
Dissolved Oxygen (mg/L)	3.82
Temperature (Degrees Celsius)	10.5
Redox (ORP mV)	-58.3
parameters	@11:00, DTW:56.53, pH:7.21, temp:10.5, cond:1.69, turb:23.7, DO:3.82, redox:-58.3

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:05, DTW:56.53, pH:7.23, temp:10.8, cond:1.73, turb:18.2, DO:3.16, redox:-57.8

Reading Time	11:05
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	56.53
pH	7.23
Conductivity (mS/cm)	1.73
Turbidity (NTU)	18.2
Dissolved Oxygen (mg/L)	3.16
Temperature (Degrees Celsius)	10.8
Redox (ORP mV)	-57.8
parameters	@11:05, DTW:56.53, pH:7.23, temp:10.8, cond:1.73, turb:18.2, DO:3.16, redox:-57.8

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:10, DTW:56.53, pH:7.21, temp:10.7, cond:1.72, turb:11.8, DO:3.34, redox:-96.5

Reading Time	11:10
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	56.53
pH	7.21
Conductivity (mS/cm)	1.72
Turbidity (NTU)	11.8
Dissolved Oxygen (mg/L)	3.34
Temperature (Degrees Celsius)	10.7
Redox (ORP mV)	-96.5
parameters	@11:10, DTW:56.53, pH:7.21, temp:10.7, cond:1.72, turb:11.8, DO:3.34, redox:-96.5

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:15, DTW:56.53, pH:7.26, temp:10.9, cond:1.75, turb:15.3, DO:2.33, redox:-68.2

Reading Time	11:15
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	56.53
pH	7.26
Conductivity (mS/cm)	1.75
Turbidity (NTU)	15.3
Dissolved Oxygen (mg/L)	2.33
Temperature (Degrees Celsius)	10.9
Redox (ORP mV)	-68.2
parameters	@11:15, DTW:56.53, pH:7.26, temp:10.9, cond:1.75, turb:15.3, DO:2.33, redox:-68.2

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:20, DTW:56.53, pH:7.26, temp:10.9, cond:1.75, turb:14.5, DO:1.73, redox:-21.1

Reading Time	11:20
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	56.53
pH	7.26
Conductivity (mS/cm)	1.75
Turbidity (NTU)	14.5
Dissolved Oxygen (mg/L)	1.73
Temperature (Degrees Celsius)	10.9
Redox (ORP mV)	-21.1
parameters	@11:20, DTW:56.53, pH:7.26, temp:10.9, cond:1.75, turb:14.5, DO:1.73, redox:-21.1

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:25, DTW:56.53, pH:7.26, temp:11, cond:1.73, turb:17.3, DO:1.76, redox:-17.5

Reading Time	11:25
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	56.53
pH	7.26
Conductivity (mS/cm)	1.73
Turbidity (NTU)	17.3
Dissolved Oxygen (mg/L)	1.76
Temperature (Degrees Celsius)	11
Redox (ORP mV)	-17.5
parameters	@11:25, DTW:56.53, pH:7.26, temp:11, cond:1.73, turb:17.3, DO:1.76, redox:-17.5

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:30, DTW:56.53, pH:7.26, temp:10.3, cond:1.74, turb:20, DO:1.87, redox:-9.6

Reading Time	11:30
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	56.53
pH	7.26
Conductivity (mS/cm)	1.74
Turbidity (NTU)	20
Dissolved Oxygen (mg/L)	1.87
Temperature (Degrees Celsius)	10.3
Redox (ORP mV)	-9.6
parameters	@11:30, DTW:56.53, pH:7.26, temp:10.3, cond:1.74, turb:20, DO:1.87, redox:-9.6

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:35, DTW:56.53, pH:7.25, temp:9.7, cond:1.73, turb:16.3, DO:1.88, redox:-2.9

Reading Time	11:35
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	56.53
pH	7.25
Conductivity (mS/cm)	1.73
Turbidity (NTU)	16.3
Dissolved Oxygen (mg/L)	1.88
Temperature (Degrees Celsius)	9.7
Redox (ORP mV)	-2.9
parameters	@11:35, DTW:56.53, pH:7.25, temp:9.7, cond:1.73, turb:16.3, DO:1.88, redox:-2.9

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:40, DTW:56.53, pH:7.26, temp:9.9, cond:1.77, turb:19.6, DO:1.91, redox:12.3

Reading Time	11:40
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	56.53
pH	7.26
Conductivity (mS/cm)	1.77
Turbidity (NTU)	19.6
Dissolved Oxygen (mg/L)	1.91
Temperature (Degrees Celsius)	9.9
Redox (ORP mV)	12.3
parameters	@11:40, DTW:56.53, pH:7.26, temp:9.9, cond:1.77, turb:19.6, DO:1.91, redox:12.3

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:45, DTW:56.53, pH:7.26, temp:10.4, cond:1.77, turb:21, DO:1.84, redox:13.9

Reading Time	11:45
Minutes Elapsed between readings	1435
Rate (mL/min)	100
Depth to Water (ft)	56.53
pH	7.26
Conductivity (mS/cm)	1.77
Turbidity (NTU)	21
Dissolved Oxygen (mg/L)	1.84
Temperature (Degrees Celsius)	10.4
Redox (ORP mV)	13.9
parameters	@11:45, DTW:56.53, pH:7.26, temp:10.4, cond:1.77, turb:21, DO:1.84, redox:13.9

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:50, DTW:56.52, pH:7.26, temp:10.3, cond:1.76, turb:29, DO:1.88, redox:15.3

Reading Time	11:50
Minutes Elapsed between readings	10
Rate (mL/min)	100
Depth to Water (ft)	56.52
pH	7.26
Conductivity (mS/cm)	1.76
Turbidity (NTU)	29
Dissolved Oxygen (mg/L)	1.88
Temperature (Degrees Celsius)	10.3
Redox (ORP mV)	15.3
parameters	@11:50, DTW:56.52, pH:7.26, temp:10.3, cond:1.76, turb:29, DO:1.88, redox:15.3

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:55, DTW:56.52, pH:7.27, temp:10.3, cond:1.77, turb:26.1, DO:1.89, redox:16.5

Reading Time	11:55
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	56.52
pH	7.27
Conductivity (mS/cm)	1.77
Turbidity (NTU)	26.1
Dissolved Oxygen (mg/L)	1.89
Temperature (Degrees Celsius)	10.3
Redox (ORP mV)	16.5

parameters	@11:55, DTW:56.52, pH:7.27, temp:10.3, cond:1.77, turb:26.1, DO:1.89, redox:16.5

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:00, DTW:56.52, pH:7.27, temp:10.5, cond:1.77, turb:27.8, DO:1.81, redox:16.7

Reading Time	12:00
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	56.52
pH	7.27
Conductivity (mS/cm)	1.77
Turbidity (NTU)	27.8
Dissolved Oxygen (mg/L)	1.81
Temperature (Degrees Celsius)	10.5
Redox (ORP mV)	16.7
parameters	@12:00, DTW:56.52, pH:7.27, temp:10.5, cond:1.77, turb:27.8, DO:1.81, redox:16.7

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

Purge End	12:00
Total Volume Measured (units)	Gallons
Total Gallons Purged	1.5
Well Volumes Purged	0.16

Sample Information

Sample Time	12:00
Color	Clear
Notable odors	None

1,4-Dioxane

Constituent Sampled	1,4-Dioxane
Container Type	40 mL Vial
Number of Containers	3
Preservative	HCL

Well Information

Well Location	Plant 3
Condition of Well	Good
Well Locked at Arrival	Yes
Well Locked at Departure	Yes
Comments	Stick up

Signature

Signed 2018-12-11 10:54:09 EST

2018-12-10, MW-91-6

Created	2018-12-10 13:18:01 EST by Christine Gregg
Updated	2018-12-10 14:32:02 EST by Christine Gregg
Location	,
Status	Field Draft
Project Number	B0064479.2018
Project Name / Location	RACER Lansing, MI
Sampler Name	Christine Gregg
Date	2018-12-10
Well ID	MW-91-6
Are you able to purge and/or sample this well? If not, explain why in the Comments section below.	Yes
Weather	30s overcast

Evacuation Details

Measuring Point (mp) Description	Top of Casing
Casing Diameter (inches)	2
Static Water Level (ft-bmp)	54.23
Total Depth (ft-bmp)	95.34
Water Column	41.11
Gallons in Well	6.68

Reference Note: Well Volume Calculation [$\pi r^2 h$, where h= 1foot] Well radius (inch):Volume (Gal./foot):Volume (mL/foot) 0.5" = 0.04 gal/ft = 154 mL/ft 1" = 0.16 gal/ft = 617 mL/ft 2" = 0.65 gal/ft = 2470 mL/ft 3" = 1.47 gal/ft = 5557 mL/ft

Purge Method	Low-Flow
Type of Equipment used	Bladder
Sample Method	Low-Flow
Sample Depth (ft-bmp) (e.g. pump intake)	93
Purge Start	13:29

@13:35, DTW:54.23, pH:7.26, temp:10.3, cond:1.29, turb:24.1, DO:1.77, redox:-16.6

Reading Time	13:35
Rate (mL/min)	150
Depth to Water (ft)	54.23
pH	7.26
Conductivity (mS/cm)	1.29
Turbidity (NTU)	24.1
Dissolved Oxygen (mg/L)	1.77
Temperature (Degrees Celsius)	10.3
Redox (ORP mV)	-16.6
parameters	@13:35, DTW:54.23, pH:7.26, temp:10.3, cond:1.29, turb:24.1, DO:1.77, redox:-16.6

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:40, DTW:54.35, pH:7.24, temp:10.2, cond:1.28, turb:21.4, DO:0.67, redox:-7.8

Reading Time	13:40

Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	54.35
pH	7.24
Conductivity (mS/cm)	1.28
Turbidity (NTU)	21.4
Dissolved Oxygen (mg/L)	0.67
Temperature (Degrees Celsius)	10.2
Redox (ORP mV)	-7.8
parameters	@13:40, DTW:54.35, pH:7.24, temp:10.2, cond:1.28, turb:21.4, DO:0.67, redox:-7.8

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:45, DTW:54.37, pH:7.24, temp:10.5, cond:1.28, turb:17.5, DO:0.7, redox:-6.4

Reading Time	13:45
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	54.37
pH	7.24
Conductivity (mS/cm)	1.28
Turbidity (NTU)	17.5
Dissolved Oxygen (mg/L)	0.7
Temperature (Degrees Celsius)	10.5
Redox (ORP mV)	-6.4
parameters	@13:45, DTW:54.37, pH:7.24, temp:10.5, cond:1.28, turb:17.5, DO:0.7, redox:-6.4

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:50, DTW:54.38, pH:7.24, temp:10.9, cond:1.28, turb:14.3, DO:0.67, redox:-1.2

Reading Time	13:50
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	54.38
pH	7.24
Conductivity (mS/cm)	1.28
Turbidity (NTU)	14.3
Dissolved Oxygen (mg/L)	0.67
Temperature (Degrees Celsius)	10.9
Redox (ORP mV)	-1.2
parameters	@13:50, DTW:54.38, pH:7.24, temp:10.9, cond:1.28, turb:14.3, DO:0.67, redox:-1.2

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:55, DTW:54.38, pH:7.23, temp:9.5, cond:1.27, turb:16.6, DO:0.84, redox:7.7

Reading Time	13:55
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	54.38
pH	7.23
Conductivity (mS/cm)	1.27
Turbidity (NTU)	16.6
Dissolved Oxygen (mg/L)	0.84
Temperature (Degrees Celsius)	9.5
Redox (ORP mV)	7.7
parameters	@13:55, DTW:54.38, pH:7.23, temp:9.5, cond:1.27, turb:16.6, DO:0.84, redox:7.7

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@14:00, DTW:54.38, pH:7.23, temp:9.4, cond:1.26, turb:17, DO:0.87, redox:7.3

Reading Time	14:00
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	54.38
pH	7.23
Conductivity (mS/cm)	1.26
Turbidity (NTU)	17
Dissolved Oxygen (mg/L)	0.87
Temperature (Degrees Celsius)	9.4
Redox (ORP mV)	7.3
parameters	@14:00, DTW:54.38, pH:7.23, temp:9.4, cond:1.26, turb:17, DO:0.87, redox:7.3

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@14:05, DTW:54.38, pH:7.24, temp:10.3, cond:1.27, turb:15.3, DO:0.95, redox:9.2

Reading Time	14:05
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	54.38
pH	7.24
Conductivity (mS/cm)	1.27
Turbidity (NTU)	15.3
Dissolved Oxygen (mg/L)	0.95
Temperature (Degrees Celsius)	10.3
Redox (ORP mV)	9.2
parameters	@14:05, DTW:54.38, pH:7.24, temp:10.3, cond:1.27, turb:15.3, DO:0.95, redox:9.2

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@14:10, DTW:54.38, pH:7.24, temp:10.8, cond:1.26, turb:19, DO:1.11, redox:8

Reading Time	14:10
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	54.38
pH	7.24
Conductivity (mS/cm)	1.26
Turbidity (NTU)	19
Dissolved Oxygen (mg/L)	1.11
Temperature (Degrees Celsius)	10.8
Redox (ORP mV)	8
parameters	@14:10, DTW:54.38, pH:7.24, temp:10.8, cond:1.26, turb:19, DO:1.11, redox:8

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@14:15, DTW:54.38, pH:7.24, temp:11.1, cond:1.25, turb:18.2, DO:1.08, redox:8.5

Reading Time	14:15
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	54.38
pH	7.24
Conductivity (mS/cm)	1.25
Turbidity (NTU)	18.2
Dissolved Oxygen (mg/L)	1.08
Temperature (Degrees Celsius)	11.1
Redox (ORP mV)	8.5
parameters	@14:15, DTW:54.38, pH:7.24, temp:11.1, cond:1.25, turb:18.2, DO:1.08, redox:8.5

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@14:20, DTW:54.38, pH:7.24, temp:10.2, cond:1.26, turb:8.9, DO:1.14, redox:9.8

Reading Time	14:20
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	54.38
pH	7.24
Conductivity (mS/cm)	1.26
Turbidity (NTU)	8.9
Dissolved Oxygen (mg/L)	1.14
Temperature (Degrees Celsius)	10.2
Redox (ORP mV)	9.8
parameters	@14:20, DTW:54.38, pH:7.24, temp:10.2, cond:1.26, turb:8.9, DO:1.14, redox:9.8

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@14:25, DTW:54.38, pH:7.23, temp:10, cond:1.25, turb:13.3, DO:1.16, redox:9.9

Reading Time	14:25
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	54.38
pH	7.23
Conductivity (mS/cm)	1.25
Turbidity (NTU)	13.3
Dissolved Oxygen (mg/L)	1.16
Temperature (Degrees Celsius)	10
Redox (ORP mV)	9.9
parameters	@14:25, DTW:54.38, pH:7.23, temp:10, cond:1.25, turb:13.3, DO:1.16, redox:9.9

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@14:30, DTW:54.38, pH:7.23, temp:10.7, cond:1.25, turb:7.7, DO:1.15, redox:10.6

Reading Time	14:30
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	54.38
pH	7.23
Conductivity (mS/cm)	1.25
Turbidity (NTU)	7.7
Dissolved Oxygen (mg/L)	1.15
Temperature (Degrees Celsius)	10.7
Redox (ORP mV)	10.6
parameters	@14:30, DTW:54.38, pH:7.23, temp:10.7, cond:1.25, turb:7.7, DO:1.15, redox:10.6

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

Purge End	14:30
Total Volume Measured (units)	Gallons
Total Gallons Purged	3
Well Volumes Purged	0.45

Sample Information

Sample Time	14:30
Color	Clear
Notable odors	None

1,4-Dioxane

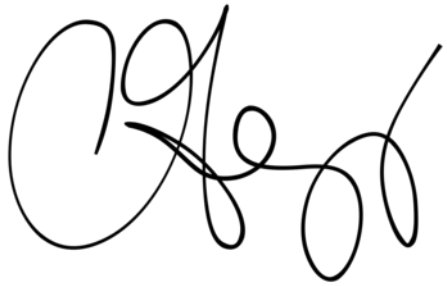
Constituent Sampled	1,4-Dioxane

Container Type	40 mL Vial
Number of Containers	3
Preservative	HCL

Well Information

Well Location	Plant 3
Condition of Well	Good
Well Locked at Arrival	Yes
Well Locked at Departure	Yes
Comments	Flush mount

Signature



Signed 2018-12-10 13:33:00 EST

2018-12-07, MWBP-12-UST1-4

Created	2018-12-07 17:59:22 UTC by Erik Pietrzak
Updated	2018-12-07 19:01:06 UTC by Erik Pietrzak
Location	42.7343283640619, -84.5816760231597
Status	Field Draft
Project Number	B0064479.2018
Project Name / Location	RACER Lansing, MI
Sampler Name	Erik Pietrzak
Date	2018-12-07
Well ID	MWBP-12-UST1-4
Are you able to purge and/or sample this well? If not, explain why in the Comments section below.	Yes
Weather	Cloudy, 20s

Evacuation Details

Measuring Point (mp) Description	Top of Casing
Casing Diameter (inches)	4
Static Water Level (ft-bmp)	7.22
Total Depth (ft-bmp)	11.3
Water Column	4.08
Gallons in Well	2.65

Reference Note: Well Volume Calculation [$\pi r^2 h$, where h= 1foot] Well radius (inch):Volume (Gal./foot):Volume (mL/foot) 0.5" = 0.04 gal/ft = 154 mL/ft 1" = 0.16 gal/ft = 617 mL/ft 2" = 0.65 gal/ft = 2470 mL/ft 3" = 1.47 gal/ft = 5557 mL/ft

Purge Method	Low-Flow
Type of Equipment used	Bladder
Sample Method	Low-Flow
Sample Depth (ft-bmp) (e.g. pump intake)	10.5
Purge Start	12:55

@13:00, DTW:7.35, pH:7.18, temp:11.5, cond:1.9, turb:5.59, DO:3.88, redox:9.2

Reading Time	13:00
Rate (mL/min)	225
Depth to Water (ft)	7.35
pH	7.18
Conductivity (mS/cm)	1.9
Turbidity (NTU)	5.59
Dissolved Oxygen (mg/L)	3.88
Temperature (Degrees Celsius)	11.5
Redox (ORP mV)	9.2
parameters	@13:00, DTW:7.35, pH:7.18, temp:11.5, cond:1.9, turb:5.59, DO:3.88, redox:9.2

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:05, DTW:7.37, pH:7.16, temp:11.3, cond:1.9, turb:5.9, DO:3.79, redox:15.9

Reading Time	13:05

Minutes Elapsed between readings	5
Rate (mL/min)	225
Depth to Water (ft)	7.37
pH	7.16
Conductivity (mS/cm)	1.9
Turbidity (NTU)	5.9
Dissolved Oxygen (mg/L)	3.79
Temperature (Degrees Celsius)	11.3
Redox (ORP mV)	15.9
parameters	@13:05, DTW:7.37, pH:7.16, temp:11.3, cond:1.9, turb:5.9, DO:3.79, redox:15.9

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:10, DTW:7.39, pH:7.16, temp:11.4, cond:1.9, turb:4.08, DO:3.79, redox:19.7

Reading Time	13:10
Minutes Elapsed between readings	5
Rate (mL/min)	225
Depth to Water (ft)	7.39
pH	7.16
Conductivity (mS/cm)	1.9
Turbidity (NTU)	4.08
Dissolved Oxygen (mg/L)	3.79
Temperature (Degrees Celsius)	11.4
Redox (ORP mV)	19.7
parameters	@13:10, DTW:7.39, pH:7.16, temp:11.4, cond:1.9, turb:4.08, DO:3.79, redox:19.7

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:15, DTW:7.39, pH:7.15, temp:11.5, cond:1.9, turb:4.19, DO:3.7, redox:22.5

Reading Time	13:15
Minutes Elapsed between readings	5
Rate (mL/min)	225
Depth to Water (ft)	7.39
pH	7.15
Conductivity (mS/cm)	1.9
Turbidity (NTU)	4.19
Dissolved Oxygen (mg/L)	3.7
Temperature (Degrees Celsius)	11.5
Redox (ORP mV)	22.5
parameters	@13:15, DTW:7.39, pH:7.15, temp:11.5, cond:1.9, turb:4.19, DO:3.7, redox:22.5

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:20, DTW:7.39, pH:7.15, temp:11.2, cond:1.91, turb:3.49, DO:3.73, redox:24.5

Reading Time	13:20
Minutes Elapsed between readings	5
Rate (mL/min)	225
Depth to Water (ft)	7.39
pH	7.15
Conductivity (mS/cm)	1.91
Turbidity (NTU)	3.49
Dissolved Oxygen (mg/L)	3.73
Temperature (Degrees Celsius)	11.2
Redox (ORP mV)	24.5
parameters	@13:20, DTW:7.39, pH:7.15, temp:11.2, cond:1.91, turb:3.49, DO:3.73, redox:24.5

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:25, DTW:7.39, pH:7.14, temp:11.3, cond:1.9, turb:3.09, DO:3.65, redox:26

Reading Time	13:25
Minutes Elapsed between readings	5
Rate (mL/min)	225
Depth to Water (ft)	7.39
pH	7.14
Conductivity (mS/cm)	1.9
Turbidity (NTU)	3.09
Dissolved Oxygen (mg/L)	3.65
Temperature (Degrees Celsius)	11.3
Redox (ORP mV)	26
parameters	@13:25, DTW:7.39, pH:7.14, temp:11.3, cond:1.9, turb:3.09, DO:3.65, redox:26

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:30, DTW:7.39, pH:7.14, temp:11.3, cond:1.91, turb:2.69, DO:3.52, redox:26.8

Reading Time	13:30
Minutes Elapsed between readings	5
Rate (mL/min)	225
Depth to Water (ft)	7.39
pH	7.14
Conductivity (mS/cm)	1.91
Turbidity (NTU)	2.69
Dissolved Oxygen (mg/L)	3.52
Temperature (Degrees Celsius)	11.3
Redox (ORP mV)	26.8
parameters	@13:30, DTW:7.39, pH:7.14, temp:11.3, cond:1.91, turb:2.69, DO:3.52, redox:26.8

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

Purge End	13:30
Total Volume Measured (units)	Gallons
Total Gallons Purged	2
Well Volumes Purged	0.75

Sample Information

Sample Time	13:32
Color	Clear
Notable odors	None

VOCs

Constituent Sampled	VOCs
Container Type	40 mL Vial
Number of Containers	3
Preservative	HCL

Well Information

Condition of Well	Good
Well Locked at Arrival	No
Well Locked at Departure	No

Signature

Signed 2018-12-07 19:01:02 UTC

2018-12-11, MW-01(2)

Created	2018-12-11 11:50:46 EST by Daniel Stockard
Updated	2018-12-11 12:38:19 EST by Daniel Stockard
Location	42.7349599404658, -84.5864266344202
Status	Field Draft
Project Number	B0064479.2018
Project Name / Location	RACER Lansing, MI
Sampler Name	Daniel Stockard
Date	2018-12-11
Well ID	MW-01(2)
Are you able to purge and/or sample this well? If not, explain why in the Comments section below.	Yes
Replicate No. (e.g. Dup)	None
Weather	Overcast 20s

Evacuation Details

Measuring Point (mp) Description	Top of Casing
Casing Diameter (inches)	2
Static Water Level (ft-bmp)	7.04
Total Depth (ft-bmp)	15
Water Column	7.96
Gallons in Well	1.29

Reference Note: Well Volume Calculation [$\pi r^2 h$, where h= 1foot] Well radius (inch):Volume (Gal./foot):Volume (mL/foot) 0.5" = 0.04 gal/ft = 154 mL/ft 1" = 0.16 gal/ft = 617 mL/ft 2" = 0.65 gal/ft = 2470 mL/ft 3" = 1.47 gal/ft = 5557 mL/ft

Purge Method	Low-Flow
Type of Equipment used	Bladder
Sample Method	Grab
Sample Depth (ft-bmp) (e.g. pump intake)	13
Purge Start	11:50

@11:55, DTW:7.04, pH:6.79, temp:14.7, cond:3.46, turb:148, DO:2.5, redox:7.8

Reading Time	11:55
Rate (mL/min)	150
Depth to Water (ft)	7.04
pH	6.79
Conductivity (mS/cm)	3.46
Turbidity (NTU)	148
Dissolved Oxygen (mg/L)	2.5
Temperature (Degrees Celsius)	14.7
Redox (ORP mV)	7.8
parameters	@11:55, DTW:7.04, pH:6.79, temp:14.7, cond:3.46, turb:148, DO:2.5, redox:7.8

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:00, DTW:9.44, pH:6.79, temp:14.4, cond:3.33, turb:74.3, DO:1.64, redox:18.7

Reading Time	12:00
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	9.44
pH	6.79
Conductivity (mS/cm)	3.33
Turbidity (NTU)	74.3
Dissolved Oxygen (mg/L)	1.64
Temperature (Degrees Celsius)	14.4
Redox (ORP mV)	18.7
parameters	@12:00, DTW:9.44, pH:6.79, temp:14.4, cond:3.33, turb:74.3, DO:1.64, redox:18.7

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:05, DTW:10.02, pH:6.8, temp:14.2, cond:3.11, turb:47.3, DO:2.41, redox:17.6

Reading Time	12:05
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	10.02
pH	6.8
Conductivity (mS/cm)	3.11
Turbidity (NTU)	47.3
Dissolved Oxygen (mg/L)	2.41
Temperature (Degrees Celsius)	14.2
Redox (ORP mV)	17.6
parameters	@12:05, DTW:10.02, pH:6.8, temp:14.2, cond:3.11, turb:47.3, DO:2.41, redox:17.6

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:10, DTW:10.09, pH:6.8, temp:14.5, cond:3.19, turb:38.8, DO:2.24, redox:17

Reading Time	12:10
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	10.09
pH	6.8
Conductivity (mS/cm)	3.19
Turbidity (NTU)	38.8
Dissolved Oxygen (mg/L)	2.24
Temperature (Degrees Celsius)	14.5
Redox (ORP mV)	17
parameters	@12:10, DTW:10.09, pH:6.8, temp:14.5, cond:3.19, turb:38.8, DO:2.24, redox:17

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:15, DTW:10.55, pH:6.79, temp:14.7, cond:3.42, turb:31.8, DO:1.75, redox:13.9

Reading Time	12:15
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	10.55
pH	6.79
Conductivity (mS/cm)	3.42
Turbidity (NTU)	31.8
Dissolved Oxygen (mg/L)	1.75
Temperature (Degrees Celsius)	14.7
Redox (ORP mV)	13.9
parameters	@12:15, DTW:10.55, pH:6.79, temp:14.7, cond:3.42, turb:31.8, DO:1.75, redox:13.9

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:20, DTW:10.75, pH:6.8, temp:14.8, cond:3.46, turb:25.2, DO:1.65, redox:11.3

Reading Time	12:20
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	10.75
pH	6.8
Conductivity (mS/cm)	3.46
Turbidity (NTU)	25.2
Dissolved Oxygen (mg/L)	1.65
Temperature (Degrees Celsius)	14.8
Redox (ORP mV)	11.3
parameters	@12:20, DTW:10.75, pH:6.8, temp:14.8, cond:3.46, turb:25.2, DO:1.65, redox:11.3

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:25, DTW:10.9, pH:6.81, temp:15.1, cond:3.71, turb:35.4, DO:0.63, redox:0.2

Reading Time	12:25
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	10.9
pH	6.81
Conductivity (mS/cm)	3.71
Turbidity (NTU)	35.4
Dissolved Oxygen (mg/L)	0.63
Temperature (Degrees Celsius)	15.1
Redox (ORP mV)	0.2
parameters	@12:25, DTW:10.9, pH:6.81, temp:15.1, cond:3.71, turb:35.4, DO:0.63, redox:0.2

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:30, DTW:10.9, pH:6.81, temp:15.3, cond:3.76, turb:35.9, DO:0.42, redox:-5.2

Reading Time	12:30
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	10.9
pH	6.81
Conductivity (mS/cm)	3.76
Turbidity (NTU)	35.9
Dissolved Oxygen (mg/L)	0.42
Temperature (Degrees Celsius)	15.3
Redox (ORP mV)	-5.2
parameters	@12:30, DTW:10.9, pH:6.81, temp:15.3, cond:3.76, turb:35.9, DO:0.42, redox:-5.2

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:35, DTW:10.9, pH:6.82, temp:15.2, cond:3.79, turb:32.9, DO:0.36, redox:-7.5

Reading Time	12:35
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	10.9
pH	6.82
Conductivity (mS/cm)	3.79
Turbidity (NTU)	32.9
Dissolved Oxygen (mg/L)	0.36
Temperature (Degrees Celsius)	15.2
Redox (ORP mV)	-7.5
parameters	@12:35, DTW:10.9, pH:6.82, temp:15.2, cond:3.79, turb:32.9, DO:0.36, redox:-7.5

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

Total Volume Measured (units)	Gallons
Total Gallons Purged	2.5
Well Volumes Purged	1.94

Sample Information

Sample Time	12:35
Color	None
Notable odors	None

VOCs

Constituent Sampled	VOCs
Container Type	40 mL Vial

Number of Containers	3
Preservative	HCL

Well Information

Well Location	Old building area
Condition of Well	Poor
Well Locked at Arrival	No
Well Locked at Departure	No
Comments	Good yield
Signature	

Signed 2018-12-11 12:38:18 EST

2018-12-05, UNK-11

Created	2018-12-05 18:13:06 UTC by Marina Samp
Updated	2018-12-05 18:49:00 UTC by Marina Samp
Location	42.7450854052256, -84.5837951359195
Status	Field Draft
Project Number	B0064479.2018
Project Name / Location	RACER Lansing, MI
Sampler Name	Marina Samp
Date	2018-12-05
Well ID	UNK-11
Are you able to purge and/or sample this well? If not, explain why in the Comments section below.	Yes
Weather	28, snowing

Evacuation Details

Measuring Point (mp) Description	Top of Casing
Casing Diameter (inches)	2
Static Water Level (ft-bmp)	3.75
Total Depth (ft-bmp)	11.5
Water Column	7.75
Gallons in Well	1.26

Reference Note: Well Volume Calculation [$\pi r^2 h$, where h= 1foot] Well radius (inch):Volume (Gal./foot):Volume (mL/foot) 0.5" = 0.04 gal/ft = 154 mL/ft 1" = 0.16 gal/ft = 617 mL/ft 2" = 0.65 gal/ft = 2470 mL/ft 3" = 1.47 gal/ft = 5557 mL/ft

Purge Method	Low-Flow
Type of Equipment used	Bladder
Sample Method	Low-Flow
Sample Depth (ft-bmp) (e.g. pump intake)	9.5
Purge Start	13:10

@13:15, DTW:3.97, pH:7.27, temp:6.3, cond:0.43, turb:133, DO:3.96, redox:52.8

Reading Time	13:15
Rate (mL/min)	300
Depth to Water (ft)	3.97
pH	7.27
Conductivity (mS/cm)	0.43
Turbidity (NTU)	133
Dissolved Oxygen (mg/L)	3.96
Temperature (Degrees Celsius)	6.3
Redox (ORP mV)	52.8
parameters	@13:15, DTW:3.97, pH:7.27, temp:6.3, cond:0.43, turb:133, DO:3.96, redox:52.8

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:20, DTW:4.07, pH:7.3, temp:3.6, cond:0.39, turb:104, DO:2.28, redox:59.4

Reading Time	13:20

Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	4.07
pH	7.3
Conductivity (mS/cm)	0.39
Turbidity (NTU)	104
Dissolved Oxygen (mg/L)	2.28
Temperature (Degrees Celsius)	3.6
Redox (ORP mV)	59.4
parameters	@13:20, DTW:4.07, pH:7.3, temp:3.6, cond:0.39, turb:104, DO:2.28, redox:59.4

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:25, DTW:4.15, pH:7.33, temp:2.3, cond:0.374, turb:56.6, DO:1.99, redox:65

Reading Time	13:25
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	4.15
pH	7.33
Conductivity (mS/cm)	0.374
Turbidity (NTU)	56.6
Dissolved Oxygen (mg/L)	1.99
Temperature (Degrees Celsius)	2.3
Redox (ORP mV)	65
parameters	@13:25, DTW:4.15, pH:7.33, temp:2.3, cond:0.374, turb:56.6, DO:1.99, redox:65

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:30, DTW:4.24, pH:7.33, temp:2.5, cond:0.367, turb:43.4, DO:1.74, redox:68.9

Reading Time	13:30
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	4.24
pH	7.33
Conductivity (mS/cm)	0.367
Turbidity (NTU)	43.4
Dissolved Oxygen (mg/L)	1.74
Temperature (Degrees Celsius)	2.5
Redox (ORP mV)	68.9
parameters	@13:30, DTW:4.24, pH:7.33, temp:2.5, cond:0.367, turb:43.4, DO:1.74, redox:68.9

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:35, DTW:4.3, pH:7.33, temp:2, cond:0.368, turb:40, DO:1.71, redox:71.8

Reading Time	13:35
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	4.3
pH	7.33
Conductivity (mS/cm)	0.368
Turbidity (NTU)	40
Dissolved Oxygen (mg/L)	1.71
Temperature (Degrees Celsius)	2
Redox (ORP mV)	71.8
parameters	@13:35, DTW:4.3, pH:7.33, temp:2, cond:0.368, turb:40, DO:1.71, redox:71.8

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:40, DTW:4.36, pH:7.32, temp:2, cond:0.366, turb:40, DO:1.76, redox:73.6

Reading Time	13:40
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	4.36
pH	7.32
Conductivity (mS/cm)	0.366
Turbidity (NTU)	40
Dissolved Oxygen (mg/L)	1.76
Temperature (Degrees Celsius)	2
Redox (ORP mV)	73.6
parameters	@13:40, DTW:4.36, pH:7.32, temp:2, cond:0.366, turb:40, DO:1.76, redox:73.6

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:45, DTW:4.42, pH:7.32, temp:2.2, cond:0.364, turb:40, DO:1.61, redox:74.8

Reading Time	13:45
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	4.42
pH	7.32
Conductivity (mS/cm)	0.364
Turbidity (NTU)	40
Dissolved Oxygen (mg/L)	1.61
Temperature (Degrees Celsius)	2.2
Redox (ORP mV)	74.8
parameters	@13:45, DTW:4.42, pH:7.32, temp:2.2, cond:0.364, turb:40, DO:1.61, redox:74.8

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

Purge End	13:45
Total Volume Measured (units)	Gallons
Total Gallons Purged	0.75
Well Volumes Purged	0.6

Sample Information

Sample Time	13:50
Color	None
Notable odors	None

VOCs

Constituent Sampled	VOCs
Container Type	40 mL Vial
Number of Containers	3
Preservative	HCL

Well Information

Well Location	Plant 3
Condition of Well	Good
Well Locked at Arrival	Yes
Well Locked at Departure	Yes

Signature

Signed 2018-12-05 18:48:52 UTC

2018-12-10, MW-13-35

Created	2018-12-10 16:35:09 UTC by Erik Pietrzak
Updated	2018-12-10 17:58:12 UTC by Erik Pietrzak
Location	42.7337674471016, -84.5815476124031
Status	Field Draft
Project Number	B0064479.2018
Project Name / Location	RACER Lansing, MI
Sampler Name	Erik Pietrzak
Date	2018-12-10
Well ID	MW-13-35
Are you able to purge and/or sample this well? If not, explain why in the Comments section below.	Yes
Weather	Cloudy, 20s

Evacuation Details

Measuring Point (mp) Description	Top of Casing
Casing Diameter (inches)	2
Static Water Level (ft-bmp)	23.4
Total Depth (ft-bmp)	29.6
Water Column	6.2
Gallons in Well	1.01

Reference Note: Well Volume Calculation [$\pi r^2 h$, where h= 1foot] Well radius (inch):Volume (Gal./foot):Volume (mL/foot) 0.5" = 0.04 gal/ft = 154 mL/ft 1" = 0.16 gal/ft = 617 mL/ft 2" = 0.65 gal/ft = 2470 mL/ft 3" = 1.47 gal/ft = 5557 mL/ft

Purge Method	Low-Flow
Type of Equipment used	Bladder
Sample Method	Low-Flow
Sample Depth (ft-bmp) (e.g. pump intake)	27
Purge Start	11:30

@11:35, DTW:23.38, pH:7.01, temp:10.2, cond:2.02, turb:45.7, DO:2.24, redox:-27.2

Reading Time	11:35
Rate (mL/min)	100
Depth to Water (ft)	23.38
pH	7.01
Conductivity (mS/cm)	2.02
Turbidity (NTU)	45.7
Dissolved Oxygen (mg/L)	2.24
Temperature (Degrees Celsius)	10.2
Redox (ORP mV)	-27.2
parameters	@11:35, DTW:23.38, pH:7.01, temp:10.2, cond:2.02, turb:45.7, DO:2.24, redox:-27.2

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:40, DTW:23.38, pH:7.04, temp:11.5, cond:2.1, turb:49.1, DO:1.79, redox:-44.6

Reading Time	11:40

Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	23.38
pH	7.04
Conductivity (mS/cm)	2.1
Turbidity (NTU)	49.1
Dissolved Oxygen (mg/L)	1.79
Temperature (Degrees Celsius)	11.5
Redox (ORP mV)	-44.6
parameters	@11:40, DTW:23.38, pH:7.04, temp:11.5, cond:2.1, turb:49.1, DO:1.79, redox:-44.6

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:45, DTW:23.38, pH:7.07, temp:11.6, cond:2.08, turb:45.2, DO:2.18, redox:-49.2

Reading Time	11:45
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	23.38
pH	7.07
Conductivity (mS/cm)	2.08
Turbidity (NTU)	45.2
Dissolved Oxygen (mg/L)	2.18
Temperature (Degrees Celsius)	11.6
Redox (ORP mV)	-49.2
parameters	@11:45, DTW:23.38, pH:7.07, temp:11.6, cond:2.08, turb:45.2, DO:2.18, redox:-49.2

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:50, DTW:23.38, pH:7.07, temp:11.6, cond:2.06, turb:40, DO:1.98, redox:-49.6

Reading Time	11:50
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	23.38
pH	7.07
Conductivity (mS/cm)	2.06
Turbidity (NTU)	40
Dissolved Oxygen (mg/L)	1.98
Temperature (Degrees Celsius)	11.6
Redox (ORP mV)	-49.6
parameters	@11:50, DTW:23.38, pH:7.07, temp:11.6, cond:2.06, turb:40, DO:1.98, redox:-49.6

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:55, DTW:23.38, pH:7.09, temp:11.7, cond:2.05, turb:42.5, DO:2.54, redox:-48.5

Reading Time	11:55
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	23.38
pH	7.09
Conductivity (mS/cm)	2.05
Turbidity (NTU)	42.5
Dissolved Oxygen (mg/L)	2.54
Temperature (Degrees Celsius)	11.7
Redox (ORP mV)	-48.5
parameters	@11:55, DTW:23.38, pH:7.09, temp:11.7, cond:2.05, turb:42.5, DO:2.54, redox:-48.5

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:00, DTW:23.38, pH:7.09, temp:11.7, cond:2.05, turb:40, DO:2.52, redox:-46.6

Reading Time	12:00
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	23.38
pH	7.09
Conductivity (mS/cm)	2.05
Turbidity (NTU)	40
Dissolved Oxygen (mg/L)	2.52
Temperature (Degrees Celsius)	11.7
Redox (ORP mV)	-46.6
parameters	@12:00, DTW:23.38, pH:7.09, temp:11.7, cond:2.05, turb:40, DO:2.52, redox:-46.6

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:05, DTW:23.38, pH:7.07, temp:11.6, cond:2.04, turb:35.2, DO:2.26, redox:-44.9

Reading Time	12:05
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	23.38
pH	7.07
Conductivity (mS/cm)	2.04
Turbidity (NTU)	35.2
Dissolved Oxygen (mg/L)	2.26
Temperature (Degrees Celsius)	11.6
Redox (ORP mV)	-44.9
parameters	@12:05, DTW:23.38, pH:7.07, temp:11.6, cond:2.04, turb:35.2, DO:2.26, redox:-44.9

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:10, DTW:23.38, pH:7.07, temp:11.4, cond:2.03, turb:31, DO:2.23, redox:-43.7

Reading Time	12:10
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	23.38
pH	7.07
Conductivity (mS/cm)	2.03
Turbidity (NTU)	31
Dissolved Oxygen (mg/L)	2.23
Temperature (Degrees Celsius)	11.4
Redox (ORP mV)	-43.7
parameters	@12:10, DTW:23.38, pH:7.07, temp:11.4, cond:2.03, turb:31, DO:2.23, redox:-43.7

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:15, DTW:23.38, pH:7.07, temp:11.6, cond:2.02, turb:28.9, DO:2.22, redox:-42.6

Reading Time	12:15
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	23.38
pH	7.07
Conductivity (mS/cm)	2.02
Turbidity (NTU)	28.9
Dissolved Oxygen (mg/L)	2.22
Temperature (Degrees Celsius)	11.6
Redox (ORP mV)	-42.6
parameters	@12:15, DTW:23.38, pH:7.07, temp:11.6, cond:2.02, turb:28.9, DO:2.22, redox:-42.6

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:20, DTW:23.38, pH:7.06, temp:11.7, cond:2.01, turb:24.5, DO:2.08, redox:-41.6

Reading Time	12:20
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	23.38
pH	7.06
Conductivity (mS/cm)	2.01
Turbidity (NTU)	24.5
Dissolved Oxygen (mg/L)	2.08
Temperature (Degrees Celsius)	11.7
Redox (ORP mV)	-41.6
parameters	@12:20, DTW:23.38, pH:7.06, temp:11.7, cond:2.01, turb:24.5, DO:2.08, redox:-41.6

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:25, DTW:23.38, pH:7.05, temp:11.7, cond:2, turb:22.4, DO:2.02, redox:-41.1

Reading Time	12:25
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	23.38
pH	7.05
Conductivity (mS/cm)	2
Turbidity (NTU)	22.4
Dissolved Oxygen (mg/L)	2.02
Temperature (Degrees Celsius)	11.7
Redox (ORP mV)	-41.1
parameters	@12:25, DTW:23.38, pH:7.05, temp:11.7, cond:2, turb:22.4, DO:2.02, redox:-41.1

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:30, DTW:23.38, pH:7.05, temp:11.7, cond:1.99, turb:21.3, DO:2.03, redox:-40.3

Reading Time	12:30
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	23.38
pH	7.05
Conductivity (mS/cm)	1.99
Turbidity (NTU)	21.3
Dissolved Oxygen (mg/L)	2.03
Temperature (Degrees Celsius)	11.7
Redox (ORP mV)	-40.3
parameters	@12:30, DTW:23.38, pH:7.05, temp:11.7, cond:1.99, turb:21.3, DO:2.03, redox:-40.3

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

Purge End	12:30
Total Volume Measured (units)	Gallons
Total Gallons Purged	1.5
Well Volumes Purged	1.49

Sample Information

Sample Time	12:32
Color	Clear
Notable odors	None

Metals

Constituent Sampled	Metals

Container Type	125 mL Plastic
Number of Containers	2
Preservative	HNO3

Well Information

Condition of Well	Good
Well Locked at Arrival	No
Well Locked at Departure	No
Comments	Total and dissolved metals

Signature

Signed 2018-12-10 17:58:10 UTC

2018-12-06, MW-03-05

Created	2018-12-06 15:14:29 UTC by Erik Pietrzak
Updated	2018-12-06 16:45:17 UTC by Erik Pietrzak
Location	42.7382682357381, -84.5801266283585
Status	Field Draft
Project Number	B0064479.2018
Project Name / Location	RACER Lansing, MI
Sampler Name	Erik Pietrzak
Date	2018-12-06
Well ID	MW-03-05
Are you able to purge and/or sample this well? If not, explain why in the Comments section below.	Yes
Replicate No. (e.g. Dup)	MS/MSD
Weather	Flurries, 30s

Evacuation Details

Measuring Point (mp) Description	Top of Casing
Casing Diameter (inches)	2
Static Water Level (ft-bmp)	23.98
Total Depth (ft-bmp)	48.55
Water Column	24.57
Gallons in Well	3.99

Reference Note: Well Volume Calculation [$\pi r^2 h$, where h= 1foot] Well radius (inch):Volume (Gal./foot):Volume (mL/foot) 0.5" = 0.04 gal/ft = 154 mL/ft 1" = 0.16 gal/ft = 617 mL/ft 2" = 0.65 gal/ft = 2470 mL/ft 3" = 1.47 gal/ft = 5557 mL/ft

Purge Method	Low-Flow
Type of Equipment used	Bladder
Sample Method	Low-Flow
Sample Depth (ft-bmp) (e.g. pump intake)	39
Purge Start	10:10

@10:15, DTW:23.73, pH:7.95, temp:11.9, cond:3.04, turb:885, DO:7.88, redox:68.4

Reading Time	10:15
Rate (mL/min)	100
Depth to Water (ft)	23.73
pH	7.95
Conductivity (mS/cm)	3.04
Turbidity (NTU)	885
Dissolved Oxygen (mg/L)	7.88
Temperature (Degrees Celsius)	11.9
Redox (ORP mV)	68.4
parameters	@10:15, DTW:23.73, pH:7.95, temp:11.9, cond:3.04, turb:885, DO:7.88, redox:68.4

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:20, DTW:24.53, pH:8.06, temp:12.4, cond:3.03, turb:944, DO:9.13, redox:68.9

Reading Time	10:20
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	24.53
pH	8.06
Conductivity (mS/cm)	3.03
Turbidity (NTU)	944
Dissolved Oxygen (mg/L)	9.13
Temperature (Degrees Celsius)	12.4
Redox (ORP mV)	68.9
parameters	@10:20, DTW:24.53, pH:8.06, temp:12.4, cond:3.03, turb:944, DO:9.13, redox:68.9

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:25, DTW:25.33, pH:8.13, temp:12.1, cond:2.98, turb:1040, DO:10.06, redox:68.6

Reading Time	10:25
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	25.33
pH	8.13
Conductivity (mS/cm)	2.98
Turbidity (NTU)	1040
Dissolved Oxygen (mg/L)	10.06
Temperature (Degrees Celsius)	12.1
Redox (ORP mV)	68.6
parameters	@10:25, DTW:25.33, pH:8.13, temp:12.1, cond:2.98, turb:1040, DO:10.06, redox:68.6

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:30, DTW:26.06, pH:8.17, temp:12, cond:3.03, turb:1100, DO:9.71, redox:67.5

Reading Time	10:30
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	26.06
pH	8.17
Conductivity (mS/cm)	3.03
Turbidity (NTU)	1100
Dissolved Oxygen (mg/L)	9.71
Temperature (Degrees Celsius)	12
Redox (ORP mV)	67.5
parameters	@10:30, DTW:26.06, pH:8.17, temp:12, cond:3.03, turb:1100, DO:9.71, redox:67.5

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:35, DTW:27.17, pH:8.2, temp:12.4, cond:3.03, turb:1080, DO:9.53, redox:66.3

Reading Time	10:35
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	27.17
pH	8.2
Conductivity (mS/cm)	3.03
Turbidity (NTU)	1080
Dissolved Oxygen (mg/L)	9.53
Temperature (Degrees Celsius)	12.4
Redox (ORP mV)	66.3
parameters	@10:35, DTW:27.17, pH:8.2, temp:12.4, cond:3.03, turb:1080, DO:9.53, redox:66.3

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:40, DTW:28, pH:8.24, temp:12, cond:3.03, turb:1020, DO:9.76, redox:65.3

Reading Time	10:40
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	28
pH	8.24
Conductivity (mS/cm)	3.03
Turbidity (NTU)	1020
Dissolved Oxygen (mg/L)	9.76
Temperature (Degrees Celsius)	12
Redox (ORP mV)	65.3
parameters	@10:40, DTW:28, pH:8.24, temp:12, cond:3.03, turb:1020, DO:9.76, redox:65.3

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:45, DTW:28.31, pH:8.28, temp:12, cond:3, turb:909, DO:10.02, redox:64.3

Reading Time	10:45
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	28.31
pH	8.28
Conductivity (mS/cm)	3
Turbidity (NTU)	909
Dissolved Oxygen (mg/L)	10.02
Temperature (Degrees Celsius)	12
Redox (ORP mV)	64.3
parameters	@10:45, DTW:28.31, pH:8.28, temp:12, cond:3, turb:909, DO:10.02, redox:64.3

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:50, DTW:29.03, pH:8.32, temp:12.2, cond:3.01, turb:759, DO:10.12, redox:63.1

Reading Time	10:50
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	29.03
pH	8.32
Conductivity (mS/cm)	3.01
Turbidity (NTU)	759
Dissolved Oxygen (mg/L)	10.12
Temperature (Degrees Celsius)	12.2
Redox (ORP mV)	63.1
parameters	@10:50, DTW:29.03, pH:8.32, temp:12.2, cond:3.01, turb:759, DO:10.12, redox:63.1

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:55, DTW:29.18, pH:8.32, temp:11.4, cond:3.04, turb:716, DO:10.02, redox:62.7

Reading Time	10:55
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	29.18
pH	8.32
Conductivity (mS/cm)	3.04
Turbidity (NTU)	716
Dissolved Oxygen (mg/L)	10.02
Temperature (Degrees Celsius)	11.4
Redox (ORP mV)	62.7
parameters	@10:55, DTW:29.18, pH:8.32, temp:11.4, cond:3.04, turb:716, DO:10.02, redox:62.7

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:00, DTW:29.45, pH:8.32, temp:11.3, cond:3.03, turb:711, DO:9.91, redox:62.2

Reading Time	11:00
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	29.45
pH	8.32
Conductivity (mS/cm)	3.03
Turbidity (NTU)	711
Dissolved Oxygen (mg/L)	9.91
Temperature (Degrees Celsius)	11.3
Redox (ORP mV)	62.2

parameters	@11:00, DTW:29.45, pH:8.32, temp:11.3, cond:3.03, turb:711, DO:9.91, redox:62.2

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:05, DTW:30.66, pH:8.33, temp:11, cond:3.01, turb:591, DO:9.78, redox:62

Reading Time	11:05
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	30.66
pH	8.33
Conductivity (mS/cm)	3.01
Turbidity (NTU)	591
Dissolved Oxygen (mg/L)	9.78
Temperature (Degrees Celsius)	11
Redox (ORP mV)	62
parameters	@11:05, DTW:30.66, pH:8.33, temp:11, cond:3.01, turb:591, DO:9.78, redox:62

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:10, DTW:30.65, pH:8.32, temp:10.5, cond:3.08, turb:642, DO:10.2, redox:62

Reading Time	11:10
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	30.65
pH	8.32
Conductivity (mS/cm)	3.08
Turbidity (NTU)	642
Dissolved Oxygen (mg/L)	10.2
Temperature (Degrees Celsius)	10.5
Redox (ORP mV)	62
parameters	@11:10, DTW:30.65, pH:8.32, temp:10.5, cond:3.08, turb:642, DO:10.2, redox:62

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

Purge End	11:10
Total Volume Measured (units)	Gallons
Total Gallons Purged	2.9
Well Volumes Purged	0.73

Sample Information

Sample Time	11:12
Color	Medium gray
Notable odors	None

VOCs

Constituent Sampled	VOCs
Container Type	40 mL Vial
Number of Containers	3
Preservative	HCL

1,4 dioxane

Constituent Sampled	1,4 dioxane
Container Type	40 mL Vial
Preservative	HCL

Well Information

Condition of Well	Good
Well Locked at Arrival	Yes
Well Locked at Departure	Yes

Signature

Signed 2018-12-06 16:44:33 UTC

2018-12-11, MW-12-05R

Created	2018-12-11 13:14:24 EST by Daniel Stockard
Updated	2018-12-11 14:10:34 EST by Daniel Stockard
Location	42.7377801156069, -84.5857252367629
Status	Field Draft
Project Number	B0064479.2018
Project Name / Location	RACER Lansing, MI
Sampler Name	Daniel Stockard
Date	2018-12-11
Well ID	MW-12-05R
Are you able to purge and/or sample this well? If not, explain why in the Comments section below.	Yes
Replicate No. (e.g. Dup)	None
Weather	Overcast, 20s

Evacuation Details

Measuring Point (mp) Description	Top of Casing
Casing Diameter (inches)	4
Static Water Level (ft-bmp)	66.8
Total Depth (ft-bmp)	110
Water Column	43.2
Gallons in Well	28.08

Reference Note: Well Volume Calculation [$\pi r^2 h$, where h= 1foot] Well radius (inch):Volume (Gal./foot):Volume (mL/foot) 0.5" = 0.04 gal/ft = 154 mL/ft 1" = 0.16 gal/ft = 617 mL/ft 2" = 0.65 gal/ft = 2470 mL/ft 3" = 1.47 gal/ft = 5557 mL/ft

Purge Method	Low-Flow
Type of Equipment used	Bladder
Sample Method	Grab
Sample Depth (ft-bmp) (e.g. pump intake)	105
Purge Start	13:10

@13:15, DTW:66.8, pH:8, temp:8.7, cond:1.16, turb:163, DO:3.34, redox:-64.9

Reading Time	13:15
Rate (mL/min)	150
Depth to Water (ft)	66.8
pH	8
Conductivity (mS/cm)	1.16
Turbidity (NTU)	163
Dissolved Oxygen (mg/L)	3.34
Temperature (Degrees Celsius)	8.7
Redox (ORP mV)	-64.9
parameters	@13:15, DTW:66.8, pH:8, temp:8.7, cond:1.16, turb:163, DO:3.34, redox:-64.9

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:20, DTW:67.04, pH:7.47, temp:9.1, cond:1.82, turb:204, DO:1.1, redox:-99.6

Reading Time	13:20
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	67.04
pH	7.47
Conductivity (mS/cm)	1.82
Turbidity (NTU)	204
Dissolved Oxygen (mg/L)	1.1
Temperature (Degrees Celsius)	9.1
Redox (ORP mV)	-99.6
parameters	@13:20, DTW:67.04, pH:7.47, temp:9.1, cond:1.82, turb:204, DO:1.1, redox:-99.6

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:25, DTW:66.8, pH:7.46, temp:9.1, cond:1.27, turb:114, DO:0.79, redox:-105.1

Reading Time	13:25
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	66.8
pH	7.46
Conductivity (mS/cm)	1.27
Turbidity (NTU)	114
Dissolved Oxygen (mg/L)	0.79
Temperature (Degrees Celsius)	9.1
Redox (ORP mV)	-105.1
parameters	@13:25, DTW:66.8, pH:7.46, temp:9.1, cond:1.27, turb:114, DO:0.79, redox:-105.1

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:30, DTW:67.09, pH:7.46, temp:9.1, cond:1.28, turb:69.5, DO:0.61, redox:-112.8

Reading Time	13:30
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	67.09
pH	7.46
Conductivity (mS/cm)	1.28
Turbidity (NTU)	69.5
Dissolved Oxygen (mg/L)	0.61
Temperature (Degrees Celsius)	9.1
Redox (ORP mV)	-112.8
parameters	@13:30, DTW:67.09, pH:7.46, temp:9.1, cond:1.28, turb:69.5, DO:0.61, redox:-112.8

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:35, DTW:67.11, pH:7.48, temp:9.5, cond:1.29, turb:37, DO:0.43, redox:-123.2

Reading Time	13:35
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	67.11
pH	7.48
Conductivity (mS/cm)	1.29
Turbidity (NTU)	37
Dissolved Oxygen (mg/L)	0.43
Temperature (Degrees Celsius)	9.5
Redox (ORP mV)	-123.2
parameters	@13:35, DTW:67.11, pH:7.48, temp:9.5, cond:1.29, turb:37, DO:0.43, redox:-123.2

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:40, DTW:67.11, pH:7.48, temp:9.4, cond:1.29, turb:31, DO:0.4, redox:-126.5

Reading Time	13:40
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	67.11
pH	7.48
Conductivity (mS/cm)	1.29
Turbidity (NTU)	31
Dissolved Oxygen (mg/L)	0.4
Temperature (Degrees Celsius)	9.4
Redox (ORP mV)	-126.5
parameters	@13:40, DTW:67.11, pH:7.48, temp:9.4, cond:1.29, turb:31, DO:0.4, redox:-126.5

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:45, DTW:67.15, pH:7.48, temp:9.6, cond:1.3, turb:29.3, DO:0.37, redox:-128.5

Reading Time	13:45
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	67.15
pH	7.48
Conductivity (mS/cm)	1.3
Turbidity (NTU)	29.3
Dissolved Oxygen (mg/L)	0.37
Temperature (Degrees Celsius)	9.6
Redox (ORP mV)	-128.5
parameters	@13:45, DTW:67.15, pH:7.48, temp:9.6, cond:1.3, turb:29.3, DO:0.37, redox:-128.5

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:50, DTW:67.17, pH:7.48, temp:9.6, cond:1.3, turb:31.2, DO:0.38, redox:-133.1

Reading Time	13:50
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	67.17
pH	7.48
Conductivity (mS/cm)	1.3
Turbidity (NTU)	31.2
Dissolved Oxygen (mg/L)	0.38
Temperature (Degrees Celsius)	9.6
Redox (ORP mV)	-133.1
parameters	@13:50, DTW:67.17, pH:7.48, temp:9.6, cond:1.3, turb:31.2, DO:0.38, redox:-133.1

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

Purge End	13:50
Total Volume Measured (units)	Gallons
Total Gallons Purged	1.5
Well Volumes Purged	0.05

Sample Information

Sample Time	13:55
Color	None
Notable odors	None

1,4-D

Constituent Sampled	1,4-D
Container Type	40 mL Vial
Number of Containers	3
Preservative	HCL

Well Information

Well Location	P2
Well Locked at Arrival	Yes
Well Locked at Departure	Yes

Signature

Signed 2018-12-11 14:10:32 EST

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2018-12-11, MW-13-34

Created	2018-12-11 12:21:20 EST by Christine Gregg
Updated	2018-12-11 13:32:05 EST by Christine Gregg
Location	42.7414141316365, -84.5870816801531
Status	Field Draft
Project Number	B0064479.2018
Project Name / Location	RACER Lansing, MI
Sampler Name	Christine Gregg
Date	2018-12-11
Well ID	MW-13-34
Are you able to purge and/or sample this well? If not, explain why in the Comments section below.	Yes
Weather	30s overcast

Evacuation Details

Measuring Point (mp) Description	Top of Casing
Casing Diameter (inches)	2
Static Water Level (ft-bmp)	57.18
Total Depth (ft-bmp)	79.97
Water Column	22.79
Gallons in Well	3.7
Reference Note: Well Volume Calculation [$\pi r^2 h$, where h= 1foot] Well radius (inch):Volume (Gal./foot):Volume (mL/foot) 0.5" = 0.04 gal/ft = 154 mL/ft 1" = 0.16 gal/ft = 617 mL/ft 2" = 0.65 gal/ft = 2470 mL/ft 3" = 1.47 gal/ft = 5557 mL/ft	
Purge Method	Low-Flow
Type of Equipment used	Bladder
Sample Method	Low-Flow
Sample Depth (ft-bmp) (e.g. pump intake)	77
Purge Start	12:26

@12:30, DTW:57.18, pH:7.49, temp:10.5, cond:1.65, turb:26.3, DO:3.33, redox:-51.6

Reading Time	12:30
Rate (mL/min)	100
Depth to Water (ft)	57.18
pH	7.49
Conductivity (mS/cm)	1.65
Turbidity (NTU)	26.3
Dissolved Oxygen (mg/L)	3.33
Temperature (Degrees Celsius)	10.5
Redox (ORP mV)	-51.6
parameters	@12:30, DTW:57.18, pH:7.49, temp:10.5, cond:1.65, turb:26.3, DO:3.33, redox:-51.6
Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit	

@12:35, DTW:57.52, pH:7.48, temp:10.2, cond:1.68, turb:23.5, DO:1.12, redox:-84.3

Reading Time	12:35

Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	57.52
pH	7.48
Conductivity (mS/cm)	1.68
Turbidity (NTU)	23.5
Dissolved Oxygen (mg/L)	1.12
Temperature (Degrees Celsius)	10.2
Redox (ORP mV)	-84.3
parameters	@12:35, DTW:57.52, pH:7.48, temp:10.2, cond:1.68, turb:23.5, DO:1.12, redox:-84.3

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:40, DTW:57.52, pH:7.48, temp:10.2, cond:1.69, turb:21.9, DO:1.12, redox:-85.7

Reading Time	12:40
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	57.52
pH	7.48
Conductivity (mS/cm)	1.69
Turbidity (NTU)	21.9
Dissolved Oxygen (mg/L)	1.12
Temperature (Degrees Celsius)	10.2
Redox (ORP mV)	-85.7
parameters	@12:40, DTW:57.52, pH:7.48, temp:10.2, cond:1.69, turb:21.9, DO:1.12, redox:-85.7

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:45, DTW:57.52, pH:7.46, temp:9.9, cond:1.7, turb:18.3, DO:1.38, redox:-82.3

Reading Time	12:45
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	57.52
pH	7.46
Conductivity (mS/cm)	1.7
Turbidity (NTU)	18.3
Dissolved Oxygen (mg/L)	1.38
Temperature (Degrees Celsius)	9.9
Redox (ORP mV)	-82.3
parameters	@12:45, DTW:57.52, pH:7.46, temp:9.9, cond:1.7, turb:18.3, DO:1.38, redox:-82.3

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:50, DTW:57.52, pH:7.45, temp:9.9, cond:1.71, turb:19.1, DO:1.37, redox:-81.9

Reading Time	12:50
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	57.52
pH	7.45
Conductivity (mS/cm)	1.71
Turbidity (NTU)	19.1
Dissolved Oxygen (mg/L)	1.37
Temperature (Degrees Celsius)	9.9
Redox (ORP mV)	-81.9
parameters	@12:50, DTW:57.52, pH:7.45, temp:9.9, cond:1.71, turb:19.1, DO:1.37, redox:-81.9

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:55, DTW:57.52, pH:7.44, temp:10.4, cond:1.73, turb:22.6, DO:1.47, redox:-79.9

Reading Time	12:55
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	57.52
pH	7.44
Conductivity (mS/cm)	1.73
Turbidity (NTU)	22.6
Dissolved Oxygen (mg/L)	1.47
Temperature (Degrees Celsius)	10.4
Redox (ORP mV)	-79.9
parameters	@12:55, DTW:57.52, pH:7.44, temp:10.4, cond:1.73, turb:22.6, DO:1.47, redox:-79.9

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:00, DTW:57.52, pH:7.44, temp:9.9, cond:1.76, turb:22.9, DO:1.47, redox:-78.2

Reading Time	13:00
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	57.52
pH	7.44
Conductivity (mS/cm)	1.76
Turbidity (NTU)	22.9
Dissolved Oxygen (mg/L)	1.47
Temperature (Degrees Celsius)	9.9
Redox (ORP mV)	-78.2
parameters	@13:00, DTW:57.52, pH:7.44, temp:9.9, cond:1.76, turb:22.9, DO:1.47, redox:-78.2

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:05, DTW:57.52, pH:7.44, temp:9.7, cond:1.76, turb:26.4, DO:1.55, redox:-75.6

Reading Time	13:05
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	57.52
pH	7.44
Conductivity (mS/cm)	1.76
Turbidity (NTU)	26.4
Dissolved Oxygen (mg/L)	1.55
Temperature (Degrees Celsius)	9.7
Redox (ORP mV)	-75.6
parameters	@13:05, DTW:57.52, pH:7.44, temp:9.7, cond:1.76, turb:26.4, DO:1.55, redox:-75.6

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:10, DTW:57.52, pH:7.44, temp:10.2, cond:1.77, turb:29.9, DO:1.61, redox:-73.5

Reading Time	13:10
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	57.52
pH	7.44
Conductivity (mS/cm)	1.77
Turbidity (NTU)	29.9
Dissolved Oxygen (mg/L)	1.61
Temperature (Degrees Celsius)	10.2
Redox (ORP mV)	-73.5
parameters	@13:10, DTW:57.52, pH:7.44, temp:10.2, cond:1.77, turb:29.9, DO:1.61, redox:-73.5

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:15, DTW:57.52, pH:7.44, temp:10, cond:1.77, turb:33.2, DO:1.7, redox:-49.6

Reading Time	13:15
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	57.52
pH	7.44
Conductivity (mS/cm)	1.77
Turbidity (NTU)	33.2
Dissolved Oxygen (mg/L)	1.7
Temperature (Degrees Celsius)	10
Redox (ORP mV)	-49.6
parameters	@13:15, DTW:57.52, pH:7.44, temp:10, cond:1.77, turb:33.2, DO:1.7, redox:-49.6

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:20, DTW:57.52, pH:7.39, temp:9.9, cond:1.78, turb:40, DO:1.8, redox:-26

Reading Time	13:20
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	57.52
pH	7.39
Conductivity (mS/cm)	1.78
Turbidity (NTU)	40
Dissolved Oxygen (mg/L)	1.8
Temperature (Degrees Celsius)	9.9
Redox (ORP mV)	-26
parameters	@13:20, DTW:57.52, pH:7.39, temp:9.9, cond:1.78, turb:40, DO:1.8, redox:-26

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:25, DTW:57.52, pH:7.38, temp:10.5, cond:1.77, turb:42.5, DO:1.76, redox:-20.5

Reading Time	13:25
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	57.52
pH	7.38
Conductivity (mS/cm)	1.77
Turbidity (NTU)	42.5
Dissolved Oxygen (mg/L)	1.76
Temperature (Degrees Celsius)	10.5
Redox (ORP mV)	-20.5
parameters	@13:25, DTW:57.52, pH:7.38, temp:10.5, cond:1.77, turb:42.5, DO:1.76, redox:-20.5

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:30, DTW:57.52, pH:7.37, temp:10.3, cond:1.78, turb:41.5, DO:1.79, redox:-22.3

Reading Time	13:30
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	57.52
pH	7.37
Conductivity (mS/cm)	1.78
Turbidity (NTU)	41.5
Dissolved Oxygen (mg/L)	1.79
Temperature (Degrees Celsius)	10.3
Redox (ORP mV)	-22.3

parameters	@13:30, DTW:57.52, pH:7.37, temp:10.3, cond:1.78, turb:41.5, DO:1.79, redox:-22.3

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

Purge End	13:30
Total Volume Measured (units)	Gallons
Total Gallons Purged	2.5
Well Volumes Purged	0.68

Sample Information

Sample Time	13:30
Color	Clear
Notable odors	None

VOCs + 1,4-Dioxane

Constituent Sampled	VOCs + 1,4-Dioxane
Container Type	40 mL Vial
Number of Containers	3
Preservative	HCL

Well Information

Well Location	Plant 3
Condition of Well	Good
Well Locked at Arrival	Yes
Well Locked at Departure	Yes
Comments	Stick up

Signature

Signed 2018-12-11 12:34:12 EST

2018-12-11, MW-13-23

Created	2018-12-11 15:19:57 UTC by Marina Samp
Updated	2018-12-11 16:22:06 UTC by Marina Samp
Location	42.7423912519987, -84.5877878554953
Status	Field Draft
Project Number	B0064479.2018
Project Name / Location	RACER Lansing, MI
Sampler Name	Marina Samp
Date	2018-12-11
Well ID	MW-13-23
Are you able to purge and/or sample this well? If not, explain why in the Comments section below.	Yes
Weather	30, cloudy

Evacuation Details

Measuring Point (mp) Description	Top of Casing
Casing Diameter (inches)	2
Static Water Level (ft-bmp)	66.12
Total Depth (ft-bmp)	74
Water Column	7.88
Gallons in Well	1.28

Reference Note: Well Volume Calculation [$\pi r^2 h$, where h= 1foot] Well radius (inch):Volume (Gal./foot):Volume (mL/foot) 0.5" = 0.04 gal/ft = 154 mL/ft 1" = 0.16 gal/ft = 617 mL/ft 2" = 0.65 gal/ft = 2470 mL/ft 3" = 1.47 gal/ft = 5557 mL/ft

Purge Method	Low-Flow
Type of Equipment used	Bladder
Sample Method	Low-Flow
Sample Depth (ft-bmp) (e.g. pump intake)	71
Purge Start	10:20

@10:25, DTW:66.22, pH:6.91, temp:6.6, cond:1.38, turb:724, DO:4.82, redox:52.6

Reading Time	10:25
Rate (mL/min)	300
Depth to Water (ft)	66.22
pH	6.91
Conductivity (mS/cm)	1.38
Turbidity (NTU)	724
Dissolved Oxygen (mg/L)	4.82
Temperature (Degrees Celsius)	6.6
Redox (ORP mV)	52.6
parameters	@10:25, DTW:66.22, pH:6.91, temp:6.6, cond:1.38, turb:724, DO:4.82, redox:52.6

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:30, DTW:66.26, pH:6.86, temp:6.9, cond:1.4, turb:1100, DO:1.08, redox:52.9

Reading Time	10:30

Minutes Elapsed between readings	4
Rate (mL/min)	300
Depth to Water (ft)	66.26
pH	6.86
Conductivity (mS/cm)	1.4
Turbidity (NTU)	1100
Dissolved Oxygen (mg/L)	1.08
Temperature (Degrees Celsius)	6.9
Redox (ORP mV)	52.9
parameters	@10:30, DTW:66.26, pH:6.86, temp:6.9, cond:1.4, turb:1100, DO:1.08, redox:52.9

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:35, DTW:66.26, pH:6.86, temp:6.8, cond:1.35, turb:822, DO:0.86, redox:52.8

Reading Time	10:35
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	66.26
pH	6.86
Conductivity (mS/cm)	1.35
Turbidity (NTU)	822
Dissolved Oxygen (mg/L)	0.86
Temperature (Degrees Celsius)	6.8
Redox (ORP mV)	52.8
parameters	@10:35, DTW:66.26, pH:6.86, temp:6.8, cond:1.35, turb:822, DO:0.86, redox:52.8

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:40, DTW:66.26, pH:6.86, temp:7.1, cond:1.3, turb:510, DO:0.71, redox:52.6

Reading Time	10:40
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	66.26
pH	6.86
Conductivity (mS/cm)	1.3
Turbidity (NTU)	510
Dissolved Oxygen (mg/L)	0.71
Temperature (Degrees Celsius)	7.1
Redox (ORP mV)	52.6
parameters	@10:40, DTW:66.26, pH:6.86, temp:7.1, cond:1.3, turb:510, DO:0.71, redox:52.6

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:45, DTW:66.26, pH:6.87, temp:6.9, cond:1.24, turb:283, DO:0.81, redox:53

Reading Time	10:45
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	66.26
pH	6.87
Conductivity (mS/cm)	1.24
Turbidity (NTU)	283
Dissolved Oxygen (mg/L)	0.81
Temperature (Degrees Celsius)	6.9
Redox (ORP mV)	53
parameters	@10:45, DTW:66.26, pH:6.87, temp:6.9, cond:1.24, turb:283, DO:0.81, redox:53

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:50, DTW:66.22, pH:6.88, temp:6.9, cond:1.21, turb:139, DO:1.18, redox:53.6

Reading Time	10:50
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	66.22
pH	6.88
Conductivity (mS/cm)	1.21
Turbidity (NTU)	139
Dissolved Oxygen (mg/L)	1.18
Temperature (Degrees Celsius)	6.9
Redox (ORP mV)	53.6
parameters	@10:50, DTW:66.22, pH:6.88, temp:6.9, cond:1.21, turb:139, DO:1.18, redox:53.6

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:55, DTW:66.22, pH:6.89, temp:6.9, cond:1.18, turb:75.2, DO:1.52, redox:54.6

Reading Time	10:55
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	66.22
pH	6.89
Conductivity (mS/cm)	1.18
Turbidity (NTU)	75.2
Dissolved Oxygen (mg/L)	1.52
Temperature (Degrees Celsius)	6.9
Redox (ORP mV)	54.6
parameters	@10:55, DTW:66.22, pH:6.89, temp:6.9, cond:1.18, turb:75.2, DO:1.52, redox:54.6

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:00, DTW:66.22, pH:6.9, temp:7.3, cond:1.16, turb:48.3, DO:1.84, redox:55.4

Reading Time	11:00
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	66.22
pH	6.9
Conductivity (mS/cm)	1.16
Turbidity (NTU)	48.3
Dissolved Oxygen (mg/L)	1.84
Temperature (Degrees Celsius)	7.3
Redox (ORP mV)	55.4
parameters	@11:00, DTW:66.22, pH:6.9, temp:7.3, cond:1.16, turb:48.3, DO:1.84, redox:55.4

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:05, DTW:66.22, pH:6.9, temp:7.2, cond:1.14, turb:40, DO:2.06, redox:56.2

Reading Time	11:05
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	66.22
pH	6.9
Conductivity (mS/cm)	1.14
Turbidity (NTU)	40
Dissolved Oxygen (mg/L)	2.06
Temperature (Degrees Celsius)	7.2
Redox (ORP mV)	56.2
parameters	@11:05, DTW:66.22, pH:6.9, temp:7.2, cond:1.14, turb:40, DO:2.06, redox:56.2

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:10, DTW:66.22, pH:6.91, temp:7.3, cond:1.13, turb:35.9, DO:2.23, redox:57.1

Reading Time	11:10
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	66.22
pH	6.91
Conductivity (mS/cm)	1.13
Turbidity (NTU)	35.9
Dissolved Oxygen (mg/L)	2.23
Temperature (Degrees Celsius)	7.3
Redox (ORP mV)	57.1
parameters	@11:10, DTW:66.22, pH:6.91, temp:7.3, cond:1.13, turb:35.9, DO:2.23, redox:57.1

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:15, DTW:66.22, pH:6.91, temp:6.8, cond:1.12, turb:32.5, DO:2.43, redox:57.9

Reading Time	11:15
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	66.22
pH	6.91
Conductivity (mS/cm)	1.12
Turbidity (NTU)	32.5
Dissolved Oxygen (mg/L)	2.43
Temperature (Degrees Celsius)	6.8
Redox (ORP mV)	57.9
parameters	@11:15, DTW:66.22, pH:6.91, temp:6.8, cond:1.12, turb:32.5, DO:2.43, redox:57.9

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:20, DTW:66.22, pH:6.91, temp:6.9, cond:1.12, turb:25.8, DO:2.49, redox:58.6

Reading Time	11:20
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	66.22
pH	6.91
Conductivity (mS/cm)	1.12
Turbidity (NTU)	25.8
Dissolved Oxygen (mg/L)	2.49
Temperature (Degrees Celsius)	6.9
Redox (ORP mV)	58.6
parameters	@11:20, DTW:66.22, pH:6.91, temp:6.9, cond:1.12, turb:25.8, DO:2.49, redox:58.6

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

Purge End	11:20
Total Volume Measured (units)	Gallons
Total Gallons Purged	1
Well Volumes Purged	0.78

Sample Information

Sample Time	11:25
Color	None
Notable odors	None

1,4-dioxane

Constituent Sampled	1,4-dioxane

Container Type	40 mL Vial
Number of Containers	3
Preservative	HCL

Well Information

Well Location	Plant 3
Condition of Well	Good
Well Locked at Arrival	Yes
Well Locked at Departure	Yes

Signature

Signed 2018-12-11 16:22:06 UTC

2018-12-10, MW-02-02_3

Created	2018-12-10 18:23:08 UTC by Marina Samp
Updated	2018-12-10 19:12:54 UTC by Marina Samp
Location	42.745735296088, -84.5858595986707
Status	Field Draft
Project Number	B0064479.2018
Project Name / Location	RACER Lansing, MI
Sampler Name	Marina Samp
Date	2018-12-10
Well ID	MW-02-02_3
Are you able to purge and/or sample this well? If not, explain why in the Comments section below.	Yes
Weather	26, cloudy

Evacuation Details

Measuring Point (mp) Description	Top of Casing
Casing Diameter (inches)	2
Static Water Level (ft-bmp)	61.71
Total Depth (ft-bmp)	83.7
Water Column	21.99
Gallons in Well	3.57

Reference Note: Well Volume Calculation [$\pi r^2 h$, where h= 1foot] Well radius (inch):Volume (Gal./foot):Volume (mL/foot) 0.5" = 0.04 gal/ft = 154 mL/ft 1" = 0.16 gal/ft = 617 mL/ft 2" = 0.65 gal/ft = 2470 mL/ft 3" = 1.47 gal/ft = 5557 mL/ft

Purge Method	Low-Flow
Type of Equipment used	Bladder
Sample Method	Low-Flow
Sample Depth (ft-bmp) (e.g. pump intake)	81
Purge Start	13:25

@13:32, DTW:63.05, pH:6.57, temp:11.6, cond:4.76, turb:158, DO:1.21, redox:52.6

Reading Time	13:32
Rate (mL/min)	300
Depth to Water (ft)	63.05
pH	6.57
Conductivity (mS/cm)	4.76
Turbidity (NTU)	158
Dissolved Oxygen (mg/L)	1.21
Temperature (Degrees Celsius)	11.6
Redox (ORP mV)	52.6
parameters	@13:32, DTW:63.05, pH:6.57, temp:11.6, cond:4.76, turb:158, DO:1.21, redox:52.6

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:35, DTW:63.31, pH:6.58, temp:11.6, cond:4.75, turb:104, DO:1.11, redox:53.8

Reading Time	13:35

Minutes Elapsed between readings	3
Rate (mL/min)	300
Depth to Water (ft)	63.31
pH	6.58
Conductivity (mS/cm)	4.75
Turbidity (NTU)	104
Dissolved Oxygen (mg/L)	1.11
Temperature (Degrees Celsius)	11.6
Redox (ORP mV)	53.8
parameters	@13:35, DTW:63.31, pH:6.58, temp:11.6, cond:4.75, turb:104, DO:1.11, redox:53.8

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:40, DTW:63, pH:6.6, temp:7.3, cond:4.48, turb:75.6, DO:1.26, redox:56.6

Reading Time	13:40
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	63
pH	6.6
Conductivity (mS/cm)	4.48
Turbidity (NTU)	75.6
Dissolved Oxygen (mg/L)	1.26
Temperature (Degrees Celsius)	7.3
Redox (ORP mV)	56.6
parameters	@13:40, DTW:63, pH:6.6, temp:7.3, cond:4.48, turb:75.6, DO:1.26, redox:56.6

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:45, DTW:62.91, pH:6.6, temp:9.4, cond:4.37, turb:89.1, DO:1.29, redox:57.4

Reading Time	13:45
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	62.91
pH	6.6
Conductivity (mS/cm)	4.37
Turbidity (NTU)	89.1
Dissolved Oxygen (mg/L)	1.29
Temperature (Degrees Celsius)	9.4
Redox (ORP mV)	57.4
parameters	@13:45, DTW:62.91, pH:6.6, temp:9.4, cond:4.37, turb:89.1, DO:1.29, redox:57.4

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:50, DTW:62.91, pH:6.6, temp:10.1, cond:4.5, turb:84.9, DO:1.2, redox:58.5

Reading Time	13:50
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	62.91
pH	6.6
Conductivity (mS/cm)	4.5
Turbidity (NTU)	84.9
Dissolved Oxygen (mg/L)	1.2
Temperature (Degrees Celsius)	10.1
Redox (ORP mV)	58.5
parameters	@13:50, DTW:62.91, pH:6.6, temp:10.1, cond:4.5, turb:84.9, DO:1.2, redox:58.5

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:55, DTW:62.91, pH:6.59, temp:8.7, cond:4.47, turb:93.6, DO:1.01, redox:60

Reading Time	13:55
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	62.91
pH	6.59
Conductivity (mS/cm)	4.47
Turbidity (NTU)	93.6
Dissolved Oxygen (mg/L)	1.01
Temperature (Degrees Celsius)	8.7
Redox (ORP mV)	60
parameters	@13:55, DTW:62.91, pH:6.59, temp:8.7, cond:4.47, turb:93.6, DO:1.01, redox:60

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@14:00, DTW:62.71, pH:6.59, temp:7, cond:4.41, turb:81.6, DO:0.89, redox:61.3

Reading Time	14:00
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	62.71
pH	6.59
Conductivity (mS/cm)	4.41
Turbidity (NTU)	81.6
Dissolved Oxygen (mg/L)	0.89
Temperature (Degrees Celsius)	7
Redox (ORP mV)	61.3
parameters	@14:00, DTW:62.71, pH:6.59, temp:7, cond:4.41, turb:81.6, DO:0.89, redox:61.3

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@14:05, DTW:62.71, pH:6.6, temp:7.1, cond:4.21, turb:87.3, DO:0.85, redox:62.7

Reading Time	14:05
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	62.71
pH	6.6
Conductivity (mS/cm)	4.21
Turbidity (NTU)	87.3
Dissolved Oxygen (mg/L)	0.85
Temperature (Degrees Celsius)	7.1
Redox (ORP mV)	62.7
parameters	@14:05, DTW:62.71, pH:6.6, temp:7.1, cond:4.21, turb:87.3, DO:0.85, redox:62.7

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@14:10, DTW:62.71, pH:6.6, temp:7.5, cond:4.27, turb:90, DO:0.86, redox:63.2

Reading Time	14:10
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	62.71
pH	6.6
Conductivity (mS/cm)	4.27
Turbidity (NTU)	90
Dissolved Oxygen (mg/L)	0.86
Temperature (Degrees Celsius)	7.5
Redox (ORP mV)	63.2
parameters	@14:10, DTW:62.71, pH:6.6, temp:7.5, cond:4.27, turb:90, DO:0.86, redox:63.2

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

Purge End	14:10
Total Volume Measured (units)	Gallons
Total Gallons Purged	0.75
Well Volumes Purged	0.21

Sample Information

Sample Time	14:15
Color	Cloudy, white
Notable odors	None

1,4-dioxane

Constituent Sampled	1,4-dioxane
Container Type	40 mL Vial
Number of Containers	3
Preservative	HCL

Well Information

Well Location	Plant 3
Condition of Well	Good
Well Locked at Arrival	Yes
Well Locked at Departure	Yes

Signature

Signed 2018-12-10 19:12:53 UTC

2018-12-05, MW-04-05(6)

Created	2018-12-05 13:58:51 UTC by Erik Pietrzak
Updated	2018-12-05 15:28:50 UTC by Erik Pietrzak
Location	42.738877055275, -84.5796326828046
Status	Field Draft
Project Number	B0064479.2018
Project Name / Location	RACER Lansing, MI
Sampler Name	Erik Pietrzak
Date	2018-12-05
Well ID	MW-04-05(6)
Are you able to purge and/or sample this well? If not, explain why in the Comments section below.	Yes
Replicate No. (e.g. Dup)	MS/MSD
Weather	Flurries, 28

Evacuation Details

Measuring Point (mp) Description	Top of Casing
Casing Diameter (inches)	2
Static Water Level (ft-bmp)	9.15
Total Depth (ft-bmp)	29.75
Water Column	20.6
Gallons in Well	3.35

Reference Note: Well Volume Calculation [$\pi r^2 h$, where h= 1foot] Well radius (inch):Volume (Gal./foot):Volume (mL/foot) 0.5" = 0.04 gal/ft = 154 mL/ft 1" = 0.16 gal/ft = 617 mL/ft 2" = 0.65 gal/ft = 2470 mL/ft 3" = 1.47 gal/ft = 5557 mL/ft

Purge Method	Low-Flow
Type of Equipment used	Bladder
Sample Method	Low-Flow
Sample Depth (ft-bmp) (e.g. pump intake)	27.75
Purge Start	08:55

@09:00, DTW:9.49, pH:7.42, temp:13.1, cond:5.75, turb:966, DO:9.97, redox:108.9

Reading Time	09:00
Rate (mL/min)	200
Depth to Water (ft)	9.49
pH	7.42
Conductivity (mS/cm)	5.75
Turbidity (NTU)	966
Dissolved Oxygen (mg/L)	9.97
Temperature (Degrees Celsius)	13.1
Redox (ORP mV)	108.9
parameters	@09:00, DTW:9.49, pH:7.42, temp:13.1, cond:5.75, turb:966, DO:9.97, redox:108.9

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:05, DTW:10.55, pH:7.64, temp:13.5, cond:5.64, turb:918, DO:10.02, redox:101.8

Reading Time	09:05
Minutes Elapsed between readings	5
Rate (mL/min)	200
Depth to Water (ft)	10.55
pH	7.64
Conductivity (mS/cm)	5.64
Turbidity (NTU)	918
Dissolved Oxygen (mg/L)	10.02
Temperature (Degrees Celsius)	13.5
Redox (ORP mV)	101.8
parameters	@09:05, DTW:10.55, pH:7.64, temp:13.5, cond:5.64, turb:918, DO:10.02, redox:101.8

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:10, DTW:11.34, pH:7.83, temp:13.2, cond:5.52, turb:757, DO:10.13, redox:97.7

Reading Time	09:10
Minutes Elapsed between readings	5
Rate (mL/min)	200
Depth to Water (ft)	11.34
pH	7.83
Conductivity (mS/cm)	5.52
Turbidity (NTU)	757
Dissolved Oxygen (mg/L)	10.13
Temperature (Degrees Celsius)	13.2
Redox (ORP mV)	97.7
parameters	@09:10, DTW:11.34, pH:7.83, temp:13.2, cond:5.52, turb:757, DO:10.13, redox:97.7

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:15, DTW:11.64, pH:7.97, temp:13, cond:5.44, turb:613, DO:10.23, redox:94.4

Reading Time	09:15
Minutes Elapsed between readings	5
Rate (mL/min)	200
Depth to Water (ft)	11.64
pH	7.97
Conductivity (mS/cm)	5.44
Turbidity (NTU)	613
Dissolved Oxygen (mg/L)	10.23
Temperature (Degrees Celsius)	13
Redox (ORP mV)	94.4
parameters	@09:15, DTW:11.64, pH:7.97, temp:13, cond:5.44, turb:613, DO:10.23, redox:94.4

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:20, DTW:12.18, pH:8.02, temp:13, cond:5.42, turb:546, DO:10.16, redox:92.2

Reading Time	09:20
Minutes Elapsed between readings	5
Rate (mL/min)	200
Depth to Water (ft)	12.18
pH	8.02
Conductivity (mS/cm)	5.42
Turbidity (NTU)	546
Dissolved Oxygen (mg/L)	10.16
Temperature (Degrees Celsius)	13
Redox (ORP mV)	92.2
parameters	@09:20, DTW:12.18, pH:8.02, temp:13, cond:5.42, turb:546, DO:10.16, redox:92.2

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:25, DTW:12.52, pH:8.05, temp:13.1, cond:5.43, turb:476, DO:10.3, redox:90.6

Reading Time	09:25
Minutes Elapsed between readings	5
Rate (mL/min)	200
Depth to Water (ft)	12.52
pH	8.05
Conductivity (mS/cm)	5.43
Turbidity (NTU)	476
Dissolved Oxygen (mg/L)	10.3
Temperature (Degrees Celsius)	13.1
Redox (ORP mV)	90.6
parameters	@09:25, DTW:12.52, pH:8.05, temp:13.1, cond:5.43, turb:476, DO:10.3, redox:90.6

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:30, DTW:12.48, pH:8.07, temp:13.1, cond:5.46, turb:412, DO:10.17, redox:89.2

Reading Time	09:30
Minutes Elapsed between readings	5
Rate (mL/min)	200
Depth to Water (ft)	12.48
pH	8.07
Conductivity (mS/cm)	5.46
Turbidity (NTU)	412
Dissolved Oxygen (mg/L)	10.17
Temperature (Degrees Celsius)	13.1
Redox (ORP mV)	89.2
parameters	@09:30, DTW:12.48, pH:8.07, temp:13.1, cond:5.46, turb:412, DO:10.17, redox:89.2

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:35, DTW:12.52, pH:8.09, temp:12.8, cond:5.48, turb:374, DO:10.51, redox:88

Reading Time	09:35
Minutes Elapsed between readings	5
Rate (mL/min)	200
Depth to Water (ft)	12.52
pH	8.09
Conductivity (mS/cm)	5.48
Turbidity (NTU)	374
Dissolved Oxygen (mg/L)	10.51
Temperature (Degrees Celsius)	12.8
Redox (ORP mV)	88
parameters	@09:35, DTW:12.52, pH:8.09, temp:12.8, cond:5.48, turb:374, DO:10.51, redox:88

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:40, DTW:12.55, pH:8.1, temp:13, cond:5.51, turb:342, DO:10.39, redox:86.9

Reading Time	09:40
Minutes Elapsed between readings	5
Rate (mL/min)	200
Depth to Water (ft)	12.55
pH	8.1
Conductivity (mS/cm)	5.51
Turbidity (NTU)	342
Dissolved Oxygen (mg/L)	10.39
Temperature (Degrees Celsius)	13
Redox (ORP mV)	86.9
parameters	@09:40, DTW:12.55, pH:8.1, temp:13, cond:5.51, turb:342, DO:10.39, redox:86.9

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:45, DTW:12.63, pH:8.1, temp:12.9, cond:5.53, turb:336, DO:10.37, redox:86

Reading Time	09:45
Minutes Elapsed between readings	5
Rate (mL/min)	200
Depth to Water (ft)	12.63
pH	8.1
Conductivity (mS/cm)	5.53
Turbidity (NTU)	336
Dissolved Oxygen (mg/L)	10.37
Temperature (Degrees Celsius)	12.9
Redox (ORP mV)	86

parameters	@09:45, DTW:12.63, pH:8.1, temp:12.9, cond:5.53, turb:336, DO:10.37, redox:86

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:50, DTW:12.52, pH:8.12, temp:12.5, cond:5.57, turb:314, DO:10.6, redox:85.2

Reading Time	09:50
Minutes Elapsed between readings	5
Rate (mL/min)	200
Depth to Water (ft)	12.52
pH	8.12
Conductivity (mS/cm)	5.57
Turbidity (NTU)	314
Dissolved Oxygen (mg/L)	10.6
Temperature (Degrees Celsius)	12.5
Redox (ORP mV)	85.2
parameters	@09:50, DTW:12.52, pH:8.12, temp:12.5, cond:5.57, turb:314, DO:10.6, redox:85.2

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:55, DTW:12.52, pH:8.13, temp:12.7, cond:5.59, turb:264, DO:10.61, redox:84.4

Reading Time	09:55
Minutes Elapsed between readings	5
Rate (mL/min)	200
Depth to Water (ft)	12.52
pH	8.13
Conductivity (mS/cm)	5.59
Turbidity (NTU)	264
Dissolved Oxygen (mg/L)	10.61
Temperature (Degrees Celsius)	12.7
Redox (ORP mV)	84.4
parameters	@09:55, DTW:12.52, pH:8.13, temp:12.7, cond:5.59, turb:264, DO:10.61, redox:84.4

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

Purge End	09:55
Total Volume Measured (units)	Gallons
Total Gallons Purged	2.9
Well Volumes Purged	0.87

Sample Information

Sample Time	09:57
Color	Light gray
Notable odors	No

VOCs

Constituent Sampled	VOCs
Container Type	40 mL Vial
Number of Containers	3
Preservative	HCL

1,4 dioxane

Constituent Sampled	1,4 dioxane

Well Information

Condition of Well	Good
Well Locked at Arrival	No
Well Locked at Departure	No

Signature

Signed 2018-12-05 15:28:47 UTC

2018-12-11, MW-14-62

Created	2018-12-11 10:14:39 EST by Daniel Stockard
Updated	2018-12-11 11:18:26 EST by Daniel Stockard
Location	42.7373789158116, -84.5847459790153
Status	Field Draft
Project Number	B0064479.2018
Project Name / Location	RACER Lansing, MI
Sampler Name	Daniel Stockard
Date	2018-12-11
Well ID	MW-14-62
Are you able to purge and/or sample this well? If not, explain why in the Comments section below.	Yes
Replicate No. (e.g. Dup)	None
Weather	20s, overcast

Evacuation Details

Measuring Point (mp) Description	Top of Casing
Casing Diameter (inches)	2
Static Water Level (ft-bmp)	6.74
Total Depth (ft-bmp)	17
Water Column	10.26
Gallons in Well	1.67

Reference Note: Well Volume Calculation [$\pi r^2 h$, where h= 1foot] Well radius (inch):Volume (Gal./foot):Volume (mL/foot) 0.5" = 0.04 gal/ft = 154 mL/ft 1" = 0.16 gal/ft = 617 mL/ft 2" = 0.65 gal/ft = 2470 mL/ft 3" = 1.47 gal/ft = 5557 mL/ft

Purge Method	Low-Flow
Type of Equipment used	Bladder
Sample Method	Grab
Sample Depth (ft-bmp) (e.g. pump intake)	15
Purge Start	10:15

@10:15, DTW:6.74, pH:11.6, temp:12.6, cond:0.377, turb:592, DO:0.26, redox:-29.7

Reading Time	10:15
Rate (mL/min)	200
Depth to Water (ft)	6.74
pH	11.6
Conductivity (mS/cm)	0.377
Turbidity (NTU)	592
Dissolved Oxygen (mg/L)	0.26
Temperature (Degrees Celsius)	12.6
Redox (ORP mV)	-29.7
parameters	@10:15, DTW:6.74, pH:11.6, temp:12.6, cond:0.377, turb:592, DO:0.26, redox:-29.7

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:20, DTW:6.86, pH:11.59, temp:12.4, cond:0.38, turb:119, DO:0.22, redox:-36.9

Reading Time	10:20
Minutes Elapsed between readings	5
Rate (mL/min)	200
Depth to Water (ft)	6.86
pH	11.59
Conductivity (mS/cm)	0.38
Turbidity (NTU)	119
Dissolved Oxygen (mg/L)	0.22
Temperature (Degrees Celsius)	12.4
Redox (ORP mV)	-36.9
parameters	@10:20, DTW:6.86, pH:11.59, temp:12.4, cond:0.38, turb:119, DO:0.22, redox:-36.9

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:25, DTW:6.89, pH:11.57, temp:12.5, cond:0.408, turb:63.1, DO:0.19, redox:-64.9

Reading Time	10:25
Minutes Elapsed between readings	5
Rate (mL/min)	200
Depth to Water (ft)	6.89
pH	11.57
Conductivity (mS/cm)	0.408
Turbidity (NTU)	63.1
Dissolved Oxygen (mg/L)	0.19
Temperature (Degrees Celsius)	12.5
Redox (ORP mV)	-64.9
parameters	@10:25, DTW:6.89, pH:11.57, temp:12.5, cond:0.408, turb:63.1, DO:0.19, redox:-64.9

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:30, DTW:6.92, pH:11.72, temp:12.1, cond:0.427, turb:35.4, DO:0.19, redox:-129.9

Reading Time	10:30
Minutes Elapsed between readings	5
Rate (mL/min)	200
Depth to Water (ft)	6.92
pH	11.72
Conductivity (mS/cm)	0.427
Turbidity (NTU)	35.4
Dissolved Oxygen (mg/L)	0.19
Temperature (Degrees Celsius)	12.1
Redox (ORP mV)	-129.9
parameters	@10:30, DTW:6.92, pH:11.72, temp:12.1, cond:0.427, turb:35.4, DO:0.19, redox:-129.9

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:35, DTW:6.92, pH:11.72, temp:12.5, cond:0.432, turb:22.4, DO:0.24, redox:-171.7

Reading Time	10:35
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	6.92
pH	11.72
Conductivity (mS/cm)	0.432
Turbidity (NTU)	22.4
Dissolved Oxygen (mg/L)	0.24
Temperature (Degrees Celsius)	12.5
Redox (ORP mV)	-171.7
parameters	@10:35, DTW:6.92, pH:11.72, temp:12.5, cond:0.432, turb:22.4, DO:0.24, redox:-171.7

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:40, DTW:6.92, pH:11.73, temp:12.2, cond:0.427, turb:14.2, DO:0.24, redox:-191.7

Reading Time	10:40
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	6.92
pH	11.73
Conductivity (mS/cm)	0.427
Turbidity (NTU)	14.2
Dissolved Oxygen (mg/L)	0.24
Temperature (Degrees Celsius)	12.2
Redox (ORP mV)	-191.7
parameters	@10:40, DTW:6.92, pH:11.73, temp:12.2, cond:0.427, turb:14.2, DO:0.24, redox:-191.7

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:45, DTW:6.92, pH:11.72, temp:12, cond:0.418, turb:9.49, DO:0.29, redox:-208.5

Reading Time	10:45
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	6.92
pH	11.72
Conductivity (mS/cm)	0.418
Turbidity (NTU)	9.49
Dissolved Oxygen (mg/L)	0.29
Temperature (Degrees Celsius)	12
Redox (ORP mV)	-208.5
parameters	@10:45, DTW:6.92, pH:11.72, temp:12, cond:0.418, turb:9.49, DO:0.29, redox:-208.5

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:50, DTW:6.92, pH:11.72, temp:11.9, cond:0.418, turb:7.34, DO:0.22, redox:-211.4

Reading Time	10:50
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	6.92
pH	11.72
Conductivity (mS/cm)	0.418
Turbidity (NTU)	7.34
Dissolved Oxygen (mg/L)	0.22
Temperature (Degrees Celsius)	11.9
Redox (ORP mV)	-211.4
parameters	@10:50, DTW:6.92, pH:11.72, temp:11.9, cond:0.418, turb:7.34, DO:0.22, redox:-211.4

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:55, DTW:6.92, pH:11.72, temp:12.1, cond:0.418, turb:5.02, DO:0.22, redox:-213.2

Reading Time	10:55
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	6.92
pH	11.72
Conductivity (mS/cm)	0.418
Turbidity (NTU)	5.02
Dissolved Oxygen (mg/L)	0.22
Temperature (Degrees Celsius)	12.1
Redox (ORP mV)	-213.2
parameters	@10:55, DTW:6.92, pH:11.72, temp:12.1, cond:0.418, turb:5.02, DO:0.22, redox:-213.2

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

Purge End	10:55
Total Volume Measured (units)	Gallons
Total Gallons Purged	2
Well Volumes Purged	1.2

Sample Information

Sample Time	10:55
Color	None
Notable odors	Slight odor

1,4-D and VOCs

Constituent Sampled	1,4-D and VOCs

Container Type	40 mL Vial
Number of Containers	3
Preservative	HCL

Well Information

Well Location	P2
Condition of Well	Good
Well Locked at Arrival	Yes
Well Locked at Departure	Yes
Comments	Yield is noice
Signature	

Signed 2018-12-11 10:53:15 EST

2018-12-07, MW-13-36R

Created	2018-12-07 14:12:50 UTC by Erik Pietrzak
Updated	2018-12-07 15:32:14 UTC by Erik Pietrzak
Location	42.7370792627733, -84.5775588323219
Status	Field Draft
Project Number	B0064479.2018
Project Name / Location	RACER Lansing, MI
Sampler Name	Erik Pietrzak
Date	2018-12-07
Well ID	MW-13-36R
Are you able to purge and/or sample this well? If not, explain why in the Comments section below.	Yes
Weather	Flurries, 20s

Evacuation Details

Measuring Point (mp) Description	Top of Casing
Casing Diameter (inches)	2
Static Water Level (ft-bmp)	5.13
Total Depth (ft-bmp)	12.75
Water Column	7.62
Gallons in Well	1.24

Reference Note: Well Volume Calculation [$\pi r^2 h$, where h= 1foot] Well radius (inch):Volume (Gal./foot):Volume (mL/foot) 0.5" = 0.04 gal/ft = 154 mL/ft 1" = 0.16 gal/ft = 617 mL/ft 2" = 0.65 gal/ft = 2470 mL/ft 3" = 1.47 gal/ft = 5557 mL/ft

Purge Method	Low-Flow
Type of Equipment used	Bladder
Sample Method	Low-Flow
Sample Depth (ft-bmp) (e.g. pump intake)	10
Purge Start	09:05

@09:15, DTW:5.17, pH:11.97, temp:8.3, cond:1.49, turb:46.7, DO:4.77, redox:140.8

Reading Time	09:15
Rate (mL/min)	100
Depth to Water (ft)	5.17
pH	11.97
Conductivity (mS/cm)	1.49
Turbidity (NTU)	46.7
Dissolved Oxygen (mg/L)	4.77
Temperature (Degrees Celsius)	8.3
Redox (ORP mV)	140.8
parameters	@09:15, DTW:5.17, pH:11.97, temp:8.3, cond:1.49, turb:46.7, DO:4.77, redox:140.8

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:20, DTW:5.17, pH:12.01, temp:8.5, cond:1.53, turb:36.3, DO:4.74, redox:134.7

Reading Time	09:20

Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	5.17
pH	12.01
Conductivity (mS/cm)	1.53
Turbidity (NTU)	36.3
Dissolved Oxygen (mg/L)	4.74
Temperature (Degrees Celsius)	8.5
Redox (ORP mV)	134.7
parameters	@09:20, DTW:5.17, pH:12.01, temp:8.5, cond:1.53, turb:36.3, DO:4.74, redox:134.7

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:25, DTW:5.17, pH:12.05, temp:8.9, cond:1.6, turb:31.8, DO:5.09, redox:127.7

Reading Time	09:25
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	5.17
pH	12.05
Conductivity (mS/cm)	1.6
Turbidity (NTU)	31.8
Dissolved Oxygen (mg/L)	5.09
Temperature (Degrees Celsius)	8.9
Redox (ORP mV)	127.7
parameters	@09:25, DTW:5.17, pH:12.05, temp:8.9, cond:1.6, turb:31.8, DO:5.09, redox:127.7

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:30, DTW:5.17, pH:12.08, temp:8.7, cond:1.65, turb:23.2, DO:5.01, redox:122.2

Reading Time	09:30
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	5.17
pH	12.08
Conductivity (mS/cm)	1.65
Turbidity (NTU)	23.2
Dissolved Oxygen (mg/L)	5.01
Temperature (Degrees Celsius)	8.7
Redox (ORP mV)	122.2
parameters	@09:30, DTW:5.17, pH:12.08, temp:8.7, cond:1.65, turb:23.2, DO:5.01, redox:122.2

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:35, DTW:5.17, pH:12.12, temp:8.1, cond:1.69, turb:20.6, DO:4.85, redox:117.1

Reading Time	09:35
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	5.17
pH	12.12
Conductivity (mS/cm)	1.69
Turbidity (NTU)	20.6
Dissolved Oxygen (mg/L)	4.85
Temperature (Degrees Celsius)	8.1
Redox (ORP mV)	117.1
parameters	@09:35, DTW:5.17, pH:12.12, temp:8.1, cond:1.69, turb:20.6, DO:4.85, redox:117.1

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:40, DTW:5.17, pH:12.14, temp:8.6, cond:1.71, turb:19, DO:4.9, redox:111.7

Reading Time	09:40
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	5.17
pH	12.14
Conductivity (mS/cm)	1.71
Turbidity (NTU)	19
Dissolved Oxygen (mg/L)	4.9
Temperature (Degrees Celsius)	8.6
Redox (ORP mV)	111.7
parameters	@09:40, DTW:5.17, pH:12.14, temp:8.6, cond:1.71, turb:19, DO:4.9, redox:111.7

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:45, DTW:5.17, pH:12.15, temp:8.9, cond:1.72, turb:18.3, DO:5.47, redox:107.1

Reading Time	09:45
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	5.17
pH	12.15
Conductivity (mS/cm)	1.72
Turbidity (NTU)	18.3
Dissolved Oxygen (mg/L)	5.47
Temperature (Degrees Celsius)	8.9
Redox (ORP mV)	107.1
parameters	@09:45, DTW:5.17, pH:12.15, temp:8.9, cond:1.72, turb:18.3, DO:5.47, redox:107.1

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:50, DTW:5.17, pH:12.17, temp:8.9, cond:1.72, turb:15.8, DO:5.57, redox:102.3

Reading Time	09:50
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	5.17
pH	12.17
Conductivity (mS/cm)	1.72
Turbidity (NTU)	15.8
Dissolved Oxygen (mg/L)	5.57
Temperature (Degrees Celsius)	8.9
Redox (ORP mV)	102.3
parameters	@09:50, DTW:5.17, pH:12.17, temp:8.9, cond:1.72, turb:15.8, DO:5.57, redox:102.3

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:55, DTW:5.17, pH:12.18, temp:8.9, cond:1.73, turb:14.5, DO:5.77, redox:98.5

Reading Time	09:55
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	5.17
pH	12.18
Conductivity (mS/cm)	1.73
Turbidity (NTU)	14.5
Dissolved Oxygen (mg/L)	5.77
Temperature (Degrees Celsius)	8.9
Redox (ORP mV)	98.5
parameters	@09:55, DTW:5.17, pH:12.18, temp:8.9, cond:1.73, turb:14.5, DO:5.77, redox:98.5

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:00, DTW:5.17, pH:12.2, temp:8.7, cond:1.74, turb:13.8, DO:5.7, redox:95.6

Reading Time	10:00
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	5.17
pH	12.2
Conductivity (mS/cm)	1.74
Turbidity (NTU)	13.8
Dissolved Oxygen (mg/L)	5.7
Temperature (Degrees Celsius)	8.7
Redox (ORP mV)	95.6
parameters	@10:00, DTW:5.17, pH:12.2, temp:8.7, cond:1.74, turb:13.8, DO:5.7, redox:95.6

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:05, DTW:5.17, pH:12.2, temp:8.7, cond:1.74, turb:12.9, DO:5.5, redox:92.6

Reading Time	10:05
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	5.17
pH	12.2
Conductivity (mS/cm)	1.74
Turbidity (NTU)	12.9
Dissolved Oxygen (mg/L)	5.5
Temperature (Degrees Celsius)	8.7
Redox (ORP mV)	92.6
parameters	@10:05, DTW:5.17, pH:12.2, temp:8.7, cond:1.74, turb:12.9, DO:5.5, redox:92.6

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

Purge End	10:05
Total Volume Measured (units)	Gallons
Total Gallons Purged	2
Well Volumes Purged	1.61

Sample Information

Sample Time	10:07
Color	Clear
Notable odors	None

Metals

Constituent Sampled	Metals
Container Type	125 mL Plastic
Number of Containers	2
Preservative	HNO3

Well Information

Condition of Well	Good
Well Locked at Arrival	Yes
Well Locked at Departure	Yes

Signature

Signed 2018-12-07 15:32:12 UTC

2018-12-06, UNK-10

Created	2018-12-06 14:06:39 UTC by Marina Samp
Updated	2018-12-06 14:30:55 UTC by Marina Samp
Location	42.7451350260924, -84.5838875044925
Status	Field Draft
Project Number	B0064479.2018
Project Name / Location	RACER Lansing, MI
Sampler Name	Marina Samp
Date	2018-12-06
Well ID	UNK-10
Are you able to purge and/or sample this well? If not, explain why in the Comments section below.	Yes
Weather	30, cloudy

Evacuation Details

Measuring Point (mp) Description	Top of Casing
Casing Diameter (inches)	4
Static Water Level (ft-bmp)	0.94
Total Depth (ft-bmp)	16
Water Column	15.06
Gallons in Well	9.79

Reference Note: Well Volume Calculation [$\pi r^2 h$, where h= 1foot] Well radius (inch):Volume (Gal./foot):Volume (mL/foot) 0.5" = 0.04 gal/ft = 154 mL/ft 1" = 0.16 gal/ft = 617 mL/ft 2" = 0.65 gal/ft = 2470 mL/ft 3" = 1.47 gal/ft = 5557 mL/ft

Purge Method	Low-Flow
Type of Equipment used	Bladder
Sample Method	Low-Flow
Sample Depth (ft-bmp) (e.g. pump intake)	13
Purge Start	09:05

@09:10, DTW:1.39, pH:7.38, temp:9.4, cond:0.115, turb:0.02, DO:4.05, redox:146.5

Reading Time	09:10
Rate (mL/min)	300
Depth to Water (ft)	1.39
pH	7.38
Conductivity (mS/cm)	0.115
Turbidity (NTU)	0.02
Dissolved Oxygen (mg/L)	4.05
Temperature (Degrees Celsius)	9.4
Redox (ORP mV)	146.5
parameters	@09:10, DTW:1.39, pH:7.38, temp:9.4, cond:0.115, turb:0.02, DO:4.05, redox:146.5

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:15, DTW:1.55, pH:7.41, temp:9.6, cond:0.115, turb:0.02, DO:6.59, redox:143.8

Reading Time	09:15

Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	1.55
pH	7.41
Conductivity (mS/cm)	0.115
Turbidity (NTU)	0.02
Dissolved Oxygen (mg/L)	6.59
Temperature (Degrees Celsius)	9.6
Redox (ORP mV)	143.8
parameters	@09:15, DTW:1.55, pH:7.41, temp:9.6, cond:0.115, turb:0.02, DO:6.59, redox:143.8

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:20, DTW:1.78, pH:7.42, temp:9.6, cond:0.116, turb:0.02, DO:5.61, redox:141

Reading Time	09:20
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	1.78
pH	7.42
Conductivity (mS/cm)	0.116
Turbidity (NTU)	0.02
Dissolved Oxygen (mg/L)	5.61
Temperature (Degrees Celsius)	9.6
Redox (ORP mV)	141
parameters	@09:20, DTW:1.78, pH:7.42, temp:9.6, cond:0.116, turb:0.02, DO:5.61, redox:141

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:25, DTW:1.86, pH:7.42, temp:9.4, cond:0.115, turb:0.02, DO:5.8, redox:140.5

Reading Time	09:25
Minutes Elapsed between readings	3
Rate (mL/min)	300
Depth to Water (ft)	1.86
pH	7.42
Conductivity (mS/cm)	0.115
Turbidity (NTU)	0.02
Dissolved Oxygen (mg/L)	5.8
Temperature (Degrees Celsius)	9.4
Redox (ORP mV)	140.5
parameters	@09:25, DTW:1.86, pH:7.42, temp:9.4, cond:0.115, turb:0.02, DO:5.8, redox:140.5

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:30, DTW:1.95, pH:7.42, temp:9.4, cond:0.116, turb:0.02, DO:5.92, redox:139.8

Reading Time	09:30
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	1.95
pH	7.42
Conductivity (mS/cm)	0.116
Turbidity (NTU)	0.02
Dissolved Oxygen (mg/L)	5.92
Temperature (Degrees Celsius)	9.4
Redox (ORP mV)	139.8
parameters	@09:30, DTW:1.95, pH:7.42, temp:9.4, cond:0.116, turb:0.02, DO:5.92, redox:139.8
Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit	
Purge End	09:30
Total Volume Measured (units)	Gallons
Total Gallons Purged	0.75
Well Volumes Purged	0.08

Sample Information

Sample Time	09:35
Color	None
Notable odors	None

VOCs

Constituent Sampled	VOCs
Container Type	40 mL Vial
Number of Containers	3
Preservative	HCL

Well Information

Well Location	Plant 3
Condition of Well	Missing well cap and casing lid
Well Locked at Arrival	No
Well Locked at Departure	No

Signature

Signed 2018-12-06 14:30:53 UTC

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2018-12-04, MW-13-25

Created	2018-12-04 17:59:38 UTC by Marina Samp
Updated	2018-12-04 20:36:36 UTC by Marina Samp
Location	42.7418756811346, -84.5884765964789
Status	Field Draft
Project Number	B0064479.2018
Project Name / Location	RACER Lansing
Sampler Name	Marina Samp
Date	2018-12-04
Well ID	MW-13-25
Are you able to purge and/or sample this well? If not, explain why in the Comments section below.	Yes
Replicate No. (e.g. Dup)	DUP-05
Weather	24, sunny

Evacuation Details

Measuring Point (mp) Description	Top of Casing
Casing Diameter (inches)	2
Static Water Level (ft-bmp)	66.72
Total Depth (ft-bmp)	74.08
Water Column	7.36
Gallons in Well	1.2

Reference Note: Well Volume Calculation [$\pi r^2 h$, where h= 1foot] Well radius (inch):Volume (Gal./foot):Volume (mL/foot) 0.5" = 0.04 gal/ft = 154 mL/ft 1" = 0.16 gal/ft = 617 mL/ft 2" = 0.65 gal/ft = 2470 mL/ft 3" = 1.47 gal/ft = 5557 mL/ft

Purge Method	Low-Flow
Type of Equipment used	Bladder
Sample Method	Low-Flow
Sample Depth (ft-bmp) (e.g. pump intake)	72
Purge Start	13:30

@13:35, DTW:66.77, pH:5.67, temp:7.7, cond:0.006, turb:51, DO:8.52, redox:607.9

Reading Time	13:35
Rate (mL/min)	300
Depth to Water (ft)	66.77
pH	5.67
Conductivity (mS/cm)	0.006
Turbidity (NTU)	51
Dissolved Oxygen (mg/L)	8.52
Temperature (Degrees Celsius)	7.7
Redox (ORP mV)	607.9
parameters	@13:35, DTW:66.77, pH:5.67, temp:7.7, cond:0.006, turb:51, DO:8.52, redox:607.9

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:40, DTW:66.76, pH:5.67, temp:7.3, cond:0.006, turb:62.3, DO:9.16, redox:437.6

Reading Time	13:40
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	66.76
pH	5.67
Conductivity (mS/cm)	0.006
Turbidity (NTU)	62.3
Dissolved Oxygen (mg/L)	9.16
Temperature (Degrees Celsius)	7.3
Redox (ORP mV)	437.6
parameters	@13:40, DTW:66.76, pH:5.67, temp:7.3, cond:0.006, turb:62.3, DO:9.16, redox:437.6

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:45, DTW:66.7, pH:5.69, temp:6.1, cond:0.006, turb:48.8, DO:10.02, redox:603.2

Reading Time	13:45
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	66.7
pH	5.69
Conductivity (mS/cm)	0.006
Turbidity (NTU)	48.8
Dissolved Oxygen (mg/L)	10.02
Temperature (Degrees Celsius)	6.1
Redox (ORP mV)	603.2
parameters	@13:45, DTW:66.7, pH:5.69, temp:6.1, cond:0.006, turb:48.8, DO:10.02, redox:603.2

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:50, DTW:66.7, pH:5.72, temp:5.9, cond:0.006, turb:55.3, DO:9.8, redox:554.8

Reading Time	13:50
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	66.7
pH	5.72
Conductivity (mS/cm)	0.006
Turbidity (NTU)	55.3
Dissolved Oxygen (mg/L)	9.8
Temperature (Degrees Celsius)	5.9
Redox (ORP mV)	554.8
parameters	@13:50, DTW:66.7, pH:5.72, temp:5.9, cond:0.006, turb:55.3, DO:9.8, redox:554.8

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:55, DTW:66.76, pH:5.81, temp:6.2, cond:0.006, turb:32.5, DO:9.62, redox:586.1

Reading Time	13:55
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	66.76
pH	5.81
Conductivity (mS/cm)	0.006
Turbidity (NTU)	32.5
Dissolved Oxygen (mg/L)	9.62
Temperature (Degrees Celsius)	6.2
Redox (ORP mV)	586.1
parameters	@13:55, DTW:66.76, pH:5.81, temp:6.2, cond:0.006, turb:32.5, DO:9.62, redox:586.1

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@14:00, DTW:66.73, pH:5.77, temp:5.7, cond:0.006, turb:34.6, DO:10.41, redox:575.1

Reading Time	14:00
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	66.73
pH	5.77
Conductivity (mS/cm)	0.006
Turbidity (NTU)	34.6
Dissolved Oxygen (mg/L)	10.41
Temperature (Degrees Celsius)	5.7
Redox (ORP mV)	575.1
parameters	@14:00, DTW:66.73, pH:5.77, temp:5.7, cond:0.006, turb:34.6, DO:10.41, redox:575.1

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@14:05, DTW:66.73, pH:5.8, temp:5.7, cond:0.006, turb:35.3, DO:10.18, redox:525.6

Reading Time	14:05
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	66.73
pH	5.8
Conductivity (mS/cm)	0.006
Turbidity (NTU)	35.3
Dissolved Oxygen (mg/L)	10.18
Temperature (Degrees Celsius)	5.7
Redox (ORP mV)	525.6
parameters	@14:05, DTW:66.73, pH:5.8, temp:5.7, cond:0.006, turb:35.3, DO:10.18, redox:525.6

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@14:10, DTW:66.73, pH:5.79, temp:5.7, cond:0.006, turb:27.5, DO:10.1, redox:588

Reading Time	14:10
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	66.73
pH	5.79
Conductivity (mS/cm)	0.006
Turbidity (NTU)	27.5
Dissolved Oxygen (mg/L)	10.1
Temperature (Degrees Celsius)	5.7
Redox (ORP mV)	588
parameters	@14:10, DTW:66.73, pH:5.79, temp:5.7, cond:0.006, turb:27.5, DO:10.1, redox:588

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@14:15, DTW:66.74, pH:5.78, temp:5.2, cond:0.006, turb:25, DO:10.6, redox:571

Reading Time	14:15
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	66.74
pH	5.78
Conductivity (mS/cm)	0.006
Turbidity (NTU)	25
Dissolved Oxygen (mg/L)	10.6
Temperature (Degrees Celsius)	5.2
Redox (ORP mV)	571
parameters	@14:15, DTW:66.74, pH:5.78, temp:5.2, cond:0.006, turb:25, DO:10.6, redox:571

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@14:20, DTW:66.72, pH:5.77, temp:4.9, cond:0.006, turb:21.6, DO:10.75, redox:575.9

Reading Time	14:20
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	66.72
pH	5.77
Conductivity (mS/cm)	0.006
Turbidity (NTU)	21.6
Dissolved Oxygen (mg/L)	10.75
Temperature (Degrees Celsius)	4.9
Redox (ORP mV)	575.9

parameters	@14:20, DTW:66.72, pH:5.77, temp:4.9, cond:0.006, turb:21.6, DO:10.75, redox:575.9

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@14:25, DTW:66.72, pH:5.76, temp:4.7, cond:0.006, turb:18.6, DO:10.44, redox:570.2

Reading Time	14:25
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	66.72
pH	5.76
Conductivity (mS/cm)	0.006
Turbidity (NTU)	18.6
Dissolved Oxygen (mg/L)	10.44
Temperature (Degrees Celsius)	4.7
Redox (ORP mV)	570.2
parameters	@14:25, DTW:66.72, pH:5.76, temp:4.7, cond:0.006, turb:18.6, DO:10.44, redox:570.2

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@14:30, DTW:66.72, pH:5.74, temp:4.8, cond:0.006, turb:16.2, DO:10.54, redox:554

Reading Time	14:30
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	66.72
pH	5.74
Conductivity (mS/cm)	0.006
Turbidity (NTU)	16.2
Dissolved Oxygen (mg/L)	10.54
Temperature (Degrees Celsius)	4.8
Redox (ORP mV)	554
parameters	@14:30, DTW:66.72, pH:5.74, temp:4.8, cond:0.006, turb:16.2, DO:10.54, redox:554

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@14:35, DTW:66.72, pH:5.73, temp:4.8, cond:0.006, turb:13.6, DO:10.57, redox:524.7

Reading Time	14:35
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	66.72
pH	5.73
Conductivity (mS/cm)	0.006
Turbidity (NTU)	13.6
Dissolved Oxygen (mg/L)	10.57
Temperature (Degrees Celsius)	4.8

Redox (ORP mV)	524.7
parameters	@14:35, DTW:66.72, pH:5.73, temp:4.8, cond:0.006, turb:13.6, DO:10.57, redox:524.7
Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit	
Purge End	14:35
Total Volume Measured (units)	Gallons
Total Gallons Purged	1.5
Well Volumes Purged	1.25

Sample Information

Sample Time	14:40
Color	Clear
Notable odors	None

1,4 dioxane

Constituent Sampled	1,4 dioxane
Container Type	40 mL Vial
Number of Containers	3
Preservative	HCL

Well Information

Well Location	Plant 3
Condition of Well	Good
Well Locked at Arrival	Yes
Well Locked at Departure	Yes

Signature

Signed 2018-12-04 20:35:50 UTC

2018-12-11, MW-12-21

Created	2018-12-11 18:51:47 UTC by Marina Samp
Updated	2018-12-11 20:46:58 UTC by Marina Samp
Location	42.7423270466204, -84.5886101201964
Status	Field Draft
Project Number	B0064479.2018
Project Name / Location	RACER Lansing, MI
Sampler Name	Marina Samp
Date	2018-12-11
Well ID	MW-12-21
Are you able to purge and/or sample this well? If not, explain why in the Comments section below.	Yes
Weather	30, cloudy

Evacuation Details

Measuring Point (mp) Description	Top of Casing
Casing Diameter (inches)	2
Static Water Level (ft-bmp)	62.56
Total Depth (ft-bmp)	75
Water Column	12.44
Gallons in Well	2.02

Reference Note: Well Volume Calculation [$\pi r^2 h$, where h= 1foot] Well radius (inch):Volume (Gal./foot):Volume (mL/foot) 0.5" = 0.04 gal/ft = 154 mL/ft 1" = 0.16 gal/ft = 617 mL/ft 2" = 0.65 gal/ft = 2470 mL/ft 3" = 1.47 gal/ft = 5557 mL/ft

Purge Method	Low-Flow
Type of Equipment used	Bladder
Sample Method	Low-Flow
Sample Depth (ft-bmp) (e.g. pump intake)	72
Purge Start	14:40

@14:45, DTW:63.91, pH:7.22, temp:4.1, cond:0.91, turb:445, DO:1.52, redox:71.3

Reading Time	14:45
Rate (mL/min)	300
Depth to Water (ft)	63.91
pH	7.22
Conductivity (mS/cm)	0.91
Turbidity (NTU)	445
Dissolved Oxygen (mg/L)	1.52
Temperature (Degrees Celsius)	4.1
Redox (ORP mV)	71.3
parameters	@14:45, DTW:63.91, pH:7.22, temp:4.1, cond:0.91, turb:445, DO:1.52, redox:71.3

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@14:50, DTW:64.13, pH:7.1, temp:6, cond:0.92, turb:284, DO:6.09, redox:60.6

Reading Time	14:50

Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	64.13
pH	7.1
Conductivity (mS/cm)	0.92
Turbidity (NTU)	284
Dissolved Oxygen (mg/L)	6.09
Temperature (Degrees Celsius)	6
Redox (ORP mV)	60.6
parameters	@14:50, DTW:64.13, pH:7.1, temp:6, cond:0.92, turb:284, DO:6.09, redox:60.6

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@14:55, DTW:64.45, pH:7.03, temp:5.5, cond:0.91, turb:248, DO:6.07, redox:56.6

Reading Time	14:55
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	64.45
pH	7.03
Conductivity (mS/cm)	0.91
Turbidity (NTU)	248
Dissolved Oxygen (mg/L)	6.07
Temperature (Degrees Celsius)	5.5
Redox (ORP mV)	56.6
parameters	@14:55, DTW:64.45, pH:7.03, temp:5.5, cond:0.91, turb:248, DO:6.07, redox:56.6

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@15:00, DTW:65.68, pH:6.97, temp:11, cond:1.06, turb:216, DO:4, redox:49.9

Reading Time	15:00
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	65.68
pH	6.97
Conductivity (mS/cm)	1.06
Turbidity (NTU)	216
Dissolved Oxygen (mg/L)	4
Temperature (Degrees Celsius)	11
Redox (ORP mV)	49.9
parameters	@15:00, DTW:65.68, pH:6.97, temp:11, cond:1.06, turb:216, DO:4, redox:49.9

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@15:05, DTW:66.8, pH:6.99, temp:9.6, cond:1.01, turb:185, DO:4.56, redox:47.8

Reading Time	15:05
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	66.8
pH	6.99
Conductivity (mS/cm)	1.01
Turbidity (NTU)	185
Dissolved Oxygen (mg/L)	4.56
Temperature (Degrees Celsius)	9.6
Redox (ORP mV)	47.8
parameters	@15:05, DTW:66.8, pH:6.99, temp:9.6, cond:1.01, turb:185, DO:4.56, redox:47.8

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@15:10, DTW:66.99, pH:6.99, temp:5.7, cond:0.9, turb:182, DO:4.99, redox:50.1

Reading Time	15:10
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	66.99
pH	6.99
Conductivity (mS/cm)	0.9
Turbidity (NTU)	182
Dissolved Oxygen (mg/L)	4.99
Temperature (Degrees Celsius)	5.7
Redox (ORP mV)	50.1
parameters	@15:10, DTW:66.99, pH:6.99, temp:5.7, cond:0.9, turb:182, DO:4.99, redox:50.1

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@15:15, DTW:67.18, pH:7.02, temp:5, cond:0.87, turb:177, DO:4.78, redox:49.4

Reading Time	15:15
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	67.18
pH	7.02
Conductivity (mS/cm)	0.87
Turbidity (NTU)	177
Dissolved Oxygen (mg/L)	4.78
Temperature (Degrees Celsius)	5
Redox (ORP mV)	49.4
parameters	@15:15, DTW:67.18, pH:7.02, temp:5, cond:0.87, turb:177, DO:4.78, redox:49.4

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@15:20, DTW:67.36, pH:7.03, temp:5.4, cond:0.87, turb:168, DO:4.77, redox:49

Reading Time	15:20
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	67.36
pH	7.03
Conductivity (mS/cm)	0.87
Turbidity (NTU)	168
Dissolved Oxygen (mg/L)	4.77
Temperature (Degrees Celsius)	5.4
Redox (ORP mV)	49
parameters	@15:20, DTW:67.36, pH:7.03, temp:5.4, cond:0.87, turb:168, DO:4.77, redox:49

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@15:25, DTW:67.55, pH:7, temp:5.6, cond:0.88, turb:154, DO:4.85, redox:50

Reading Time	15:25
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	67.55
pH	7
Conductivity (mS/cm)	0.88
Turbidity (NTU)	154
Dissolved Oxygen (mg/L)	4.85
Temperature (Degrees Celsius)	5.6
Redox (ORP mV)	50
parameters	@15:25, DTW:67.55, pH:7, temp:5.6, cond:0.88, turb:154, DO:4.85, redox:50

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@15:30, DTW:67.68, pH:7.02, temp:4.5, cond:0.87, turb:133, DO:4.75, redox:49.2

Reading Time	15:30
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	67.68
pH	7.02
Conductivity (mS/cm)	0.87
Turbidity (NTU)	133
Dissolved Oxygen (mg/L)	4.75
Temperature (Degrees Celsius)	4.5
Redox (ORP mV)	49.2
parameters	@15:30, DTW:67.68, pH:7.02, temp:4.5, cond:0.87, turb:133, DO:4.75, redox:49.2

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@15:35, DTW:67.74, pH:7.03, temp:2.8, cond:0.83, turb:120, DO:4.77, redox:50

Reading Time	15:35
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	67.74
pH	7.03
Conductivity (mS/cm)	0.83
Turbidity (NTU)	120
Dissolved Oxygen (mg/L)	4.77
Temperature (Degrees Celsius)	2.8
Redox (ORP mV)	50
parameters	@15:35, DTW:67.74, pH:7.03, temp:2.8, cond:0.83, turb:120, DO:4.77, redox:50

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@15:40, DTW:67.78, pH:7.04, temp:2.2, cond:0.81, turb:115, DO:4.72, redox:50.3

Reading Time	15:40
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	67.78
pH	7.04
Conductivity (mS/cm)	0.81
Turbidity (NTU)	115
Dissolved Oxygen (mg/L)	4.72
Temperature (Degrees Celsius)	2.2
Redox (ORP mV)	50.3
parameters	@15:40, DTW:67.78, pH:7.04, temp:2.2, cond:0.81, turb:115, DO:4.72, redox:50.3

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@15:45, DTW:67.82, pH:7.05, temp:2.1, cond:0.8, turb:108, DO:4.54, redox:50.6

Reading Time	15:45
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	67.82
pH	7.05
Conductivity (mS/cm)	0.8
Turbidity (NTU)	108
Dissolved Oxygen (mg/L)	4.54
Temperature (Degrees Celsius)	2.1
Redox (ORP mV)	50.6

parameters	@15:45, DTW:67.82, pH:7.05, temp:2.1, cond:0.8, turb:108, DO:4.54, redox:50.6

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

Purge End	15:45
Total Volume Measured (units)	Gallons
Total Gallons Purged	1
Well Volumes Purged	0.5

Sample Information

Sample Time	15:50
Color	Cloudy, white
Notable odors	None

VOCs

Constituent Sampled	VOCs
Container Type	40 mL Vial
Number of Containers	3
Preservative	HCL

1,4-dioxane

Constituent Sampled	1,4-dioxane
Container Type	40 mL Vial
Number of Containers	3
Preservative	HCL

Well Information

Well Location	Plant 3
Condition of Well	Good
Well Locked at Arrival	Yes
Well Locked at Departure	Yes

Signature

Signed 2018-12-11 20:46:57 UTC

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2018-12-10, MW-13-41

Created	2018-12-10 15:50:08 UTC by Marina Samp
Updated	2018-12-10 17:32:07 UTC by Marina Samp
Location	42.7459218772526, -84.584248177786
Status	Field Draft
Project Number	B0064479.2018
Project Name / Location	RACER Lansing, MI
Sampler Name	Marina Samp
Date	2018-12-10
Well ID	MW-13-41
Are you able to purge and/or sample this well? If not, explain why in the Comments section below.	Yes
Weather	26, cloudy

Evacuation Details

Measuring Point (mp) Description	Top of Casing
Casing Diameter (inches)	2
Static Water Level (ft-bmp)	62.01
Total Depth (ft-bmp)	84.7
Water Column	22.69
Gallons in Well	3.69
Reference Note: Well Volume Calculation [$\pi r^2 h$, where h= 1foot] Well radius (inch):Volume (Gal./foot):Volume (mL/foot) 0.5" = 0.04 gal/ft = 154 mL/ft 1" = 0.16 gal/ft = 617 mL/ft 2" = 0.65 gal/ft = 2470 mL/ft 3" = 1.47 gal/ft = 5557 mL/ft	
Purge Method	Low-Flow
Type of Equipment used	Bladder
Sample Method	Low-Flow
Sample Depth (ft-bmp) (e.g. pump intake)	81
Purge Start	10:50

@10:55, DTW:61.85, pH:7.26, temp:10.1, cond:3.49, turb:606, DO:4.7, redox:103.1

Reading Time	10:55
Rate (mL/min)	300
Depth to Water (ft)	61.85
pH	7.26
Conductivity (mS/cm)	3.49
Turbidity (NTU)	606
Dissolved Oxygen (mg/L)	4.7
Temperature (Degrees Celsius)	10.1
Redox (ORP mV)	103.1
parameters	@10:55, DTW:61.85, pH:7.26, temp:10.1, cond:3.49, turb:606, DO:4.7, redox:103.1
Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit	

@11:00, DTW:61.85, pH:7.18, temp:10.2, cond:3.65, turb:576, DO:0.44, redox:81.9

Reading Time	11:00

Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	61.85
pH	7.18
Conductivity (mS/cm)	3.65
Turbidity (NTU)	576
Dissolved Oxygen (mg/L)	0.44
Temperature (Degrees Celsius)	10.2
Redox (ORP mV)	81.9
parameters	@11:00, DTW:61.85, pH:7.18, temp:10.2, cond:3.65, turb:576, DO:0.44, redox:81.9

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:05, DTW:61.88, pH:7.18, temp:10.3, cond:3.67, turb:824, DO:0.39, redox:79.2

Reading Time	11:05
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	61.88
pH	7.18
Conductivity (mS/cm)	3.67
Turbidity (NTU)	824
Dissolved Oxygen (mg/L)	0.39
Temperature (Degrees Celsius)	10.3
Redox (ORP mV)	79.2
parameters	@11:05, DTW:61.88, pH:7.18, temp:10.3, cond:3.67, turb:824, DO:0.39, redox:79.2

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:10, DTW:61.87, pH:7.19, temp:10.5, cond:3.62, turb:755, DO:0.46, redox:71.6

Reading Time	11:10
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	61.87
pH	7.19
Conductivity (mS/cm)	3.62
Turbidity (NTU)	755
Dissolved Oxygen (mg/L)	0.46
Temperature (Degrees Celsius)	10.5
Redox (ORP mV)	71.6
parameters	@11:10, DTW:61.87, pH:7.19, temp:10.5, cond:3.62, turb:755, DO:0.46, redox:71.6

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:15, DTW:61.88, pH:7.19, temp:10.3, cond:3.64, turb:525, DO:0.39, redox:66.1

Reading Time	11:15
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	61.88
pH	7.19
Conductivity (mS/cm)	3.64
Turbidity (NTU)	525
Dissolved Oxygen (mg/L)	0.39
Temperature (Degrees Celsius)	10.3
Redox (ORP mV)	66.1
parameters	@11:15, DTW:61.88, pH:7.19, temp:10.3, cond:3.64, turb:525, DO:0.39, redox:66.1

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:20, DTW:61.88, pH:7.2, temp:10.5, cond:3.68, turb:666, DO:0.3, redox:61

Reading Time	11:20
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	61.88
pH	7.2
Conductivity (mS/cm)	3.68
Turbidity (NTU)	666
Dissolved Oxygen (mg/L)	0.3
Temperature (Degrees Celsius)	10.5
Redox (ORP mV)	61
parameters	@11:20, DTW:61.88, pH:7.2, temp:10.5, cond:3.68, turb:666, DO:0.3, redox:61

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:25, DTW:61.88, pH:7.21, temp:7.4, cond:3.41, turb:635, DO:0.32, redox:58.8

Reading Time	11:25
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	61.88
pH	7.21
Conductivity (mS/cm)	3.41
Turbidity (NTU)	635
Dissolved Oxygen (mg/L)	0.32
Temperature (Degrees Celsius)	7.4
Redox (ORP mV)	58.8
parameters	@11:25, DTW:61.88, pH:7.21, temp:7.4, cond:3.41, turb:635, DO:0.32, redox:58.8

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:29, DTW:61.88, pH:7.23, temp:7.5, cond:3.43, turb:556, DO:0.3, redox:55.7

Reading Time	11:29
Minutes Elapsed between readings	4
Rate (mL/min)	300
Depth to Water (ft)	61.88
pH	7.23
Conductivity (mS/cm)	3.43
Turbidity (NTU)	556
Dissolved Oxygen (mg/L)	0.3
Temperature (Degrees Celsius)	7.5
Redox (ORP mV)	55.7
parameters	@11:29, DTW:61.88, pH:7.23, temp:7.5, cond:3.43, turb:556, DO:0.3, redox:55.7

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:35, DTW:61.88, pH:7.24, temp:7.5, cond:3.4, turb:435, DO:0.31, redox:52.8

Reading Time	11:35
Minutes Elapsed between readings	6
Rate (mL/min)	300
Depth to Water (ft)	61.88
pH	7.24
Conductivity (mS/cm)	3.4
Turbidity (NTU)	435
Dissolved Oxygen (mg/L)	0.31
Temperature (Degrees Celsius)	7.5
Redox (ORP mV)	52.8
parameters	@11:35, DTW:61.88, pH:7.24, temp:7.5, cond:3.4, turb:435, DO:0.31, redox:52.8

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:40, DTW:61.88, pH:7.24, temp:7.6, cond:3.4, turb:358, DO:0.28, redox:50.5

Reading Time	11:40
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	61.88
pH	7.24
Conductivity (mS/cm)	3.4
Turbidity (NTU)	358
Dissolved Oxygen (mg/L)	0.28
Temperature (Degrees Celsius)	7.6
Redox (ORP mV)	50.5
parameters	@11:40, DTW:61.88, pH:7.24, temp:7.6, cond:3.4, turb:358, DO:0.28, redox:50.5

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:45, DTW:61.88, pH:7.24, temp:7.5, cond:3.4, turb:249, DO:0.27, redox:48

Reading Time	11:45
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	61.88
pH	7.24
Conductivity (mS/cm)	3.4
Turbidity (NTU)	249
Dissolved Oxygen (mg/L)	0.27
Temperature (Degrees Celsius)	7.5
Redox (ORP mV)	48
parameters	@11:45, DTW:61.88, pH:7.24, temp:7.5, cond:3.4, turb:249, DO:0.27, redox:48

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:50, DTW:61.88, pH:7.24, temp:7.3, cond:3.4, turb:198, DO:0.27, redox:46

Reading Time	11:50
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	61.88
pH	7.24
Conductivity (mS/cm)	3.4
Turbidity (NTU)	198
Dissolved Oxygen (mg/L)	0.27
Temperature (Degrees Celsius)	7.3
Redox (ORP mV)	46
parameters	@11:50, DTW:61.88, pH:7.24, temp:7.3, cond:3.4, turb:198, DO:0.27, redox:46

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:55, DTW:61.88, pH:7.24, temp:8.2, cond:3.43, turb:166, DO:0.25, redox:43.6

Reading Time	11:55
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	61.88
pH	7.24
Conductivity (mS/cm)	3.43
Turbidity (NTU)	166
Dissolved Oxygen (mg/L)	0.25
Temperature (Degrees Celsius)	8.2
Redox (ORP mV)	43.6

parameters	@11:55, DTW:61.88, pH:7.24, temp:8.2, cond:3.43, turb:166, DO:0.25, redox:43.6

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:00, DTW:61.88, pH:7.24, temp:7.9, cond:3.46, turb:142, DO:0.24, redox:41.5

Reading Time	12:00
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	61.88
pH	7.24
Conductivity (mS/cm)	3.46
Turbidity (NTU)	142
Dissolved Oxygen (mg/L)	0.24
Temperature (Degrees Celsius)	7.9
Redox (ORP mV)	41.5
parameters	@12:00, DTW:61.88, pH:7.24, temp:7.9, cond:3.46, turb:142, DO:0.24, redox:41.5

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:05, DTW:61.88, pH:7.24, temp:7.9, cond:3.45, turb:138, DO:0.24, redox:39.7

Reading Time	12:05
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	61.88
pH	7.24
Conductivity (mS/cm)	3.45
Turbidity (NTU)	138
Dissolved Oxygen (mg/L)	0.24
Temperature (Degrees Celsius)	7.9
Redox (ORP mV)	39.7
parameters	@12:05, DTW:61.88, pH:7.24, temp:7.9, cond:3.45, turb:138, DO:0.24, redox:39.7

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:10, DTW:61.88, pH:7.24, temp:7.6, cond:3.43, turb:119, DO:0.24, redox:38.3

Reading Time	12:10
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	61.88
pH	7.24
Conductivity (mS/cm)	3.43
Turbidity (NTU)	119
Dissolved Oxygen (mg/L)	0.24
Temperature (Degrees Celsius)	7.6

Redox (ORP mV)	38.3
parameters	@12:10, DTW:61.88, pH:7.24, temp:7.6, cond:3.43, turb:119, DO:0.24, redox:38.3

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:15, DTW:61.88, pH:7.25, temp:8.3, cond:3.48, turb:124, DO:0.23, redox:36.2

Reading Time	12:15
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	61.88
pH	7.25
Conductivity (mS/cm)	3.48
Turbidity (NTU)	124
Dissolved Oxygen (mg/L)	0.23
Temperature (Degrees Celsius)	8.3
Redox (ORP mV)	36.2
parameters	@12:15, DTW:61.88, pH:7.25, temp:8.3, cond:3.48, turb:124, DO:0.23, redox:36.2

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:20, DTW:61.88, pH:7.25, temp:8, cond:3.46, turb:106, DO:0.23, redox:34.9

Reading Time	12:20
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	61.88
pH	7.25
Conductivity (mS/cm)	3.46
Turbidity (NTU)	106
Dissolved Oxygen (mg/L)	0.23
Temperature (Degrees Celsius)	8
Redox (ORP mV)	34.9
parameters	@12:20, DTW:61.88, pH:7.25, temp:8, cond:3.46, turb:106, DO:0.23, redox:34.9

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:25, DTW:61.88, pH:7.25, temp:8.2, cond:3.5, turb:95.7, DO:0.25, redox:33.1

Reading Time	12:25
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	61.88
pH	7.25
Conductivity (mS/cm)	3.5
Turbidity (NTU)	95.7
Dissolved Oxygen (mg/L)	0.25

Temperature (Degrees Celsius)	8.2
Redox (ORP mV)	33.1
parameters	@12:25, DTW:61.88, pH:7.25, temp:8.2, cond:3.5, turb:95.7, DO:0.25, redox:33.1
Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit	

@12:29, DTW:61.88, pH:7.25, temp:7.6, cond:3.44, turb:86.8, DO:0.23, redox:32.2

Reading Time	12:29
Minutes Elapsed between readings	4
Rate (mL/min)	300
Depth to Water (ft)	61.88
pH	7.25
Conductivity (mS/cm)	3.44
Turbidity (NTU)	86.8
Dissolved Oxygen (mg/L)	0.23
Temperature (Degrees Celsius)	7.6
Redox (ORP mV)	32.2
parameters	@12:29, DTW:61.88, pH:7.25, temp:7.6, cond:3.44, turb:86.8, DO:0.23, redox:32.2
Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit	
Purge End	12:30
Total Volume Measured (units)	Gallons
Total Gallons Purged	3.5
Well Volumes Purged	0.95

Sample Information

Sample Time	12:30
Color	Yes, cloudy white
Notable odors	None

1,4-dioxane

Constituent Sampled	1,4-dioxane
Container Type	40 mL Vial
Number of Containers	3
Preservative	HCL

Well Information

Well Location	Plant 3
Condition of Well	Good
Well Locked at Arrival	Yes
Well Locked at Departure	Yes

Signature

Signed 2018-12-10 17:32:06 UTC

2018-12-10, MW-12-18

Created	2018-12-10 14:37:13 EST by Daniel Stockard
Updated	2018-12-10 18:42:18 EST by Daniel Stockard
Location	42.7367875725429, -84.5872643218232
Status	Field Draft
Project Number	B0064479.2018
Project Name / Location	RACER Lansing, MI
Sampler Name	Daniel Stockard
Date	2018-12-10
Well ID	MW-12-18
Are you able to purge and/or sample this well? If not, explain why in the Comments section below.	Yes
Weather	Overcast, 20s

Evacuation Details

Measuring Point (mp) Description	Top of Casing
Casing Diameter (inches)	2
Static Water Level (ft-bmp)	23.32
Total Depth (ft-bmp)	32.5
Water Column	9.18
Gallons in Well	1.49

Reference Note: Well Volume Calculation [$\pi r^2 h$, where h= 1foot] Well radius (inch):Volume (Gal./foot):Volume (mL/foot) 0.5" = 0.04 gal/ft = 154 mL/ft 1" = 0.16 gal/ft = 617 mL/ft 2" = 0.65 gal/ft = 2470 mL/ft 3" = 1.47 gal/ft = 5557 mL/ft

Purge Method	Low-Flow
Type of Equipment used	Bladder
Sample Method	Grab
Sample Depth (ft-bmp) (e.g. pump intake)	30
Purge Start	14:35

@14:35, DTW:23.32, pH:7.13, temp:12.1, cond:1.65, turb:902, DO:0.67, redox:-2.8

Reading Time	14:35
Rate (mL/min)	150
Depth to Water (ft)	23.32
pH	7.13
Conductivity (mS/cm)	1.65
Turbidity (NTU)	902
Dissolved Oxygen (mg/L)	0.67
Temperature (Degrees Celsius)	12.1
Redox (ORP mV)	-2.8
parameters	@14:35, DTW:23.32, pH:7.13, temp:12.1, cond:1.65, turb:902, DO:0.67, redox:-2.8

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@14:45, DTW:25.85, pH:7.13, temp:12, cond:1.63, turb:164, DO:0.47, redox:-9.4

Reading Time	14:45

Minutes Elapsed between readings	10
Rate (mL/min)	150
Depth to Water (ft)	25.85
pH	7.13
Conductivity (mS/cm)	1.63
Turbidity (NTU)	164
Dissolved Oxygen (mg/L)	0.47
Temperature (Degrees Celsius)	12
Redox (ORP mV)	-9.4
parameters	@14:45, DTW:25.85, pH:7.13, temp:12, cond:1.63, turb:164, DO:0.47, redox:-9.4

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@14:50, DTW:27.02, pH:7.13, temp:12.3, cond:1.58, turb:70.1, DO:0.4, redox:-15.8

Reading Time	14:50
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	27.02
pH	7.13
Conductivity (mS/cm)	1.58
Turbidity (NTU)	70.1
Dissolved Oxygen (mg/L)	0.4
Temperature (Degrees Celsius)	12.3
Redox (ORP mV)	-15.8
parameters	@14:50, DTW:27.02, pH:7.13, temp:12.3, cond:1.58, turb:70.1, DO:0.4, redox:-15.8

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@14:55, DTW:28.24, pH:7.13, temp:12, cond:1.6, turb:94.5, DO:0.57, redox:-18.3

Reading Time	14:55
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	28.24
pH	7.13
Conductivity (mS/cm)	1.6
Turbidity (NTU)	94.5
Dissolved Oxygen (mg/L)	0.57
Temperature (Degrees Celsius)	12
Redox (ORP mV)	-18.3
parameters	@14:55, DTW:28.24, pH:7.13, temp:12, cond:1.6, turb:94.5, DO:0.57, redox:-18.3

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@15:00, DTW:28.03, pH:7.13, temp:11.7, cond:1.59, turb:87.6, DO:0.6, redox:-18.8

Reading Time	15:00
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	28.03
pH	7.13
Conductivity (mS/cm)	1.59
Turbidity (NTU)	87.6
Dissolved Oxygen (mg/L)	0.6
Temperature (Degrees Celsius)	11.7
Redox (ORP mV)	-18.8
parameters	@15:00, DTW:28.03, pH:7.13, temp:11.7, cond:1.59, turb:87.6, DO:0.6, redox:-18.8

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@15:05, DTW:28.03, pH:7.13, temp:11.6, cond:1.6, turb:75.2, DO:0.64, redox:-19.1

Reading Time	15:05
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	28.03
pH	7.13
Conductivity (mS/cm)	1.6
Turbidity (NTU)	75.2
Dissolved Oxygen (mg/L)	0.64
Temperature (Degrees Celsius)	11.6
Redox (ORP mV)	-19.1
parameters	@15:05, DTW:28.03, pH:7.13, temp:11.6, cond:1.6, turb:75.2, DO:0.64, redox:-19.1

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@15:10, DTW:28.06, pH:7.13, temp:11.6, cond:1.62, turb:61.7, DO:0.51, redox:-20.3

Reading Time	15:10
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	28.06
pH	7.13
Conductivity (mS/cm)	1.62
Turbidity (NTU)	61.7
Dissolved Oxygen (mg/L)	0.51
Temperature (Degrees Celsius)	11.6
Redox (ORP mV)	-20.3
parameters	@15:10, DTW:28.06, pH:7.13, temp:11.6, cond:1.62, turb:61.7, DO:0.51, redox:-20.3

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@15:15, DTW:28.66, pH:7.11, temp:12.2, cond:1.65, turb:36, DO:0.25, redox:-25.7

Reading Time	15:15
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	28.66
pH	7.11
Conductivity (mS/cm)	1.65
Turbidity (NTU)	36
Dissolved Oxygen (mg/L)	0.25
Temperature (Degrees Celsius)	12.2
Redox (ORP mV)	-25.7
parameters	@15:15, DTW:28.66, pH:7.11, temp:12.2, cond:1.65, turb:36, DO:0.25, redox:-25.7

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@15:21, DTW:28.85, pH:7.12, temp:12, cond:1.63, turb:33.2, DO:0.28, redox:-26.8

Reading Time	15:21
Minutes Elapsed between readings	6
Rate (mL/min)	150
Depth to Water (ft)	28.85
pH	7.12
Conductivity (mS/cm)	1.63
Turbidity (NTU)	33.2
Dissolved Oxygen (mg/L)	0.28
Temperature (Degrees Celsius)	12
Redox (ORP mV)	-26.8
parameters	@15:21, DTW:28.85, pH:7.12, temp:12, cond:1.63, turb:33.2, DO:0.28, redox:-26.8

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@15:25, DTW:28.51, pH:7.12, temp:11.8, cond:1.62, turb:35.1, DO:0.33, redox:-27.2

Reading Time	15:25
Minutes Elapsed between readings	4
Rate (mL/min)	150
Depth to Water (ft)	28.51
pH	7.12
Conductivity (mS/cm)	1.62
Turbidity (NTU)	35.1
Dissolved Oxygen (mg/L)	0.33
Temperature (Degrees Celsius)	11.8
Redox (ORP mV)	-27.2
parameters	@15:25, DTW:28.51, pH:7.12, temp:11.8, cond:1.62, turb:35.1, DO:0.33, redox:-27.2

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@15:30, DTW:28.55, pH:7.12, temp:11.9, cond:1.64, turb:29.2, DO:0.31, redox:-27.4

Reading Time	15:30
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	28.55
pH	7.12
Conductivity (mS/cm)	1.64
Turbidity (NTU)	29.2
Dissolved Oxygen (mg/L)	0.31
Temperature (Degrees Celsius)	11.9
Redox (ORP mV)	-27.4
parameters	@15:30, DTW:28.55, pH:7.12, temp:11.9, cond:1.64, turb:29.2, DO:0.31, redox:-27.4

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

Purge End	15:35
Total Volume Measured (units)	Gallons
Total Gallons Purged	3.5
Well Volumes Purged	2.35

Sample Information

Sample Time	15:35
Color	None
Notable odors	None

VOCs

Constituent Sampled	VOCs
Container Type	40 mL Vial
Number of Containers	3
Preservative	HCL

Well Information

Well Location	P2
Condition of Well	Good
Well Locked at Arrival	Yes
Well Locked at Departure	Yes
Comments	Good yield8

Signature

Signed 2018-12-10 18:41:48 EST

2018-12-11, MW-91-5

Created	2018-12-11 14:05:47 EST by Christine Gregg
Updated	2018-12-11 15:41:37 EST by Christine Gregg
Location	42.7422918845366, -84.5902941283626
Status	Field Draft
Project Number	B0064479.2018
Project Name / Location	RACER Lansing, MI
Sampler Name	Christine Gregg
Date	2018-12-11
Well ID	MW-91-5
Are you able to purge and/or sample this well? If not, explain why in the Comments section below.	Yes
Weather	30s overcast

Evacuation Details

Measuring Point (mp) Description	Top of Casing
Casing Diameter (inches)	2
Static Water Level (ft-bmp)	59.11
Total Depth (ft-bmp)	127.05
Water Column	67.94
Gallons in Well	11.04

Reference Note: Well Volume Calculation [$\pi r^2 h$, where h= 1foot] Well radius (inch):Volume (Gal./foot):Volume (mL/foot) 0.5" = 0.04 gal/ft = 154 mL/ft 1" = 0.16 gal/ft = 617 mL/ft 2" = 0.65 gal/ft = 2470 mL/ft 3" = 1.47 gal/ft = 5557 mL/ft

Purge Method	Low-Flow
Type of Equipment used	Bladder
Sample Method	Low-Flow
Sample Depth (ft-bmp) (e.g. pump intake)	120
Purge Start	14:18

@14:35, DTW:59.11, pH:7.47, temp:8, cond:0.307, turb:15.2, DO:4.99, redox:-32.9

Reading Time	14:35
Rate (mL/min)	100
Depth to Water (ft)	59.11
pH	7.47
Conductivity (mS/cm)	0.307
Turbidity (NTU)	15.2
Dissolved Oxygen (mg/L)	4.99
Temperature (Degrees Celsius)	8
Redox (ORP mV)	-32.9
parameters	@14:35, DTW:59.11, pH:7.47, temp:8, cond:0.307, turb:15.2, DO:4.99, redox:-32.9

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@14:40, DTW:59.17, pH:7.34, temp:8.3, cond:0.82, turb:7.46, DO:5.1, redox:-46.9

Reading Time	14:40

Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	59.17
pH	7.34
Conductivity (mS/cm)	0.82
Turbidity (NTU)	7.46
Dissolved Oxygen (mg/L)	5.1
Temperature (Degrees Celsius)	8.3
Redox (ORP mV)	-46.9
parameters	@14:40, DTW:59.17, pH:7.34, temp:8.3, cond:0.82, turb:7.46, DO:5.1, redox:-46.9

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@14:45, DTW:59.17, pH:7.33, temp:7.9, cond:0.94, turb:7.54, DO:8.88, redox:-37.9

Reading Time	14:45
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	59.17
pH	7.33
Conductivity (mS/cm)	0.94
Turbidity (NTU)	7.54
Dissolved Oxygen (mg/L)	8.88
Temperature (Degrees Celsius)	7.9
Redox (ORP mV)	-37.9
parameters	@14:45, DTW:59.17, pH:7.33, temp:7.9, cond:0.94, turb:7.54, DO:8.88, redox:-37.9

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@14:50, DTW:59.17, pH:7.28, temp:8.1, cond:1.07, turb:7.13, DO:8.14, redox:-17.2

Reading Time	14:50
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	59.17
pH	7.28
Conductivity (mS/cm)	1.07
Turbidity (NTU)	7.13
Dissolved Oxygen (mg/L)	8.14
Temperature (Degrees Celsius)	8.1
Redox (ORP mV)	-17.2
parameters	@14:50, DTW:59.17, pH:7.28, temp:8.1, cond:1.07, turb:7.13, DO:8.14, redox:-17.2

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@14:55, DTW:59.17, pH:7.28, temp:8.1, cond:1.12, turb:5.61, DO:7.42, redox:-10.5

Reading Time	14:55
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	59.17
pH	7.28
Conductivity (mS/cm)	1.12
Turbidity (NTU)	5.61
Dissolved Oxygen (mg/L)	7.42
Temperature (Degrees Celsius)	8.1
Redox (ORP mV)	-10.5
parameters	@14:55, DTW:59.17, pH:7.28, temp:8.1, cond:1.12, turb:5.61, DO:7.42, redox:-10.5

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@15:00, DTW:59.17, pH:7.28, temp:9, cond:1.17, turb:3.38, DO:5.78, redox:2.6

Reading Time	15:00
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	59.17
pH	7.28
Conductivity (mS/cm)	1.17
Turbidity (NTU)	3.38
Dissolved Oxygen (mg/L)	5.78
Temperature (Degrees Celsius)	9
Redox (ORP mV)	2.6
parameters	@15:00, DTW:59.17, pH:7.28, temp:9, cond:1.17, turb:3.38, DO:5.78, redox:2.6

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@15:05, DTW:59.17, pH:7.29, temp:8.6, cond:1.18, turb:3.14, DO:4.95, redox:12.9

Reading Time	15:05
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	59.17
pH	7.29
Conductivity (mS/cm)	1.18
Turbidity (NTU)	3.14
Dissolved Oxygen (mg/L)	4.95
Temperature (Degrees Celsius)	8.6
Redox (ORP mV)	12.9
parameters	@15:05, DTW:59.17, pH:7.29, temp:8.6, cond:1.18, turb:3.14, DO:4.95, redox:12.9

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@15:10, DTW:59.17, pH:7.29, temp:8.4, cond:1.17, turb:3.23, DO:5.29, redox:18.2

Reading Time	15:10
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	59.17
pH	7.29
Conductivity (mS/cm)	1.17
Turbidity (NTU)	3.23
Dissolved Oxygen (mg/L)	5.29
Temperature (Degrees Celsius)	8.4
Redox (ORP mV)	18.2
parameters	@15:10, DTW:59.17, pH:7.29, temp:8.4, cond:1.17, turb:3.23, DO:5.29, redox:18.2

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@15:15, DTW:59.17, pH:7.29, temp:8.6, cond:1.17, turb:2.9, DO:4.77, redox:19.7

Reading Time	15:15
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	59.17
pH	7.29
Conductivity (mS/cm)	1.17
Turbidity (NTU)	2.9
Dissolved Oxygen (mg/L)	4.77
Temperature (Degrees Celsius)	8.6
Redox (ORP mV)	19.7
parameters	@15:15, DTW:59.17, pH:7.29, temp:8.6, cond:1.17, turb:2.9, DO:4.77, redox:19.7

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@15:20, DTW:59.17, pH:7.3, temp:8.7, cond:1.16, turb:2.99, DO:4.62, redox:24.6

Reading Time	15:20
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	59.17
pH	7.3
Conductivity (mS/cm)	1.16
Turbidity (NTU)	2.99
Dissolved Oxygen (mg/L)	4.62
Temperature (Degrees Celsius)	8.7
Redox (ORP mV)	24.6
parameters	@15:20, DTW:59.17, pH:7.3, temp:8.7, cond:1.16, turb:2.99, DO:4.62, redox:24.6

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@15:25, DTW:59.17, pH:7.31, temp:8.5, cond:1.18, turb:3.23, DO:4.58, redox:27.4

Reading Time	15:25
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	59.17
pH	7.31
Conductivity (mS/cm)	1.18
Turbidity (NTU)	3.23
Dissolved Oxygen (mg/L)	4.58
Temperature (Degrees Celsius)	8.5
Redox (ORP mV)	27.4
parameters	@15:25, DTW:59.17, pH:7.31, temp:8.5, cond:1.18, turb:3.23, DO:4.58, redox:27.4

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@15:30, DTW:59.17, pH:7.31, temp:8.8, cond:1.17, turb:4.77, DO:4.57, redox:30.5

Reading Time	15:30
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	59.17
pH	7.31
Conductivity (mS/cm)	1.17
Turbidity (NTU)	4.77
Dissolved Oxygen (mg/L)	4.57
Temperature (Degrees Celsius)	8.8
Redox (ORP mV)	30.5
parameters	@15:30, DTW:59.17, pH:7.31, temp:8.8, cond:1.17, turb:4.77, DO:4.57, redox:30.5

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@15:35, DTW:59.17, pH:7.31, temp:8.5, cond:1.17, turb:2.65, DO:4.48, redox:32.5

Reading Time	15:35
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	59.17
pH	7.31
Conductivity (mS/cm)	1.17
Turbidity (NTU)	2.65
Dissolved Oxygen (mg/L)	4.48
Temperature (Degrees Celsius)	8.5
Redox (ORP mV)	32.5

parameters	@15:35, DTW:59.17, pH:7.31, temp:8.5, cond:1.17, turb:2.65, DO:4.48, redox:32.5

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@15:40, DTW:59.17, pH:7.31, temp:8.4, cond:1.16, turb:5.39, DO:4.53, redox:33.2

Reading Time	15:40
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	59.17
pH	7.31
Conductivity (mS/cm)	1.16
Turbidity (NTU)	5.39
Dissolved Oxygen (mg/L)	4.53
Temperature (Degrees Celsius)	8.4
Redox (ORP mV)	33.2
parameters	@15:40, DTW:59.17, pH:7.31, temp:8.4, cond:1.16, turb:5.39, DO:4.53, redox:33.2

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

Purge End	15:40
Total Volume Measured (units)	Gallons
Total Gallons Purged	2
Well Volumes Purged	0.18

Sample Information

Sample Time	15:40
Color	Clear
Notable odors	None

1,4-Dioxane

Constituent Sampled	1,4-Dioxane
Container Type	40 mL Vial
Number of Containers	3
Preservative	HCL

Well Information

Well Location	Plant 3
Condition of Well	Good
Well Locked at Arrival	Yes
Well Locked at Departure	Yes
Comments	Flush mount. No lock on j plug, but well in secure area onsite.

Signature

Signed 2018-12-11 14:45:14 EST

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2018-12-10, MW-14-54

Created	2018-12-10 09:39:11 EST by Daniel Stockard
Updated	2018-12-10 10:58:35 EST by Daniel Stockard
Location	42.7367229061599, -84.5863298234386
Status	Field Draft
Project Number	B0064479.2018
Project Name / Location	RACER Lansing, MI
Sampler Name	Daniel Stockard
Date	2018-12-10
Well ID	MW-14-54
Are you able to purge and/or sample this well? If not, explain why in the Comments section below.	Yes
Replicate No. (e.g. Dup)	None
Weather	20s, overcast

Evacuation Details

Measuring Point (mp) Description	Top of Casing
Casing Diameter (inches)	2
Static Water Level (ft-bmp)	14.52
Total Depth (ft-bmp)	16.69
Water Column	2.17
Gallons in Well	0.35

Reference Note: Well Volume Calculation [$\pi r^2 h$, where h= 1foot] Well radius (inch):Volume (Gal./foot):Volume (mL/foot) 0.5" = 0.04 gal/ft = 154 mL/ft 1" = 0.16 gal/ft = 617 mL/ft 2" = 0.65 gal/ft = 2470 mL/ft 3" = 1.47 gal/ft = 5557 mL/ft

Purge Method	Low-Flow
Type of Equipment used	Bladder
Sample Method	Grab
Sample Depth (ft-bmp) (e.g. pump intake)	15.5
Purge Start	09:40

@09:45, DTW:14.52, pH:8.36, temp:11.3, cond:1.05, turb:87.7, DO:0.32, redox:-126.3

Reading Time	09:45
Rate (mL/min)	100
Depth to Water (ft)	14.52
pH	8.36
Conductivity (mS/cm)	1.05
Turbidity (NTU)	87.7
Dissolved Oxygen (mg/L)	0.32
Temperature (Degrees Celsius)	11.3
Redox (ORP mV)	-126.3
parameters	@09:45, DTW:14.52, pH:8.36, temp:11.3, cond:1.05, turb:87.7, DO:0.32, redox:-126.3

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:50, DTW:14.59, pH:8.36, temp:11.8, cond:1.08, turb:41.8, DO:0.21, redox:-144.9

Reading Time	09:50
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	14.59
pH	8.36
Conductivity (mS/cm)	1.08
Turbidity (NTU)	41.8
Dissolved Oxygen (mg/L)	0.21
Temperature (Degrees Celsius)	11.8
Redox (ORP mV)	-144.9
parameters	@09:50, DTW:14.59, pH:8.36, temp:11.8, cond:1.08, turb:41.8, DO:0.21, redox:-144.9

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:55, DTW:14.75, pH:8.34, temp:11.6, cond:1.07, turb:95.8, DO:0.15, redox:-161.1

Reading Time	09:55
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	14.75
pH	8.34
Conductivity (mS/cm)	1.07
Turbidity (NTU)	95.8
Dissolved Oxygen (mg/L)	0.15
Temperature (Degrees Celsius)	11.6
Redox (ORP mV)	-161.1
parameters	@09:55, DTW:14.75, pH:8.34, temp:11.6, cond:1.07, turb:95.8, DO:0.15, redox:-161.1

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:05, DTW:14.77, pH:8.32, temp:13.8, cond:1.1, turb:25.6, DO:0.37, redox:-178.7

Reading Time	10:05
Minutes Elapsed between readings	10
Rate (mL/min)	100
Depth to Water (ft)	14.77
pH	8.32
Conductivity (mS/cm)	1.1
Turbidity (NTU)	25.6
Dissolved Oxygen (mg/L)	0.37
Temperature (Degrees Celsius)	13.8
Redox (ORP mV)	-178.7
parameters	@10:05, DTW:14.77, pH:8.32, temp:13.8, cond:1.1, turb:25.6, DO:0.37, redox:-178.7

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:15, DTW:14.77, pH:8.38, temp:13.5, cond:0.97, turb:15.1, DO:0.33, redox:-161.9

Reading Time	10:15
Minutes Elapsed between readings	10
Rate (mL/min)	100
Depth to Water (ft)	14.77
pH	8.38
Conductivity (mS/cm)	0.97
Turbidity (NTU)	15.1
Dissolved Oxygen (mg/L)	0.33
Temperature (Degrees Celsius)	13.5
Redox (ORP mV)	-161.9
parameters	@10:15, DTW:14.77, pH:8.38, temp:13.5, cond:0.97, turb:15.1, DO:0.33, redox:-161.9

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:20, DTW:14.77, pH:8.39, temp:13.3, cond:0.92, turb:5.65, DO:0.17, redox:-170.9

Reading Time	10:20
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	14.77
pH	8.39
Conductivity (mS/cm)	0.92
Turbidity (NTU)	5.65
Dissolved Oxygen (mg/L)	0.17
Temperature (Degrees Celsius)	13.3
Redox (ORP mV)	-170.9
parameters	@10:20, DTW:14.77, pH:8.39, temp:13.3, cond:0.92, turb:5.65, DO:0.17, redox:-170.9

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:25, DTW:14.77, pH:8.4, temp:13.3, cond:0.9, turb:2.78, DO:0.15, redox:-176.3

Reading Time	10:25
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	14.77
pH	8.4
Conductivity (mS/cm)	0.9
Turbidity (NTU)	2.78
Dissolved Oxygen (mg/L)	0.15
Temperature (Degrees Celsius)	13.3
Redox (ORP mV)	-176.3
parameters	@10:25, DTW:14.77, pH:8.4, temp:13.3, cond:0.9, turb:2.78, DO:0.15, redox:-176.3

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:30, DTW:14.77, pH:8.41, temp:13.3, cond:0.88, turb:1.65, DO:0.15, redox:-179.7

Reading Time	10:30
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	14.77
pH	8.41
Conductivity (mS/cm)	0.88
Turbidity (NTU)	1.65
Dissolved Oxygen (mg/L)	0.15
Temperature (Degrees Celsius)	13.3
Redox (ORP mV)	-179.7
parameters	@10:30, DTW:14.77, pH:8.41, temp:13.3, cond:0.88, turb:1.65, DO:0.15, redox:-179.7

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:35, DTW:14.77, pH:8.43, temp:13.4, cond:0.85, turb:1.45, DO:0.19, redox:-183.3

Reading Time	10:35
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	14.77
pH	8.43
Conductivity (mS/cm)	0.85
Turbidity (NTU)	1.45
Dissolved Oxygen (mg/L)	0.19
Temperature (Degrees Celsius)	13.4
Redox (ORP mV)	-183.3
parameters	@10:35, DTW:14.77, pH:8.43, temp:13.4, cond:0.85, turb:1.45, DO:0.19, redox:-183.3

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

Purge End	10:35
Total Volume Measured (units)	Gallons
Total Gallons Purged	3
Well Volumes Purged	8.57

Sample Information

Sample Time	10:35
Color	Slight yellow tinge
Notable odors	Strong odor

VOCs

Constituent Sampled	VOCs

Container Type	40 mL Vial
Number of Containers	3
Preservative	HCL

Well Information

Well Location	P2
Condition of Well	Good
Comments	Yield was □
Signature	

Signed 2018-12-10 10:58:14 EST

2018-12-06, MW-18-90

Created	2018-12-06 14:48:27 UTC by Austin Westhuis
Updated	2018-12-06 15:40:11 UTC by Austin Westhuis
Location	42.7458497509758, -84.5841113013072
Status	Field Draft
Project Number	B0064479.2018
Project Name / Location	RACER Lansing, MI
Sampler Name	Austin Westhuis
Date	2018-12-06
Well ID	MW-18-90
Are you able to purge and/or sample this well? If not, explain why in the Comments section below.	Yes
Weather	Cloudy, 30F

Evacuation Details

Measuring Point (mp) Description	Top of Casing
Casing Diameter (inches)	2
Static Water Level (ft-bmp)	9.85
Total Depth (ft-bmp)	23.15
Water Column	13.3
Gallons in Well	2.16

Reference Note: Well Volume Calculation [$\pi r^2 h$, where h= 1foot] Well radius (inch):Volume (Gal./foot):Volume (mL/foot) 0.5" = 0.04 gal/ft = 154 mL/ft 1" = 0.16 gal/ft = 617 mL/ft 2" = 0.65 gal/ft = 2470 mL/ft 3" = 1.47 gal/ft = 5557 mL/ft

Purge Method	Low-Flow
Type of Equipment used	Peristaltic
Sample Method	Low-Flow
Sample Depth (ft-bmp) (e.g. pump intake)	20.65
Purge Start	09:55

@10:00, DTW:9.85, pH:11.79, temp:12.6, cond:1.72, turb:29.3, DO:1.16, redox:101.4

Reading Time	10:00
Rate (mL/min)	100
Depth to Water (ft)	9.85
Milliliters Purged (total)	500
pH	11.79
Conductivity (mS/cm)	1.72
Turbidity (NTU)	29.3
Dissolved Oxygen (mg/L)	1.16
Temperature (Degrees Celsius)	12.6
Redox (ORP mV)	101.4
parameters	@10:00, DTW:9.85, pH:11.79, temp:12.6, cond:1.72, turb:29.3, DO:1.16, redox:101.4

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:05, DTW:9.85, pH:12.09, temp:12.6, cond:1.83, turb:13.9, DO:0.65, redox:33.4

Reading Time	10:05
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	9.85
Milliliters Purged (total)	1000
pH	12.09
Conductivity (mS/cm)	1.83
Turbidity (NTU)	13.9
Dissolved Oxygen (mg/L)	0.65
Temperature (Degrees Celsius)	12.6
Redox (ORP mV)	33.4
parameters	@10:05, DTW:9.85, pH:12.09, temp:12.6, cond:1.83, turb:13.9, DO:0.65, redox:33.4

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:10, DTW:9.85, pH:12.1, temp:12.6, cond:1.83, turb:8.84, DO:0.61, redox:29.6

Reading Time	10:10
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	9.85
Milliliters Purged (total)	1500
pH	12.1
Conductivity (mS/cm)	1.83
Turbidity (NTU)	8.84
Dissolved Oxygen (mg/L)	0.61
Temperature (Degrees Celsius)	12.6
Redox (ORP mV)	29.6
parameters	@10:10, DTW:9.85, pH:12.1, temp:12.6, cond:1.83, turb:8.84, DO:0.61, redox:29.6

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:15, DTW:9.85, pH:12.11, temp:12.6, cond:1.83, turb:5.44, DO:0.59, redox:26.6

Reading Time	10:15
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	9.85
Milliliters Purged (total)	2000
pH	12.11
Conductivity (mS/cm)	1.83
Turbidity (NTU)	5.44
Dissolved Oxygen (mg/L)	0.59
Temperature (Degrees Celsius)	12.6
Redox (ORP mV)	26.6
parameters	@10:15, DTW:9.85, pH:12.11, temp:12.6, cond:1.83, turb:5.44, DO:0.59, redox:26.6

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:20, DTW:9.85, pH:12.2, temp:12.8, cond:1.88, turb:3.48, DO:0.45, redox:-9

Reading Time	10:20
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	9.85
Milliliters Purged (total)	2500
pH	12.2
Conductivity (mS/cm)	1.88
Turbidity (NTU)	3.48
Dissolved Oxygen (mg/L)	0.45
Temperature (Degrees Celsius)	12.8
Redox (ORP mV)	-9
parameters	@10:20, DTW:9.85, pH:12.2, temp:12.8, cond:1.88, turb:3.48, DO:0.45, redox:-9

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:25, DTW:9.85, pH:12.2, temp:12.9, cond:1.89, turb:2.68, DO:0.44, redox:-11.7

Reading Time	10:25
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	9.85
Milliliters Purged (total)	3000
pH	12.2
Conductivity (mS/cm)	1.89
Turbidity (NTU)	2.68
Dissolved Oxygen (mg/L)	0.44
Temperature (Degrees Celsius)	12.9
Redox (ORP mV)	-11.7
parameters	@10:25, DTW:9.85, pH:12.2, temp:12.9, cond:1.89, turb:2.68, DO:0.44, redox:-11.7

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:30, DTW:9.85, pH:12.24, temp:12.8, cond:1.9, turb:2.21, DO:0.42, redox:-29.4

Reading Time	10:30
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	9.85
Milliliters Purged (total)	3500
pH	12.24
Conductivity (mS/cm)	1.9
Turbidity (NTU)	2.21

Dissolved Oxygen (mg/L)	0.42
Temperature (Degrees Celsius)	12.8
Redox (ORP mV)	-29.4
parameters	@10:30, DTW:9.85, pH:12.24, temp:12.8, cond:1.9, turb:2.21, DO:0.42, redox:-29.4

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:35, DTW:9.85, pH:12.21, temp:12.9, cond:1.93, turb:1.77, DO:0.39, redox:-31.3

Reading Time	10:35
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	9.85
Milliliters Purged (total)	4000
pH	12.21
Conductivity (mS/cm)	1.93
Turbidity (NTU)	1.77
Dissolved Oxygen (mg/L)	0.39
Temperature (Degrees Celsius)	12.9
Redox (ORP mV)	-31.3
parameters	@10:35, DTW:9.85, pH:12.21, temp:12.9, cond:1.93, turb:1.77, DO:0.39, redox:-31.3

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:40, DTW:9.85, pH:12.25, temp:12.7, cond:1.94, turb:1.44, DO:0.36, redox:-34.1

Reading Time	10:40
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	9.85
Milliliters Purged (total)	4500
pH	12.25
Conductivity (mS/cm)	1.94
Turbidity (NTU)	1.44
Dissolved Oxygen (mg/L)	0.36
Temperature (Degrees Celsius)	12.7
Redox (ORP mV)	-34.1
parameters	@10:40, DTW:9.85, pH:12.25, temp:12.7, cond:1.94, turb:1.44, DO:0.36, redox:-34.1

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

Total Volume Measured (units)	Gallons

Sample Information

Sample Time	10:45
Color	Clear
Notable odors	None

PFAS

Constituent Sampled	PFAS
Container Type	250 mL Plastic
Number of Containers	2
Preservative	None

Alkalinity, BOD, Chloride, Nitrate, Nitrite, Phosphate, Sulfate, TSS, TDS

Constituent Sampled	Alkalinity, BOD, Chloride, Nitrate, Nitrite, Phosphate, Sulfate, TSS, TDS
Container Type	1L Plastic
Number of Containers	1
Preservative	None

COD

Constituent Sampled	COD
Container Type	250 mL Plastic
Number of Containers	1
Preservative	H2SO4

Sulfide

Constituent Sampled	Sulfide
Container Type	125 mL Plastic
Number of Containers	1
Preservative	NaOH

TOC

Constituent Sampled	TOC
Container Type	40 mL Vial
Number of Containers	2
Preservative	H2SO4

Metals

Constituent Sampled	Metals
Container Type	125 mL Plastic
Number of Containers	1
Preservative	HNO3

Dissolved Metals

Constituent Sampled	Dissolved Metals
Container Type	125 mL Plastic
Number of Containers	1
Preservative	HNO3

Well Information

Condition of Well	Good
Well Locked at Arrival	No
Well Locked at Departure	No

Signature

Signed 2018-12-06 14:53:23 UTC

2018-12-05, MW-18-92

Created	2018-12-05 16:49:43 UTC by Austin Westhuis
Updated	2018-12-05 17:36:12 UTC by Austin Westhuis
Location	42.7452458767618, -84.5867427159888
Status	Field Draft
Project Number	B0064479.2018
Project Name / Location	RACER Lansing, MI
Sampler Name	Austin Westhuis
Date	2018-12-05
Well ID	MW-18-92
Are you able to purge and/or sample this well? If not, explain why in the Comments section below.	Yes
Weather	Cloudy, 25F

Evacuation Details

Measuring Point (mp) Description	Top of Casing
Casing Diameter (inches)	2
Static Water Level (ft-bmp)	16.34
Total Depth (ft-bmp)	30.09
Water Column	13.75
Gallons in Well	2.23

Reference Note: Well Volume Calculation [$\pi r^2 h$, where h= 1foot] Well radius (inch):Volume (Gal./foot):Volume (mL/foot) 0.5" = 0.04 gal/ft = 154 mL/ft 1" = 0.16 gal/ft = 617 mL/ft 2" = 0.65 gal/ft = 2470 mL/ft 3" = 1.47 gal/ft = 5557 mL/ft

Purge Method	Low-Flow
Type of Equipment used	Peristaltic
Sample Method	Low-Flow
Sample Depth (ft-bmp) (e.g. pump intake)	27.59
Purge Start	11:50

@11:55, DTW:16.97, pH:6.71, temp:12, cond:0.98, turb:4.61, DO:0.54, redox:37.6

Reading Time	11:55
Rate (mL/min)	100
Depth to Water (ft)	16.97
Milliliters Purged (total)	500
pH	6.71
Conductivity (mS/cm)	0.98
Turbidity (NTU)	4.61
Dissolved Oxygen (mg/L)	0.54
Temperature (Degrees Celsius)	12
Redox (ORP mV)	37.6
parameters	@11:55, DTW:16.97, pH:6.71, temp:12, cond:0.98, turb:4.61, DO:0.54, redox:37.6

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:00, DTW:17.36, pH:6.72, temp:11.9, cond:0.97, turb:3.44, DO:0.37, redox:30.2

Reading Time	12:00
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	17.36
Milliliters Purged (total)	1000
pH	6.72
Conductivity (mS/cm)	0.97
Turbidity (NTU)	3.44
Dissolved Oxygen (mg/L)	0.37
Temperature (Degrees Celsius)	11.9
Redox (ORP mV)	30.2
parameters	@12:00, DTW:17.36, pH:6.72, temp:11.9, cond:0.97, turb:3.44, DO:0.37, redox:30.2

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:05, DTW:17.67, pH:6.73, temp:11.6, cond:0.96, turb:3.03, DO:0.3, redox:26.8

Reading Time	12:05
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	17.67
Milliliters Purged (total)	1500
pH	6.73
Conductivity (mS/cm)	0.96
Turbidity (NTU)	3.03
Dissolved Oxygen (mg/L)	0.3
Temperature (Degrees Celsius)	11.6
Redox (ORP mV)	26.8
parameters	@12:05, DTW:17.67, pH:6.73, temp:11.6, cond:0.96, turb:3.03, DO:0.3, redox:26.8

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:10, DTW:17.85, pH:6.75, temp:11.7, cond:0.96, turb:2.56, DO:0.26, redox:24.6

Reading Time	12:10
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	17.85
Milliliters Purged (total)	4000
pH	6.75
Conductivity (mS/cm)	0.96
Turbidity (NTU)	2.56
Dissolved Oxygen (mg/L)	0.26
Temperature (Degrees Celsius)	11.7
Redox (ORP mV)	24.6
parameters	@12:10, DTW:17.85, pH:6.75, temp:11.7, cond:0.96, turb:2.56, DO:0.26, redox:24.6

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:15, DTW:17.89, pH:6.75, temp:11.6, cond:0.95, turb:2.21, DO:0.28, redox:23.8

Reading Time	12:15
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	17.89
Milliliters Purged (total)	4500
pH	6.75
Conductivity (mS/cm)	0.95
Turbidity (NTU)	2.21
Dissolved Oxygen (mg/L)	0.28
Temperature (Degrees Celsius)	11.6
Redox (ORP mV)	23.8
parameters	@12:15, DTW:17.89, pH:6.75, temp:11.6, cond:0.95, turb:2.21, DO:0.28, redox:23.8

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

Total Volume Measured (units)	Gallons

Sample Information

Sample Time	12:20
Color	Clear
Notable odors	None

PFAS

Constituent Sampled	PFAS
Container Type	250 mL Plastic
Number of Containers	2
Preservative	None

Well Information

Condition of Well	Good
Well Locked at Arrival	Yes
Well Locked at Departure	Yes

Signature

Signed 2018-12-05 16:55:19 UTC

2018-12-04, AS-16-02

Created	2018-12-04 14:21:20 EST by Daniel Stockard
Updated	2018-12-04 15:41:26 EST by Daniel Stockard
Location	42.7370476083801, -84.5876888501584
Status	Field Draft
Project Number	B0064479.2018
Project Name / Location	RACER Lansing, MI
Sampler Name	Daniel Stockard
Date	2018-12-04
Well ID	AS-16-02
Are you able to purge and/or sample this well? If not, explain why in the Comments section below.	Yes
Replicate No. (e.g. Dup)	None
Weather	Sunny, 30s

Evacuation Details

Measuring Point (mp) Description	Top of Casing
Casing Diameter (inches)	2
Static Water Level (ft-bmp)	62.4
Total Depth (ft-bmp)	74.45
Water Column	12.05
Gallons in Well	1.96

Reference Note: Well Volume Calculation [$\pi r^2 h$, where h= 1foot] Well radius (inch):Volume (Gal./foot):Volume (mL/foot) 0.5" = 0.04 gal/ft = 154 mL/ft 1" = 0.16 gal/ft = 617 mL/ft 2" = 0.65 gal/ft = 2470 mL/ft 3" = 1.47 gal/ft = 5557 mL/ft

Purge Method	Low-Flow
Type of Equipment used	Bladder
Sample Method	Grab
Sample Depth (ft-bmp) (e.g. pump intake)	72
Purge Start	14:15

@14:15, DTW:62.4, pH:5.44, temp:13.8, cond:2.24, turb:198, DO:7.19, redox:202.5

Reading Time	14:15
Rate (mL/min)	100
Depth to Water (ft)	62.4
pH	5.44
Conductivity (mS/cm)	2.24
Turbidity (NTU)	198
Dissolved Oxygen (mg/L)	7.19
Temperature (Degrees Celsius)	13.8
Redox (ORP mV)	202.5
parameters	@14:15, DTW:62.4, pH:5.44, temp:13.8, cond:2.24, turb:198, DO:7.19, redox:202.5

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@14:25, DTW:62.49, pH:5.37, temp:14, cond:2.25, turb:108, DO:8.06, redox:204.2

Reading Time	14:25
Minutes Elapsed between readings	10
Rate (mL/min)	100
Depth to Water (ft)	62.49
pH	5.37
Conductivity (mS/cm)	2.25
Turbidity (NTU)	108
Dissolved Oxygen (mg/L)	8.06
Temperature (Degrees Celsius)	14
Redox (ORP mV)	204.2
parameters	@14:25, DTW:62.49, pH:5.37, temp:14, cond:2.25, turb:108, DO:8.06, redox:204.2

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@14:30, DTW:62.59, pH:5.35, temp:14, cond:2.25, turb:, DO:8.25, redox:204.7

Reading Time	14:30
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	62.59
pH	5.35
Conductivity (mS/cm)	2.25
Dissolved Oxygen (mg/L)	8.25
Temperature (Degrees Celsius)	14
Redox (ORP mV)	204.7
parameters	@14:30, DTW:62.59, pH:5.35, temp:14, cond:2.25, turb:, DO:8.25, redox:204.7

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@14:35, DTW:62.63, pH:5.35, temp:14, cond:2.25, turb:48.8, DO:8.29, redox:204.8

Reading Time	14:35
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	62.63
pH	5.35
Conductivity (mS/cm)	2.25
Turbidity (NTU)	48.8
Dissolved Oxygen (mg/L)	8.29
Temperature (Degrees Celsius)	14
Redox (ORP mV)	204.8
parameters	@14:35, DTW:62.63, pH:5.35, temp:14, cond:2.25, turb:48.8, DO:8.29, redox:204.8

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@14:39, DTW:62.63, pH:5.32, temp:14.1, cond:2.25, turb:46, DO:8.36, redox:204.9

Reading Time	14:39
Minutes Elapsed between readings	4
Rate (mL/min)	100
Depth to Water (ft)	62.63
pH	5.32
Conductivity (mS/cm)	2.25
Turbidity (NTU)	46
Dissolved Oxygen (mg/L)	8.36
Temperature (Degrees Celsius)	14.1
Redox (ORP mV)	204.9
parameters	@14:39, DTW:62.63, pH:5.32, temp:14.1, cond:2.25, turb:46, DO:8.36, redox:204.9

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@14:44, DTW:63.12, pH:5.36, temp:13.9, cond:2.25, turb:31.6, DO:9.63, redox:206.2

Reading Time	14:44
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	63.12
pH	5.36
Conductivity (mS/cm)	2.25
Turbidity (NTU)	31.6
Dissolved Oxygen (mg/L)	9.63
Temperature (Degrees Celsius)	13.9
Redox (ORP mV)	206.2
parameters	@14:44, DTW:63.12, pH:5.36, temp:13.9, cond:2.25, turb:31.6, DO:9.63, redox:206.2

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@14:51, DTW:63.3, pH:5.46, temp:14, cond:2.83, turb:43.5, DO:8.3, redox:204.6

Reading Time	14:51
Minutes Elapsed between readings	7
Rate (mL/min)	100
Depth to Water (ft)	63.3
pH	5.46
Conductivity (mS/cm)	2.83
Turbidity (NTU)	43.5
Dissolved Oxygen (mg/L)	8.3
Temperature (Degrees Celsius)	14
Redox (ORP mV)	204.6
parameters	@14:51, DTW:63.3, pH:5.46, temp:14, cond:2.83, turb:43.5, DO:8.3, redox:204.6

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@14:57, DTW:63.3, pH:5.44, temp:13.8, cond:2.21, turb:25, DO:8.33, redox:204.9

Reading Time	14:57
Minutes Elapsed between readings	6
Rate (mL/min)	100
Depth to Water (ft)	63.3
pH	5.44
Conductivity (mS/cm)	2.21
Turbidity (NTU)	25
Dissolved Oxygen (mg/L)	8.33
Temperature (Degrees Celsius)	13.8
Redox (ORP mV)	204.9
parameters	@14:57, DTW:63.3, pH:5.44, temp:13.8, cond:2.21, turb:25, DO:8.33, redox:204.9

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

Total Volume Measured (units)	Gallons

Sample Information

Sample Time	15:00
Color	Clear
Notable odors	None

1,4-D

Constituent Sampled	1,4-D
Container Type	40 mL Vial
Number of Containers	3
Preservative	HCL

TKN,TP

Constituent Sampled	TKN,TP
Container Type	250 mL Glass
Number of Containers	1
Preservative	H2SO4

Propane

Constituent Sampled	Propane
Container Type	40 mL Vial
Number of Containers	3
Preservative	TSP

NO3

Constituent Sampled	NO3
Container Type	125 mL Plastic
Number of Containers	1
Preservative	None

Well Information

Well Location	Plant 2 biosparge
Condition of Well	Great
Well Locked at Arrival	Yes
Well Locked at Departure	Yes
Signature	

Signed 2018-12-04 15:41:25 EST

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2018-12-10, MW-13-29

Created	2018-12-10 19:50:42 UTC by Marina Samp
Updated	2018-12-11 02:44:20 UTC by Marina Samp
Location	42.7409434991383, -84.5880382285248
Status	Field Draft
Project Number	B0064479.2018
Project Name / Location	RACER Lansing, MI
Sampler Name	Marina Samp
Date	2018-12-10
Well ID	MW-13-29
Are you able to purge and/or sample this well? If not, explain why in the Comments section below.	Yes
Weather	26, cloudy

Evacuation Details

Measuring Point (mp) Description	Top of Casing
Casing Diameter (inches)	2
Static Water Level (ft-bmp)	65.89
Total Depth (ft-bmp)	73
Water Column	7.11
Gallons in Well	1.16

Reference Note: Well Volume Calculation [$\pi r^2 h$, where h= 1foot] Well radius (inch):Volume (Gal./foot):Volume (mL/foot) 0.5" = 0.04 gal/ft = 154 mL/ft 1" = 0.16 gal/ft = 617 mL/ft 2" = 0.65 gal/ft = 2470 mL/ft 3" = 1.47 gal/ft = 5557 mL/ft

Purge Method	Low-Flow
Type of Equipment used	Bladder
Sample Method	Low-Flow
Sample Depth (ft-bmp) (e.g. pump intake)	71
Purge Start	14:50

@14:55, DTW:65.94, pH:6.86, temp:9.3, cond:1.75, turb:641, DO:2.2, redox:48.2

Reading Time	14:55
Rate (mL/min)	300
Depth to Water (ft)	65.94
pH	6.86
Conductivity (mS/cm)	1.75
Turbidity (NTU)	641
Dissolved Oxygen (mg/L)	2.2
Temperature (Degrees Celsius)	9.3
Redox (ORP mV)	48.2
parameters	@14:55, DTW:65.94, pH:6.86, temp:9.3, cond:1.75, turb:641, DO:2.2, redox:48.2

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@15:00, DTW:65.92, pH:6.75, temp:10.5, cond:1.77, turb:401, DO:0.78, redox:45.3

Reading Time	15:00

Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	65.92
pH	6.75
Conductivity (mS/cm)	1.77
Turbidity (NTU)	401
Dissolved Oxygen (mg/L)	0.78
Temperature (Degrees Celsius)	10.5
Redox (ORP mV)	45.3
parameters	@15:00, DTW:65.92, pH:6.75, temp:10.5, cond:1.77, turb:401, DO:0.78, redox:45.3

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@15:05, DTW:65.89, pH:6.74, temp:10.6, cond:1.78, turb:321, DO:0.72, redox:45.6

Reading Time	15:05
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	65.89
pH	6.74
Conductivity (mS/cm)	1.78
Turbidity (NTU)	321
Dissolved Oxygen (mg/L)	0.72
Temperature (Degrees Celsius)	10.6
Redox (ORP mV)	45.6
parameters	@15:05, DTW:65.89, pH:6.74, temp:10.6, cond:1.78, turb:321, DO:0.72, redox:45.6

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@15:10, DTW:65.92, pH:6.74, temp:10.6, cond:1.78, turb:251, DO:0.72, redox:46.2

Reading Time	15:10
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	65.92
pH	6.74
Conductivity (mS/cm)	1.78
Turbidity (NTU)	251
Dissolved Oxygen (mg/L)	0.72
Temperature (Degrees Celsius)	10.6
Redox (ORP mV)	46.2
parameters	@15:10, DTW:65.92, pH:6.74, temp:10.6, cond:1.78, turb:251, DO:0.72, redox:46.2

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@15:15, DTW:65.93, pH:6.74, temp:10.5, cond:1.78, turb:187, DO:0.79, redox:46.9

Reading Time	15:15
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	65.93
pH	6.74
Conductivity (mS/cm)	1.78
Turbidity (NTU)	187
Dissolved Oxygen (mg/L)	0.79
Temperature (Degrees Celsius)	10.5
Redox (ORP mV)	46.9
parameters	@15:15, DTW:65.93, pH:6.74, temp:10.5, cond:1.78, turb:187, DO:0.79, redox:46.9

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@15:20, DTW:65.93, pH:6.74, temp:10.6, cond:1.79, turb:144, DO:0.86, redox:47.3

Reading Time	15:20
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	65.93
pH	6.74
Conductivity (mS/cm)	1.79
Turbidity (NTU)	144
Dissolved Oxygen (mg/L)	0.86
Temperature (Degrees Celsius)	10.6
Redox (ORP mV)	47.3
parameters	@15:20, DTW:65.93, pH:6.74, temp:10.6, cond:1.79, turb:144, DO:0.86, redox:47.3

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@15:25, DTW:65.93, pH:6.74, temp:10.6, cond:1.78, turb:129, DO:0.94, redox:48.1

Reading Time	15:25
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	65.93
pH	6.74
Conductivity (mS/cm)	1.78
Turbidity (NTU)	129
Dissolved Oxygen (mg/L)	0.94
Temperature (Degrees Celsius)	10.6
Redox (ORP mV)	48.1
parameters	@15:25, DTW:65.93, pH:6.74, temp:10.6, cond:1.78, turb:129, DO:0.94, redox:48.1

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@15:30, DTW:65.93, pH:6.74, temp:10.5, cond:1.77, turb:119, DO:0.94, redox:48.7

Reading Time	15:30
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	65.93
pH	6.74
Conductivity (mS/cm)	1.77
Turbidity (NTU)	119
Dissolved Oxygen (mg/L)	0.94
Temperature (Degrees Celsius)	10.5
Redox (ORP mV)	48.7
parameters	@15:30, DTW:65.93, pH:6.74, temp:10.5, cond:1.77, turb:119, DO:0.94, redox:48.7

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@15:35, DTW:65.93, pH:6.74, temp:10.3, cond:1.77, turb:118, DO:0.9, redox:49.1

Reading Time	15:35
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	65.93
pH	6.74
Conductivity (mS/cm)	1.77
Turbidity (NTU)	118
Dissolved Oxygen (mg/L)	0.9
Temperature (Degrees Celsius)	10.3
Redox (ORP mV)	49.1
parameters	@15:35, DTW:65.93, pH:6.74, temp:10.3, cond:1.77, turb:118, DO:0.9, redox:49.1

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@15:40, DTW:65.93, pH:6.74, temp:8.8, cond:1.7, turb:108, DO:0.92, redox:50.7

Reading Time	15:40
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	65.93
pH	6.74
Conductivity (mS/cm)	1.7
Turbidity (NTU)	108
Dissolved Oxygen (mg/L)	0.92
Temperature (Degrees Celsius)	8.8
Redox (ORP mV)	50.7
parameters	@15:40, DTW:65.93, pH:6.74, temp:8.8, cond:1.7, turb:108, DO:0.92, redox:50.7

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@15:45, DTW:65.93, pH:6.75, temp:9, cond:1.7, turb:97.9, DO:0.94, redox:50.9

Reading Time	15:45
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	65.93
pH	6.75
Conductivity (mS/cm)	1.7
Turbidity (NTU)	97.9
Dissolved Oxygen (mg/L)	0.94
Temperature (Degrees Celsius)	9
Redox (ORP mV)	50.9
parameters	@15:45, DTW:65.93, pH:6.75, temp:9, cond:1.7, turb:97.9, DO:0.94, redox:50.9

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@15:50, DTW:65.93, pH:6.75, temp:9, cond:1.7, turb:97.7, DO:1.01, redox:51.3

Reading Time	15:50
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	65.93
pH	6.75
Conductivity (mS/cm)	1.7
Turbidity (NTU)	97.7
Dissolved Oxygen (mg/L)	1.01
Temperature (Degrees Celsius)	9
Redox (ORP mV)	51.3
parameters	@15:50, DTW:65.93, pH:6.75, temp:9, cond:1.7, turb:97.7, DO:1.01, redox:51.3

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@15:55, DTW:65.93, pH:6.75, temp:8.9, cond:1.71, turb:88.8, DO:0.99, redox:51.5

Reading Time	15:55
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	65.93
pH	6.75
Conductivity (mS/cm)	1.71
Turbidity (NTU)	88.8
Dissolved Oxygen (mg/L)	0.99
Temperature (Degrees Celsius)	8.9
Redox (ORP mV)	51.5

parameters	@15:55, DTW:65.93, pH:6.75, temp:8.9, cond:1.71, turb:88.8, DO:0.99, redox:51.5

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@16:00, DTW:65.93, pH:6.75, temp:8.7, cond:1.7, turb:88.5, DO:1, redox:51.8

Reading Time	16:00
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	65.93
pH	6.75
Conductivity (mS/cm)	1.7
Turbidity (NTU)	88.5
Dissolved Oxygen (mg/L)	1
Temperature (Degrees Celsius)	8.7
Redox (ORP mV)	51.8
parameters	@16:00, DTW:65.93, pH:6.75, temp:8.7, cond:1.7, turb:88.5, DO:1, redox:51.8

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@16:05, DTW:65.93, pH:6.75, temp:9.2, cond:1.71, turb:84.4, DO:1, redox:51.7

Reading Time	16:05
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	65.93
pH	6.75
Conductivity (mS/cm)	1.71
Turbidity (NTU)	84.4
Dissolved Oxygen (mg/L)	1
Temperature (Degrees Celsius)	9.2
Redox (ORP mV)	51.7
parameters	@16:05, DTW:65.93, pH:6.75, temp:9.2, cond:1.71, turb:84.4, DO:1, redox:51.7

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

Purge End	16:05
Total Volume Measured (units)	Gallons
Total Gallons Purged	2.5
Well Volumes Purged	2.16

Sample Information

Sample Time	16:10
Color	Cloudy, white
Notable odors	None

1,4-dioxane

Constituent Sampled	1,4-dioxane
Container Type	40 mL Vial
Number of Containers	3
Preservative	HCL

Well Information

Well Location	Plant 3
Condition of Well	Good
Well Locked at Arrival	Yes
Well Locked at Departure	Yes
Comments	Flowrate lowered an turbidity still not dropping
Signature	

Signed 2018-12-10 21:07:46 UTC

2018-12-05, MW-02-04(3)

Created	2018-12-05 14:58:01 UTC by Austin Westhuis
Updated	2018-12-05 15:44:44 UTC by Austin Westhuis
Location	42.7464187564726, -84.5847350825412
Status	Field Draft
Project Number	B0064479.2018
Project Name / Location	RACER Lansing, MI
Sampler Name	Austin Westhuis
Date	2018-12-05
Well ID	MW-02-04(3)
Are you able to purge and/or sample this well? If not, explain why in the Comments section below.	Yes
Weather	Cloudy, 25F

Evacuation Details

Measuring Point (mp) Description	Top of Casing
Casing Diameter (inches)	2
Static Water Level (ft-bmp)	58.68
Total Depth (ft-bmp)	83.98
Water Column	25.3
Gallons in Well	4.11

Reference Note: Well Volume Calculation [$\pi r^2 h$, where h= 1foot] Well radius (inch):Volume (Gal./foot):Volume (mL/foot) 0.5" = 0.04 gal/ft = 154 mL/ft 1" = 0.16 gal/ft = 617 mL/ft 2" = 0.65 gal/ft = 2470 mL/ft 3" = 1.47 gal/ft = 5557 mL/ft

Purge Method	Low-Flow
Type of Equipment used	Bladder
Sample Method	Low-Flow
Sample Depth (ft-bmp) (e.g. pump intake)	81.48
Purge Start	09:55

@10:00, DTW:60.26, pH:6.85, temp:13.2, cond:4.31, turb:8.87, DO:0.65, redox:81

Reading Time	10:00
Rate (mL/min)	100
Depth to Water (ft)	60.26
Milliliters Purged (total)	500
pH	6.85
Conductivity (mS/cm)	4.31
Turbidity (NTU)	8.87
Dissolved Oxygen (mg/L)	0.65
Temperature (Degrees Celsius)	13.2
Redox (ORP mV)	81
parameters	@10:00, DTW:60.26, pH:6.85, temp:13.2, cond:4.31, turb:8.87, DO:0.65, redox:81

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:05, DTW:60.47, pH:6.85, temp:12.9, cond:4.64, turb:7.76, DO:0.31, redox:32.3

Reading Time	10:05
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	60.47
Milliliters Purged (total)	1000
pH	6.85
Conductivity (mS/cm)	4.64
Turbidity (NTU)	7.76
Dissolved Oxygen (mg/L)	0.31
Temperature (Degrees Celsius)	12.9
Redox (ORP mV)	32.3
parameters	@10:05, DTW:60.47, pH:6.85, temp:12.9, cond:4.64, turb:7.76, DO:0.31, redox:32.3

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:10, DTW:60.53, pH:6.85, temp:12.9, cond:4.64, turb:6.59, DO:0.32, redox:27.9

Reading Time	10:10
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	60.53
Milliliters Purged (total)	1500
pH	6.85
Conductivity (mS/cm)	4.64
Turbidity (NTU)	6.59
Dissolved Oxygen (mg/L)	0.32
Temperature (Degrees Celsius)	12.9
Redox (ORP mV)	27.9
parameters	@10:10, DTW:60.53, pH:6.85, temp:12.9, cond:4.64, turb:6.59, DO:0.32, redox:27.9

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:15, DTW:60.53, pH:6.86, temp:12.9, cond:4.68, turb:5.12, DO:0.26, redox:11.2

Reading Time	10:15
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	60.53
Milliliters Purged (total)	2000
pH	6.86
Conductivity (mS/cm)	4.68
Turbidity (NTU)	5.12
Dissolved Oxygen (mg/L)	0.26
Temperature (Degrees Celsius)	12.9
Redox (ORP mV)	11.2
parameters	@10:15, DTW:60.53, pH:6.86, temp:12.9, cond:4.68, turb:5.12, DO:0.26, redox:11.2

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:20, DTW:60.53, pH:6.86, temp:13, cond:4.67, turb:4.34, DO:0.2, redox:-9.1

Reading Time	10:20
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	60.53
Milliliters Purged (total)	2500
pH	6.86
Conductivity (mS/cm)	4.67
Turbidity (NTU)	4.34
Dissolved Oxygen (mg/L)	0.2
Temperature (Degrees Celsius)	13
Redox (ORP mV)	-9.1
parameters	@10:20, DTW:60.53, pH:6.86, temp:13, cond:4.67, turb:4.34, DO:0.2, redox:-9.1

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:25, DTW:60.53, pH:6.86, temp:13, cond:4.67, turb:4.21, DO:0.19, redox:-10.7

Reading Time	10:25
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	60.53
Milliliters Purged (total)	3000
pH	6.86
Conductivity (mS/cm)	4.67
Turbidity (NTU)	4.21
Dissolved Oxygen (mg/L)	0.19
Temperature (Degrees Celsius)	13
Redox (ORP mV)	-10.7
parameters	@10:25, DTW:60.53, pH:6.86, temp:13, cond:4.67, turb:4.21, DO:0.19, redox:-10.7

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:30, DTW:60.53, pH:6.86, temp:12.8, cond:4.65, turb:3.66, DO:0.17, redox:-24

Reading Time	10:30
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	60.53
Milliliters Purged (total)	3500
pH	6.86
Conductivity (mS/cm)	4.65
Turbidity (NTU)	3.66

Dissolved Oxygen (mg/L)	0.17
Temperature (Degrees Celsius)	12.8
Redox (ORP mV)	-24
parameters	@10:30, DTW:60.53, pH:6.86, temp:12.8, cond:4.65, turb:3.66, DO:0.17, redox:-24

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:35, DTW:60.53, pH:6.86, temp:12.9, cond:4.65, turb:3.26, DO:0.16, redox:-25.1

Reading Time	10:35
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	60.53
Milliliters Purged (total)	4000
pH	6.86
Conductivity (mS/cm)	4.65
Turbidity (NTU)	3.26
Dissolved Oxygen (mg/L)	0.16
Temperature (Degrees Celsius)	12.9
Redox (ORP mV)	-25.1
parameters	@10:35, DTW:60.53, pH:6.86, temp:12.9, cond:4.65, turb:3.26, DO:0.16, redox:-25.1

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:40, DTW:60.53, pH:6.86, temp:13, cond:4.66, turb:2.6, DO:0.14, redox:-25.6

Reading Time	10:40
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	60.53
Milliliters Purged (total)	4500
pH	6.86
Conductivity (mS/cm)	4.66
Turbidity (NTU)	2.6
Dissolved Oxygen (mg/L)	0.14
Temperature (Degrees Celsius)	13
Redox (ORP mV)	-25.6
parameters	@10:40, DTW:60.53, pH:6.86, temp:13, cond:4.66, turb:2.6, DO:0.14, redox:-25.6

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

Total Volume Measured (units)	Gallons

Sample Information

Sample Time	10:45
Color	Clear
Notable odors	None

1,4-Dioxane

Constituent Sampled	1,4-Dioxane
Container Type	40 mL Vial
Number of Containers	3
Preservative	HCL

PFAS

Constituent Sampled	PFAS
Container Type	250 mL Plastic
Number of Containers	2
Preservative	None

Well Information

Condition of Well	Good
Well Locked at Arrival	Yes
Well Locked at Departure	Yes

Signature

Signed 2018-12-05 15:01:31 UTC

2018-12-10, MW-13-49

Created	2018-12-10 14:58:44 EST by Christine Gregg
Updated	2018-12-10 15:50:33 EST by Christine Gregg
Location	,
Status	Field Draft
Project Number	B0064479.2018
Project Name / Location	RACER Lansing, MI
Sampler Name	Christine Gregg
Date	2018-12-10
Well ID	MW-13-49
Are you able to purge and/or sample this well? If not, explain why in the Comments section below.	Yes
Weather	30s partly cloudy

Evacuation Details

Measuring Point (mp) Description	Top of Casing
Casing Diameter (inches)	2
Static Water Level (ft-bmp)	56.54
Total Depth (ft-bmp)	82.12
Water Column	25.58
Gallons in Well	4.16
Reference Note: Well Volume Calculation [$\pi r^2 h$, where h= 1foot] Well radius (inch):Volume (Gal./foot):Volume (mL/foot) 0.5" = 0.04 gal/ft = 154 mL/ft 1" = 0.16 gal/ft = 617 mL/ft 2" = 0.65 gal/ft = 2470 mL/ft 3" = 1.47 gal/ft = 5557 mL/ft	
Purge Method	Low-Flow
Type of Equipment used	Bladder
Sample Method	Low-Flow
Sample Depth (ft-bmp) (e.g. pump intake)	79
Purge Start	15:06

@15:10, DTW:56.54, pH:7.25, temp:9.2, cond:1.5, turb:10.3, DO:7.44, redox:-21.9

Reading Time	15:10
Rate (mL/min)	150
Depth to Water (ft)	56.54
pH	7.25
Conductivity (mS/cm)	1.5
Turbidity (NTU)	10.3
Dissolved Oxygen (mg/L)	7.44
Temperature (Degrees Celsius)	9.2
Redox (ORP mV)	-21.9
parameters	@15:10, DTW:56.54, pH:7.25, temp:9.2, cond:1.5, turb:10.3, DO:7.44, redox:-21.9
Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit	

@15:15, DTW:57.94, pH:7.07, temp:10.1, cond:1.66, turb:10.6, DO:4.94, redox:-31.7

Reading Time	15:15

Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	57.94
pH	7.07
Conductivity (mS/cm)	1.66
Turbidity (NTU)	10.6
Dissolved Oxygen (mg/L)	4.94
Temperature (Degrees Celsius)	10.1
Redox (ORP mV)	-31.7
parameters	@15:15, DTW:57.94, pH:7.07, temp:10.1, cond:1.66, turb:10.6, DO:4.94, redox:-31.7

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@15:20, DTW:58.3, pH:7.08, temp:7.8, cond:1.68, turb:6.79, DO:5, redox:-32.5

Reading Time	15:20
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	58.3
pH	7.08
Conductivity (mS/cm)	1.68
Turbidity (NTU)	6.79
Dissolved Oxygen (mg/L)	5
Temperature (Degrees Celsius)	7.8
Redox (ORP mV)	-32.5
parameters	@15:20, DTW:58.3, pH:7.08, temp:7.8, cond:1.68, turb:6.79, DO:5, redox:-32.5

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@15:25, DTW:58.36, pH:7.08, temp:7.9, cond:1.63, turb:7.16, DO:2.03, redox:-31.9

Reading Time	15:25
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	58.36
pH	7.08
Conductivity (mS/cm)	1.63
Turbidity (NTU)	7.16
Dissolved Oxygen (mg/L)	2.03
Temperature (Degrees Celsius)	7.9
Redox (ORP mV)	-31.9
parameters	@15:25, DTW:58.36, pH:7.08, temp:7.9, cond:1.63, turb:7.16, DO:2.03, redox:-31.9

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@15:30, DTW:58.4, pH:7.08, temp:8.8, cond:1.64, turb:5.97, DO:2.31, redox:-33.3

Reading Time	15:30
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	58.4
pH	7.08
Conductivity (mS/cm)	1.64
Turbidity (NTU)	5.97
Dissolved Oxygen (mg/L)	2.31
Temperature (Degrees Celsius)	8.8
Redox (ORP mV)	-33.3
parameters	@15:30, DTW:58.4, pH:7.08, temp:8.8, cond:1.64, turb:5.97, DO:2.31, redox:-33.3

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@15:35, DTW:58.43, pH:7.08, temp:9.2, cond:1.64, turb:8.7, DO:1.54, redox:-33.7

Reading Time	15:35
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	58.43
pH	7.08
Conductivity (mS/cm)	1.64
Turbidity (NTU)	8.7
Dissolved Oxygen (mg/L)	1.54
Temperature (Degrees Celsius)	9.2
Redox (ORP mV)	-33.7
parameters	@15:35, DTW:58.43, pH:7.08, temp:9.2, cond:1.64, turb:8.7, DO:1.54, redox:-33.7

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@15:40, DTW:58.45, pH:7.08, temp:9.6, cond:1.66, turb:8.68, DO:1.27, redox:-34.9

Reading Time	15:40
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	58.45
pH	7.08
Conductivity (mS/cm)	1.66
Turbidity (NTU)	8.68
Dissolved Oxygen (mg/L)	1.27
Temperature (Degrees Celsius)	9.6
Redox (ORP mV)	-34.9
parameters	@15:40, DTW:58.45, pH:7.08, temp:9.6, cond:1.66, turb:8.68, DO:1.27, redox:-34.9

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@15:45, DTW:58.45, pH:7.08, temp:9.5, cond:1.65, turb:7.44, DO:1.19, redox:-35.8

Reading Time	15:45
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	58.45
pH	7.08
Conductivity (mS/cm)	1.65
Turbidity (NTU)	7.44
Dissolved Oxygen (mg/L)	1.19
Temperature (Degrees Celsius)	9.5
Redox (ORP mV)	-35.8
parameters	@15:45, DTW:58.45, pH:7.08, temp:9.5, cond:1.65, turb:7.44, DO:1.19, redox:-35.8

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@15:50, DTW:58.45, pH:7.08, temp:9.5, cond:1.65, turb:7.97, DO:1.16, redox:-35.5

Reading Time	15:50
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	58.45
pH	7.08
Conductivity (mS/cm)	1.65
Turbidity (NTU)	7.97
Dissolved Oxygen (mg/L)	1.16
Temperature (Degrees Celsius)	9.5
Redox (ORP mV)	-35.5
parameters	@15:50, DTW:58.45, pH:7.08, temp:9.5, cond:1.65, turb:7.97, DO:1.16, redox:-35.5

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

Purge End	15:50
Total Volume Measured (units)	Gallons
Total Gallons Purged	2
Well Volumes Purged	0.48

Sample Information

Sample Time	15:50
Color	Clear
Notable odors	None

1,4-Dioxane

Constituent Sampled	1,4-Dioxane
Container Type	40 mL Vial
Number of Containers	3
Preservative	HCL

Well Information

Well Location	Plant 3
Condition of Well	Good
Well Locked at Arrival	No
Well Locked at Departure	No
Comments	Stick up with no lock. Semi-fenced area
Signature	

Signed 2018-12-10 15:50:29 EST

2018-12-05, MW-18-88

Created	2018-12-05 17:58:13 UTC by Austin Westhuis
Updated	2018-12-05 18:41:07 UTC by Austin Westhuis
Location	42.7451411029722, -84.5825553686214
Status	Field Draft
Project Number	B0064479.2018
Project Name / Location	RACER Lansing, MI
Sampler Name	Austin Westhuis
Date	2018-12-05
Well ID	MW-18-88
Are you able to purge and/or sample this well? If not, explain why in the Comments section below.	Yes
Weather	Cloudy, 25F

Evacuation Details

Measuring Point (mp) Description	Top of Casing
Casing Diameter (inches)	2
Static Water Level (ft-bmp)	4.2
Total Depth (ft-bmp)	15.02
Water Column	10.82
Gallons in Well	1.76
Reference Note: Well Volume Calculation [$\pi r^2 h$, where h= 1foot] Well radius (inch):Volume (Gal./foot):Volume (mL/foot) 0.5" = 0.04 gal/ft = 154 mL/ft 1" = 0.16 gal/ft = 617 mL/ft 2" = 0.65 gal/ft = 2470 mL/ft 3" = 1.47 gal/ft = 5557 mL/ft	
Purge Method	Low-Flow
Type of Equipment used	Peristaltic
Sample Method	Low-Flow
Sample Depth (ft-bmp) (e.g. pump intake)	16.52
Purge Start	12:55

@13:00, DTW:4.36, pH:7.23, temp:9.5, cond:0.36, turb:229, DO:1.23, redox:-2.1

Reading Time	13:00
Rate (mL/min)	100
Depth to Water (ft)	4.36
Milliliters Purged (total)	500
pH	7.23
Conductivity (mS/cm)	0.36
Turbidity (NTU)	229
Dissolved Oxygen (mg/L)	1.23
Temperature (Degrees Celsius)	9.5
Redox (ORP mV)	-2.1
parameters	@13:00, DTW:4.36, pH:7.23, temp:9.5, cond:0.36, turb:229, DO:1.23, redox:-2.1
Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit	

@13:05, DTW:4.36, pH:7.23, temp:9.7, cond:0.348, turb:104, DO:0.9, redox:6.6

Reading Time	13:05
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	4.36
Milliliters Purged (total)	1000
pH	7.23
Conductivity (mS/cm)	0.348
Turbidity (NTU)	104
Dissolved Oxygen (mg/L)	0.9
Temperature (Degrees Celsius)	9.7
Redox (ORP mV)	6.6
parameters	@13:05, DTW:4.36, pH:7.23, temp:9.7, cond:0.348, turb:104, DO:0.9, redox:6.6

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:10, DTW:4.36, pH:7.21, temp:9.7, cond:0.343, turb:82.4, DO:0.76, redox:11.6

Reading Time	13:10
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	4.36
Milliliters Purged (total)	1500
pH	7.21
Conductivity (mS/cm)	0.343
Turbidity (NTU)	82.4
Dissolved Oxygen (mg/L)	0.76
Temperature (Degrees Celsius)	9.7
Redox (ORP mV)	11.6
parameters	@13:10, DTW:4.36, pH:7.21, temp:9.7, cond:0.343, turb:82.4, DO:0.76, redox:11.6

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:15, DTW:4.36, pH:7.2, temp:9.8, cond:0.343, turb:41.1, DO:0.6, redox:17

Reading Time	13:15
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	4.36
Milliliters Purged (total)	2000
pH	7.2
Conductivity (mS/cm)	0.343
Turbidity (NTU)	41.1
Dissolved Oxygen (mg/L)	0.6
Temperature (Degrees Celsius)	9.8
Redox (ORP mV)	17
parameters	@13:15, DTW:4.36, pH:7.2, temp:9.8, cond:0.343, turb:41.1, DO:0.6, redox:17

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:20, DTW:4.39, pH:7.2, temp:9.9, cond:0.343, turb:31.1, DO:0.57, redox:18.3

Reading Time	13:20
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	4.39
Milliliters Purged (total)	2500
pH	7.2
Conductivity (mS/cm)	0.343
Turbidity (NTU)	31.1
Dissolved Oxygen (mg/L)	0.57
Temperature (Degrees Celsius)	9.9
Redox (ORP mV)	18.3
parameters	@13:20, DTW:4.39, pH:7.2, temp:9.9, cond:0.343, turb:31.1, DO:0.57, redox:18.3

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:25, DTW:4.39, pH:7.19, temp:10, cond:0.344, turb:22.1, DO:0.56, redox:18.7

Reading Time	13:25
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	4.39
Milliliters Purged (total)	3000
pH	7.19
Conductivity (mS/cm)	0.344
Turbidity (NTU)	22.1
Dissolved Oxygen (mg/L)	0.56
Temperature (Degrees Celsius)	10
Redox (ORP mV)	18.7
parameters	@13:25, DTW:4.39, pH:7.19, temp:10, cond:0.344, turb:22.1, DO:0.56, redox:18.7

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:30, DTW:4.39, pH:7.2, temp:10, cond:0.346, turb:11.4, DO:0.49, redox:21.1

Reading Time	13:30
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	4.39
Milliliters Purged (total)	3500
pH	7.2
Conductivity (mS/cm)	0.346
Turbidity (NTU)	11.4

Dissolved Oxygen (mg/L)	0.49
Temperature (Degrees Celsius)	10
Redox (ORP mV)	21.1
parameters	@13:30, DTW:4.39, pH:7.2, temp:10, cond:0.346, turb:11.4, DO:0.49, redox:21.1

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:35, DTW:4.39, pH:7.19, temp:10, cond:0.345, turb:7.69, DO:0.46, redox:21.8

Reading Time	13:35
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	4.39
Milliliters Purged (total)	4000
pH	7.19
Conductivity (mS/cm)	0.345
Turbidity (NTU)	7.69
Dissolved Oxygen (mg/L)	0.46
Temperature (Degrees Celsius)	10
Redox (ORP mV)	21.8
parameters	@13:35, DTW:4.39, pH:7.19, temp:10, cond:0.345, turb:7.69, DO:0.46, redox:21.8

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

Total Volume Measured (units)	Gallons

Sample Information

Sample Time	13:40
Color	Clear
Notable odors	None

PFAS

Constituent Sampled	PFAS
Container Type	250 mL Plastic
Number of Containers	2
Preservative	None

VOCs

Constituent Sampled	VOCs
Container Type	40 mL Vial
Number of Containers	3
Preservative	HCL

Alkalinity, BOD, Chloride, Nitrate, Nitrite, Phosphate, Sulfate, TSS, TDS

Constituent Sampled	Alkalinity, BOD, Chloride, Nitrate, Nitrite, Phosphate, Sulfate, TSS, TDS
Container Type	1L Plastic
Number of Containers	1

Preservative	None

COD

Constituent Sampled	COD
Container Type	250 mL Plastic
Number of Containers	1
Preservative	H2SO4

Sulfide

Constituent Sampled	Sulfide
Container Type	125 mL Plastic
Number of Containers	1
Preservative	NaOH

TOC

Constituent Sampled	TOC
Container Type	40 mL Vial
Number of Containers	2
Preservative	H2SO4

Metals

Constituent Sampled	Metals
Container Type	125 mL Plastic
Number of Containers	1
Preservative	HNO3

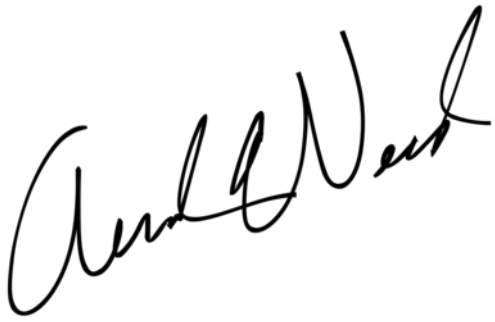
Dissolved Metals

Constituent Sampled	Dissolved Metals
Container Type	125 mL Plastic
Number of Containers	1
Preservative	HNO3

Well Information

Condition of Well	Good
Well Locked at Arrival	No
Well Locked at Departure	No

Signature



Signed 2018-12-05 18:40:48 UTC

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2018-12-07, P6-MH2-SW

Created	2018-12-07 19:00:07 UTC by Dale Arnett
Updated	2018-12-07 19:40:06 UTC by Dale Arnett
Location	42.7341552777614, -84.5816126559717
Status	Field Draft
Project Number	B0064479.2018
Project Name / Location	RACER Lansing, MI
Sampler Name	Dale Arnett
Date	2018-12-07
Well ID	P6-MH2-SW
Are you able to purge and/or sample this well? If not, explain why in the Comments section below.	Yes
Replicate No. (e.g. Dup)	Dup-08
Weather	20s overcast

Evacuation Details

Measuring Point (mp) Description	Ground Surface
Static Water Level (ft-bmp)	0
Reference Note: Well Volume Calculation [$\pi r^2 h$, where h= 1foot] Well radius (inch):Volume (Gal./foot):Volume (mL/foot) 0.5" = 0.04 gal/ft = 154 mL/ft 1" = 0.16 gal/ft = 617 mL/ft 2" = 0.65 gal/ft = 2470 mL/ft 3" = 1.47 gal/ft = 5557 mL/ft	
Purge Method	Grab
Type of Equipment used	Peristaltic
Sample Method	Grab
Purge Start	14:10

@14:20, DTW:, pH:7.83, temp:9.4, cond:0.53, turb:0.02, DO:9.73, redox:94.2

Reading Time	14:20
pH	7.83
Conductivity (mS/cm)	0.53
Turbidity (NTU)	0.02
Dissolved Oxygen (mg/L)	9.73
Temperature (Degrees Celsius)	9.4
Redox (ORP mV)	94.2
parameters	@14:20, DTW:, pH:7.83, temp:9.4, cond:0.53, turb:0.02, DO:9.73, redox:94.2
Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit	
Purge End	14:30

Sample Information

Sample Time	14:20
Color	None
Notable odors	None

VOCs

Constituent Sampled	VOCs
Container Type	40 mL Vial

Number of Containers	6
Preservative	HCL

1,4-Dioxane

Constituent Sampled	1,4-Dioxane
Container Type	40 mL Vial
Number of Containers	6
Preservative	HCL

Metals

Constituent Sampled	Metals
Container Type	125 mL Plastic
Number of Containers	2
Preservative	HNO3

PFAS

Constituent Sampled	PFAS
Container Type	250 mL Plastic
Number of Containers	4
Preservative	None

Well Information

Photo of Well

Comments	Good flow
Signature	

Signed 2018-12-07 19:39:37 UTC

2018-12-07, MW-13-32

Created	2018-12-07 14:07:06 UTC by Marina Samp
Updated	2018-12-07 16:11:16 UTC by Marina Samp
Location	42.7419699775453, -84.5826895628912
Status	Field Draft
Project Number	B0064479.2018
Project Name / Location	RACER Lansing, MI
Sampler Name	Marina Samp
Date	2018-12-07
Well ID	MW-13-32
Are you able to purge and/or sample this well? If not, explain why in the Comments section below.	Yes
Replicate No. (e.g. Dup)	MS/MSD
Weather	26, snowing

Evacuation Details

Measuring Point (mp) Description	Top of Casing
Casing Diameter (inches)	2
Static Water Level (ft-bmp)	7.21
Total Depth (ft-bmp)	12.6
Water Column	5.39
Gallons in Well	0.88

Reference Note: Well Volume Calculation [$\pi r^2 h$, where h= 1foot] Well radius (inch):Volume (Gal./foot):Volume (mL/foot) 0.5" = 0.04 gal/ft = 154 mL/ft 1" = 0.16 gal/ft = 617 mL/ft 2" = 0.65 gal/ft = 2470 mL/ft 3" = 1.47 gal/ft = 5557 mL/ft

Purge Method	Low-Flow
Type of Equipment used	Bladder
Sample Method	Low-Flow
Sample Depth (ft-bmp) (e.g. pump intake)	9
Purge Start	09:05

@09:10, DTW:7.71, pH:6.91, temp:8.7, cond:1, turb:182, DO:1.76, redox:163.5

Reading Time	09:10
Rate (mL/min)	300
Depth to Water (ft)	7.71
pH	6.91
Conductivity (mS/cm)	1
Turbidity (NTU)	182
Dissolved Oxygen (mg/L)	1.76
Temperature (Degrees Celsius)	8.7
Redox (ORP mV)	163.5
parameters	@09:10, DTW:7.71, pH:6.91, temp:8.7, cond:1, turb:182, DO:1.76, redox:163.5

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:15, DTW:7.72, pH:6.93, temp:7.8, cond:0.97, turb:150, DO:1.79, redox:161.4

Reading Time	09:15
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	7.72
pH	6.93
Conductivity (mS/cm)	0.97
Turbidity (NTU)	150
Dissolved Oxygen (mg/L)	1.79
Temperature (Degrees Celsius)	7.8
Redox (ORP mV)	161.4
parameters	@09:15, DTW:7.72, pH:6.93, temp:7.8, cond:0.97, turb:150, DO:1.79, redox:161.4

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:20, DTW:7.59, pH:6.94, temp:4.3, cond:0.92, turb:103, DO:2.26, redox:160.5

Reading Time	09:20
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	7.59
pH	6.94
Conductivity (mS/cm)	0.92
Turbidity (NTU)	103
Dissolved Oxygen (mg/L)	2.26
Temperature (Degrees Celsius)	4.3
Redox (ORP mV)	160.5
parameters	@09:20, DTW:7.59, pH:6.94, temp:4.3, cond:0.92, turb:103, DO:2.26, redox:160.5

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:25, DTW:7.72, pH:6.96, temp:5.8, cond:0.93, turb:66, DO:2.78, redox:156.7

Reading Time	09:25
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	7.72
pH	6.96
Conductivity (mS/cm)	0.93
Turbidity (NTU)	66
Dissolved Oxygen (mg/L)	2.78
Temperature (Degrees Celsius)	5.8
Redox (ORP mV)	156.7
parameters	@09:25, DTW:7.72, pH:6.96, temp:5.8, cond:0.93, turb:66, DO:2.78, redox:156.7

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:30, DTW:7.62, pH:6.99, temp:3.6, cond:0.81, turb:50.9, DO:3.12, redox:156.6

Reading Time	09:30
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	7.62
pH	6.99
Conductivity (mS/cm)	0.81
Turbidity (NTU)	50.9
Dissolved Oxygen (mg/L)	3.12
Temperature (Degrees Celsius)	3.6
Redox (ORP mV)	156.6
parameters	@09:30, DTW:7.62, pH:6.99, temp:3.6, cond:0.81, turb:50.9, DO:3.12, redox:156.6

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:37, DTW:7.62, pH:7.03, temp:3.1, cond:0.76, turb:40, DO:3.28, redox:155.4

Reading Time	09:37
Minutes Elapsed between readings	7
Rate (mL/min)	300
Depth to Water (ft)	7.62
pH	7.03
Conductivity (mS/cm)	0.76
Turbidity (NTU)	40
Dissolved Oxygen (mg/L)	3.28
Temperature (Degrees Celsius)	3.1
Redox (ORP mV)	155.4
parameters	@09:37, DTW:7.62, pH:7.03, temp:3.1, cond:0.76, turb:40, DO:3.28, redox:155.4

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:40, DTW:7.62, pH:7.04, temp:2.9, cond:0.74, turb:38.4, DO:3.31, redox:155.2

Reading Time	09:40
Minutes Elapsed between readings	3
Rate (mL/min)	300
Depth to Water (ft)	7.62
pH	7.04
Conductivity (mS/cm)	0.74
Turbidity (NTU)	38.4
Dissolved Oxygen (mg/L)	3.31
Temperature (Degrees Celsius)	2.9
Redox (ORP mV)	155.2
parameters	@09:40, DTW:7.62, pH:7.04, temp:2.9, cond:0.74, turb:38.4, DO:3.31, redox:155.2

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:45, DTW:7.56, pH:7.05, temp:3.1, cond:0.73, turb:31, DO:3.4, redox:154.7

Reading Time	09:45
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	7.56
pH	7.05
Conductivity (mS/cm)	0.73
Turbidity (NTU)	31
Dissolved Oxygen (mg/L)	3.4
Temperature (Degrees Celsius)	3.1
Redox (ORP mV)	154.7
parameters	@09:45, DTW:7.56, pH:7.05, temp:3.1, cond:0.73, turb:31, DO:3.4, redox:154.7

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:50, DTW:7.54, pH:7.05, temp:3, cond:0.73, turb:29.7, DO:3.49, redox:154.3

Reading Time	09:50
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	7.54
pH	7.05
Conductivity (mS/cm)	0.73
Turbidity (NTU)	29.7
Dissolved Oxygen (mg/L)	3.49
Temperature (Degrees Celsius)	3
Redox (ORP mV)	154.3
parameters	@09:50, DTW:7.54, pH:7.05, temp:3, cond:0.73, turb:29.7, DO:3.49, redox:154.3

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:55, DTW:7.54, pH:7.06, temp:3.8, cond:0.72, turb:21.2, DO:3.53, redox:153.5

Reading Time	09:55
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	7.54
pH	7.06
Conductivity (mS/cm)	0.72
Turbidity (NTU)	21.2
Dissolved Oxygen (mg/L)	3.53
Temperature (Degrees Celsius)	3.8
Redox (ORP mV)	153.5

parameters	@09:55, DTW:7.54, pH:7.06, temp:3.8, cond:0.72, turb:21.2, DO:3.53, redox:153.5

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:00, DTW:7.54, pH:7.06, temp:3.4, cond:0.71, turb:19, DO:3.69, redox:153.2

Reading Time	10:00
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	7.54
pH	7.06
Conductivity (mS/cm)	0.71
Turbidity (NTU)	19
Dissolved Oxygen (mg/L)	3.69
Temperature (Degrees Celsius)	3.4
Redox (ORP mV)	153.2
parameters	@10:00, DTW:7.54, pH:7.06, temp:3.4, cond:0.71, turb:19, DO:3.69, redox:153.2

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:05, DTW:7.54, pH:7.07, temp:3.6, cond:0.7, turb:14, DO:3.84, redox:152.9

Reading Time	10:05
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	7.54
pH	7.07
Conductivity (mS/cm)	0.7
Turbidity (NTU)	14
Dissolved Oxygen (mg/L)	3.84
Temperature (Degrees Celsius)	3.6
Redox (ORP mV)	152.9
parameters	@10:05, DTW:7.54, pH:7.07, temp:3.6, cond:0.7, turb:14, DO:3.84, redox:152.9

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:10, DTW:7.54, pH:7.07, temp:3.4, cond:0.69, turb:12.6, DO:3.86, redox:152.8

Reading Time	10:10
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	7.54
pH	7.07
Conductivity (mS/cm)	0.69
Turbidity (NTU)	12.6
Dissolved Oxygen (mg/L)	3.86
Temperature (Degrees Celsius)	3.4

Redox (ORP mV)	152.8
parameters	@10:10, DTW:7.54, pH:7.07, temp:3.4, cond:0.69, turb:12.6, DO:3.86, redox:152.8

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:15, DTW:7.54, pH:7.07, temp:3.7, cond:0.69, turb:9.49, DO:3.86, redox:152.4

Reading Time	10:15
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	7.54
pH	7.07
Conductivity (mS/cm)	0.69
Turbidity (NTU)	9.49
Dissolved Oxygen (mg/L)	3.86
Temperature (Degrees Celsius)	3.7
Redox (ORP mV)	152.4
parameters	@10:15, DTW:7.54, pH:7.07, temp:3.7, cond:0.69, turb:9.49, DO:3.86, redox:152.4

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

Purge End	10:15
Total Volume Measured (units)	Gallons
Total Gallons Purged	1
Well Volumes Purged	1.14

Sample Information

Sample Time	10:20
Color	None
Notable odors	None

Metals

Constituent Sampled	Metals
Container Type	125 mL Plastic
Number of Containers	1
Preservative	HNO3

Well Information

Well Location	Plant 3
Condition of Well	Good
Well Locked at Arrival	Yes
Well Locked at Departure	Yes

Signature

Signed 2018-12-07 15:19:18 UTC

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2018-12-11, MW-16-82

Created	2018-12-11 14:20:23 EST by Daniel Stockard
Updated	2018-12-11 19:33:15 EST by Daniel Stockard
Location	42.7380184969332, -84.5849960111869
Status	Field Draft
Project Number	B0064479.2018
Project Name / Location	RACER Lansing, MI
Sampler Name	Daniel Stockard
Date	2018-12-11
Well ID	MW-16-82
Are you able to purge and/or sample this well? If not, explain why in the Comments section below.	Yes
Replicate No. (e.g. Dup)	None
Weather	Overcast, chilly

Evacuation Details

Measuring Point (mp) Description	Top of Casing
Casing Diameter (inches)	2
Static Water Level (ft-bmp)	65.45
Total Depth (ft-bmp)	74
Water Column	8.55
Gallons in Well	1.39

Reference Note: Well Volume Calculation [$\pi r^2 h$, where h= 1foot] Well radius (inch):Volume (Gal./foot):Volume (mL/foot) 0.5" = 0.04 gal/ft = 154 mL/ft 1" = 0.16 gal/ft = 617 mL/ft 2" = 0.65 gal/ft = 2470 mL/ft 3" = 1.47 gal/ft = 5557 mL/ft

Purge Method	Low-Flow
Type of Equipment used	Bladder
Sample Method	Grab
Sample Depth (ft-bmp) (e.g. pump intake)	72
Purge Start	14:15

@14:20, DTW:65.45, pH:7.24, temp:12.3, cond:0.83, turb:585, DO:0.79, redox:-50.7

Reading Time	14:20
Rate (mL/min)	150
Depth to Water (ft)	65.45
pH	7.24
Conductivity (mS/cm)	0.83
Turbidity (NTU)	585
Dissolved Oxygen (mg/L)	0.79
Temperature (Degrees Celsius)	12.3
Redox (ORP mV)	-50.7
parameters	@14:20, DTW:65.45, pH:7.24, temp:12.3, cond:0.83, turb:585, DO:0.79, redox:-50.7

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@14:25, DTW:65.96, pH:7.22, temp:12.3, cond:0.84, turb:754, DO:0.48, redox:-59.8

Reading Time	14:25
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	65.96
pH	7.22
Conductivity (mS/cm)	0.84
Turbidity (NTU)	754
Dissolved Oxygen (mg/L)	0.48
Temperature (Degrees Celsius)	12.3
Redox (ORP mV)	-59.8
parameters	@14:25, DTW:65.96, pH:7.22, temp:12.3, cond:0.84, turb:754, DO:0.48, redox:-59.8

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@14:30, DTW:66.15, pH:7.2, temp:11.5, cond:0.82, turb:562, DO:0.43, redox:-67.1

Reading Time	14:30
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	66.15
pH	7.2
Conductivity (mS/cm)	0.82
Turbidity (NTU)	562
Dissolved Oxygen (mg/L)	0.43
Temperature (Degrees Celsius)	11.5
Redox (ORP mV)	-67.1
parameters	@14:30, DTW:66.15, pH:7.2, temp:11.5, cond:0.82, turb:562, DO:0.43, redox:-67.1

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@14:35, DTW:66.39, pH:7.2, temp:11.4, cond:0.81, turb:136, DO:0.46, redox:-73

Reading Time	14:35
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	66.39
pH	7.2
Conductivity (mS/cm)	0.81
Turbidity (NTU)	136
Dissolved Oxygen (mg/L)	0.46
Temperature (Degrees Celsius)	11.4
Redox (ORP mV)	-73
parameters	@14:35, DTW:66.39, pH:7.2, temp:11.4, cond:0.81, turb:136, DO:0.46, redox:-73

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@14:40, DTW:66.45, pH:7.2, temp:11.4, cond:0.81, turb:89.1, DO:0.44, redox:-73.9

Reading Time	14:40
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	66.45
pH	7.2
Conductivity (mS/cm)	0.81
Turbidity (NTU)	89.1
Dissolved Oxygen (mg/L)	0.44
Temperature (Degrees Celsius)	11.4
Redox (ORP mV)	-73.9
parameters	@14:40, DTW:66.45, pH:7.2, temp:11.4, cond:0.81, turb:89.1, DO:0.44, redox:-73.9

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@14:45, DTW:66.49, pH:7.2, temp:11.6, cond:0.81, turb:44, DO:0.44, redox:-74.4

Reading Time	14:45
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	66.49
pH	7.2
Conductivity (mS/cm)	0.81
Turbidity (NTU)	44
Dissolved Oxygen (mg/L)	0.44
Temperature (Degrees Celsius)	11.6
Redox (ORP mV)	-74.4
parameters	@14:45, DTW:66.49, pH:7.2, temp:11.6, cond:0.81, turb:44, DO:0.44, redox:-74.4

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@14:50, DTW:66.61, pH:7.2, temp:11.5, cond:0.81, turb:32.4, DO:0.42, redox:-74.7

Reading Time	14:50
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	66.61
pH	7.2
Conductivity (mS/cm)	0.81
Turbidity (NTU)	32.4
Dissolved Oxygen (mg/L)	0.42
Temperature (Degrees Celsius)	11.5
Redox (ORP mV)	-74.7
parameters	@14:50, DTW:66.61, pH:7.2, temp:11.5, cond:0.81, turb:32.4, DO:0.42, redox:-74.7

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@14:55, DTW:66.66, pH:7.2, temp:11.7, cond:0.81, turb:24, DO:0.44, redox:-74.7

Reading Time	14:55
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	66.66
pH	7.2
Conductivity (mS/cm)	0.81
Turbidity (NTU)	24
Dissolved Oxygen (mg/L)	0.44
Temperature (Degrees Celsius)	11.7
Redox (ORP mV)	-74.7
parameters	@14:55, DTW:66.66, pH:7.2, temp:11.7, cond:0.81, turb:24, DO:0.44, redox:-74.7

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@15:00, DTW:66.68, pH:7.2, temp:11.8, cond:0.81, turb:14, DO:0.44, redox:-74.7

Reading Time	15:00
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	66.68
pH	7.2
Conductivity (mS/cm)	0.81
Turbidity (NTU)	14
Dissolved Oxygen (mg/L)	0.44
Temperature (Degrees Celsius)	11.8
Redox (ORP mV)	-74.7
parameters	@15:00, DTW:66.68, pH:7.2, temp:11.8, cond:0.81, turb:14, DO:0.44, redox:-74.7

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@15:05, DTW:66.66, pH:7.2, temp:11.7, cond:0.82, turb:7.2, DO:0.45, redox:-74.7

Reading Time	15:05
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	66.66
pH	7.2
Conductivity (mS/cm)	0.82
Turbidity (NTU)	7.2
Dissolved Oxygen (mg/L)	0.45
Temperature (Degrees Celsius)	11.7
Redox (ORP mV)	-74.7

parameters	@15:05, DTW:66.66, pH:7.2, temp:11.7, cond:0.82, turb:7.2, DO:0.45, redox:-74.7

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

Purge End	15:05
Total Volume Measured (units)	Gallons
Total Gallons Purged	1.5
Well Volumes Purged	1.08

Sample Information

Sample Time	15:05
Color	None
Notable odors	None

1,4-D and VOCs

Constituent Sampled	1,4-D and VOCs
Container Type	40 mL Vial
Number of Containers	3
Preservative	HCL

Well Information

Well Location	P2
Condition of Well	Good
Well Locked at Arrival	Yes
Well Locked at Departure	Yes
Comments	Yield was 😍

Signature

Signed 2018-12-11 19:32:59 EST

2018-12-11, PW-14-03

Created	2018-12-11 13:34:03 UTC by Marina Samp
Updated	2018-12-11 14:47:53 UTC by Marina Samp
Location	42.7366962097983, -84.5855158568216
Status	Field Draft
Project Number	B0064479.2018
Project Name / Location	RACER Lansing, MI
Sampler Name	Marina Samp
Date	2018-12-11
Well ID	PW-14-03
Are you able to purge and/or sample this well? If not, explain why in the Comments section below.	Yes
Weather	30, cloudy

Evacuation Details

Measuring Point (mp) Description	Top of Casing
Casing Diameter (inches)	8
Static Water Level (ft-bmp)	65.55
Total Depth (ft-bmp)	85
Water Column	19.45
Gallons in Well	50.57

Reference Note: Well Volume Calculation [$\pi r^2 h$, where h= 1foot] Well radius (inch):Volume (Gal./foot):Volume (mL/foot) 0.5" = 0.04 gal/ft = 154 mL/ft 1" = 0.16 gal/ft = 617 mL/ft 2" = 0.65 gal/ft = 2470 mL/ft 3" = 1.47 gal/ft = 5557 mL/ft

Purge Method	Low-Flow
Type of Equipment used	Bladder
Sample Method	Low-Flow
Sample Depth (ft-bmp) (e.g. pump intake)	82
Purge Start	09:00

@09:05, DTW:65.71, pH:6.48, temp:9.4, cond:2.54, turb:61.8, DO:1.68, redox:125.6

Reading Time	09:05
Rate (mL/min)	300
Depth to Water (ft)	65.71
pH	6.48
Conductivity (mS/cm)	2.54
Turbidity (NTU)	61.8
Dissolved Oxygen (mg/L)	1.68
Temperature (Degrees Celsius)	9.4
Redox (ORP mV)	125.6
parameters	@09:05, DTW:65.71, pH:6.48, temp:9.4, cond:2.54, turb:61.8, DO:1.68, redox:125.6

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:10, DTW:65.74, pH:6.48, temp:8.5, cond:2.49, turb:16.3, DO:1.29, redox:109

Reading Time	09:10

Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	65.74
pH	6.48
Conductivity (mS/cm)	2.49
Turbidity (NTU)	16.3
Dissolved Oxygen (mg/L)	1.29
Temperature (Degrees Celsius)	8.5
Redox (ORP mV)	109
parameters	@09:10, DTW:65.74, pH:6.48, temp:8.5, cond:2.49, turb:16.3, DO:1.29, redox:109

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:15, DTW:65.76, pH:6.48, temp:9, cond:2.51, turb:8.78, DO:0.89, redox:99.3

Reading Time	09:15
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	65.76
pH	6.48
Conductivity (mS/cm)	2.51
Turbidity (NTU)	8.78
Dissolved Oxygen (mg/L)	0.89
Temperature (Degrees Celsius)	9
Redox (ORP mV)	99.3
parameters	@09:15, DTW:65.76, pH:6.48, temp:9, cond:2.51, turb:8.78, DO:0.89, redox:99.3

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:20, DTW:65.78, pH:6.48, temp:9.1, cond:2.52, turb:14.1, DO:0.67, redox:90.9

Reading Time	09:20
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	65.78
pH	6.48
Conductivity (mS/cm)	2.52
Turbidity (NTU)	14.1
Dissolved Oxygen (mg/L)	0.67
Temperature (Degrees Celsius)	9.1
Redox (ORP mV)	90.9
parameters	@09:20, DTW:65.78, pH:6.48, temp:9.1, cond:2.52, turb:14.1, DO:0.67, redox:90.9

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:25, DTW:65.79, pH:6.49, temp:8.5, cond:2.5, turb:5.61, DO:0.7, redox:83.7

Reading Time	09:25
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	65.79
pH	6.49
Conductivity (mS/cm)	2.5
Turbidity (NTU)	5.61
Dissolved Oxygen (mg/L)	0.7
Temperature (Degrees Celsius)	8.5
Redox (ORP mV)	83.7
parameters	@09:25, DTW:65.79, pH:6.49, temp:8.5, cond:2.5, turb:5.61, DO:0.7, redox:83.7

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:30, DTW:65.78, pH:6.5, temp:7.2, cond:2.41, turb:2.7, DO:0.69, redox:79

Reading Time	09:30
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	65.78
pH	6.5
Conductivity (mS/cm)	2.41
Turbidity (NTU)	2.7
Dissolved Oxygen (mg/L)	0.69
Temperature (Degrees Celsius)	7.2
Redox (ORP mV)	79
parameters	@09:30, DTW:65.78, pH:6.5, temp:7.2, cond:2.41, turb:2.7, DO:0.69, redox:79

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:35, DTW:65.78, pH:6.5, temp:7.6, cond:2.41, turb:0.78, DO:0.69, redox:75.5

Reading Time	09:35
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	65.78
pH	6.5
Conductivity (mS/cm)	2.41
Turbidity (NTU)	0.78
Dissolved Oxygen (mg/L)	0.69
Temperature (Degrees Celsius)	7.6
Redox (ORP mV)	75.5
parameters	@09:35, DTW:65.78, pH:6.5, temp:7.6, cond:2.41, turb:0.78, DO:0.69, redox:75.5

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:40, DTW:65.78, pH:6.51, temp:7.3, cond:2.38, turb:1.14, DO:0.94, redox:71.8

Reading Time	09:40
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	65.78
pH	6.51
Conductivity (mS/cm)	2.38
Turbidity (NTU)	1.14
Dissolved Oxygen (mg/L)	0.94
Temperature (Degrees Celsius)	7.3
Redox (ORP mV)	71.8
parameters	@09:40, DTW:65.78, pH:6.51, temp:7.3, cond:2.38, turb:1.14, DO:0.94, redox:71.8

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:45, DTW:65.78, pH:6.51, temp:6.6, cond:2.33, turb:1.09, DO:1.22, redox:69.3

Reading Time	09:45
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	65.78
pH	6.51
Conductivity (mS/cm)	2.33
Turbidity (NTU)	1.09
Dissolved Oxygen (mg/L)	1.22
Temperature (Degrees Celsius)	6.6
Redox (ORP mV)	69.3
parameters	@09:45, DTW:65.78, pH:6.51, temp:6.6, cond:2.33, turb:1.09, DO:1.22, redox:69.3

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

Purge End	09:45
Total Volume Measured (units)	Gallons
Total Gallons Purged	1
Well Volumes Purged	0.02

Sample Information

Sample Time	09:50
Color	None
Notable odors	None

VOCs

Constituent Sampled	VOCs
Container Type	40 mL Vial
Number of Containers	3
Preservative	HCL

1,4-dioxane

Constituent Sampled	1,4-dioxane
Container Type	40 mL Vial
Number of Containers	3
Preservative	HCL

Well Information

Well Location	Plant 3
Condition of Well	Good
Well Locked at Arrival	Yes
Well Locked at Departure	Yes

Signature

Signed 2018-12-11 14:47:52 UTC

2018-12-06, CH-14-RO

Created	2018-12-06 18:42:30 UTC by Austin Westhuis
Updated	2018-12-06 19:39:47 UTC by Austin Westhuis
Location	42.7452074038263, -84.5848990325672
Status	Field Draft
Project Number	B0064479.2018
Project Name / Location	RACER Lansing, MI
Sampler Name	Austin Westhuis
Date	2018-12-06
Well ID	CH-14-RO
Are you able to purge and/or sample this well? If not, explain why in the Comments section below.	Yes
Replicate No. (e.g. Dup)	Duo-04
Weather	Cloudy, 30F

Evacuation Details

Measuring Point (mp) Description	Top of Casing
Casing Diameter (inches)	2
Static Water Level (ft-bmp)	7.68
Total Depth (ft-bmp)	14.79
Water Column	7.11
Gallons in Well	1.16
Reference Note: Well Volume Calculation [$\pi r^2 h$, where h= 1foot] Well radius (inch):Volume (Gal./foot):Volume (mL/foot) 0.5" = 0.04 gal/ft = 154 mL/ft 1" = 0.16 gal/ft = 617 mL/ft 2" = 0.65 gal/ft = 2470 mL/ft 3" = 1.47 gal/ft = 5557 mL/ft	
Purge Method	Low-Flow
Type of Equipment used	Peristaltic
Sample Method	Low-Flow
Sample Depth (ft-bmp) (e.g. pump intake)	12.29
Purge Start	13:45

@13:50, DTW:7.94, pH:7.28, temp:11.6, cond:0.55, turb:5.53, DO:0.63, redox:55.6

Reading Time	13:50
Rate (mL/min)	100
Depth to Water (ft)	7.94
Milliliters Purged (total)	500
pH	7.28
Conductivity (mS/cm)	0.55
Turbidity (NTU)	5.53
Dissolved Oxygen (mg/L)	0.63
Temperature (Degrees Celsius)	11.6
Redox (ORP mV)	55.6
parameters	@13:50, DTW:7.94, pH:7.28, temp:11.6, cond:0.55, turb:5.53, DO:0.63, redox:55.6
Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit	

@13:55, DTW:7.94, pH:7.27, temp:11.9, cond:0.55, turb:3.83, DO:0.27, redox:61.5

Reading Time	13:55
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	7.94
Milliliters Purged (total)	1000
pH	7.27
Conductivity (mS/cm)	0.55
Turbidity (NTU)	3.83
Dissolved Oxygen (mg/L)	0.27
Temperature (Degrees Celsius)	11.9
Redox (ORP mV)	61.5
parameters	@13:55, DTW:7.94, pH:7.27, temp:11.9, cond:0.55, turb:3.83, DO:0.27, redox:61.5

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@14:15, DTW:7.94, pH:7.24, temp:11.9, cond:0.55, turb:2.21, DO:0.12, redox:82.9

Reading Time	14:15
Minutes Elapsed between readings	20
Rate (mL/min)	100
Depth to Water (ft)	7.94
Milliliters Purged (total)	2500
pH	7.24
Conductivity (mS/cm)	0.55
Turbidity (NTU)	2.21
Dissolved Oxygen (mg/L)	0.12
Temperature (Degrees Celsius)	11.9
Redox (ORP mV)	82.9
parameters	@14:15, DTW:7.94, pH:7.24, temp:11.9, cond:0.55, turb:2.21, DO:0.12, redox:82.9

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@14:20, DTW:7.94, pH:7.24, temp:11.9, cond:0.55, turb:2.11, DO:0.13, redox:87.5

Reading Time	14:20
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	7.94
Milliliters Purged (total)	3000
pH	7.24
Conductivity (mS/cm)	0.55
Turbidity (NTU)	2.11
Dissolved Oxygen (mg/L)	0.13
Temperature (Degrees Celsius)	11.9
Redox (ORP mV)	87.5

parameters	@14:20, DTW:7.94, pH:7.24, temp:11.9, cond:0.55, turb:2.11, DO:0.13, redox:87.5

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@14:25, DTW:7.94, pH:7.24, temp:11.9, cond:0.55, turb:1.67, DO:0.11, redox:90.5

Reading Time	14:25
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	7.94
Milliliters Purged (total)	4000
pH	7.24
Conductivity (mS/cm)	0.55
Turbidity (NTU)	1.67
Dissolved Oxygen (mg/L)	0.11
Temperature (Degrees Celsius)	11.9
Redox (ORP mV)	90.5
parameters	@14:25, DTW:7.94, pH:7.24, temp:11.9, cond:0.55, turb:1.67, DO:0.11, redox:90.5

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@14:30, DTW:7.94, pH:7.23, temp:11.9, cond:0.55, turb:1.44, DO:0.12, redox:94.5

Reading Time	14:30
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	7.94
Milliliters Purged (total)	4500
pH	7.23
Conductivity (mS/cm)	0.55
Turbidity (NTU)	1.44
Dissolved Oxygen (mg/L)	0.12
Temperature (Degrees Celsius)	11.9
Redox (ORP mV)	94.5
parameters	@14:30, DTW:7.94, pH:7.23, temp:11.9, cond:0.55, turb:1.44, DO:0.12, redox:94.5

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@14:35, DTW:7.94, pH:7.23, temp:11.9, cond:0.55, turb:1.12, DO:0.1, redox:98.8

Reading Time	14:35
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	7.94
Milliliters Purged (total)	5000
pH	7.23
Conductivity (mS/cm)	0.55

Turbidity (NTU)	1.12
Dissolved Oxygen (mg/L)	0.1
Temperature (Degrees Celsius)	11.9
Redox (ORP mV)	98.8
parameters	@14:35, DTW:7.94, pH:7.23, temp:11.9, cond:0.55, turb:1.12, DO:0.1, redox:98.8
Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit	
Total Volume Measured (units)	Gallons

Sample Information

Sample Time	14:40
Color	Clear/slight yellowish green
Notable odors	None

PFAS

Constituent Sampled	PFAS
Container Type	250 mL Plastic
Number of Containers	4
Preservative	None

Alkalinity, BOD, Chloride, Nitrate, Nitrite, Phosphate, Sulfate, TSS, TDS

Constituent Sampled	Alkalinity, BOD, Chloride, Nitrate, Nitrite, Phosphate, Sulfate, TSS, TDS
Container Type	1L Plastic
Number of Containers	1
Preservative	None

COD

Constituent Sampled	COD
Container Type	250 mL Plastic
Number of Containers	1
Preservative	H2SO4

Sulfide

Constituent Sampled	Sulfide
Container Type	125 mL Plastic
Number of Containers	1
Preservative	NaOH

TOC

Constituent Sampled	TOC
Container Type	40 mL Vial
Number of Containers	2
Preservative	H2SO4

Metals

Constituent Sampled	Metals

Container Type	125 mL Plastic
Number of Containers	4
Preservative	HNO3

Dissolved Metals

Constituent Sampled	Dissolved Metals
Container Type	125 mL Plastic
Number of Containers	1
Preservative	HNO3

Hexavalent Chromium

Constituent Sampled	Hexavalent Chromium
Container Type	125 mL Plastic
Number of Containers	2
Preservative	None

Well Information

Condition of Well	Good
Well Locked at Arrival	Yes
Well Locked at Departure	Yes

Signature

Signed 2018-12-06 18:45:04 UTC

2018-12-05, MW-02-03(6)

Created	2018-12-05 17:31:24 UTC by Erik Pietrzak
Updated	2018-12-05 19:00:52 UTC by Erik Pietrzak
Location	42.7378894575338, -84.5806441270603
Status	Field Draft
Project Number	B0064479.2018
Project Name / Location	RACER Lansing, MI
Sampler Name	Erik Pietrzak
Date	2018-12-05
Well ID	MW-02-03(6)
Are you able to purge and/or sample this well? If not, explain why in the Comments section below.	Yes
Replicate No. (e.g. Dup)	DUP-07
Weather	Flurries, 29

Evacuation Details

Measuring Point (mp) Description	Top of Casing
Casing Diameter (inches)	2
Static Water Level (ft-bmp)	30.28
Total Depth (ft-bmp)	45.2
Water Column	14.92
Gallons in Well	2.42

Reference Note: Well Volume Calculation [$\pi r^2 h$, where h= 1foot] Well radius (inch):Volume (Gal./foot):Volume (mL/foot) 0.5" = 0.04 gal/ft = 154 mL/ft 1" = 0.16 gal/ft = 617 mL/ft 2" = 0.65 gal/ft = 2470 mL/ft 3" = 1.47 gal/ft = 5557 mL/ft

Purge Method	Low-Flow
Type of Equipment used	Bladder
Sample Method	Low-Flow
Sample Depth (ft-bmp) (e.g. pump intake)	41
Purge Start	12:30

@12:35, DTW:29.71, pH:7.18, temp:10.5, cond:9.03, turb:525, DO:8.53, redox:71.4

Reading Time	12:35
Rate (mL/min)	200
Depth to Water (ft)	29.71
pH	7.18
Conductivity (mS/cm)	9.03
Turbidity (NTU)	525
Dissolved Oxygen (mg/L)	8.53
Temperature (Degrees Celsius)	10.5
Redox (ORP mV)	71.4
parameters	@12:35, DTW:29.71, pH:7.18, temp:10.5, cond:9.03, turb:525, DO:8.53, redox:71.4

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:40, DTW:30.27, pH:7.29, temp:10, cond:8.9, turb:529, DO:9.14, redox:66.5

Reading Time	12:40
Minutes Elapsed between readings	5
Rate (mL/min)	200
Depth to Water (ft)	30.27
pH	7.29
Conductivity (mS/cm)	8.9
Turbidity (NTU)	529
Dissolved Oxygen (mg/L)	9.14
Temperature (Degrees Celsius)	10
Redox (ORP mV)	66.5
parameters	@12:40, DTW:30.27, pH:7.29, temp:10, cond:8.9, turb:529, DO:9.14, redox:66.5

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:45, DTW:31.17, pH:7.41, temp:9.2, cond:8.86, turb:540, DO:9.64, redox:61.8

Reading Time	12:45
Minutes Elapsed between readings	5
Rate (mL/min)	200
Depth to Water (ft)	31.17
pH	7.41
Conductivity (mS/cm)	8.86
Turbidity (NTU)	540
Dissolved Oxygen (mg/L)	9.64
Temperature (Degrees Celsius)	9.2
Redox (ORP mV)	61.8
parameters	@12:45, DTW:31.17, pH:7.41, temp:9.2, cond:8.86, turb:540, DO:9.64, redox:61.8

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:50, DTW:31.55, pH:7.51, temp:8.6, cond:8.82, turb:540, DO:9.79, redox:59.1

Reading Time	12:50
Minutes Elapsed between readings	5
Rate (mL/min)	200
Depth to Water (ft)	31.55
pH	7.51
Conductivity (mS/cm)	8.82
Turbidity (NTU)	540
Dissolved Oxygen (mg/L)	9.79
Temperature (Degrees Celsius)	8.6
Redox (ORP mV)	59.1
parameters	@12:50, DTW:31.55, pH:7.51, temp:8.6, cond:8.82, turb:540, DO:9.79, redox:59.1

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:55, DTW:32, pH:7.61, temp:8.4, cond:8.82, turb:557, DO:10.18, redox:57

Reading Time	12:55
Minutes Elapsed between readings	5
Rate (mL/min)	200
Depth to Water (ft)	32
pH	7.61
Conductivity (mS/cm)	8.82
Turbidity (NTU)	557
Dissolved Oxygen (mg/L)	10.18
Temperature (Degrees Celsius)	8.4
Redox (ORP mV)	57
parameters	@12:55, DTW:32, pH:7.61, temp:8.4, cond:8.82, turb:557, DO:10.18, redox:57

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:00, DTW:32.22, pH:7.68, temp:6.5, cond:8.86, turb:575, DO:10.29, redox:57.2

Reading Time	13:00
Minutes Elapsed between readings	5
Rate (mL/min)	200
Depth to Water (ft)	32.22
pH	7.68
Conductivity (mS/cm)	8.86
Turbidity (NTU)	575
Dissolved Oxygen (mg/L)	10.29
Temperature (Degrees Celsius)	6.5
Redox (ORP mV)	57.2
parameters	@13:00, DTW:32.22, pH:7.68, temp:6.5, cond:8.86, turb:575, DO:10.29, redox:57.2

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:05, DTW:32.57, pH:7.73, temp:7.3, cond:8.8, turb:566, DO:10.37, redox:56.7

Reading Time	13:05
Minutes Elapsed between readings	5
Rate (mL/min)	200
Depth to Water (ft)	32.57
pH	7.73
Conductivity (mS/cm)	8.8
Turbidity (NTU)	566
Dissolved Oxygen (mg/L)	10.37
Temperature (Degrees Celsius)	7.3
Redox (ORP mV)	56.7
parameters	@13:05, DTW:32.57, pH:7.73, temp:7.3, cond:8.8, turb:566, DO:10.37, redox:56.7

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:10, DTW:32.68, pH:7.81, temp:8.2, cond:8.8, turb:589, DO:9.95, redox:56.4

Reading Time	13:10
Minutes Elapsed between readings	5
Rate (mL/min)	200
Depth to Water (ft)	32.68
pH	7.81
Conductivity (mS/cm)	8.8
Turbidity (NTU)	589
Dissolved Oxygen (mg/L)	9.95
Temperature (Degrees Celsius)	8.2
Redox (ORP mV)	56.4
parameters	@13:10, DTW:32.68, pH:7.81, temp:8.2, cond:8.8, turb:589, DO:9.95, redox:56.4

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:15, DTW:33.13, pH:7.86, temp:8.1, cond:8.81, turb:617, DO:9.87, redox:56.2

Reading Time	13:15
Minutes Elapsed between readings	5
Rate (mL/min)	200
Depth to Water (ft)	33.13
pH	7.86
Conductivity (mS/cm)	8.81
Turbidity (NTU)	617
Dissolved Oxygen (mg/L)	9.87
Temperature (Degrees Celsius)	8.1
Redox (ORP mV)	56.2
parameters	@13:15, DTW:33.13, pH:7.86, temp:8.1, cond:8.81, turb:617, DO:9.87, redox:56.2

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:20, DTW:33.28, pH:7.89, temp:6.6, cond:8.84, turb:640, DO:10.09, redox:56.9

Reading Time	13:20
Minutes Elapsed between readings	5
Rate (mL/min)	200
Depth to Water (ft)	33.28
pH	7.89
Conductivity (mS/cm)	8.84
Turbidity (NTU)	640
Dissolved Oxygen (mg/L)	10.09
Temperature (Degrees Celsius)	6.6
Redox (ORP mV)	56.9

parameters	@13:20, DTW:33.28, pH:7.89, temp:6.6, cond:8.84, turb:640, DO:10.09, redox:56.9

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

Purge End	13:20
Total Volume Measured (units)	Gallons
Total Gallons Purged	2.5
Well Volumes Purged	1.03

Sample Information

Sample Time	13:22
Color	Medium gray
Notable odors	None

VOCs

Constituent Sampled	VOCs
Container Type	40 mL Vial
Number of Containers	3
Preservative	HCL

1,4 dioxane

Constituent Sampled	1,4 dioxane
Container Type	40 mL Vial
Preservative	HCL

Well Information

Condition of Well	Good
Well Locked at Arrival	No
Well Locked at Departure	No

Signature

Signed 2018-12-05 19:00:50 UTC

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2018-12-05, MW-18-89

Created	2018-12-05 19:40:42 UTC by Austin Westhuis
Updated	2018-12-05 20:15:33 UTC by Austin Westhuis
Location	42.7460700693007, -84.5845128782881
Status	Field Draft
Project Number	B0064479.2018
Project Name / Location	RACER Lansing, MI
Sampler Name	Austin Westhuis
Date	2018-12-05
Well ID	MW-18-89
Are you able to purge and/or sample this well? If not, explain why in the Comments section below.	Yes
Weather	Cloudy, 25F

Evacuation Details

Measuring Point (mp) Description	Top of Casing
Casing Diameter (inches)	2
Static Water Level (ft-bmp)	7.44
Total Depth (ft-bmp)	15.6
Water Column	8.16
Gallons in Well	1.33

Reference Note: Well Volume Calculation [$\pi r^2 h$, where h= 1foot] Well radius (inch):Volume (Gal./foot):Volume (mL/foot) 0.5" = 0.04 gal/ft = 154 mL/ft 1" = 0.16 gal/ft = 617 mL/ft 2" = 0.65 gal/ft = 2470 mL/ft 3" = 1.47 gal/ft = 5557 mL/ft

Purge Method	Low-Flow
Type of Equipment used	Peristaltic
Sample Method	Low-Flow
Sample Depth (ft-bmp) (e.g. pump intake)	13.35
Purge Start	14:45

@14:50, DTW:7.73, pH:8.16, temp:8.5, cond:0.481, turb:8.63, DO:0.91, redox:120.9

Reading Time	14:50
Rate (mL/min)	100
Depth to Water (ft)	7.73
Milliliters Purged (total)	500
pH	8.16
Conductivity (mS/cm)	0.481
Turbidity (NTU)	8.63
Dissolved Oxygen (mg/L)	0.91
Temperature (Degrees Celsius)	8.5
Redox (ORP mV)	120.9
parameters	@14:50, DTW:7.73, pH:8.16, temp:8.5, cond:0.481, turb:8.63, DO:0.91, redox:120.9

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@14:55, DTW:8.56, pH:8.17, temp:8.6, cond:0.481, turb:7.22, DO:0.64, redox:119.9

Reading Time	14:55
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	8.56
Milliliters Purged (total)	1000
pH	8.17
Conductivity (mS/cm)	0.481
Turbidity (NTU)	7.22
Dissolved Oxygen (mg/L)	0.64
Temperature (Degrees Celsius)	8.6
Redox (ORP mV)	119.9
parameters	@14:55, DTW:8.56, pH:8.17, temp:8.6, cond:0.481, turb:7.22, DO:0.64, redox:119.9

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@15:00, DTW:9.12, pH:8.14, temp:8.7, cond:0.481, turb:3.68, DO:0.3, redox:118.2

Reading Time	15:00
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	9.12
Milliliters Purged (total)	1500
pH	8.14
Conductivity (mS/cm)	0.481
Turbidity (NTU)	3.68
Dissolved Oxygen (mg/L)	0.3
Temperature (Degrees Celsius)	8.7
Redox (ORP mV)	118.2
parameters	@15:00, DTW:9.12, pH:8.14, temp:8.7, cond:0.481, turb:3.68, DO:0.3, redox:118.2

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@15:05, DTW:9.31, pH:8.13, temp:8.9, cond:0.484, turb:2.52, DO:0.28, redox:114.1

Reading Time	15:05
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	9.31
Milliliters Purged (total)	2000
pH	8.13
Conductivity (mS/cm)	0.484
Turbidity (NTU)	2.52
Dissolved Oxygen (mg/L)	0.28
Temperature (Degrees Celsius)	8.9
Redox (ORP mV)	114.1
parameters	@15:05, DTW:9.31, pH:8.13, temp:8.9, cond:0.484, turb:2.52, DO:0.28, redox:114.1

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@15:10, DTW:9.47, pH:8.14, temp:9, cond:0.484, turb:2.12, DO:0.26, redox:111.4

Reading Time	15:10
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	9.47
Milliliters Purged (total)	3000
pH	8.14
Conductivity (mS/cm)	0.484
Turbidity (NTU)	2.12
Dissolved Oxygen (mg/L)	0.26
Temperature (Degrees Celsius)	9
Redox (ORP mV)	111.4
parameters	@15:10, DTW:9.47, pH:8.14, temp:9, cond:0.484, turb:2.12, DO:0.26, redox:111.4

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

Total Volume Measured (units)	Gallons

Sample Information

Sample Time	15:15
Color	Clear
Notable odors	None

PFAS

Constituent Sampled	PFAS
Container Type	250 mL Plastic
Number of Containers	2
Preservative	None

VOCs

Constituent Sampled	VOCs
Container Type	40 mL Vial
Number of Containers	3
Preservative	HCL

Alkalinity, BOD, Chloride, Nitrate, Nitrite, Phosphate, Sulfate, TSS, TDS

Constituent Sampled	Alkalinity, BOD, Chloride, Nitrate, Nitrite, Phosphate, Sulfate, TSS, TDS
Container Type	1L Plastic
Number of Containers	1
Preservative	None

COD

Constituent Sampled	COD

Container Type	250 mL Plastic
Number of Containers	1
Preservative	H2SO4

Sulfide

Constituent Sampled	Sulfide
Container Type	125 mL Plastic
Number of Containers	1
Preservative	NaOH

TOC

Constituent Sampled	TOC
Container Type	40 mL Vial
Number of Containers	2
Preservative	H2SO4

Metals

Constituent Sampled	Metals
Container Type	125 mL Plastic
Number of Containers	1
Preservative	HNO3

Dissolved Metals

Constituent Sampled	Dissolved Metals
Container Type	125 mL Plastic
Number of Containers	1
Preservative	HNO3

Well Information

Condition of Well	Good
Well Locked at Arrival	No
Well Locked at Departure	No

Signature

Signed 2018-12-05 19:42:36 UTC

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2018-12-06, MW-22

Created	2018-12-06 17:57:08 UTC by Marina Samp
Updated	2018-12-06 18:57:12 UTC by Marina Samp
Location	42.7449284121792, -84.583849199195
Status	Field Draft
Project Number	B0064479.2018
Project Name / Location	RACER Lansing, MI
Sampler Name	Marina Samp
Date	2018-12-06
Well ID	MW-22
Are you able to purge and/or sample this well? If not, explain why in the Comments section below.	Yes
Weather	30, cloudy

Evacuation Details

Measuring Point (mp) Description	Top of Casing
Casing Diameter (inches)	2
Static Water Level (ft-bmp)	50.97
Total Depth (ft-bmp)	62
Water Column	11.03
Gallons in Well	1.79

Reference Note: Well Volume Calculation [$\pi r^2 h$, where h= 1foot] Well radius (inch):Volume (Gal./foot):Volume (mL/foot) 0.5" = 0.04 gal/ft = 154 mL/ft 1" = 0.16 gal/ft = 617 mL/ft 2" = 0.65 gal/ft = 2470 mL/ft 3" = 1.47 gal/ft = 5557 mL/ft

Purge Method	Low-Flow
Type of Equipment used	Bladder
Sample Method	Low-Flow
Sample Depth (ft-bmp) (e.g. pump intake)	59
Purge Start	12:55

@13:00, DTW:51.03, pH:7, temp:9, cond:1.74, turb:228, DO:1.6, redox:159.5

Reading Time	13:00
Rate (mL/min)	300
Depth to Water (ft)	51.03
pH	7
Conductivity (mS/cm)	1.74
Turbidity (NTU)	228
Dissolved Oxygen (mg/L)	1.6
Temperature (Degrees Celsius)	9
Redox (ORP mV)	159.5
parameters	@13:00, DTW:51.03, pH:7, temp:9, cond:1.74, turb:228, DO:1.6, redox:159.5

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:05, DTW:51.1, pH:7.03, temp:8.3, cond:1.66, turb:89.4, DO:1.26, redox:157.7

Reading Time	13:05

Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	51.1
pH	7.03
Conductivity (mS/cm)	1.66
Turbidity (NTU)	89.4
Dissolved Oxygen (mg/L)	1.26
Temperature (Degrees Celsius)	8.3
Redox (ORP mV)	157.7
parameters	@13:05, DTW:51.1, pH:7.03, temp:8.3, cond:1.66, turb:89.4, DO:1.26, redox:157.7

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:10, DTW:51.08, pH:7.05, temp:7.8, cond:1.65, turb:56.4, DO:1.44, redox:156.2

Reading Time	13:10
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	51.08
pH	7.05
Conductivity (mS/cm)	1.65
Turbidity (NTU)	56.4
Dissolved Oxygen (mg/L)	1.44
Temperature (Degrees Celsius)	7.8
Redox (ORP mV)	156.2
parameters	@13:10, DTW:51.08, pH:7.05, temp:7.8, cond:1.65, turb:56.4, DO:1.44, redox:156.2

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:15, DTW:51.08, pH:7.08, temp:7.8, cond:1.59, turb:41.8, DO:1.79, redox:154.1

Reading Time	13:15
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	51.08
pH	7.08
Conductivity (mS/cm)	1.59
Turbidity (NTU)	41.8
Dissolved Oxygen (mg/L)	1.79
Temperature (Degrees Celsius)	7.8
Redox (ORP mV)	154.1
parameters	@13:15, DTW:51.08, pH:7.08, temp:7.8, cond:1.59, turb:41.8, DO:1.79, redox:154.1

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:20, DTW:51.08, pH:7.1, temp:7.5, cond:1.53, turb:42.7, DO:1.34, redox:152

Reading Time	13:20
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	51.08
pH	7.1
Conductivity (mS/cm)	1.53
Turbidity (NTU)	42.7
Dissolved Oxygen (mg/L)	1.34
Temperature (Degrees Celsius)	7.5
Redox (ORP mV)	152
parameters	@13:20, DTW:51.08, pH:7.1, temp:7.5, cond:1.53, turb:42.7, DO:1.34, redox:152

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:25, DTW:51.08, pH:7.12, temp:7.4, cond:1.48, turb:40, DO:2.74, redox:150

Reading Time	13:25
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	51.08
pH	7.12
Conductivity (mS/cm)	1.48
Turbidity (NTU)	40
Dissolved Oxygen (mg/L)	2.74
Temperature (Degrees Celsius)	7.4
Redox (ORP mV)	150
parameters	@13:25, DTW:51.08, pH:7.12, temp:7.4, cond:1.48, turb:40, DO:2.74, redox:150

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:30, DTW:51.08, pH:7.15, temp:3, cond:1.37, turb:34.9, DO:3.05, redox:150.1

Reading Time	13:30
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	51.08
pH	7.15
Conductivity (mS/cm)	1.37
Turbidity (NTU)	34.9
Dissolved Oxygen (mg/L)	3.05
Temperature (Degrees Celsius)	3
Redox (ORP mV)	150.1
parameters	@13:30, DTW:51.08, pH:7.15, temp:3, cond:1.37, turb:34.9, DO:3.05, redox:150.1

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:35, DTW:51.08, pH:7.16, temp:2.6, cond:1.32, turb:35.4, DO:2.99, redox:149.6

Reading Time	13:35
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	51.08
pH	7.16
Conductivity (mS/cm)	1.32
Turbidity (NTU)	35.4
Dissolved Oxygen (mg/L)	2.99
Temperature (Degrees Celsius)	2.6
Redox (ORP mV)	149.6
parameters	@13:35, DTW:51.08, pH:7.16, temp:2.6, cond:1.32, turb:35.4, DO:2.99, redox:149.6

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:40, DTW:51.08, pH:7.16, temp:3.9, cond:1.3, turb:33.2, DO:2.84, redox:149.2

Reading Time	13:40
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	51.08
pH	7.16
Conductivity (mS/cm)	1.3
Turbidity (NTU)	33.2
Dissolved Oxygen (mg/L)	2.84
Temperature (Degrees Celsius)	3.9
Redox (ORP mV)	149.2
parameters	@13:40, DTW:51.08, pH:7.16, temp:3.9, cond:1.3, turb:33.2, DO:2.84, redox:149.2

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:45, DTW:51.08, pH:7.16, temp:5.5, cond:1.35, turb:35.3, DO:2.9, redox:148.1

Reading Time	13:45
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	51.08
pH	7.16
Conductivity (mS/cm)	1.35
Turbidity (NTU)	35.3
Dissolved Oxygen (mg/L)	2.9
Temperature (Degrees Celsius)	5.5
Redox (ORP mV)	148.1
parameters	@13:45, DTW:51.08, pH:7.16, temp:5.5, cond:1.35, turb:35.3, DO:2.9, redox:148.1

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:50, DTW:51.08, pH:7.17, temp:5, cond:1.35, turb:36.5, DO:3.39, redox:146.9

Reading Time	13:50
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	51.08
pH	7.17
Conductivity (mS/cm)	1.35
Turbidity (NTU)	36.5
Dissolved Oxygen (mg/L)	3.39
Temperature (Degrees Celsius)	5
Redox (ORP mV)	146.9
parameters	@13:50, DTW:51.08, pH:7.17, temp:5, cond:1.35, turb:36.5, DO:3.39, redox:146.9

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:55, DTW:51.08, pH:7.19, temp:5.2, cond:1.31, turb:34.2, DO:3.69, redox:145.8

Reading Time	13:55
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	51.08
pH	7.19
Conductivity (mS/cm)	1.31
Turbidity (NTU)	34.2
Dissolved Oxygen (mg/L)	3.69
Temperature (Degrees Celsius)	5.2
Redox (ORP mV)	145.8
parameters	@13:55, DTW:51.08, pH:7.19, temp:5.2, cond:1.31, turb:34.2, DO:3.69, redox:145.8

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

Purge End	13:55
Total Volume Measured (units)	Gallons
Total Gallons Purged	1
Well Volumes Purged	0.56

Sample Information

Sample Time	14:00
Color	None
Notable odors	None

Metals

Constituent Sampled	Metals

Container Type	125 mL Plastic
Number of Containers	1
Preservative	HNO3

Well Information

Well Location	Plant 3
Condition of Well	Good
Well Locked at Arrival	Yes
Well Locked at Departure	Yes

Signature

Signed 2018-12-06 18:57:10 UTC

2018-12-11, MW-16-81

Created	2018-12-11 08:56:18 EST by Daniel Stockard
Updated	2018-12-11 10:14:37 EST by Daniel Stockard
Location	42.736278993699, -84.5877833641673
Status	Field Draft
Project Number	B0064479.2018
Project Name / Location	RACER Lansing, MI
Sampler Name	Daniel Stockard
Date	2018-12-11
Well ID	MW-16-81
Are you able to purge and/or sample this well? If not, explain why in the Comments section below.	Yes
Replicate No. (e.g. Dup)	None
Weather	20s, overcast

Evacuation Details

Measuring Point (mp) Description	Top of Casing
Casing Diameter (inches)	2
Static Water Level (ft-bmp)	65.15
Total Depth (ft-bmp)	75
Water Column	9.84999999999999
Gallons in Well	1.6

Reference Note: Well Volume Calculation [$\pi r^2 h$, where h= 1foot] Well radius (inch):Volume (Gal./foot):Volume (mL/foot) 0.5" = 0.04 gal/ft = 154 mL/ft 1" = 0.16 gal/ft = 617 mL/ft 2" = 0.65 gal/ft = 2470 mL/ft 3" = 1.47 gal/ft = 5557 mL/ft

Purge Method	Low-Flow
Type of Equipment used	Bladder
Sample Method	Grab
Sample Depth (ft-bmp) (e.g. pump intake)	73
Purge Start	08:55

@09:00, DTW:65.15, pH:6.68, temp:11.2, cond:1.32, turb:502, DO:1.44, redox:2.3

Reading Time	09:00
Rate (mL/min)	150
Depth to Water (ft)	65.15
pH	6.68
Conductivity (mS/cm)	1.32
Turbidity (NTU)	502
Dissolved Oxygen (mg/L)	1.44
Temperature (Degrees Celsius)	11.2
Redox (ORP mV)	2.3
parameters	@09:00, DTW:65.15, pH:6.68, temp:11.2, cond:1.32, turb:502, DO:1.44, redox:2.3

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:10, DTW:65.89, pH:6.72, temp:10.4, cond:1.79, turb:493, DO:0.8, redox:-0.1

Reading Time	09:10
Minutes Elapsed between readings	10
Rate (mL/min)	150
Depth to Water (ft)	65.89
pH	6.72
Conductivity (mS/cm)	1.79
Turbidity (NTU)	493
Dissolved Oxygen (mg/L)	0.8
Temperature (Degrees Celsius)	10.4
Redox (ORP mV)	-0.1
parameters	@09:10, DTW:65.89, pH:6.72, temp:10.4, cond:1.79, turb:493, DO:0.8, redox:-0.1

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:15, DTW:65.9, pH:6.73, temp:10.5, cond:1.8, turb:114, DO:0.74, redox:-3.5

Reading Time	09:15
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	65.9
pH	6.73
Conductivity (mS/cm)	1.8
Turbidity (NTU)	114
Dissolved Oxygen (mg/L)	0.74
Temperature (Degrees Celsius)	10.5
Redox (ORP mV)	-3.5
parameters	@09:15, DTW:65.9, pH:6.73, temp:10.5, cond:1.8, turb:114, DO:0.74, redox:-3.5

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:20, DTW:65.9, pH:6.74, temp:10.7, cond:1.82, turb:69.1, DO:0.72, redox:-5.5

Reading Time	09:20
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	65.9
pH	6.74
Conductivity (mS/cm)	1.82
Turbidity (NTU)	69.1
Dissolved Oxygen (mg/L)	0.72
Temperature (Degrees Celsius)	10.7
Redox (ORP mV)	-5.5
parameters	@09:20, DTW:65.9, pH:6.74, temp:10.7, cond:1.82, turb:69.1, DO:0.72, redox:-5.5

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:25, DTW:65.96, pH:6.74, temp:11.2, cond:1.83, turb:32.3, DO:0.69, redox:-7.1

Reading Time	09:25
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	65.96
pH	6.74
Conductivity (mS/cm)	1.83
Turbidity (NTU)	32.3
Dissolved Oxygen (mg/L)	0.69
Temperature (Degrees Celsius)	11.2
Redox (ORP mV)	-7.1
parameters	@09:25, DTW:65.96, pH:6.74, temp:11.2, cond:1.83, turb:32.3, DO:0.69, redox:-7.1

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:30, DTW:65.97, pH:6.74, temp:10.7, cond:1.82, turb:21.7, DO:0.73, redox:-7

Reading Time	09:30
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	65.97
pH	6.74
Conductivity (mS/cm)	1.82
Turbidity (NTU)	21.7
Dissolved Oxygen (mg/L)	0.73
Temperature (Degrees Celsius)	10.7
Redox (ORP mV)	-7
parameters	@09:30, DTW:65.97, pH:6.74, temp:10.7, cond:1.82, turb:21.7, DO:0.73, redox:-7

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:35, DTW:66.11, pH:6.74, temp:11.5, cond:1.86, turb:19.1, DO:0.71, redox:-6

Reading Time	09:35
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	66.11
pH	6.74
Conductivity (mS/cm)	1.86
Turbidity (NTU)	19.1
Dissolved Oxygen (mg/L)	0.71
Temperature (Degrees Celsius)	11.5
Redox (ORP mV)	-6
parameters	@09:35, DTW:66.11, pH:6.74, temp:11.5, cond:1.86, turb:19.1, DO:0.71, redox:-6

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:40, DTW:66.11, pH:6.75, temp:11.4, cond:1.85, turb:13.9, DO:0.78, redox:-5.1

Reading Time	09:40
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	66.11
pH	6.75
Conductivity (mS/cm)	1.85
Turbidity (NTU)	13.9
Dissolved Oxygen (mg/L)	0.78
Temperature (Degrees Celsius)	11.4
Redox (ORP mV)	-5.1
parameters	@09:40, DTW:66.11, pH:6.75, temp:11.4, cond:1.85, turb:13.9, DO:0.78, redox:-5.1

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:45, DTW:66.22, pH:6.76, temp:10.8, cond:1.83, turb:24.5, DO:1.09, redox:-3.4

Reading Time	09:45
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	66.22
pH	6.76
Conductivity (mS/cm)	1.83
Turbidity (NTU)	24.5
Dissolved Oxygen (mg/L)	1.09
Temperature (Degrees Celsius)	10.8
Redox (ORP mV)	-3.4
parameters	@09:45, DTW:66.22, pH:6.76, temp:10.8, cond:1.83, turb:24.5, DO:1.09, redox:-3.4

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:50, DTW:66.26, pH:6.76, temp:10.2, cond:1.83, turb:20, DO:1.1, redox:-2.9

Reading Time	09:50
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	66.26
pH	6.76
Conductivity (mS/cm)	1.83
Turbidity (NTU)	20
Dissolved Oxygen (mg/L)	1.1
Temperature (Degrees Celsius)	10.2
Redox (ORP mV)	-2.9

parameters	@09:50, DTW:66.26, pH:6.76, temp:10.2, cond:1.83, turb:20, DO:1.1, redox:-2.9

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

Total Volume Measured (units)	Gallons
Total Gallons Purged	2
Well Volumes Purged	1.25

Sample Information

Sample Time	09:55
Color	None
Notable odors	None

1,4-D and VOCs

Constituent Sampled	1,4-D and VOCs
Container Type	40 mL Vial
Number of Containers	3
Preservative	HCL

Well Information

Well Location	P2
Condition of Well	Great!
Well Locked at Arrival	Yes
Well Locked at Departure	Yes
Comments	Well yield was 😁
Signature	

Signed 2018-12-11 10:14:28 EST

2018-12-07, MW-19

Created	2018-12-07 18:02:42 UTC by Marina Samp
Updated	2018-12-07 19:36:44 UTC by Marina Samp
Location	42.7452617604684, -84.5840109699262
Status	Field Draft
Project Number	B0064479.2018
Project Name / Location	RACER Lansing, MI
Sampler Name	Marina Samp
Date	2018-12-07
Well ID	MW-19
Are you able to purge and/or sample this well? If not, explain why in the Comments section below.	Yes
Weather	26, sun/clouds

Evacuation Details

Measuring Point (mp) Description	Top of Casing
Casing Diameter (inches)	2
Static Water Level (ft-bmp)	51.64
Total Depth (ft-bmp)	65
Water Column	13.36
Gallons in Well	2.17

Reference Note: Well Volume Calculation [$\pi r^2 h$, where h= 1foot] Well radius (inch):Volume (Gal./foot):Volume (mL/foot) 0.5" = 0.04 gal/ft = 154 mL/ft 1" = 0.16 gal/ft = 617 mL/ft 2" = 0.65 gal/ft = 2470 mL/ft 3" = 1.47 gal/ft = 5557 mL/ft

Purge Method	Low-Flow
Type of Equipment used	Bladder
Sample Method	Low-Flow
Sample Depth (ft-bmp) (e.g. pump intake)	61
Purge Start	13:00

@13:05, DTW:52.43, pH:7.67, temp:9.5, cond:0.254, turb:856, DO:4.81, redox:111.1

Reading Time	13:05
Rate (mL/min)	300
Depth to Water (ft)	52.43
pH	7.67
Conductivity (mS/cm)	0.254
Turbidity (NTU)	856
Dissolved Oxygen (mg/L)	4.81
Temperature (Degrees Celsius)	9.5
Redox (ORP mV)	111.1
parameters	@13:05, DTW:52.43, pH:7.67, temp:9.5, cond:0.254, turb:856, DO:4.81, redox:111.1

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:10, DTW:52.26, pH:7.64, temp:7, cond:0.24, turb:975, DO:5.22, redox:112.8

Reading Time	13:10

Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	52.26
pH	7.64
Conductivity (mS/cm)	0.24
Turbidity (NTU)	975
Dissolved Oxygen (mg/L)	5.22
Temperature (Degrees Celsius)	7
Redox (ORP mV)	112.8
parameters	@13:10, DTW:52.26, pH:7.64, temp:7, cond:0.24, turb:975, DO:5.22, redox:112.8

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:15, DTW:52.26, pH:7.63, temp:8.4, cond:0.233, turb:992, DO:4.44, redox:112

Reading Time	13:15
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	52.26
pH	7.63
Conductivity (mS/cm)	0.233
Turbidity (NTU)	992
Dissolved Oxygen (mg/L)	4.44
Temperature (Degrees Celsius)	8.4
Redox (ORP mV)	112
parameters	@13:15, DTW:52.26, pH:7.63, temp:8.4, cond:0.233, turb:992, DO:4.44, redox:112

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:20, DTW:52.49, pH:7.64, temp:11.2, cond:0.242, turb:1090, DO:4.24, redox:110.9

Reading Time	13:20
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	52.49
pH	7.64
Conductivity (mS/cm)	0.242
Turbidity (NTU)	1090
Dissolved Oxygen (mg/L)	4.24
Temperature (Degrees Celsius)	11.2
Redox (ORP mV)	110.9
parameters	@13:20, DTW:52.49, pH:7.64, temp:11.2, cond:0.242, turb:1090, DO:4.24, redox:110.9

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:25, DTW:52.59, pH:7.63, temp:10.6, cond:0.224, turb:855, DO:4.53, redox:111.6

Reading Time	13:25
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	52.59
pH	7.63
Conductivity (mS/cm)	0.224
Turbidity (NTU)	855
Dissolved Oxygen (mg/L)	4.53
Temperature (Degrees Celsius)	10.6
Redox (ORP mV)	111.6
parameters	@13:25, DTW:52.59, pH:7.63, temp:10.6, cond:0.224, turb:855, DO:4.53, redox:111.6

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:30, DTW:52.62, pH:7.63, temp:10.4, cond:0.221, turb:749, DO:4.72, redox:112.4

Reading Time	13:30
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	52.62
pH	7.63
Conductivity (mS/cm)	0.221
Turbidity (NTU)	749
Dissolved Oxygen (mg/L)	4.72
Temperature (Degrees Celsius)	10.4
Redox (ORP mV)	112.4
parameters	@13:30, DTW:52.62, pH:7.63, temp:10.4, cond:0.221, turb:749, DO:4.72, redox:112.4

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:35, DTW:52.64, pH:7.62, temp:10.5, cond:0.223, turb:537, DO:4.76, redox:113.5

Reading Time	13:35
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	52.64
pH	7.62
Conductivity (mS/cm)	0.223
Turbidity (NTU)	537
Dissolved Oxygen (mg/L)	4.76
Temperature (Degrees Celsius)	10.5
Redox (ORP mV)	113.5
parameters	@13:35, DTW:52.64, pH:7.62, temp:10.5, cond:0.223, turb:537, DO:4.76, redox:113.5

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:40, DTW:52.67, pH:7.61, temp:10.4, cond:0.228, turb:457, DO:4.72, redox:114.5

Reading Time	13:40
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	52.67
pH	7.61
Conductivity (mS/cm)	0.228
Turbidity (NTU)	457
Dissolved Oxygen (mg/L)	4.72
Temperature (Degrees Celsius)	10.4
Redox (ORP mV)	114.5
parameters	@13:40, DTW:52.67, pH:7.61, temp:10.4, cond:0.228, turb:457, DO:4.72, redox:114.5

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:45, DTW:52.82, pH:7.6, temp:11.1, cond:0.248, turb:413, DO:4.57, redox:115.4

Reading Time	13:45
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	52.82
pH	7.6
Conductivity (mS/cm)	0.248
Turbidity (NTU)	413
Dissolved Oxygen (mg/L)	4.57
Temperature (Degrees Celsius)	11.1
Redox (ORP mV)	115.4
parameters	@13:45, DTW:52.82, pH:7.6, temp:11.1, cond:0.248, turb:413, DO:4.57, redox:115.4

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:50, DTW:52.82, pH:7.59, temp:12.2, cond:0.258, turb:356, DO:4.36, redox:115.1

Reading Time	13:50
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	52.82
pH	7.59
Conductivity (mS/cm)	0.258
Turbidity (NTU)	356
Dissolved Oxygen (mg/L)	4.36
Temperature (Degrees Celsius)	12.2
Redox (ORP mV)	115.1
parameters	@13:50, DTW:52.82, pH:7.59, temp:12.2, cond:0.258, turb:356, DO:4.36, redox:115.1

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:55, DTW:53.12, pH:7.58, temp:12.1, cond:0.276, turb:235, DO:4.26, redox:116

Reading Time	13:55
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	53.12
pH	7.58
Conductivity (mS/cm)	0.276
Turbidity (NTU)	235
Dissolved Oxygen (mg/L)	4.26
Temperature (Degrees Celsius)	12.1
Redox (ORP mV)	116
parameters	@13:55, DTW:53.12, pH:7.58, temp:12.1, cond:0.276, turb:235, DO:4.26, redox:116

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@14:00, DTW:53.12, pH:7.57, temp:12.4, cond:0.29, turb:196, DO:3.94, redox:116.9

Reading Time	14:00
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	53.12
pH	7.57
Conductivity (mS/cm)	0.29
Turbidity (NTU)	196
Dissolved Oxygen (mg/L)	3.94
Temperature (Degrees Celsius)	12.4
Redox (ORP mV)	116.9
parameters	@14:00, DTW:53.12, pH:7.57, temp:12.4, cond:0.29, turb:196, DO:3.94, redox:116.9

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@14:05, DTW:53.22, pH:7.57, temp:12.1, cond:0.299, turb:208, DO:3.86, redox:118.1

Reading Time	14:05
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	53.22
pH	7.57
Conductivity (mS/cm)	0.299
Turbidity (NTU)	208
Dissolved Oxygen (mg/L)	3.86
Temperature (Degrees Celsius)	12.1
Redox (ORP mV)	118.1

parameters	@14:05, DTW:53.22, pH:7.57, temp:12.1, cond:0.299, turb:208, DO:3.86, redox:118.1

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@14:10, DTW:53.22, pH:7.57, temp:12.5, cond:0.288, turb:247, DO:3.91, redox:117.5

Reading Time	14:10
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	53.22
pH	7.57
Conductivity (mS/cm)	0.288
Turbidity (NTU)	247
Dissolved Oxygen (mg/L)	3.91
Temperature (Degrees Celsius)	12.5
Redox (ORP mV)	117.5
parameters	@14:10, DTW:53.22, pH:7.57, temp:12.5, cond:0.288, turb:247, DO:3.91, redox:117.5

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@14:15, DTW:52.66, pH:7.67, temp:7.7, cond:0.003, turb:200, DO:7.53, redox:121.3

Reading Time	14:15
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	52.66
pH	7.67
Conductivity (mS/cm)	0.003
Turbidity (NTU)	200
Dissolved Oxygen (mg/L)	7.53
Temperature (Degrees Celsius)	7.7
Redox (ORP mV)	121.3
parameters	@14:15, DTW:52.66, pH:7.67, temp:7.7, cond:0.003, turb:200, DO:7.53, redox:121.3

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@14:20, DTW:52.59, pH:7.58, temp:6.9, cond:0.262, turb:236, DO:4.39, redox:121.4

Reading Time	14:20
Minutes Elapsed between readings	3
Rate (mL/min)	300
Depth to Water (ft)	52.59
pH	7.58
Conductivity (mS/cm)	0.262
Turbidity (NTU)	236
Dissolved Oxygen (mg/L)	4.39
Temperature (Degrees Celsius)	6.9

Redox (ORP mV)	121.4
parameters	@14:20, DTW:52.59, pH:7.58, temp:6.9, cond:0.262, turb:236, DO:4.39, redox:121.4

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@14:25, DTW:52.4, pH:7.59, temp:6.3, cond:0.27, turb:192, DO:4.16, redox:122.9

Reading Time	14:25
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	52.4
pH	7.59
Conductivity (mS/cm)	0.27
Turbidity (NTU)	192
Dissolved Oxygen (mg/L)	4.16
Temperature (Degrees Celsius)	6.3
Redox (ORP mV)	122.9
parameters	@14:25, DTW:52.4, pH:7.59, temp:6.3, cond:0.27, turb:192, DO:4.16, redox:122.9

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@14:30, DTW:52.37, pH:7.59, temp:6.4, cond:0.305, turb:178, DO:3.77, redox:124.2

Reading Time	14:30
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	52.37
pH	7.59
Conductivity (mS/cm)	0.305
Turbidity (NTU)	178
Dissolved Oxygen (mg/L)	3.77
Temperature (Degrees Celsius)	6.4
Redox (ORP mV)	124.2
parameters	@14:30, DTW:52.37, pH:7.59, temp:6.4, cond:0.305, turb:178, DO:3.77, redox:124.2

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@14:34, DTW:52.35, pH:7.59, temp:6.3, cond:0.315, turb:179, DO:3.83, redox:125.7

Reading Time	14:34
Minutes Elapsed between readings	4
Rate (mL/min)	300
Depth to Water (ft)	52.35
pH	7.59
Conductivity (mS/cm)	0.315
Turbidity (NTU)	179
Dissolved Oxygen (mg/L)	3.83

Temperature (Degrees Celsius)	6.3
Redox (ORP mV)	125.7
parameters	@14:34, DTW:52.35, pH:7.59, temp:6.3, cond:0.315, turb:179, DO:3.83, redox:125.7
Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit	
Purge End	14:35
Total Volume Measured (units)	Gallons
Total Gallons Purged	2.25
Well Volumes Purged	1.04

Sample Information

Sample Time	14:40
Color	None
Notable odors	None

1,4-dioxane

Constituent Sampled	1,4-dioxane
Container Type	40 mL Vial
Number of Containers	3
Preservative	HCL

Well Information

Well Location	Plant 3
Condition of Well	Good
Well Locked at Arrival	Yes
Well Locked at Departure	Yes

Signature

Signed 2018-12-07 19:36:42 UTC

2018-12-06, MW-16-77

Created	2018-12-06 10:10:34 EST by Daniel Stockard
Updated	2018-12-06 11:35:21 EST by Daniel Stockard
Location	42.7364655817326, -84.5860029292149
Status	Field Draft
Project Number	B0064479.2018
Project Name / Location	RACER Lansing, MI
Sampler Name	Daniel Stockard
Date	2018-12-06
Well ID	MW-16-77
Are you able to purge and/or sample this well? If not, explain why in the Comments section below.	Yes
Replicate No. (e.g. Dup)	None
Weather	Cloudy, meh, 20s

Evacuation Details

Measuring Point (mp) Description	Top of Casing
Casing Diameter (inches)	2
Static Water Level (ft-bmp)	60.43
Total Depth (ft-bmp)	71
Water Column	10.57
Gallons in Well	1.72

Reference Note: Well Volume Calculation [$\pi r^2 h$, where h= 1foot] Well radius (inch):Volume (Gal./foot):Volume (mL/foot) 0.5" = 0.04 gal/ft = 154 mL/ft 1" = 0.16 gal/ft = 617 mL/ft 2" = 0.65 gal/ft = 2470 mL/ft 3" = 1.47 gal/ft = 5557 mL/ft

Purge Method	Low-Flow
Type of Equipment used	Bladder
Sample Method	Grab
Sample Depth (ft-bmp) (e.g. pump intake)	68
Purge Start	10:05

@10:05, DTW:60.43, pH:7.17, temp:9.6, cond:1.22, turb:98.8, DO:0.68, redox:-3.7

Reading Time	10:05
Rate (mL/min)	100
Depth to Water (ft)	60.43
pH	7.17
Conductivity (mS/cm)	1.22
Turbidity (NTU)	98.8
Dissolved Oxygen (mg/L)	0.68
Temperature (Degrees Celsius)	9.6
Redox (ORP mV)	-3.7
parameters	@10:05, DTW:60.43, pH:7.17, temp:9.6, cond:1.22, turb:98.8, DO:0.68, redox:-3.7

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:10, DTW:61.38, pH:7.17, temp:10, cond:1.23, turb:50.3, DO:0.6, redox:-12.4

Reading Time	10:10
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	61.38
pH	7.17
Conductivity (mS/cm)	1.23
Turbidity (NTU)	50.3
Dissolved Oxygen (mg/L)	0.6
Temperature (Degrees Celsius)	10
Redox (ORP mV)	-12.4
parameters	@10:10, DTW:61.38, pH:7.17, temp:10, cond:1.23, turb:50.3, DO:0.6, redox:-12.4

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:15, DTW:62.24, pH:7.17, temp:10.1, cond:1.24, turb:31.7, DO:0.63, redox:-14.2

Reading Time	10:15
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	62.24
pH	7.17
Conductivity (mS/cm)	1.24
Turbidity (NTU)	31.7
Dissolved Oxygen (mg/L)	0.63
Temperature (Degrees Celsius)	10.1
Redox (ORP mV)	-14.2
parameters	@10:15, DTW:62.24, pH:7.17, temp:10.1, cond:1.24, turb:31.7, DO:0.63, redox:-14.2

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:20, DTW:62.24, pH:7.17, temp:10.1, cond:1.24, turb:27.9, DO:0.68, redox:-16.5

Reading Time	10:20
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	62.24
pH	7.17
Conductivity (mS/cm)	1.24
Turbidity (NTU)	27.9
Dissolved Oxygen (mg/L)	0.68
Temperature (Degrees Celsius)	10.1
Redox (ORP mV)	-16.5
parameters	@10:20, DTW:62.24, pH:7.17, temp:10.1, cond:1.24, turb:27.9, DO:0.68, redox:-16.5

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:25, DTW:63.26, pH:7.18, temp:10.1, cond:1.24, turb:39.4, DO:0.81, redox:-19.5

Reading Time	10:25
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	63.26
pH	7.18
Conductivity (mS/cm)	1.24
Turbidity (NTU)	39.4
Dissolved Oxygen (mg/L)	0.81
Temperature (Degrees Celsius)	10.1
Redox (ORP mV)	-19.5
parameters	@10:25, DTW:63.26, pH:7.18, temp:10.1, cond:1.24, turb:39.4, DO:0.81, redox:-19.5

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:31, DTW:64.01, pH:7.18, temp:8.7, cond:1.22, turb:43.4, DO:0.99, redox:-18.3

Reading Time	10:31
Minutes Elapsed between readings	6
Rate (mL/min)	100
Depth to Water (ft)	64.01
pH	7.18
Conductivity (mS/cm)	1.22
Turbidity (NTU)	43.4
Dissolved Oxygen (mg/L)	0.99
Temperature (Degrees Celsius)	8.7
Redox (ORP mV)	-18.3
parameters	@10:31, DTW:64.01, pH:7.18, temp:8.7, cond:1.22, turb:43.4, DO:0.99, redox:-18.3

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:36, DTW:64.55, pH:7.19, temp:8.1, cond:1.21, turb:35.1, DO:1.13, redox:-16.6

Reading Time	10:36
Minutes Elapsed between readings	5
Rate (mL/min)	75
Depth to Water (ft)	64.55
pH	7.19
Conductivity (mS/cm)	1.21
Turbidity (NTU)	35.1
Dissolved Oxygen (mg/L)	1.13
Temperature (Degrees Celsius)	8.1
Redox (ORP mV)	-16.6
parameters	@10:36, DTW:64.55, pH:7.19, temp:8.1, cond:1.21, turb:35.1, DO:1.13, redox:-16.6

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:41, DTW:64.91, pH:7.19, temp:7.9, cond:1.17, turb:31.9, DO:1.19, redox:-15.7

Reading Time	10:41
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	64.91
pH	7.19
Conductivity (mS/cm)	1.17
Turbidity (NTU)	31.9
Dissolved Oxygen (mg/L)	1.19
Temperature (Degrees Celsius)	7.9
Redox (ORP mV)	-15.7
parameters	@10:41, DTW:64.91, pH:7.19, temp:7.9, cond:1.17, turb:31.9, DO:1.19, redox:-15.7

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:49, DTW:65.45, pH:7.2, temp:7.5, cond:1.16, turb:30.2, DO:1.23, redox:-12.9

Reading Time	10:49
Minutes Elapsed between readings	8
Rate (mL/min)	100
Depth to Water (ft)	65.45
pH	7.2
Conductivity (mS/cm)	1.16
Turbidity (NTU)	30.2
Dissolved Oxygen (mg/L)	1.23
Temperature (Degrees Celsius)	7.5
Redox (ORP mV)	-12.9
parameters	@10:49, DTW:65.45, pH:7.2, temp:7.5, cond:1.16, turb:30.2, DO:1.23, redox:-12.9

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:55, DTW:65.95, pH:7.21, temp:6.4, cond:1.13, turb:32.7, DO:1.28, redox:-11.4

Reading Time	10:55
Minutes Elapsed between readings	6
Rate (mL/min)	75
Depth to Water (ft)	65.95
pH	7.21
Conductivity (mS/cm)	1.13
Turbidity (NTU)	32.7
Dissolved Oxygen (mg/L)	1.28
Temperature (Degrees Celsius)	6.4
Redox (ORP mV)	-11.4

parameters	@10:55, DTW:65.95, pH:7.21, temp:6.4, cond:1.13, turb:32.7, DO:1.28, redox:-11.4

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:00, DTW:65.12, pH:7.21, temp:6.2, cond:1.12, turb:30.4, DO:1.28, redox:-10.7

Reading Time	11:00
Minutes Elapsed between readings	5
Rate (mL/min)	75
Depth to Water (ft)	65.12
pH	7.21
Conductivity (mS/cm)	1.12
Turbidity (NTU)	30.4
Dissolved Oxygen (mg/L)	1.28
Temperature (Degrees Celsius)	6.2
Redox (ORP mV)	-10.7
parameters	@11:00, DTW:65.12, pH:7.21, temp:6.2, cond:1.12, turb:30.4, DO:1.28, redox:-10.7

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:05, DTW:65.29, pH:7.21, temp:6, cond:1.11, turb:28.8, DO:1.3, redox:-10

Reading Time	11:05
Minutes Elapsed between readings	5
Rate (mL/min)	75
Depth to Water (ft)	65.29
pH	7.21
Conductivity (mS/cm)	1.11
Turbidity (NTU)	28.8
Dissolved Oxygen (mg/L)	1.3
Temperature (Degrees Celsius)	6
Redox (ORP mV)	-10
parameters	@11:05, DTW:65.29, pH:7.21, temp:6, cond:1.11, turb:28.8, DO:1.3, redox:-10

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

Purge End	11:05
Total Volume Measured (units)	Gallons

Sample Information

Sample Time	11:05
Color	Clear
Notable odors	None

1,4-D and VOCs

Constituent Sampled	1,4-D and VOCs
Container Type	40 mL Vial

Number of Containers	3
Preservative	HCL

Propane

Constituent Sampled	Propane
Container Type	40 mL Vial
Number of Containers	3
Preservative	TSP

Well Information

Well Location	P2
Condition of Well	Good
Well Locked at Arrival	Yes
Well Locked at Departure	Yes

Signature

Signed 2018-12-06 11:35:06 EST

2018-12-10, MWBP-11-UST1-4

Created	2018-12-10 14:48:50 UTC by Erik Pietrzak
Updated	2018-12-10 16:44:01 UTC by Erik Pietrzak
Location	42.7341968100916, -84.5816807170255
Status	Field Draft
Project Number	B0064479.2018
Project Name / Location	RACER Lansing, MI
Sampler Name	Erik Pietrzak
Date	2018-12-10
Well ID	MWBP-11-UST1-4
Are you able to purge and/or sample this well? If not, explain why in the Comments section below.	Yes
Weather	Cloudy, 20s

Evacuation Details

Measuring Point (mp) Description	Top of Casing
Casing Diameter (inches)	4
Static Water Level (ft-bmp)	2.72
Total Depth (ft-bmp)	11.25
Water Column	8.53
Gallons in Well	5.54

Reference Note: Well Volume Calculation [$\pi r^2 h$, where h= 1foot] Well radius (inch):Volume (Gal./foot):Volume (mL/foot) 0.5" = 0.04 gal/ft = 154 mL/ft 1" = 0.16 gal/ft = 617 mL/ft 2" = 0.65 gal/ft = 2470 mL/ft 3" = 1.47 gal/ft = 5557 mL/ft

Purge Method	Low-Flow
Type of Equipment used	Bladder
Sample Method	Low-Flow
Sample Depth (ft-bmp) (e.g. pump intake)	10.25
Purge Start	09:45

@09:50, DTW:3.13, pH:9.84, temp:10.7, cond:0.79, turb:10.4, DO:6.27, redox:51.6

Reading Time	09:50
Rate (mL/min)	150
Depth to Water (ft)	3.13
pH	9.84
Conductivity (mS/cm)	0.79
Turbidity (NTU)	10.4
Dissolved Oxygen (mg/L)	6.27
Temperature (Degrees Celsius)	10.7
Redox (ORP mV)	51.6
parameters	@09:50, DTW:3.13, pH:9.84, temp:10.7, cond:0.79, turb:10.4, DO:6.27, redox:51.6

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:55, DTW:3.28, pH:9.85, temp:9.7, cond:0.79, turb:25.5, DO:9.28, redox:21.8

Reading Time	09:55

Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	3.28
pH	9.85
Conductivity (mS/cm)	0.79
Turbidity (NTU)	25.5
Dissolved Oxygen (mg/L)	9.28
Temperature (Degrees Celsius)	9.7
Redox (ORP mV)	21.8
parameters	@09:55, DTW:3.28, pH:9.85, temp:9.7, cond:0.79, turb:25.5, DO:9.28, redox:21.8

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:00, DTW:3.3, pH:9.85, temp:9.6, cond:0.79, turb:14.3, DO:9.12, redox:7.2

Reading Time	10:00
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	3.3
pH	9.85
Conductivity (mS/cm)	0.79
Turbidity (NTU)	14.3
Dissolved Oxygen (mg/L)	9.12
Temperature (Degrees Celsius)	9.6
Redox (ORP mV)	7.2
parameters	@10:00, DTW:3.3, pH:9.85, temp:9.6, cond:0.79, turb:14.3, DO:9.12, redox:7.2

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:05, DTW:3.32, pH:9.86, temp:9.6, cond:0.8, turb:20.7, DO:9.57, redox:-3.9

Reading Time	10:05
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	3.32
pH	9.86
Conductivity (mS/cm)	0.8
Turbidity (NTU)	20.7
Dissolved Oxygen (mg/L)	9.57
Temperature (Degrees Celsius)	9.6
Redox (ORP mV)	-3.9
parameters	@10:05, DTW:3.32, pH:9.86, temp:9.6, cond:0.8, turb:20.7, DO:9.57, redox:-3.9

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:10, DTW:3.33, pH:9.88, temp:9.7, cond:0.81, turb:30.4, DO:9.3, redox:-12.1

Reading Time	10:10
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	3.33
pH	9.88
Conductivity (mS/cm)	0.81
Turbidity (NTU)	30.4
Dissolved Oxygen (mg/L)	9.3
Temperature (Degrees Celsius)	9.7
Redox (ORP mV)	-12.1
parameters	@10:10, DTW:3.33, pH:9.88, temp:9.7, cond:0.81, turb:30.4, DO:9.3, redox:-12.1

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:15, DTW:3.35, pH:9.88, temp:9.6, cond:0.82, turb:30.3, DO:9.14, redox:-18.5

Reading Time	10:15
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	3.35
pH	9.88
Conductivity (mS/cm)	0.82
Turbidity (NTU)	30.3
Dissolved Oxygen (mg/L)	9.14
Temperature (Degrees Celsius)	9.6
Redox (ORP mV)	-18.5
parameters	@10:15, DTW:3.35, pH:9.88, temp:9.6, cond:0.82, turb:30.3, DO:9.14, redox:-18.5

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:20, DTW:3.37, pH:9.87, temp:9.8, cond:0.83, turb:26.8, DO:9.03, redox:-24.8

Reading Time	10:20
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	3.37
pH	9.87
Conductivity (mS/cm)	0.83
Turbidity (NTU)	26.8
Dissolved Oxygen (mg/L)	9.03
Temperature (Degrees Celsius)	9.8
Redox (ORP mV)	-24.8
parameters	@10:20, DTW:3.37, pH:9.87, temp:9.8, cond:0.83, turb:26.8, DO:9.03, redox:-24.8

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:25, DTW:3.38, pH:9.87, temp:9.8, cond:0.83, turb:24, DO:8.99, redox:-29.3

Reading Time	10:25
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	3.38
pH	9.87
Conductivity (mS/cm)	0.83
Turbidity (NTU)	24
Dissolved Oxygen (mg/L)	8.99
Temperature (Degrees Celsius)	9.8
Redox (ORP mV)	-29.3
parameters	@10:25, DTW:3.38, pH:9.87, temp:9.8, cond:0.83, turb:24, DO:8.99, redox:-29.3

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:30, DTW:3.4, pH:9.86, temp:9.7, cond:0.84, turb:20.2, DO:8.73, redox:-33.1

Reading Time	10:30
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	3.4
pH	9.86
Conductivity (mS/cm)	0.84
Turbidity (NTU)	20.2
Dissolved Oxygen (mg/L)	8.73
Temperature (Degrees Celsius)	9.7
Redox (ORP mV)	-33.1
parameters	@10:30, DTW:3.4, pH:9.86, temp:9.7, cond:0.84, turb:20.2, DO:8.73, redox:-33.1

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:35, DTW:3.42, pH:9.86, temp:10, cond:0.85, turb:19.5, DO:8.45, redox:-36.8

Reading Time	10:35
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	3.42
pH	9.86
Conductivity (mS/cm)	0.85
Turbidity (NTU)	19.5
Dissolved Oxygen (mg/L)	8.45
Temperature (Degrees Celsius)	10
Redox (ORP mV)	-36.8
parameters	@10:35, DTW:3.42, pH:9.86, temp:10, cond:0.85, turb:19.5, DO:8.45, redox:-36.8

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:40, DTW:3.42, pH:9.85, temp:9.7, cond:0.85, turb:18.5, DO:8.37, redox:-40

Reading Time	10:40
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	3.42
pH	9.85
Conductivity (mS/cm)	0.85
Turbidity (NTU)	18.5
Dissolved Oxygen (mg/L)	8.37
Temperature (Degrees Celsius)	9.7
Redox (ORP mV)	-40
parameters	@10:40, DTW:3.42, pH:9.85, temp:9.7, cond:0.85, turb:18.5, DO:8.37, redox:-40

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:45, DTW:3.43, pH:9.86, temp:10, cond:0.86, turb:17.4, DO:8.2, redox:-42.5

Reading Time	10:45
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	3.43
pH	9.86
Conductivity (mS/cm)	0.86
Turbidity (NTU)	17.4
Dissolved Oxygen (mg/L)	8.2
Temperature (Degrees Celsius)	10
Redox (ORP mV)	-42.5
parameters	@10:45, DTW:3.43, pH:9.86, temp:10, cond:0.86, turb:17.4, DO:8.2, redox:-42.5

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@10:50, DTW:3.45, pH:9.85, temp:9.8, cond:0.87, turb:16.4, DO:8.01, redox:-44.7

Reading Time	10:50
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	3.45
pH	9.85
Conductivity (mS/cm)	0.87
Turbidity (NTU)	16.4
Dissolved Oxygen (mg/L)	8.01
Temperature (Degrees Celsius)	9.8
Redox (ORP mV)	-44.7

parameters	@10:50, DTW:3.45, pH:9.85, temp:9.8, cond:0.87, turb:16.4, DO:8.01, redox:-44.7

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

Purge End	10:50
Total Volume Measured (units)	Gallons
Total Gallons Purged	3
Well Volumes Purged	0.54

Sample Information

Sample Time	10:52
Color	Clear
Notable odors	None

VOCs

Constituent Sampled	VOCs
Container Type	40 mL Vial
Number of Containers	3
Preservative	HCL

Well Information

Condition of Well	Good
Well Locked at Arrival	No
Well Locked at Departure	No
Comments	Unable to stabilize ORP

Signature

Signed 2018-12-10 16:12:50 UTC

2018-12-05, MW-05

Created	2018-12-05 16:26:11 UTC by Marina Samp
Updated	2018-12-05 17:55:18 UTC by Marina Samp
Location	42.7452465892236, -84.5837545675082
Status	Field Draft
Project Number	B0064479.2018
Project Name / Location	RACER Lansing, MI
Sampler Name	Marina Samp
Date	2018-12-05
Well ID	MW-05
Are you able to purge and/or sample this well? If not, explain why in the Comments section below.	Yes
Weather	28, snowing

Evacuation Details

Measuring Point (mp) Description	Top of Casing
Casing Diameter (inches)	4
Static Water Level (ft-bmp)	3.63
Total Depth (ft-bmp)	15
Water Column	11.37
Gallons in Well	7.39

Reference Note: Well Volume Calculation [$\pi r^2 h$, where h= 1foot] Well radius (inch):Volume (Gal./foot):Volume (mL/foot) 0.5" = 0.04 gal/ft = 154 mL/ft 1" = 0.16 gal/ft = 617 mL/ft 2" = 0.65 gal/ft = 2470 mL/ft 3" = 1.47 gal/ft = 5557 mL/ft

Purge Method	Low-Flow
Type of Equipment used	Bladder
Sample Method	Low-Flow
Sample Depth (ft-bmp) (e.g. pump intake)	13
Purge Start	11:25

@11:30, DTW:3.98, pH:7.49, temp:11.1, cond:0.87, turb:82.8, DO:3.75, redox:60.8

Reading Time	11:30
Rate (mL/min)	300
Depth to Water (ft)	3.98
pH	7.49
Conductivity (mS/cm)	0.87
Turbidity (NTU)	82.8
Dissolved Oxygen (mg/L)	3.75
Temperature (Degrees Celsius)	11.1
Redox (ORP mV)	60.8
parameters	@11:30, DTW:3.98, pH:7.49, temp:11.1, cond:0.87, turb:82.8, DO:3.75, redox:60.8

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:35, DTW:3.99, pH:7.5, temp:6.8, cond:0.79, turb:76.3, DO:4.06, redox:56.7

Reading Time	11:35

Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	3.99
pH	7.5
Conductivity (mS/cm)	0.79
Turbidity (NTU)	76.3
Dissolved Oxygen (mg/L)	4.06
Temperature (Degrees Celsius)	6.8
Redox (ORP mV)	56.7
parameters	@11:35, DTW:3.99, pH:7.5, temp:6.8, cond:0.79, turb:76.3, DO:4.06, redox:56.7

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:40, DTW:4.07, pH:7.5, temp:9.1, cond:0.81, turb:87.9, DO:3.66, redox:53.1

Reading Time	11:40
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	4.07
pH	7.5
Conductivity (mS/cm)	0.81
Turbidity (NTU)	87.9
Dissolved Oxygen (mg/L)	3.66
Temperature (Degrees Celsius)	9.1
Redox (ORP mV)	53.1
parameters	@11:40, DTW:4.07, pH:7.5, temp:9.1, cond:0.81, turb:87.9, DO:3.66, redox:53.1

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:45, DTW:4.12, pH:7.5, temp:7.4, cond:0.79, turb:69.8, DO:3.62, redox:56.2

Reading Time	11:45
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	4.12
pH	7.5
Conductivity (mS/cm)	0.79
Turbidity (NTU)	69.8
Dissolved Oxygen (mg/L)	3.62
Temperature (Degrees Celsius)	7.4
Redox (ORP mV)	56.2
parameters	@11:45, DTW:4.12, pH:7.5, temp:7.4, cond:0.79, turb:69.8, DO:3.62, redox:56.2

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:50, DTW:4.17, pH:7.51, temp:7.5, cond:0.79, turb:55.3, DO:3.66, redox:51.9

Reading Time	11:50
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	4.17
pH	7.51
Conductivity (mS/cm)	0.79
Turbidity (NTU)	55.3
Dissolved Oxygen (mg/L)	3.66
Temperature (Degrees Celsius)	7.5
Redox (ORP mV)	51.9
parameters	@11:50, DTW:4.17, pH:7.51, temp:7.5, cond:0.79, turb:55.3, DO:3.66, redox:51.9

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:55, DTW:4.12, pH:7.52, temp:4.8, cond:0.76, turb:50.7, DO:4.04, redox:52.7

Reading Time	11:55
Minutes Elapsed between readings	7
Rate (mL/min)	300
Depth to Water (ft)	4.12
pH	7.52
Conductivity (mS/cm)	0.76
Turbidity (NTU)	50.7
Dissolved Oxygen (mg/L)	4.04
Temperature (Degrees Celsius)	4.8
Redox (ORP mV)	52.7
parameters	@11:55, DTW:4.12, pH:7.52, temp:4.8, cond:0.76, turb:50.7, DO:4.04, redox:52.7

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:00, DTW:4.2, pH:7.52, temp:5.6, cond:0.75, turb:50.6, DO:3.61, redox:53

Reading Time	12:00
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	4.2
pH	7.52
Conductivity (mS/cm)	0.75
Turbidity (NTU)	50.6
Dissolved Oxygen (mg/L)	3.61
Temperature (Degrees Celsius)	5.6
Redox (ORP mV)	53
parameters	@12:00, DTW:4.2, pH:7.52, temp:5.6, cond:0.75, turb:50.6, DO:3.61, redox:53

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:05, DTW:4.21, pH:7.53, temp:3.9, cond:0.73, turb:47.7, DO:3.82, redox:54.3

Reading Time	12:05
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	4.21
pH	7.53
Conductivity (mS/cm)	0.73
Turbidity (NTU)	47.7
Dissolved Oxygen (mg/L)	3.82
Temperature (Degrees Celsius)	3.9
Redox (ORP mV)	54.3
parameters	@12:05, DTW:4.21, pH:7.53, temp:3.9, cond:0.73, turb:47.7, DO:3.82, redox:54.3

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:10, DTW:4.24, pH:7.52, temp:6.5, cond:0.76, turb:41.4, DO:3.78, redox:53

Reading Time	12:10
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	4.24
pH	7.52
Conductivity (mS/cm)	0.76
Turbidity (NTU)	41.4
Dissolved Oxygen (mg/L)	3.78
Temperature (Degrees Celsius)	6.5
Redox (ORP mV)	53
parameters	@12:10, DTW:4.24, pH:7.52, temp:6.5, cond:0.76, turb:41.4, DO:3.78, redox:53

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:15, DTW:4.3, pH:7.52, temp:7.3, cond:0.78, turb:40, DO:3.55, redox:52.8

Reading Time	12:15
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	4.3
pH	7.52
Conductivity (mS/cm)	0.78
Turbidity (NTU)	40
Dissolved Oxygen (mg/L)	3.55
Temperature (Degrees Celsius)	7.3
Redox (ORP mV)	52.8
parameters	@12:15, DTW:4.3, pH:7.52, temp:7.3, cond:0.78, turb:40, DO:3.55, redox:52.8

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:20, DTW:4.34, pH:7.51, temp:7.4, cond:0.79, turb:36, DO:3.56, redox:52.9

Reading Time	12:20
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	4.34
pH	7.51
Conductivity (mS/cm)	0.79
Turbidity (NTU)	36
Dissolved Oxygen (mg/L)	3.56
Temperature (Degrees Celsius)	7.4
Redox (ORP mV)	52.9
parameters	@12:20, DTW:4.34, pH:7.51, temp:7.4, cond:0.79, turb:36, DO:3.56, redox:52.9

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:25, DTW:4.38, pH:7.51, temp:7.6, cond:0.79, turb:32.8, DO:3.58, redox:52.9

Reading Time	12:25
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	4.38
pH	7.51
Conductivity (mS/cm)	0.79
Turbidity (NTU)	32.8
Dissolved Oxygen (mg/L)	3.58
Temperature (Degrees Celsius)	7.6
Redox (ORP mV)	52.9
parameters	@12:25, DTW:4.38, pH:7.51, temp:7.6, cond:0.79, turb:32.8, DO:3.58, redox:52.9

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

Purge End	12:25
Total Volume Measured (units)	Gallons
Total Gallons Purged	1
Well Volumes Purged	0.14

Sample Information

Sample Time	12:30
Color	None
Notable odors	None

VOCs

Constituent Sampled	VOCs

Container Type	40 mL Vial
Number of Containers	3
Preservative	HCL

Well Information

Well Location	Plant 3
Condition of Well	Good
Well Locked at Arrival	Yes
Well Locked at Departure	Yes

Signature

Signed 2018-12-05 17:28:31 UTC

2018-12-12, MW-14-64

Created	2018-12-12 08:21:40 EST by Christine Gregg
Updated	2018-12-12 09:40:05 EST by Christine Gregg
Location	42.7410419751357, -84.583159452383
Status	Field Draft
Project Number	B0064479.2018
Project Name / Location	RACER Lansing, MI
Sampler Name	Christine Gregg
Date	2018-12-12
Well ID	MW-14-64
Are you able to purge and/or sample this well? If not, explain why in the Comments section below.	Yes
Weather	30s overcast

Evacuation Details

Measuring Point (mp) Description	Top of Casing
Casing Diameter (inches)	2
Static Water Level (ft-bmp)	63.69
Total Depth (ft-bmp)	106.32
Water Column	42.63
Gallons in Well	6.93

Reference Note: Well Volume Calculation [$\pi r^2 h$, where h= 1foot] Well radius (inch):Volume (Gal./foot):Volume (mL/foot) 0.5" = 0.04 gal/ft = 154 mL/ft 1" = 0.16 gal/ft = 617 mL/ft 2" = 0.65 gal/ft = 2470 mL/ft 3" = 1.47 gal/ft = 5557 mL/ft

Purge Method	Low-Flow
Type of Equipment used	Bladder
Sample Method	Low-Flow
Sample Depth (ft-bmp) (e.g. pump intake)	103
Purge Start	08:37

@08:45, DTW:63.69, pH:7.12, temp:8.4, cond:1.6, turb:3.11, DO:3.88, redox:42.3

Reading Time	08:45
Rate (mL/min)	100
Depth to Water (ft)	63.69
pH	7.12
Conductivity (mS/cm)	1.6
Turbidity (NTU)	3.11
Dissolved Oxygen (mg/L)	3.88
Temperature (Degrees Celsius)	8.4
Redox (ORP mV)	42.3
parameters	@08:45, DTW:63.69, pH:7.12, temp:8.4, cond:1.6, turb:3.11, DO:3.88, redox:42.3

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@08:50, DTW:64.49, pH:7.11, temp:9.4, cond:1.74, turb:2.98, DO:2.24, redox:38.8

Reading Time	08:50

Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	64.49
pH	7.11
Conductivity (mS/cm)	1.74
Turbidity (NTU)	2.98
Dissolved Oxygen (mg/L)	2.24
Temperature (Degrees Celsius)	9.4
Redox (ORP mV)	38.8
parameters	@08:50, DTW:64.49, pH:7.11, temp:9.4, cond:1.74, turb:2.98, DO:2.24, redox:38.8

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@08:55, DTW:64.49, pH:7.11, temp:9.6, cond:1.8, turb:3.39, DO:1.04, redox:34.9

Reading Time	08:55
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	64.49
pH	7.11
Conductivity (mS/cm)	1.8
Turbidity (NTU)	3.39
Dissolved Oxygen (mg/L)	1.04
Temperature (Degrees Celsius)	9.6
Redox (ORP mV)	34.9
parameters	@08:55, DTW:64.49, pH:7.11, temp:9.6, cond:1.8, turb:3.39, DO:1.04, redox:34.9

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:00, DTW:64.49, pH:7.11, temp:9, cond:1.79, turb:11.3, DO:1.42, redox:3.7

Reading Time	09:00
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	64.49
pH	7.11
Conductivity (mS/cm)	1.79
Turbidity (NTU)	11.3
Dissolved Oxygen (mg/L)	1.42
Temperature (Degrees Celsius)	9
Redox (ORP mV)	3.7
parameters	@09:00, DTW:64.49, pH:7.11, temp:9, cond:1.79, turb:11.3, DO:1.42, redox:3.7

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:05, DTW:64.49, pH:7.12, temp:9, cond:1.78, turb:3.48, DO:1.23, redox:7.3

Reading Time	09:05
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	64.49
pH	7.12
Conductivity (mS/cm)	1.78
Turbidity (NTU)	3.48
Dissolved Oxygen (mg/L)	1.23
Temperature (Degrees Celsius)	9
Redox (ORP mV)	7.3
parameters	@09:05, DTW:64.49, pH:7.12, temp:9, cond:1.78, turb:3.48, DO:1.23, redox:7.3

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:10, DTW:64.49, pH:7.13, temp:8.6, cond:1.76, turb:10.3, DO:1.67, redox:-0.1

Reading Time	09:10
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	64.49
pH	7.13
Conductivity (mS/cm)	1.76
Turbidity (NTU)	10.3
Dissolved Oxygen (mg/L)	1.67
Temperature (Degrees Celsius)	8.6
Redox (ORP mV)	-0.1
parameters	@09:10, DTW:64.49, pH:7.13, temp:8.6, cond:1.76, turb:10.3, DO:1.67, redox:-0.1

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:15, DTW:64.49, pH:7.13, temp:9.3, cond:1.76, turb:7.21, DO:1.9, redox:-5.6

Reading Time	09:15
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	64.49
pH	7.13
Conductivity (mS/cm)	1.76
Turbidity (NTU)	7.21
Dissolved Oxygen (mg/L)	1.9
Temperature (Degrees Celsius)	9.3
Redox (ORP mV)	-5.6
parameters	@09:15, DTW:64.49, pH:7.13, temp:9.3, cond:1.76, turb:7.21, DO:1.9, redox:-5.6

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:20, DTW:64.49, pH:7.12, temp:9.6, cond:1.76, turb:11.1, DO:1.95, redox:-14.3

Reading Time	09:20
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	64.49
pH	7.12
Conductivity (mS/cm)	1.76
Turbidity (NTU)	11.1
Dissolved Oxygen (mg/L)	1.95
Temperature (Degrees Celsius)	9.6
Redox (ORP mV)	-14.3
parameters	@09:20, DTW:64.49, pH:7.12, temp:9.6, cond:1.76, turb:11.1, DO:1.95, redox:-14.3

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:25, DTW:64.49, pH:7.13, temp:8.9, cond:1.78, turb:7.93, DO:2.11, redox:-11

Reading Time	09:25
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	64.49
pH	7.13
Conductivity (mS/cm)	1.78
Turbidity (NTU)	7.93
Dissolved Oxygen (mg/L)	2.11
Temperature (Degrees Celsius)	8.9
Redox (ORP mV)	-11
parameters	@09:25, DTW:64.49, pH:7.13, temp:8.9, cond:1.78, turb:7.93, DO:2.11, redox:-11

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:30, DTW:64.49, pH:7.13, temp:8.7, cond:1.78, turb:3.6, DO:2.21, redox:-7.9

Reading Time	09:30
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	64.49
pH	7.13
Conductivity (mS/cm)	1.78
Turbidity (NTU)	3.6
Dissolved Oxygen (mg/L)	2.21
Temperature (Degrees Celsius)	8.7
Redox (ORP mV)	-7.9
parameters	@09:30, DTW:64.49, pH:7.13, temp:8.7, cond:1.78, turb:3.6, DO:2.21, redox:-7.9

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:35, DTW:64.49, pH:7.13, temp:9.6, cond:1.74, turb:9.7, DO:2.2, redox:-10.6

Reading Time	09:35
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	64.49
pH	7.13
Conductivity (mS/cm)	1.74
Turbidity (NTU)	9.7
Dissolved Oxygen (mg/L)	2.2
Temperature (Degrees Celsius)	9.6
Redox (ORP mV)	-10.6
parameters	@09:35, DTW:64.49, pH:7.13, temp:9.6, cond:1.74, turb:9.7, DO:2.2, redox:-10.6

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:40, DTW:64.49, pH:7.13, temp:9, cond:1.79, turb:9.46, DO:2.29, redox:-10.6

Reading Time	09:40
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	64.49
pH	7.13
Conductivity (mS/cm)	1.79
Turbidity (NTU)	9.46
Dissolved Oxygen (mg/L)	2.29
Temperature (Degrees Celsius)	9
Redox (ORP mV)	-10.6
parameters	@09:40, DTW:64.49, pH:7.13, temp:9, cond:1.79, turb:9.46, DO:2.29, redox:-10.6

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

Purge End	09:40
Total Volume Measured (units)	Gallons
Total Gallons Purged	1.5
Well Volumes Purged	0.22

Sample Information

Sample Time	09:40
Color	Clear
Notable odors	None

1,4-dioxane

Constituent Sampled	1,4-dioxane

Container Type	40 mL Vial
Number of Containers	3
Preservative	HCL

Well Information

Well Location	Plant 3
Condition of Well	Good
Well Locked at Arrival	Yes
Well Locked at Departure	Yes
Comments	Stick up

Signature

Signed 2018-12-12 08:38:59 EST

2018-12-07, AS-17-05

Created	2018-12-07 15:33:04 UTC by Dale Arnett
Updated	2018-12-07 16:50:28 UTC by Dale Arnett
Location	42.737259613798, -84.5876338128737
Status	Field Draft
Project Number	B0064479.2018
Project Name / Location	RACER Lansing, MI
Sampler Name	Dale Arnett
Date	2018-12-07
Well ID	AS-17-05
Are you able to purge and/or sample this well? If not, explain why in the Comments section below.	Yes
Weather	20s, flurries

Evacuation Details

Measuring Point (mp) Description	Top of Casing
Casing Diameter (inches)	2
Static Water Level (ft-bmp)	67.43
Reference Note: Well Volume Calculation [$\pi r^2 h$, where h= 1foot] Well radius (inch):Volume (Gal./foot):Volume (mL/foot) 0.5" = 0.04 gal/ft = 154 mL/ft 1" = 0.16 gal/ft = 617 mL/ft 2" = 0.65 gal/ft = 2470 mL/ft 3" = 1.47 gal/ft = 5557 mL/ft	
Purge Method	Low-Flow
Type of Equipment used	Bladder
Sample Method	Low-Flow
Purge Start	10:45

@10:50, DTW:67.43, pH:7.11, temp:9.3, cond:1.92, turb:374, DO:6.26, redox:180.4

Reading Time	10:50
Rate (mL/min)	125
Depth to Water (ft)	67.43
pH	7.11
Conductivity (mS/cm)	1.92
Turbidity (NTU)	374
Dissolved Oxygen (mg/L)	6.26
Temperature (Degrees Celsius)	9.3
Redox (ORP mV)	180.4
parameters	@10:50, DTW:67.43, pH:7.11, temp:9.3, cond:1.92, turb:374, DO:6.26, redox:180.4
Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit	

@10:55, DTW:67.52, pH:6.98, temp:11, cond:2.19, turb:321, DO:5.13, redox:176.3

Reading Time	10:55
Minutes Elapsed between readings	5
Rate (mL/min)	125
Depth to Water (ft)	67.52
pH	6.98

Conductivity (mS/cm)	2.19
Turbidity (NTU)	321
Dissolved Oxygen (mg/L)	5.13
Temperature (Degrees Celsius)	11
Redox (ORP mV)	176.3
parameters	@10:55, DTW:67.52, pH:6.98, temp:11, cond:2.19, turb:321, DO:5.13, redox:176.3

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:00, DTW:67.6, pH:6.87, temp:11.4, cond:2.4, turb:94.5, DO:4.82, redox:187.3

Reading Time	11:00
Minutes Elapsed between readings	5
Rate (mL/min)	125
Depth to Water (ft)	67.6
pH	6.87
Conductivity (mS/cm)	2.4
Turbidity (NTU)	94.5
Dissolved Oxygen (mg/L)	4.82
Temperature (Degrees Celsius)	11.4
Redox (ORP mV)	187.3
parameters	@11:00, DTW:67.6, pH:6.87, temp:11.4, cond:2.4, turb:94.5, DO:4.82, redox:187.3

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:05, DTW:67.6, pH:6.8, temp:11.7, cond:2.63, turb:73, DO:5.02, redox:195.7

Reading Time	11:05
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	67.6
pH	6.8
Conductivity (mS/cm)	2.63
Turbidity (NTU)	73
Dissolved Oxygen (mg/L)	5.02
Temperature (Degrees Celsius)	11.7
Redox (ORP mV)	195.7
parameters	@11:05, DTW:67.6, pH:6.8, temp:11.7, cond:2.63, turb:73, DO:5.02, redox:195.7

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:10, DTW:67.72, pH:6.77, temp:11, cond:2.75, turb:64.5, DO:4.86, redox:199.7

Reading Time	11:10
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	67.72

pH	6.77
Conductivity (mS/cm)	2.75
Turbidity (NTU)	64.5
Dissolved Oxygen (mg/L)	4.86
Temperature (Degrees Celsius)	11
Redox (ORP mV)	199.7
parameters	@11:10, DTW:67.72, pH:6.77, temp:11, cond:2.75, turb:64.5, DO:4.86, redox:199.7

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:15, DTW:67.72, pH:6.75, temp:11.2, cond:2.83, turb:62.9, DO:4.64, redox:202

Reading Time	11:15
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	67.72
pH	6.75
Conductivity (mS/cm)	2.83
Turbidity (NTU)	62.9
Dissolved Oxygen (mg/L)	4.64
Temperature (Degrees Celsius)	11.2
Redox (ORP mV)	202
parameters	@11:15, DTW:67.72, pH:6.75, temp:11.2, cond:2.83, turb:62.9, DO:4.64, redox:202

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:20, DTW:67.72, pH:6.74, temp:11.5, cond:2.84, turb:57.3, DO:4.28, redox:202

Reading Time	11:20
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	67.72
pH	6.74
Conductivity (mS/cm)	2.84
Turbidity (NTU)	57.3
Dissolved Oxygen (mg/L)	4.28
Temperature (Degrees Celsius)	11.5
Redox (ORP mV)	202
parameters	@11:20, DTW:67.72, pH:6.74, temp:11.5, cond:2.84, turb:57.3, DO:4.28, redox:202

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:25, DTW:67.72, pH:6.73, temp:11.1, cond:2.92, turb:60.2, DO:4.31, redox:202.9

Reading Time	11:25
Minutes Elapsed between readings	5
Rate (mL/min)	100

Depth to Water (ft)	67.72
pH	6.73
Conductivity (mS/cm)	2.92
Turbidity (NTU)	60.2
Dissolved Oxygen (mg/L)	4.31
Temperature (Degrees Celsius)	11.1
Redox (ORP mV)	202.9
parameters	@11:25, DTW:67.72, pH:6.73, temp:11.1, cond:2.92, turb:60.2, DO:4.31, redox:202.9

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:30, DTW:67.72, pH:6.73, temp:11, cond:2.91, turb:51.8, DO:3.97, redox:200.8

Reading Time	11:30
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	67.72
pH	6.73
Conductivity (mS/cm)	2.91
Turbidity (NTU)	51.8
Dissolved Oxygen (mg/L)	3.97
Temperature (Degrees Celsius)	11
Redox (ORP mV)	200.8
parameters	@11:30, DTW:67.72, pH:6.73, temp:11, cond:2.91, turb:51.8, DO:3.97, redox:200.8

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:35, DTW:67.72, pH:6.72, temp:11.6, cond:3.01, turb:66.7, DO:3.96, redox:196

Reading Time	11:35
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	67.72
pH	6.72
Conductivity (mS/cm)	3.01
Turbidity (NTU)	66.7
Dissolved Oxygen (mg/L)	3.96
Temperature (Degrees Celsius)	11.6
Redox (ORP mV)	196
parameters	@11:35, DTW:67.72, pH:6.72, temp:11.6, cond:3.01, turb:66.7, DO:3.96, redox:196

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:40, DTW:67.72, pH:6.72, temp:11.3, cond:3, turb:57.4, DO:3.9, redox:195.5

Reading Time	11:40
Minutes Elapsed between readings	5

Rate (mL/min)	100
Depth to Water (ft)	67.72
pH	6.72
Conductivity (mS/cm)	3
Turbidity (NTU)	57.4
Dissolved Oxygen (mg/L)	3.9
Temperature (Degrees Celsius)	11.3
Redox (ORP mV)	195.5
parameters	@11:40, DTW:67.72, pH:6.72, temp:11.3, cond:3, turb:57.4, DO:3.9, redox:195.5
Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit	
Purge End	11:50
Total Volume Measured (units)	Milliliters

Sample Information

Sample Time	11:40
Color	None
Notable odors	None

PFAS

Constituent Sampled	PFAS
Container Type	250 mL Plastic
Number of Containers	2
Preservative	None

Well Information

Well Location	Plant 2
Condition of Well	Good
Well Locked at Arrival	No
Well Locked at Departure	No

Signature

Signed 2018-12-07 16:43:28 UTC

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2018-12-07, P6-MH2-NE

Created	2018-12-07 18:38:01 UTC by Dale Arnett
Updated	2018-12-07 18:51:35 UTC by Dale Arnett
Location	42.7395418659251, -84.5797565673334
Status	Field Draft
Project Number	B0064479.2018
Project Name / Location	RACER Lansing, MI
Sampler Name	Dale Arnett
Date	2018-12-07
Well ID	P6-MH2-NE
Are you able to purge and/or sample this well? If not, explain why in the Comments section below.	No
Weather	20s overcast

Evacuation Details

Reference Note: Well Volume Calculation [πr²h, where h= 1foot] Well radius (inch):Volume (Gal./foot):Volume (mL/foot) 0.5" = 0.04 gal/ft = 154 mL/ft 1" = 0.16 gal/ft = 617 mL/ft 2" = 0.65 gal/ft = 2470 mL/ft 3" = 1.47 gal/ft = 5557 mL/ft

Well Information

Well Location	Plant 6
Condition of Well	Lid frozen on
Photo of Well	

Comments	No flow into or out of storm water line
Signature	

Signed 2018-12-07 18:51:19 UTC

2018-12-05, MW-15-72

Created	2018-12-05 14:54:35 EST by Daniel Stockard
Updated	2018-12-05 18:39:48 EST by Daniel Stockard
Location	42.7378279343645, -84.5856713411255
Status	Field Draft
Project Number	B0064479.2018
Project Name / Location	RACER Lansing, MI
Sampler Name	Daniel Stockard
Date	2018-12-05
Well ID	MW-15-72
Are you able to purge and/or sample this well? If not, explain why in the Comments section below.	Yes
Replicate No. (e.g. Dup)	None
Weather	Cold, sad

Evacuation Details

Measuring Point (mp) Description	Top of Casing
Casing Diameter (inches)	2
Static Water Level (ft-bmp)	57.91
Total Depth (ft-bmp)	68.3
Water Column	10.39
Gallons in Well	1.69

Reference Note: Well Volume Calculation [$\pi r^2 h$, where h= 1foot] Well radius (inch):Volume (Gal./foot):Volume (mL/foot) 0.5" = 0.04 gal/ft = 154 mL/ft 1" = 0.16 gal/ft = 617 mL/ft 2" = 0.65 gal/ft = 2470 mL/ft 3" = 1.47 gal/ft = 5557 mL/ft

Purge Method	Low-Flow
Type of Equipment used	Bladder
Sample Method	Grab
Sample Depth (ft-bmp) (e.g. pump intake)	65
Purge Start	14:50

@14:50, DTW:59.61, pH:7.09, temp:10.6, cond:0.86, turb:735, DO:0.83, redox:-1.2

Reading Time	14:50
Rate (mL/min)	100
Depth to Water (ft)	59.61
pH	7.09
Conductivity (mS/cm)	0.86
Turbidity (NTU)	735
Dissolved Oxygen (mg/L)	0.83
Temperature (Degrees Celsius)	10.6
Redox (ORP mV)	-1.2
parameters	@14:50, DTW:59.61, pH:7.09, temp:10.6, cond:0.86, turb:735, DO:0.83, redox:-1.2

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@14:55, DTW:58.86, pH:7.08, temp:11.7, cond:0.87, turb:337, DO:0.58, redox:-8.6

Reading Time	14:55
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	58.86
pH	7.08
Conductivity (mS/cm)	0.87
Turbidity (NTU)	337
Dissolved Oxygen (mg/L)	0.58
Temperature (Degrees Celsius)	11.7
Redox (ORP mV)	-8.6
parameters	@14:55, DTW:58.86, pH:7.08, temp:11.7, cond:0.87, turb:337, DO:0.58, redox:-8.6

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@15:00, DTW:59.14, pH:7.08, temp:12, cond:0.91, turb:154, DO:0.6, redox:-16.4

Reading Time	15:00
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	59.14
pH	7.08
Conductivity (mS/cm)	0.91
Turbidity (NTU)	154
Dissolved Oxygen (mg/L)	0.6
Temperature (Degrees Celsius)	12
Redox (ORP mV)	-16.4
parameters	@15:00, DTW:59.14, pH:7.08, temp:12, cond:0.91, turb:154, DO:0.6, redox:-16.4

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@15:05, DTW:59.36, pH:7.09, temp:12.5, cond:0.98, turb:105, DO:0.49, redox:-26.6

Reading Time	15:05
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	59.36
pH	7.09
Conductivity (mS/cm)	0.98
Turbidity (NTU)	105
Dissolved Oxygen (mg/L)	0.49
Temperature (Degrees Celsius)	12.5
Redox (ORP mV)	-26.6
parameters	@15:05, DTW:59.36, pH:7.09, temp:12.5, cond:0.98, turb:105, DO:0.49, redox:-26.6

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@15:10, DTW:59.39, pH:7.08, temp:12.2, cond:1, turb:85.1, DO:0.43, redox:-29.5

Reading Time	15:10
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	59.39
pH	7.08
Conductivity (mS/cm)	1
Turbidity (NTU)	85.1
Dissolved Oxygen (mg/L)	0.43
Temperature (Degrees Celsius)	12.2
Redox (ORP mV)	-29.5
parameters	@15:10, DTW:59.39, pH:7.08, temp:12.2, cond:1, turb:85.1, DO:0.43, redox:-29.5

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@15:16, DTW:59.47, pH:7.08, temp:12.4, cond:1.02, turb:76.2, DO:0.36, redox:-34.7

Reading Time	15:16
Minutes Elapsed between readings	6
Rate (mL/min)	100
Depth to Water (ft)	59.47
pH	7.08
Conductivity (mS/cm)	1.02
Turbidity (NTU)	76.2
Dissolved Oxygen (mg/L)	0.36
Temperature (Degrees Celsius)	12.4
Redox (ORP mV)	-34.7
parameters	@15:16, DTW:59.47, pH:7.08, temp:12.4, cond:1.02, turb:76.2, DO:0.36, redox:-34.7

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@15:23, DTW:59.47, pH:7.08, temp:11.8, cond:1.04, turb:66.5, DO:0.35, redox:-36.8

Reading Time	15:23
Minutes Elapsed between readings	7
Rate (mL/min)	100
Depth to Water (ft)	59.47
pH	7.08
Conductivity (mS/cm)	1.04
Turbidity (NTU)	66.5
Dissolved Oxygen (mg/L)	0.35
Temperature (Degrees Celsius)	11.8
Redox (ORP mV)	-36.8
parameters	@15:23, DTW:59.47, pH:7.08, temp:11.8, cond:1.04, turb:66.5, DO:0.35, redox:-36.8

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@15:29, DTW:59.47, pH:7.09, temp:12.2, cond:1.05, turb:64.6, DO:, redox:-41.6

Reading Time	15:29
Minutes Elapsed between readings	6
Rate (mL/min)	100
Depth to Water (ft)	59.47
pH	7.09
Conductivity (mS/cm)	1.05
Turbidity (NTU)	64.6
Temperature (Degrees Celsius)	12.2
Redox (ORP mV)	-41.6
parameters	@15:29, DTW:59.47, pH:7.09, temp:12.2, cond:1.05, turb:64.6, DO:, redox:-41.6

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@15:35, DTW:59.55, pH:7.08, temp:11.1, cond:1.06, turb:55.6, DO:0.29, redox:-43.9

Reading Time	15:35
Minutes Elapsed between readings	6
Rate (mL/min)	100
Depth to Water (ft)	59.55
pH	7.08
Conductivity (mS/cm)	1.06
Turbidity (NTU)	55.6
Dissolved Oxygen (mg/L)	0.29
Temperature (Degrees Celsius)	11.1
Redox (ORP mV)	-43.9
parameters	@15:35, DTW:59.55, pH:7.08, temp:11.1, cond:1.06, turb:55.6, DO:0.29, redox:-43.9

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@15:40, DTW:59.55, pH:7.08, temp:11.2, cond:1.04, turb:49.4, DO:0.3, redox:-44.4

Reading Time	15:40
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	59.55
pH	7.08
Conductivity (mS/cm)	1.04
Turbidity (NTU)	49.4
Dissolved Oxygen (mg/L)	0.3
Temperature (Degrees Celsius)	11.2
Redox (ORP mV)	-44.4
parameters	@15:40, DTW:59.55, pH:7.08, temp:11.2, cond:1.04, turb:49.4, DO:0.3, redox:-44.4

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@15:49, DTW:59.62, pH:7.09, temp:11.4, cond:1.08, turb:32.1, DO:0.3, redox:-46.3

Reading Time	15:49
Minutes Elapsed between readings	9
Rate (mL/min)	100
Depth to Water (ft)	59.62
pH	7.09
Conductivity (mS/cm)	1.08
Turbidity (NTU)	32.1
Dissolved Oxygen (mg/L)	0.3
Temperature (Degrees Celsius)	11.4
Redox (ORP mV)	-46.3
parameters	@15:49, DTW:59.62, pH:7.09, temp:11.4, cond:1.08, turb:32.1, DO:0.3, redox:-46.3

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

Purge End	15:50
Total Volume Measured (units)	Gallons
Total Gallons Purged	2.5
Well Volumes Purged	1.48

Sample Information

Sample Time	15:50
Color	Clear
Notable odors	None

1,4-D and VOCs

Constituent Sampled	1,4-D and VOCs
Container Type	40 mL Vial
Number of Containers	3
Preservative	HCL

Propane

Constituent Sampled	Propane
Container Type	40 mL Vial
Number of Containers	3
Preservative	TSP

Well Information

Well Location	P2
Condition of Well	Good
Well Locked at Arrival	Yes
Well Locked at Departure	Yes
Comments	Good yield

Signature

Signed 2018-12-05 18:39:43 EST

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2018-12-06, MW-03-06

Created	2018-12-06 14:00:22 UTC by Erik Pietrzak
Updated	2018-12-06 14:51:28 UTC by Erik Pietrzak
Location	42.737517301033, -84.5799010713441
Status	Field Draft
Project Number	B0064479.2018
Project Name / Location	RACER Lansing, MI
Sampler Name	Erik Pietrzak
Date	2018-12-06
Well ID	MW-03-06
Are you able to purge and/or sample this well? If not, explain why in the Comments section below.	Yes
Weather	Cloudy, 30s

Evacuation Details

Measuring Point (mp) Description	Top of Casing
Casing Diameter (inches)	2
Static Water Level (ft-bmp)	36.15
Total Depth (ft-bmp)	41.4
Water Column	5.25
Gallons in Well	0.85

Reference Note: Well Volume Calculation [$\pi r^2 h$, where h= 1foot] Well radius (inch):Volume (Gal./foot):Volume (mL/foot) 0.5" = 0.04 gal/ft = 154 mL/ft 1" = 0.16 gal/ft = 617 mL/ft 2" = 0.65 gal/ft = 2470 mL/ft 3" = 1.47 gal/ft = 5557 mL/ft

Purge Method	Low-Flow
Type of Equipment used	Bladder
Sample Method	Low-Flow
Sample Depth (ft-bmp) (e.g. pump intake)	39
Purge Start	09:00

@09:05, DTW:36.21, pH:7.31, temp:11.4, cond:10.94, turb:5.5, DO:6.36, redox:153.2

Reading Time	09:05
Rate (mL/min)	100
Depth to Water (ft)	36.21
pH	7.31
Conductivity (mS/cm)	10.94
Turbidity (NTU)	5.5
Dissolved Oxygen (mg/L)	6.36
Temperature (Degrees Celsius)	11.4
Redox (ORP mV)	153.2
parameters	@09:05, DTW:36.21, pH:7.31, temp:11.4, cond:10.94, turb:5.5, DO:6.36, redox:153.2

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:10, DTW:36.36, pH:7.31, temp:11.5, cond:10.97, turb:3.49, DO:6.23, redox:141.6

Reading Time	09:10

Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	36.36
pH	7.31
Conductivity (mS/cm)	10.97
Turbidity (NTU)	3.49
Dissolved Oxygen (mg/L)	6.23
Temperature (Degrees Celsius)	11.5
Redox (ORP mV)	141.6
parameters	@09:10, DTW:36.36, pH:7.31, temp:11.5, cond:10.97, turb:3.49, DO:6.23, redox:141.6

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:15, DTW:36.36, pH:7.37, temp:11.6, cond:10.97, turb:2.7, DO:6.32, redox:132.8

Reading Time	09:15
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	36.36
pH	7.37
Conductivity (mS/cm)	10.97
Turbidity (NTU)	2.7
Dissolved Oxygen (mg/L)	6.32
Temperature (Degrees Celsius)	11.6
Redox (ORP mV)	132.8
parameters	@09:15, DTW:36.36, pH:7.37, temp:11.6, cond:10.97, turb:2.7, DO:6.32, redox:132.8

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:20, DTW:36.43, pH:7.45, temp:11.4, cond:10.99, turb:3.52, DO:6.51, redox:126.7

Reading Time	09:20
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	36.43
pH	7.45
Conductivity (mS/cm)	10.99
Turbidity (NTU)	3.52
Dissolved Oxygen (mg/L)	6.51
Temperature (Degrees Celsius)	11.4
Redox (ORP mV)	126.7
parameters	@09:20, DTW:36.43, pH:7.45, temp:11.4, cond:10.99, turb:3.52, DO:6.51, redox:126.7

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@09:25, DTW:36.53, pH:7.51, temp:11.5, cond:10.97, turb:3.76, DO:6.65, redox:121.9

Reading Time	09:25
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	36.53
pH	7.51
Conductivity (mS/cm)	10.97
Turbidity (NTU)	3.76
Dissolved Oxygen (mg/L)	6.65
Temperature (Degrees Celsius)	11.5
Redox (ORP mV)	121.9
parameters	@09:25, DTW:36.53, pH:7.51, temp:11.5, cond:10.97, turb:3.76, DO:6.65, redox:121.9
Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit	

@09:30, DTW:36.62, pH:7.57, temp:11.3, cond:10.96, turb:4.23, DO:6.52, redox:118.4

Reading Time	09:30
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	36.62
pH	7.57
Conductivity (mS/cm)	10.96
Turbidity (NTU)	4.23
Dissolved Oxygen (mg/L)	6.52
Temperature (Degrees Celsius)	11.3
Redox (ORP mV)	118.4
parameters	@09:30, DTW:36.62, pH:7.57, temp:11.3, cond:10.96, turb:4.23, DO:6.52, redox:118.4
Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit	
Purge End	09:30
Total Volume Measured (units)	Gallons
Total Gallons Purged	1
Well Volumes Purged	1.18

Sample Information

Sample Time	09:32
Color	Clear
Notable odors	None

VOCs

Constituent Sampled	VOCs
Container Type	40 mL Vial
Number of Containers	3
Preservative	HCL

1,4 dioxane

Constituent Sampled	1,4 dioxane
Container Type	40 mL Vial
Preservative	HCL

Well Information

Condition of Well	Good
Well Locked at Arrival	Yes
Well Locked at Departure	Yes

Signature

Signed 2018-12-06 14:51:26 UTC

2018-12-05, MW-06

Created	2018-12-05 19:26:25 UTC by Marina Samp
Updated	2018-12-05 19:47:29 UTC by Marina Samp
Location	42.74522525728, -84.5839482732905
Status	Field Draft
Project Number	B0064479.2018
Project Name / Location	RACER Lansing, MI
Sampler Name	Marina Samp
Date	2018-12-05
Well ID	MW-06
Are you able to purge and/or sample this well? If not, explain why in the Comments section below.	Yes
Weather	28, snowing

Evacuation Details

Measuring Point (mp) Description	Top of Casing
Casing Diameter (inches)	4
Static Water Level (ft-bmp)	2.05
Total Depth (ft-bmp)	11
Water Column	8.95
Gallons in Well	5.82

Reference Note: Well Volume Calculation [$\pi r^2 h$, where h= 1foot] Well radius (inch):Volume (Gal./foot):Volume (mL/foot) 0.5" = 0.04 gal/ft = 154 mL/ft 1" = 0.16 gal/ft = 617 mL/ft 2" = 0.65 gal/ft = 2470 mL/ft 3" = 1.47 gal/ft = 5557 mL/ft

Purge Method	Low-Flow
Type of Equipment used	Bladder
Sample Method	Low-Flow
Sample Depth (ft-bmp) (e.g. pump intake)	9
Purge Start	14:25

@14:30, DTW:2.15, pH:7.42, temp:6.2, cond:0.411, turb:19.7, DO:7.43, redox:80.4

Reading Time	14:30
Rate (mL/min)	300
Depth to Water (ft)	2.15
pH	7.42
Conductivity (mS/cm)	0.411
Turbidity (NTU)	19.7
Dissolved Oxygen (mg/L)	7.43
Temperature (Degrees Celsius)	6.2
Redox (ORP mV)	80.4
parameters	@14:30, DTW:2.15, pH:7.42, temp:6.2, cond:0.411, turb:19.7, DO:7.43, redox:80.4

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@14:35, DTW:2.19, pH:7.42, temp:6, cond:0.406, turb:7.79, DO:6.65, redox:80.1

Reading Time	14:35

Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	2.19
pH	7.42
Conductivity (mS/cm)	0.406
Turbidity (NTU)	7.79
Dissolved Oxygen (mg/L)	6.65
Temperature (Degrees Celsius)	6
Redox (ORP mV)	80.1
parameters	@14:35, DTW:2.19, pH:7.42, temp:6, cond:0.406, turb:7.79, DO:6.65, redox:80.1

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@14:40, DTW:2.19, pH:7.42, temp:5.9, cond:0.404, turb:8.86, DO:6.9, redox:80

Reading Time	14:40
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	2.19
pH	7.42
Conductivity (mS/cm)	0.404
Turbidity (NTU)	8.86
Dissolved Oxygen (mg/L)	6.9
Temperature (Degrees Celsius)	5.9
Redox (ORP mV)	80
parameters	@14:40, DTW:2.19, pH:7.42, temp:5.9, cond:0.404, turb:8.86, DO:6.9, redox:80

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@14:45, DTW:2.19, pH:7.43, temp:5.9, cond:0.402, turb:8.5, DO:6.84, redox:80

Reading Time	14:45
Minutes Elapsed between readings	5
Rate (mL/min)	300
Depth to Water (ft)	2.19
pH	7.43
Conductivity (mS/cm)	0.402
Turbidity (NTU)	8.5
Dissolved Oxygen (mg/L)	6.84
Temperature (Degrees Celsius)	5.9
Redox (ORP mV)	80
parameters	@14:45, DTW:2.19, pH:7.43, temp:5.9, cond:0.402, turb:8.5, DO:6.84, redox:80

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

Purge End	14:45

Total Volume Measured (units)	Gallons
Total Gallons Purged	0.5
Well Volumes Purged	0.09

Sample Information

Sample Time	14:50
Color	None
Notable odors	None

VOCs

Constituent Sampled	VOCs
Container Type	40 mL Vial
Number of Containers	3
Preservative	HCL

Well Information

Well Location	Plant 3
Condition of Well	Good
Well Locked at Arrival	Yes
Well Locked at Departure	Yes

Signature

Signed 2018-12-05 19:47:28 UTC

2018-12-07, AS-17-04

Created	2018-12-07 17:06:38 UTC by Dale Arnett
Updated	2018-12-07 17:58:03 UTC by Dale Arnett
Location	42.7368105808671, -84.5857672300977
Status	Field Draft
Project Number	B0064479.2018
Project Name / Location	RACER Lansing, MI
Sampler Name	Dale Arnett
Date	2018-12-07
Well ID	AS-17-04
Are you able to purge and/or sample this well? If not, explain why in the Comments section below.	Yes
Weather	20s flurr

Evacuation Details

Measuring Point (mp) Description	Top of Casing
Casing Diameter (inches)	2
Static Water Level (ft-bmp)	63.4
Reference Note: Well Volume Calculation [$\pi r^2 h$, where h= 1foot] Well radius (inch):Volume (Gal./foot):Volume (mL/foot) 0.5" = 0.04 gal/ft = 154 mL/ft 1" = 0.16 gal/ft = 617 mL/ft 2" = 0.65 gal/ft = 2470 mL/ft 3" = 1.47 gal/ft = 5557 mL/ft	
Purge Method	Low-Flow
Type of Equipment used	Bladder
Sample Method	Low-Flow
Purge Start	12:05

@12:10, DTW:63.68, pH:6.4, temp:12.1, cond:3.45, turb:74.9, DO:5.88, redox:210.4

Reading Time	12:10
Rate (mL/min)	150
Depth to Water (ft)	63.68
pH	6.4
Conductivity (mS/cm)	3.45
Turbidity (NTU)	74.9
Dissolved Oxygen (mg/L)	5.88
Temperature (Degrees Celsius)	12.1
Redox (ORP mV)	210.4
parameters	@12:10, DTW:63.68, pH:6.4, temp:12.1, cond:3.45, turb:74.9, DO:5.88, redox:210.4
Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit	

@12:15, DTW:64.1, pH:6.42, temp:11.9, cond:3.57, turb:49.2, DO:6.14, redox:209.4

Reading Time	12:15
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	64.1
pH	6.42

Conductivity (mS/cm)	3.57
Turbidity (NTU)	49.2
Dissolved Oxygen (mg/L)	6.14
Temperature (Degrees Celsius)	11.9
Redox (ORP mV)	209.4
parameters	@12:15, DTW:64.1, pH:6.42, temp:11.9, cond:3.57, turb:49.2, DO:6.14, redox:209.4

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:20, DTW:64.48, pH:6.41, temp:12.3, cond:3.54, turb:51.1, DO:6.27, redox:209.6

Reading Time	12:20
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	64.48
pH	6.41
Conductivity (mS/cm)	3.54
Turbidity (NTU)	51.1
Dissolved Oxygen (mg/L)	6.27
Temperature (Degrees Celsius)	12.3
Redox (ORP mV)	209.6
parameters	@12:20, DTW:64.48, pH:6.41, temp:12.3, cond:3.54, turb:51.1, DO:6.27, redox:209.6

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:25, DTW:64.6, pH:6.39, temp:12.4, cond:3.59, turb:46.7, DO:6.22, redox:210.4

Reading Time	12:25
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	64.6
pH	6.39
Conductivity (mS/cm)	3.59
Turbidity (NTU)	46.7
Dissolved Oxygen (mg/L)	6.22
Temperature (Degrees Celsius)	12.4
Redox (ORP mV)	210.4
parameters	@12:25, DTW:64.6, pH:6.39, temp:12.4, cond:3.59, turb:46.7, DO:6.22, redox:210.4

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:30, DTW:64.6, pH:6.39, temp:12.1, cond:3.6, turb:40, DO:6.16, redox:211.7

Reading Time	12:30
Minutes Elapsed between readings	5
Rate (mL/min)	110
Depth to Water (ft)	64.6

pH	6.39
Conductivity (mS/cm)	3.6
Turbidity (NTU)	40
Dissolved Oxygen (mg/L)	6.16
Temperature (Degrees Celsius)	12.1
Redox (ORP mV)	211.7
parameters	@12:30, DTW:64.6, pH:6.39, temp:12.1, cond:3.6, turb:40, DO:6.16, redox:211.7

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:35, DTW:64.6, pH:6.38, temp:11.7, cond:3.61, turb:40, DO:6.04, redox:213.8

Reading Time	12:35
Minutes Elapsed between readings	5
Rate (mL/min)	110
Depth to Water (ft)	64.6
pH	6.38
Conductivity (mS/cm)	3.61
Turbidity (NTU)	40
Dissolved Oxygen (mg/L)	6.04
Temperature (Degrees Celsius)	11.7
Redox (ORP mV)	213.8
parameters	@12:35, DTW:64.6, pH:6.38, temp:11.7, cond:3.61, turb:40, DO:6.04, redox:213.8

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:40, DTW:64.6, pH:6.37, temp:12.1, cond:3.69, turb:28.3, DO:5.82, redox:213.8

Reading Time	12:40
Minutes Elapsed between readings	5
Rate (mL/min)	110
Depth to Water (ft)	64.6
pH	6.37
Conductivity (mS/cm)	3.69
Turbidity (NTU)	28.3
Dissolved Oxygen (mg/L)	5.82
Temperature (Degrees Celsius)	12.1
Redox (ORP mV)	213.8
parameters	@12:40, DTW:64.6, pH:6.37, temp:12.1, cond:3.69, turb:28.3, DO:5.82, redox:213.8

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:45, DTW:64.6, pH:6.37, temp:11.7, cond:3.72, turb:38.1, DO:5.97, redox:214.9

Reading Time	12:45
Minutes Elapsed between readings	5
Rate (mL/min)	110

Depth to Water (ft)	64.6
pH	6.37
Conductivity (mS/cm)	3.72
Turbidity (NTU)	38.1
Dissolved Oxygen (mg/L)	5.97
Temperature (Degrees Celsius)	11.7
Redox (ORP mV)	214.9
parameters	@12:45, DTW:64.6, pH:6.37, temp:11.7, cond:3.72, turb:38.1, DO:5.97, redox:214.9
Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit	

@12:50, DTW:64.6, pH:6.35, temp:11.9, cond:3.69, turb:33.7, DO:5.87, redox:215.2

Reading Time	12:50
Minutes Elapsed between readings	5
Rate (mL/min)	110
Depth to Water (ft)	64.6
pH	6.35
Conductivity (mS/cm)	3.69
Turbidity (NTU)	33.7
Dissolved Oxygen (mg/L)	5.87
Temperature (Degrees Celsius)	11.9
Redox (ORP mV)	215.2
parameters	@12:50, DTW:64.6, pH:6.35, temp:11.9, cond:3.69, turb:33.7, DO:5.87, redox:215.2
Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit	
Purge End	12:58
Total Volume Measured (units)	Milliliters

Sample Information

Sample Time	12:50
Color	None
Notable odors	None

Well Information

Well Location	Plant 2
Condition of Well	Good
Well Locked at Arrival	No
Well Locked at Departure	No

Signature

Signed 2018-12-07 17:52:59 UTC

2018-12-05, PW-14-01

Created	2018-12-05 13:24:17 EST by Daniel Stockard
Updated	2018-12-05 14:39:36 EST by Daniel Stockard
Location	42.737073087358, -84.5876496755105
Status	Field Draft
Project Number	B0064479.2018
Project Name / Location	RACER Lansing, MI
Sampler Name	Daniel Stockard
Date	2018-12-05
Well ID	PW-14-01
Are you able to purge and/or sample this well? If not, explain why in the Comments section below.	Yes
Replicate No. (e.g. Dup)	DUP-02
Weather	Flurries, 20s

Evacuation Details

Measuring Point (mp) Description	Top of Casing
Casing Diameter (inches)	6
Static Water Level (ft-bmp)	62.39
Total Depth (ft-bmp)	87
Water Column	24.61
Gallons in Well	35.99

Reference Note: Well Volume Calculation [$\pi r^2 h$, where h= 1foot] Well radius (inch):Volume (Gal./foot):Volume (mL/foot) 0.5" = 0.04 gal/ft = 154 mL/ft 1" = 0.16 gal/ft = 617 mL/ft 2" = 0.65 gal/ft = 2470 mL/ft 3" = 1.47 gal/ft = 5557 mL/ft

Purge Method	Low-Flow
Type of Equipment used	Bladder
Sample Method	Grab
Sample Depth (ft-bmp) (e.g. pump intake)	82
Purge Start	13:20

@13:20, DTW:62.39, pH:7.09, temp:10.3, cond:1.54, turb:12.7, DO:0.85, redox:67.5

Reading Time	13:20
Rate (mL/min)	150
Depth to Water (ft)	62.39
pH	7.09
Conductivity (mS/cm)	1.54
Turbidity (NTU)	12.7
Dissolved Oxygen (mg/L)	0.85
Temperature (Degrees Celsius)	10.3
Redox (ORP mV)	67.5
parameters	@13:20, DTW:62.39, pH:7.09, temp:10.3, cond:1.54, turb:12.7, DO:0.85, redox:67.5

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:25, DTW:62.45, pH:7.09, temp:10.5, cond:1.56, turb:7.54, DO:0.71, redox:66

Reading Time	13:25
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	62.45
pH	7.09
Conductivity (mS/cm)	1.56
Turbidity (NTU)	7.54
Dissolved Oxygen (mg/L)	0.71
Temperature (Degrees Celsius)	10.5
Redox (ORP mV)	66
parameters	@13:25, DTW:62.45, pH:7.09, temp:10.5, cond:1.56, turb:7.54, DO:0.71, redox:66

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:35, DTW:62.45, pH:7.08, temp:10.5, cond:1.56, turb:6.43, DO:0.35, redox:63.9

Reading Time	13:35
Minutes Elapsed between readings	10
Rate (mL/min)	150
Depth to Water (ft)	62.45
pH	7.08
Conductivity (mS/cm)	1.56
Turbidity (NTU)	6.43
Dissolved Oxygen (mg/L)	0.35
Temperature (Degrees Celsius)	10.5
Redox (ORP mV)	63.9
parameters	@13:35, DTW:62.45, pH:7.08, temp:10.5, cond:1.56, turb:6.43, DO:0.35, redox:63.9

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:40, DTW:62.64, pH:7.08, temp:10.5, cond:1.57, turb:5.04, DO:0.36, redox:63.5

Reading Time	13:40
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	62.64
pH	7.08
Conductivity (mS/cm)	1.57
Turbidity (NTU)	5.04
Dissolved Oxygen (mg/L)	0.36
Temperature (Degrees Celsius)	10.5
Redox (ORP mV)	63.5
parameters	@13:40, DTW:62.64, pH:7.08, temp:10.5, cond:1.57, turb:5.04, DO:0.36, redox:63.5

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:45, DTW:62.64, pH:7.08, temp:10.2, cond:1.57, turb:4.85, DO:0.36, redox:63.6

Reading Time	13:45
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	62.64
pH	7.08
Conductivity (mS/cm)	1.57
Turbidity (NTU)	4.85
Dissolved Oxygen (mg/L)	0.36
Temperature (Degrees Celsius)	10.2
Redox (ORP mV)	63.6
parameters	@13:45, DTW:62.64, pH:7.08, temp:10.2, cond:1.57, turb:4.85, DO:0.36, redox:63.6

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:50, DTW:62.64, pH:7.08, temp:10.3, cond:1.56, turb:4.78, DO:0.36, redox:62.7

Reading Time	13:50
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	62.64
pH	7.08
Conductivity (mS/cm)	1.56
Turbidity (NTU)	4.78
Dissolved Oxygen (mg/L)	0.36
Temperature (Degrees Celsius)	10.3
Redox (ORP mV)	62.7
parameters	@13:50, DTW:62.64, pH:7.08, temp:10.3, cond:1.56, turb:4.78, DO:0.36, redox:62.7

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:55, DTW:62.64, pH:7.08, temp:10.4, cond:1.55, turb:2.62, DO:0.37, redox:61.8

Reading Time	13:55
Minutes Elapsed between readings	5
Rate (mL/min)	150
Depth to Water (ft)	62.64
pH	7.08
Conductivity (mS/cm)	1.55
Turbidity (NTU)	2.62
Dissolved Oxygen (mg/L)	0.37
Temperature (Degrees Celsius)	10.4
Redox (ORP mV)	61.8
parameters	@13:55, DTW:62.64, pH:7.08, temp:10.4, cond:1.55, turb:2.62, DO:0.37, redox:61.8

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

Purge End	14:00
Total Volume Measured (units)	Gallons
Total Gallons Purged	2
Well Volumes Purged	0.06

Sample Information

Sample Time	14:00
Color	None
Notable odors	None

1,4-D

Constituent Sampled	1,4-D
Container Type	40 mL Vial
Number of Containers	6
Preservative	HCL

TKN, TP

Constituent Sampled	TKN, TP
Container Type	250 mL Plastic
Number of Containers	1
Preservative	H2SO4

Nitrate

Constituent Sampled	Nitrate
Container Type	125 mL Plastic
Number of Containers	1
Preservative	None

Propane

Constituent Sampled	Propane
Container Type	40 mL Vial
Number of Containers	3
Preservative	TSP

Well Information

Well Location	P2
Condition of Well	Good
Well Locked at Arrival	Yes
Well Locked at Departure	Yes

Signature

Signed 2018-12-05 14:39:32 EST

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2018-12-10, MW-12-16

Created	2018-12-10 18:24:28 UTC by Erik Pietrzak
Updated	2018-12-10 18:58:56 UTC by Erik Pietrzak
Location	42.7337940177347, -84.5810904634042
Status	Field Draft
Project Number	B0064479.2018
Project Name / Location	RACER Lansing, MI
Sampler Name	Erik Pietrzak
Date	2018-12-10
Well ID	MW-12-16
Are you able to purge and/or sample this well? If not, explain why in the Comments section below.	Yes
Weather	Cloudy, 30

Evacuation Details

Measuring Point (mp) Description	Top of Casing
Casing Diameter (inches)	2
Static Water Level (ft-bmp)	22.59
Total Depth (ft-bmp)	32.55
Water Column	9.96
Gallons in Well	1.62

Reference Note: Well Volume Calculation [$\pi r^2 h$, where h= 1foot] Well radius (inch):Volume (Gal./foot):Volume (mL/foot) 0.5" = 0.04 gal/ft = 154 mL/ft 1" = 0.16 gal/ft = 617 mL/ft 2" = 0.65 gal/ft = 2470 mL/ft 3" = 1.47 gal/ft = 5557 mL/ft

Purge Method	Low-Flow
Type of Equipment used	Bladder
Sample Method	Low-Flow
Sample Depth (ft-bmp) (e.g. pump intake)	30
Purge Start	13:20

@13:25, DTW:22.59, pH:6.99, temp:11.8, cond:1.52, turb:40, DO:1.02, redox:-8.9

Reading Time	13:25
Rate (mL/min)	175
Depth to Water (ft)	22.59
pH	6.99
Conductivity (mS/cm)	1.52
Turbidity (NTU)	40
Dissolved Oxygen (mg/L)	1.02
Temperature (Degrees Celsius)	11.8
Redox (ORP mV)	-8.9
parameters	@13:25, DTW:22.59, pH:6.99, temp:11.8, cond:1.52, turb:40, DO:1.02, redox:-8.9

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:30, DTW:22.59, pH:6.95, temp:12.3, cond:1.47, turb:15.6, DO:0.35, redox:-19.2

Reading Time	13:30

Minutes Elapsed between readings	5
Rate (mL/min)	175
Depth to Water (ft)	22.59
pH	6.95
Conductivity (mS/cm)	1.47
Turbidity (NTU)	15.6
Dissolved Oxygen (mg/L)	0.35
Temperature (Degrees Celsius)	12.3
Redox (ORP mV)	-19.2
parameters	@13:30, DTW:22.59, pH:6.95, temp:12.3, cond:1.47, turb:15.6, DO:0.35, redox:-19.2

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:35, DTW:22.59, pH:6.95, temp:12.4, cond:1.45, turb:7.99, DO:0.23, redox:-23.6

Reading Time	13:35
Minutes Elapsed between readings	5
Rate (mL/min)	175
Depth to Water (ft)	22.59
pH	6.95
Conductivity (mS/cm)	1.45
Turbidity (NTU)	7.99
Dissolved Oxygen (mg/L)	0.23
Temperature (Degrees Celsius)	12.4
Redox (ORP mV)	-23.6
parameters	@13:35, DTW:22.59, pH:6.95, temp:12.4, cond:1.45, turb:7.99, DO:0.23, redox:-23.6

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:40, DTW:22.59, pH:6.95, temp:12.4, cond:1.44, turb:5.57, DO:0.2, redox:-26.2

Reading Time	13:40
Minutes Elapsed between readings	5
Rate (mL/min)	175
Depth to Water (ft)	22.59
pH	6.95
Conductivity (mS/cm)	1.44
Turbidity (NTU)	5.57
Dissolved Oxygen (mg/L)	0.2
Temperature (Degrees Celsius)	12.4
Redox (ORP mV)	-26.2
parameters	@13:40, DTW:22.59, pH:6.95, temp:12.4, cond:1.44, turb:5.57, DO:0.2, redox:-26.2

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:45, DTW:22.59, pH:6.95, temp:12.1, cond:1.44, turb:4.25, DO:0.2, redox:-27.7

Reading Time	13:45
Minutes Elapsed between readings	5
Rate (mL/min)	175
Depth to Water (ft)	22.59
pH	6.95
Conductivity (mS/cm)	1.44
Turbidity (NTU)	4.25
Dissolved Oxygen (mg/L)	0.2
Temperature (Degrees Celsius)	12.1
Redox (ORP mV)	-27.7
parameters	@13:45, DTW:22.59, pH:6.95, temp:12.1, cond:1.44, turb:4.25, DO:0.2, redox:-27.7
Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit	

@13:50, DTW:22.59, pH:6.95, temp:12.4, cond:1.44, turb:3.58, DO:0.18, redox:-29

Reading Time	13:50
Minutes Elapsed between readings	5
Rate (mL/min)	175
Depth to Water (ft)	22.59
pH	6.95
Conductivity (mS/cm)	1.44
Turbidity (NTU)	3.58
Dissolved Oxygen (mg/L)	0.18
Temperature (Degrees Celsius)	12.4
Redox (ORP mV)	-29
parameters	@13:50, DTW:22.59, pH:6.95, temp:12.4, cond:1.44, turb:3.58, DO:0.18, redox:-29
Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit	
Purge End	13:50
Total Volume Measured (units)	Gallons
Total Gallons Purged	1.75
Well Volumes Purged	1.08

Sample Information

Sample Time	13:52
Color	Clear
Notable odors	None

Metals

Constituent Sampled	Metals
Container Type	125 mL Plastic
Number of Containers	1
Preservative	HNO3

Well Information

Condition of Well	Good
Well Locked at Arrival	No
Well Locked at Departure	No

Signature

Signed 2018-12-10 18:58:53 UTC

2018-12-04, MWBP-10-UST5-6

Created	2018-12-04 16:49:18 UTC by Erik Pietrzak
Updated	2018-12-04 18:54:36 UTC by Erik Pietrzak
Location	42.7334893762648, -84.5828235840825
Status	Field Draft
Project Number	B0064479.2018
Project Name / Location	RACER Lansing, MI
Sampler Name	Erik Pietrzak
Date	2018-12-04
Well ID	MWBP-10-UST5-6
Are you able to purge and/or sample this well? If not, explain why in the Comments section below.	Yes
Weather	Sunny, 30s

Evacuation Details

Measuring Point (mp) Description	Top of Casing
Casing Diameter (inches)	2
Static Water Level (ft-bmp)	30.33
Total Depth (ft-bmp)	36.86
Water Column	6.53
Gallons in Well	1.06

Reference Note: Well Volume Calculation [$\pi r^2 h$, where h= 1foot] Well radius (inch):Volume (Gal./foot):Volume (mL/foot) 0.5" = 0.04 gal/ft = 154 mL/ft 1" = 0.16 gal/ft = 617 mL/ft 2" = 0.65 gal/ft = 2470 mL/ft 3" = 1.47 gal/ft = 5557 mL/ft

Purge Method	Low-Flow
Type of Equipment used	Bladder
Sample Method	Low-Flow
Sample Depth (ft-bmp) (e.g. pump intake)	35.86
Purge Start	12:30

@12:35, DTW:29.78, pH:6.92, temp:12.7, cond:3.57, turb:34.1, DO:7, redox:90

Reading Time	12:35
Rate (mL/min)	100
Depth to Water (ft)	29.78
pH	6.92
Conductivity (mS/cm)	3.57
Turbidity (NTU)	34.1
Dissolved Oxygen (mg/L)	7
Temperature (Degrees Celsius)	12.7
Redox (ORP mV)	90
parameters	@12:35, DTW:29.78, pH:6.92, temp:12.7, cond:3.57, turb:34.1, DO:7, redox:90

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:40, DTW:29.69, pH:6.93, temp:12.7, cond:3.56, turb:25.8, DO:6.56, redox:78

Reading Time	12:40

Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	29.69
pH	6.93
Conductivity (mS/cm)	3.56
Turbidity (NTU)	25.8
Dissolved Oxygen (mg/L)	6.56
Temperature (Degrees Celsius)	12.7
Redox (ORP mV)	78
parameters	@12:40, DTW:29.69, pH:6.93, temp:12.7, cond:3.56, turb:25.8, DO:6.56, redox:78

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:45, DTW:29.65, pH:6.94, temp:12.9, cond:3.62, turb:16.8, DO:6.11, redox:67.1

Reading Time	12:45
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	29.65
pH	6.94
Conductivity (mS/cm)	3.62
Turbidity (NTU)	16.8
Dissolved Oxygen (mg/L)	6.11
Temperature (Degrees Celsius)	12.9
Redox (ORP mV)	67.1
parameters	@12:45, DTW:29.65, pH:6.94, temp:12.9, cond:3.62, turb:16.8, DO:6.11, redox:67.1

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:50, DTW:29.63, pH:6.94, temp:12.9, cond:3.63, turb:11.1, DO:5.73, redox:58.9

Reading Time	12:50
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	29.63
pH	6.94
Conductivity (mS/cm)	3.63
Turbidity (NTU)	11.1
Dissolved Oxygen (mg/L)	5.73
Temperature (Degrees Celsius)	12.9
Redox (ORP mV)	58.9
parameters	@12:50, DTW:29.63, pH:6.94, temp:12.9, cond:3.63, turb:11.1, DO:5.73, redox:58.9

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@12:55, DTW:29.63, pH:6.94, temp:13, cond:3.63, turb:5.02, DO:5.42, redox:50.9

Reading Time	12:55
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	29.63
pH	6.94
Conductivity (mS/cm)	3.63
Turbidity (NTU)	5.02
Dissolved Oxygen (mg/L)	5.42
Temperature (Degrees Celsius)	13
Redox (ORP mV)	50.9
parameters	@12:55, DTW:29.63, pH:6.94, temp:13, cond:3.63, turb:5.02, DO:5.42, redox:50.9

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:00, DTW:29.61, pH:6.94, temp:12.4, cond:3.65, turb:3.02, DO:5.32, redox:43.7

Reading Time	13:00
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	29.61
pH	6.94
Conductivity (mS/cm)	3.65
Turbidity (NTU)	3.02
Dissolved Oxygen (mg/L)	5.32
Temperature (Degrees Celsius)	12.4
Redox (ORP mV)	43.7
parameters	@13:00, DTW:29.61, pH:6.94, temp:12.4, cond:3.65, turb:3.02, DO:5.32, redox:43.7

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:05, DTW:29.61, pH:6.94, temp:11.6, cond:3.64, turb:2.15, DO:5.08, redox:38.4

Reading Time	13:05
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	29.61
pH	6.94
Conductivity (mS/cm)	3.64
Turbidity (NTU)	2.15
Dissolved Oxygen (mg/L)	5.08
Temperature (Degrees Celsius)	11.6
Redox (ORP mV)	38.4
parameters	@13:05, DTW:29.61, pH:6.94, temp:11.6, cond:3.64, turb:2.15, DO:5.08, redox:38.4

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:10, DTW:29.61, pH:6.94, temp:11.6, cond:3.61, turb:1.74, DO:4.64, redox:33.5

Reading Time	13:10
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	29.61
pH	6.94
Conductivity (mS/cm)	3.61
Turbidity (NTU)	1.74
Dissolved Oxygen (mg/L)	4.64
Temperature (Degrees Celsius)	11.6
Redox (ORP mV)	33.5
parameters	@13:10, DTW:29.61, pH:6.94, temp:11.6, cond:3.61, turb:1.74, DO:4.64, redox:33.5

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:15, DTW:29.61, pH:6.95, temp:12.7, cond:3.59, turb:1.57, DO:4.06, redox:28.8

Reading Time	13:15
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	29.61
pH	6.95
Conductivity (mS/cm)	3.59
Turbidity (NTU)	1.57
Dissolved Oxygen (mg/L)	4.06
Temperature (Degrees Celsius)	12.7
Redox (ORP mV)	28.8
parameters	@13:15, DTW:29.61, pH:6.95, temp:12.7, cond:3.59, turb:1.57, DO:4.06, redox:28.8

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:20, DTW:29.61, pH:6.95, temp:12.9, cond:3.6, turb:0.88, DO:3.91, redox:24.2

Reading Time	13:20
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	29.61
pH	6.95
Conductivity (mS/cm)	3.6
Turbidity (NTU)	0.88
Dissolved Oxygen (mg/L)	3.91
Temperature (Degrees Celsius)	12.9
Redox (ORP mV)	24.2
parameters	@13:20, DTW:29.61, pH:6.95, temp:12.9, cond:3.6, turb:0.88, DO:3.91, redox:24.2

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:25, DTW:29.58, pH:6.95, temp:13, cond:3.61, turb:1.2, DO:3.81, redox:20.9

Reading Time	13:25
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	29.58
pH	6.95
Conductivity (mS/cm)	3.61
Turbidity (NTU)	1.2
Dissolved Oxygen (mg/L)	3.81
Temperature (Degrees Celsius)	13
Redox (ORP mV)	20.9
parameters	@13:25, DTW:29.58, pH:6.95, temp:13, cond:3.61, turb:1.2, DO:3.81, redox:20.9

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@13:30, DTW:29.58, pH:6.95, temp:12.5, cond:3.62, turb:1.04, DO:3.77, redox:17.6

Reading Time	13:30
Minutes Elapsed between readings	5
Rate (mL/min)	100
Depth to Water (ft)	29.58
pH	6.95
Conductivity (mS/cm)	3.62
Turbidity (NTU)	1.04
Dissolved Oxygen (mg/L)	3.77
Temperature (Degrees Celsius)	12.5
Redox (ORP mV)	17.6
parameters	@13:30, DTW:29.58, pH:6.95, temp:12.5, cond:3.62, turb:1.04, DO:3.77, redox:17.6

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -Turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -Specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

Purge End	13:30
Total Volume Measured (units)	Gallons
Total Gallons Purged	1.25
Well Volumes Purged	1.18

Sample Information

Sample Time	13:30
Color	Clear
Notable odors	No

VOCs

Constituent Sampled	VOCs

Container Type	40 mL Vial
Number of Containers	3
Preservative	HCL

Metals

Constituent Sampled	Metals
Container Type	125 mL Plastic
Number of Containers	1
Preservative	HNO3

Well Information

Condition of Well	Good
Well Locked at Arrival	Yes
Well Locked at Departure	Yes
Comments	Unable to stabilize ORP

Signature

Signed 2018-12-04 18:54:19 UTC

ARCADIS

Water Sampling Log

Project	RACER Lansing	Project No.	B0064479.2018	Page	1 of 1
Site Location	Plant 2			Date	12.7.18
Site/Well No.	MW-14-60	Replicate No.		Code No.	
Weather	cold, sunny	Sampling Time:	Begin 1400	End	1405

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	Not Measured
Land Surface Elevation (ft)	Not Measured
Sounded Well Depth (ft bmp)	23.60
Depth to Water (ft bmp)	12.95
Water-Level Elevation (ft)	
Water Column in Well (ft)	10.65
Casing Diameter/Type	2" PVC
Gallons in Well	1.70
Gallons Pumped/Bailed Prior to Sampling	~2
Sample Pump Intake Setting (ft bmp)	20'
Purge Time	begin 1320 end 1400
Pumping Rate (ml/min)	200
Evacuation Method	Bladder Pump

Field Parameters

Temperature (°C)	11.4
SpC (mS/cm)	1.37
CND (mS/cm)	1.01
Dissolved Oxygen (%)	2.4
Dissolved Oxygen (mg/L)	0.26
pH (s.u.)	7.33
ORP (mV)	-52.3
Turbidity (NTU)	1.99
Color	Clear
Odor	None
Appearance	Clear
Sampling Method	Bladder Pump
Remarks	

Constituents Sampled	Container Description	Number	Preservative
VOC's, 1,4 Dioxane	40 ml VOA	3	HCl

Sampling Personnel: Jake Pisarkiewicz

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-14-60 PROJ #: B0064479.2018

DATE : 12-7-18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1330	10.9	1.35	0.99	5.8	0.64	7.35	-9.4	200	6.60	12.98
1335	10.8	1.37	1.00	3.8	0.42	7.35	-34.9	200	4.72	12.98
1340	11.0	1.37	1.00	3.1	0.35	7.34	-43.6	200	4.04	12.98
1345	11.1	1.38	1.01	2.9	0.32	7.34	-48.3	200	3.70	12.98
1350	11.4	1.37	1.02	2.10	0.27	7.34	-53.3	200	2.90	12.98
1355	11.4	1.37	1.01	2.5	0.27	7.34	-52.8	200	2.10	12.98
1400	11.4	1.37	1.01	2.4	0.26	7.33	-52.3	200	1.99	12.98
Total Depth of Well:			23.60							
Depth To Water Before Purging:			12.95							
Depth To Water After Purging:			12.98							

ARCADIS

Water Sampling Log

Project	RACER Lansing	Project No.	B0064479.2018	Page	1 of 1
Site Location	Plant 2			Date	12.7.18
Site/Well No.	MW-16-85	Replicate No.		Code No.	
Weather	cold, snowy	Sampling Time:	Begin 1235	End	1240

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	Not Measured
Land Surface Elevation (ft)	Not Measured
Sounded Well Depth (ft bmp)	82.00'
Depth to Water (ft bmp)	67.85
Water-Level Elevation (ft)	
Water Column in Well (ft)	14.15
Casing Diameter/Type	2" PVC
Gallons in Well	2.26
Gallons Pumped/Bailed Prior to Sampling	~3
Sample Pump Intake Setting (ft bmp)	78'
Purge Time	begin 1125 end 1235
Pumping Rate (ml/min)	200
Evacuation Method	Bladder Pump

Field Parameters

Temperature (°C)	5.9
SpC (mS/cm)	1.08
CND (mS/cm)	0.68
Dissolved Oxygen (%)	9.8
Dissolved Oxygen (mg/L)	1.79
pH (s.u.)	7.40
ORP (mV)	-48.4
Turbidity (NTU)	0.91
Color	Clear
Odor	None
Appearance	Clear
Sampling Method	Bladder Pump
Remarks	

Constituents Sampled	Container Description	Number	Preservative
VOC's, 1,4 Dioxane	40 ml VOA	3	HCl

Sampling Personnel: John P. Jaskiewicz

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-16-85 PROJ #: B0064479.2018

DATE : 12-7-18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1135	5.6	1.03	1.03	18.7	2.32	7.46	-25.2	200	12.1	68.10
1140	6.2	1.03	0.66	20.0	2.49	7.47	-25.7	200	10.4	68.30
1145	6.2	1.02	0.65	27.2	3.37	7.51	-28.1	200	6.71	68.50
1150	6.5	1.01	0.65	29.8	3.65	7.53	-29.4	200	4.91	68.80
1155	6.7	1.01	0.66	30.8	3.75	7.55	-30.0	200	4.04	68.80
1200	6.8	1.02	0.69	29.9	3.52	7.51	-27.4	150	3.40	68.80
1205	6.4	1.04	0.666	29.5	3.666	7.52	-33.1	150	3.10	68.80
1210	6.3	1.03	0.666	25.4	3.10	7.49	-38.0	150	2.70	68.80
1215	6.2	1.04	0.667	15.3	1.91	7.42	-44.1	150	1.91	68.80
1220	6.0	1.08	0.67	11.2	1.42	7.40	-46.9	150	1.42	68.80
1225	6.0	1.09	0.68	10.1	1.37	7.39	-47.7	150	1.10	68.80
1230	6.0	1.08	0.68	9.90	1.31	7.40	-48.1	150	1.12	68.80
1235	5.9	1.08	0.68	9.8	1.29	7.40	-48.4	150	0.91	68.80
Total Depth of Well:			82.0							
Depth To Water Before Purging:			67.85							
Depth To Water After Purging:			68.80							

ARCADIS

Water Sampling Log

Project	RACER Lansing	Project No.	B0064479.2018	Page	1 of 1
Site Location	Plant 2			Date	12-7-18
Site/Well No.	MW-14-59	Replicate No.	Dup-01	Code No.	
Weather	Cold, snowy	Sampling Time:	Begin 1045	End	1050

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	Not Measured
Land Surface Elevation (ft)	Not Measured
Sounded Well Depth (ft bmp)	18.85
Depth to Water (ft bmp)	7.85
Water-Level Elevation (ft)	
Water Column in Well (ft)	11
Casing Diameter/Type	2" PVC
Gallons in Well	1.76
Gallons Pumped/Bailed Prior to Sampling	~2
Sample Pump Intake Setting (ft bmp)	16'
Purge Time	begin 1005 end 1045
Pumping Rate (ml/min)	200
Evacuation Method	Bladder Pump

Field Parameters

Temperature (°C)	9.5
SpC (mS/cm)	0.76
CND (mS/cm)	0.54
Dissolved Oxygen (%)	3.1
Dissolved Oxygen (mg/L)	0.34
pH (s.u.)	7.34
ORP (mV)	-1.1
Turbidity (NTU)	0.54
Color	Clear
Odor	None
Appearance	clear
Sampling Method	Bladder Pump
Remarks	Dup-01 collected

Constituents Sampled	Container Description	Number	Preservative
VOC's, 1,4 Dioxane	40ml VOA	3	HCl

Sampling Personnel: Jake Pisarkiewicz

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-14-59 PROJ #: B0064479.2018

DATE : 12-7-18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1015	8.8	0.76	0.52	5.7	0.66	7.35	-1.3	200	2.40	8.20
1020	9.1	0.76	0.53	5.0	0.57	7.34	-1.1	200	1.80	8.21
1025	9.1	0.76	0.53	4.2	0.48	7.37	0.7	200	0.90	8.21
1030	9.4	0.76	0.53	3.7	0.42	7.34	0.4	200	0.84	8.21
1035	9.5	0.76	0.54	3.2	0.36	7.34	-0.5	200	0.71	8.21
1040	9.5	0.76	0.54	3.1	0.35	7.34	-0.8	200	0.61	8.21
1045	9.5	0.76	0.54	3.1	0.34	7.34	-1.1	200	0.54	8.21

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Water Sampling Log

Project	RACER Lansing	Project No.	B0064479.2018	Page	1 of 1
Site Location	Plant 2			Date	12-7-18
Site/Well No.	MW-13-45	Replicate No.		Code No.	
Weather	cold, snow	Sampling Time:	Begin 0940	End	0945

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	Not Measured
Land Surface Elevation (ft)	Not Measured
Sounded Well Depth (ft bmp)	78.30
Depth to Water (ft bmp)	65.94
Water-Level Elevation (ft)	
Water Column in Well (ft)	12.36
Casing Diameter/Type	2" PVC
Gallons in Well	1.98
Gallons Pumped/Bailed Prior to Sampling	~2
Sample Pump Intake Setting (ft bmp)	74'
Purge Time	begin 0855 end 0940
Pumping Rate (ml/min)	200
Evacuation Method	Bladder Pump

Field Parameters

Temperature (°C)	9.1
SpC (mS/cm)	1.00
CND (mS/cm)	0.69
Dissolved Oxygen (%)	5.4
Dissolved Oxygen (mg/L)	0.61
pH (s.u.)	7.36
ORP (mV)	-73.6
Turbidity (NTU)	1.89
Color	clear
Odor	none
Appearance	clear
Sampling Method	Bladder Pump
Remarks	

Constituents Sampled	Container Description	Number	Preservative
1,4 Dioxane	40 ml VOA	3	HCl

Sampling Personnel: Jake Pisarkiewicz

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-13-45 PROJ #: B0064479.2018

DATE : 12-7-18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
0905	9.3	0.99	0.69	10.0	1.13	7.33	-68.4	200	9.10	66.10
0910	9.5	0.99	0.70	9.5	1.08	7.33	-70.9	200	6.21	66.10
0915	9.6	0.99	0.70	7.4	0.85	7.34	-73.0	200	4.10	66.10
0920	9.5	0.99	0.70	6.6	0.74	7.35	-74.0	200	3.91	66.10
0925	9.4	1.00	0.70	6.0	0.69	7.35	-74.4	200	3.70	66.10
0930	9.3	1.00	0.70	5.7	0.64	7.36	-74.1	200	2.80	66.10
0935	9.2	1.00	0.69	5.5	0.62	7.36	-74.0	200	2.10	66.10
0940	9.1	1.00	0.69	5.4	0.61	7.36	-73.6	200	1.89	66.10
Total Depth of Well:			78.30							
Depth To Water Before Purging:			65.94							
Depth To Water After Purging:			66.10							

ARCADIS

Water Sampling Log

Project	RACER Lansing	Project No.	B0064479.2018	Page	1 of 1
Site Location	Plant 2			Date	12.5.18
Site/Well No.	MW-14-58	Replicate No.		Code No.	
Weather	sunny, cold	Sampling Time:	Begin 1240	End	1245

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	Not Measured
Land Surface Elevation (ft)	Not Measured
Sounded Well Depth (ft bmp)	29.94
Depth to Water (ft bmp)	14.32
Water-Level Elevation (ft)	
Water Column in Well (ft)	15.62
Casing Diameter/Type	2" PVC
Gallons in Well	2.50
Gallons Pumped/Bailed Prior to Sampling	~ 2.5
Sample Pump Intake Setting (ft bmp)	27'
Purge Time	begin 1150 end 1240
Pumping Rate (ml/min)	200
Evacuation Method	Bladder Pump

Field Parameters

Temperature (°C)	10.2
SpC (mS/cm)	5.10
CND (mS/cm)	3.69
Dissolved Oxygen (%)	2.0
Dissolved Oxygen (mg/L)	0.20
pH (s.u.)	6.74
ORP (mV)	-37.1
Turbidity (NTU)	11.4
Color	clear
Odor	none
Appearance	clear
Sampling Method	Bladder Pump
Remarks	

Constituents Sampled	Container Description	Number	Preservative
VOCs, 1,4 Dioxane	40 ml VOA	3	HCl

Sampling Personnel: Jake Pisarkiewicz

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

PAGE 1 OF 1

WELL : MW-14-58 PROJ #: B0064479.2018

DATE : 12-5-18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1205	10.2	5.73	4.11	4.9	0.53	6.69	-26.3	200	26.8	14.40
1210	10.8	5.72	4.16	3.6	0.39	6.70	-29.0	200	19.1	14.40
1215	10.5	5.65	4.09	2.7	0.29	6.71	-32.1	200	16.5	14.40
1220	10.2	5.54	3.97	2.5	0.27	6.72	-34.0	200	14.1	14.40
1225	9.8	5.33	3.77	2.3	0.25	6.74	-34.7	200	13.0	14.40
1230	10.0	5.20	3.73	2.1	0.23	6.74	-35.7	200	12.1	14.40
1235	10.1	5.15	3.70	2.0	0.21	6.74	-36.7	200	11.9	14.40
1240	10.2	5.10	3.69	2.0	0.20	6.74	-37.1	200	11.4	14.40
Total Depth of Well:		29.94								
Depth To Water Before Purging:			14.32							
Depth To Water After Purging:			14.40							

ARCADIS

Water Sampling Log

Project	RACER Lansing	Project No.	B0064479.2018	Page	1 of 1
Site Location	Plant 2			Date	12-5-18
Site/Well No.	MW-15-73	Replicate No.		Code No.	
Weather	Cold, Snowy	Sampling Time:	Begin 1130	End	1135

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	Not Measured
Land Surface Elevation (ft)	Not Measured
Sounded Well Depth (ft bmp)	80.90
Depth to Water (ft bmp)	64.32
Water-Level Elevation (ft)	
Water Column in Well (ft)	16.58
Casing Diameter/Type	2" PVC
Gallons in Well	2.65
Gallons Pumped/Bailed Prior to Sampling	~2.5
Sample Pump Intake Setting (ft bmp)	~~80~~
Purge Time	begin 1030 end 1130
Pumping Rate (ml/min)	200
Evacuation Method	Bladder Pump

Field Parameters

Temperature (°C)	8.4
SpC (mS/cm)	2.59
CND (mS/cm)	1.77
Dissolved Oxygen (%)	2.7
Dissolved Oxygen (mg/L)	0.29
pH (s.u.)	6.88
ORP (mV)	-40.4
Turbidity (NTU)	9.91
Color	clear
Odor	none
Appearance	clear
Sampling Method	Bladder Pump
Remarks	

Constituents Sampled	Container Description	Number	Preservative
VOC's	40ml VOA	3	HCL
1,4 Dioxane	"	3	"

Sampling Personnel: Jake Pisarkiewicz

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

PAGE 1 OF 1

WELL : MW-15-73 PROJ #: B0064479.2018

DATE : 12-5-18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1040	8.0	2.34	1.58	16.9	1.92	6.88	-24.4	200	47.9	64.50
1045	7.9	2.41	1.64	8.4	0.90	6.88	-29.4	200	43.9	64.50
1050	7.8	2.54	1.69	5.6	0.62	6.88	-32.3	200	40.3	64.50
1055	7.7	2.56	1.70	4.0	0.48	6.88	-34.1	200	34.1	64.50
1100	7.7	2.59	1.73	3.7	0.42	6.88	-35.4	200	27.3	64.50
1105	8.4	2.57	1.73	3.0	0.33	6.88	-37.6	200	20.1	64.50
1110	8.3	2.56	1.74	2.8	0.30	6.88	-39.0	200	16.7	64.50
1115	8.3	2.58	1.75	2.8	0.30	6.88	-39.3	200	12.1	64.50
1120	8.3	2.59	1.76	2.8	0.30	6.88	-39.8	200	10.2	64.50
1125	8.3	2.59	1.76	2.8	0.29	6.88	-40.1	200	10.3	64.50
1130	8.4	2.59	1.77	2.7	0.29	6.88	-40.4	200	9.91	64.50
Total Depth of Well:		80.90								
Depth To Water Before Purging:			64.32							
Depth To Water After Purging:			64.50							

ARCADIS

Water Sampling Log

Project	RACER Lansing	Project No.	B0064479.2018	Page	1 of 1
Site Location	Plant 2			Date	12-5-18
Site/Well No.	MW-16-80	Replicate No.	MS/MSD	Code No.	
Weather	Snowy cold	Sampling Time: Begin	0955	End	1000

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	Not Measured
Land Surface Elevation (ft)	Not Measured
Sounded Well Depth (ft bmp)	73.40
Depth to Water (ft bmp)	56.42
Water-Level Elevation (ft)	
Water Column in Well (ft)	16.98
Casing Diameter/Type	2" PVC
Gallons in Well	2.72
Gallons Pumped/Bailed Prior to Sampling	~2.5
Sample Pump Intake Setting (ft bmp)	70'
Purge Time	begin 0915 end 0955
Pumping Rate (ml/min)	200 ml/min
Evacuation Method	Bladder Pump

Field Parameters

Temperature (°C)	10.1
SpC (mS/cm)	2.75
CND (mS/cm)	1.77
Dissolved Oxygen (%)	3.2
Dissolved Oxygen (mg/L)	0.34
pH (s.u.)	6.94
ORP (mV)	-41.9
Turbidity (NTU)	23.9
Color	clear
Odor	none
Appearance	clear
Sampling Method	Bladder Pump
Remarks	MS/MSD collected

Constituents Sampled	Container Description	Number	Preservative
VOC's	3 40ml VOAs	3	HCl
1,4 Dioxane	"	"	"

Sampling Personnel: Jake Pisarkiewicz

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

PAGE 1 OF 1

WELL : MW-116-80 PROJ #: B0064479.2018

DATE : 12-5-18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
0920	9.5	2.44	1.72	18.2	2.02	6.91	0.8	200	26.8	56.90
0925	9.5	2.45	1.73	5.5	0.63	6.94	-29.4	200	25.4	56.90
0930	9.7	2.45	1.74	5.3	0.64	6.93	-34.1	200	24.4	56.90
0935	9.8	2.45	1.74	5.2	0.60	6.93	-36.5	200	22.9	56.90
0940	9.7	2.45	1.73	3.9	0.45	6.94	-38.7	200	24.6	56.90
0945	9.8	2.44	1.74	3.7	0.40	6.94	-39.2	200	25.1	56.90
0950	10.0	2.45	1.76	3.3	0.36	6.94	-41.1	200	23.1	56.90
0955	10.1	2.45	1.77	3.2	0.34	6.94	-41.9	200	23.9	56.90
Total Depth of Well:		73.40								
Depth To Water Before Purging:		56.42								
Depth To Water After Purging:		56.90								

ARCADIS

Water Sampling Log

Project	RACER Lansing	Project No.	B0064479.2018	Page	1 of 1
Site Location	Plant 2			Date	12-4-18
Site/Well No.	MW-12-02	Replicate No.		Code No.	
Weather	sunny, cold	Sampling Time:	Begin 1420	End	1420

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	Not Measured
Land Surface Elevation (ft)	Not Measured
Sounded Well Depth (ft bmp)	101.30
Depth to Water (ft bmp)	57.50
Water-Level Elevation (ft)	
Water Column in Well (ft)	43.8
Casing Diameter/Type	4" steel
Gallons in Well	28.47
Gallons Pumped/Bailed Prior to Sampling	~3
Sample Pump Intake Setting (ft bmp)	97'
Purge Time	begin 1320 end 1420
Pumping Rate (ml/min)	200 ml/min
Evacuation Method	Bladder Pump

Field Parameters

Temperature (°C)	8.9
SpC (mS/cm)	1.14
CND (mS/cm)	0.80
Dissolved Oxygen (%)	6.7
Dissolved Oxygen (mg/L)	0.74
pH (s.u.)	7.10
ORP (mV)	-49.5
Turbidity (NTU)	24.1
Color	clear
Odor	NO
Appearance	clear
Sampling Method	Bladder Pump
Remarks	

Constituents Sampled	Container Description	Number	Preservative
1,4-Dioxane	3-VOA	3	HCl

Sampling Personnel: John Pijanowski

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-12-02 PROJ #: B0064479.2018

DATE : 12-4-18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1330	6.3	1.14	0.74	24.3	3.00	7.09	16.6	200	57.8	57.70
1335	6.3	1.14	0.75	32.6	3.90	7.10	-27.3	200	51.3	57.70
1340	9.6	1.14	0.81	21.4	2.43	7.01	-40.6	200	48.6	57.70
1345	10.1	1.15	0.82	13.0	1.45	7.05	-45.9	200	32.4	57.70
1350	10.2	1.15	0.82	9.0	1.02	7.05	-49.6	200	29.1	57.70
1355	9.8	1.14	0.81	5.6	0.70	7.08	-51.9	200	25.5	57.70
1400	10.1	1.15	0.82	5.4	0.60	7.08	-52.0	200	25.8	57.70
1405	9.6	1.15	0.81	5.8	0.69	7.08	-52.3	200	24.1	57.70
1410	9.0	1.14	0.80	6.3	0.71	7.09	-50.1	200	24.7	57.70
1415	8.8	1.14	0.79	6.5	0.78	7.10	-49.3	200	24.8	57.70
1420	8.9	1.14	0.80	6.7	0.74	7.10	-49.5	200	24.1	57.70
Total Depth of Well:		101								
Depth To Water Before Purging:			57.50							
Depth To Water After Purging:			57.50							

ARCADIS

Water Sampling Log

Project	RACER Lansing	Project No.	B0064479.2018	Page	1 of 1
Site Location	Plant 2			Date	12-4-18
Site/Well No.	MW-14-63	Replicate No.		Code No.	
Weather	sunny, cold	Sampling Time:	Begin 1550	End	1552

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	Not Measured
Land Surface Elevation (ft)	Not Measured
Sounded Well Depth (ft bmp)	76.70
Depth to Water (ft bmp)	57.94
Water-Level Elevation (ft)	
Water Column in Well (ft)	18.76
Casing Diameter/Type	2"
Gallons in Well	3.00
Gallons Pumped/Bailed Prior to Sampling	~3
Sample Pump Intake Setting (ft bmp)	70'
Purge Time	begin 1440 end 1550
Pumping Rate (ml/min)	200ml/min
Evacuation Method	

Field Parameters

Temperature (°C)	9.9
SpC (mS/cm)	1.20
CND (mS/cm)	0.85
Dissolved Oxygen (%)	3.1
Dissolved Oxygen (mg/L)	0.34
pH (s.u.)	7.00
ORP (mV)	-40.1
Turbidity (NTU)	53.1
Color	cloudy - whitish
Odor	none
Appearance	cloudy
Sampling Method	Bladder Pump
Remarks	

Constituents Sampled	Container Description	Number	Preservative
1,4 Dioxane	VOA	3	HCL

Sampling Personnel: Jake Pisarkiewicz

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

PAGE 1 OF 1

WELL : MW-14-63 PROJ #: B0064479.2018

DATE : 12-4-18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1450	10.2	1.20	0.86	8.8	0.95	7.01	-30.6	200	36.1	58.10
1455	10.1	1.20	0.86	8.2	0.90	7.01	-34.6	200	125	58.10
1500	10.1	1.20	0.85	8.0	0.85	7.02	-36.5	200	210	58.10
1505	10.0	1.20	0.85	7.5	0.87	7.02	-37.9	200	184	58.10
1510	9.8	1.19	0.85	6.6	0.76	7.03	-36.4	200	135	58.10
1515	9.8	1.19	0.85	5.4	0.60	7.01	-36.0	200	110	58.10
1520	9.8	1.20	0.85	4.9	0.56	7.00	-35.3	200	99.1	58.10
1525	9.6	1.20	0.85	3.7	0.43	7.00	-36.1	200	89.1	58.10
1530	9.5	1.20	0.85	3.3	0.38	7.00	-37.0	200	80.3	58.10
1535	9.6	1.20	0.85	3.1	0.34	7.00	-35.8	200	73.6	58.10
1540	9.8	1.20	0.87	2.9	0.30	6.99	-39.3	200	59.6	58.10
1545	9.9	1.20	0.85	3.0	0.34	6.99	-40.1	200	55.2	58.10
1550	9.9	1.20	0.85	3.1	0.34	7.00	-40.1	200	53.1	58.10
Total Depth of Well:		76.70								
Depth To Water Before Purging:			57.94							
Depth To Water After Purging:			58.10							

ARCADIS

Water Sampling Log

Project	RACER Lansing	Project No.	B0064479.2018	Page	1 of 1
Site Location	Plant 2			Date	12.5.18
Site/Well No.	MW-16-83	Replicate No.		Code No.	
Weather	cold, snowy	Sampling Time:	Begin 1435	End	1440

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	Not Measured
Land Surface Elevation (ft)	Not Measured
Sounded Well Depth (ft bmp)	79.50
Depth to Water (ft bmp)	65.10
Water-Level Elevation (ft)	
Water Column in Well (ft)	14.4
Casing Diameter/Type	2" PVC
Gallons in Well	2.30
Gallons Pumped/Bailed Prior to Sampling	
Sample Pump Intake Setting (ft bmp)	75'
Purge Time	begin 1350 end 1435
Pumping Rate (ml/min)	200
Evacuation Method	Bladder Pump

Field Parameters

Temperature (°C)	8.8
SpC (mS/cm)	3.96
CND (mS/cm)	2.76
Dissolved Oxygen (%)	~~7.10~~ 9.8
Dissolved Oxygen (mg/L)	1.10
pH (s.u.)	7.14
ORP (mV)	-74.2
Turbidity (NTU)	19.9
Color	clear
Odor	None
Appearance	clear
Sampling Method	Bladder Pump
Remarks	

Constituents Sampled	Container Description	Number	Preservative
VOCs + 1,4 Dioxane	40 ml VOA	3	HCl

Sampling Personnel: Jake Pisarkiewicz

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-16-83 PROJ #: B0064479.2018

DATE : 12-5-18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1400	8.7	4.00	2.76	8.1	0.93	7.15	-78.5	200	31.1	65.12
1405	8.2	3.99	2.71	8.7	1.01	7.16	-78.0	200	22.8	65.12
1410	8.0	4.00	2.69	9.8	1.15	7.17	-75.4	200	21.1	65.12
1415	8.6	3.94	2.71	10.6	1.22	7.16	-73.0	200	21.3	65.12
1420	8.5	3.97	2.72	10.5	1.22	7.16	-72.9	200	28.0	65.12
1425	8.4	3.99	2.72	10.5	1.22	7.16	-72.2	200	22.8	65.12
1430	8.6	3.94	2.74	9.9	1.12	7.15	-73.6	200	20.6	65.12
1435	8.8	3.96	2.76	9.8	1.10	7.14	-74.2	200	19.9	65.12
Total Depth of Well:			79.50							
Depth To Water Before Purging:			65.10							
Depth To Water After Purging:			65.12							

ARCADIS

Water Sampling Log

Project	RACER Lansing	Project No.	B0064479.2018	Page	1 of 1
Site Location	Plant 2			Date	12-5-18
Site/Well No.	MW-17-87	Replicate No.		Code No.	
Weather	cold, snowy	Sampling Time:	Begin 1610	End	1615

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	Not Measured
Land Surface Elevation (ft)	Not Measured
Sounded Well Depth (ft bmp)	115
Depth to Water (ft bmp)	65.08
Water-Level Elevation (ft)	
Water Column in Well (ft)	49.92
Casing Diameter/Type	4" steel
Gallons in Well	7.99
Gallons Pumped/Bailed Prior to Sampling	~2.5
Sample Pump Intake Setting (ft bmp)	110
Purge Time	begin 1500 end 1610
Pumping Rate (ml/min)	200
Evacuation Method	Bladder Pump

Field Parameters

Temperature (°C)	8.0
SpC (mS/cm)	3.41
CND (mS/cm)	2.30
Dissolved Oxygen (%)	4.8
Dissolved Oxygen (mg/L)	0.56
pH (s.u.)	7.52
ORP (mV)	-149.8
Turbidity (NTU)	29.6
Color	clear
Odor	none
Appearance	slightly cloudy
Sampling Method	Bladder Pump
Remarks	

Constituents Sampled	Container Description	Number	Preservative
1,4 Dioxane	40ml VOA	3	HCl

Sampling Personnel: Jake Pisarkiewicz

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-17-87 PROJ #: B0064479.2018

DATE : 12-5-18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1520	8.1	3.54	2.40	9.6	1.13	7.86	-209.9	200	26.0	65.10
1525	8.4	3.56	2.43	8.4	0.62	7.87	-217.6	200	10.8	65.10
1530	8.4	3.54	2.41	8.3	0.44	7.88	-223.7	200	14.6	65.10
1535	7.7	3.52	2.35	3.2	0.38	7.86	-221.1	200	17.3	65.10
1540	8.1	3.48	2.35	3.3	0.39	7.79	-203.6	200	24.3	65.10
1545	8.3	3.44	2.35	3.8	0.44	7.66	-180.3	200	27.6	65.10
1550	8.2	3.44	2.33	4.4	0.51	7.60	-166.6	200	30.1	65.10
1555	8.3	3.42	2.33	4.6	0.54	7.55	-157.1	200	30.9	65.10
1600	8.1	3.42	2.32	4.7	0.55	7.53	-152.2	200	29.6	65.10
1605	8.0	3.41	2.31	4.8	0.56	7.53	-150.1	200	28.7	65.10
1610	8.0	3.41	2.30	4.8	0.56	7.52	-149.8	200	29.6	65.10
Total Depth of Well:			11.5							
Depth To Water Before Purging:			65.08							
Depth To Water After Purging:			65.10							

ARCADIS

Water Sampling Log

Project	RACER Lansing	Project No.	B0064479.2018	Page	1 of 1
Site Location	Plant 2			Date	12-6-18
Site/Well No.	MW-14-57	Replicate No.		Code No.	
Weather	Cold, snowy	Sampling Time:	Begin 1155	End	1200

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	Not Measured
Land Surface Elevation (ft)	Not Measured
Sounded Well Depth (ft bmp)	21.40
Depth to Water (ft bmp)	13.93
Water-Level Elevation (ft)	
Water Column in Well (ft)	7.47
Casing Diameter/Type	2" PVC
Gallons in Well	1.20
Gallons Pumped/Bailed Prior to Sampling	~2
Sample Pump Intake Setting (ft bmp)	19'
Purge Time	begin 1115 end 1155
Pumping Rate (ml/min)	200
Evacuation Method	Bladder Pump

Field Parameters

Temperature (°C)	11.4
SpC (mS/cm)	0.80
CND (mS/cm)	0.60
Dissolved Oxygen (%)	4.4
Dissolved Oxygen (mg/L)	0.46
pH (s.u.)	7.34
ORP (mV)	39.9
Turbidity (NTU)	1.51
Color	clear
Odor	none
Appearance	clear
Sampling Method	Bladder Pump
Remarks	

Constituents Sampled	Container Description	Number	Preservative
VOC's, 1,4 Dioxane	40 ml VOA	3	HCl

Sampling Personnel: Jake Pisarkiewicz

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-14-57 PROJ #: B0064479.2018

DATE : 12-6-18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1125	11.9	0.81	0.61	7.3	0.78	7.36	11.3	200	6.40	13.97
1130	11.3	0.81	0.60	5.9	0.65	7.35	17.2	200	4.10	13.97
1135	11.1	0.81	0.62	5.7	0.63	7.35	24.3	200	3.70	13.97
1140	11.2	0.80	0.57	5.0	0.55	7.35	30.1	200	2.40	13.97
1145	11.3	0.81	0.60	4.5	0.49	7.34	36.5	200	2.10	13.97
1150	11.3	0.81	0.60	4.4	0.47	7.34	38.9	200	1.87	13.97
1155	11.4	0.80	0.60	4.4	0.46	7.34	39.9	200	1.51	13.97
Total Depth of Well:			21.40							
Depth To Water Before Purging:			13.93							
Depth To Water After Purging:			13.97							

ARCADIS

Water Sampling Log

Project	RACER Lansing	Project No.	B0064479.2018	Page	1 of 1
Site Location	Plant 2			Date	12-6-18
Site/Well No.	MW-12-09	Replicate No.		Code No.	
Weather	Cold	Sampling Time:	Begin 0925	End	0930

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	Not Measured
Land Surface Elevation (ft)	Not Measured
Sounded Well Depth (ft bmp)	21.60
Depth to Water (ft bmp)	14.05
Water-Level Elevation (ft)	
Water Column in Well (ft)	7.55
Casing Diameter/Type	2" PVC
Gallons in Well	1.21
Gallons Pumped/Bailed Prior to Sampling	~2
Sample Pump Intake Setting (ft bmp)	18'
Purge Time	begin 0845 end 0925
Pumping Rate (ml/min)	200
Evacuation Method	Bladder Pump

Field Parameters

Temperature (°C)	9.1
SpC (mS/cm)	2.12
CND (mS/cm)	1.48
Dissolved Oxygen (%)	3.3
Dissolved Oxygen (mg/L)	0.38
pH (s.u.)	6.92
ORP (mV)	-19.3
Turbidity (NTU)	3.24
Color	Clear
Odor	None
Appearance	Clear
Sampling Method	Bladder Pump
Remarks	

Constituents Sampled	Container Description	Number	Preservative
1,4 Dioxane	40ml VOA	3	HCl

Sampling Personnel: Jake Pischkiewicz

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

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WELL : MW-12-09 PROJ #: B0064479.2018

DATE : 12-6-18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
0855	9.4	2.08	1.46	17.0	1.93	6.97	-10.5	200	10.1	14.10
0900	9.6	2.06	1.45	9.1	1.04	6.98	-18.1	200	6.31	14.10
0905	9.2	2.07	1.45	7.3	0.89	6.98	-18.0	200	5.10	14.10
0910	9.2	2.08	1.45	6.3	0.70	6.98	-18.2	200	5.95	14.10
0915	9.3	2.11	1.48	3.8	0.44	6.98	-18.8	200	4.10	14.10
0920	9.1	2.12	1.48	3.4	0.40	6.93	-19.1	200	3.78	14.10
0925	9.1	2.12	1.48	3.3	0.38	6.92	-19.3	200	3.24	14.10
Total Depth of Well:			21.60							
Depth To Water Before Purging:			14.05							
Depth To Water After Purging:			14.10							

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Water Sampling Log

Project	RACER Lansing	Project No.	B0064479.2018	Page	1 of 1
Site Location	Plant 2			Date	12-6-18
Site/Well No.	MW-14-56	Replicate No.		Code No.	
Weather	Cold, snowy	Sampling Time:	Begin 1040	End	1045

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	Not Measured
Land Surface Elevation (ft)	Not Measured
Sounded Well Depth (ft bmp)	79.10
Depth to Water (ft bmp)	64.31
Water-Level Elevation (ft)	
Water Column in Well (ft)	14.79
Casing Diameter/Type	2" PVC
Gallons in Well	2.36
Gallons Pumped/Bailed Prior to Sampling	~2.0
Sample Pump Intake Setting (ft bmp)	75'
Purge Time	begin 1000 end 1040
Pumping Rate (ml/min)	200
Evacuation Method	Bladder Pump

Field Parameters

Temperature (°C)	10.2
SpC (mS/cm)	5.78
CND (mS/cm)	4.17
Dissolved Oxygen (%)	4.0
Dissolved Oxygen (mg/L)	0.44
pH (s.u.)	6.78
ORP (mV)	-22.9
Turbidity (NTU)	2.10
Color	clear
Odor	none
Appearance	clear
Sampling Method	Bladder Pump
Remarks	

Constituents Sampled	Container Description	Number	Preservative
1,4 Dioxane	40 ml VOA	3	HCl

Sampling Personnel: Jake Pisarkiewicz

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

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WELL : MW-14-56 PROJ #: B0064479.2018

DATE : 12-6-18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1010	9.8	5.76	4.09	15.4	1.109	6.76	-14.1	200	10.2	64.90
1015	9.9	5.76	4.11	9.8	1.09	6.77	-17.6	200	8.76	64.90
1020	10.0	5.80	4.12	6.1	0.64	6.78	-21.4	200	4.31	64.90
1025	10.1	5.78	4.14	4.8	0.53	6.78	-21.9	200	3.10	64.90
1030	10.1	5.79	4.14	4.4	0.47	6.79	-22.1	200	2.74	64.90
1035	10.2	5.78	4.16	4.1	0.45	6.78	-22.6	200	2.30	64.90
1040	10.2	5.78	4.17	4.0	0.44	6.78	-22.9	200	2.10	64.90
Total Depth of Well:			79.10							
Depth To Water Before Purging:			64.31							
Depth To Water After Purging:			64.90							

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Water Sampling Log

Project	RACER Lansing	Project No.	B0064479.2018	Page	1 of 1
Site Location	Plant 2			Date	12-6-18
Site/Well No.	P2-SB-20	Replicate No.		Code No.	
Weather	cold, snowy	Sampling Time: Begin	1345	End	1350

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	Not Measured
Land Surface Elevation (ft)	Not Measured
Sounded Well Depth (ft bmp)	16.28
Depth to Water (ft bmp)	9.18
Water-Level Elevation (ft)	
Water Column in Well (ft)	7.1
Casing Diameter/Type	2" PVC
Gallons in Well	1.14
Gallons Pumped/Bailed Prior to Sampling	~2
Sample Pump Intake Setting (ft bmp)	14'
Purge Time	begin 1255 end 1345
Pumping Rate (ml/min)	200
Evacuation Method	Bladder Pump

Field Parameters

Temperature (°C)	7.9
SpC (mS/cm)	0.33
CND (mS/cm)	0.22
Dissolved Oxygen (%)	11.4
Dissolved Oxygen (mg/L)	1.32
pH (s.u.)	9.53
ORP (mV)	66.1
Turbidity (NTU)	1.11
Color	Clear
Odor	none
Appearance	clear
Sampling Method	Bladder Pump
Remarks	

Constituents Sampled	Container Description	Number	Preservative
1,4 Dioxane	40ml VOA	3	HCl

Sampling Personnel: Jake Pisarkiewicz

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : P2-SB-20 PROJ #: B0064479.2018

DATE : 12-6-18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1315	10.5	0.36	0.25	~~25.4~~ 22.0	2.54	9.35	78.1	200	6.35	9.56
1320	8.0	0.36	0.24	19.1	2.26	9.37	74.4	200	4.10	9.59
1325	8.1	0.35	0.24	16.7	1.92	9.38	71.4	200	3.73	9.59
1330	8.0	0.34	0.23	12.8	1.51	9.50	68.8	200	2.90	9.59
1335	7.8	0.33	0.23	11.6	1.37	9.52	67.3	200	1.74	9.59
1340	7.9	0.33	0.22	11.7	1.39	9.53	66.3	200	1.51	9.59
1345	7.9	0.33	0.22	11.4	1.32	9.53	66.1	200	1.11	9.59
Total Depth of Well:			16.28							
Depth To Water Before Purging:			9.18							
Depth To Water After Purging:			9.59							

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Water Sampling Log

Project	RACER Lansing	Project No.	B0064479.2018	Page	1 of 1
Site Location	Plant 2			Date	12-6-18
Site/Well No.	MW-14-55	Replicate No.		Code No.	
Weather	Cold, snowy	Sampling Time:	Begin 1455	End	1520

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	Not Measured
Land Surface Elevation (ft)	Not Measured
Sounded Well Depth (ft bmp)	20.01
Depth to Water (ft bmp)	17.92
Water-Level Elevation (ft)	
Water Column in Well (ft)	2.09
Casing Diameter/Type	2" PVC
Gallons in Well	0.33
Gallons Pumped/Bailed Prior to Sampling	~1
Sample Pump Intake Setting (ft bmp)	19'
Purge Time	begin 1415 end 1455
Pumping Rate (ml/min)	200
Evacuation Method	Peristaltic Pump

Field Parameters

Temperature (°C)	8.2
SpC (mS/cm)	0.72
CND (mS/cm)	0.49
Dissolved Oxygen (%)	45.3
Dissolved Oxygen (mg/L)	5.32
pH (s.u.)	7.27
ORP (mV)	102.5
Turbidity (NTU)	8.08
Color	clear
Odor	none
Appearance	clear
Sampling Method	Peristaltic Pump
Remarks	

Constituents Sampled	Container Description	Number	Preservative
VOC's	40 ml VOA	3	HCl

Sampling Personnel: Jake Pisalkiewicz

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

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YSI/LOW FLOW SAMPLING LOG

WELL : MW-14-55 PROJ #: B0064479.2018

DATE : 12-6-18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1425	8.0	0.71	0.48	48.7	5.83	7.26	84.2	200	33.6	18.22
1430	8.4	0.72	0.49	46.6	5.42	7.27	91.6	200	21.6	18.22
1435	8.8	0.72	0.49	47.7	5.53	7.27	92.8	200	14.3	18.22
1440	8.3	0.72	0.49	47.5	5.60	7.28	98.2	200	10.1	18.22
1445	8.1	0.72	0.49	46.3	5.43	7.28	98.2	200	9.34	18.22
1450	8.4	0.72	0.49	46.9	5.48	7.27	99.9	200	8.10	18.22
1455	8.2	0.72	0.49	45.3	5.32	7.27	102.5	200	8.08	18.22
Total Depth of Well:			20.01							
Depth To Water Before Purging:			17.92							
Depth To Water After Purging:			18.22							

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Water Sampling Log

Project	RACER Lansing	Project No.	B0064479.2018	Page	1 of 1
Site Location	Plant 2			Date	12-10-18
Site/Well No.	MW-16-84	Replicate No.		Code No.	
Weather	cold, cloudy	Sampling Time:	Begin 1010	End	1015

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	Not Measured
Land Surface Elevation (ft)	Not Measured
Sounded Well Depth (ft bmp)	81.10
Depth to Water (ft bmp)	66.70
Water-Level Elevation (ft)	
Water Column in Well (ft)	14.4
Casing Diameter/Type	2" PVC
Gallons in Well	2.30
Gallons Pumped/Bailed Prior to Sampling	~2.5
Sample Pump Intake Setting (ft bmp)	78'
Purge Time	begin 0925 end 1010
Pumping Rate (ml/min)	200
Evacuation Method	Bladder Pump

Field Parameters

Temperature (°C)	7.9
SpC (mS/cm)	1.44
CND (mS/cm)	0.94
Dissolved Oxygen (%)	6.0
Dissolved Oxygen (mg/L)	0.72
pH (s.u.)	7.20
ORP (mV)	-32.9
Turbidity (NTU)	1.60
Color	Clear
Odor	none
Appearance	Clear
Sampling Method	Bladder Pump
Remarks	

Constituents Sampled	Container Description	Number	Preservative
VOC's, 1,4 Dioxane	40 ml VOA	3	HCl

Sampling Personnel: Jake Pisarkiewicz

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-16-84 PROJ #: B0064479.2018

DATE : 12-10-18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
0935	8.9	1.31	0.91	12.2	1.41	7.19	-29.3	200	8.42	67.00
0940	9.0	1.36	0.95	9.1	1.05	7.18	-33.3	200	6.10	67.00
0945	8.9	1.39	0.96	8.2	0.95	7.18	-35.0	200	5.40	67.00
0950	8.5	1.41	0.94	7.6	0.86	7.19	-33.3	200	3.10	67.00
0955	8.0	1.43	0.95	6.7	0.80	7.18	-32.7	200	2.90	67.00
1000	8.0	1.43	0.94	6.3	0.75	7.19	-32.6	200	2.10	67.00
1005	7.9	1.44	0.94	6.0	0.73	7.20	-32.5	200	1.75	67.00
1010	7.9	1.44	0.94	6.0	0.72	7.20	-32.9	200	1.60	67.00

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Water Sampling Log

Project	RACER Lansing	Project No.	B0064479.2018	Page	1 of 1
Site Location	Plant 2			Date	10-12-18
Site/Well No.	MW-17-86	Replicate No.		Code No.	
Weather	cold, overcast	Sampling Time:	Begin 1130	End	1135

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	Not Measured
Land Surface Elevation (ft)	Not Measured
Sounded Well Depth (ft bmp)	82.20
Depth to Water (ft bmp)	65.66
Water-Level Elevation (ft)	
Water Column in Well (ft)	16.54
Casing Diameter/Type	2" PVC
Gallons in Well	2.65
Gallons Pumped/Bailed Prior to Sampling	~2
Sample Pump Intake Setting (ft bmp)	79'
Purge Time	begin 1050 end 1130
Pumping Rate (ml/min)	200
Evacuation Method	Bladder Pump

Field Parameters

Temperature (°C)	7.8
SpC (mS/cm)	1.39
CND (mS/cm)	0.93
Dissolved Oxygen (%)	5.4
Dissolved Oxygen (mg/L)	0.65
pH (s.u.)	7.15
ORP (mV)	-41.1
Turbidity (NTU)	1.08
Color	Clear
Odor	None
Appearance	Clear
Sampling Method	Bladder Pump
Remarks	

Constituents Sampled	Container Description	Number	Preservative
VOCs, 1,4 Dioxane	40ml HCL	3	HCL

Sampling Personnel: John Pisarkiewicz

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-17-86 PROJ #: B0064479.2018

DATE : 12-10-18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1100	8.6	1.35	0.93	10.9	1.25	7.17	-35.6	200	5.10	65.90
1105	8.3	1.40	0.82	7.0	0.82	7.14	-40.3	200	3.18	65.90
1110	8.0	1.39	0.94	6.4	0.76	7.15	-40.5	200	2.40	65.90
1115	7.9	1.40	0.94	6.1	0.71	7.15	-41.1	200	2.10	65.90
1120	7.5	1.40	0.93	5.7	0.68	7.15	-40.6	200	1.75	65.90
1125	7.8	1.39	0.94	5.5	0.66	7.15	-40.7	200	1.41	65.90
1130	7.8	1.39	0.93	5.4	0.65	7.15	-41.1	200	1.08	65.90
Total Depth of Well:			82.20							
Depth To Water Before Purging:			65.66							
Depth To Water After Purging:			65.90							

ARCADIS

Water Sampling Log

Project	RACER Lansing	Project No.	B0064479.2018	Page	1 of 1
Site Location	Plant 2			Date	12-10-18
Site/Well No.	MW-14-61	Replicate No.		Code No.	
Weather	cold, overcast	Sampling Time:	Begin 1320	End	1325

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	Not Measured
Land Surface Elevation (ft)	Not Measured
Sounded Well Depth (ft bmp)	77.50
Depth to Water (ft bmp)	66.59
Water-Level Elevation (ft)	
Water Column in Well (ft)	10.91
Casing Diameter/Type	2" PVC
Gallons in Well	1.74
Gallons Pumped/Bailed Prior to Sampling	~2
Sample Pump Intake Setting (ft bmp)	74'
Purge Time	begin 1230 end 1320
Pumping Rate (ml/min)	200
Evacuation Method	Bladder Pump

Field Parameters

Temperature (°C)	9.7
SpC (mS/cm)	1.73
CND (mS/cm)	1.22
Dissolved Oxygen (%)	3.7
Dissolved Oxygen (mg/L)	0.42
pH (s.u.)	7.00
ORP (mV)	-27.9
Turbidity (NTU)	0.59
Color	clear
Odor	none
Appearance	clear
Sampling Method	Bladder Pump
Remarks	

Constituents Sampled	Container Description	Number	Preservative
1,4 Dioxane	40 ml VOA	3	HCl

Sampling Personnel: Jake Pisarkiewicz

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

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WELL : MW-14-61 PROJ #: B0064479.2018

DATE : 12·10·18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1240	9.6	1.71	1.21	~~11.6~~ 1.33	1.33	7.00	-7.4	200	6.70	66.61
1245	10.6	1.72	1.25	8.7	0.95	6.99	-18.1	200	3.21	66.61
1250	9.4	1.74	1.21	7.1	0.82	7.00	-20.6	200	2.84	66.61
1255	9.2	1.74	1.21	5.9	0.67	7.00	-22.3	200	1.75	66.61
1300	9.5	1.73	1.22	5.3	0.60	7.00	-23.3	200	1.60	66.61
1305	9.2	1.73	1.21	4.6	0.53	7.00	-25.1	200	1.21	66.61
1310	9.5	1.73	1.23	4.1	0.46	7.00	-27.0	200	1.01	66.61
1315	9.7	1.73	1.22	3.8	0.43	7.00	-27.3	200	0.78	66.61
1320	9.7	1.73	1.22	3.7	0.42	7.00	-27.9	200	0.59	66.61
Total Depth of Well:			77.50							
Depth To Water Before Purging:			66.59							
Depth To Water After Purging:			66.61							

ARCADIS

Water Sampling Log

Project	RACER Lansing	Project No.	B0064479.2018	Page	1 of 1
Site Location	Plant 2			Date	12.10.18
Site/Well No.	MW-12-06	Replicate No.		Code No.	
Weather		Sampling Time:	Begin 1425	End	1430

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	Not Measured
Land Surface Elevation (ft)	Not Measured
Sounded Well Depth (ft bmp)	104
Depth to Water (ft bmp)	67.15
Water-Level Elevation (ft)	
Water Column in Well (ft)	36.85
Casing Diameter/Type	4" steel
Gallons in Well	23.95
Gallons Pumped/Bailed Prior to Sampling	~ 2
Sample Pump Intake Setting (ft bmp)	99'
Purge Time	begin 1350 end 1425
Pumping Rate (ml/min)	200
Evacuation Method	Bladder Pump

Field Parameters

Temperature (°C)	6.5
SpC (mS/cm)	0.80
CND (mS/cm)	12.52
Dissolved Oxygen (%)	5.9
Dissolved Oxygen (mg/L)	0.73
pH (s.u.)	7.59
ORP (mV)	-132.9
Turbidity (NTU)	2.21
Color	Clear
Odor	None
Appearance	Clear
Sampling Method	Bladder Pump
Remarks	

Constituents Sampled	Container Description	Number	Preservative
1,4 Dioxane	40 ml VOA	3	HCl

Sampling Personnel: Jake Piasecki

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-12-DD PROJ #: B0064479.2018

DATE : 12-10-18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1400	9.4	0.80	0.56	8.8	0.99	7.57	-130.7	200	10.2	67.21
1405	7.7	0.80	0.54	7.0	0.84	7.58	-132.1	200	5.86	67.21
1410	7.2	0.80	0.53	6.6	0.81	7.59	-132.0	200	4.10	67.21
1415	7.2	0.80	0.53	6.2	0.76	7.59	-132.7	200	3.72	67.21
1420	7.0	0.80	0.53	6.0	0.74	7.59	-132.8	200	2.90	67.21
1425	6.9	0.80	0.52	5.9	0.73	7.59	-132.9	200	2.21	67.21

ARCADIS

Water Sampling Log

Project	RACER Lansing	Project No.	B0064479.2018	Page	1 of 1
Site Location	Plant 2			Date	12-10-18
Site/Well No.	MW-16-78	Replicate No.		Code No.	
Weather	Cold, overcast	Sampling Time:	Begin 1540	End	1545

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	Not Measured
Land Surface Elevation (ft)	Not Measured
Sounded Well Depth (ft bmp)	76.20
Depth to Water (ft bmp)	63.73
Water-Level Elevation (ft)	
Water Column in Well (ft)	12.47
Casing Diameter/Type	2" PVC
Gallons in Well	1.99
Gallons Pumped/Bailed Prior to Sampling	~2
Sample Pump Intake Setting (ft bmp)	72'
Purge Time	begin 1500 end 1540
Pumping Rate (ml/min)	200
Evacuation Method	Bladder Pump

Field Parameters

Temperature (°C)	10.4
SpC (mS/cm)	1.95
CND (mS/cm)	1.40
Dissolved Oxygen (%)	3.1
Dissolved Oxygen (mg/L)	0.34
pH (s.u.)	7.03
ORP (mV)	-44.7
Turbidity (NTU)	1.21
Color	clear
Odor	none
Appearance	clear
Sampling Method	Bladder Pump
Remarks	

Constituents Sampled	Container Description	Number	Preservative
VOCs, 1,4 Dioxane	40ml VOA	3	HCL

Sampling Personnel: Jake Pasternowicz

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

PAGE 1 OF 1

WELL : MW-16-78 PROJ #: B0064479.2018

DATE : 12-10-18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1515	10.1	1.94	1.39	7.4	0.82	7.02	-33.5	200	5.22	63.74
1520	10.7	1.94	1.41	5.3	0.58	7.02	-39.8	200	3.80	63.74
1525	10.6	1.95	1.41	4.3	0.47	7.02	-42.0	200	2.74	63.74
1530	10.3	1.95	1.40	3.3	0.36	7.03	-44.4	200	1.71	63.74
1535	10.5	1.95	1.41	3.2	0.35	7.03	-44.5	200	1.40	63.74
1540	10.4	1.95	1.40	3.1	0.34	7.03	-44.7	200	1.21	63.74

ARCADIS

Water Sampling Log

Project	RACER Lansing	Project No.	B0064479.2018	Page	1 of 1
Site Location	Plant 2			Date	12-11-18
Site/Well No.	PW-14-02	Replicate No.		Code No.	
Weather	Cold, overcast	Sampling Time:	Begin 1515	End	1520

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	Not Measured
Land Surface Elevation (ft)	Not Measured
Sounded Well Depth (ft bmp)	85.20
Depth to Water (ft bmp)	64.64
Water-Level Elevation (ft)	
Water Column in Well (ft)	20.56
Casing Diameter/Type	6" PVC
Gallons in Well	30.22
Gallons Pumped/Bailed Prior to Sampling	~3
Sample Pump Intake Setting (ft bmp)	82'
Purge Time	begin 1420 end 1515
Pumping Rate (ml/min)	200
Evacuation Method	Bladder Pump

Field Parameters

Temperature (°C)	8.3
SpC (mS/cm)	2.69
CND (mS/cm)	1.83
Dissolved Oxygen (%)	3.6
Dissolved Oxygen (mg/L)	0.41
pH (s.u.)	7.11
ORP (mV)	-47.7
Turbidity (NTU)	1.61
Color	Clear
Odor	No
Appearance	clear
Sampling Method	Bladder pump
Remarks	

Constituents Sampled	Container Description	Number	Preservative
VOCs, 1,4 Dioxane	40ml VOA	3	HCL

Sampling Personnel: Jake Pisarkiewicz

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

PAGE 1 OF 1

WELL : PW-14-02 PROJ #: B0064479.2018

DATE : 12-11-18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1430	3.0	2.73	1.58	19.3	2.55	7.14	-11.8	200	3.34	64.64
1435	3.9	2.68	1.58	13.2	1.70	7.13	-19.0	200	2.90	64.64
1440	8.3	2.68	1.83	7.9	0.92	7.11	-31.1	200	2.98	64.64
1445	8.4	2.68	1.83	6.1	0.70	7.10	-34.3	200	2.73	64.64
1450	8.6	2.68	1.84	5.4	0.63	7.10	-37.3	200	2.92	64.64
1455	8.5	2.68	1.83	4.9	0.57	7.11	-41.8	200	2.40	64.64
1500	8.7	2.70	1.89	3.9	0.45	7.10	-44.7	200	2.10	64.64
1505	8.4	2.69	1.84	3.6	0.41	7.10	-45.7	200	1.89	64.64
1510	8.3	2.69	1.83	3.5	0.40	7.10	-46.2	200	1.75	64.64
1515	8.3	2.69	1.83	3.6	0.41	7.11	-47.7	200	1.61	64.64
Total Depth of Well:			85.20							
Depth To Water Before Purging:			64.64							
Depth To Water After Purging:			64.64							

ARCADIS

Water Sampling Log

Project	RACER Lansing	Project No.	B0064479.2018	Page	1 of 1
Site Location	Plant 2			Date	12-11-18
Site/Well No.	MW-13-44	Replicate No.		Code No.	
Weather	cold, overcast	Sampling Time: Begin	1402	End	1405

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	Not Measured
Land Surface Elevation (ft)	Not Measured
Sounded Well Depth (ft bmp)	121.20
Depth to Water (ft bmp)	67.45
Water-Level Elevation (ft)	
Water Column in Well (ft)	53.75
Casing Diameter/Type	4" steel
Gallons in Well	34.94
Gallons Pumped/Bailed Prior to Sampling	~3
Sample Pump Intake Setting (ft bmp)	115
Purge Time	begin 1250 end 1400
Pumping Rate (ml/min)	200
Evacuation Method	Bladder Pump

Field Parameters

Temperature (°C)	8.3
SpC (mS/cm)	1.37
CND (mS/cm)	0.94
Dissolved Oxygen (%)	10.4
Dissolved Oxygen (mg/L)	0.77
pH (s.u.)	7.36
ORP (mV)	-63.1
Turbidity (NTU)	1.51
Color	Clear
Odor	none
Appearance	Clear
Sampling Method	Bladder Pump
Remarks	

Constituents Sampled	Container Description	Number	Preservative
1,4 Dioxane	40 ml VOA	3	HCl

Sampling Personnel: Jake Pisarkiewicz

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-13-44 PROJ #: B0064479.2018

DATE : 12-11-18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1320	7.1	1.36	0.89	14.2	1.70	7.39	-25.5	200	8.72	67.45
1325	8.4	1.37	0.94	10.0	1.16	7.36	-46.7	200	6.53	67.45
1330	8.2	1.37	0.93	8.6	1.00	7.36	-51.4	200	4.10	67.45
1335	8.0	1.37	0.90	7.7	0.90	7.36	-55.1	200	3.70	67.45
1340	8.1	1.37	0.92	7.4	0.85	7.36	-57.6	200	3.10	67.45
1345	8.2	1.37	0.93	7.1	0.83	7.37	-59.0	200	2.75	67.45
1350	8.3	1.37	0.94	6.5	0.76	7.36	-61.7	200	2.02	67.45
1355	8.3	1.37	0.94	6.4	0.74	7.36	-62.3	200	1.74	67.45
1400	8.3	1.37	0.94	6.4	0.73	7.36	-63.1	200	1.51	67.45

ARCADIS

Water Sampling Log

Project	RACER Lansing	Project No.	B0064479.2018	Page	1 of 1
Site Location	Plant 2			Date	12-11-18
Site/Well No.	MW-13-43	Replicate No.		Code No.	
Weather	cold, overcast	Sampling Time:	Begin 1125	End	1130

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	Not Measured
Land Surface Elevation (ft)	Not Measured
Sounded Well Depth (ft bmp)	79.70
Depth to Water (ft bmp)	64.88
Water-Level Elevation (ft)	
Water Column in Well (ft)	14.82
Casing Diameter/Type	2" PVC
Gallons in Well	2.37
Gallons Pumped/Bailed Prior to Sampling	
Sample Pump Intake Setting (ft bmp)	76'
Purge Time	begin 1035 end 1125
Pumping Rate (ml/min)	200
Evacuation Method	Bladder Pump

Field Parameters

Temperature (°C)	9.6
SpC (mS/cm)	2.70
CND (mS/cm)	1.90
Dissolved Oxygen (%)	3.3
Dissolved Oxygen (mg/L)	0.38
pH (s.u.)	7.00
ORP (mV)	-9.1
Turbidity (NTU)	2.71
Color	Clear
Odor	None
Appearance	Clear
Sampling Method	Bladder Pump
Remarks	

Constituents Sampled	Container Description	Number	Preservative
1,4 Dioxane	40ml VOA	3	HCl

Sampling Personnel: Jake Piszczewicz

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-13-43 PROJ #: B0064479.2018

DATE : 12-11-18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1050	9.2	2.28	1.61	8.7	0.98	7.03	-28.8	200	9.30	65.20
1055	9.9	2.48	1.79	6.9	0.71	7.01	-17.7	200	6.74	65.20
1100	10.3	2.69	1.94	5.2	0.58	7.00	-11.2	200	5.10	65.20
1105	9.8	2.69	1.91	4.5	0.50	7.01	-9.8	200	4.17	65.20
1110	9.6	2.70	1.91	3.9	0.43	7.00	-9.4	200	3.71	65.20
1115	9.5	2.71	1.92	3.6	0.40	7.00	-9.1	200	3.10	65.20
1120	9.6	2.70	1.91	3.4	0.39	7.00	-9.2	200	2.80	65.20
1125	9.6	2.70	1.90	3.3	0.38	7.00	-9.1	200	2.71	65.20
Total Depth of Well:			79.70							
Depth To Water Before Purging:			64.98							
Depth To Water After Purging:			65.20							

ARCADIS

Water Sampling Log

Project	RACER Lansing	Project No.	B0064479.2018	Page	1 of 1
Site Location	Plant 2			Date	12-11-18
Site/Well No.	MW-16-79	Replicate No.		Code No.	
Weather	cold, overcast	Sampling Time:	Begin 0955	End	1000

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	Not Measured
Land Surface Elevation (ft)	Not Measured
Sounded Well Depth (ft bmp)	76.00
Depth to Water (ft bmp)	65.20
Water-Level Elevation (ft)	
Water Column in Well (ft)	10.8
Casing Diameter/Type	2" PVC
Gallons in Well	1.73
Gallons Pumped/Bailed Prior to Sampling	~ 3
Sample Pump Intake Setting (ft bmp)	73'
Purge Time	begin 0845 end 0955
Pumping Rate (ml/min)	200
Evacuation Method	Bladder Pump

Field Parameters

Temperature (°C)	6.0
SpC (mS/cm)	1.12
CND (mS/cm)	0.68
Dissolved Oxygen (%)	5.6
Dissolved Oxygen (mg/L)	0.73
pH (s.u.)	7.31
ORP (mV)	-23.0
Turbidity (NTU)	6.10
Color	Clear
Odor	none
Appearance	clear
Sampling Method	Bladder Pump
Remarks	

Constituents Sampled	Container Description	Number	Preservative
VOC's, 1,4 Dioxane	40 ml VOA	3	HCl

Sampling Personnel: John Pistachiowicz

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-16-79 PROJ #: B0064479.2018

DATE : 12-11-18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
0800	8.4	1.13	0.77	7.7	0.91	7.23	-15.8	200	45.1	65.50
0905	7.5	1.12	0.74	8.2	0.95	7.27	-13.9	200	34.3	65.50
0910	7.0	1.10	0.73	8.6	0.99	7.30	-12.5	200	27.6	65.50
0915	6.4	1.11	0.72	8.0	0.91	7.30	-14.0	200	24.3	65.50
0920	6.1	1.12	0.71	8.2	0.89	7.30	-14.9	200	20.9	65.50
0925	6.4	1.12	0.72	6.8	0.84	7.30	-16.3	200	14.6	65.50
0930	6.6	1.12	0.73	6.4	0.79	7.30	-18.6	200	11.9	65.50
0935	5.7	1.11	0.71	6.7	0.82	7.31	-19.2	200	10.1	65.50
0940	6.2	1.12	0.72	6.0	0.74	7.31	-21.1	200	9.10	65.50
0945	6.4	1.13	0.72	5.8	0.71	7.30	-23.5	200	7.40	65.50
0950	6.1	1.12	0.69	5.7	0.74	7.31	-22.7	200	6.90	65.50
0955	6.0	1.12	0.68	5.6	0.73	7.31	-23.0	200	6.10	65.50
Total Depth of Well:			76.00							
Depth To Water Before Purging:			65.20							
Depth To Water After Purging:			65.50							

ARCADIS

Water Sampling Log

Project	RACER Lansing	Project No.	B0064479.2018	Page	1 of 1
Site Location	Plant 3			Date	12-12-18
Site/Well No.	MW-13-24	Replicate No.	MS/MSD	Code No.	
Weather	cold, overcast	Sampling Time: Begin	1100	End	1105

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	Not Measured
Land Surface Elevation (ft)	Not Measured
Sounded Well Depth (ft bmp)	77.33
Depth to Water (ft bmp)	62.61
Water-Level Elevation (ft)	
Water Column in Well (ft)	14.72
Casing Diameter/Type	2" PVC
Gallons in Well	2.35
Gallons Pumped/Bailed Prior to Sampling	
Sample Pump Intake Setting (ft bmp)	73'
Purge Time	begin 1020 end 1100
Pumping Rate (ml/min)	200
Evacuation Method	Bladder Pump

Field Parameters

Temperature (°C)	8.7
SpC (mS/cm)	1.18
CND (mS/cm)	0.81
Dissolved Oxygen (%)	5.5
Dissolved Oxygen (mg/L)	0.62
pH (s.u.)	6.92
ORP (mV)	-20.5
Turbidity (NTU)	2.10
Color	Clear
Odor	None
Appearance	Clear
Sampling Method	Bladder Pump
Remarks	MS/MSD collected

Constituents Sampled	Container Description	Number	Preservative
1,4 Dioxane	40 ml VOA	3 (MS/MSD)	HCl

Sampling Personnel: Jake Pisarkiewicz

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

PAGE 1 OF 1

WELL : MW-13-24 PROJ #: B0064479.2018

DATE : 12-12-18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
1030	8.7	0.96	0.66	20.4	2.34	7.17	-23.9	200	4.10	63.40
1035	8.3	1.03	0.71	14.1	1.64	7.04	-20.3	200	3.75	63.40
1040	9.1	1.14	0.80	8.5	0.98	6.93	-20.5	200	3.20	63.40
1045	8.8	1.16	0.80	6.4	0.74	6.93	-20.6	200	2.92	63.40
1050	8.7	1.17	0.81	5.9	0.68	6.93	-20.9	200	2.74	63.40
1055	8.8	1.18	0.81	5.6	0.63	6.92	-20.7	200	2.45	63.40
1100	8.7	1.18	0.81	5.5	0.62	6.92	-20.5	200	2.10	63.40
Total Depth of Well:			77.33							
Depth To Water Before Purging:			62.61							
Depth To Water After Purging:			63.40							

ARCADIS

Water Sampling Log

Project	RACER Lansing	Project No.	B0064479.2018	Page	1 of 1
Site Location	Plant 3			Date	12-12-18
Site/Well No.	MW-15-71	Replicate No.		Code No.	
Weather	Cold, overcast	Sampling Time: Begin	0930	End	0935

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	Not Measured
Land Surface Elevation (ft)	Not Measured
Sounded Well Depth (ft bmp)	118.21
Depth to Water (ft bmp)	63.30
Water-Level Elevation (ft)	
Water Column in Well (ft)	54.91
Casing Diameter/Type	2" PVC
Gallons in Well	8.79
Gallons Pumped/Bailed Prior to Sampling	~3
Sample Pump Intake Setting (ft bmp)	113'
Purge Time	begin 0835 end 0930
Pumping Rate (ml/min)	200
Evacuation Method	Bladder Pump

Field Parameters

Temperature (°C)	5.4
SpC (mS/cm)	1.94
CND (mS/cm)	1.21
Dissolved Oxygen (%)	5.8
Dissolved Oxygen (mg/L)	0.73
pH (s.u.)	7.10
ORP (mV)	73.1
Turbidity (NTU)	9.09
Color	clear
Odor	none
Appearance	clear
Sampling Method	Bladder Pump
Remarks	

Constituents Sampled	Container Description	Number	Preservative
1,4 Dioxane	40 ml VOA	3	HCl

Sampling Personnel: Jake Pisarkiewicz

Well Casing Volumes

Gal./Ft.					
	0.5" = 0.01	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

ARCADIS

YSI/LOW FLOW SAMPLING LOG

WELL : MW-15-71 PROJ #: B0064479.2018

DATE : 12-12-18 LOC: RACER Lansing, MI

Time	Temp Degree C	SpC mS/cm	CND mS/cm	DO%	DO mg/L	pH	ORP mV	Flow Rate mL/min	Turbidity NTU	DTW
0845	3.5	1.50	0.87	49.8	6.69	7.22	29.1	200	46.5	63.36
0850	3.2	1.55	0.90	40.8	5.40	7.21	36.1	200	21.3	63.36
0855	5.4	1.61	1.01	16.9	2.09	7.19	40.2	200	15.10	63.36
0900	5.8	1.68	1.07	9.5	1.18	7.18	49.7	200	14.10	63.36
0905	6.16	1.77	1.14	7.4	1.14	7.15	56.2	200	13.76	63.36
0910	5.5	1.84	1.16	7.1	0.95	7.13	63.1	200	12.3	63.36
0915	5.3	1.87	1.17	7.0	0.87	7.12	68.3	200	11.4	63.36
0920	5.4	1.90	1.20	6.4	0.79	7.11	70.3	200	10.1	63.36
0925	5.4	1.94	1.21	5.9	0.74	7.10	72.0	200	9.60	63.36
0930	5.4	1.94	1.21	5.8	0.73	7.10	73.1	200	9.09	63.36
Total Depth of Well:			118.21							
Depth To Water Before Purging:			63.36							
Depth To Water After Purging:			63.36							

APPENDIX E

APC Sampling Results

(On attached CD)

Michigan Department of Environmental Quality Analytical Testing Report

Work Order:	1410055
Report Date:	10/30/2014 12:55
Client:	MDEQ-RRD-LANSING
Attention:	Mary Schafer
Project Name:	ADAMS PLATING COMPANY
Project Number:	LB041499

Sample Number			Target Detection Limit (TDL)	Drinking Water Criteria (DWC)	Groundwater Surface Water Interface Criteria (GSIC)	Groundwater Volatilization to Indoor Air Inhalation Criteria (GVIIC)	Rule 57 Final Acute Value (FAV)	1410055-01	1410055-02	1410055-03	1410055-04	1410055-05	1410055-06	1410055-07
Sample ID								MW08S	MW08D	MW07S	MW07D	MW12S	MW12D	MW04S
Sample Depth														
Date Collected								10/7/2014	10/7/2014	10/7/2014	10/7/2014	10/7/2014	10/7/2014	10/8/2014
Date Received								10/9/2014	10/9/2014	10/9/2014	10/9/2014	10/9/2014	10/9/2014	10/9/2014
Analyte	Units	Method	Organics-Dioxane											
1,4-dioxane	ug/L	8260 Modified	1	85	2,800	NLV	390,000	44	24	<1.0	95	<1.0	12	<1.0

Grey indicates contaminant was detected.
Yellow indicates contaminant exceeds DWC.
Blue indicates contaminant exceeds GSIC.
Green indicates contaminant exceeds both DWC and GSIC.
Orange indicates contaminant exceeds one or more criteria; GVIIC and/or FAV.
“ID” means insufficient data to develop criterion.
“NA” means a criterion or value is not available or, in the case of background, not applicable.
“NLV” means hazardous substance is not likely to volatilize under most conditions.
Letters in criteria columns refer to Footnotes of the Criteria/RBSLs tables.

Michigan Department of Environmental Quality Analytical Testing Report

Work Order:	1410055
Report Date:	10/30/2014 12:55
Client:	MDEQ-RRD-LANSING
Attention:	Mary Schafer
Project Name:	ADAMS PLATING COMPANY
Project Number:	LB041499

Sample Number			Target Detection Limit (TDL)	Drinking Water Criteria (DWC)	Groundwater Surface Water Interface Criteria (GSIC)	Groundwater Volatilization to Indoor Air Inhalation Criteria (GVIIC)	Rule 57 Final Acute Value (FAV)	1410055-08	1410055-09	1410055-10	1410055-11	1410055-12	1410055-13	1410055-14
Sample ID								MW04D	MW06S	MW13S	MW06D	MW05D	MW11S	MW11D
Sample Depth														
Date Collected								10/8/2014	10/8/2014	10/8/2014	10/8/2014	10/8/2014	10/8/2014	10/8/2014
Date Received								10/9/2014	10/9/2014	10/9/2014	10/9/2014	10/9/2014	10/9/2014	10/9/2014
Analyte	Units	Method	Organics-Dioxane											
1,4-dioxane	ug/L	8260 Modified	1	85	2,800	NLV	390,000	39	<1.0	490	11	3.9	3	<1.0

Grey indicates contaminant was detected.
Yellow indicates contaminant exceeds DWC.
Blue indicates contaminant exceeds GSIC.
Green indicates contaminant exceeds both DWC and GSIC.
Orange indicates contaminant exceeds one or more criteria; GVIIC and/or FAV.
"ID" means insufficient data to develop criterion.
"NA" means a criterion or value is not available or, in the case of background, not applicable.
"NLV" means hazardous substance is not likely to volatilize under most conditions.
Letters in criteria columns refer to Footnotes of the Criteria/RBSLs tables.

Michigan Department of Environmental Quality Analytical Testing Report

Work Order:	1410055
Report Date:	10/30/2014 12:55
Client:	MDEQ-RRD-LANSING
Attention:	Mary Schafer
Project Name:	ADAMS PLATING COMPANY
Project Number:	LB041499

Sample Number			Target Detection Limit (TDL)	Drinking Water Criteria (DWC)	Groundwater Surface Water Interface Criteria (GSIC)	Groundwater Volatilization to Indoor Air Inhalation Criteria (GVIIC)	Rule 57 Final Acute Value (FAV)	1410055-15	1410055-16	1410055-17	1410055-18	1410055-19	1410055-20	1410055-21
Sample ID								MW11D MS	MW11D MSD	MW09D	MW09D-dup	MW02-D	MW13D	MW04D-dup
Sample Depth														
Date Collected								10/8/2014	10/8/2014	10/8/2014	10/8/2014	10/8/2014	10/8/2014	10/8/2014
Date Received								10/9/2014	10/9/2014	10/9/2014	10/9/2014	10/9/2014	10/9/2014	10/9/2014
Analyte	Units	Method	Organics-Dioxane											
1,4-dioxane	ug/L	8260 Modified	1	85	2,800	NLV	390,000	12	11	910	930	<1.0	200	34

Grey indicates contaminant was detected.
Yellow indicates contaminant exceeds DWC.
Blue indicates contaminant exceeds GSIC.
Green indicates contaminant exceeds both DWC and GSIC.
Orange indicates contaminant exceeds one or more criteria; GVIIC and/or FAV.
“ID” means insufficient data to develop criterion.
“NA” means a criterion or value is not available or, in the case of background, not applicable.
“NLV” means hazardous substance is not likely to volatilize under most conditions.
Letters in criteria columns refer to Footnotes of the Criteria/RBSLs tables.

MW-14-63
MW-12-02
<3 ug/L
APC MW-7S
APC MW-7D
<1.0 µg/L
95 µg/L
APC MW-8S
44 µg/L
24 µg/L
APC MW-8D
add
P2-MW-03
APC MW-9D
910 µg/L
[930 µg/L duplicate]
APC MW-2D
<1.0 µg/L
APC MW-13S
APC MW-13D
200 µg/L
490 µg/L
MW-16-80
27 ug/L
FORMER APC FACILITY
APC MW-4D
APC MW-4S
<1.0 µg/L
39 µg/L
[34 µg/L duplicate]
260 ug/L
MW-13-43
MW-13-44
PW-14-02
230 ug/L
[220 ug/L duplicate]
APC MW-5D
3.9 µg/L
65-70 ft: 33 µg/L*
70-75 ft: 30 µg/L*
APC MW-6D
APC MW-6S
11 µg/L
<1.0 µg/L
MW-13-42
20 ug/L (3/15/2016)
MW-15-73
7 ug/L
SB-P2-ML33
SB-P2-MM43
65-70 ft: 3 µg/L*
70-75 ft: 5 µg/L*
<1.0 µg/L
APC MW-12S
12 µg/L
APC MW-12D
3 µg/L
APC MW-11S
<1.0 µg/L
APC MW-11D
MW-14-58
add
MW-16-83
<3 ug/L
Add date of data
MW-14-57
add
MW-12-09
MW-14-56
9 ug/L
0
75
150
SCALE IN FEET

Legend

- VAP BORING LOCATION
- APC PERCHED MONITORING WELL
- PERCHED MONITORING WELL
- WEATHERED BEDROCK MONITORING WELL
- BEDROCK MONITORING WELL
- PERCHED 1,4-DIOXANE IMPACTS DW CRITERIA (7.2 µg/L)
- LOWER 1,4-DIOXANE IMPACTS DW CRITERIA (7.2 µg/L)
- APC PERCHED 1,4-DIOXANE >7.2 µg/L (DASHED WHERE ESTIMATED OR COMINGLED)
- APC POTENTIAL AREA OF WEATHERED BEDROCK IMPACTS >7.2 µg/L (ESTIMATED FROM OFF-SITE VAP BORINGS AND INCONGRUENT IMPACTS TO RACER WEATHERED BEDROCK WELLS)
- PROPERTY BOUNDARY

NOTES:
* - VAP SAMPLE ANALYZED VIA GC-MS METHOD 8260, OTHERWISE DSITMS METHOD 8265.

RACER TRUST
PLANTS 2, 3, and 6
LANSING, MICHIGAN

FORMER ADAMS PLATING COMPANY
MONITORING WELLS & 1,4-DIOXANE

ARCADIS Design & Consultancy for natural and built assets

FIGURE
E-1

CITY: KNOXVILLE DIV: ENV DB: A.SMITH PIC: PM: R. Christensen TM: A. Villhauer TR: PROJECT NUMBER: B0064479.2018 COORDINATE SYSTEM: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl
Z:\GISProjects_ENV\RACER_Lansing\Docs\2017 Semi-Annual Report\MONITORING WELL SUMMARY_20180501.mxd PLOTTED: 5/2/2018 10:57:29 AM BY: rjmiller

Tabulated Results

Well ID EPA SAS #	MW-02D 16CD02-04	MW-04D 16CD02-02	MW-04S 16CD02-01	MW-05D 16CD02-08	MW-06D 16CD02-20	MW-06S 16CD02-19	MW-07D 16CD02-11	MW-07S 16CD02-10
ng/l	30 U	**80**	**85.1**	30 U	**181**	**245**	**296**	30
ng/l	10 U	**48.7 I**	**12.6**	10 U	**140**	**251**	10 U	10
ng/l	15 U	**600**	**113**	15 U	**2,860**	**1,060**	15 U	15
ng/l	50 UJ	50 UJ	50 UJ	50 UJ	**81.4**	**84 J**	50 UJ	50
ng/l	50 UJ	50 UJ	50 UJ	50 UJ	**735**	**695 J**	50 UJ	50
ng/l	10 U	**23.2 I**	10 U	**15.6**	**600**	**545**	10 U	10
ng/l	10 U	**12.8**	10 U	10 U	**276**	**400**	10 U	10
ng/l	10 UJ	10 UJ	10 UJ	10 UJ	**240**	**1,310**	10 UJ	10
ng/l	10 U	**40.9**	10 U	10 U	**683**	**549**	10 U	10
ng/l	10 U	10 U	10 U	10 U	10 U	**210**	10 U	10
ng/l	10 U	10 U	10 U	10 U	10 U	**46.8**	10 U	10
ng/l	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10
ng/l	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10
ng/l	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10
ng/l	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10
ng/l	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10
ng/l	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10
ng/l	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10
ng/l	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10
ng/l	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10
ng/l	10 U	10 U	10 U	10 U	10 U	14.8	10 U	10
ng/l	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10
ng/l	10 U	17.3	10 U	10 U	43.8	29.8	10 U	10
ng/l	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10
ng/l	10 U	10 U	10 U	10 U	10 U	34	10 U	10
ng/l	10 U	11.7	10 U	10 U	23	24.4	10 U	10
ng/l	10 U	40.9	10 U	10 U	683	549	10 U	10

Tabulated Results

Well ID	MW-02D	16CD02-	MW-04D	16CD02-	MW-04S	MW-05D	16CD02-	MW-06D	16CD02-	MW-06S	MW-07D	16CD02-	MW-07S
EPA SAS #	04		02		16CD02-01	08		20		16CD02-19	11		16CD02-10

Tabulated Results

Well ID		MW-08D	16CD02-14	MW-08S	16CD02-13	MW-09D	16CD02-16	MW-11D	16CD02-09	MW-11S	16CD02-03	MW-11S	16CD02-18	MW-12D	16CD02-15
ng/l	U	**85.4 J**		**843**		**2,790**		30 U		**182**		**185**		30 U	
ng/l	U	**84.2 I**		**73.5**		**126 I**		**17.5**		**52**		**51.6**		10 U	
ng/l	U	**204 I**		**435 I**		**200 I**		15 U		**171**		**167**		15 U	
ng/l	UJ	50 UJ		50 UJ		50 UJ		50 UJ		50 UJ		50 UJ		50 UJ	
ng/l	UJ	50 UJ		50 UJ		50 UJ		50 UJ		**338 L**		**352 J**		50 UJ	
ng/l	U	**34.2 J**		**13.1 I**		**22.4**		**19.6**		**321**		**330**		**12.2**	
ng/l	U	**16 J**		10 U		10 U		**12.4**		**179**		**188**		10 U	
ng/l	UJ	10 UJ		10 UJ		10 UJ		10 UJ		**302**		**298**		10 UJ	
ng/l	U	**17.8 J**		10 U		10 U		10 U		**365**		**355**		10 U	
ng/l	U	10 UJ		10 U		10 U		10 U		10 U		10 U		10 U	
ng/l	U	10 UJ		10 U		10 U		10 U		10 U		10 U		10 U	
ng/l	U	10 UJ		10 U		10 U		10 U		10 U		10 U		10 U	
ng/l	U	10 UJ		10 U		10 U		10 U		10 U		10 U		10 U	
ng/l	U	10 UJ		10 U		10 U		10 U		10 U		10 U		10 U	
ng/l	U	10 UJ		10 U		10 U		10 U		10 U		10 U		10 U	
ng/l	U	10 UJ		10 U		10 U		10 U		10 U		10 U		10 U	
ng/l	U	10 UJ		10 U		10 U		10 U		10 U		10 U		10 U	
ng/l	U	10 UJ		10 U		10 U		10 U		10 U		10 U		10 U	
ng/l	U	10 UJ		10 U		10 U		10 U		10 U		10 U		10 U	
ng/l	U	10 UJ		10 U		10 U		10 U		10 U		10 U		10 U	
ng/l	U	10 UJ		10 U		10 U		10 U		10 U		10 U		10 U	
ng/l	U	10 UJ		10 U		10 U		10 U		10 U		10 U		10 U	
ng/l	U	16 J		19.7		10 U		10 U		10 U		10 U		10 U	
ng/l	U	10 UJ		10 U		10 U		10 U		10 U		10 U		10 U	
ng/l	U	10 UJ		10 U		10 U		10 U		10 U		10 U		10 U	
ng/l	U	20 J		14.9		145		10 U		14.7		15.8		10 U	
ng/l	U	17.8 J		10 U		10 U		10 U		365		355		10 U	

Tabulated Results

Well ID	MW-08D	16CD02-	MW-08S	16CD02·	MW-09D	16CD02-	MW-11D	16CD02-	MW-11S	MW-11S	MW-12D	16CD02-
EPA SAS #	14		13		16		09		16CD02-03	16CD02-18	15	

Tabulated Results

Well ID	MW-12S	MW-13D	16CD02-	MW-13S	MW-14D	16CD02-	MW-14S	MW-15	MW-15
EPA SAS #	16CD02-12	22		16CD02-21	06		16CD02-05	16CD02-07	16CD02-17
ng/l	30 U	**1,060**		**28,800**	30 U		**478**	**2,380**	**2,290**
ng/l	10 U	**104 I**		**2,450 I**	10 U		**109 J**	**83.5 I**	**83.6 I**
ng/l	15 U	15 UJ		**88 J**	15 U		**741**	**99.6 I**	**91.4 I**
ng/l	50 UJ	50 UJ		**96 J**	50 UJ		50 UJ	50 UJ	50 UJ
ng/l	50 UJ	50 UJ		**78.4 J**	50 UJ		**114 J**	**74.2 L**	**75 J**
ng/l	10 U	**19 J**		**118 J**	10 U		**89.8 J**	**56.1**	**55.4 J**
ng/l	10 U	10 UJ		**37.4 J**	10 U		**40.8 J**	**20.8**	**20.2 J**
ng/l	10 UJ	10 UJ		10 UJ	10 UJ		10 UJ	10 UJ	10 UJ
ng/l	10 U	10 UJ		10 UJ	10 U		**37.3 J**	10 U	10 UJ
ng/l	10 U	10 UJ		10 UJ	10 U		10 UJ	10 U	10 UJ
ng/l	10 U	10 UJ		10 UJ	10 U		10 UJ	10 U	10 UJ
ng/l	10 U	10 UJ		10 UJ	10 U		10 UJ	10 U	10 UJ
ng/l	10 U	10 UJ		10 UJ	10 U		10 UJ	10 U	10 UJ
ng/l	10 U	10 UJ		**26 J**	10 U		10 UJ	10 U	10 UJ
ng/l	10 U	10 UJ		10 UJ	10 U		10 UJ	10 U	10 UJ
ng/l	10 U	10 UJ		10 UJ	10 U		10 UJ	10 U	10 UJ
ng/l	10 U	10 UJ		10 UJ	10 U		10 UJ	10 U	10 UJ
ng/l	10 U	10 UJ		10 UJ	10 U		10 UJ	10 U	10 UJ
ng/l	10 U	10 UJ		10 UJ	10 U		10 UJ	10 U	10 UJ
ng/l	10 U	10 UJ		10 UJ	10 U		10 UJ	10 U	10 UJ
ng/l	10 U	10 UJ		10 UJ	10 U		24.8 J	10 U	10 UJ
ng/l	10 U	10 UJ		10 UJ	10 U		10 UJ	10 U	10 UJ
ng/l	10 U	10 UJ		10 UJ	10 U		10 UJ	10 U	10 UJ
ng/l	10 U	141 I		1,690	10 U		24.9 I	47.9 I	52 I
ng/l	10 U	10 UJ		10 UJ	10 U		37.3 J	10 U	10 UJ

Tabulated Results

Well ID	MW-12S	MW-13D	16CD02-22	MW-13S	MW-14D	16CD02-06	MW-14S	MW-15	MW-15
EPA SAS #	16CD02-12			16CD02-21			16CD02-05	16CD02-07	16CD02-17

APPENDIX F

Annual Storm Sewer Sampling

(On attached CD)

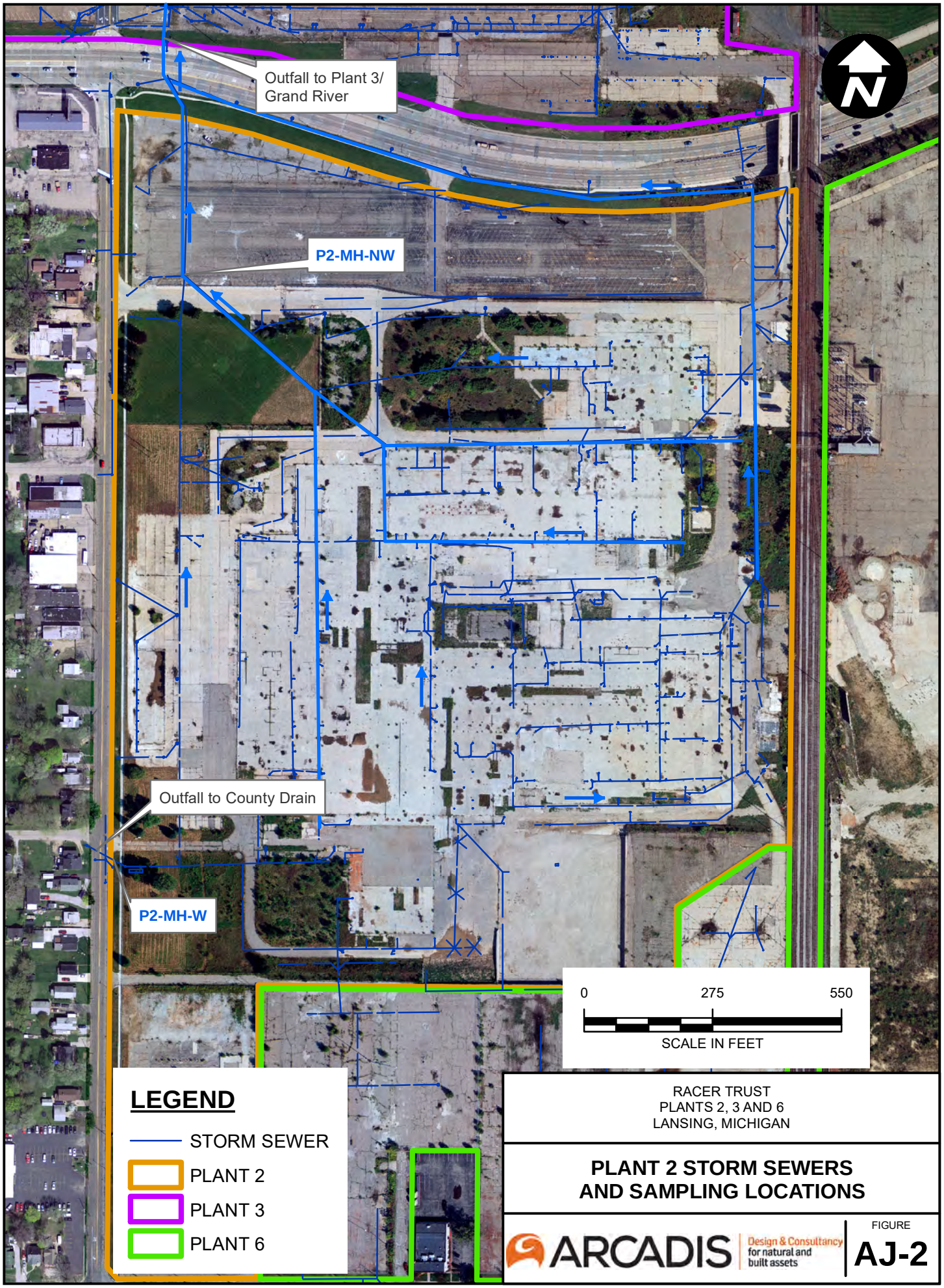
RACER TRUST
PLANTS 2, 3 AND 6
LANSING, MICHIGAN

PLANT 6 STORM SEWERS AND SAMPLING LOCATIONS

ARCADIS Design & Consultancy for natural and built assets

FIGURE
AJ-1

CITY: KNOXVILLE DIV: ENV DB: A.SMITH PIC: PM: TM: TR: PROJECT NUMBER: COORDINATE SYSTEM: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl
G:\GIS\Project Files\MotorsLiquidationCompany\Lansing\Docs\2017 Annual Report\A1-1_Plant 6 SW.mxd PLOTTED: 2/28/2017 4:40:06 PM BY: ddexa



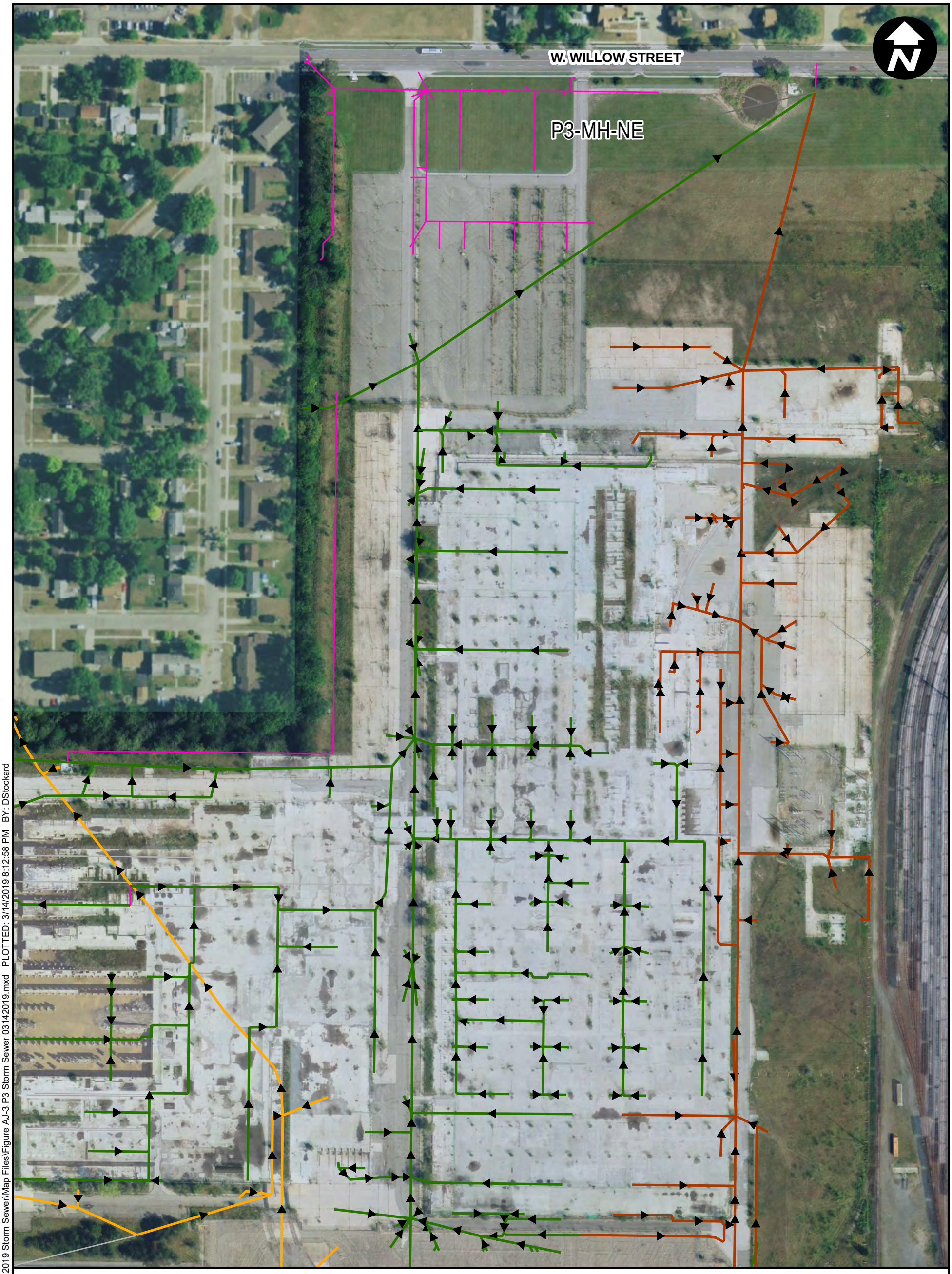
RACER TRUST
PLANTS 2, 3 AND 6
LANSING, MICHIGAN

PLANT 2 STORM SEWERS AND SAMPLING LOCATIONS

ARCADIS Design & Consultancy for natural and built assets

FIGURE
AJ-2

CITY: KNOXVILLE DIV: ENV DB: A.SMITH PIC: PM: TM: TR: PROJECT NUMBER: COORDINATE SYSTEM: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl
G:\GIS\Project Files\MotorsLiquidationCompany\Lansing\Docs\Quarterly Report Figures\A1-1_Plant 2 SW.mxd PLOTTED: 2/12/2016 11:33:57 AM BY: dolexa



PLANT 3 DRAINAGE NETWORKS

- P3 EASTERN
- P3 WESTERN
- COUNTY MAIN
- OTHER
- ABANDONED

NOTES:
-UTILITY LOCATIONS ARE APPROXIMATE

0 150 300
SCALE IN FEET

RACER TRUST
PLANTS 2, 3 & 6
LANSING, MICHIGAN

PLANT 3 STORM SAMPLING LOCATIONS

ARCADIS Design & Consultancy for natural and built assets

FIGURE
AJ-3

CITY: Novi DIV: ENV PIC: J. BARRETT PM: R. CHRISTENSEN TM: A. LORENZ TR: P. CURRY PROJECT NUMBER: B0064479.2018 COORDINATE SYSTEM: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl
C:\Users\DStockard\Documents\Racers lansing\ArcMap\2019 Storm Sewer\Map Files\Figure AJ-3 P3 Storm Sewer 03142019.mxd PLOTTED: 3/14/2019 8:12:58 PM BY: DStockard

Analytical Laboratory Report

Report ID: S97828.01(01)
Generated on 12/21/2018

Report to

Attention: Christine Gregg
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Novi, MI 48377

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Report Summary

Lab Sample ID(s): S97828.01-S97828.05
Project: RACER Lansing / B0064479.2018.03100
Collected Date: 12/07/2018
Submitted Date/Time: 12/14/2018 11:50
Sampled by: Dale Arnett
P.O. #: B0064479.2018.03100

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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).
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

Method Summary

Method	Version
N/A	Not Applicable
SW3015A	SW 846 Method 3015A Revision 1 February 2007
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003
SW6020A	SW 846 Method 6020A Revision 1 February 2007
SW7471B	SW 846 Method 7471B Revision 2 February 2007
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs

Sample Summary (5 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S97828.01	P6-MH2-SW_120718	Groundwater	12/07/18 14:00
S97828.02	P3-MH-NE_120718	Groundwater	12/07/18 15:10
S97828.03	P2-MH-NW_120718	Groundwater	12/07/18 15:40
S97828.04	Dup-08_120718	Groundwater	12/07/18 00:01
S97828.05	Trip Blank	Water	12/07/18 00:01

Lab Sample ID: S97828.01
Sample Tag: P6-MH2-SW_120718
Collected Date/Time: 12/07/2018 14:00
Matrix: Groundwater
COC Reference: 120336

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.4	IR
1	125ml Plastic	HNO3	Yes	4.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/18/18 14:00	JML	
Metal Digestion	Completed	SW3015A	12/18/18 09:00	JRH	
Mercury Digestion*	Completed	SW7471B	12/21/18 10:00	JRH	

Metals

Method: SW6020A, Run Date: 12/19/18 12:57, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Boron	0.11	0.04		mg/L	5	7440-42-8	

Method: SW6020A, Run Date: 12/18/18 13:55, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Antimony	Not detected	0.005		mg/L	5	7440-36-0	
Arsenic	0.002	0.002		mg/L	5	7440-38-2	
Barium	0.058	0.005		mg/L	5	7440-39-3	
Cadmium	Not detected	0.0005		mg/L	5	7440-43-9	
Chromium	Not detected	0.005		mg/L	5	7440-47-3	
Cobalt	Not detected	0.005		mg/L	5	7440-48-4	
Copper	Not detected	0.005		mg/L	5	7440-50-8	
Lead	Not detected	0.003		mg/L	5	7439-92-1	
Manganese	0.054	0.005		mg/L	5	7439-96-5	
Nickel	Not detected	0.005		mg/L	5	7440-02-0	
Selenium	Not detected	0.004		mg/L	5	7782-49-2	
Silver	Not detected	0.0005		mg/L	5	7440-22-4	
Vanadium	Not detected	0.005		mg/L	5	7440-62-2	
Zinc	0.005	0.005		mg/L	5	7440-66-6	

Method: SW7471B, Run Date: 12/21/18 14:08, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury*	Not detected	0.0002		mg/L	1	7439-97-6	

Organics - Volatiles

Method: SW5030C/8260C, Run Date: 12/17/18 20:19, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromo-3-chloropropane	Not detected	1		ug/L	1	96-12-8	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	

Method: SW8260B - SIM, Run Date: 12/21/18 14:58, Analyst: JML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

Lab Sample ID: S97828.01 (continued)
Sample Tag: P6-MH2-SW_120718

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/17/18 20:19, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
Acetone	Not detected	10		ug/L	1	67-64-1	
Carbon disulfide	Not detected	1		ug/L	1	75-15-0	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	1		ug/L	1	1634-04-4	
2-Butanone (MEK)	Not detected	10		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	1		ug/L	1	75-71-8	
Chloromethane	Not detected	1		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	1		ug/L	1	74-83-9	
Chloroethane	Not detected	1		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	1		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	
Chloroform	Not detected	1		ug/L	1	67-66-3	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	10		ug/L	1	108-10-1	
2-Hexanone	Not detected	10		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	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
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	
Dibromochloromethane	Not detected	1		ug/L	1	124-48-1	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
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	1		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
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	
1,2,4-Trichlorobenzene	Not detected	1		ug/L	1	120-82-1	

Lab Sample ID: S97828.02
Sample Tag: P3-MH-NE_120718
Collected Date/Time: 12/07/2018 15:10
Matrix: Groundwater
COC Reference: 120336

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.4	IR
1	125ml Plastic	HNO3	Yes	4.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/18/18 14:00	JML	
Metal Digestion	Completed	SW3015A	12/18/18 09:00	JRH	
Mercury Digestion*	Completed	SW7471B	12/21/18 10:00	JRH	

Metals

Method: SW6020A, Run Date: 12/19/18 12:58, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Boron	Not detected	0.04		mg/L	5	7440-42-8	

Method: SW6020A, Run Date: 12/18/18 13:59, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Antimony	Not detected	0.005		mg/L	5	7440-36-0	
Arsenic	Not detected	0.002		mg/L	5	7440-38-2	
Barium	0.045	0.005		mg/L	5	7440-39-3	
Cadmium	Not detected	0.0005		mg/L	5	7440-43-9	
Chromium	Not detected	0.005		mg/L	5	7440-47-3	
Cobalt	Not detected	0.005		mg/L	5	7440-48-4	
Copper	Not detected	0.005		mg/L	5	7440-50-8	
Lead	Not detected	0.003		mg/L	5	7439-92-1	
Manganese	0.018	0.005		mg/L	5	7439-96-5	
Nickel	Not detected	0.005		mg/L	5	7440-02-0	
Selenium	Not detected	0.004		mg/L	5	7782-49-2	
Silver	Not detected	0.0005		mg/L	5	7440-22-4	
Vanadium	Not detected	0.005		mg/L	5	7440-62-2	
Zinc	Not detected	0.005		mg/L	5	7440-66-6	

Method: SW7471B, Run Date: 12/21/18 14:10, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury*	Not detected	0.0002		mg/L	1	7439-97-6	

Organics - Volatiles

Method: SW5030C/8260C, Run Date: 12/17/18 20:39, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromo-3-chloropropane	Not detected	1		ug/L	1	96-12-8	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	

Method: SW8260B - SIM, Run Date: 12/21/18 03:59, Analyst: JML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

Lab Sample ID: S97828.02 (continued)
Sample Tag: P3-MH-NE_120718

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/17/18 20:39, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
Acetone	11	10		ug/L	1	67-64-1	
Carbon disulfide	Not detected	1		ug/L	1	75-15-0	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	1		ug/L	1	1634-04-4	
2-Butanone (MEK)	Not detected	10		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	1		ug/L	1	75-71-8	
Chloromethane	Not detected	1		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	1		ug/L	1	74-83-9	
Chloroethane	Not detected	1		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	1		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	
Chloroform	Not detected	1		ug/L	1	67-66-3	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	10		ug/L	1	108-10-1	
2-Hexanone	Not detected	10		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	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
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	
Dibromochloromethane	Not detected	1		ug/L	1	124-48-1	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
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	1		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
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	
1,2,4-Trichlorobenzene	Not detected	1		ug/L	1	120-82-1	

Lab Sample ID: S97828.03
Sample Tag: P2-MH-NW_120718
Collected Date/Time: 12/07/2018 15:40
Matrix: Groundwater
COC Reference: 120336

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.4	IR
1	125ml Plastic	HNO3	Yes	4.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/19/18 12:30	JML	
Metal Digestion	Completed	SW3015A	12/18/18 09:00	JRH	
Mercury Digestion*	Completed	SW7471B	12/21/18 10:00	JRH	

Metals

Method: SW6020A, Run Date: 12/19/18 12:59, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Boron	0.13	0.04		mg/L	5	7440-42-8	

Method: SW6020A, Run Date: 12/18/18 14:03, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Antimony	Not detected	0.005		mg/L	5	7440-36-0	
Arsenic	0.003	0.002		mg/L	5	7440-38-2	
Barium	0.055	0.005		mg/L	5	7440-39-3	
Cadmium	Not detected	0.0005		mg/L	5	7440-43-9	
Chromium	Not detected	0.005		mg/L	5	7440-47-3	
Cobalt	Not detected	0.005		mg/L	5	7440-48-4	
Copper	Not detected	0.005		mg/L	5	7440-50-8	
Lead	Not detected	0.003		mg/L	5	7439-92-1	
Manganese	0.082	0.005		mg/L	5	7439-96-5	
Nickel	Not detected	0.005		mg/L	5	7440-02-0	
Selenium	Not detected	0.004		mg/L	5	7782-49-2	
Silver	Not detected	0.0005		mg/L	5	7440-22-4	
Vanadium	Not detected	0.005		mg/L	5	7440-62-2	
Zinc	0.013	0.005		mg/L	5	7440-66-6	

Method: SW7471B, Run Date: 12/21/18 14:12, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury*	Not detected	0.0002		mg/L	1	7439-97-6	

Organics - Volatiles

Method: SW5030C/8260C, Run Date: 12/19/18 06:16, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromo-3-chloropropane	Not detected	1		ug/L	1	96-12-8	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	

Method: SW8260B - SIM, Run Date: 12/21/18 04:20, Analyst: JML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

Lab Sample ID: S97828.03 (continued)
Sample Tag: P2-MH-NW_120718

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/19/18 06:16, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
Acetone	Not detected	10		ug/L	1	67-64-1	
Carbon disulfide	Not detected	1		ug/L	1	75-15-0	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	1		ug/L	1	1634-04-4	
2-Butanone (MEK)	Not detected	10		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	1		ug/L	1	75-71-8	
Chloromethane	Not detected	1		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	1		ug/L	1	74-83-9	
Chloroethane	Not detected	1		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	1		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	
Chloroform	Not detected	1		ug/L	1	67-66-3	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	10		ug/L	1	108-10-1	
2-Hexanone	Not detected	10		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	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
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	
Dibromochloromethane	Not detected	1		ug/L	1	124-48-1	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
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	1		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
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	
1,2,4-Trichlorobenzene	Not detected	1		ug/L	1	120-82-1	

Lab Sample ID: S97828.04
Sample Tag: Dup-08_120718
Collected Date/Time: 12/07/2018 00:01
Matrix: Groundwater
COC Reference: 120336

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.4	IR
1	125ml Plastic	HNO3	Yes	4.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/19/18 12:30	JML	
Metal Digestion	Completed	SW3015A	12/18/18 09:00	JRH	
Mercury Digestion*	Completed	SW7471B	12/21/18 10:00	JRH	

Metals

Method: SW6020A, Run Date: 12/19/18 13:00, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Boron	0.11	0.04		mg/L	5	7440-42-8	

Method: SW6020A, Run Date: 12/18/18 14:07, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Antimony	Not detected	0.005		mg/L	5	7440-36-0	
Arsenic	0.002	0.002		mg/L	5	7440-38-2	
Barium	0.060	0.005		mg/L	5	7440-39-3	
Cadmium	Not detected	0.0005		mg/L	5	7440-43-9	
Chromium	Not detected	0.005		mg/L	5	7440-47-3	
Cobalt	Not detected	0.005		mg/L	5	7440-48-4	
Copper	Not detected	0.005		mg/L	5	7440-50-8	
Lead	0.003	0.003		mg/L	5	7439-92-1	
Manganese	0.092	0.005		mg/L	5	7439-96-5	
Nickel	Not detected	0.005		mg/L	5	7440-02-0	
Selenium	Not detected	0.004		mg/L	5	7782-49-2	
Silver	Not detected	0.0005		mg/L	5	7440-22-4	
Vanadium	Not detected	0.005		mg/L	5	7440-62-2	
Zinc	0.011	0.005		mg/L	5	7440-66-6	

Method: SW7471B, Run Date: 12/21/18 14:14, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury*	Not detected	0.0002		mg/L	1	7439-97-6	

Organics - Volatiles

Method: SW5030C/8260C, Run Date: 12/19/18 06:35, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromo-3-chloropropane	Not detected	1		ug/L	1	96-12-8	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	

Method: SW8260B - SIM, Run Date: 12/21/18 04:42, Analyst: JML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

Lab Sample ID: S97828.04 (continued)
Sample Tag: Dup-08_120718

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/19/18 06:35, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
Acetone	Not detected	10		ug/L	1	67-64-1	
Carbon disulfide	Not detected	1		ug/L	1	75-15-0	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	1		ug/L	1	1634-04-4	
2-Butanone (MEK)	Not detected	10		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	1		ug/L	1	75-71-8	
Chloromethane	Not detected	1		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	1		ug/L	1	74-83-9	
Chloroethane	Not detected	1		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	1		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	
Chloroform	Not detected	1		ug/L	1	67-66-3	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	10		ug/L	1	108-10-1	
2-Hexanone	Not detected	10		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	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
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	
Dibromochloromethane	Not detected	1		ug/L	1	124-48-1	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
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	1		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
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	
1,2,4-Trichlorobenzene	Not detected	1		ug/L	1	120-82-1	

Analytical Laboratory Report

Lab Sample ID: S97828.05
Sample Tag: Trip Blank
Collected Date/Time: 12/07/2018 00:01
Matrix: Water
COC Reference: 120336

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125ml Plastic	HNO3	Yes	4.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/18/18 14:00	JML	

Organics - Volatiles

Method: SW5030C/8260C, Run Date: 12/17/18 15:33, Analyst: JML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromo-3-chloropropane	Not detected	1		ug/L	1	96-12-8	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	

Method: SW8260B - SIM, Run Date: 12/21/18 01:30, Analyst: JML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/17/18 15:33, Analyst: JML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
Acetone	Not detected	10		ug/L	1	67-64-1	
Carbon disulfide	Not detected	1		ug/L	1	75-15-0	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	1		ug/L	1	1634-04-4	
2-Butanone (MEK)	Not detected	10		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	1		ug/L	1	75-71-8	
Chloromethane	Not detected	1		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	1		ug/L	1	74-83-9	
Chloroethane	Not detected	1		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	1		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	
Chloroform	Not detected	1		ug/L	1	67-66-3	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	10		ug/L	1	108-10-1	
2-Hexanone	Not detected	10		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	

Lab Sample ID: S97828.05 (continued)
Sample Tag: Trip Blank

TCL Volatile Organics 8260, Method: SW5030C/8260C, Run Date: 12/17/18 15:33, Analyst: JML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
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	
Dibromochloromethane	Not detected	1		ug/L	1	124-48-1	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
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	1		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
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	
1,2,4-Trichlorobenzene	Not detected	1		ug/L	1	120-82-1	

Merit Laboratories Login Checklist

Lab Set ID: S97828
Client: ARCADIS_NOVI (ARCADIS U.S., Inc.)
Project: RACER Lansing / B0064479.2018.03100
Submitted: 12/14/2018 11:50 Login User: MMC

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

Phone: 734-585-7817 FAX: 248-994-2241
Email: christine.gregg@arcadis.com

Selection				Description	Note
Sample Receiving					
01.	[X] Yes	[ ] No	[ ] N/A	Samples are received at 4C +/- 2C Thermometer #	IR 4.4
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.	[X] Yes	[ ] No	[ ] 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	[ ] No	[X] 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 Bottle Preservation Check

Lab Set ID: S97828 Initials: MMC

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

Project: RACER Lansing / B0064479.2018.03100

Submitted: 12/14/2018 11:50 Login User:

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

Phone: 734-585-7817 FAX: 248-994-2241
Email: christine.gregg@arcadis.com

Lab ID	125 ml Plastic HNO_3	250 ml Plastic HNO_3	1 L Plastic HNO_3	250 ml Plastic H_2SO_4	125 ml Amber H_2SO_4	32 oz Glass HCl	125 ml Plastic NaOH	125 ml Amber $PbCO_3$ NaOH	pH					Notes
									<2	>12	other	ml add	new pH	
S97828.01	X								X					
S97828.02	X								X					
S97828.03	X								X					
S97828.04	X								X					
S97828.05	X								X					

Prepared by Merit Laboratories

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

120336

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME: Christine Gress
COMPANY: ARCADIS
ADDRESS: 28550 Cabot Dr
CITY: Novi STATE: MI ZIP CODE: 48377
PHONE NO.: 248-994-2240 FAX NO.: 248-994-2241 P.O. NO.:
E-MAIL ADDRESS: Christine.Gress@arcadis.com QUOTE NO.:

INVOICE TO

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

PROJECT NO./NAME: Race Lansing / B0064479.2018.03100
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Dak Kinn

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

DELIVERABLES REQUIRED X 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	1,4-Dioxane 8260 VOCs	Select Metals (Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Copper, Lead, Manganese, Mercury, Nickel, Selenium, Silver, Vanadium, Zinc (Total))
97828.01	12/7/18	1400	P6-MW2-SW_120718	GW	3		3	1					X	X
.02		1510	P3-MW-NE_120718	GW	3		3	1					X	X
.03		1540	P2-MW-NW_120718	GW	3		3	1					X	X
.04		—	Dup-08_120718	GW	3		3	1					X	X
.05	-	—	Trip Blank	DI WATER	1		1						X	

RELINQUISHED BY: SIGNATURE/ORGANIZATION	Sampler ARCADIS	DATE 12/18/18	TIME 1150
RECEIVED BY: SIGNATURE/ORGANIZATION		DATE 12/19/18	TIME 1150
RELINQUISHED BY: SIGNATURE/ORGANIZATION		DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION		DATE	TIME

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 4.4

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

Rev. 5.18.12

Appendix C
Summary of Storm Sewer Groundwater Sampling Results
RACER Plant 6
Lansing, Michigan

Location ID: Date Collected:	Units	Groundwater Surface Water Interface Criteria (DEQ 2013)	Plant 2 P2-MH-NW 12/7/2018	Plant 3 P2-MH-NE 12/7/2018	Plant 6 P6-MH2-SW 12/7/18
Volatile Organics					
Acetone	ug/L	1,700	ND	11	ND
Inorganics					
Arsenic	mg/L	0.01	0.003	ND	0.002
Barium (G)	mg/L	1.2	0.055	0.045	0.058
Boron (X)	mg/L	7.2	0.13	ND	0.11
Manganese (G, X)	mg/L	4.5	0.082	0.018	0.054
Zinc (G)	mg/L	0.26	0.013	ND	0.005

Notes:

1. Only those constituents of concern (COCs) with detections are listed. If a COC is not listed then the lab results showed non-detect.
2. GSI Criteria obtained from the MDEQ Part 201 generic cleanup Table 1, dated December 30, 2013.
3. **Bold** and gray shading denotes a result above of the Groundwater Surface Water Interface Criteria.

MDEQ Criteria Footnotes: (as revised December 30, 2013)

(G) Groundwater surface water interface (GSI) criterion depends on the water hardness of the receiving surface water. The final chronic value (FCV) for the protection of aquatic life was calculated based on the average of readily available published hardness values calculated to be 257 mg/L. The generic GSI criterion is the lesser of the calculated FCV, the wildlife value (WV), and the surface water human nondrinking water value (HNDV).

(X) The GSI criterion is not protective for surface water that is used as a drinking water source.

- - = Not listed in the MDEQ Criteria Tables.

Acronyms and Abbreviations:

GSI = Groundwater Surface Water Interface

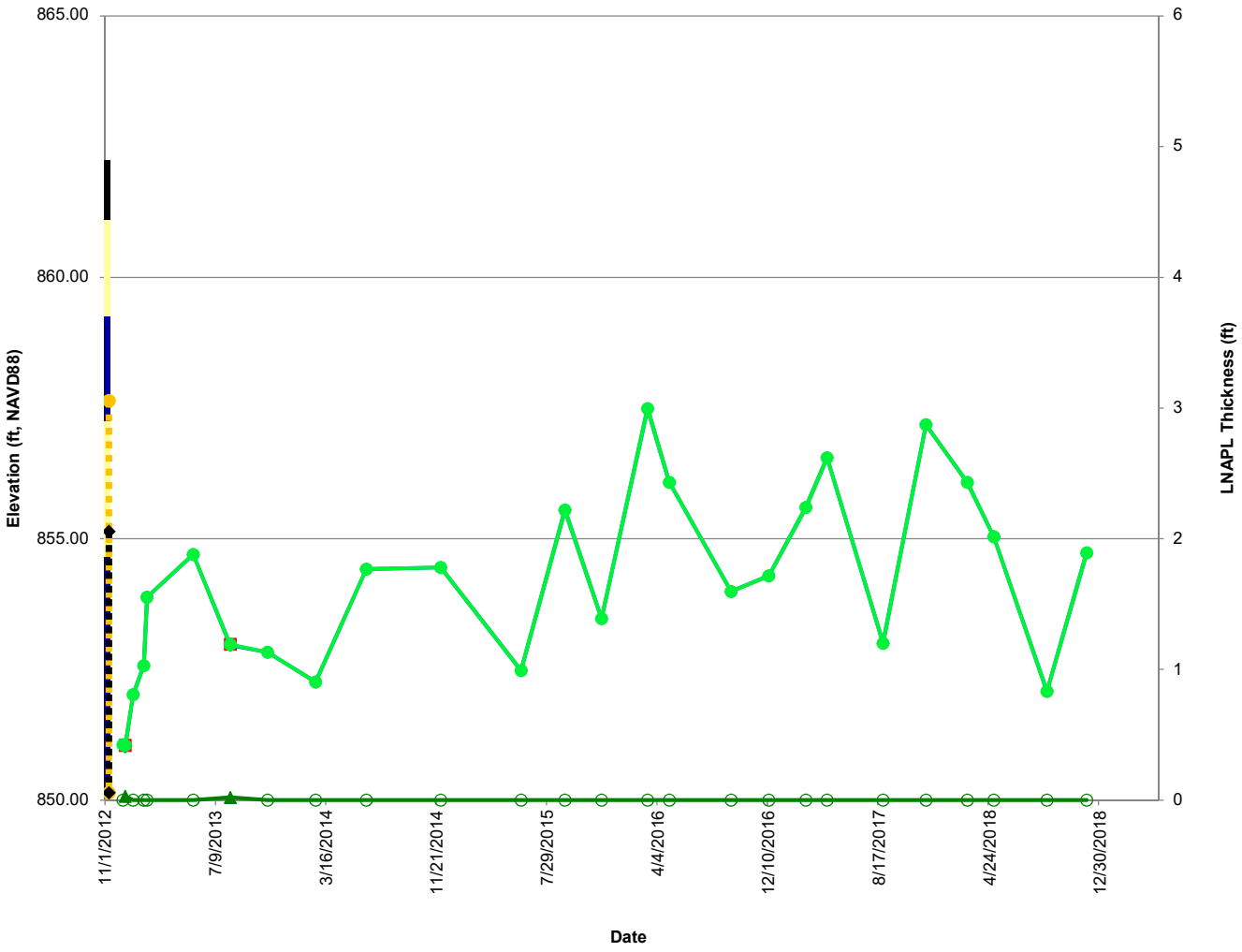
ND= Not detected

mg/L = milligrams per liter

APPENDIX G

LNAPL Trend Graphs

(On attached CD)



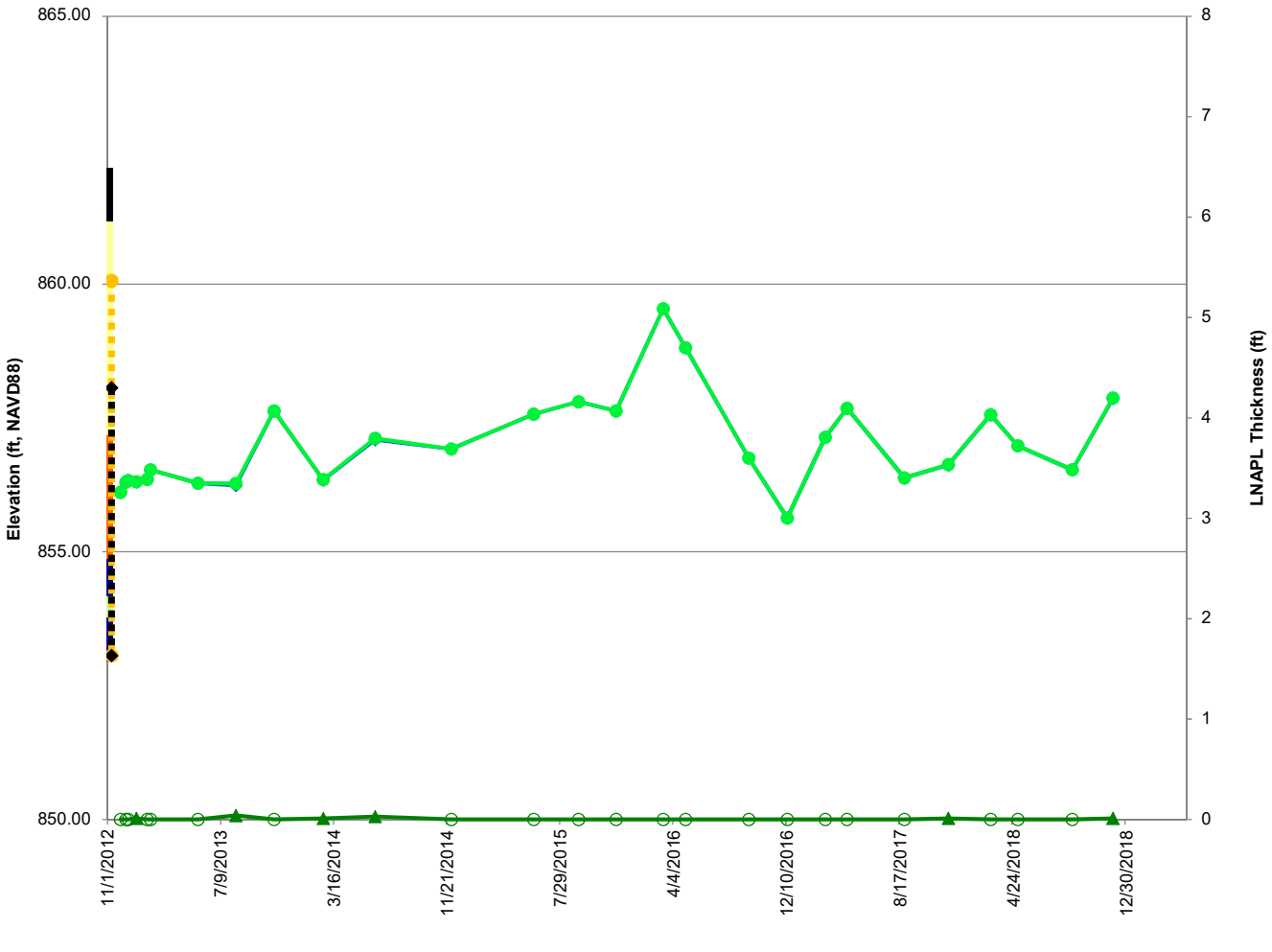
RACER Lansing
Lansing, MI

LMW-12-01 LNAPL HYDROGRAPH

ARCADIS Design & Consultancy for natural and built assets

FIGURE

A



RACER Lansing
Lansing, MI

LMW-12-03S LNAPL HYDROGRAPH

ARCADIS Design & Consultancy for natural and built assets

FIGURE

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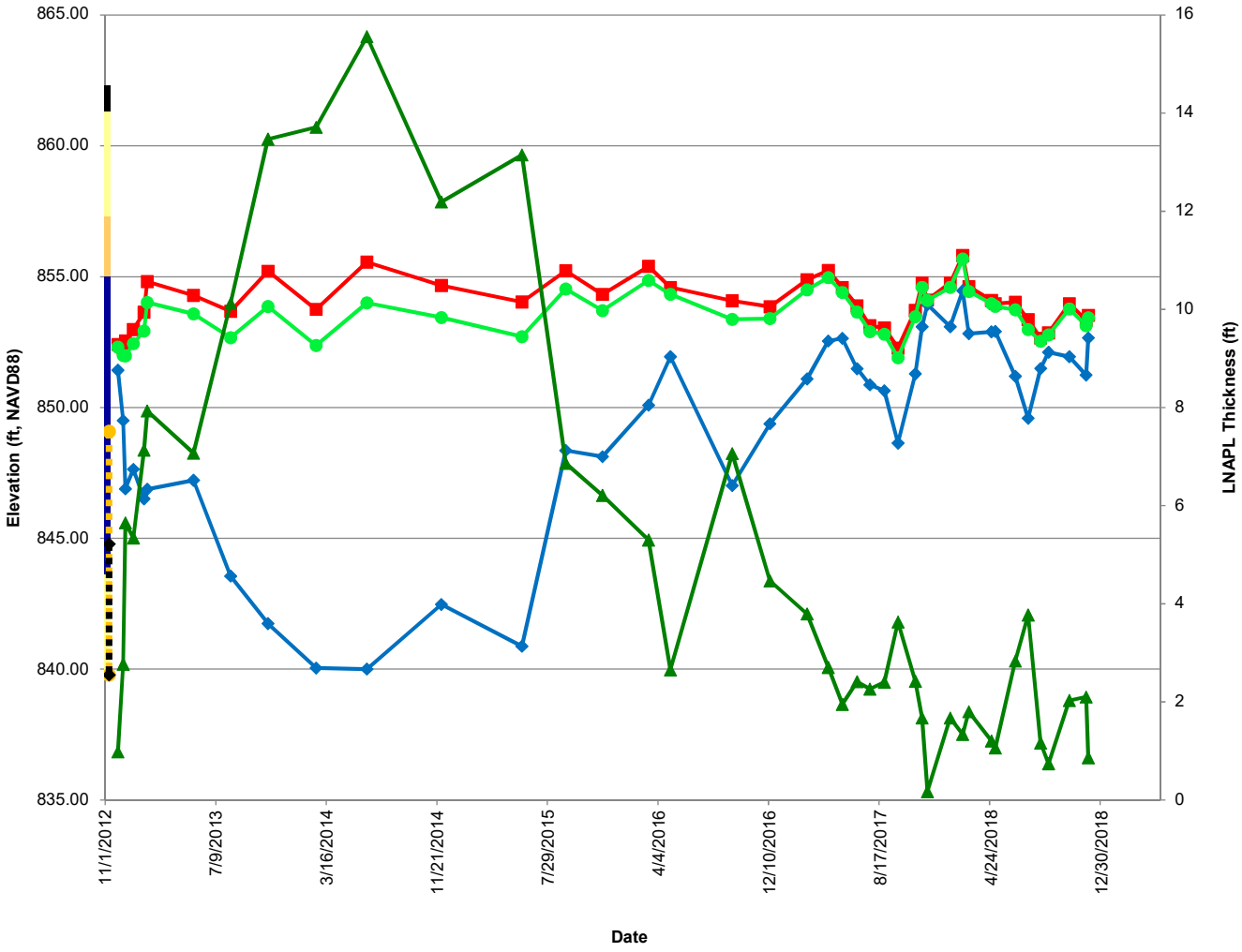
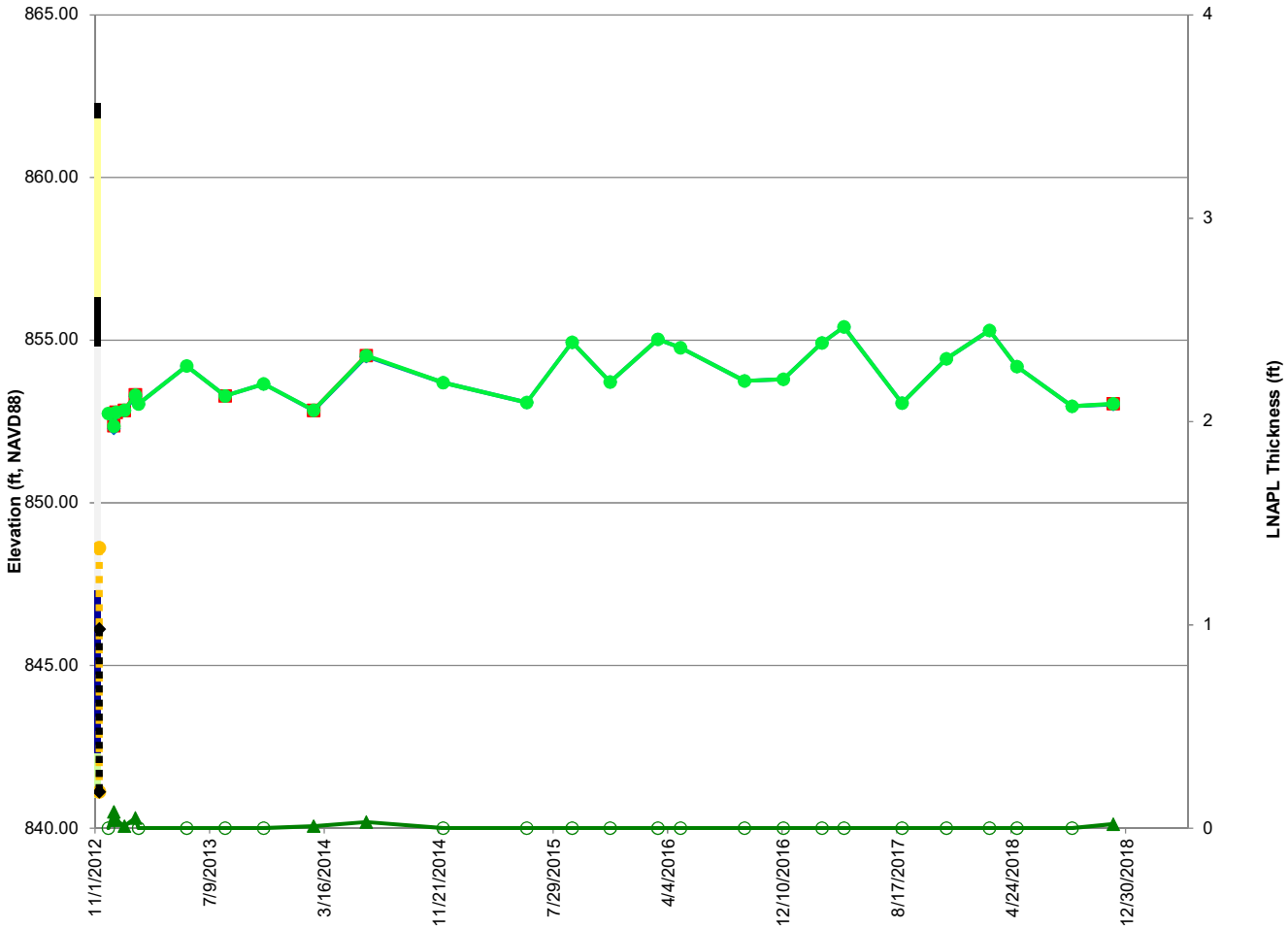


RACER Lansing
Lansing, MI

LMW-12-03D LNAPL HYDROGRAPH

ARCADIS Design & Consultancy for natural and built assets

FIGURE
A



RACER Lansing
Lansing, MI

LMW-12-04 LNAPL HYDROGRAPH

ARCADIS Design & Consultancy for natural and built assets

FIGURE

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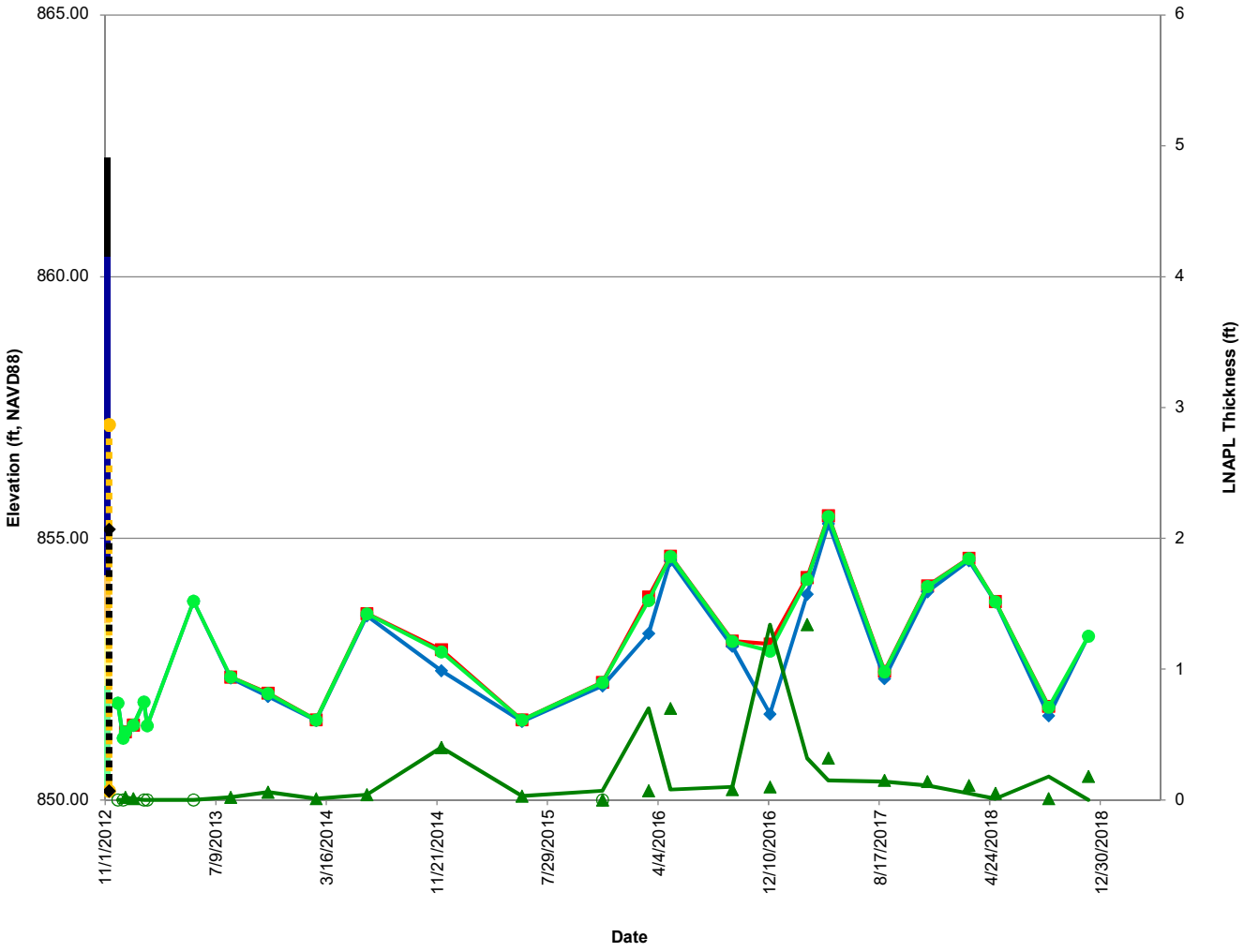

RACER Lansing
Lansing, MI

LMW-12-05 LNAPL HYDROGRAPH

ARCADIS Design & Consultancy for natural and built assets

FIGURE

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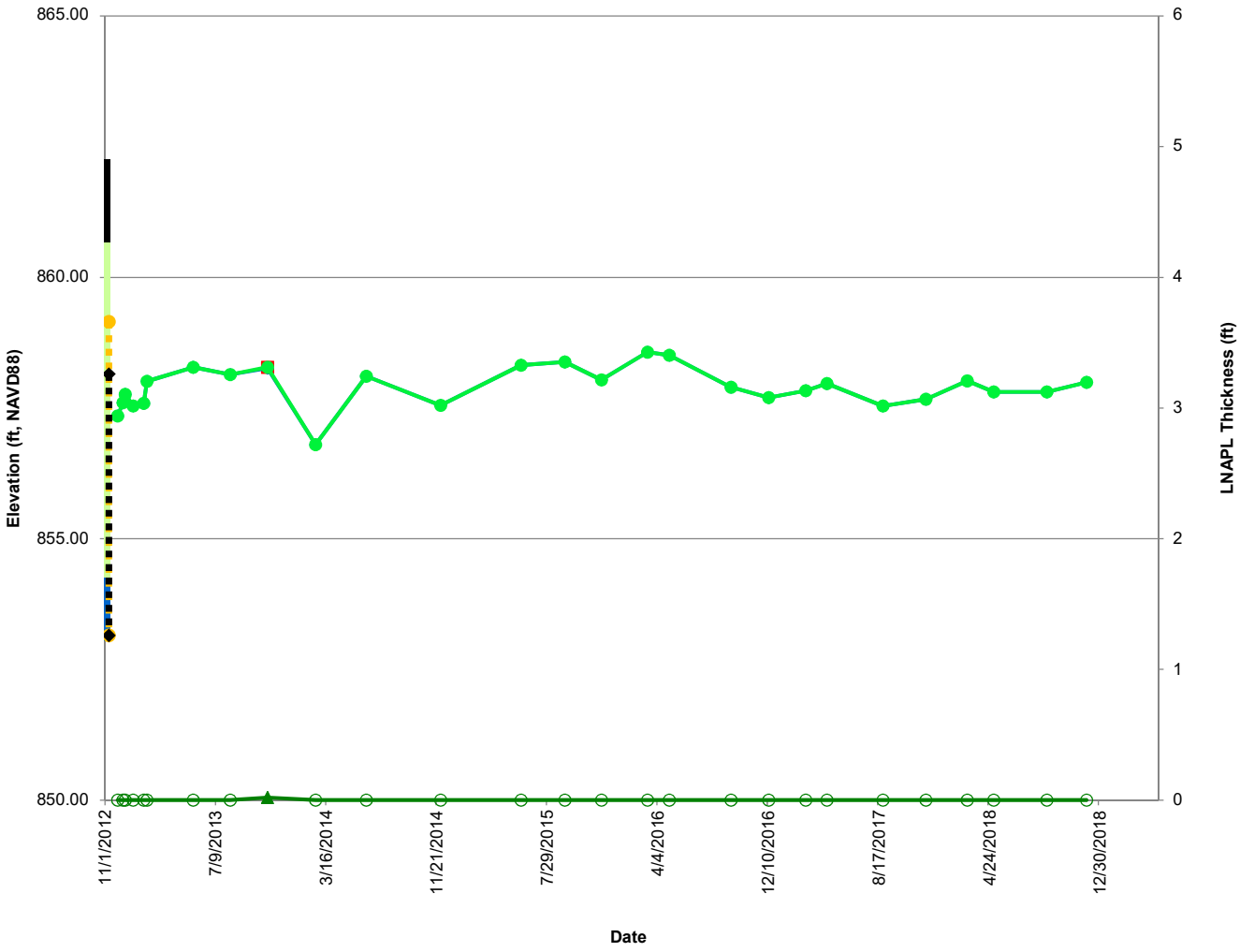

RACER Lansing
Lansing, MI

LMW-12-06 LNAPL HYDROGRAPH

ARCADIS Design & Consultancy for natural and built assets

FIGURE
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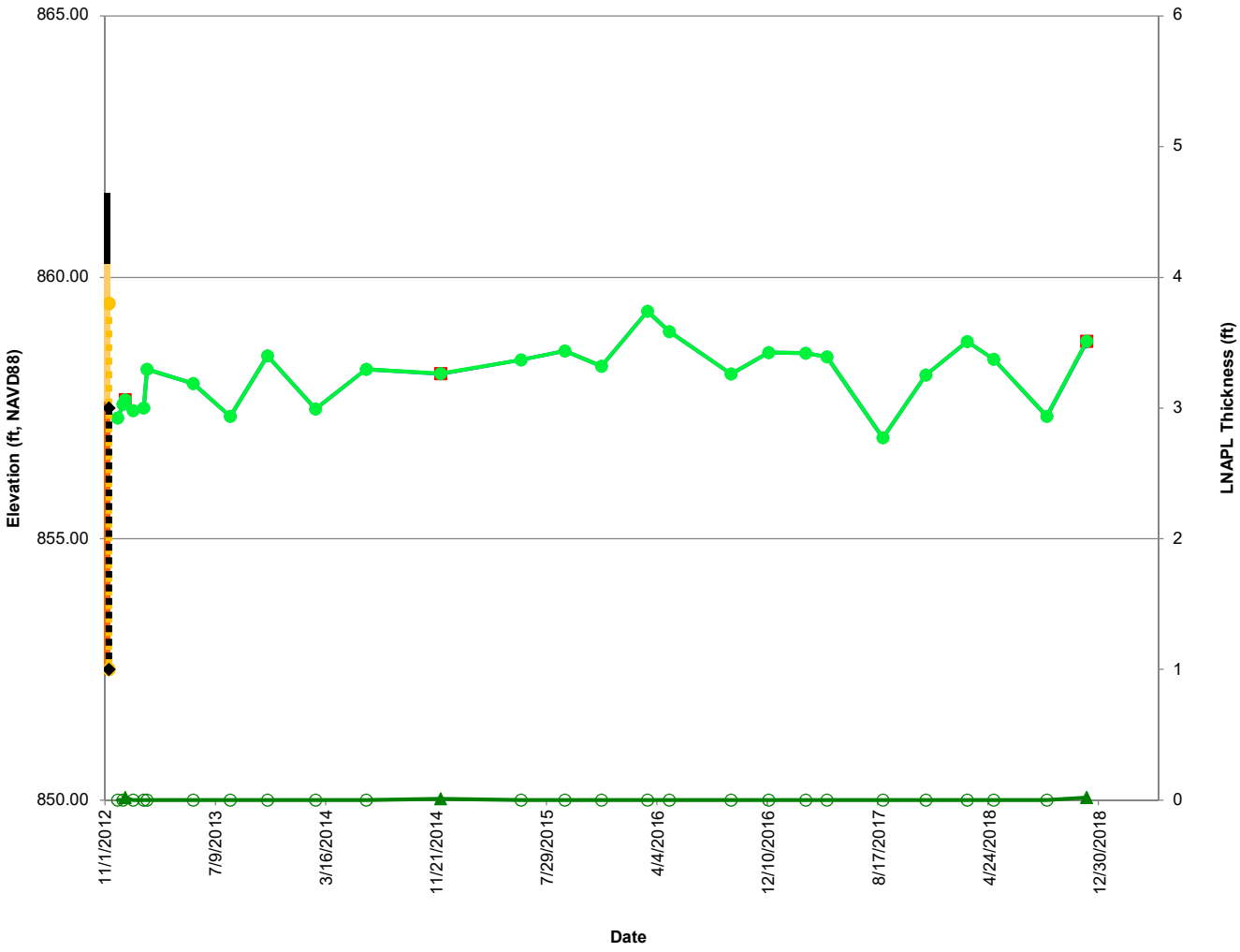

RACER Lansing
Lansing, MI

LMW-12-07 LNAPL HYDROGRAPH

ARCADIS Design & Consultancy for natural and built assets

FIGURE

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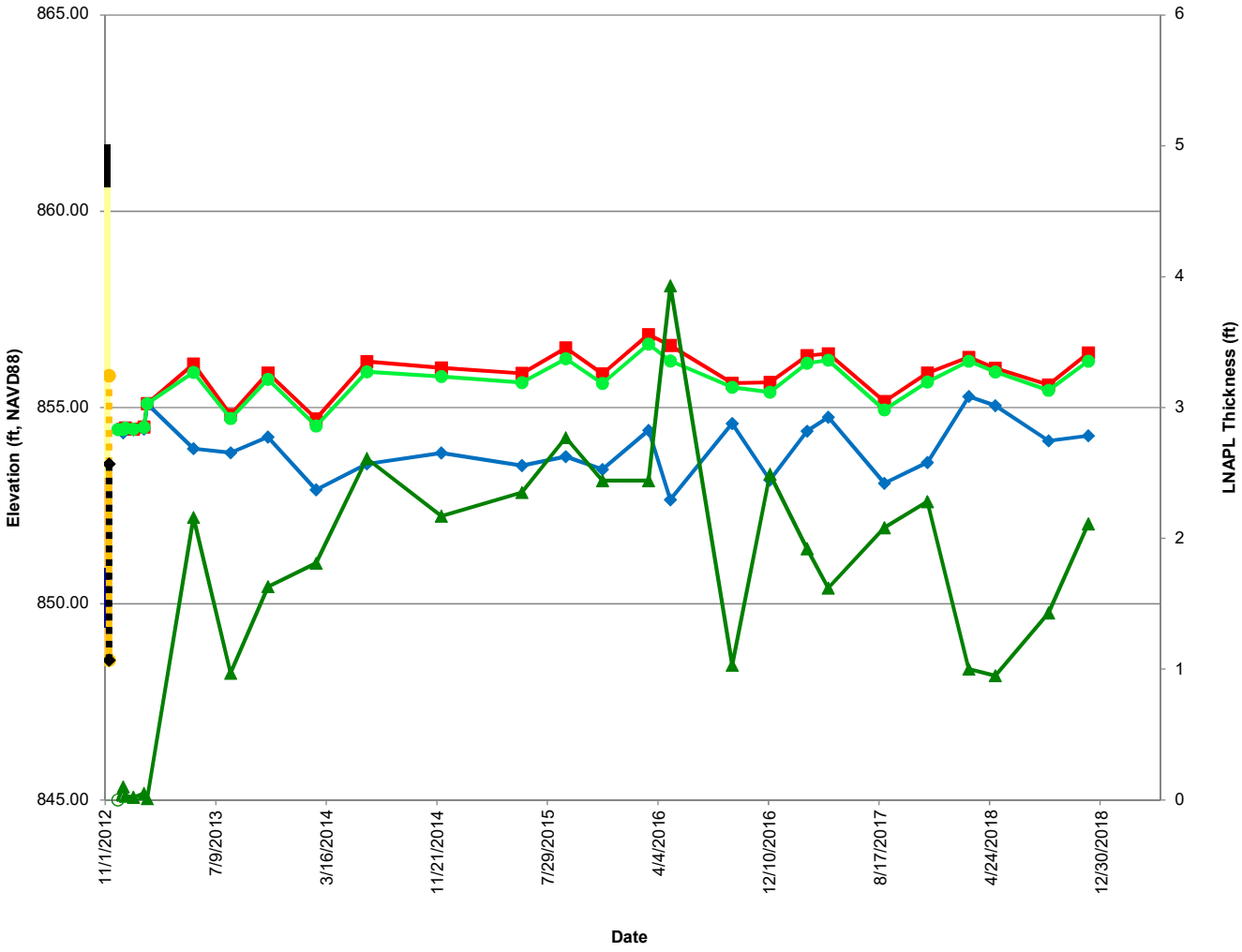

RACER Lansing
Lansing, MI

LMW-12-08 LNAPL HYDROGRAPH

ARCADIS Design & Consultancy for natural and built assets

FIGURE
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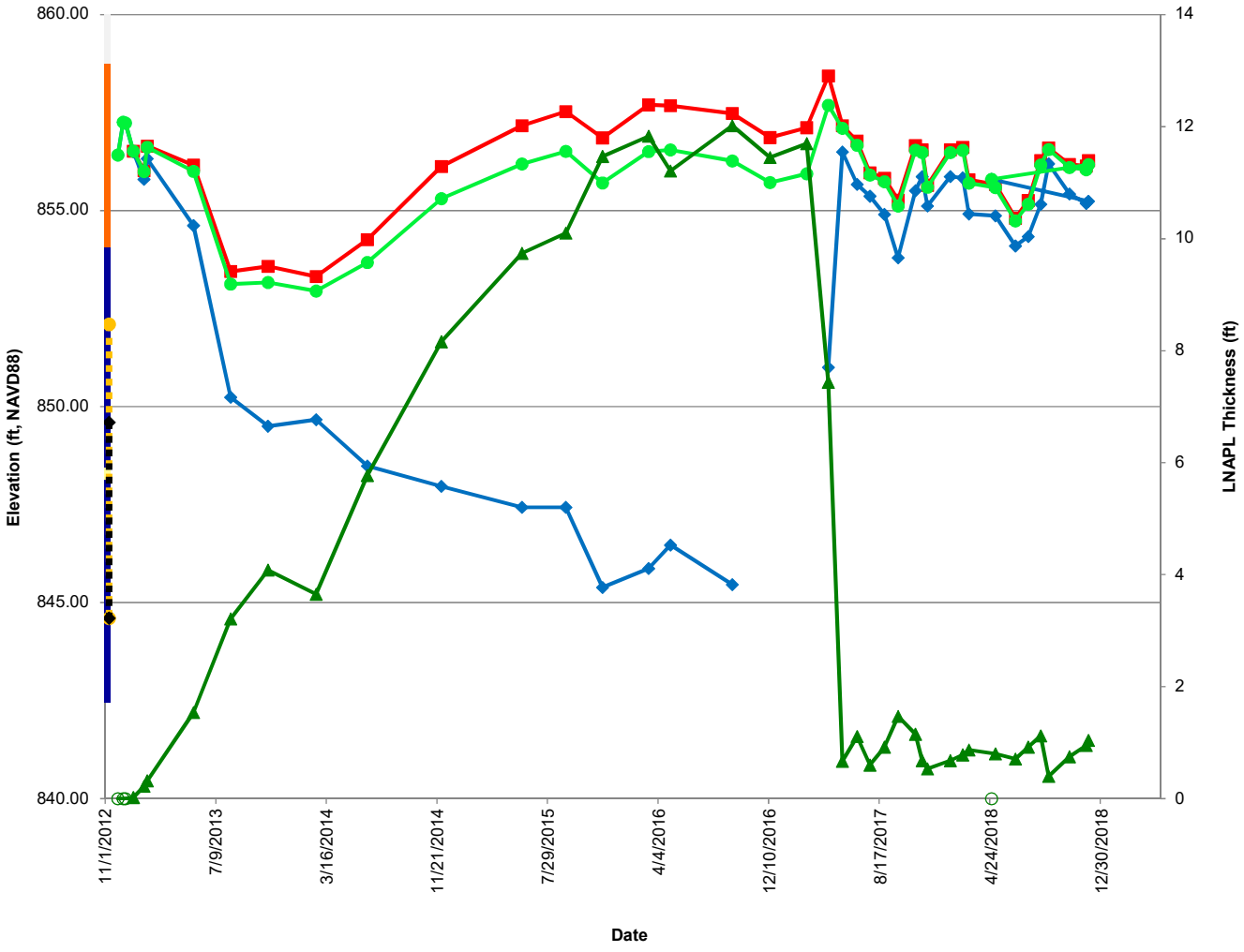

RACER Lansing
Lansing, MI

LMW-12-10 LNAPL HYDROGRAPH

ARCADIS Design & Consultancy for natural and built assets

FIGURE

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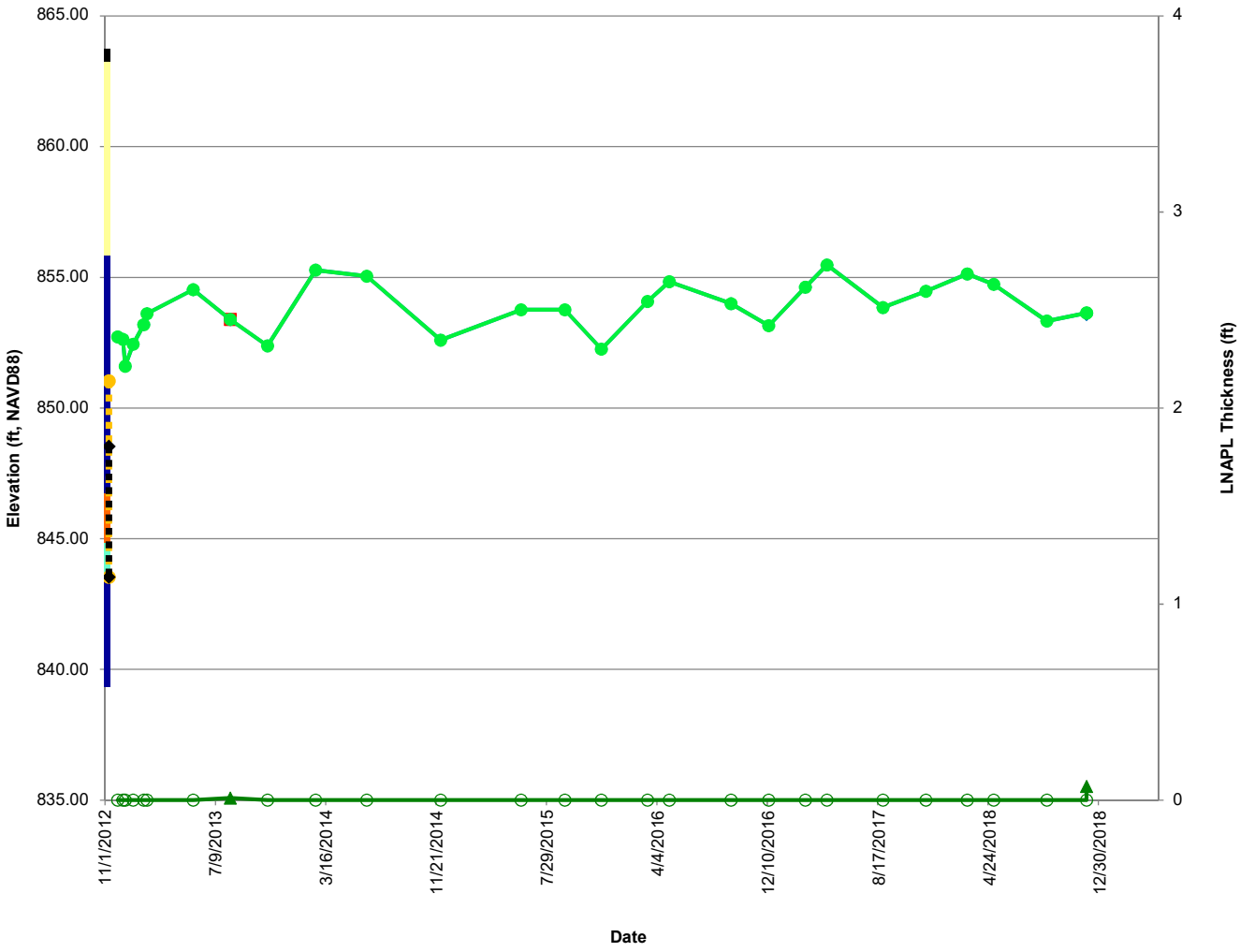

RACER Lansing
Lansing, MI

LMW-12-11 LNAPL HYDROGRAPH

ARCADIS Design & Consultancy for natural and built assets

FIGURE

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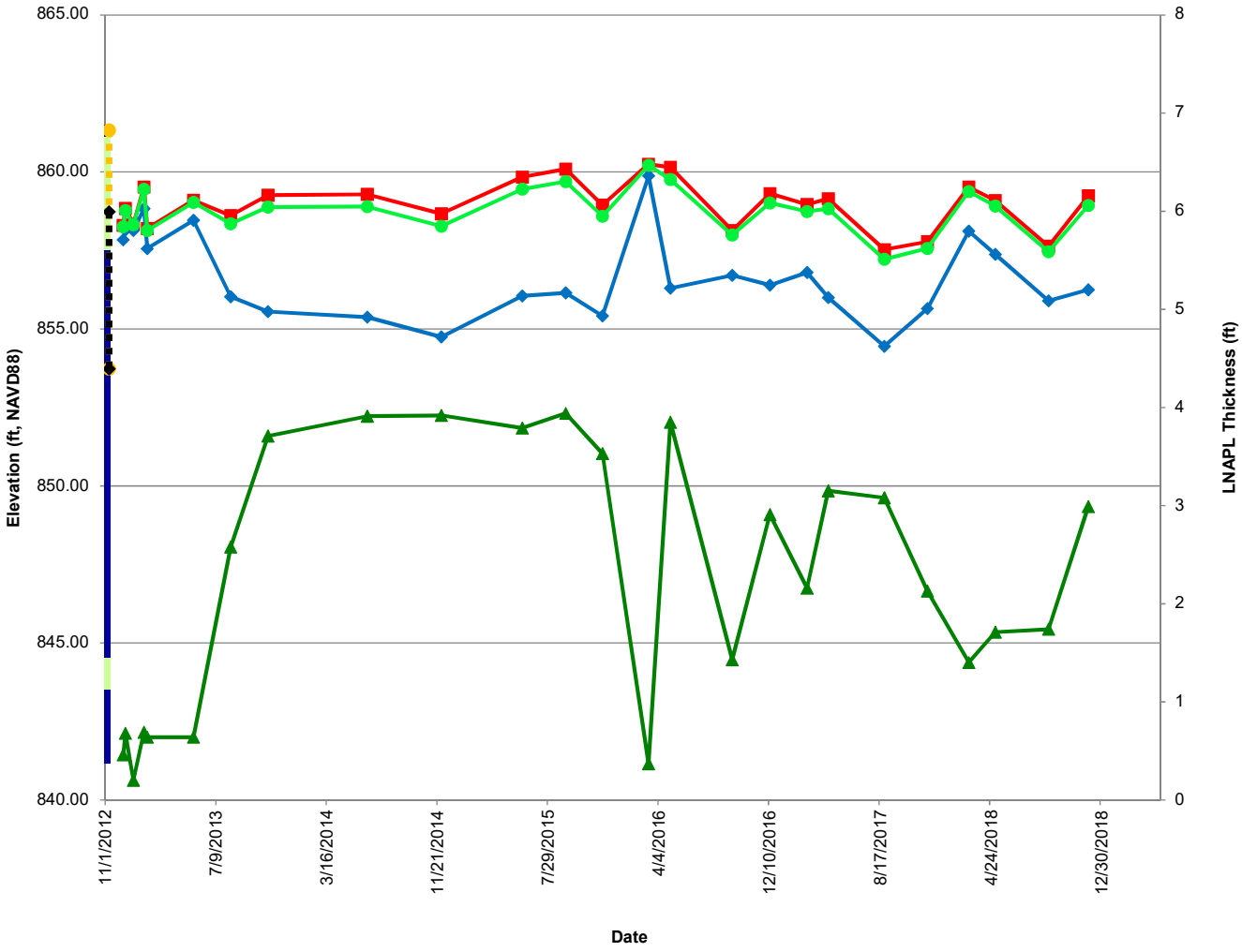

RACER Lansing
Lansing, MI

PMW-1 LNAPL HYDROGRAPH

ARCADIS Design & Consultancy for natural and built assets

FIGURE

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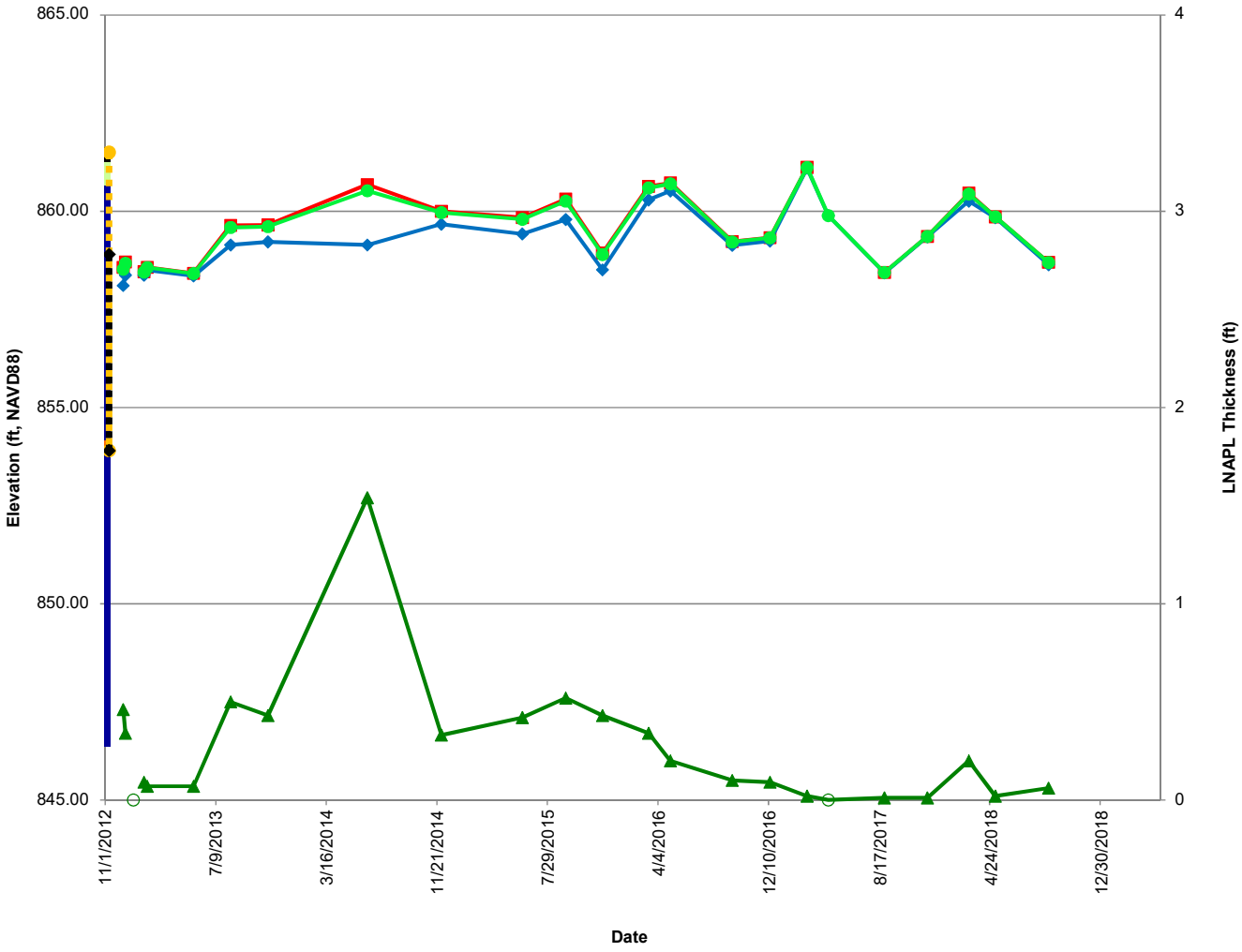

RACER Lansing
Lansing, MI

PMW-2 LNAPL HYDROGRAPH

ARCADIS Design & Consultancy for natural and built assets

FIGURE
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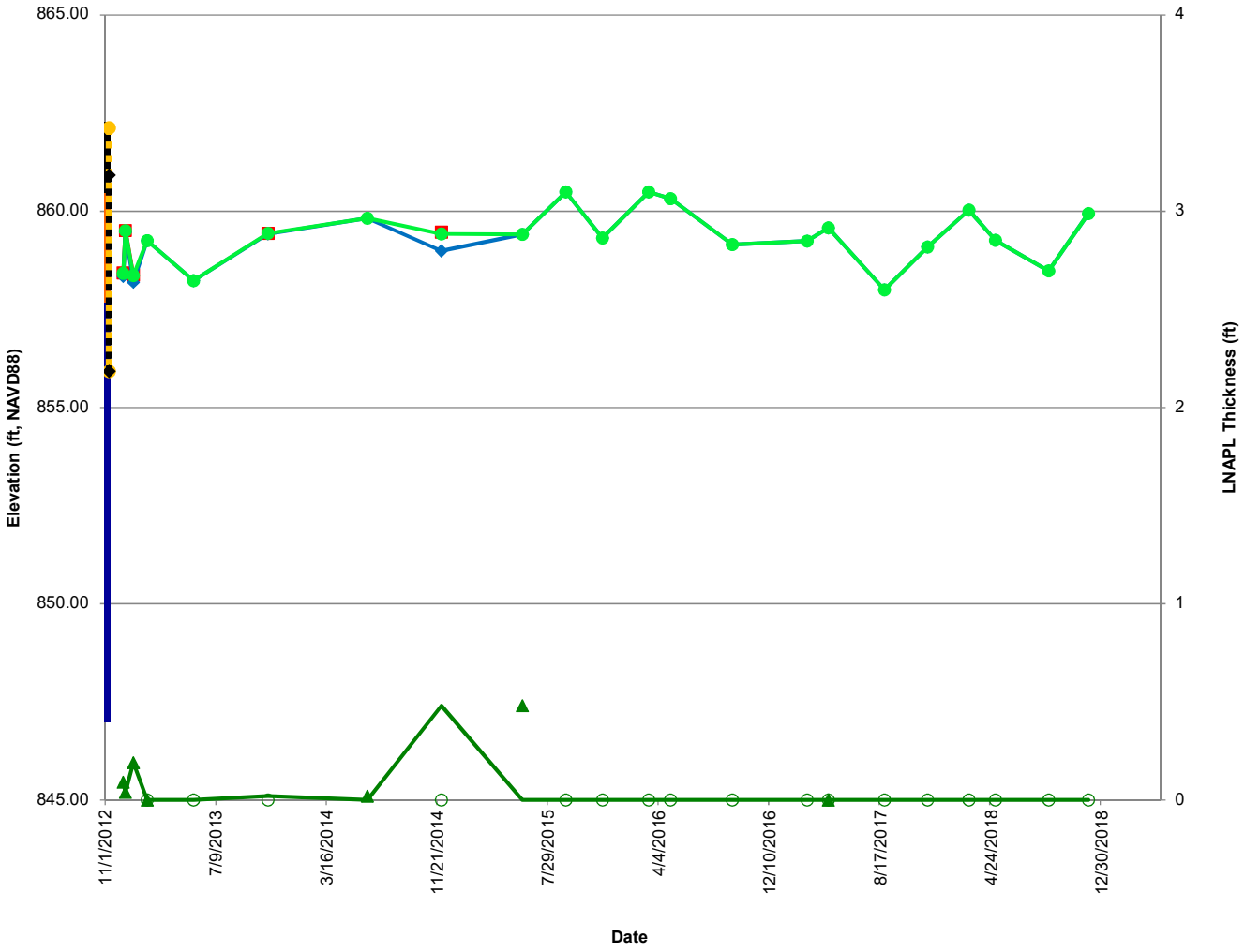

RACER Lansing
Lansing, MI

PMW-3 LNAPL HYDROGRAPH

ARCADIS Design & Consultancy for natural and built assets

FIGURE

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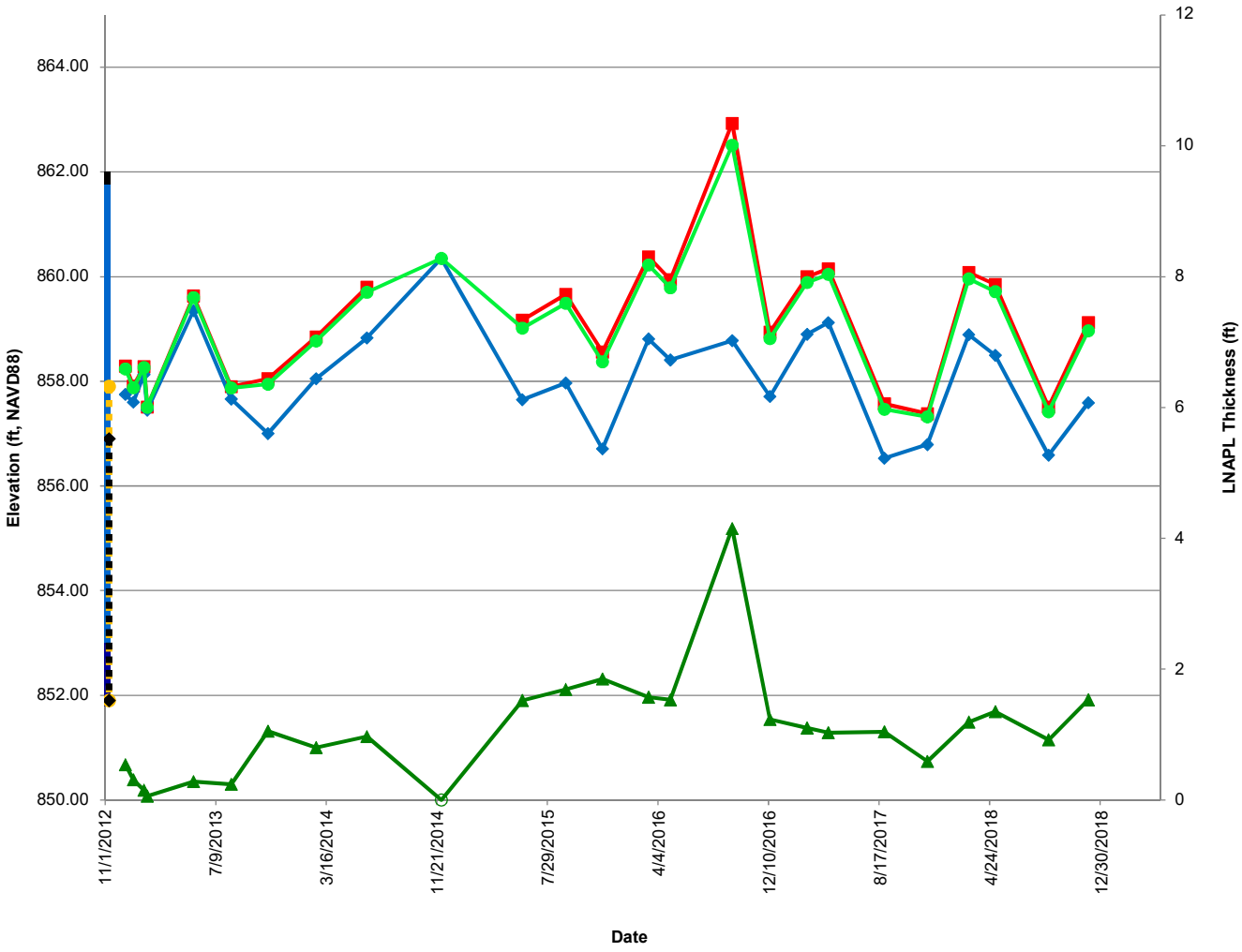

RACER Lansing
Lansing, MI

P2-SB-37 LNAPL HYDROGRAPH

ARCADIS Design & Consultancy for natural and built assets

FIGURE
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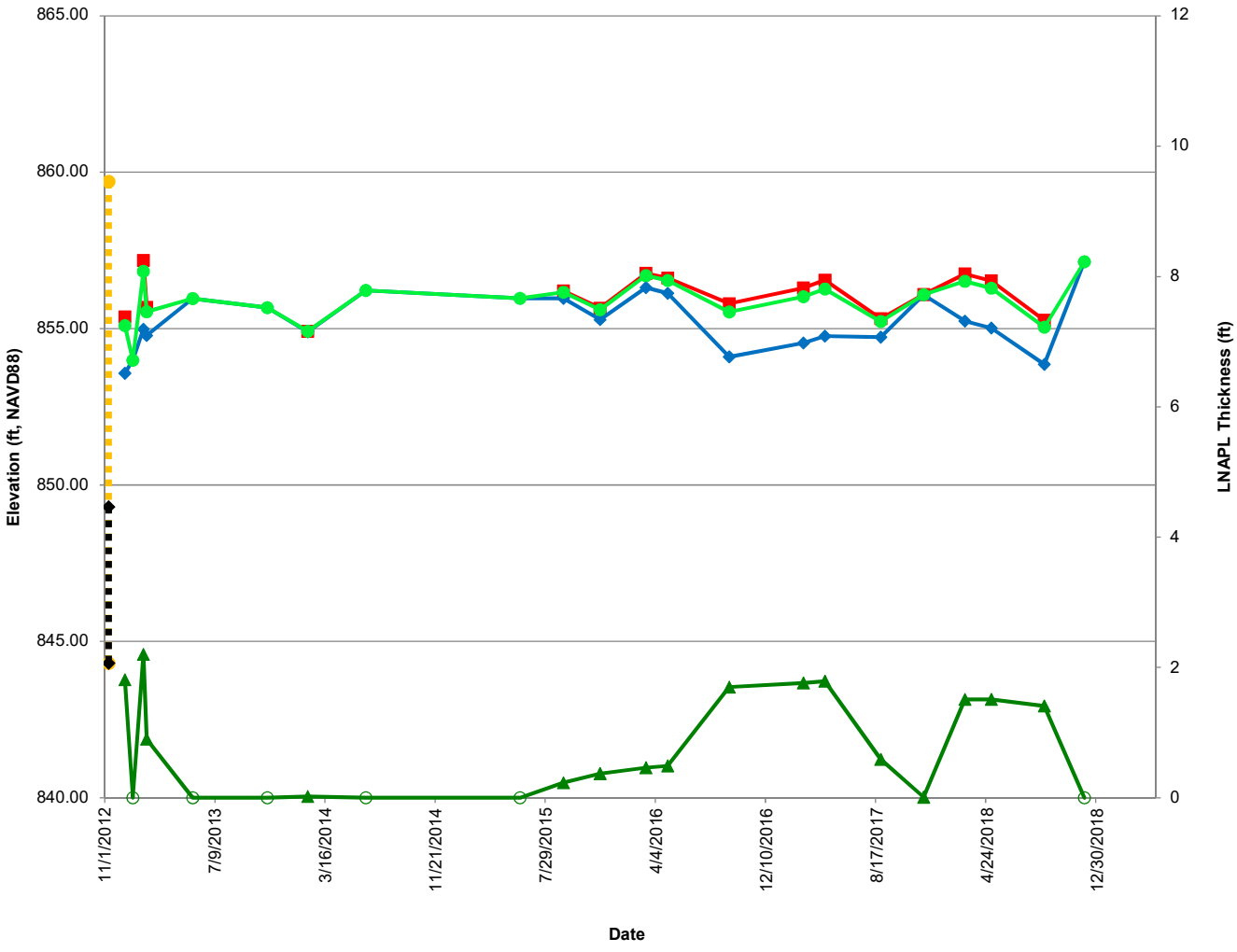

RACER Lansing
Lansing, MI

UNK-14 LNAPL HYDROGRAPH

ARCADIS Design & Consultancy for natural and built assets

FIGURE

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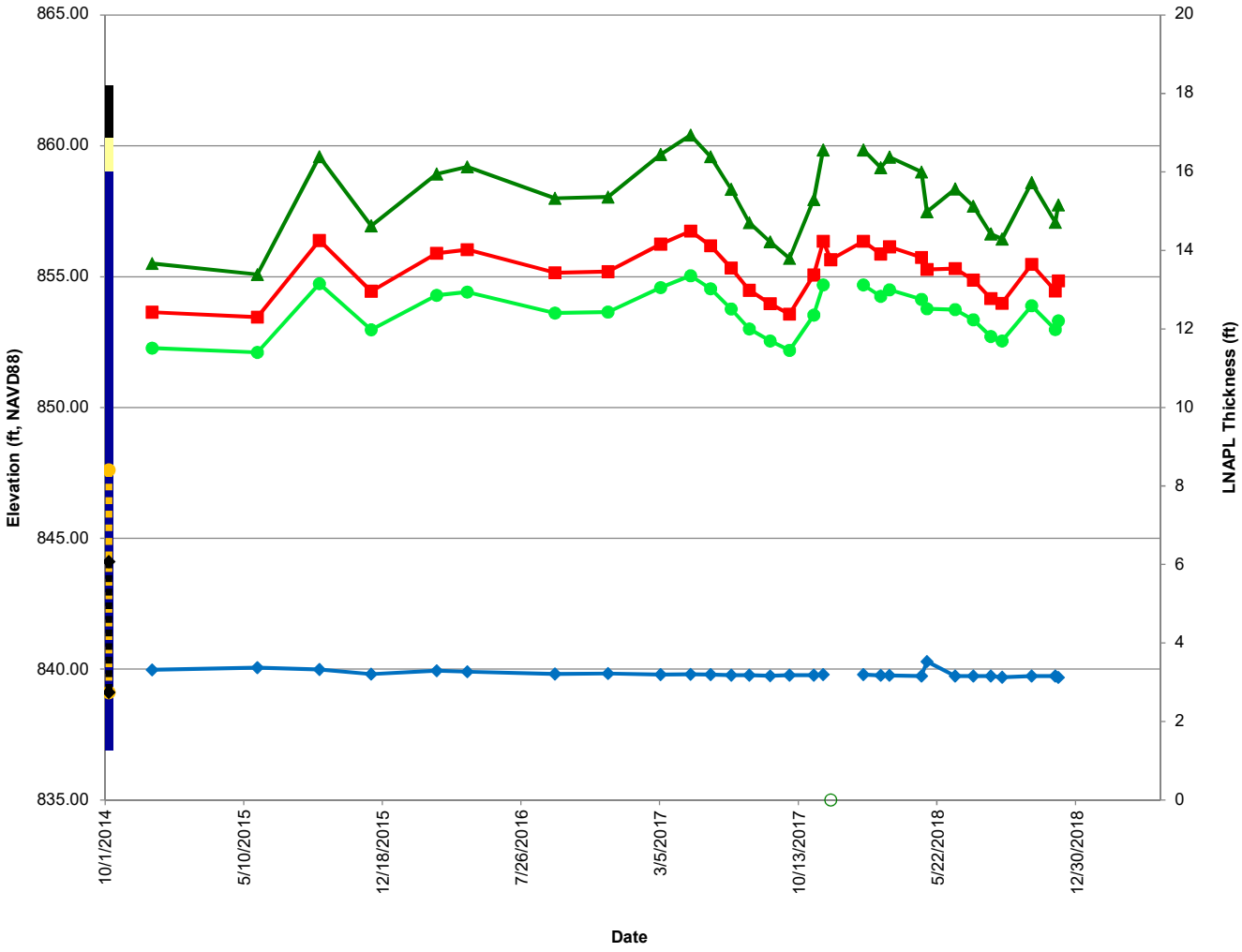

RACER Lansing
Lansing, MI

LMW-14-12D LNAPL HYDROGRAPH

ARCADIS Design & Consultancy for natural and built assets

FIGURE

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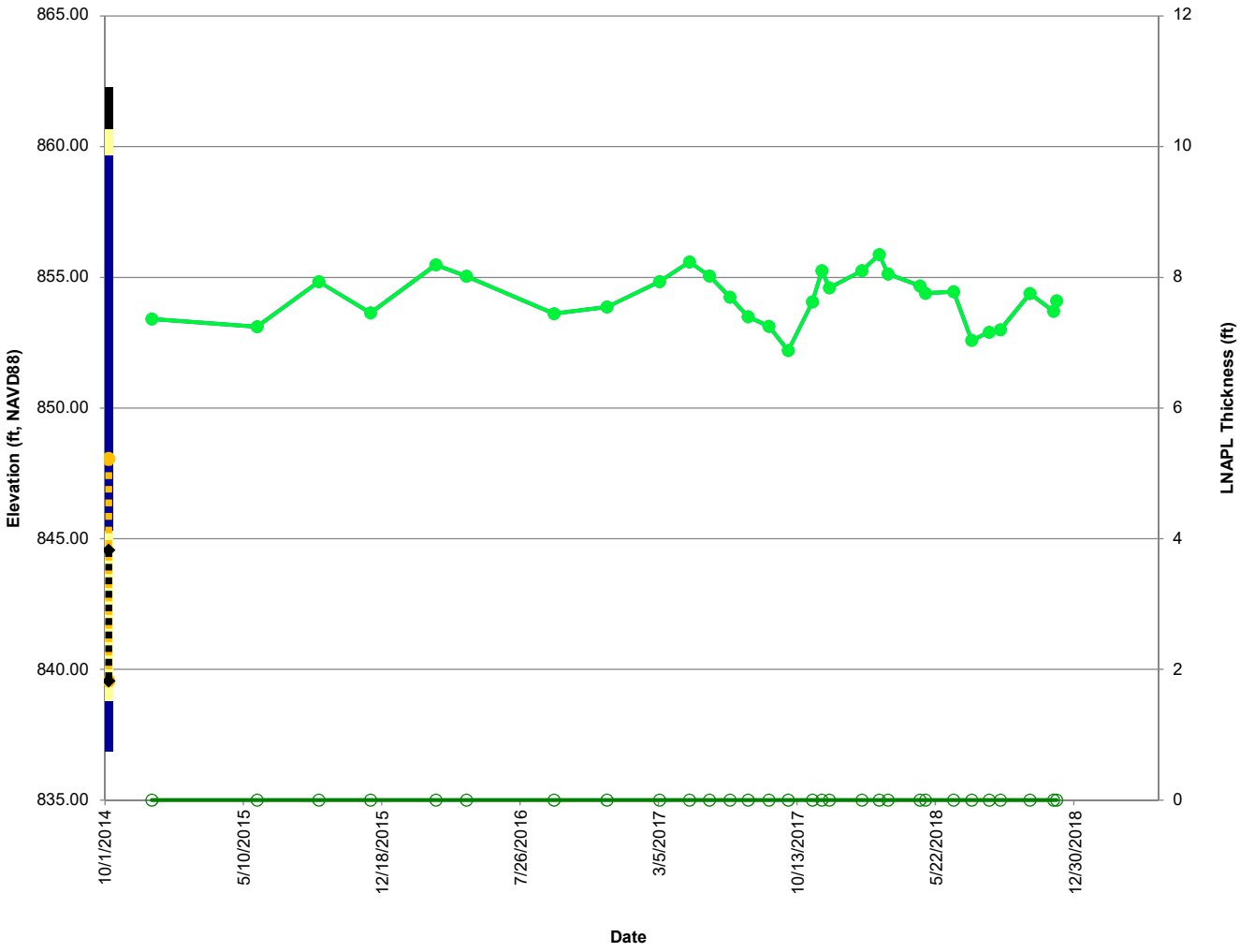

RACER Lansing
Lansing, MI

LMW-14-13D LNAPL HYDROGRAPH

ARCADIS Design & Consultancy for natural and built assets

FIGURE

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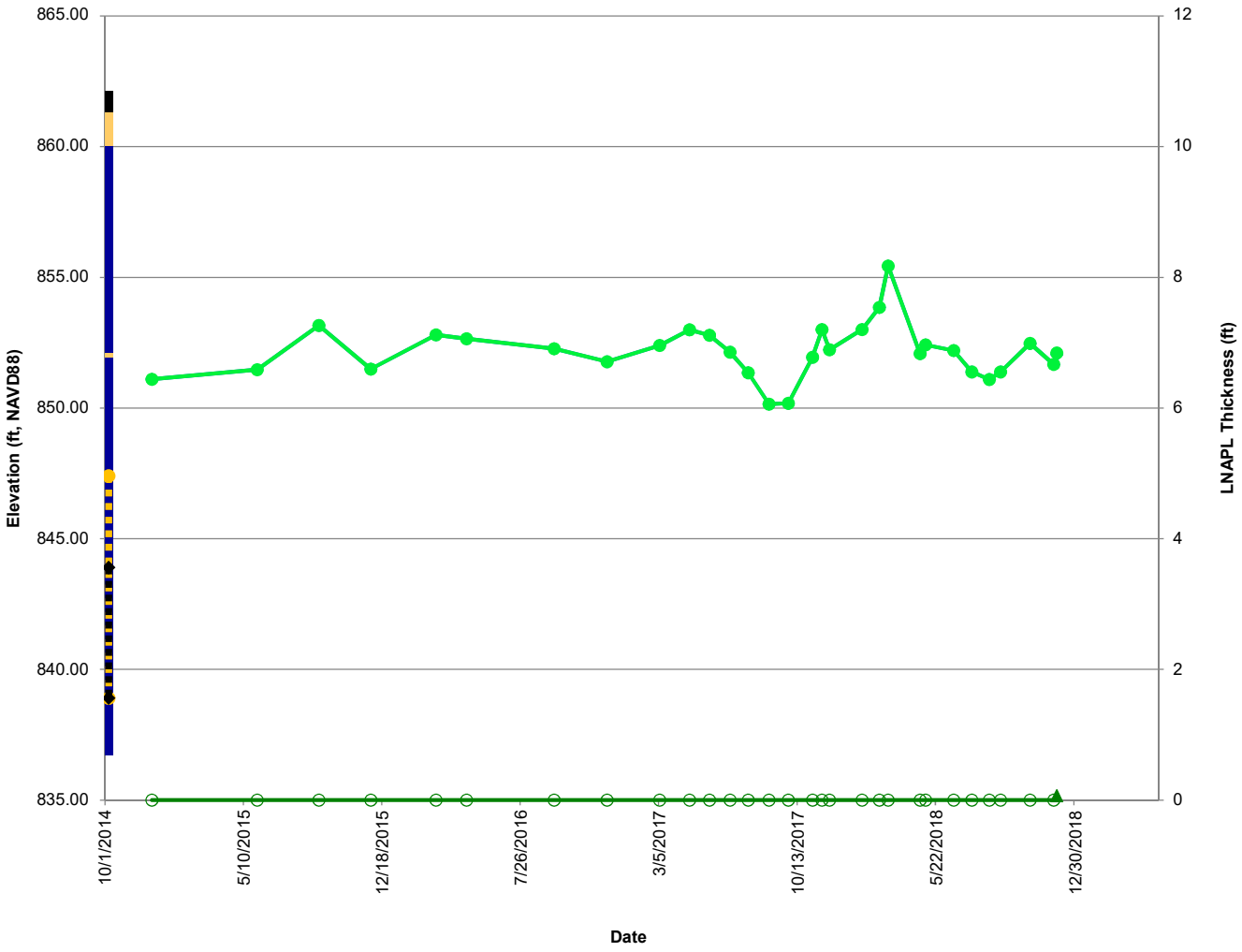

NAPL-Water or Air-Water Interface
Potentiometric Surface
Concrete
Coarse Sand
Clay
Filter Pack
Screened Interval
NAPL Thickness

RACER Lansing
Lansing, MI

LMW-14-14D LNAPL HYDROGRAPH

ARCADIS Design & Consultancy for natural and built assets

FIGURE
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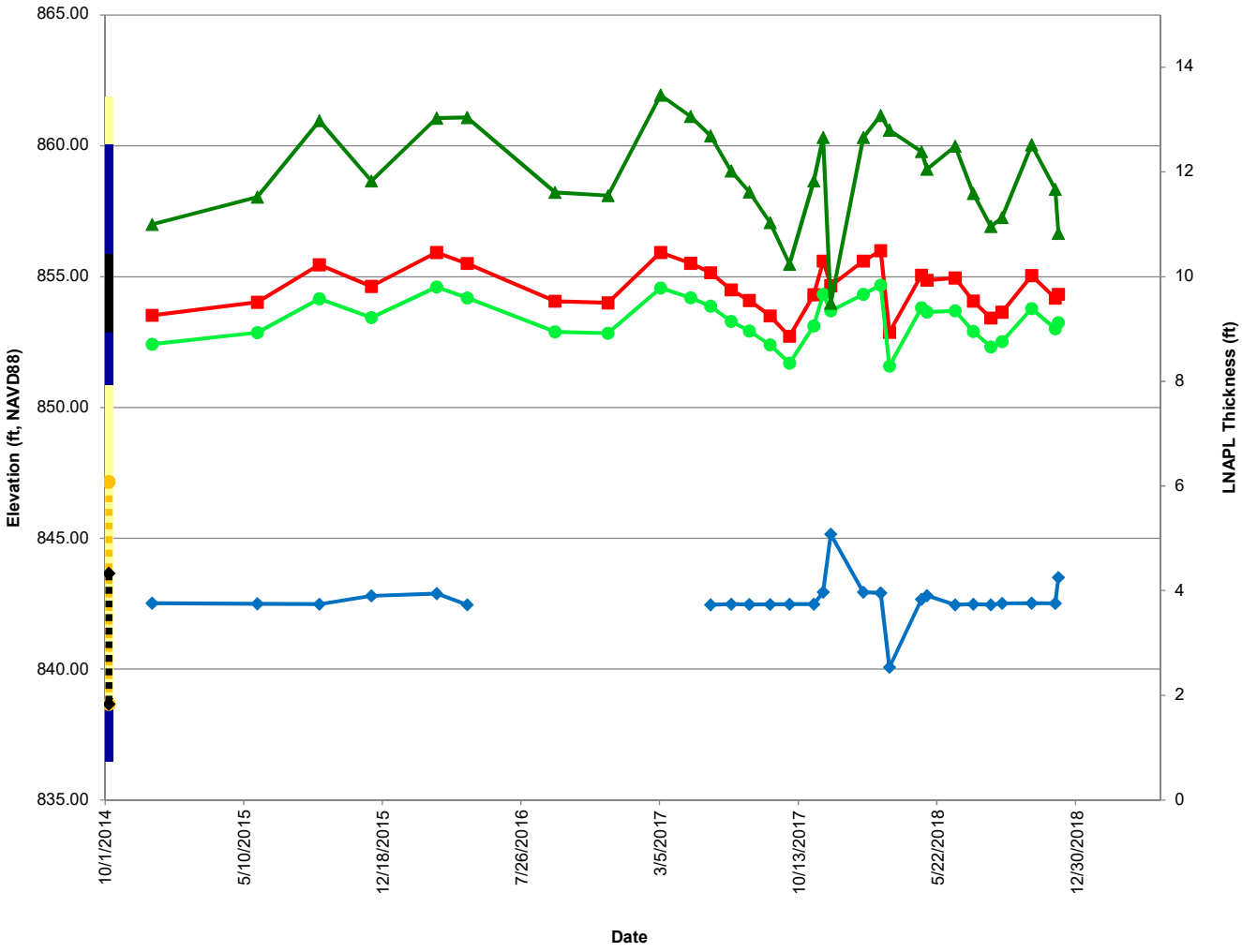


Air-NAPL Interface

NAPL-Water or Air-Water Interface

Potentiometric Surface

Concrete

Medium Sand

Clay

Filter Pack

Screened Interval

NAPL Thickness

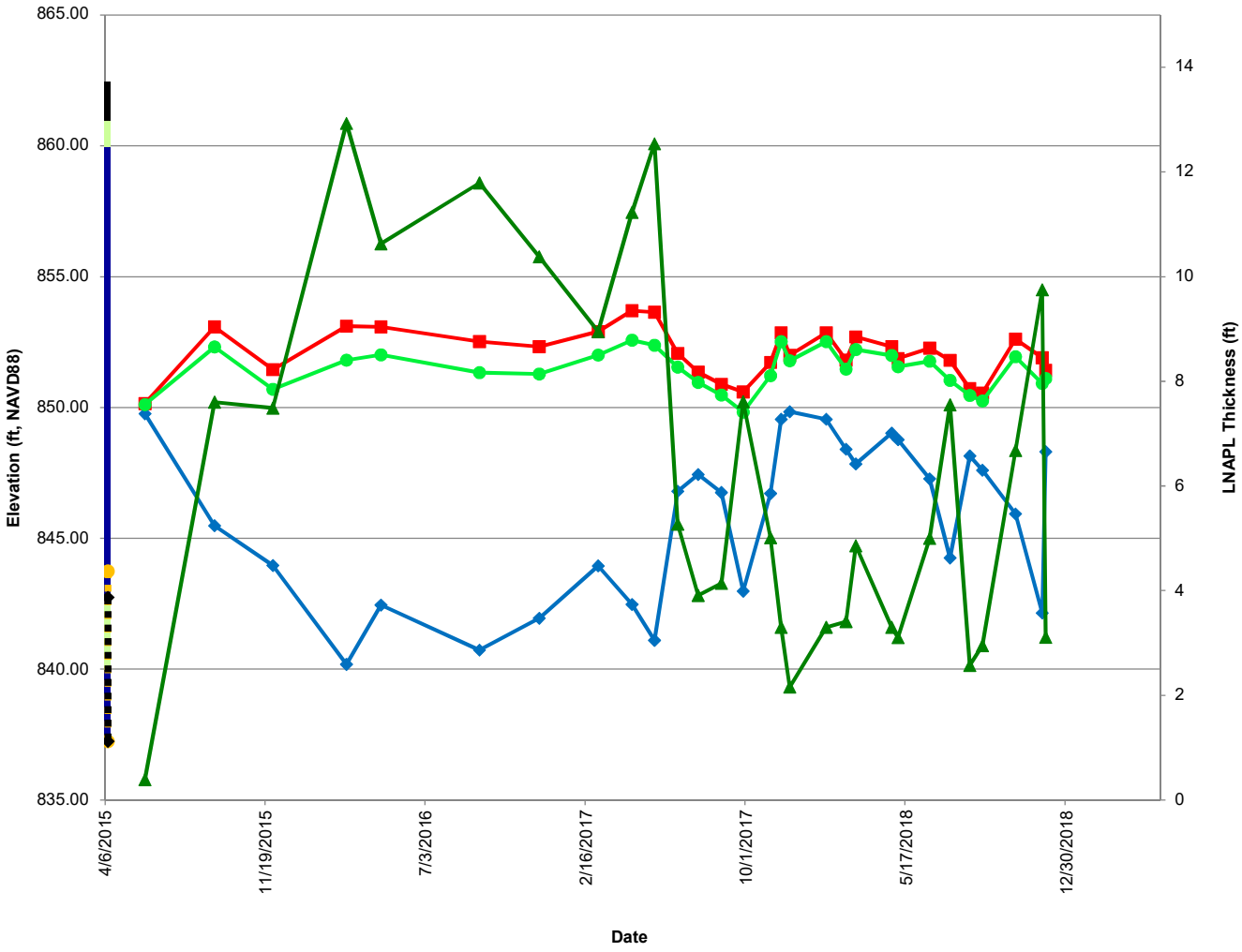
RACER Lansing
Lansing, MI

LMW-14-15D LNAPL HYDROGRAPH

ARCADIS Design & Consultancy for natural and built assets

FIGURE

A



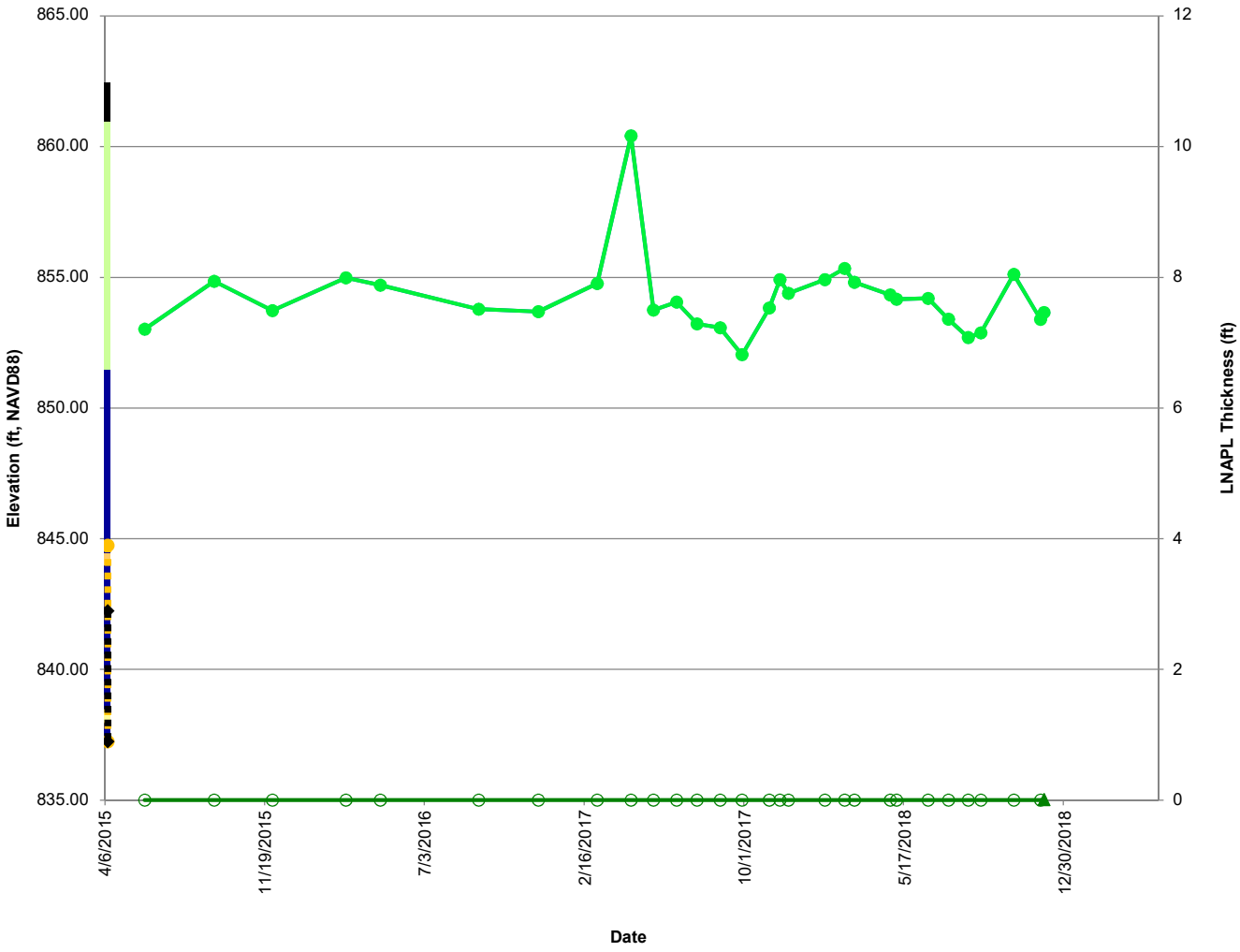
RACER Lansing
Lansing, MI

LMW-15-16D LNAPL HYDROGRAPH

ARCADIS Design & Consultancy for natural and built assets

FIGURE

A



RACER Lansing
Lansing, MI

LMW-15-17D LNAPL HYDROGRAPH

ARCADIS Design & Consultancy for natural and built assets

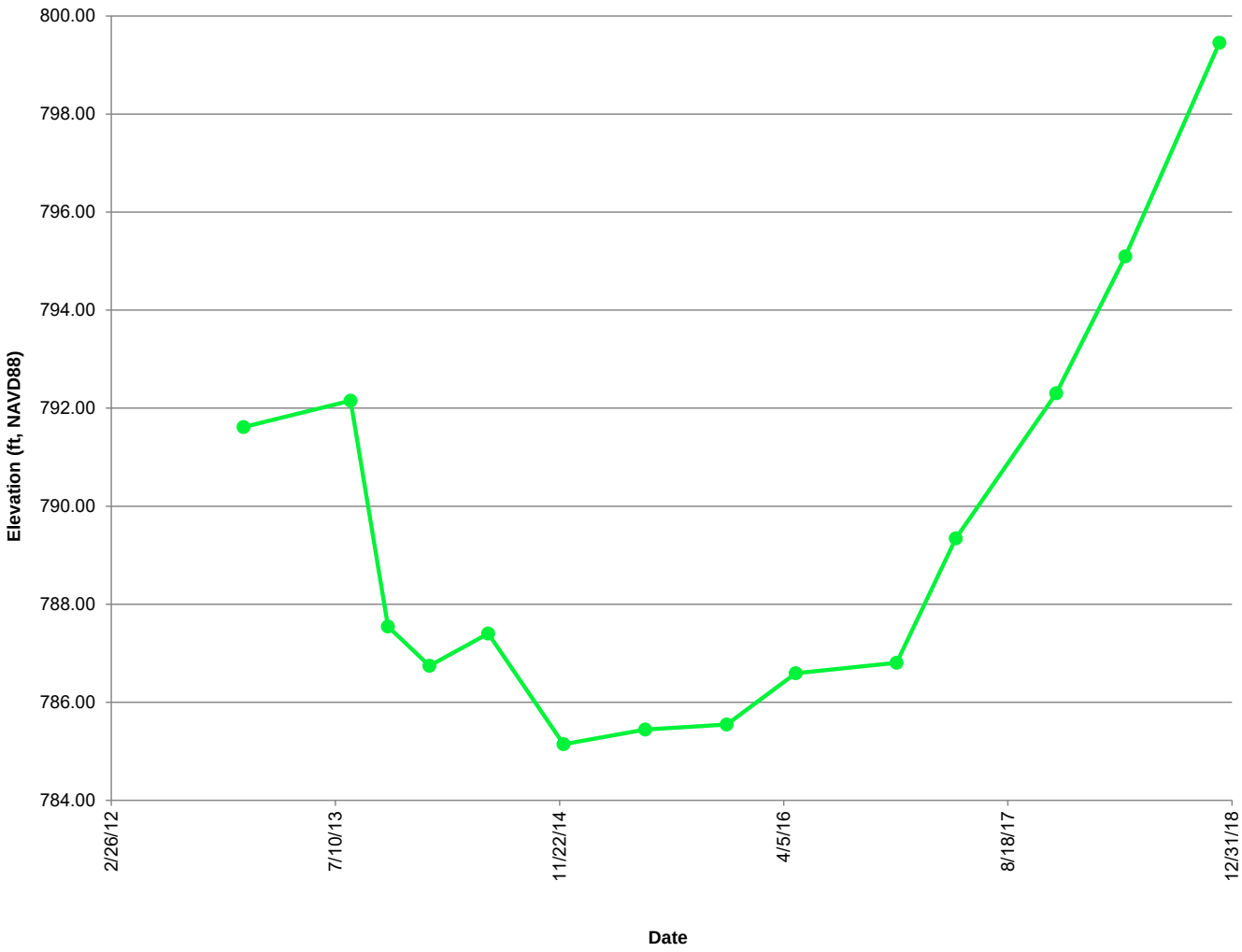
FIGURE

A

APPENDIX H

Groundwater Elevation Trend Graphs

(On attached CD)



RACER Lansing Plant 2
Lansing, MI

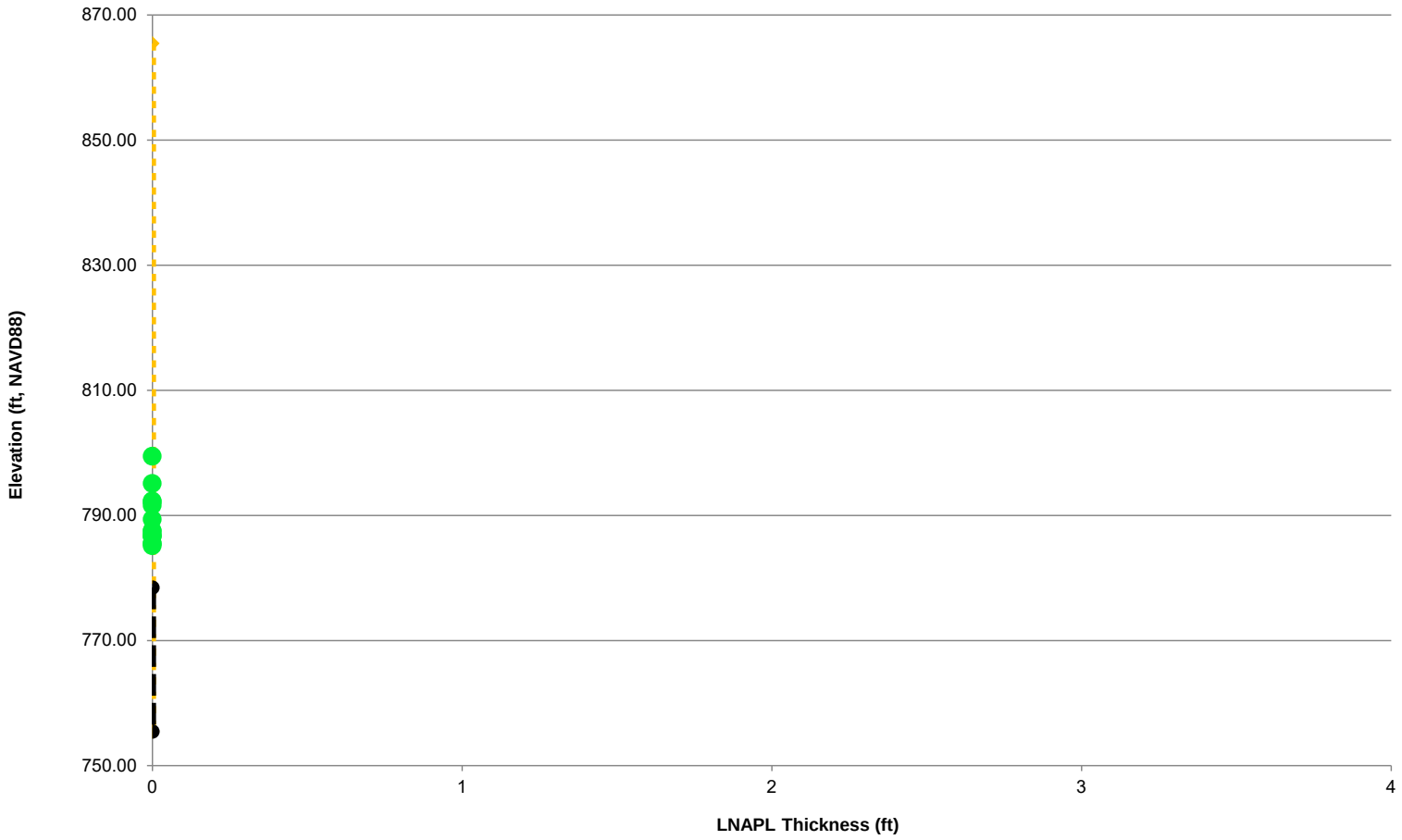
MW-12-01 HYDROGRAPH

BEDROCK

ARCADIS Design & Consultancy for natural and built assets

FIGURE

A

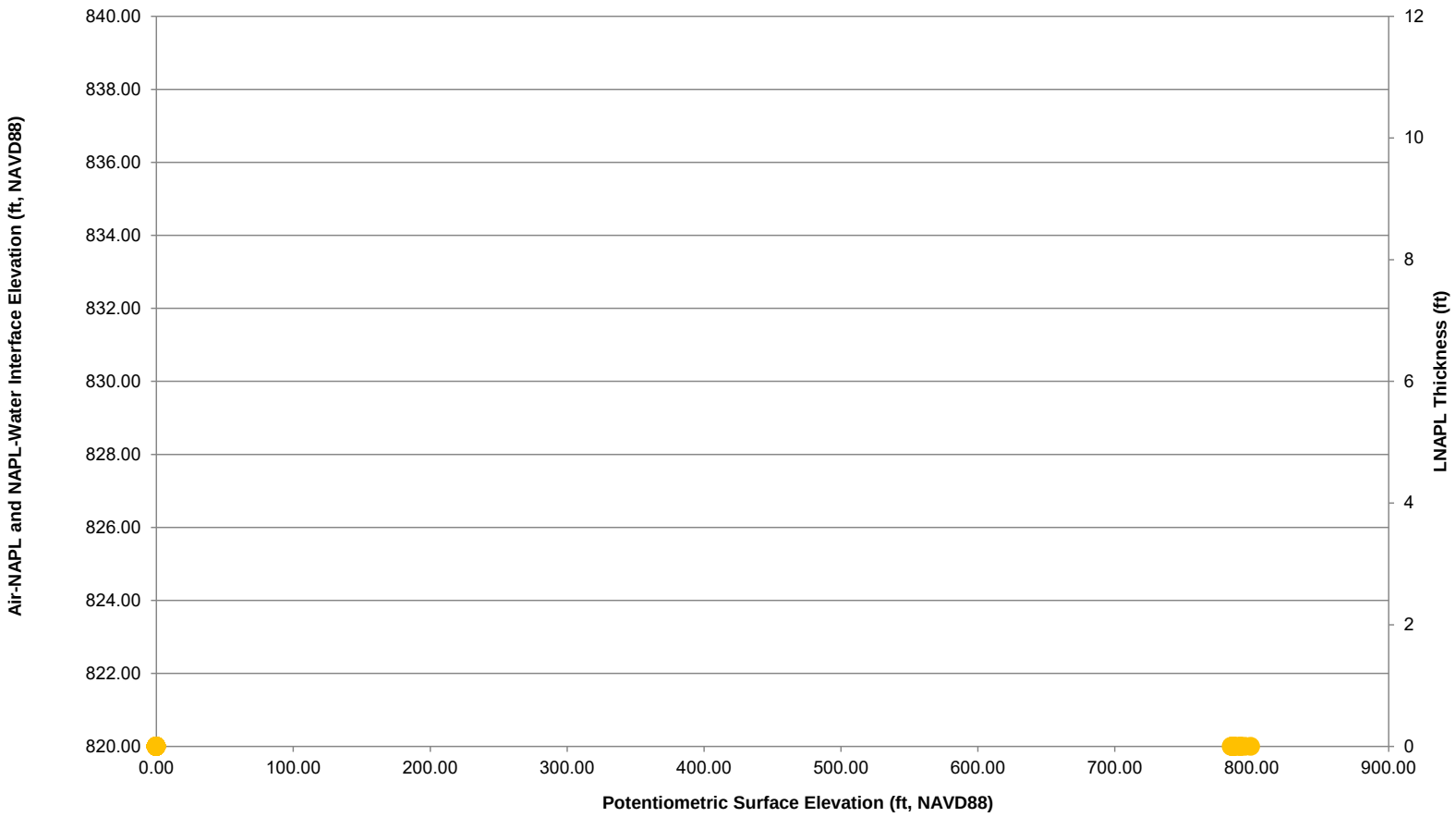


RACER Lansing
Lansing, MI

MW-12-01 DIAGNOSTIC GAUGE PLOT

ARCADIS Design & Consultancy for natural and built assets

FIGURE
B

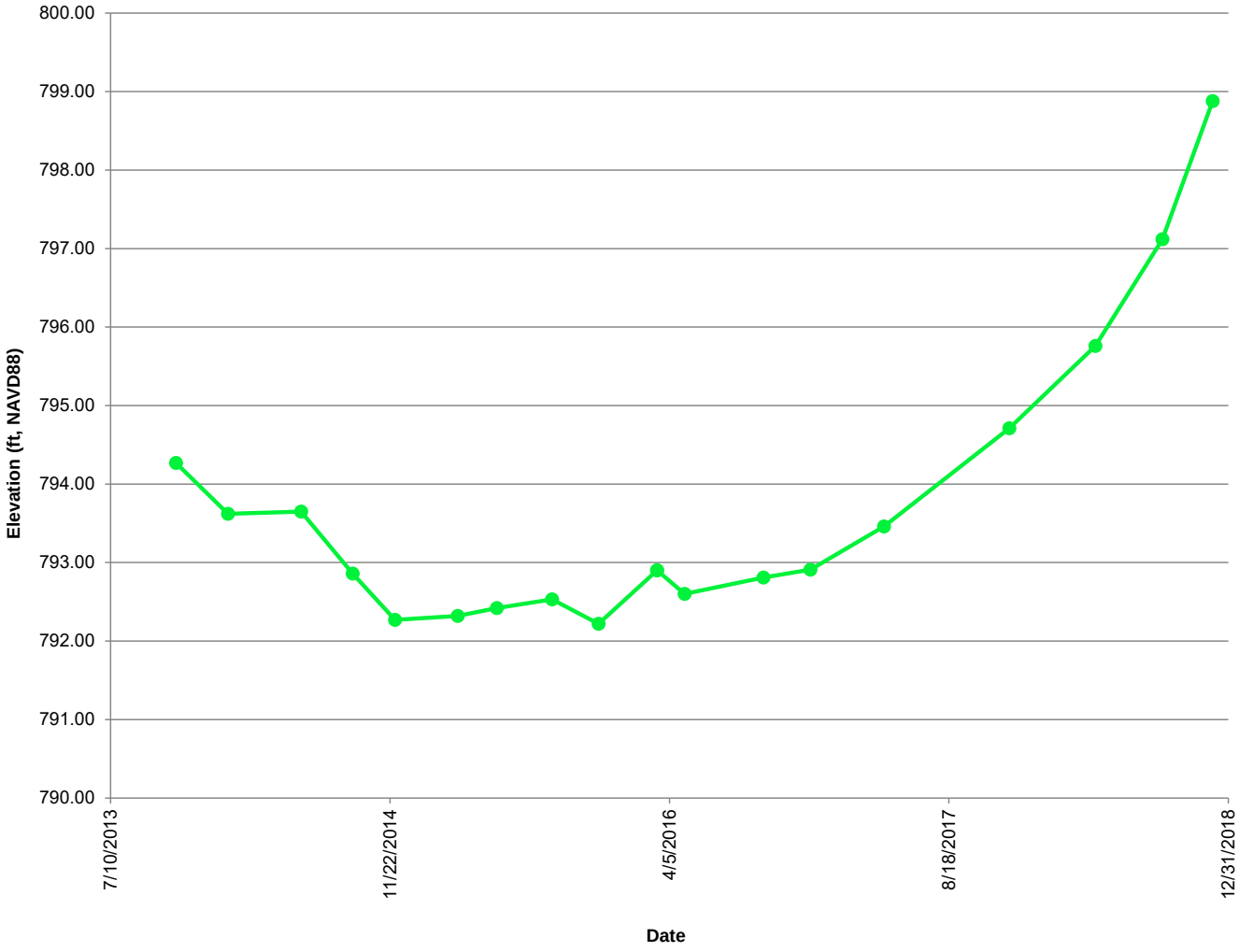


RACER Lansing
Lansing, MI

MW-12-01 DIAGNOSTIC GAUGE PLOT

ARCADIS Design & Consultancy for natural and built assets

FIGURE
C



RACER Lansing Plant 2
Lansing, MI

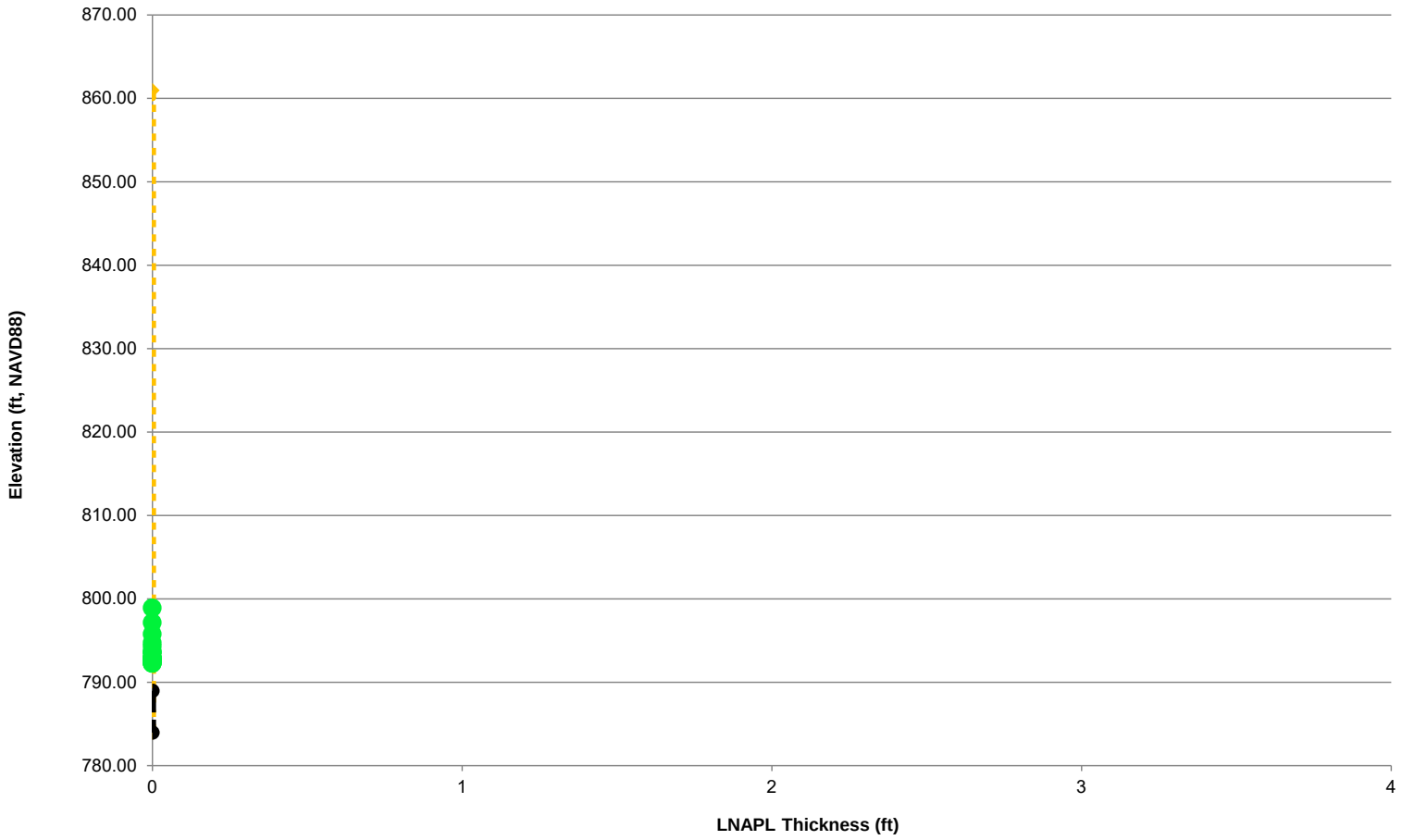
MW-13-43 HYDROGRAPH

DEEP OVERBURDEN/WEATHERED BEDROCK

ARCADIS Design & Consultancy for natural and built assets

FIGURE

A



RACER Lansing
Lansing, MI

MW-13-43 DIAGNOSTIC GAUGE PLOT

ARCADIS Design & Consultancy for natural and built assets

FIGURE
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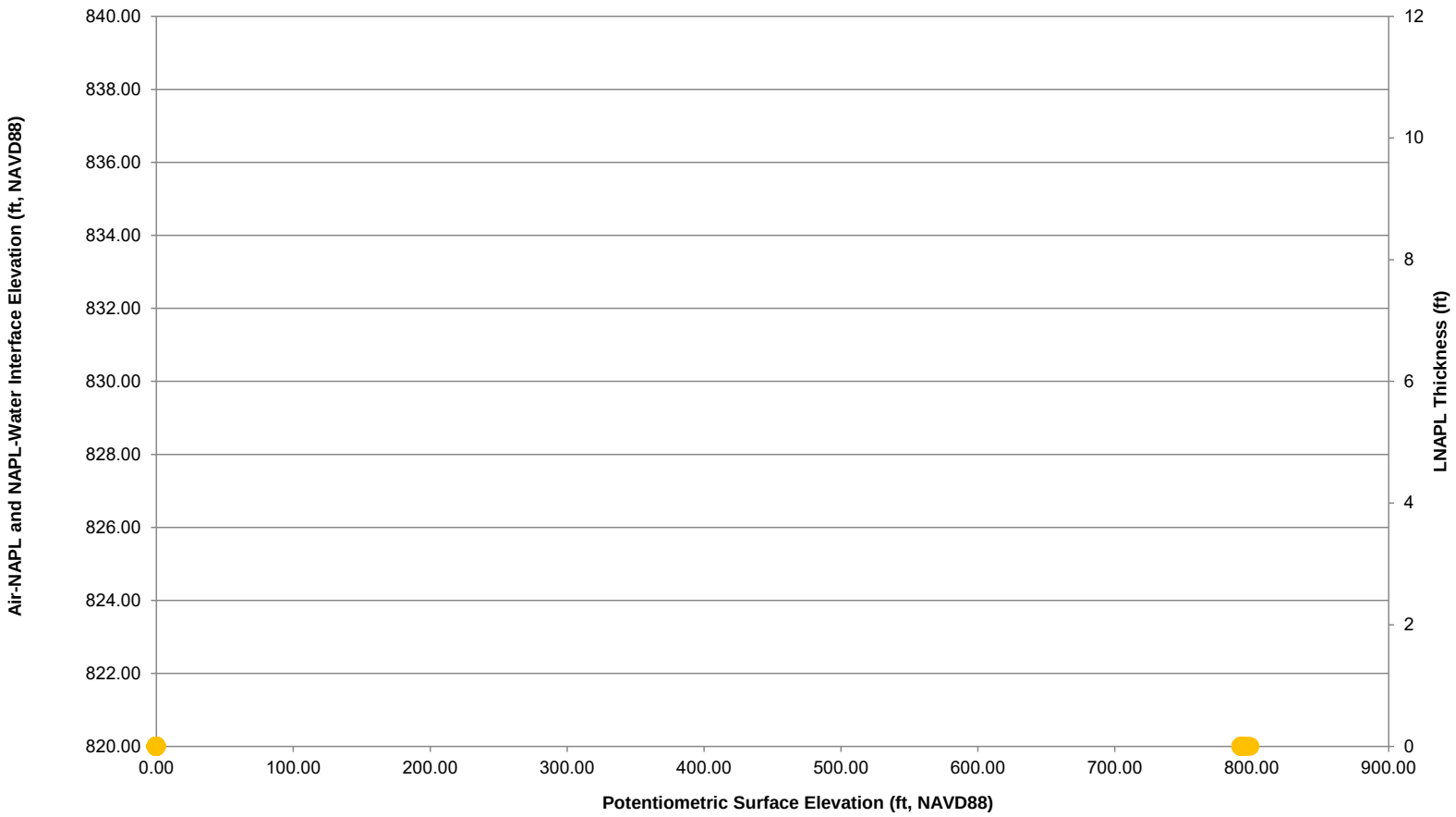

RACER Lansing
Lansing, MI

MW-13-43 DIAGNOSTIC GAUGE PLOT

ARCADIS Design & Consultancy for natural and built assets

FIGURE
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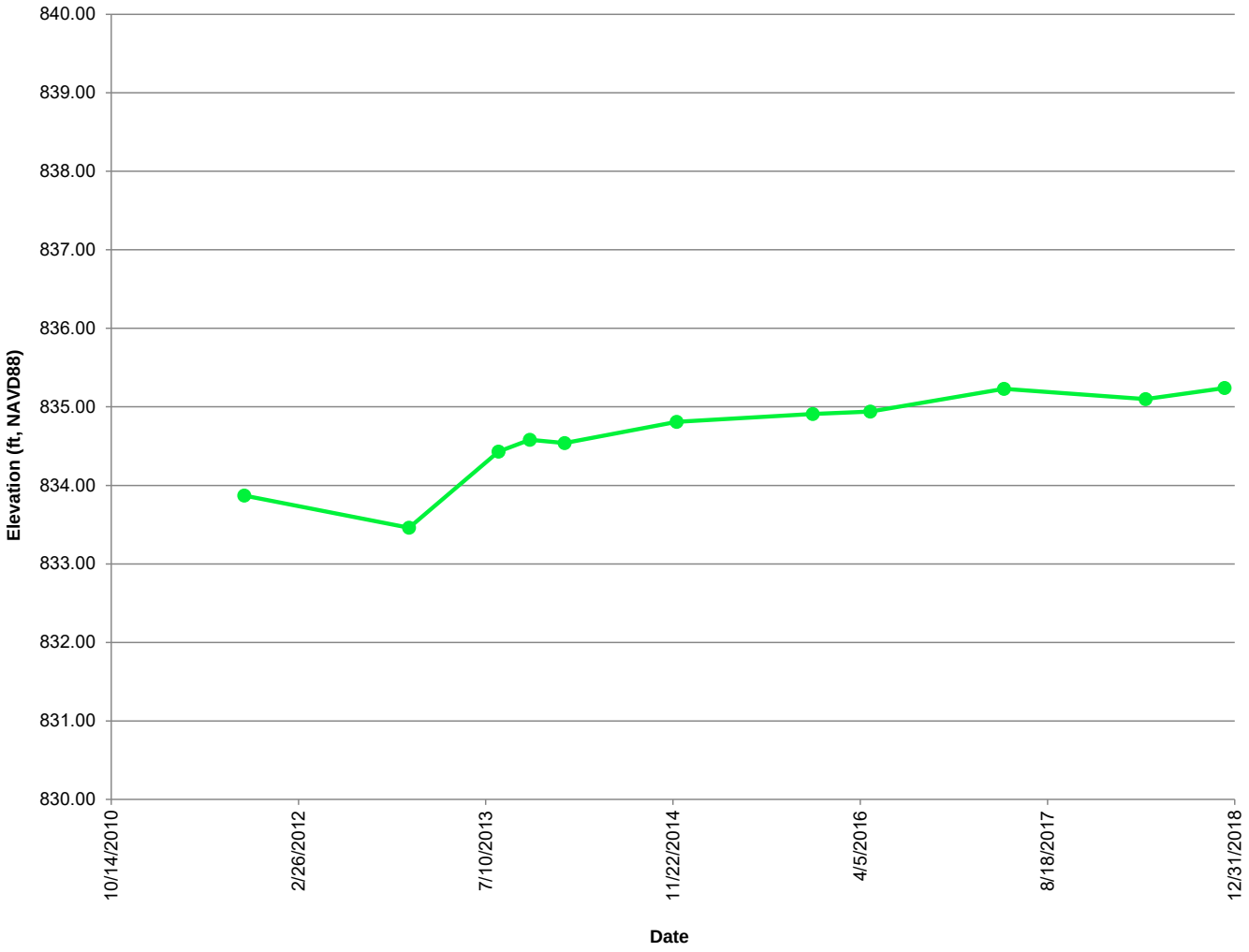

RACER Lansing Plant 2
Lansing, MI

P2-MW-02 HYDROGRAPH

PERCHED

ARCADIS Design & Consultancy for natural and built assets

FIGURE

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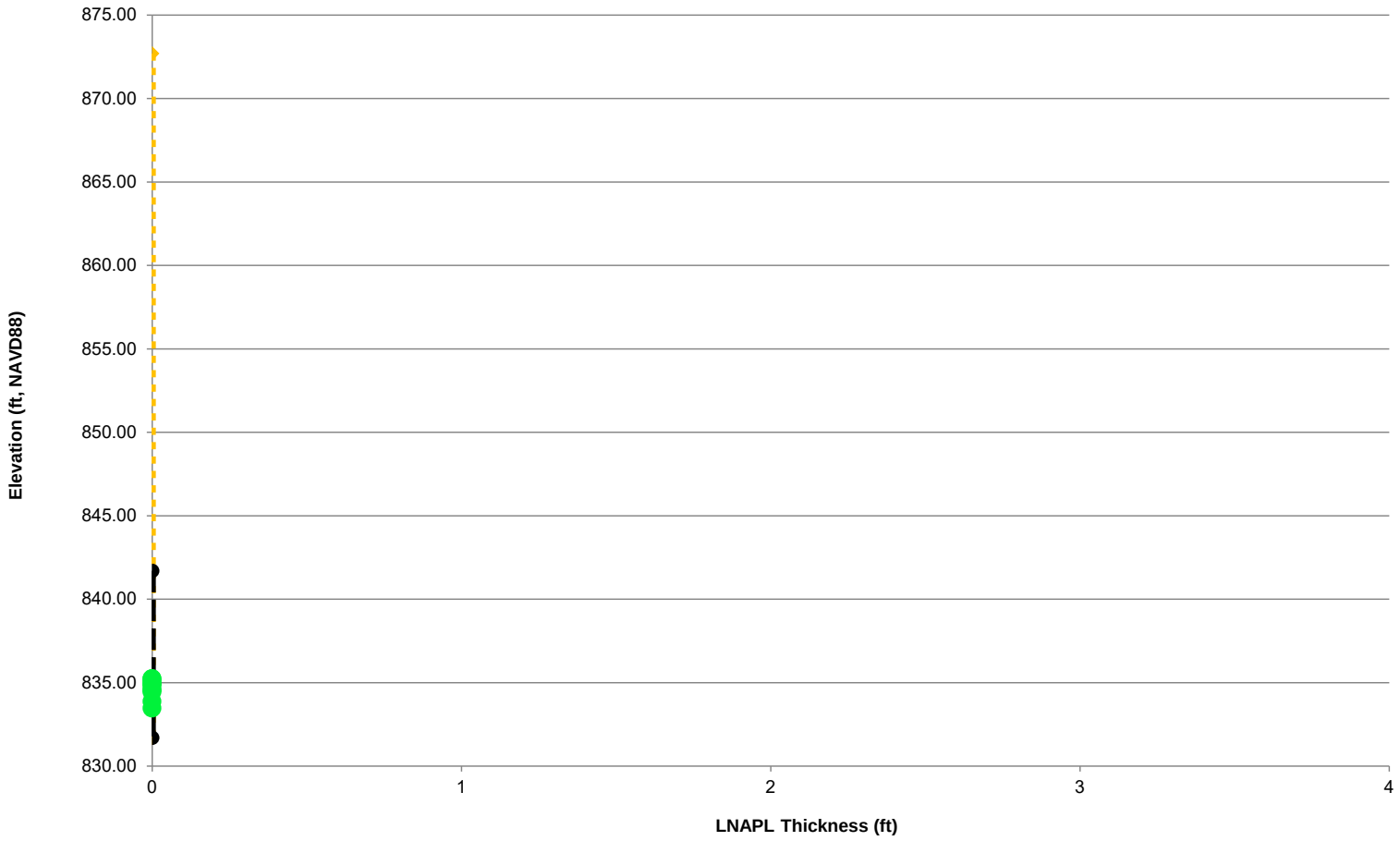

RACER Lansing
Lansing, MI

P2-MW-02 DIAGNOSTIC GAUGE PLOT

ARCADIS Design & Consultancy for natural and built assets

FIGURE
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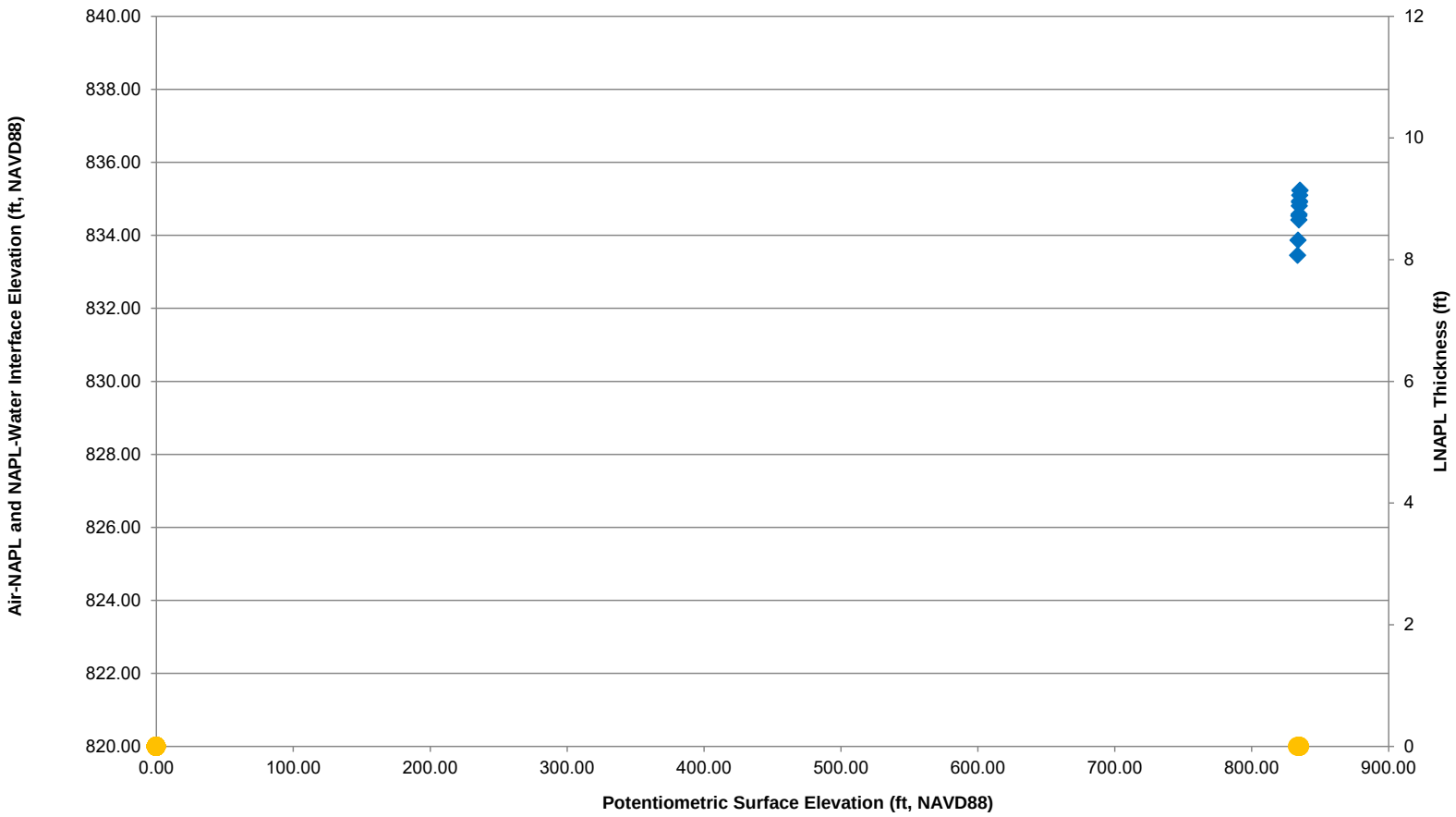

RACER Lansing
Lansing, MI

P2-MW-02 DIAGNOSTIC GAUGE PLOT

ARCADIS Design & Consultancy for natural and built assets

FIGURE
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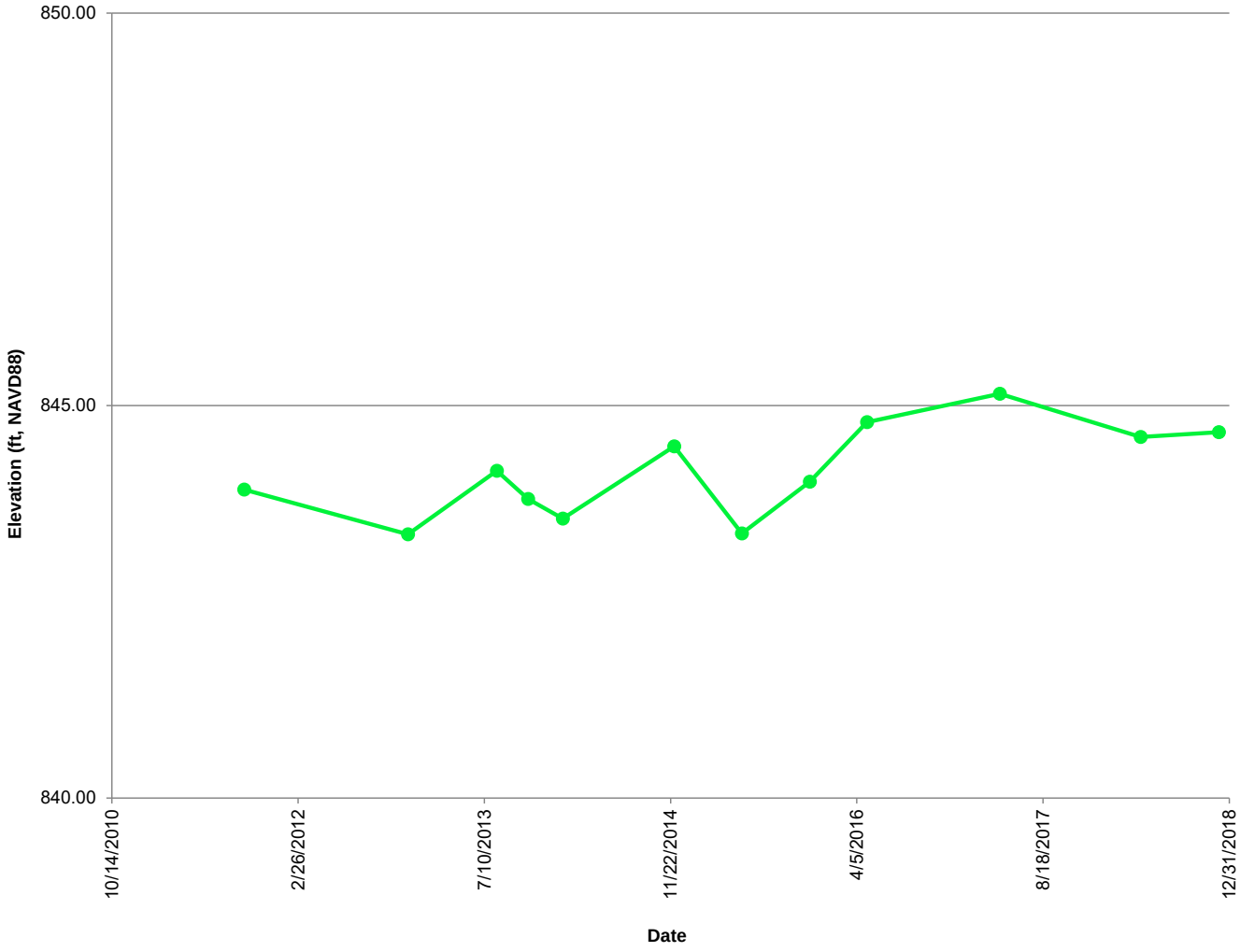


RACER Lansing Plant 2
Lansing, MI

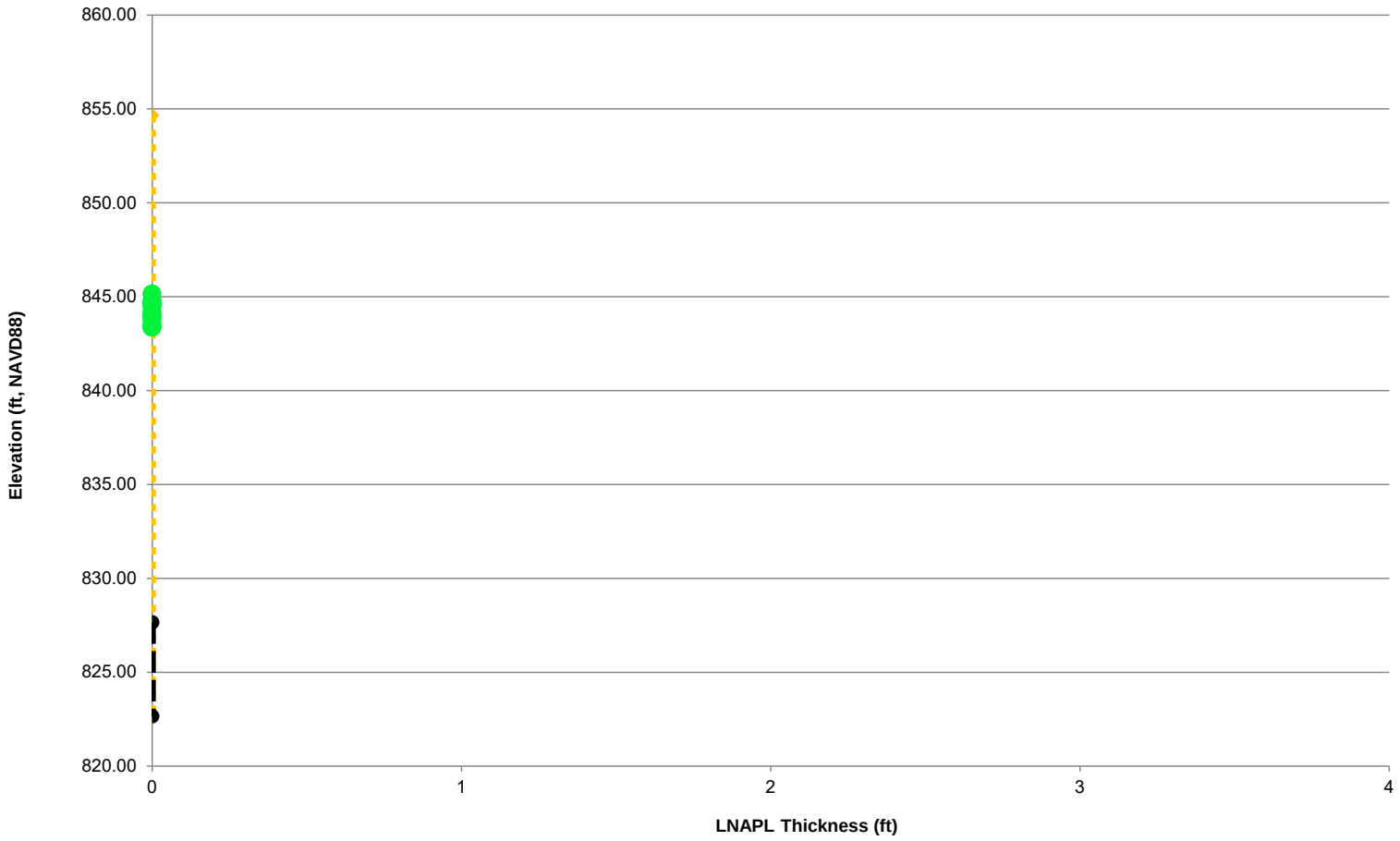
P2-MW-03 HYDROGRAPH

PERCHED

ARCADIS Design & Consultancy for natural and built assets

FIGURE

A

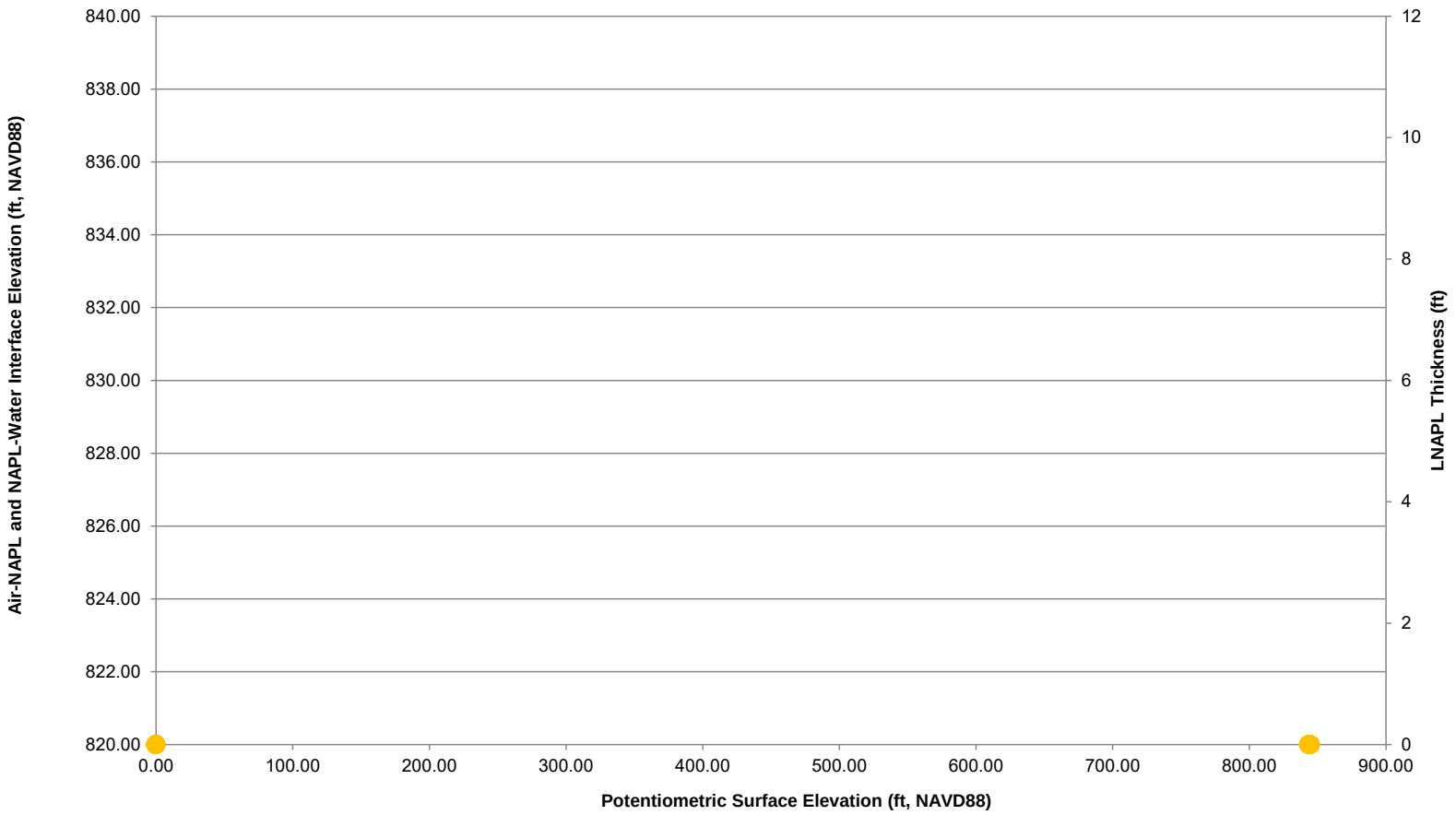


RACER Lansing
Lansing, MI

P2-MW-03 DIAGNOSTIC GAUGE PLOT

ARCADIS Design & Consultancy for natural and built assets

FIGURE
B

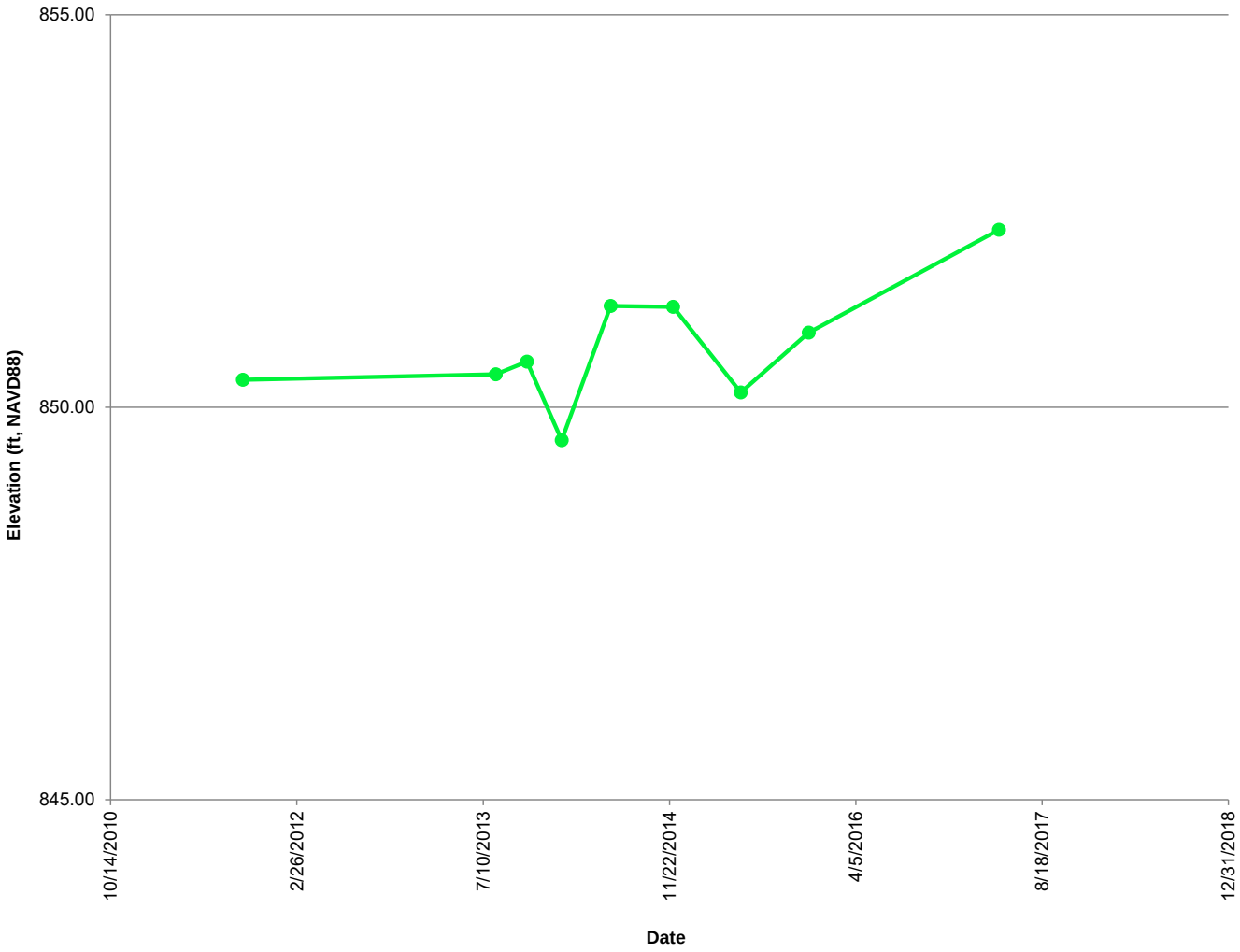


RACER Lansing
Lansing, MI

P2-MW-03 DIAGNOSTIC GAUGE PLOT

ARCADIS Design & Consultancy for natural and built assets

FIGURE
C



RACER Lansing Plant 2
Lansing, MI

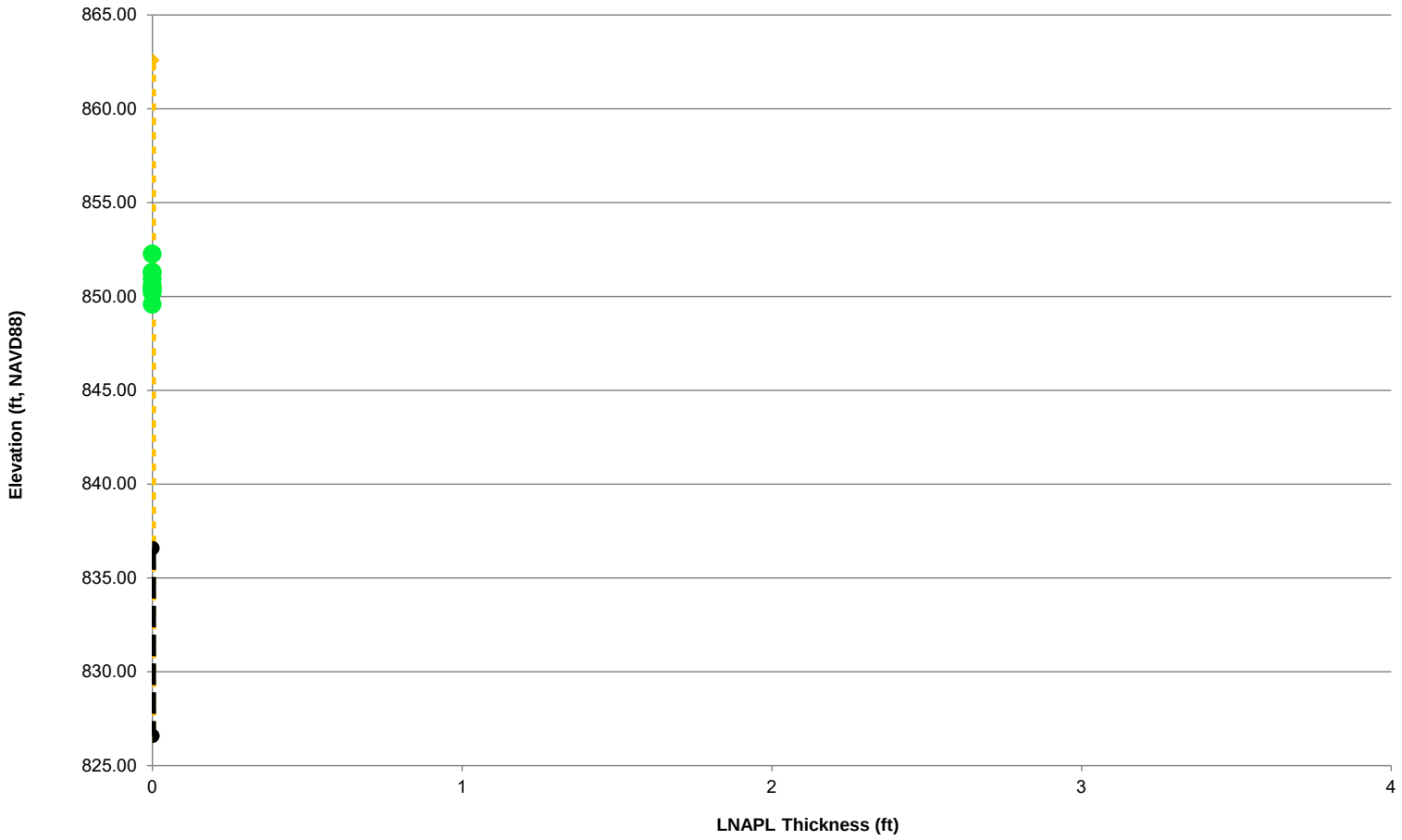
P2-MW-04 HYDROGRAPH

PERCHED

ARCADIS Design & Consultancy for natural and built assets

FIGURE

A

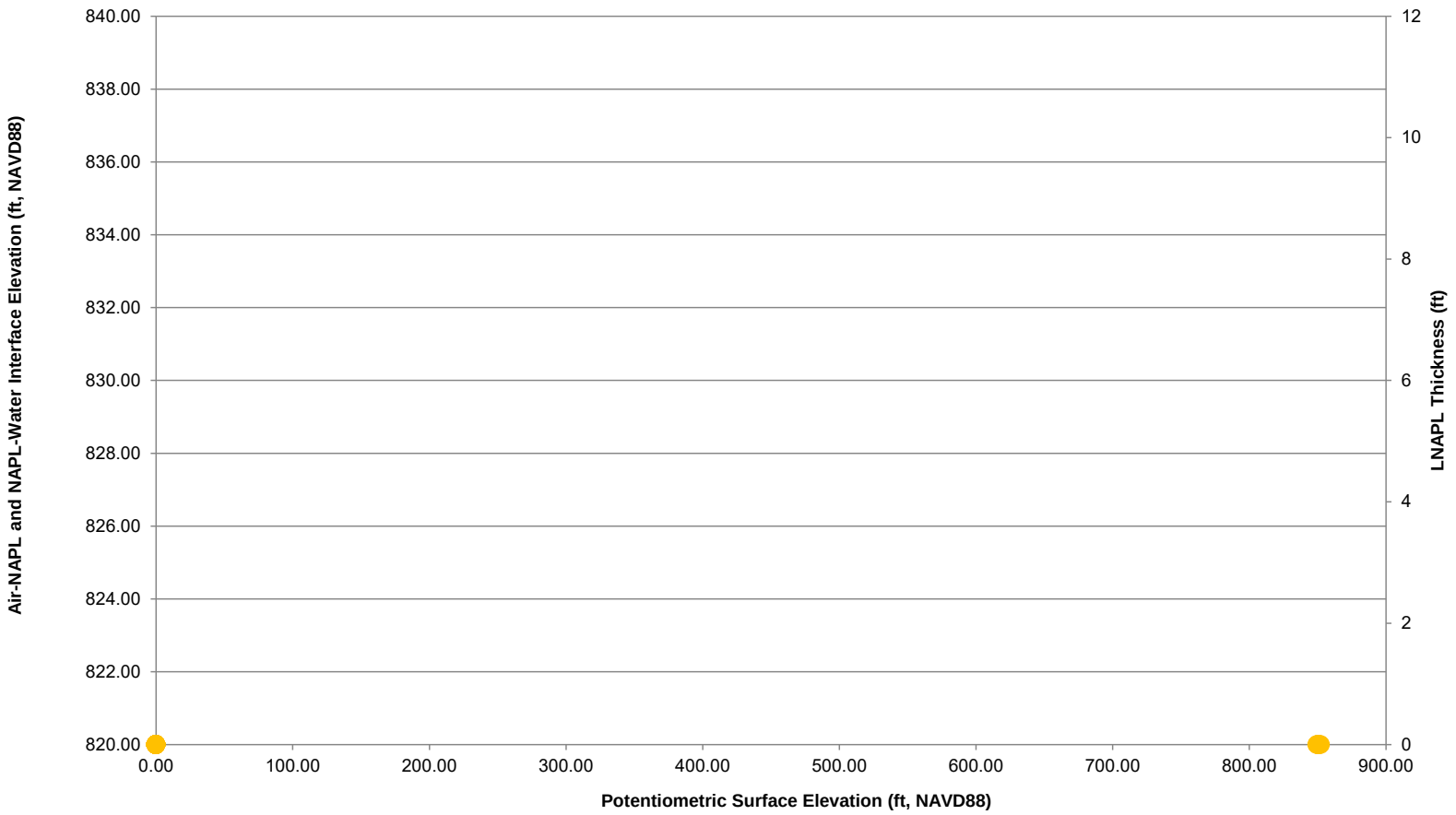


RACER Lansing
Lansing, MI

P2-MW-04 DIAGNOSTIC GAUGE PLOT

ARCADIS Design & Consultancy for natural and built assets

FIGURE
B

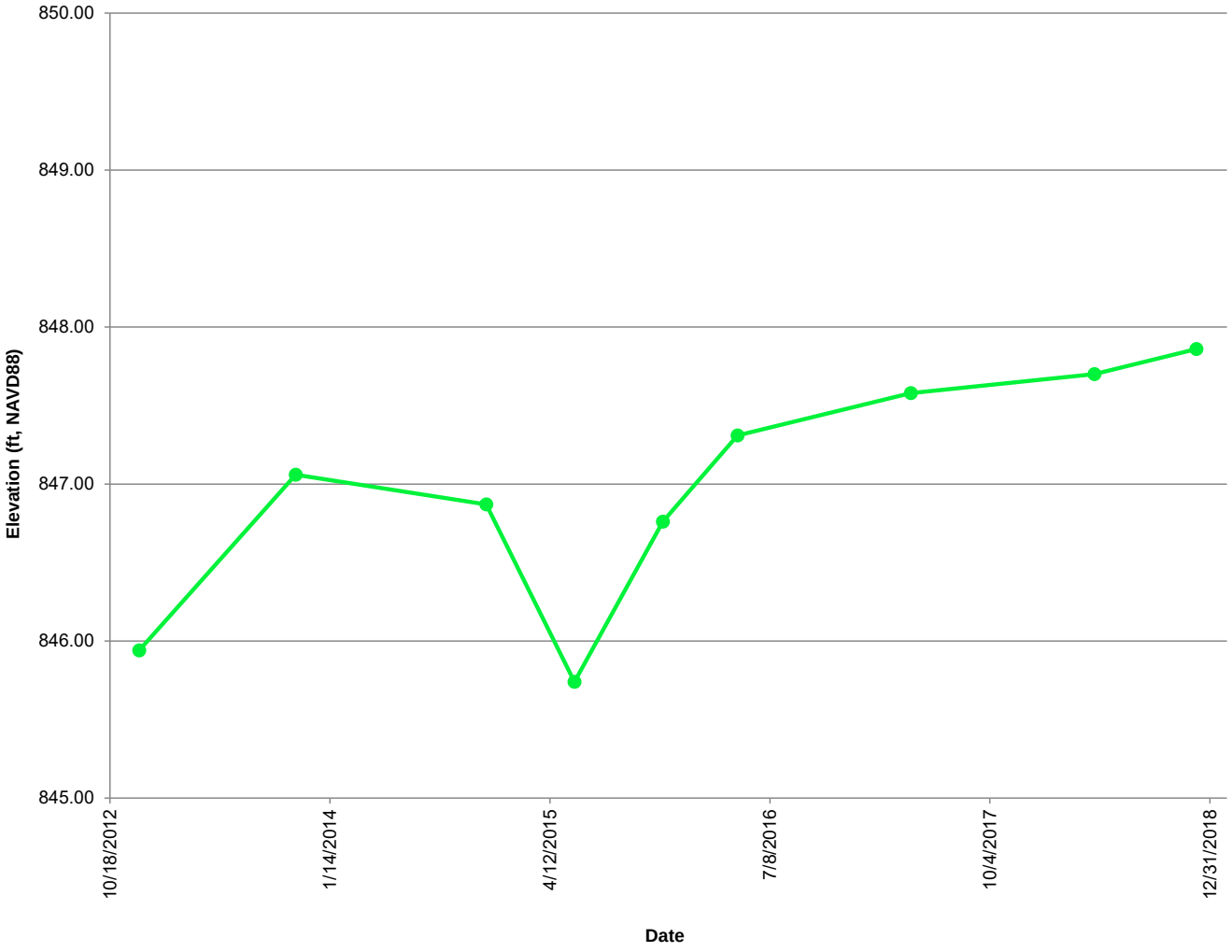


RACER Lansing
Lansing, MI

P2-MW-04 DIAGNOSTIC GAUGE PLOT

ARCADIS Design & Consultancy for natural and built assets

FIGURE
C



RACER Lansing Plant 2
Lansing, MI

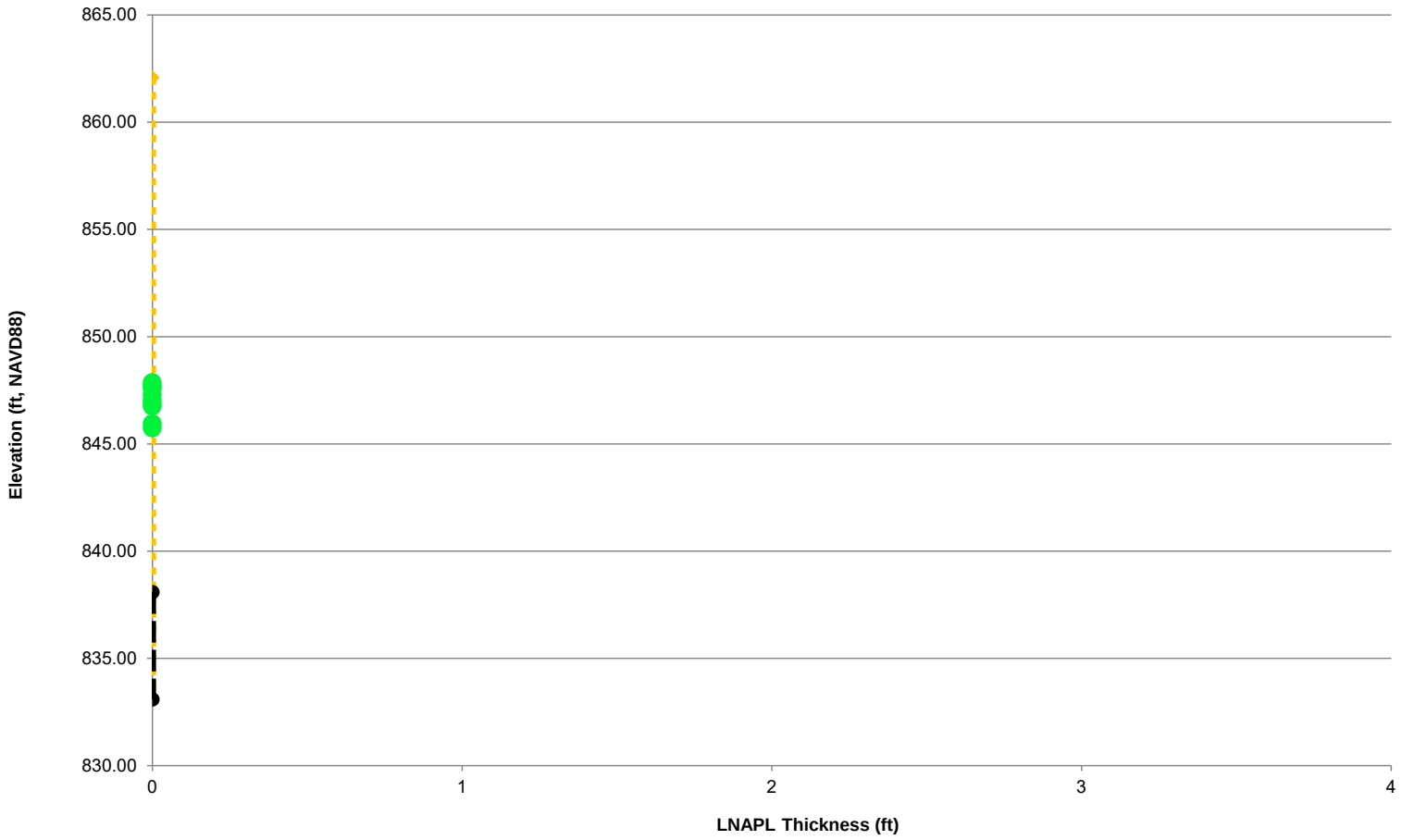
P2-SB-06 HYDROGRAPH

PERCHED

ARCADIS Design & Consultancy for natural and built assets

FIGURE

A



Air-NAPL Interface

NAPL-Water or Air-Water Interface

Potentiometric Surface

Filter Pack

Screened Interval

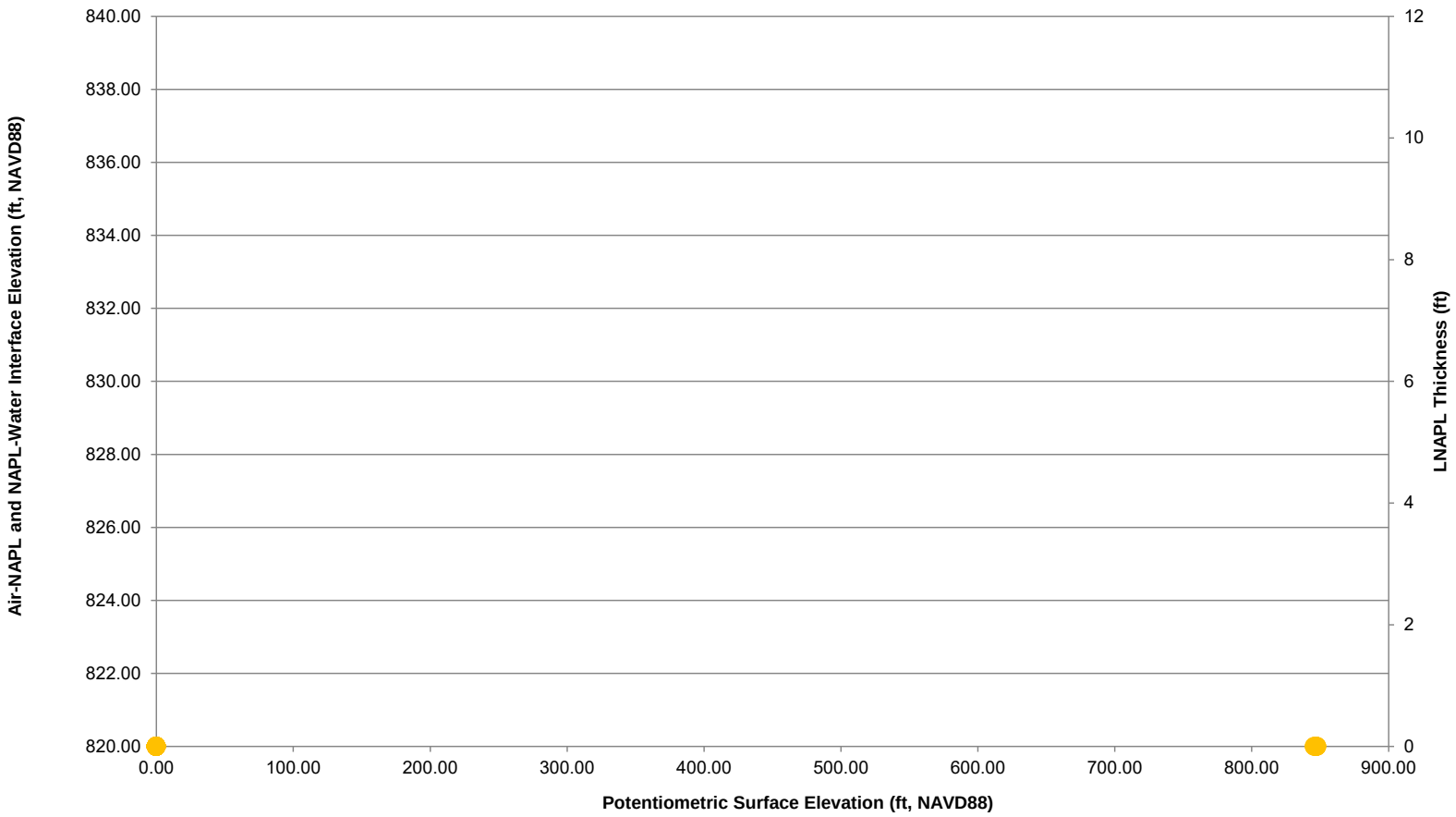
RACER Lansing
Lansing, MI

P2-SB-06 DIAGNOSTIC GAUGE PLOT

ARCADIS Design & Consultancy for natural and built assets

FIGURE

B



RACER Lansing
Lansing, MI

P2-SB-06 DIAGNOSTIC GAUGE PLOT

ARCADIS Design & Consultancy for natural and built assets

FIGURE
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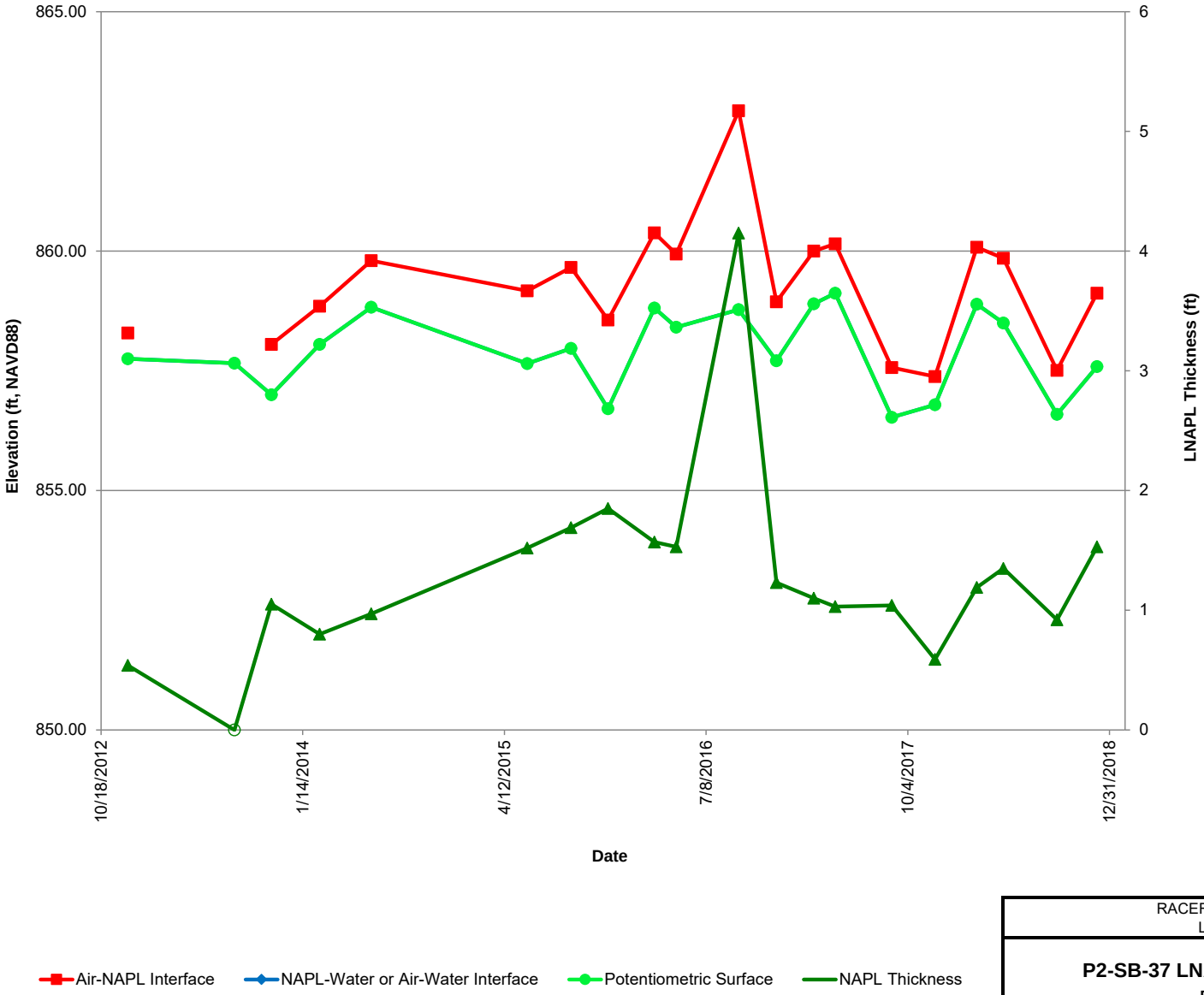
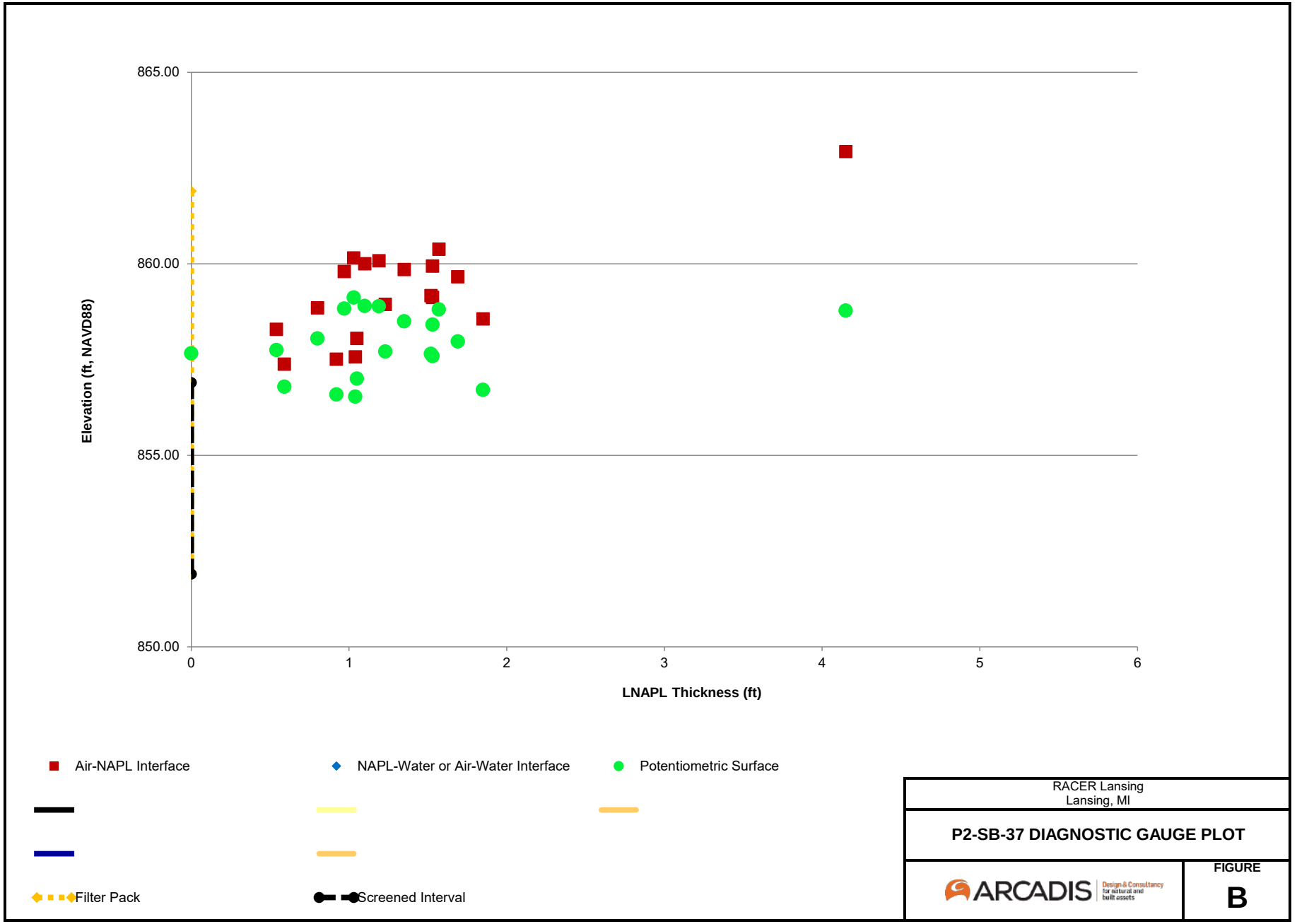


RACER Lansing Plant 2
Lansing, MI

P2-SB-37 LNAPL HYDROGRAPH
PERCHED

ARCADIS Design & Consultancy for natural and built assets

FIGURE
A



RACER Lansing
Lansing, MI

P2-SB-37 DIAGNOSTIC GAUGE PLOT

ARCADIS Design & Consultancy for natural and built assets

FIGURE
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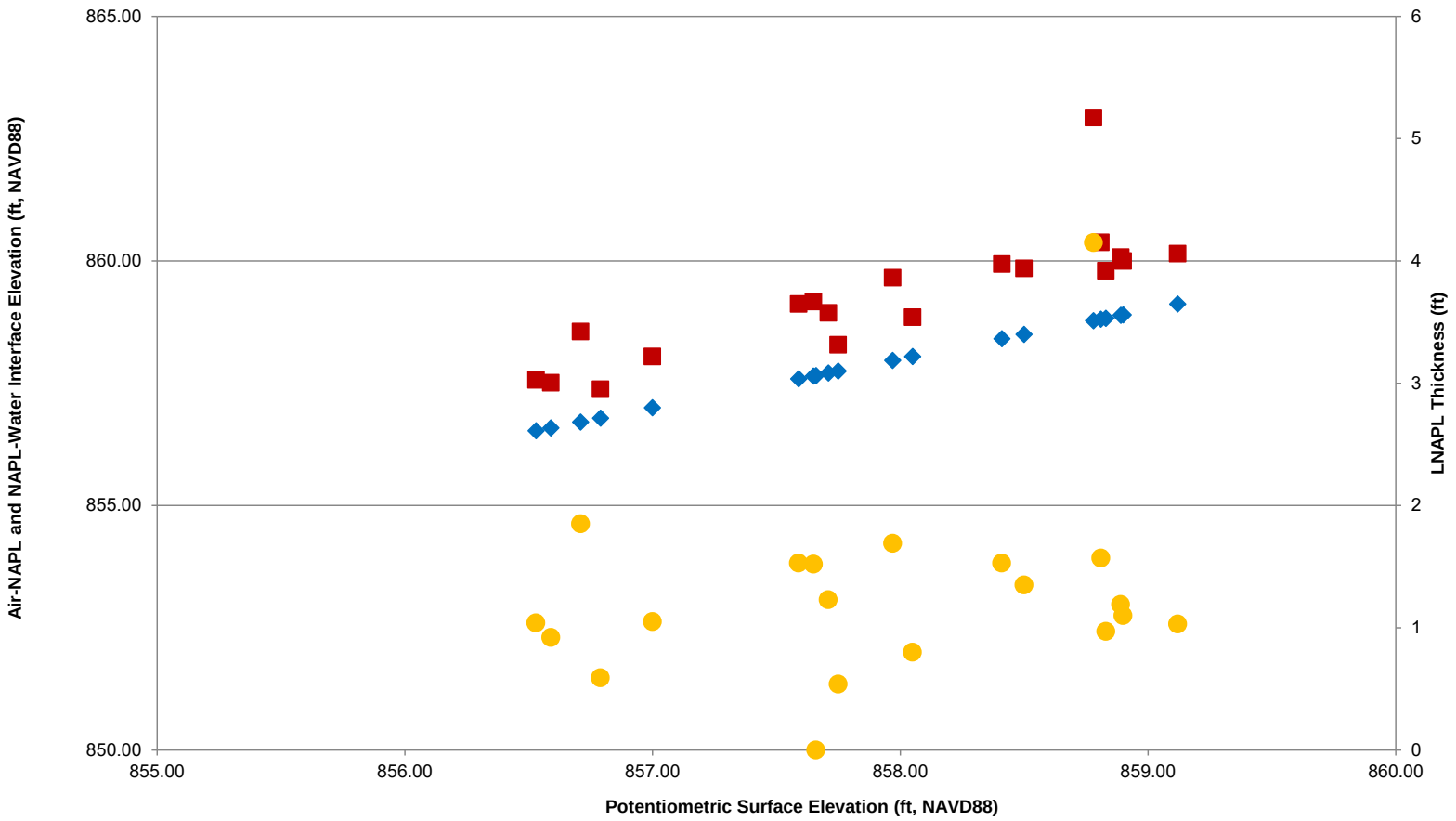

RACER Lansing
Lansing, MI

P2-SB-37 DIAGNOSTIC GAUGE PLOT

ARCADIS Design & Consultancy for natural and built assets

FIGURE
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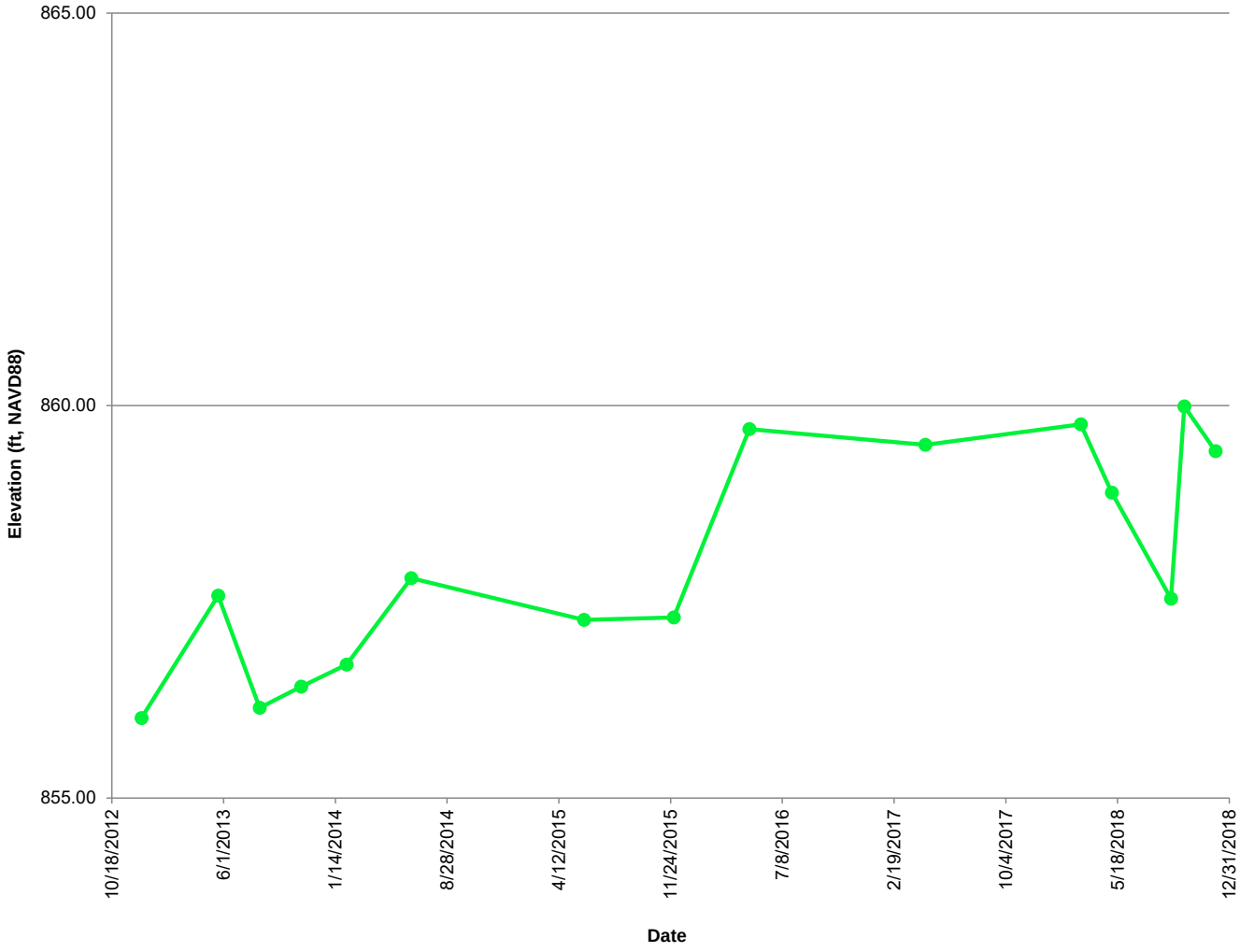


RACER Lansing Plant 3
Lansing, MI

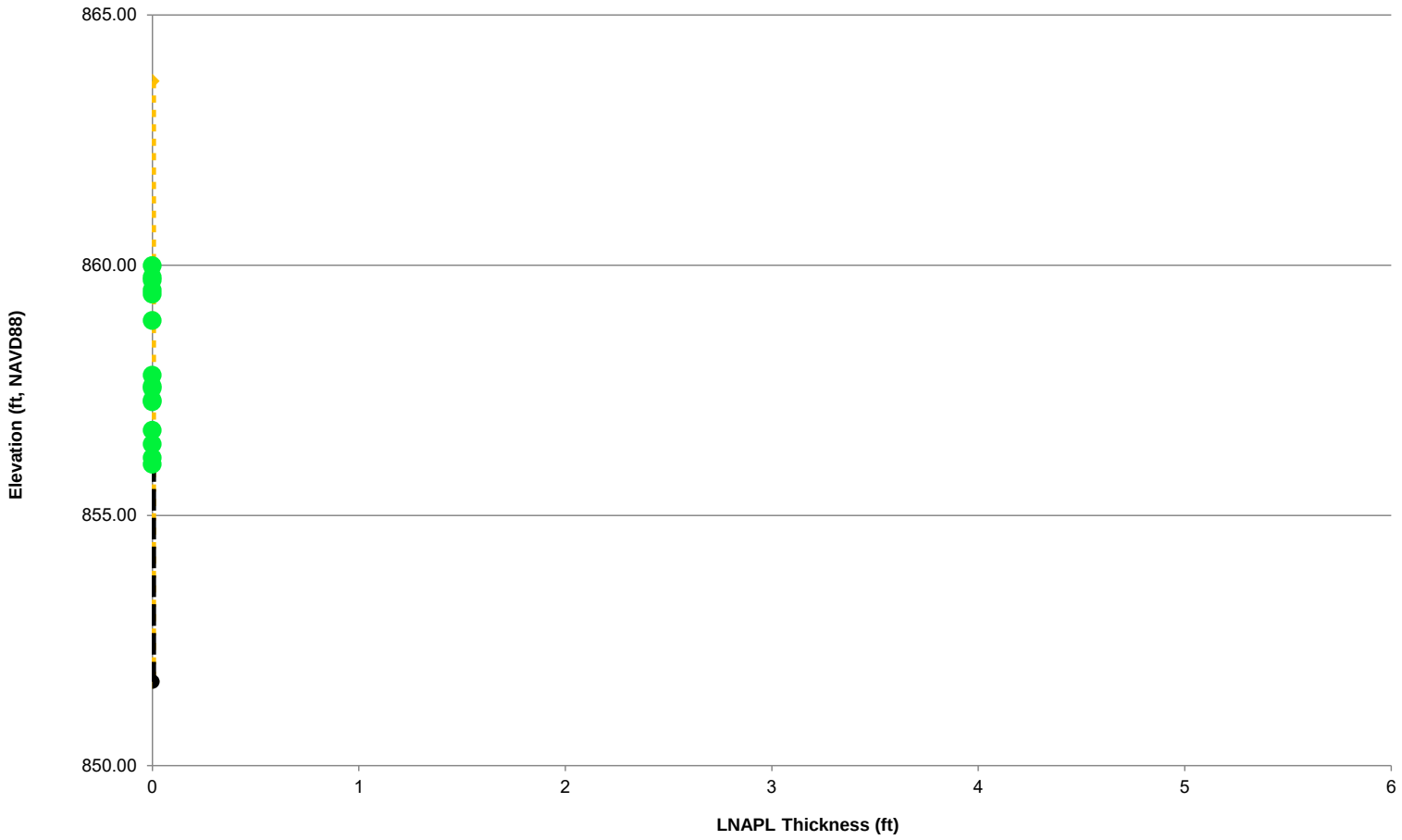
P3-SB-07 HYDROGRAPH

PERCHED

ARCADIS Design & Consultancy for natural and built assets

FIGURE

A

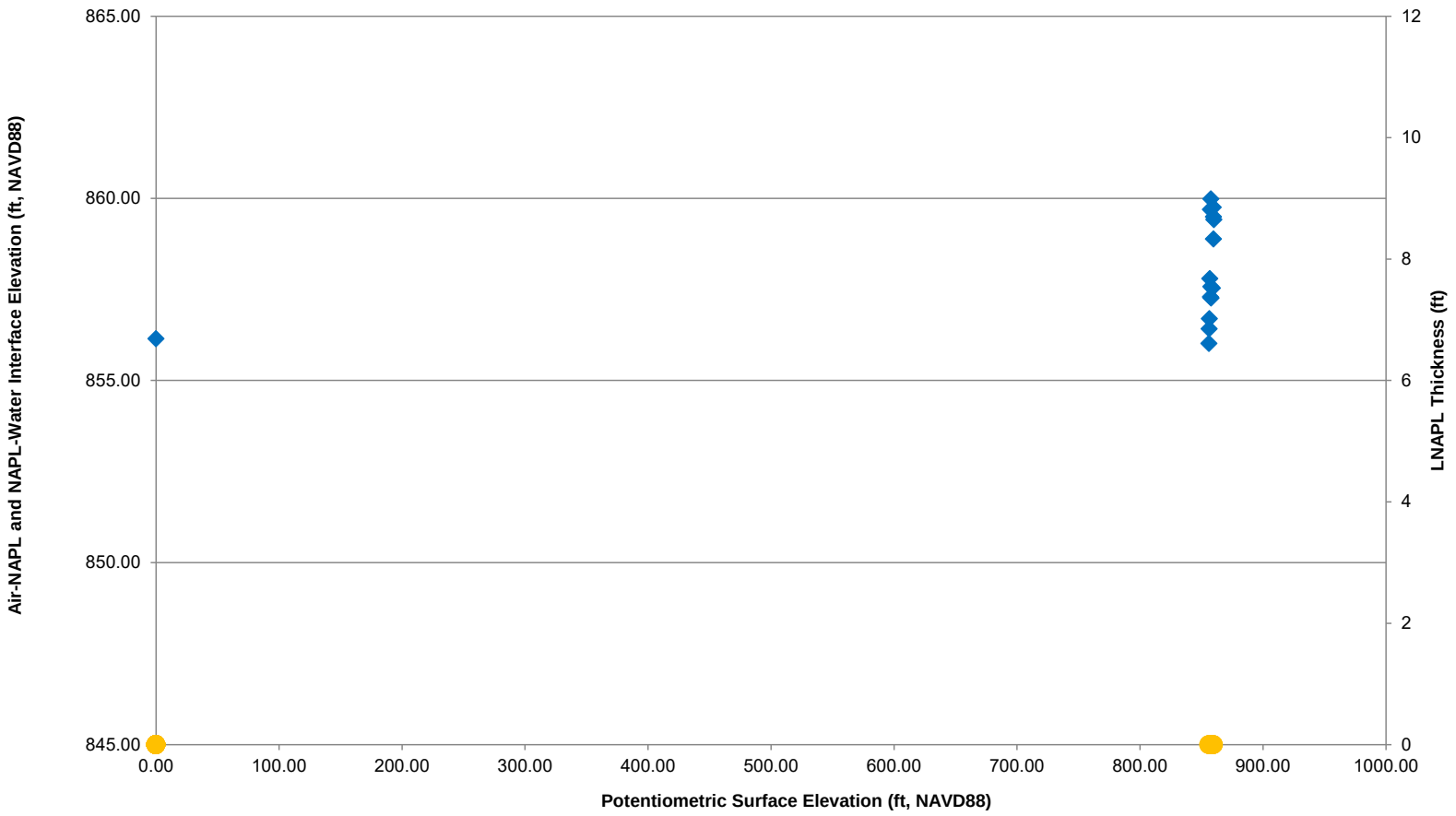


RACER Lansing
Lansing, MI

P3-SB-07 DIAGNOSTIC GAUGE PLOT

ARCADIS Design & Consultancy for natural and built assets

FIGURE
B

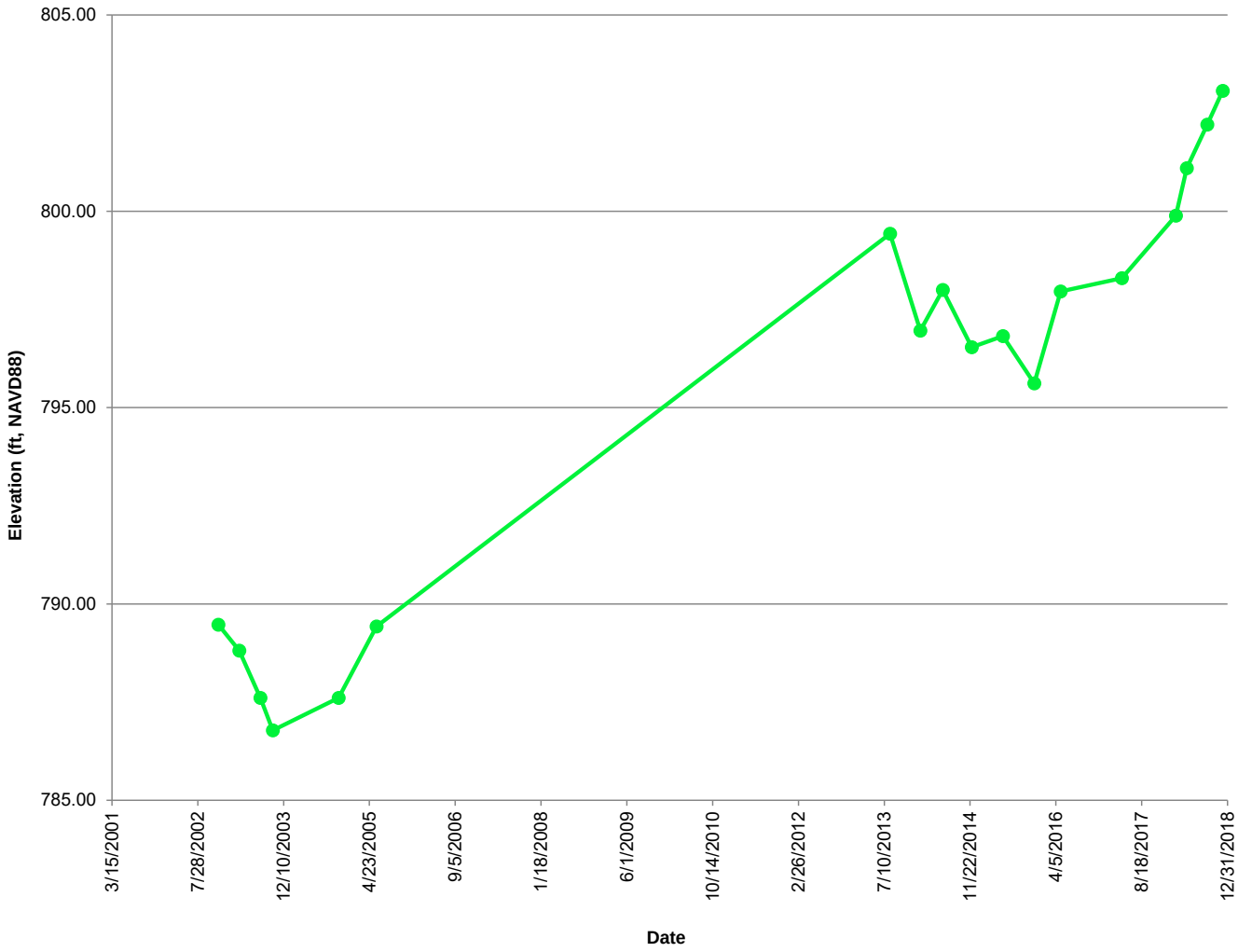


RACER Lansing
Lansing, MI

P3-SB-07 DIAGNOSTIC GAUGE PLOT

ARCADIS Design & Consultancy for natural and built assets

FIGURE
C



RACER Lansing Plant 3
Lansing, MI

MW-02-04(3) HYDROGRAPH

DEEP OVERBURDEN/WEATHERED BEDROCK

ARCADIS Design & Consultancy for natural and built assets

FIGURE

A

RACER Lansing
Lansing, MI

0

ARCADIS Design & Consultancy for natural and built assets

FIGURE

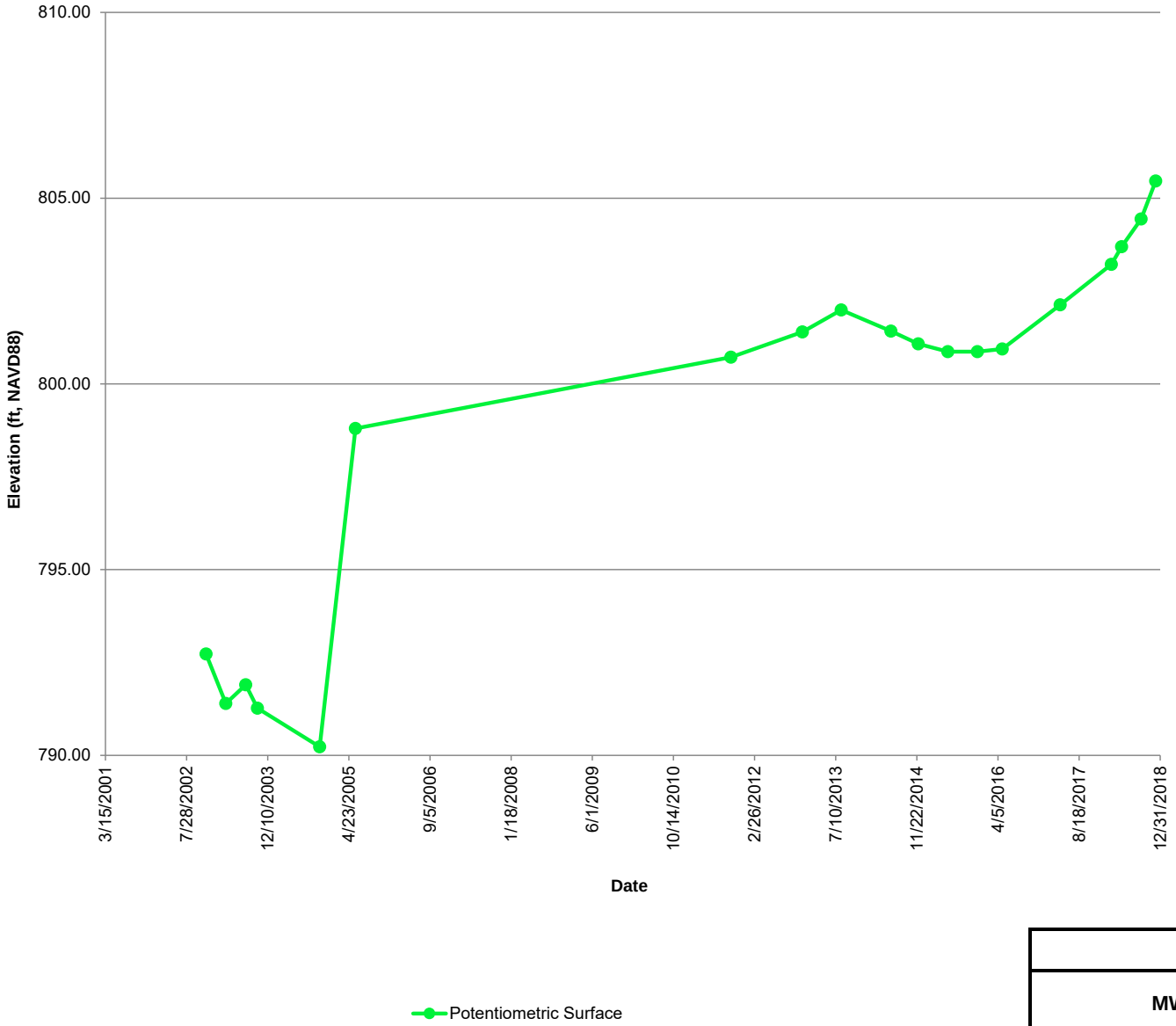
B

RACER Lansing
Lansing, MI

0

ARCADIS Design & Consultancy for natural and built assets

FIGURE
C



RACER Lansing Plant 3
Lansing, MI

MW-91-2 HYDROGRAPH

BEDROCK

ARCADIS Design & Consultancy for natural and built assets

FIGURE

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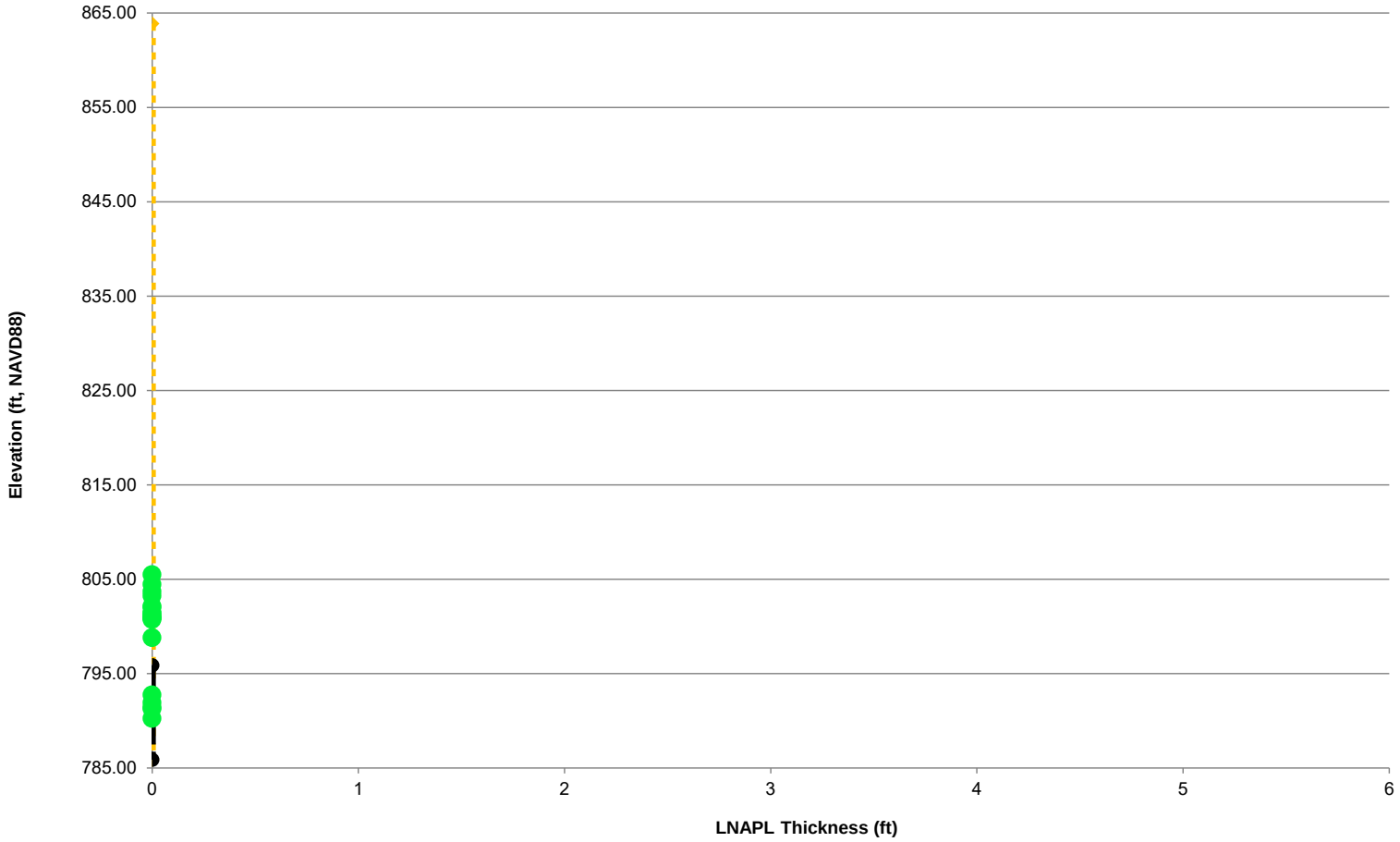


Air-NAPL Interface

NAPL-Water or Air-Water Interface

Potentiometric Surface

Filter Pack

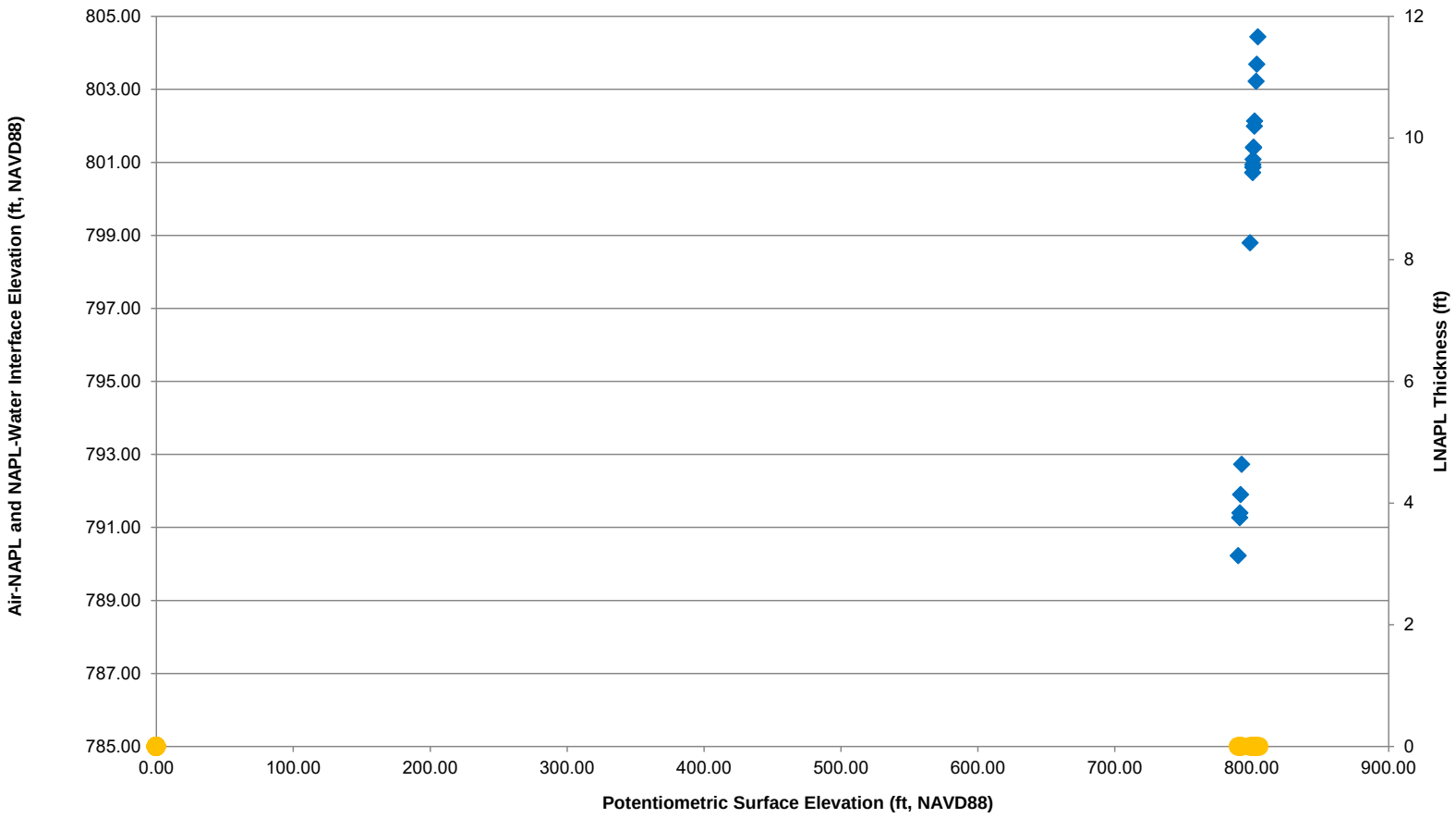
Screened Interval

RACER Lansing
Lansing, MI

MW-91-2 DIAGNOSTIC GAUGE PLOT

ARCADIS Design & Consultancy for natural and built assets

FIGURE
B

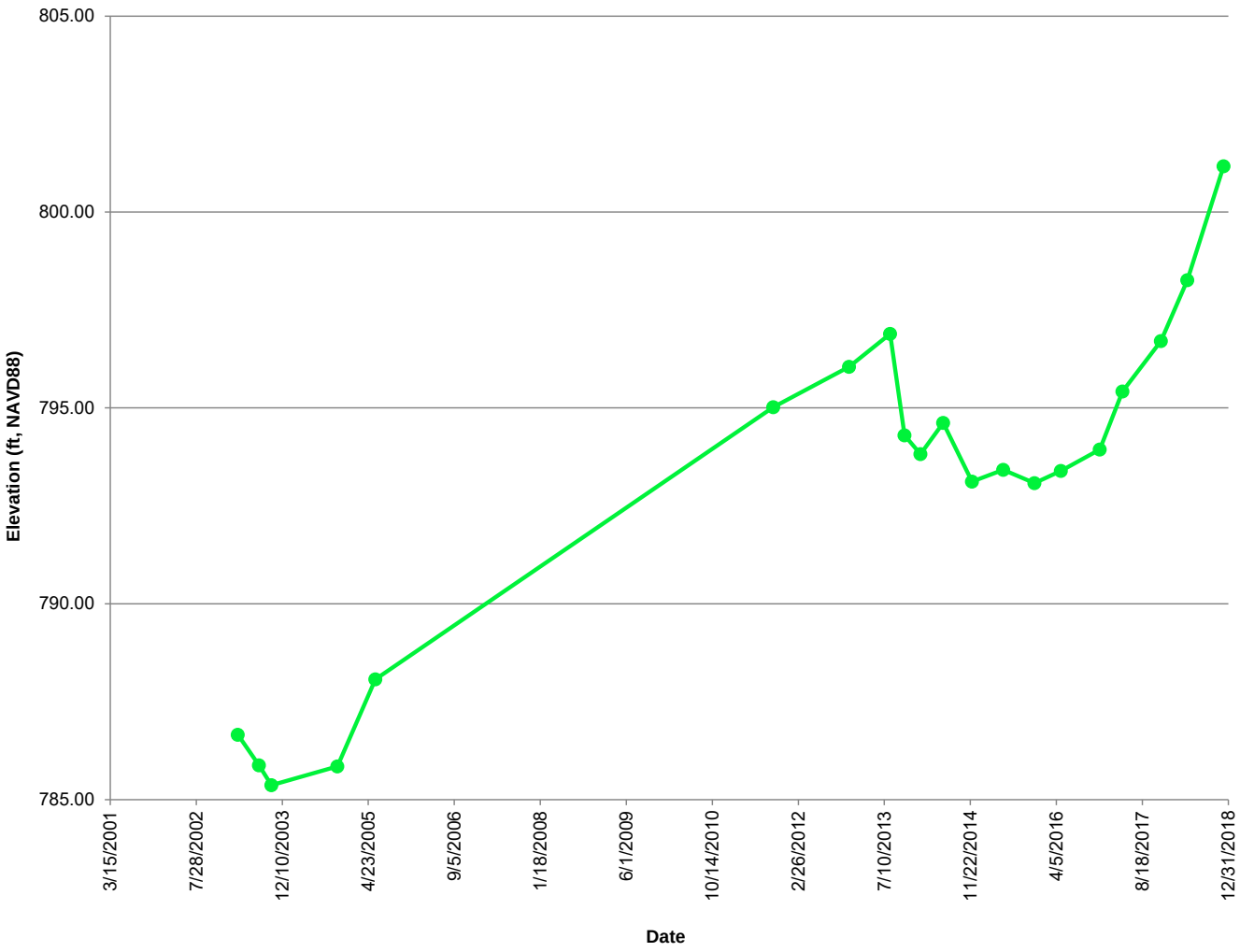


RACER Lansing
Lansing, MI

MW-91-2 DIAGNOSTIC GAUGE PLOT

ARCADIS Design & Consultancy for natural and built assets

FIGURE
C



RACER Lansing Plant 3
Lansing, MI

MW-91-5 HYDROGRAPH

BEDROCK

ARCADIS Design & Consultancy for natural and built assets

FIGURE

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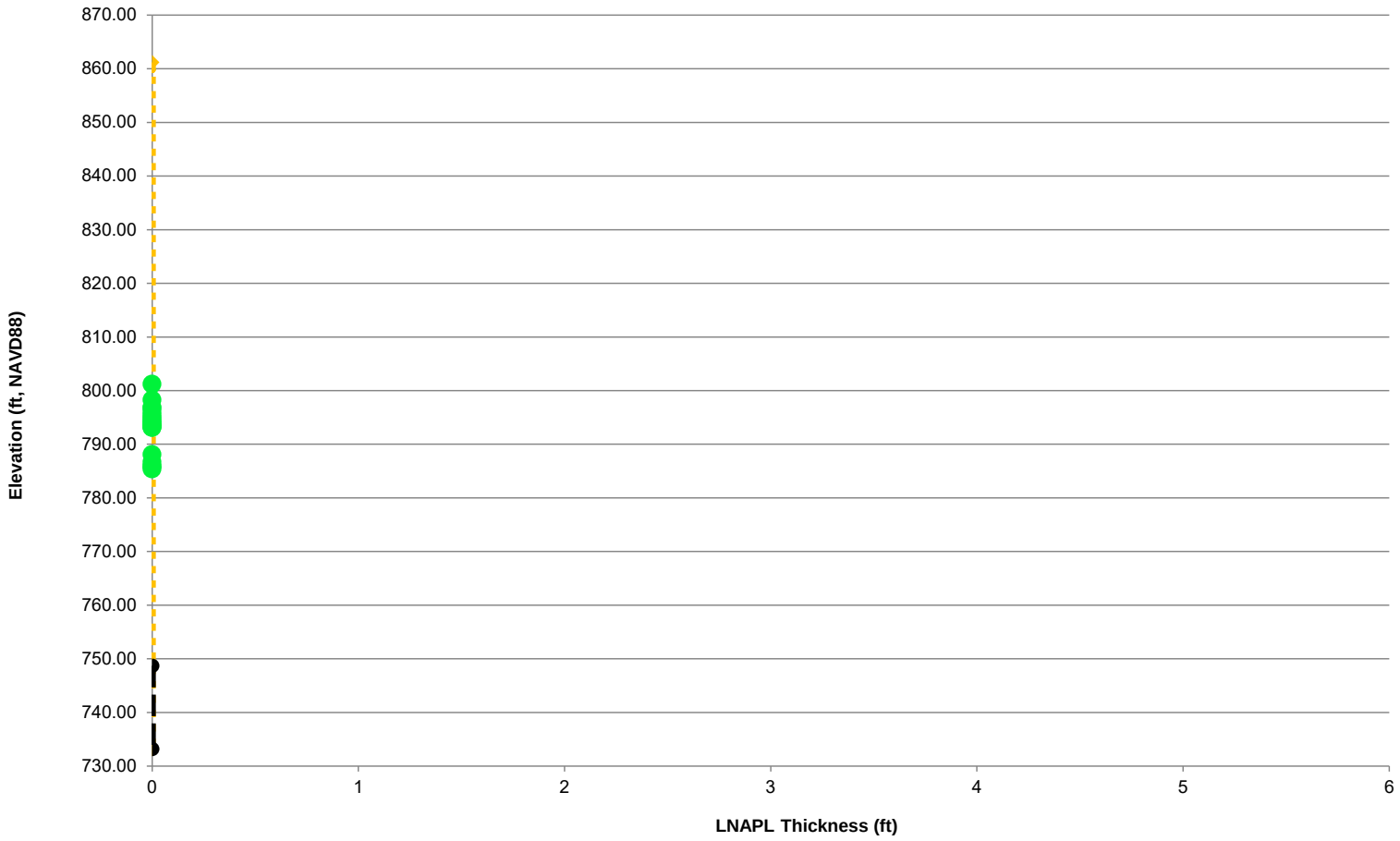

RACER Lansing
Lansing, MI

MW-91-5 DIAGNOSTIC GAUGE PLOT

ARCADIS Design & Consultancy for natural and built assets

FIGURE
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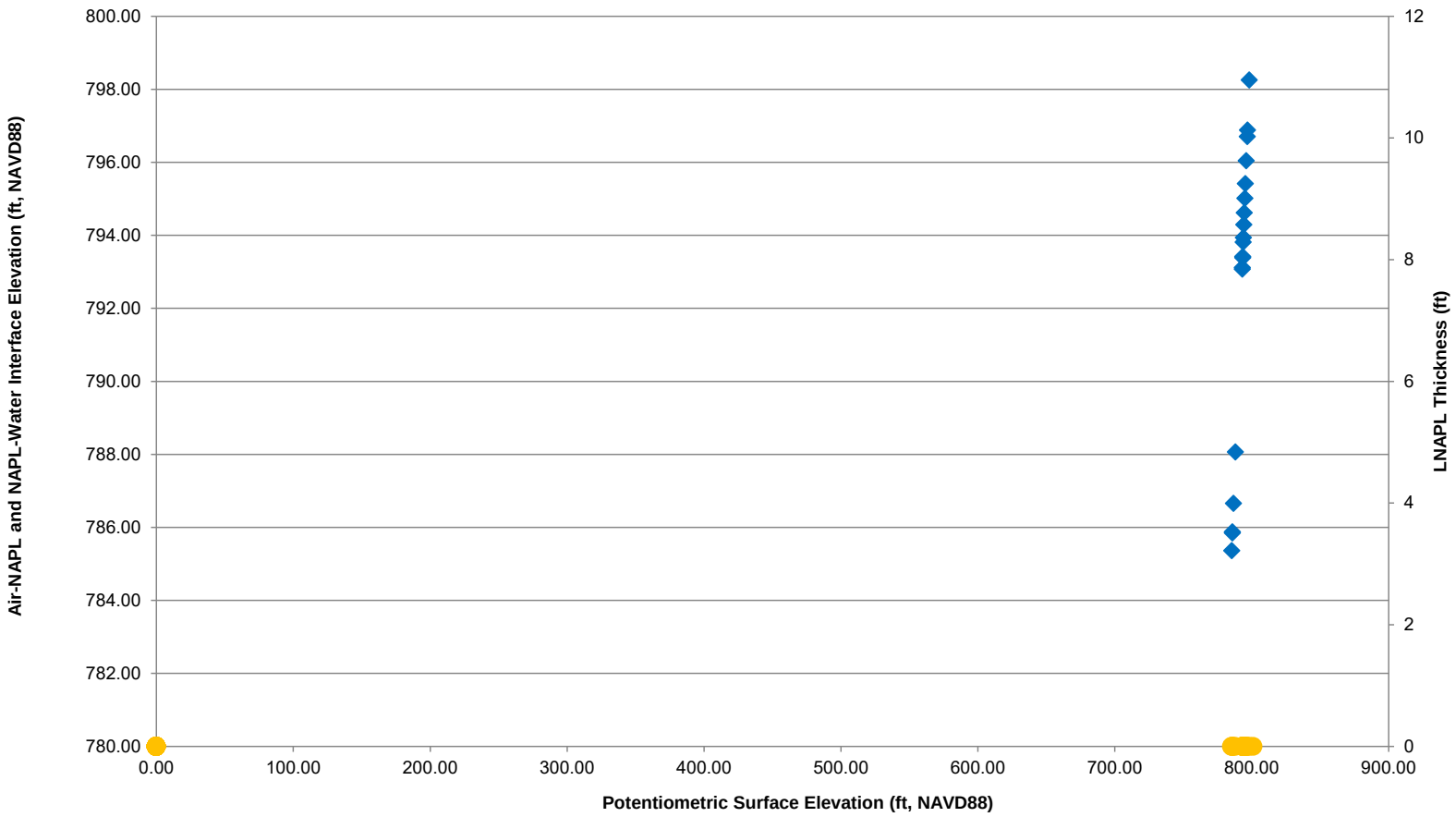
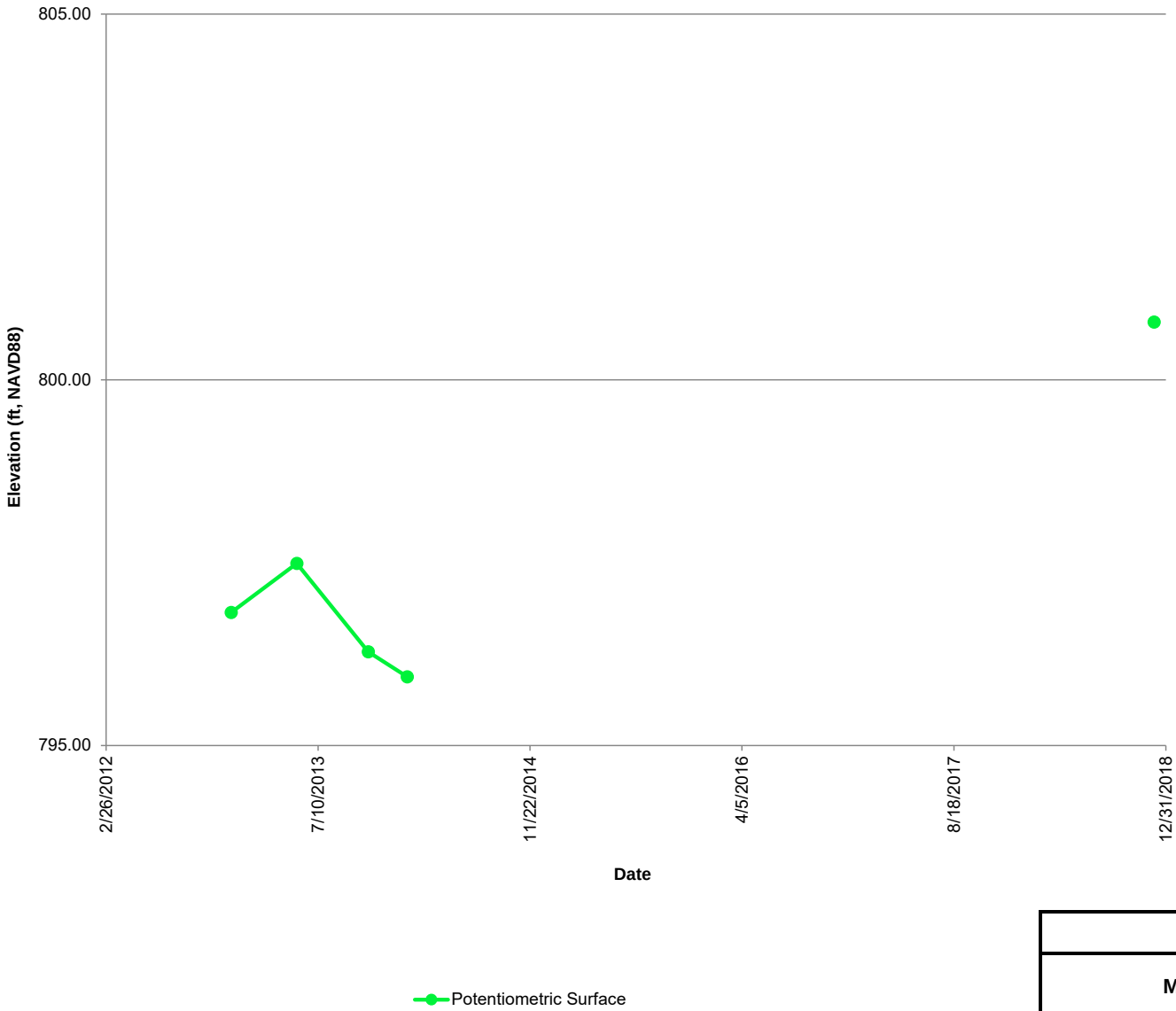


RACER Lansing
Lansing, MI

MW-91-5 DIAGNOSTIC GAUGE PLOT

ARCADIS Design & Consultancy for natural and built assets

FIGURE
C



RACER Lansing Plant 3
Lansing, MI

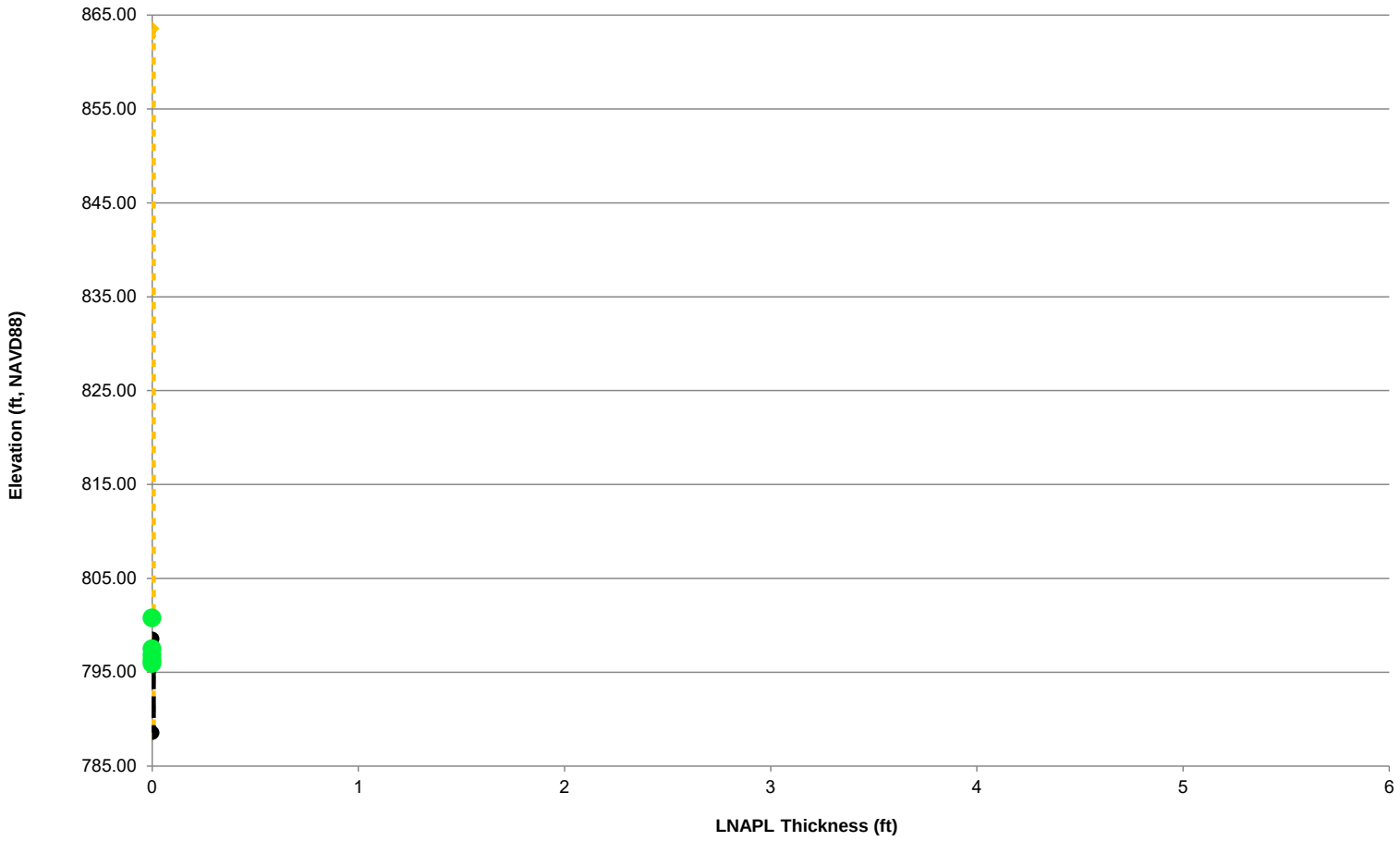
MW-93-1 HYDROGRAPH

BEDROCK

ARCADIS Design & Consultancy for natural and built assets

FIGURE

A



RACER Lansing
Lansing, MI

MW-93-1 DIAGNOSTIC GAUGE PLOT

ARCADIS Design & Consultancy for natural and built assets

FIGURE
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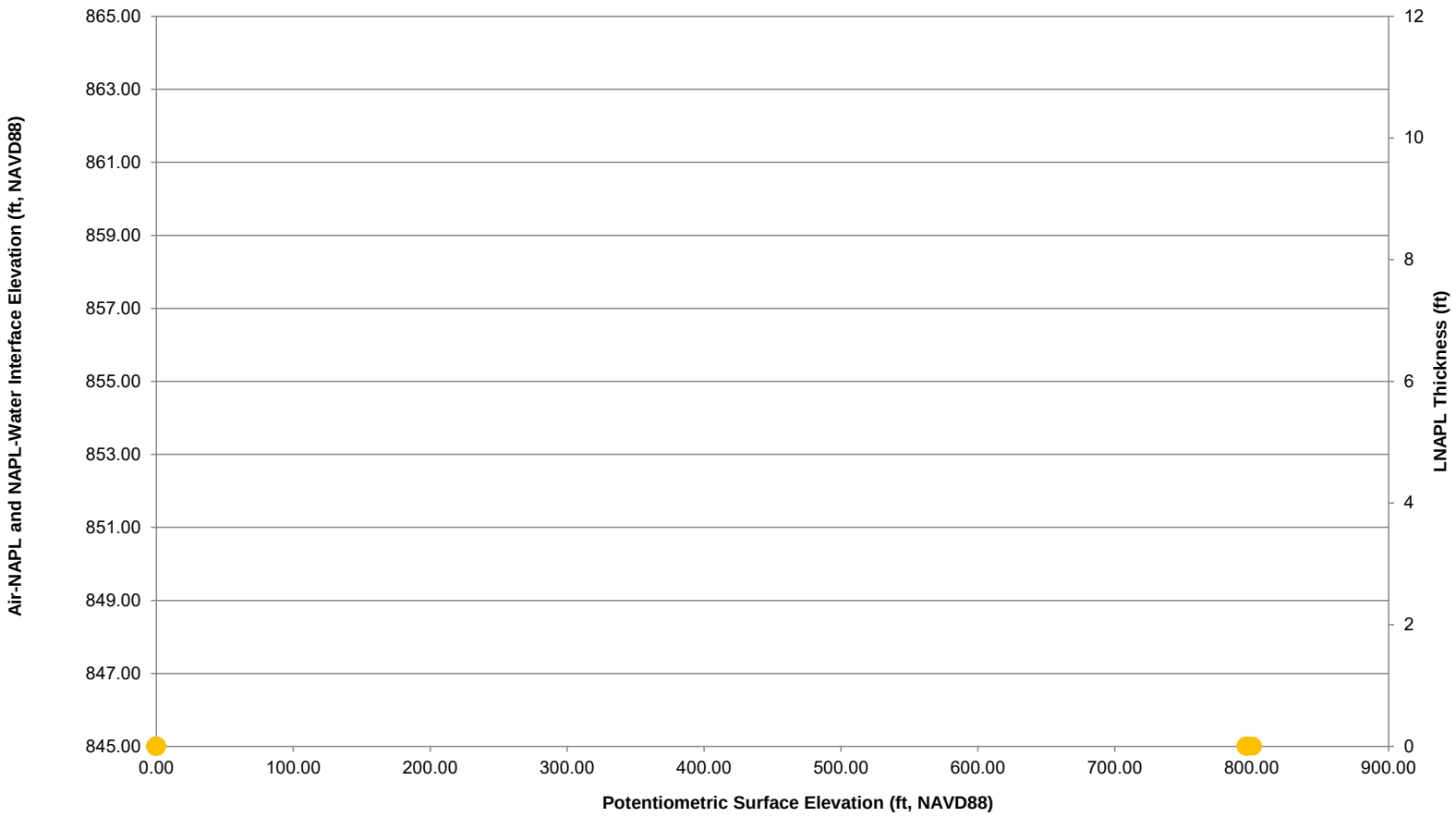
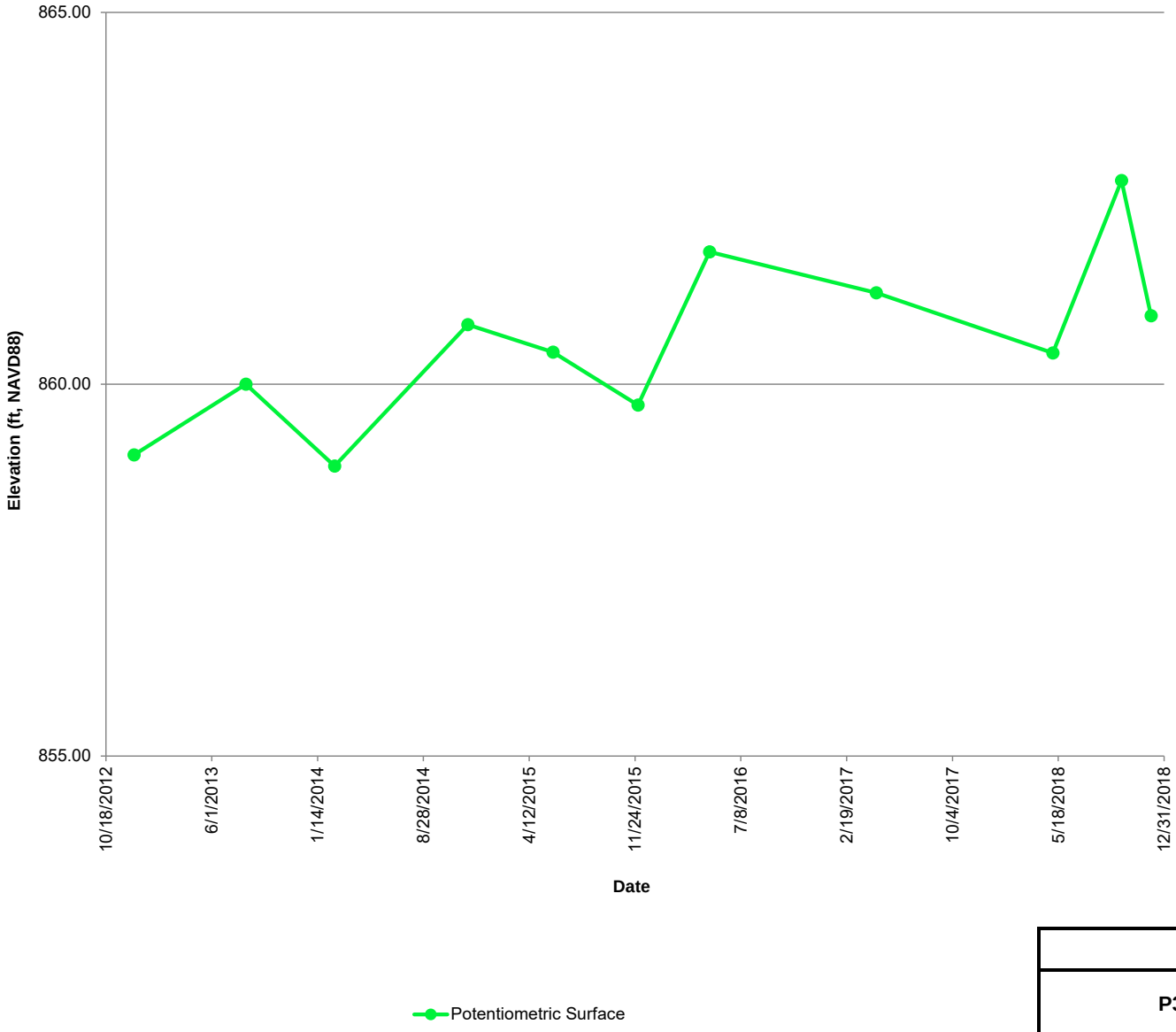


RACER Lansing
Lansing, MI

MW-93-1 DIAGNOSTIC GAUGE PLOT

ARCADIS Design & Consultancy for natural and built assets

FIGURE
C



RACER Lansing Plant 3
Lansing, MI

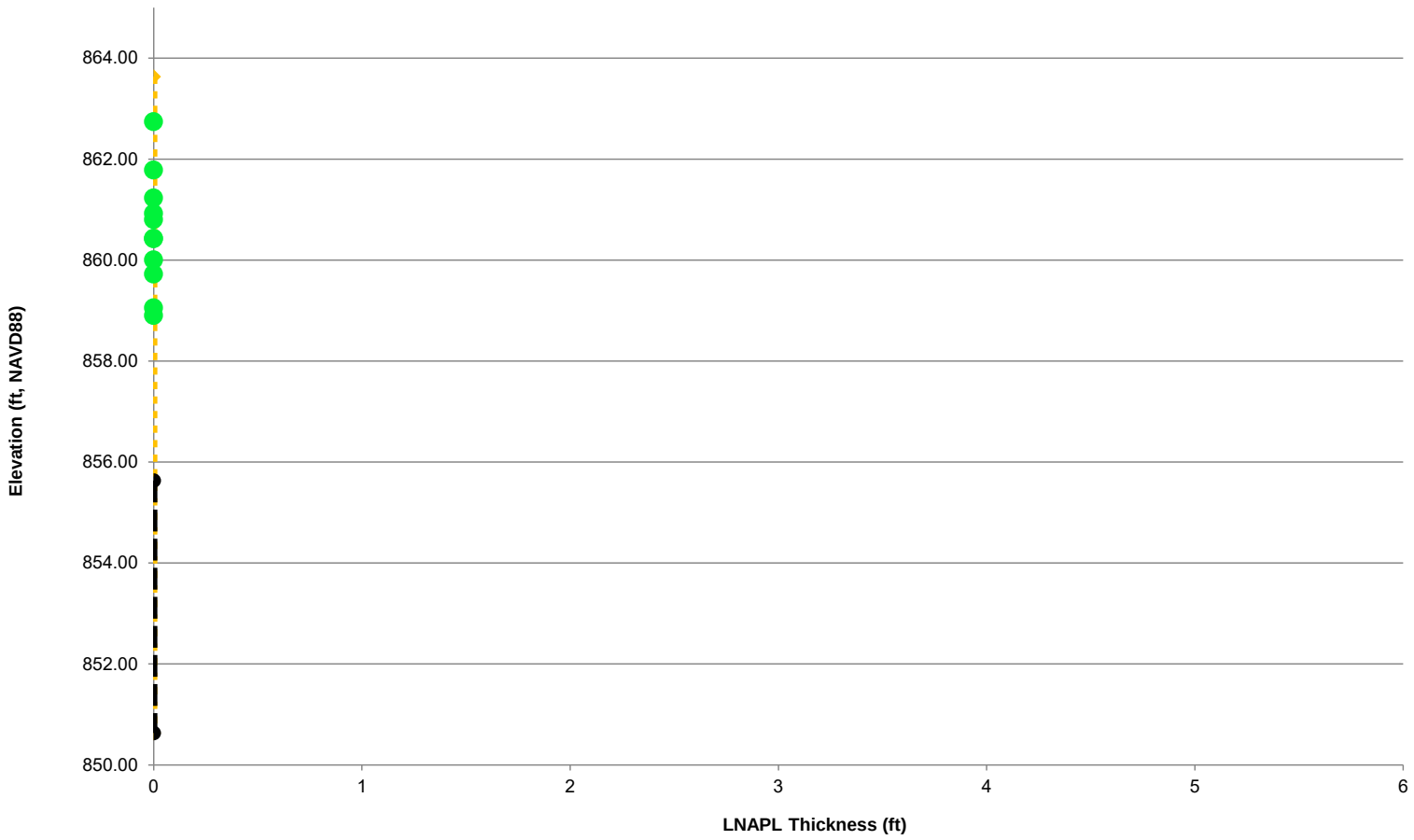
P3-SB-28 HYDROGRAPH

PERCHED

ARCADIS Design & Consultancy for natural and built assets

FIGURE

A



Air-NAPL Interface

NAPL-Water or Air-Water Interface

Potentiometric Surface

Filter Pack

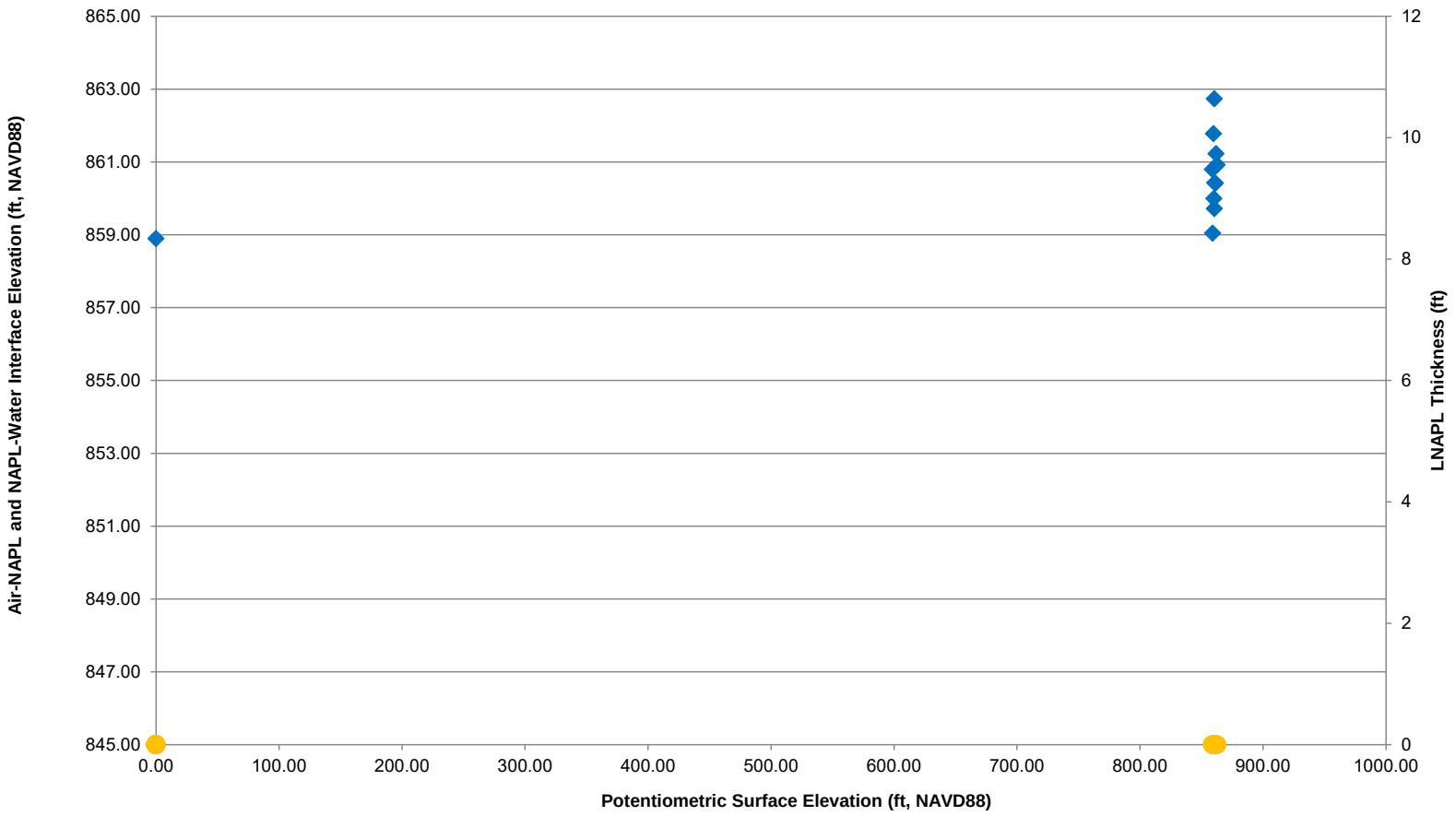
Screened Interval

RACER Lansing
Lansing, MI

P3-SB-28 DIAGNOSTIC GAUGE PLOT

ARCADIS Design & Consultancy for natural and built assets

FIGURE
B



RACER Lansing
Lansing, MI

P3-SB-28 DIAGNOSTIC GAUGE PLOT

ARCADIS Design & Consultancy for natural and built assets

FIGURE
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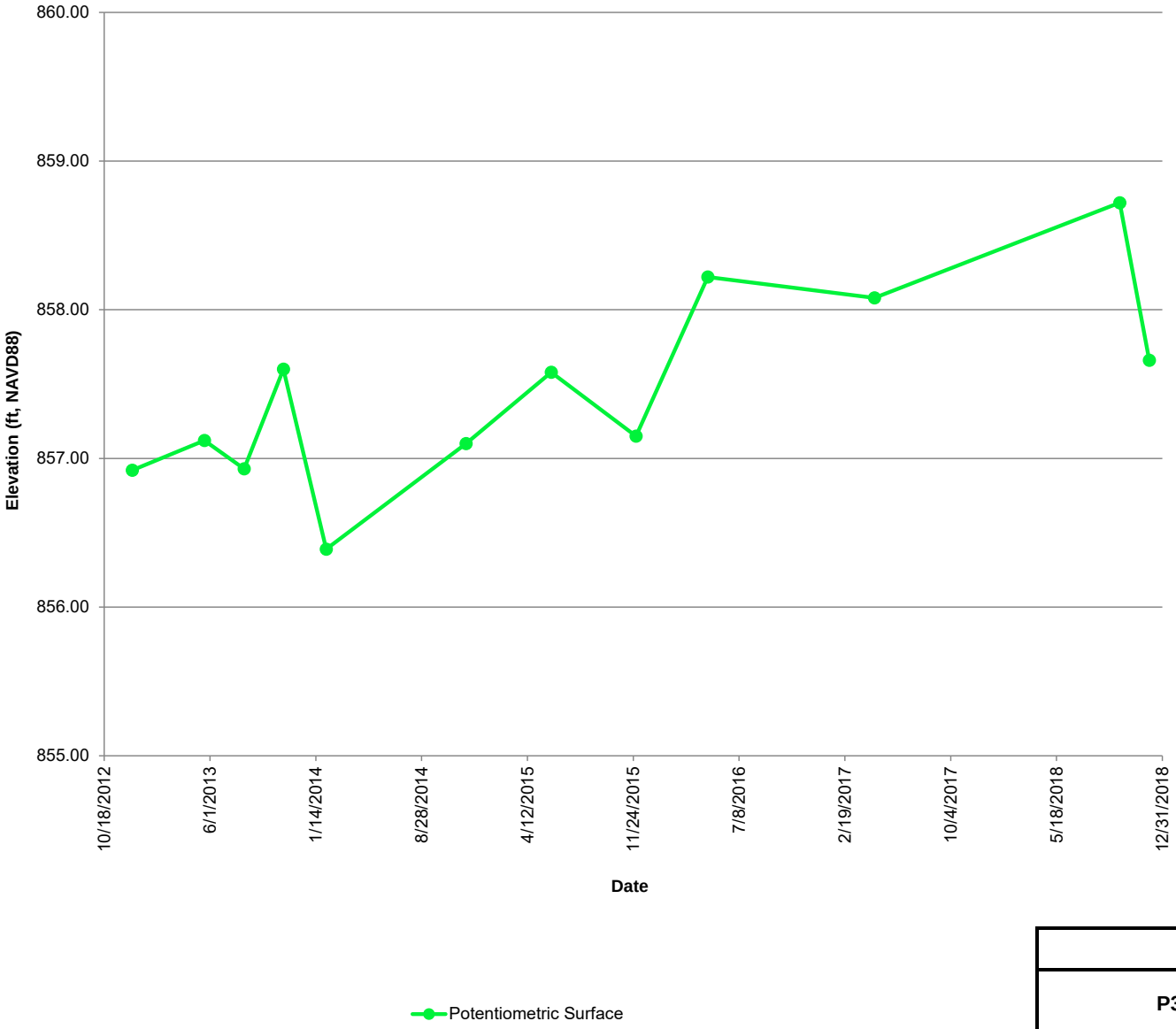

RACER Lansing Plant 3
Lansing, MI

P3-SB-07 HYDROGRAPH

PERCHED

ARCADIS Design & Consultancy for natural and built assets

FIGURE

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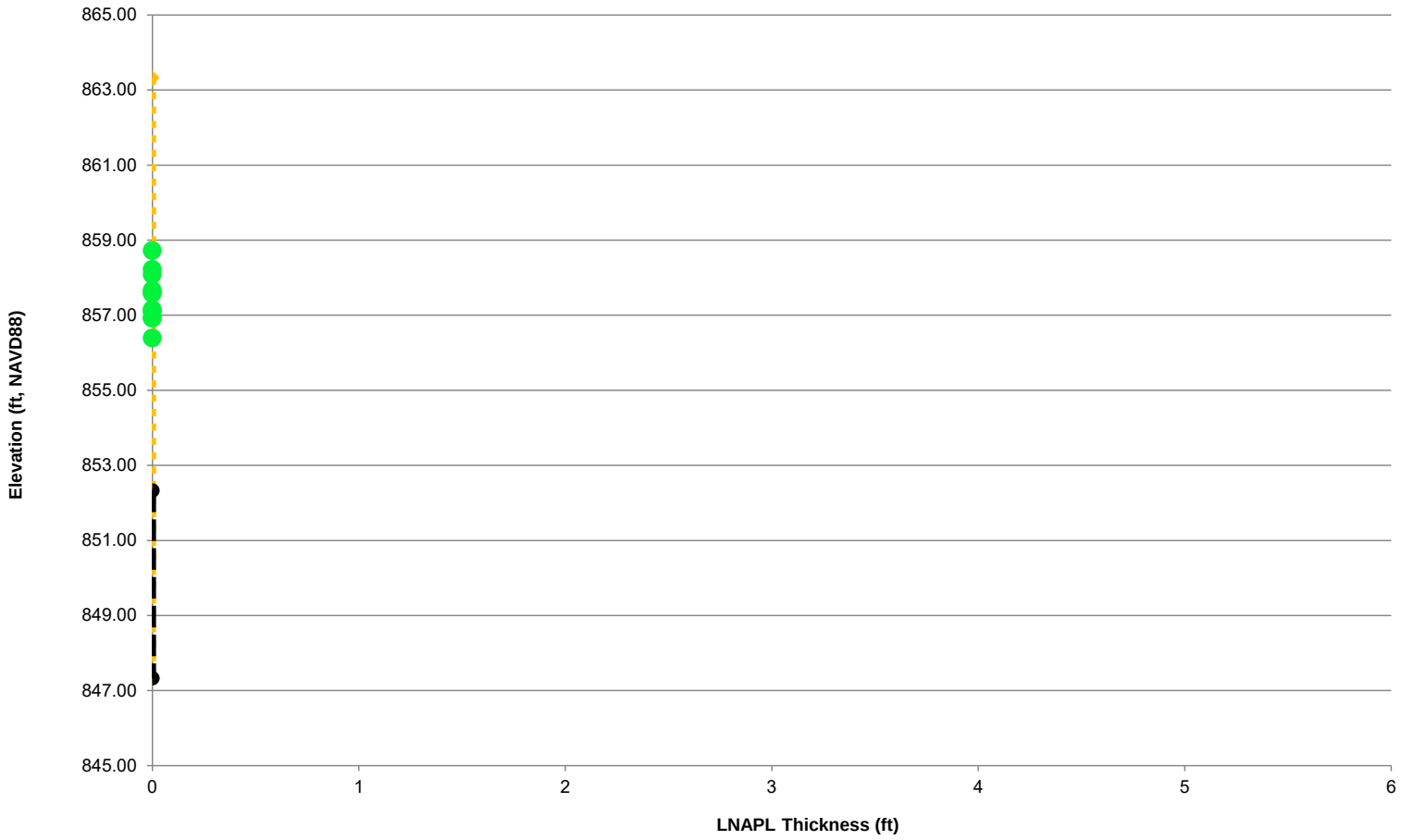
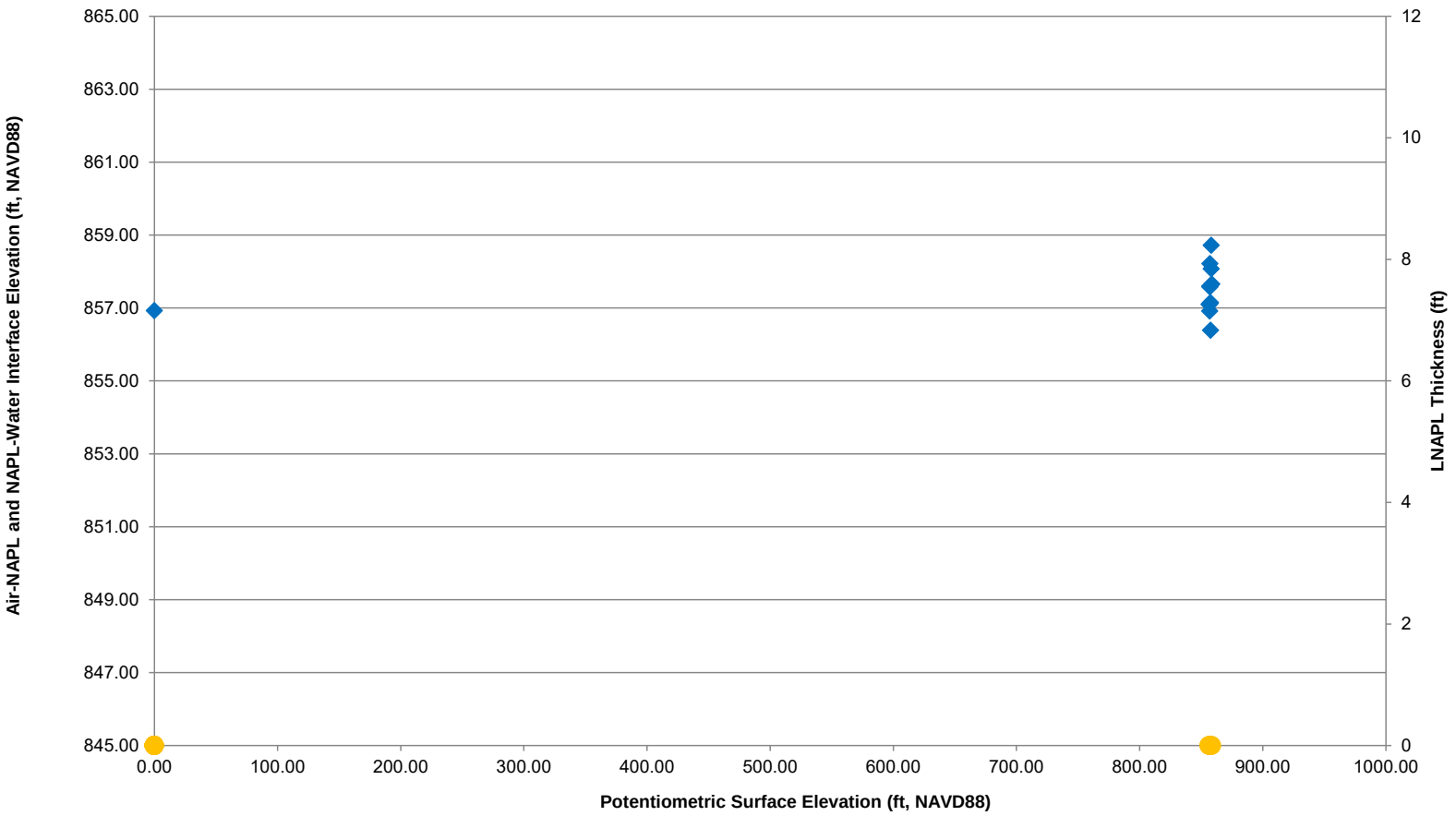


RACER Lansing
Lansing, MI

P3-SB-07 DIAGNOSTIC GAUGE PLOT

ARCADIS Design & Consultancy for natural and built assets

FIGURE
B

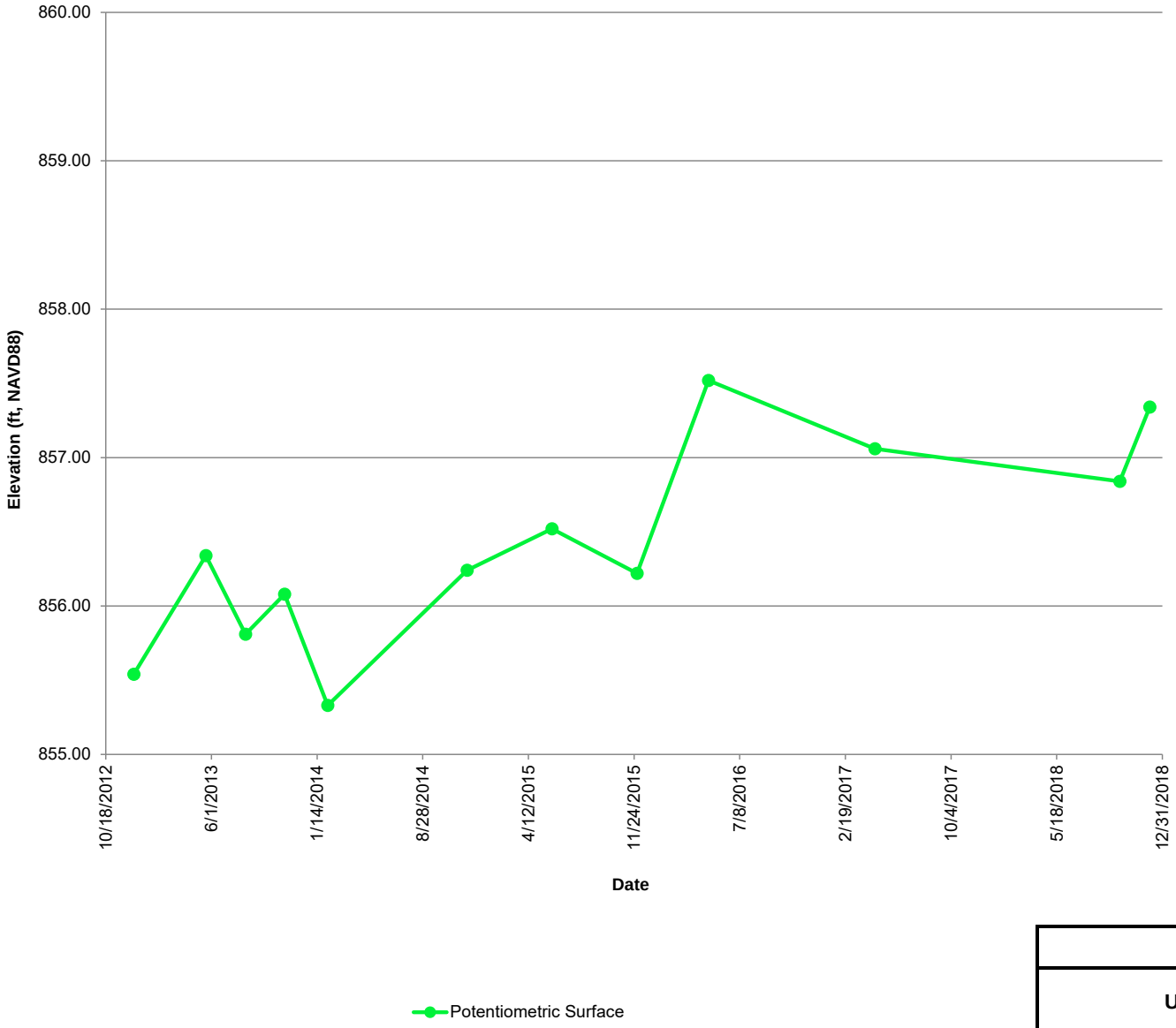


RACER Lansing
Lansing, MI

P3-SB-07 DIAGNOSTIC GAUGE PLOT

ARCADIS Design & Consultancy for natural and built assets

FIGURE
C



RACER Lansing Plant 3
Lansing, MI

UNK-15 HYDROGRAPH

PERCHED

ARCADIS Design & Consultancy for natural and built assets

FIGURE

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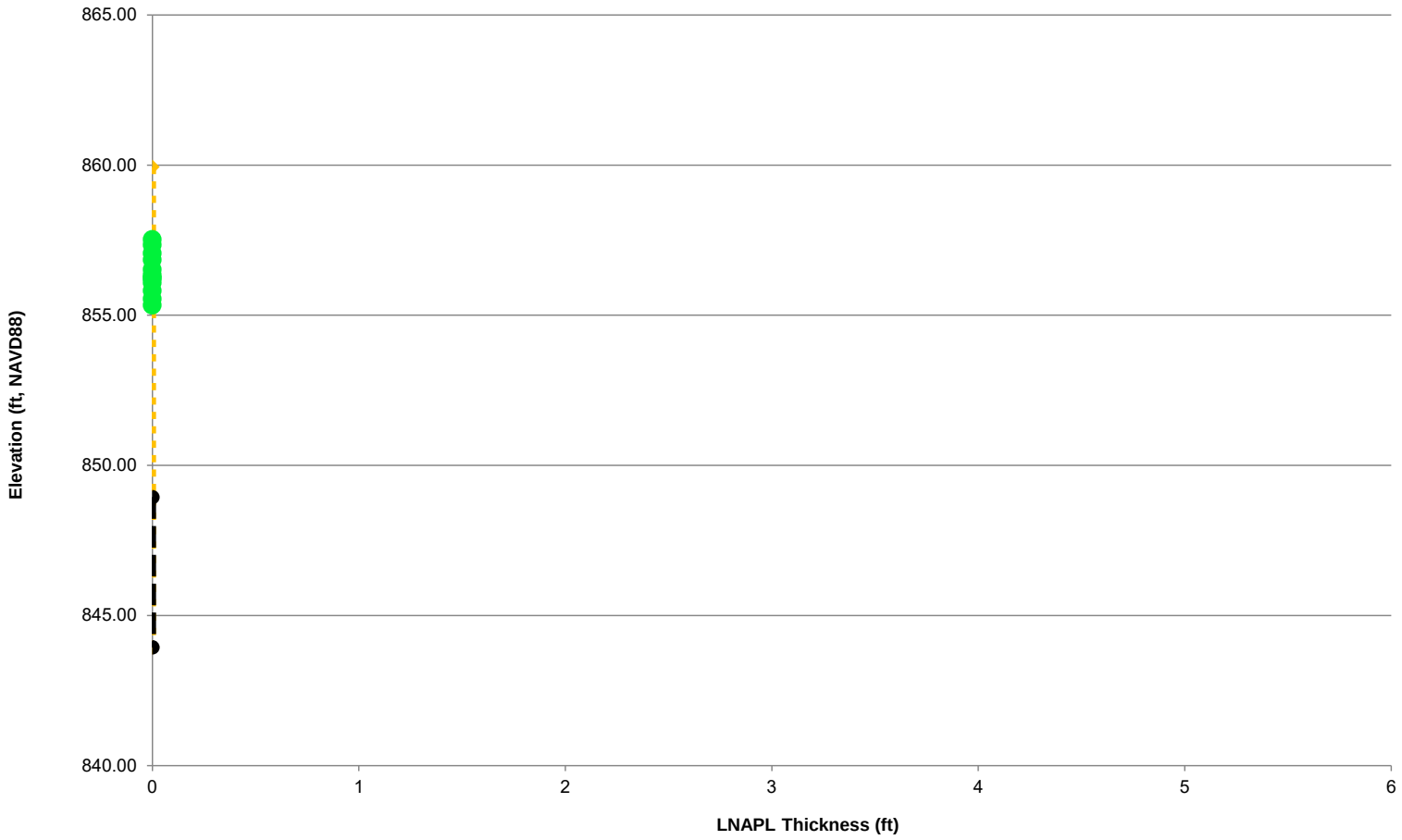


Air-NAPL Interface

NAPL-Water or Air-Water Interface

Potentiometric Surface

Filter Pack

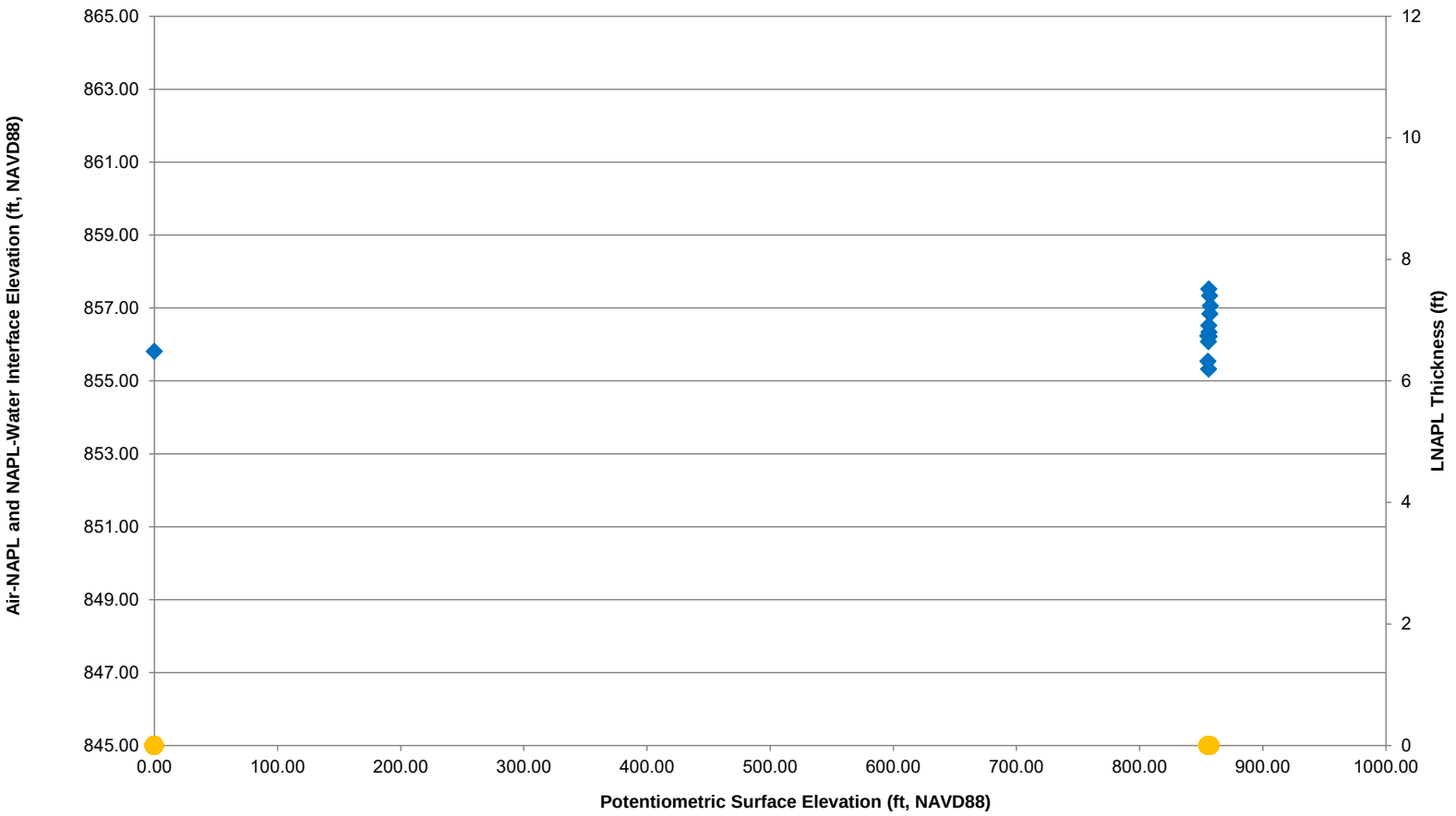
Screened Interval

RACER Lansing
Lansing, MI

UNK-15 DIAGNOSTIC GAUGE PLOT

ARCADIS Design & Consultancy for natural and built assets

FIGURE
B

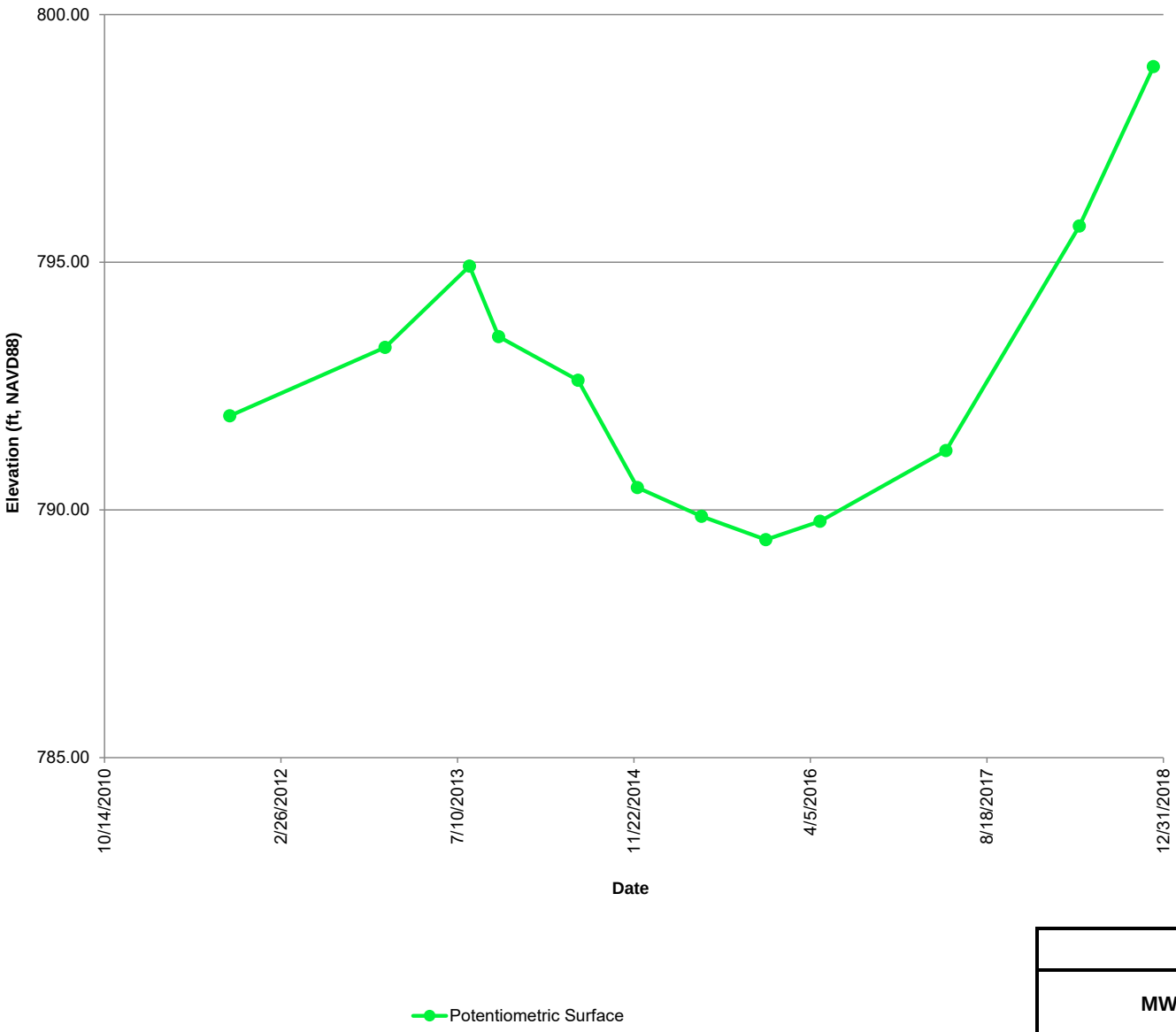


RACER Lansing
Lansing, MI

UNK-15 DIAGNOSTIC GAUGE PLOT

ARCADIS Design & Consultancy for natural and built assets

FIGURE
C

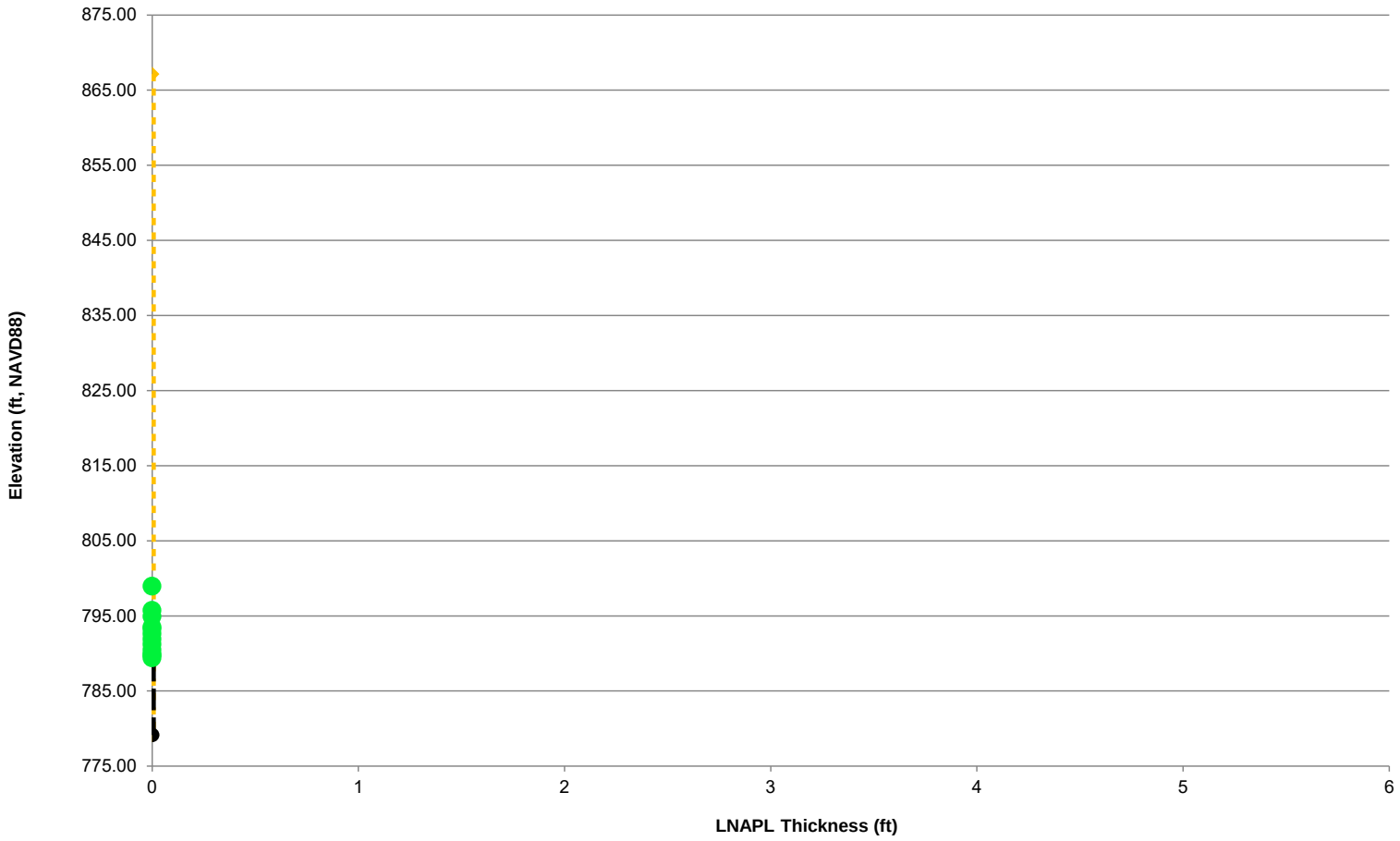


RACER Lansing Plant 6
Lansing, MI

MW-04-01(6) HYDROGRAPH
BEDROCK

ARCADIS Design & Consultancy for natural and built assets

FIGURE
A



Air-NAPL Interface

NAPL-Water or Air-Water Interface

Potentiometric Surface

Filter Pack

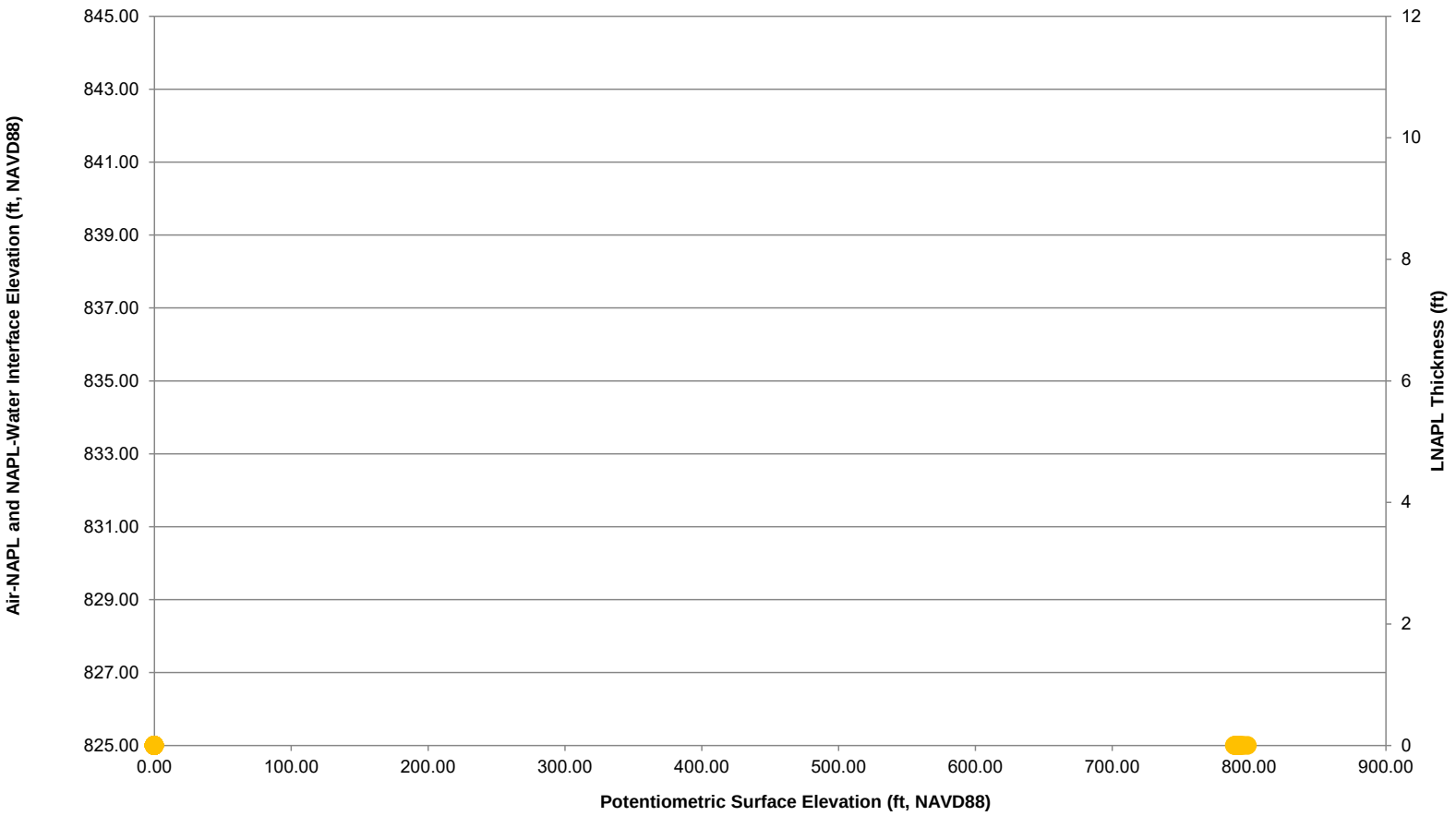
Screened Interval

RACER Lansing
Lansing, MI

MW-04-01(6) DIAGNOSTIC GAUGE PLOT

ARCADIS Design & Consultancy for natural and built assets

FIGURE
B

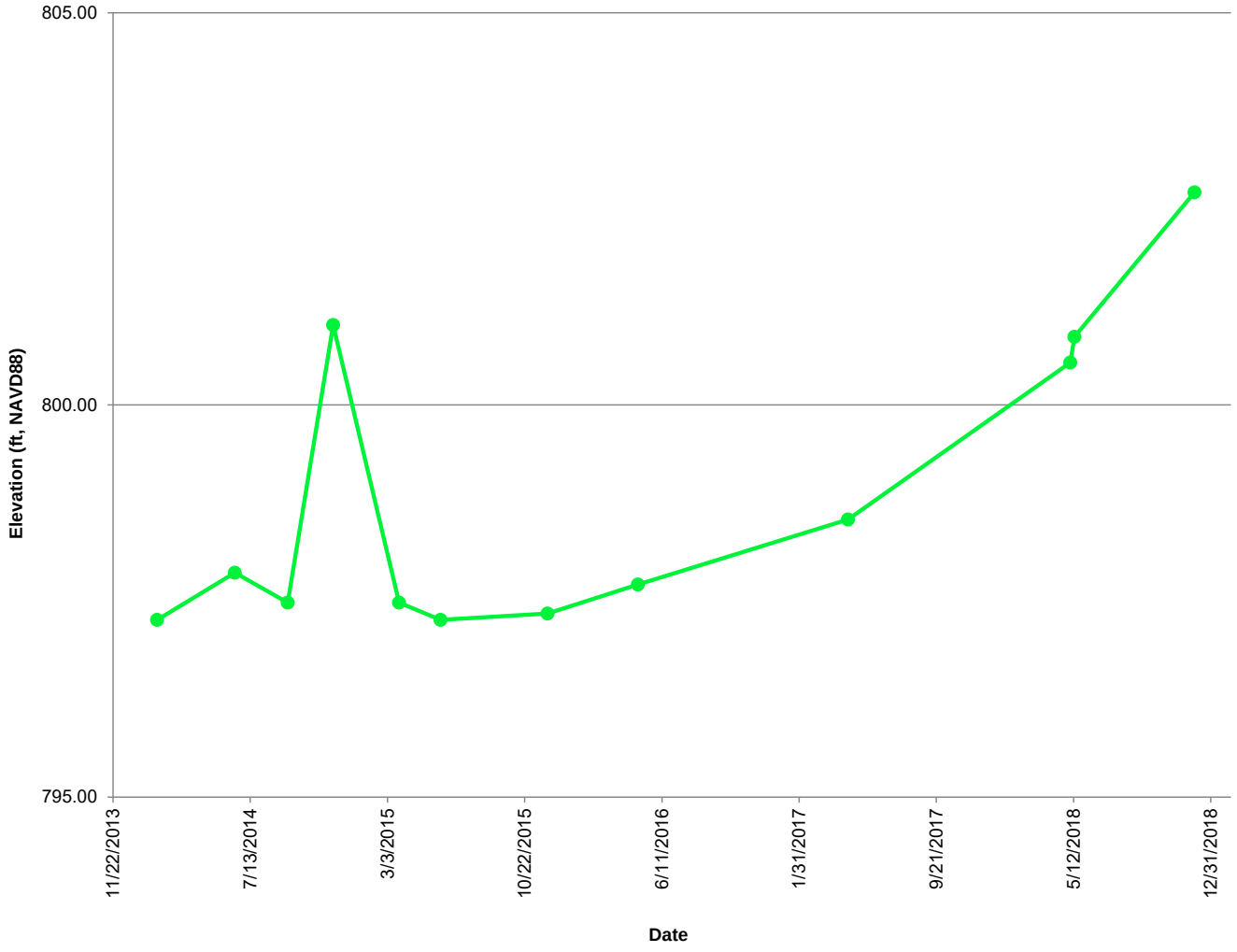


RACER Lansing
Lansing, MI

MW-04-01(6) DIAGNOSTIC GAUGE PLOT

ARCADIS Design & Consultancy for natural and built assets

FIGURE
C



RACER Lansing Plant 6
Lansing, MI

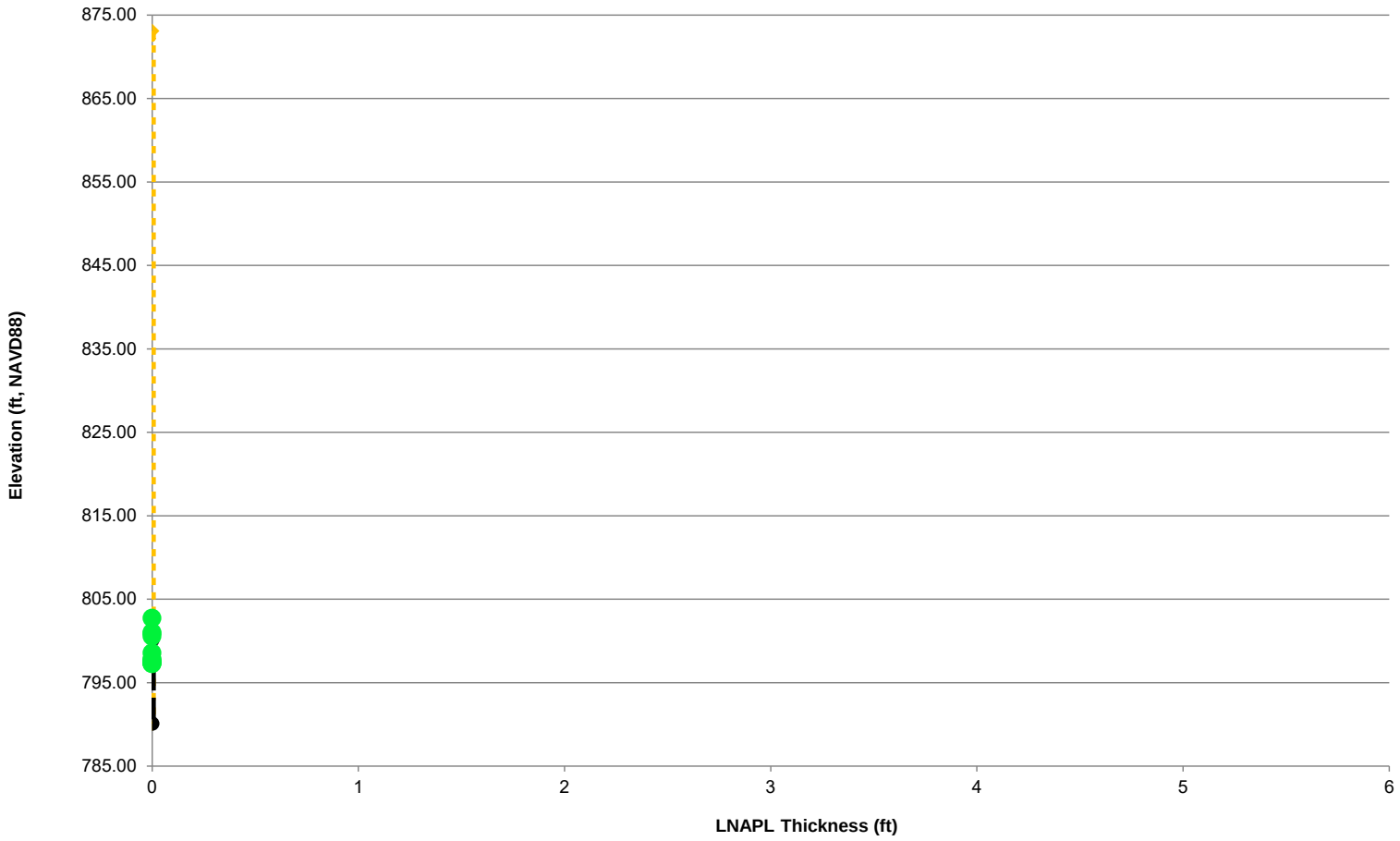
MW-13-53 HYDROGRAPH

DEEP OVERBURDEN/WEATHERED BEDROCK

ARCADIS Design & Consultancy for natural and built assets

FIGURE

A



Air-NAPL Interface

NAPL-Water or Air-Water Interface

Potentiometric Surface

Filter Pack

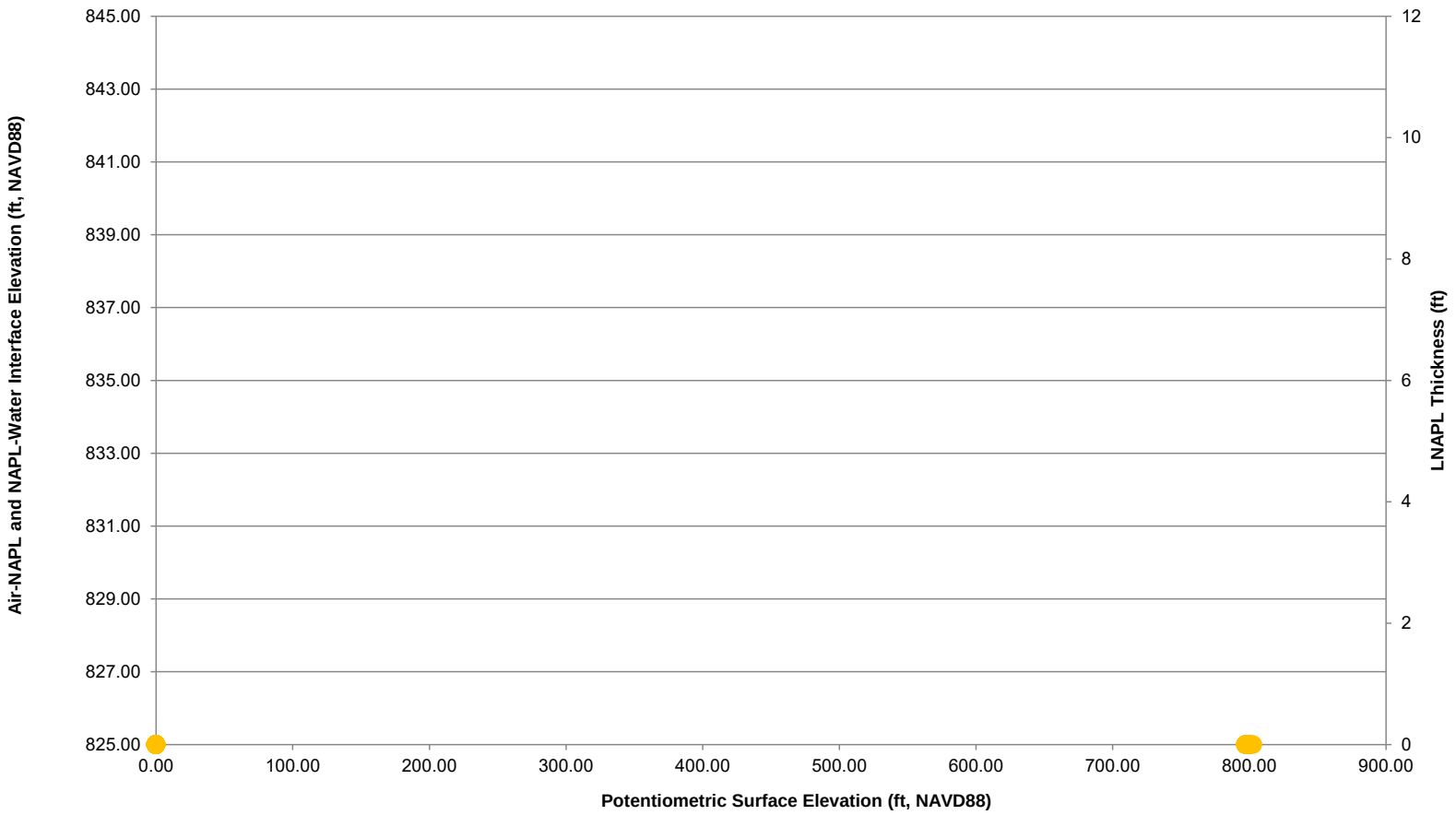
Screened Interval

RACER Lansing
Lansing, MI

MW-13-53 DIAGNOSTIC GAUGE PLOT

ARCADIS Design & Consultancy for natural and built assets

FIGURE
B

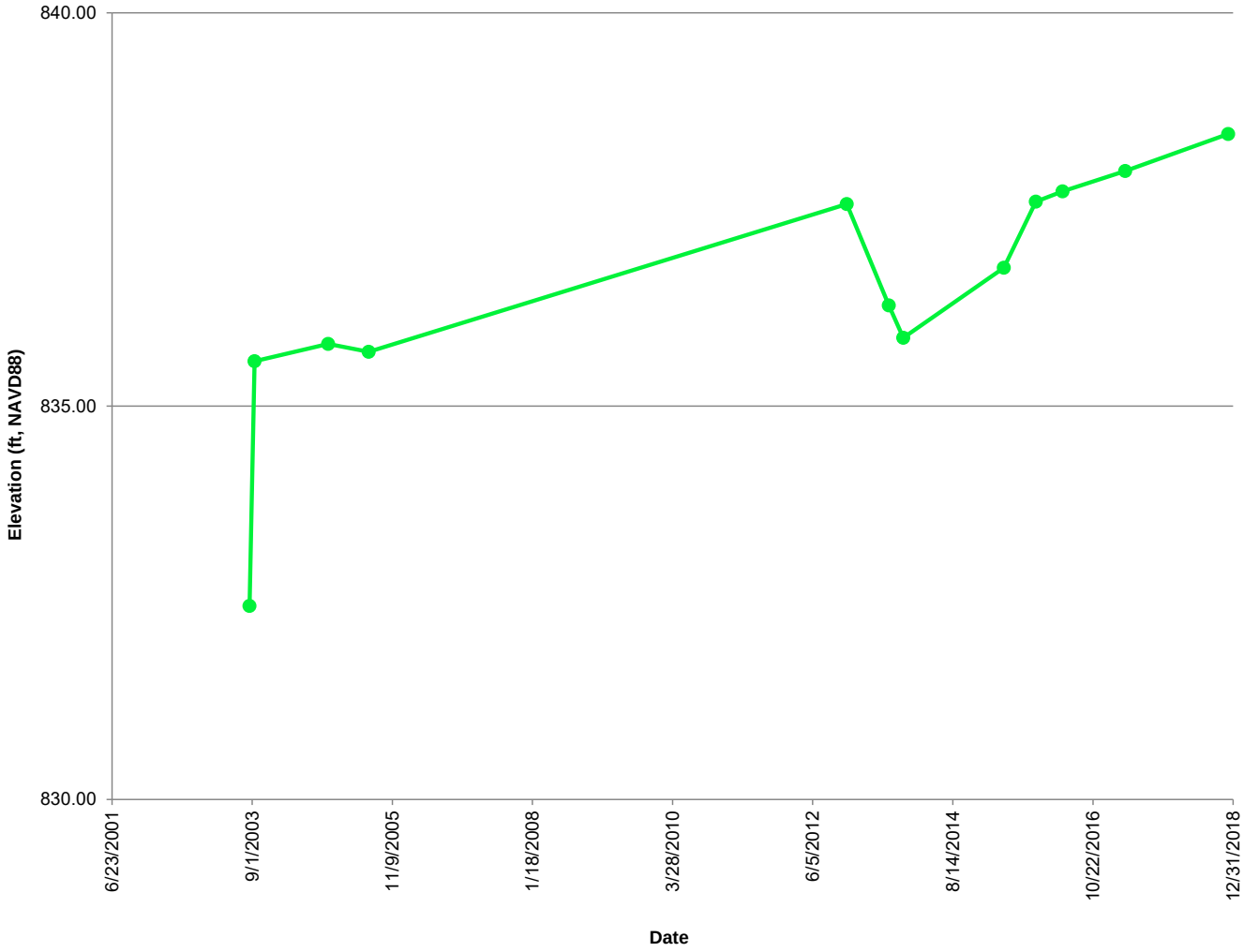


RACER Lansing
Lansing, MI

MW-13-53 DIAGNOSTIC GAUGE PLOT

ARCADIS Design & Consultancy for natural and built assets

FIGURE
C



RACER Lansing Plant 6
Lansing, MI

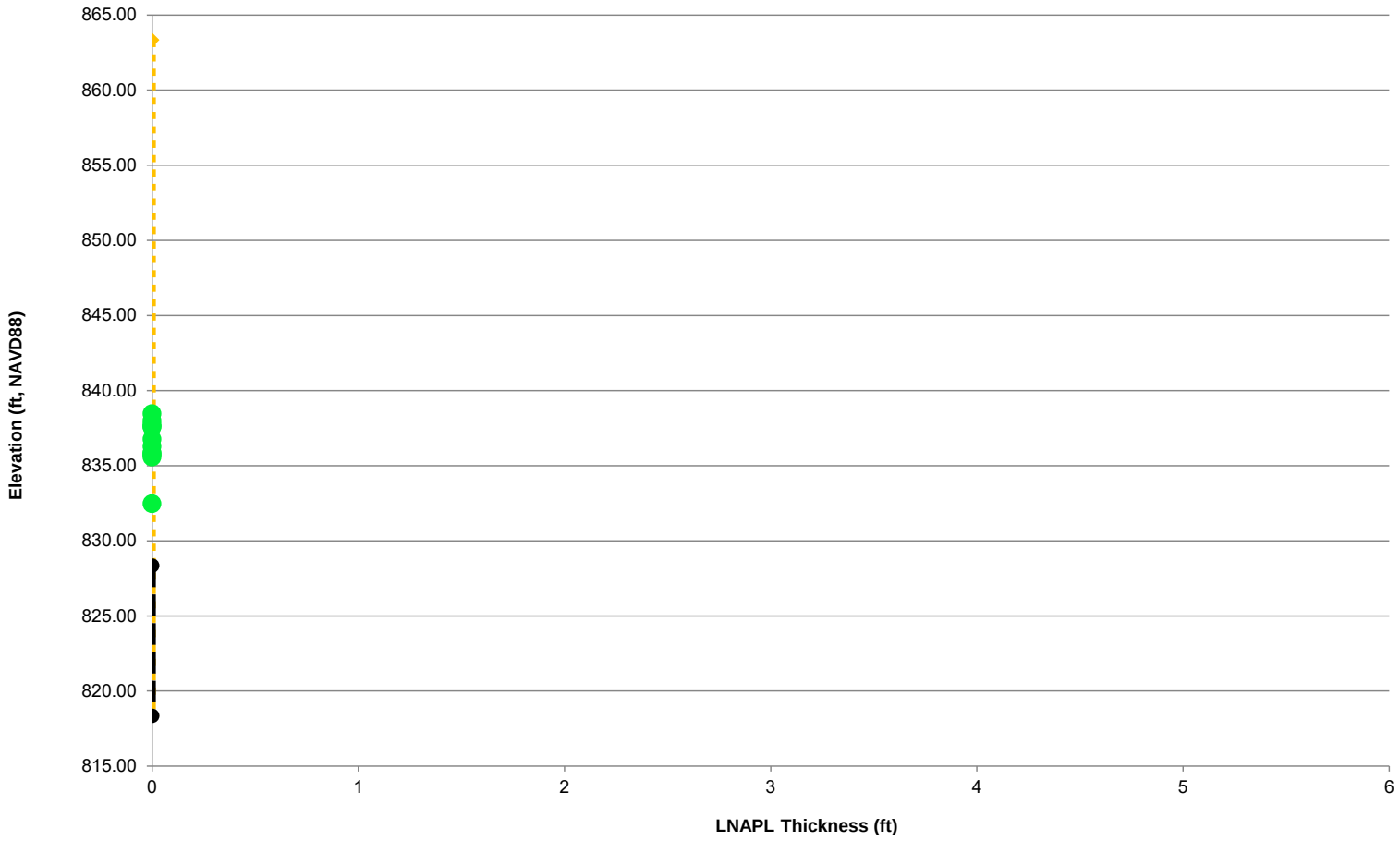
MW-02-01(6) HYDROGRAPH

PERCHED

ARCADIS Design & Consultancy for natural and built assets

FIGURE

A



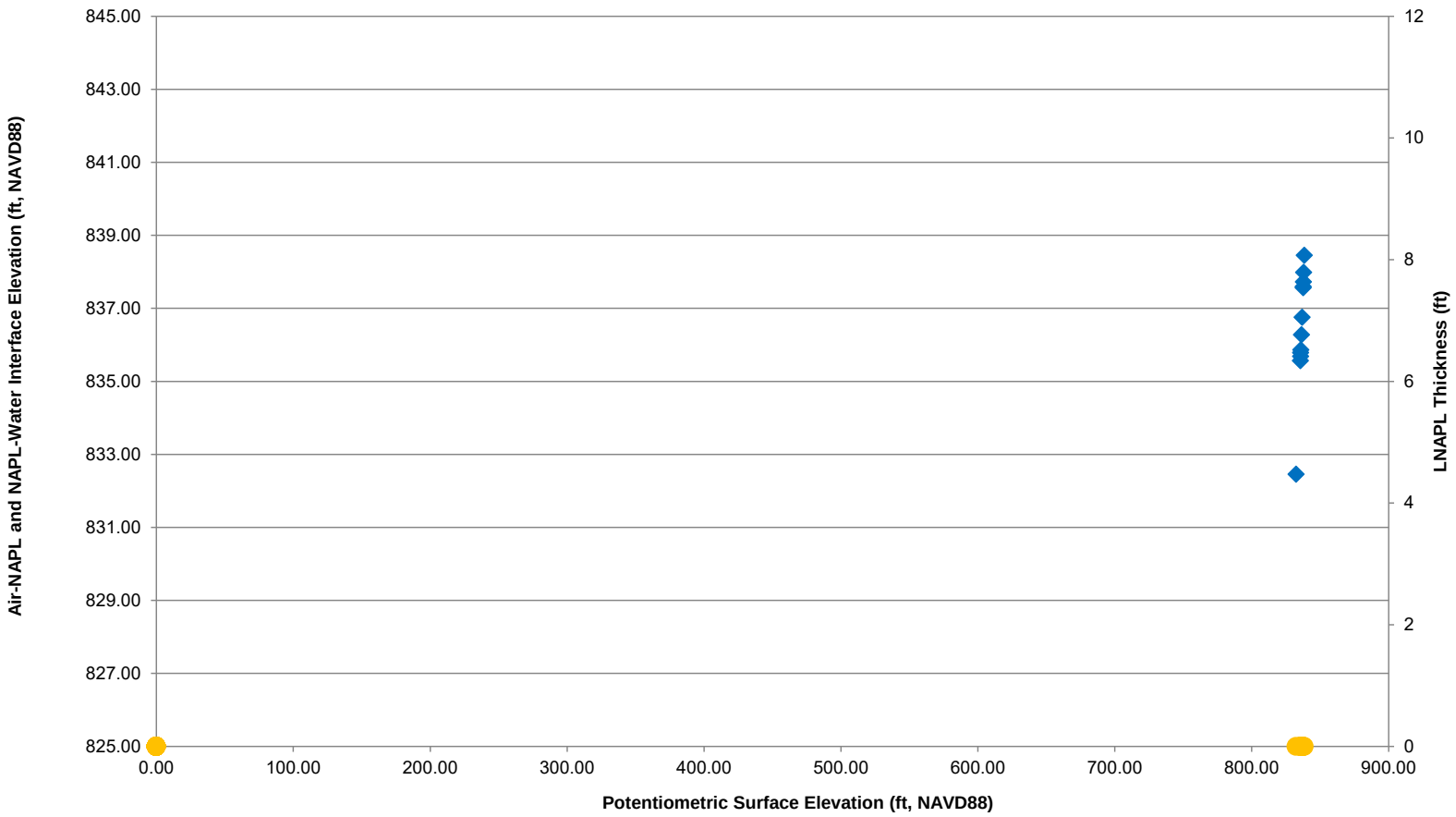
RACER Lansing
Lansing, MI

MW-02-01(6) DIAGNOSTIC GAUGE PLOT

ARCADIS Design & Consultancy for natural and built assets

FIGURE

B



RACER Lansing
Lansing, MI

MW-02-01(6) DIAGNOSTIC GAUGE PLOT

ARCADIS Design & Consultancy for natural and built assets

FIGURE
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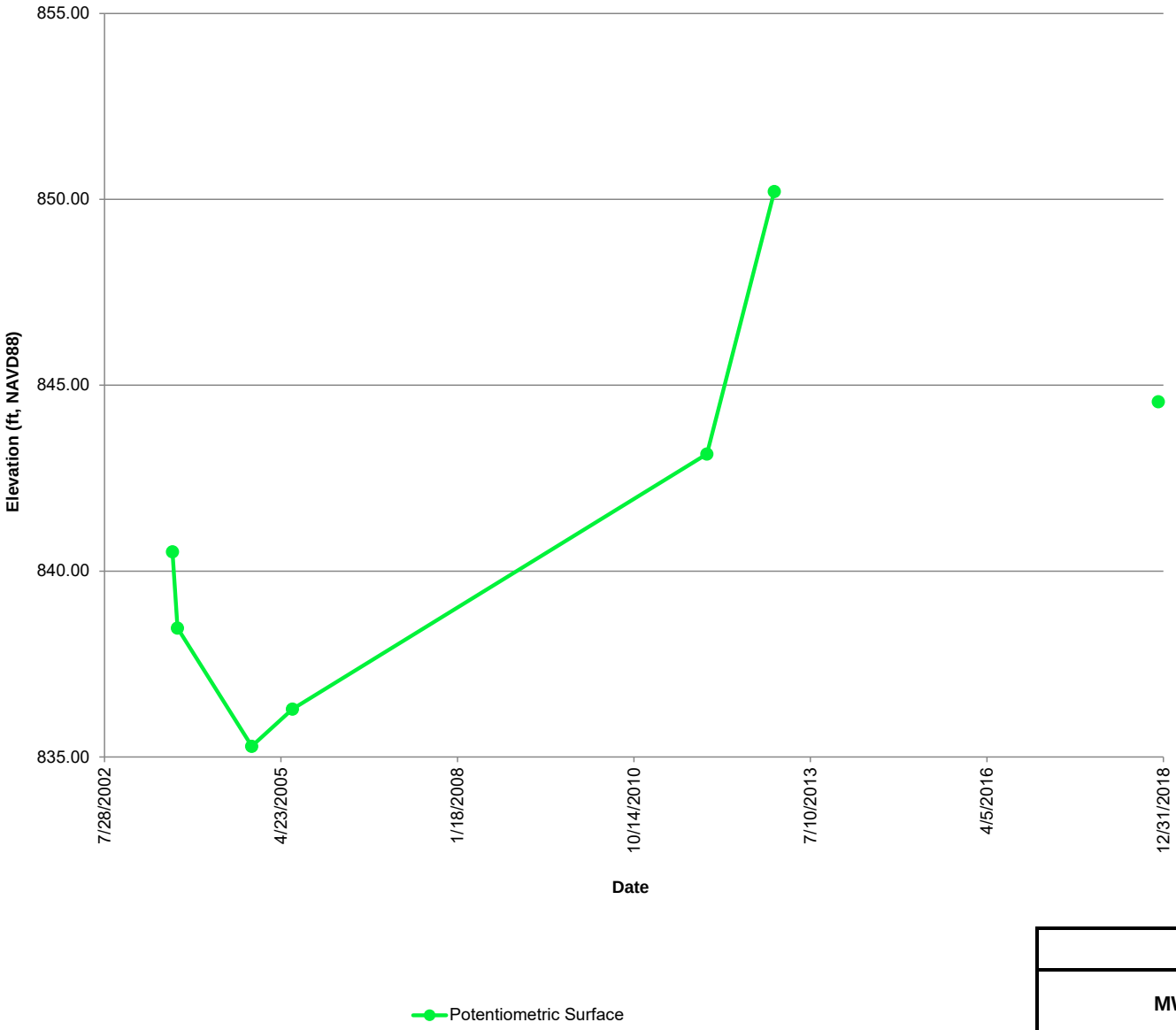


RACER Lansing Plant 6
Lansing, MI

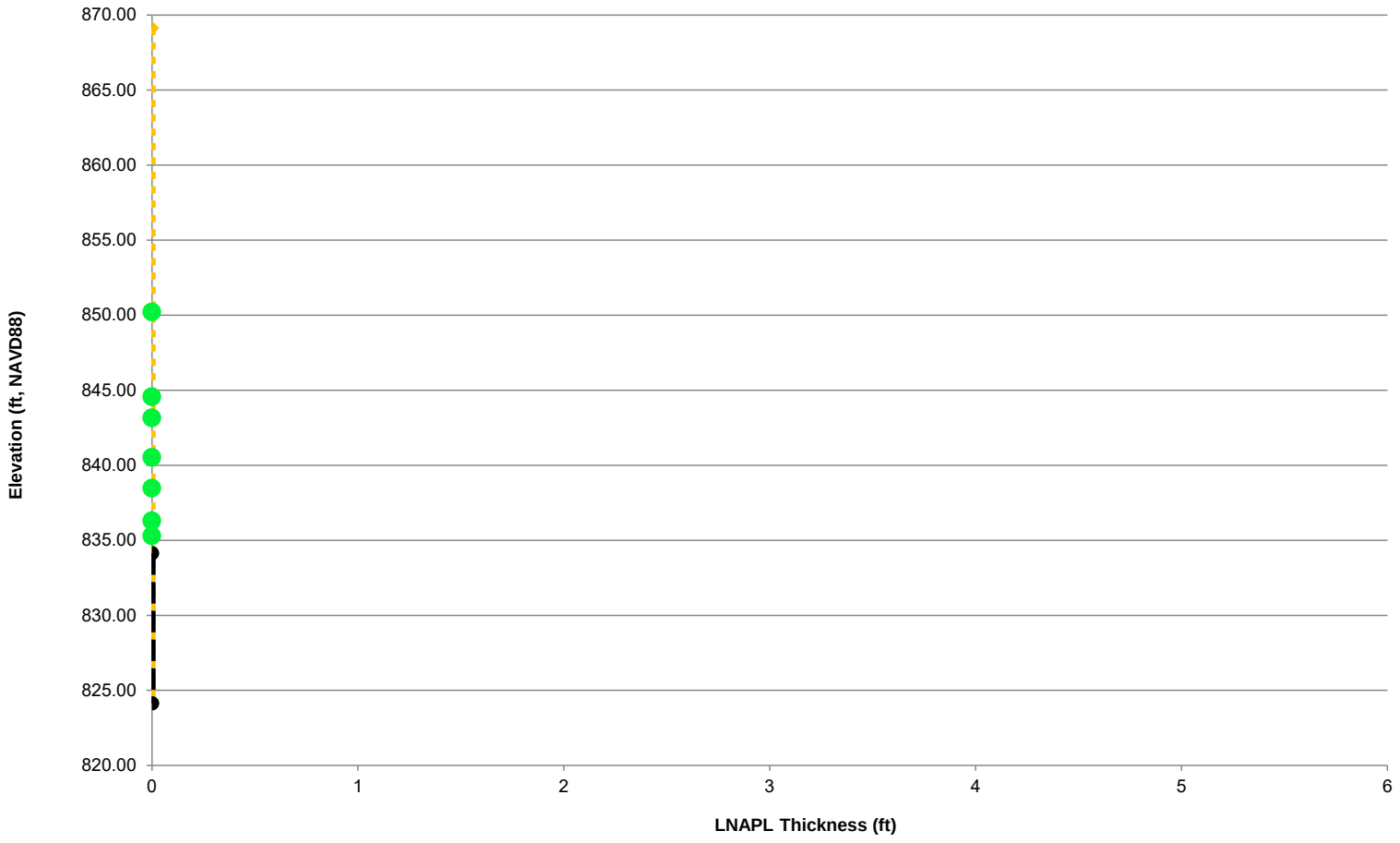
MW-03-05 HYDROGRAPH

PERCHED

ARCADIS Design & Consultancy for natural and built assets

FIGURE

A

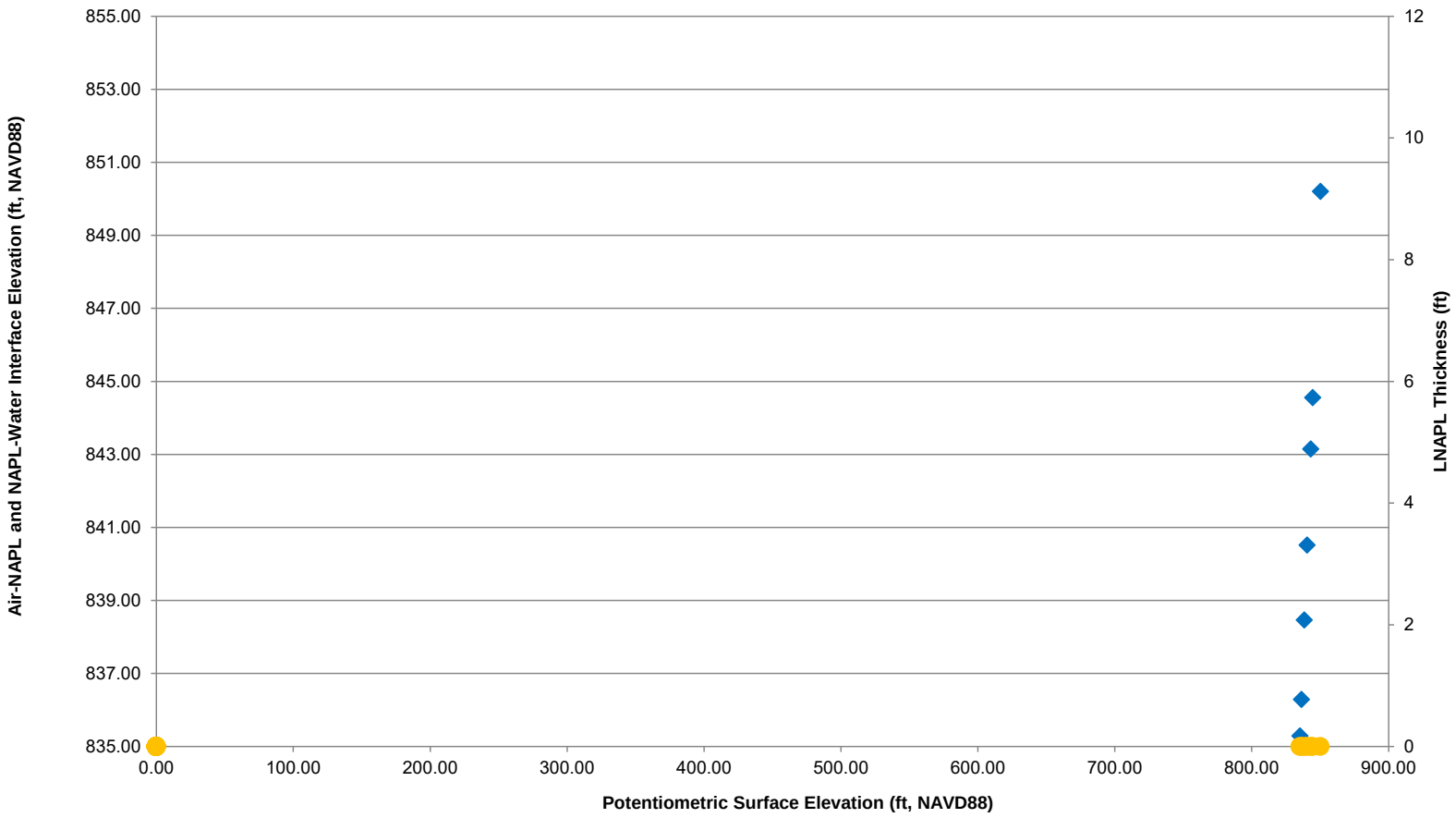


RACER Lansing
Lansing, MI

MW-03-05 DIAGNOSTIC GAUGE PLOT

ARCADIS Design & Consultancy for natural and built assets

FIGURE
B

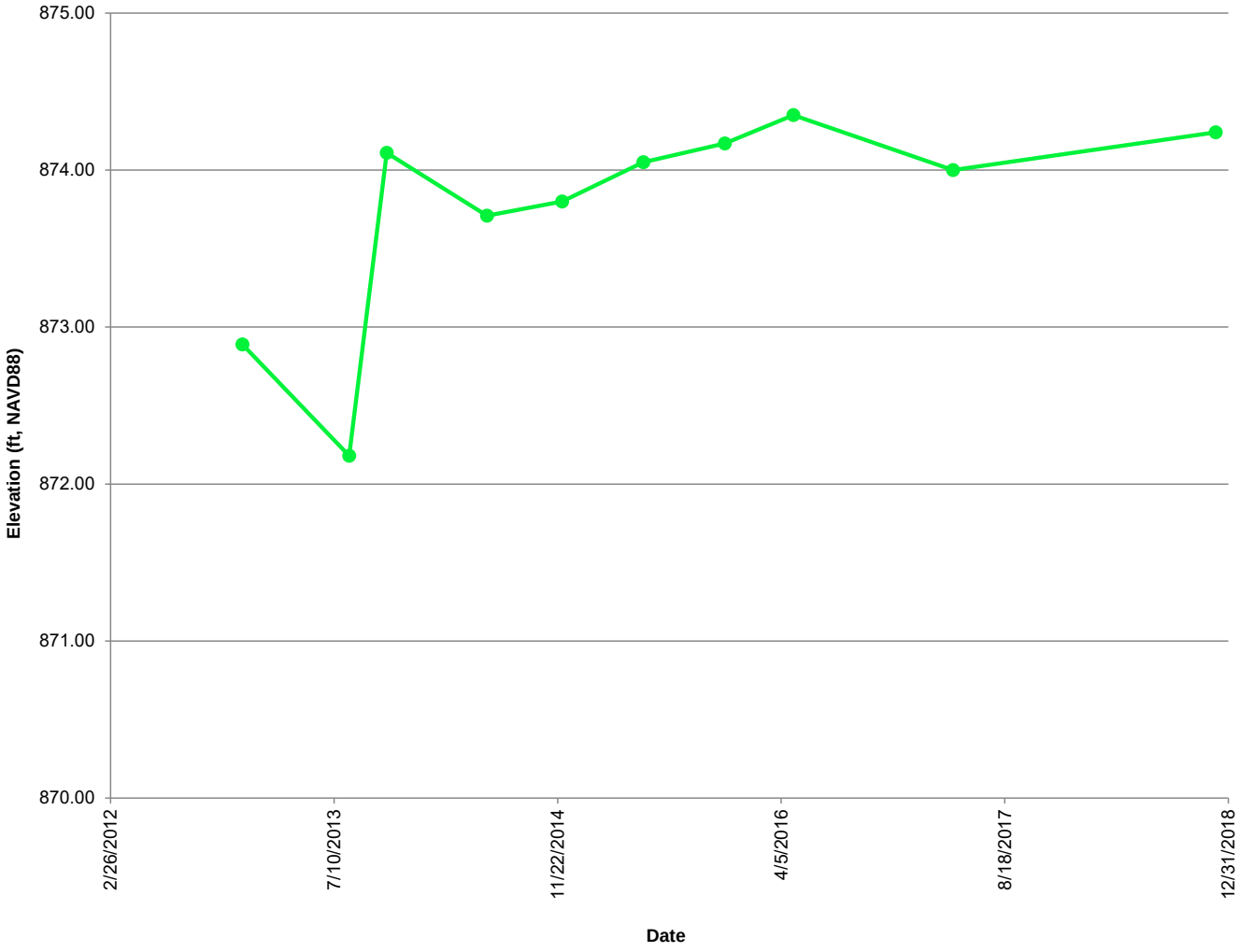


RACER Lansing
Lansing, MI

MW-03-05 DIAGNOSTIC GAUGE PLOT

ARCADIS Design & Consultancy for natural and built assets

FIGURE
C



RACER Lansing Plant 6
Lansing, MI

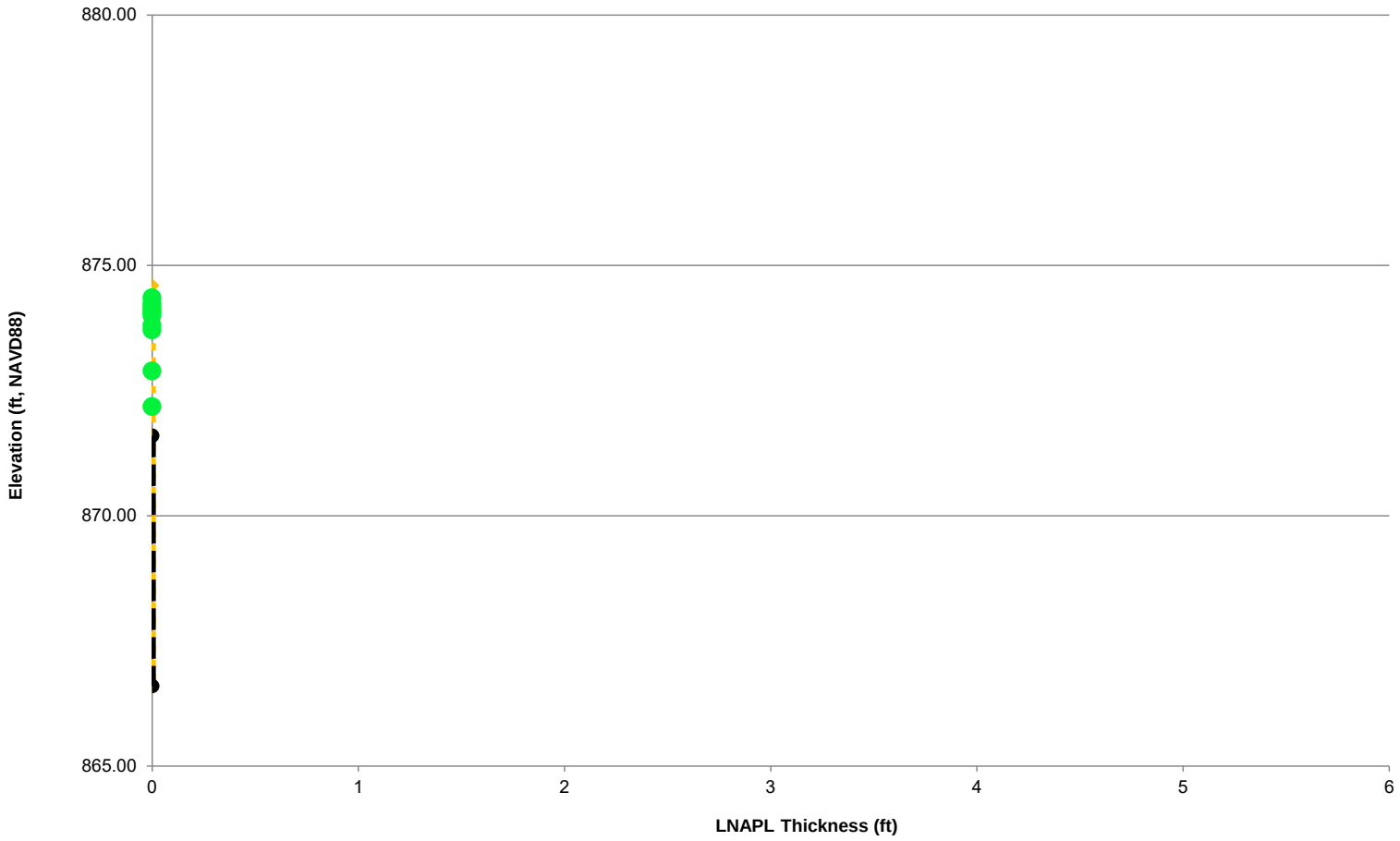
P6-SB-18 HYDROGRAPH

PERCHED

ARCADIS Design & Consultancy for natural and built assets

FIGURE

A

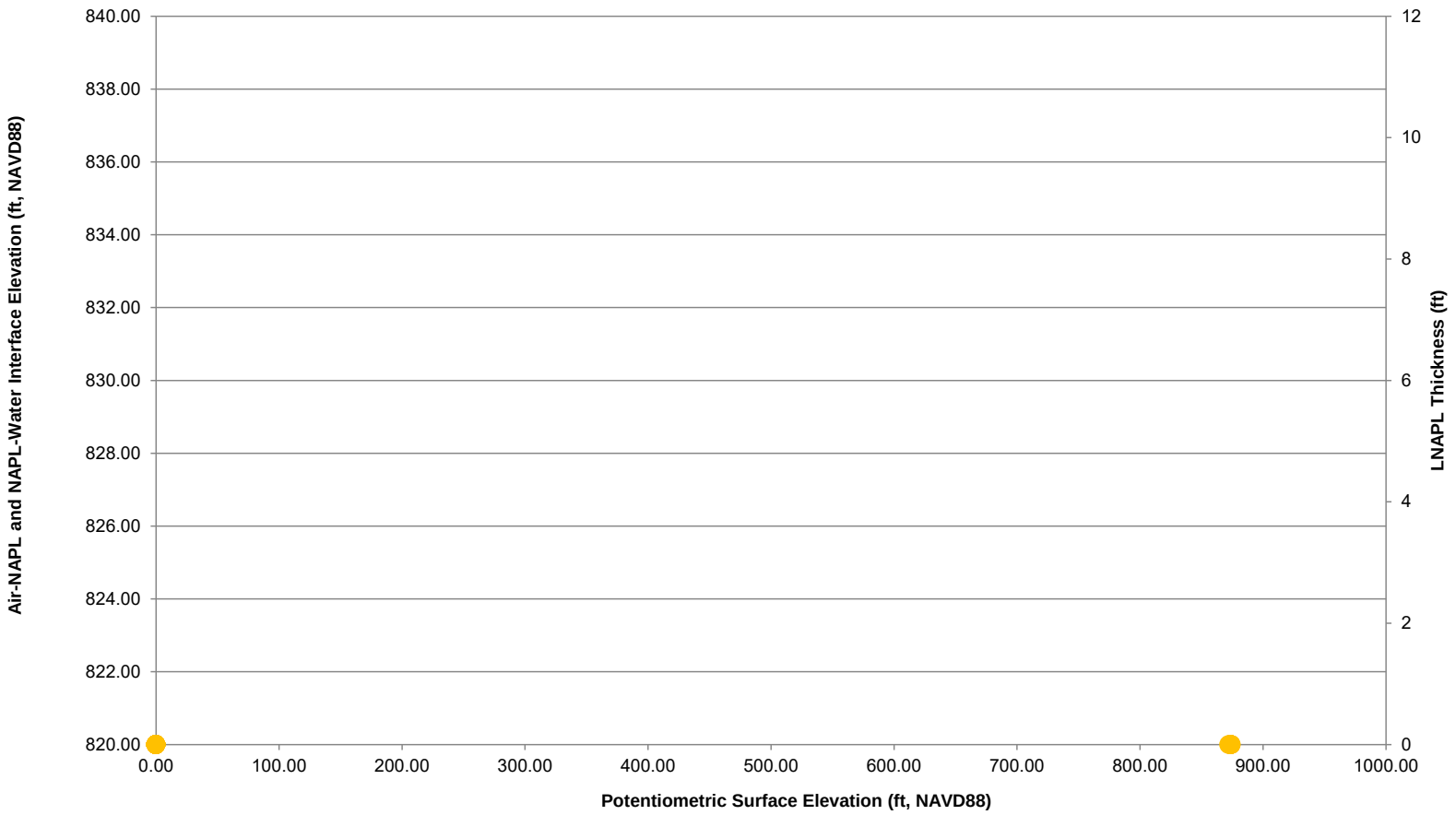


RACER Lansing
Lansing, MI

P6-SB-18 DIAGNOSTIC GAUGE PLOT

ARCADIS Design & Consultancy for natural and built assets

FIGURE
B

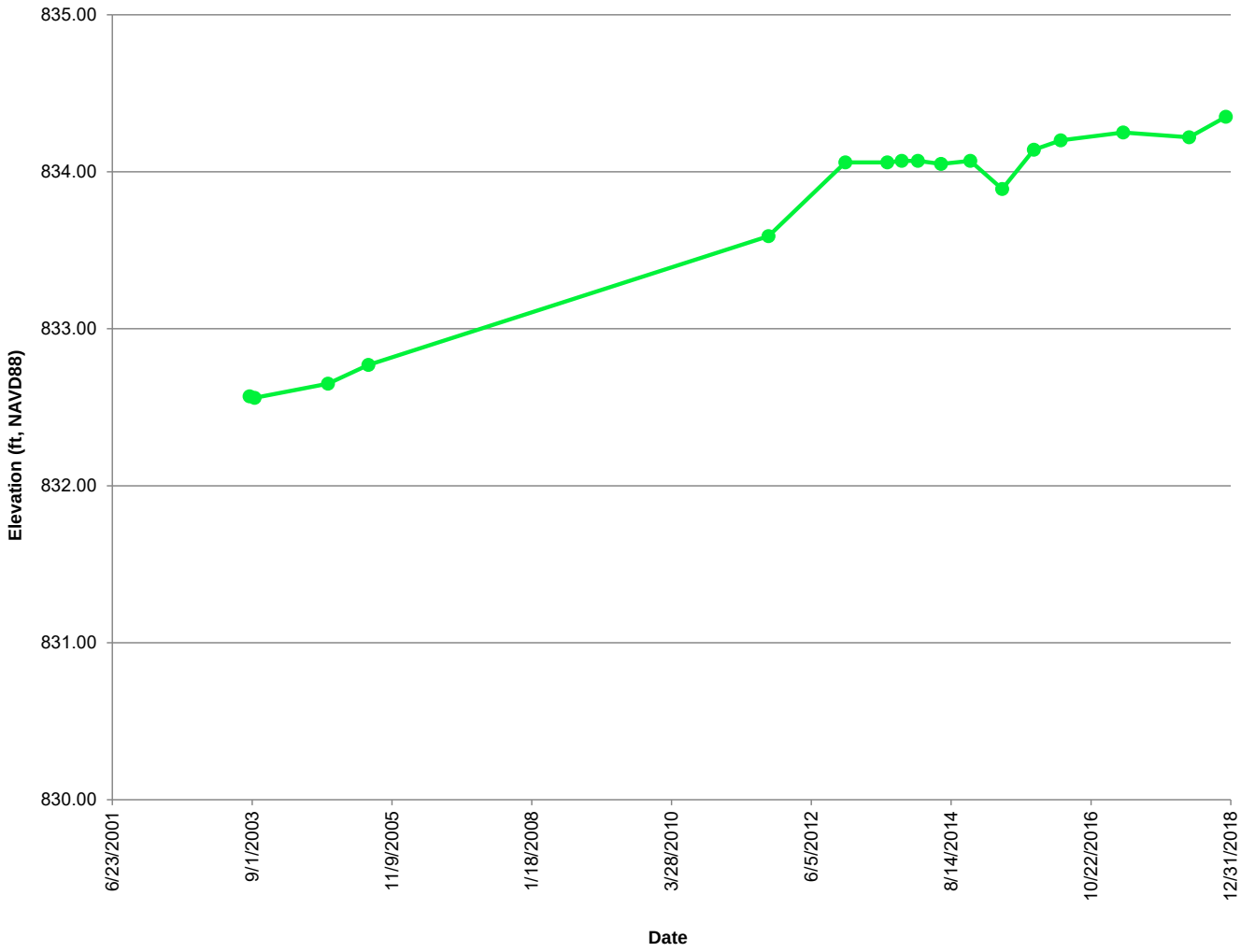


RACER Lansing
Lansing, MI

P6-SB-18 DIAGNOSTIC GAUGE PLOT

ARCADIS Design & Consultancy for natural and built assets

FIGURE
C



RACER Lansing Plant 6
Lansing, MI

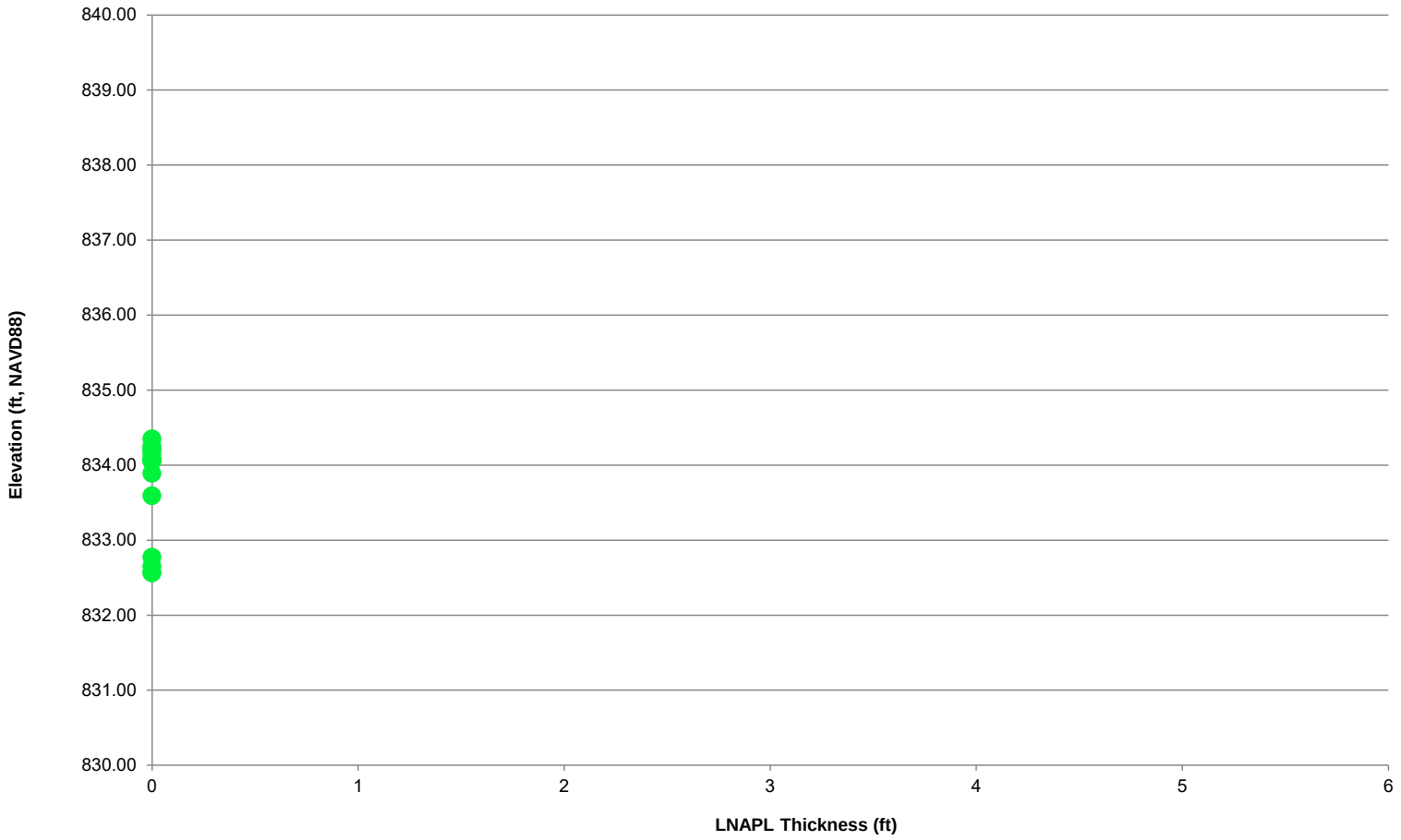
MW-03-06 HYDROGRAPH

PERCHED

ARCADIS Design & Consultancy for natural and built assets

FIGURE

A

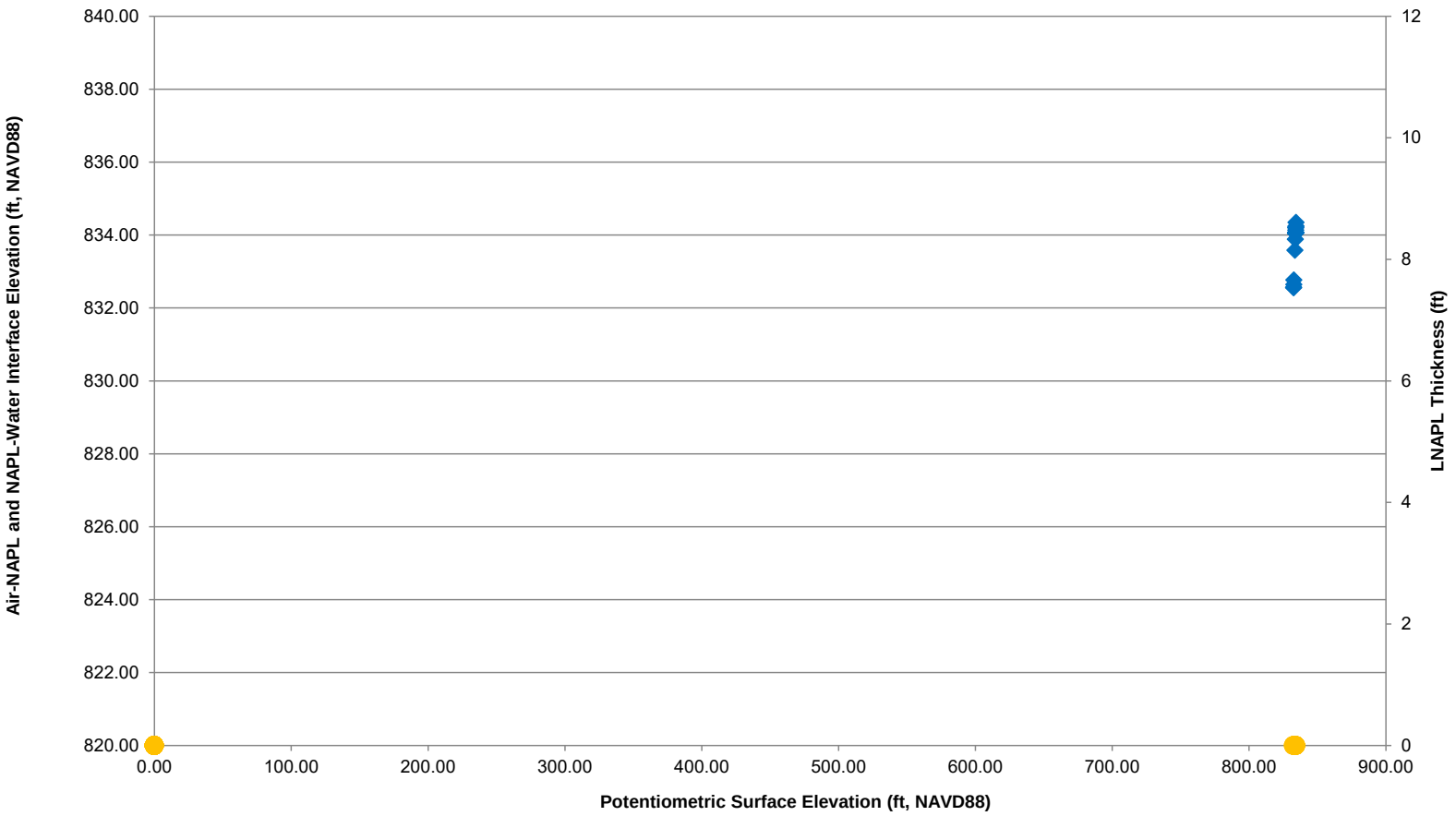


RACER Lansing
Lansing, MI

MW-03-06 DIAGNOSTIC GAUGE PLOT

ARCADIS Design & Consultancy for natural and built assets

FIGURE
B



RACER Lansing
Lansing, MI

MW-03-06 DIAGNOSTIC GAUGE PLOT

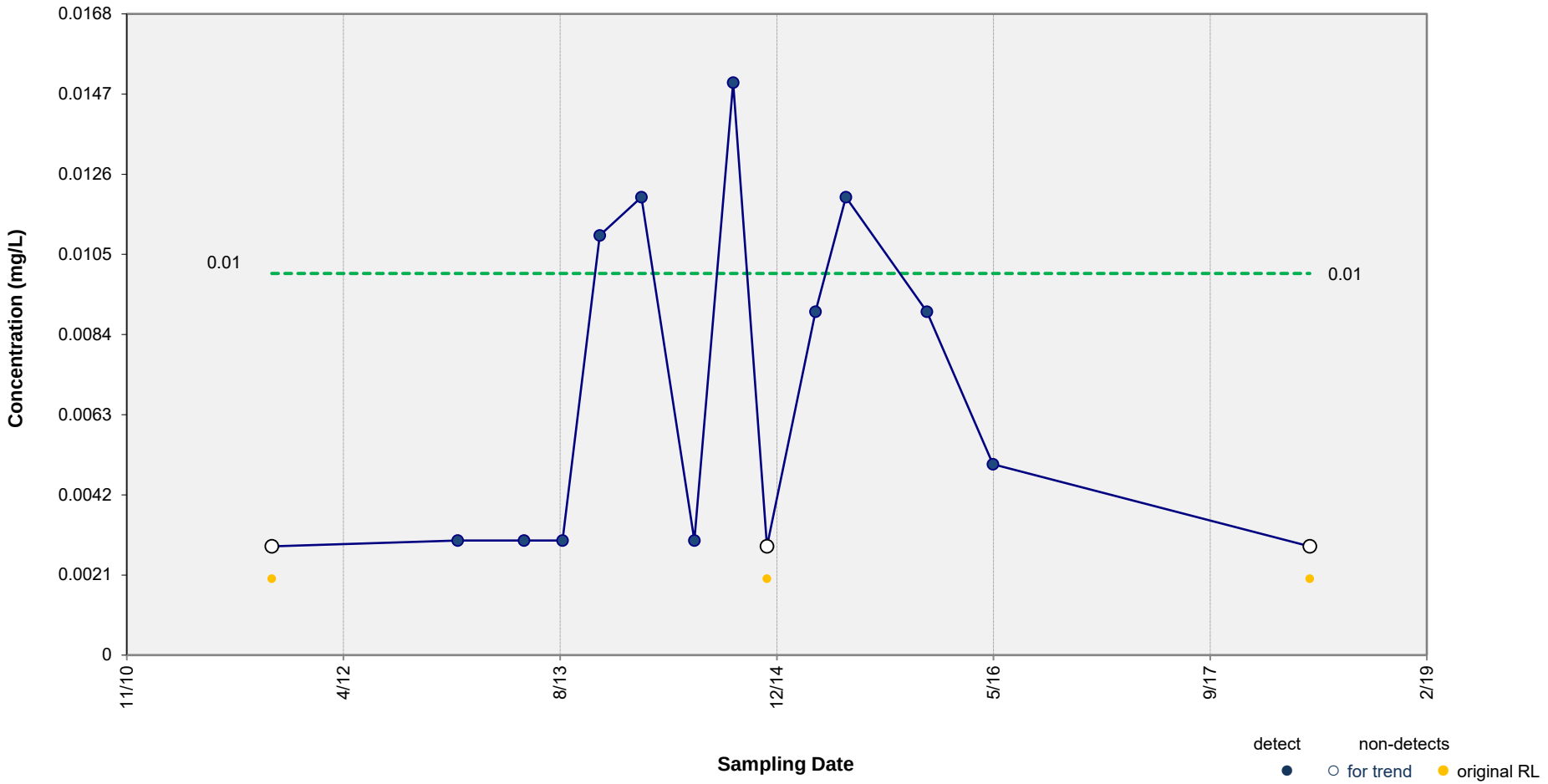
ARCADIS Design & Consultancy for natural and built assets

FIGURE
C

APPENDIX I

Concentration vs. Time Plots

(on attached CD)



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

p value = 0.2691 Note: p value < 0.1 indicates a statistically significant trend (90% confidence level).

Results of Sen's Estimator of Slope: **NA**

Median Slope Estimate = 1.54E-04 mg/L per day

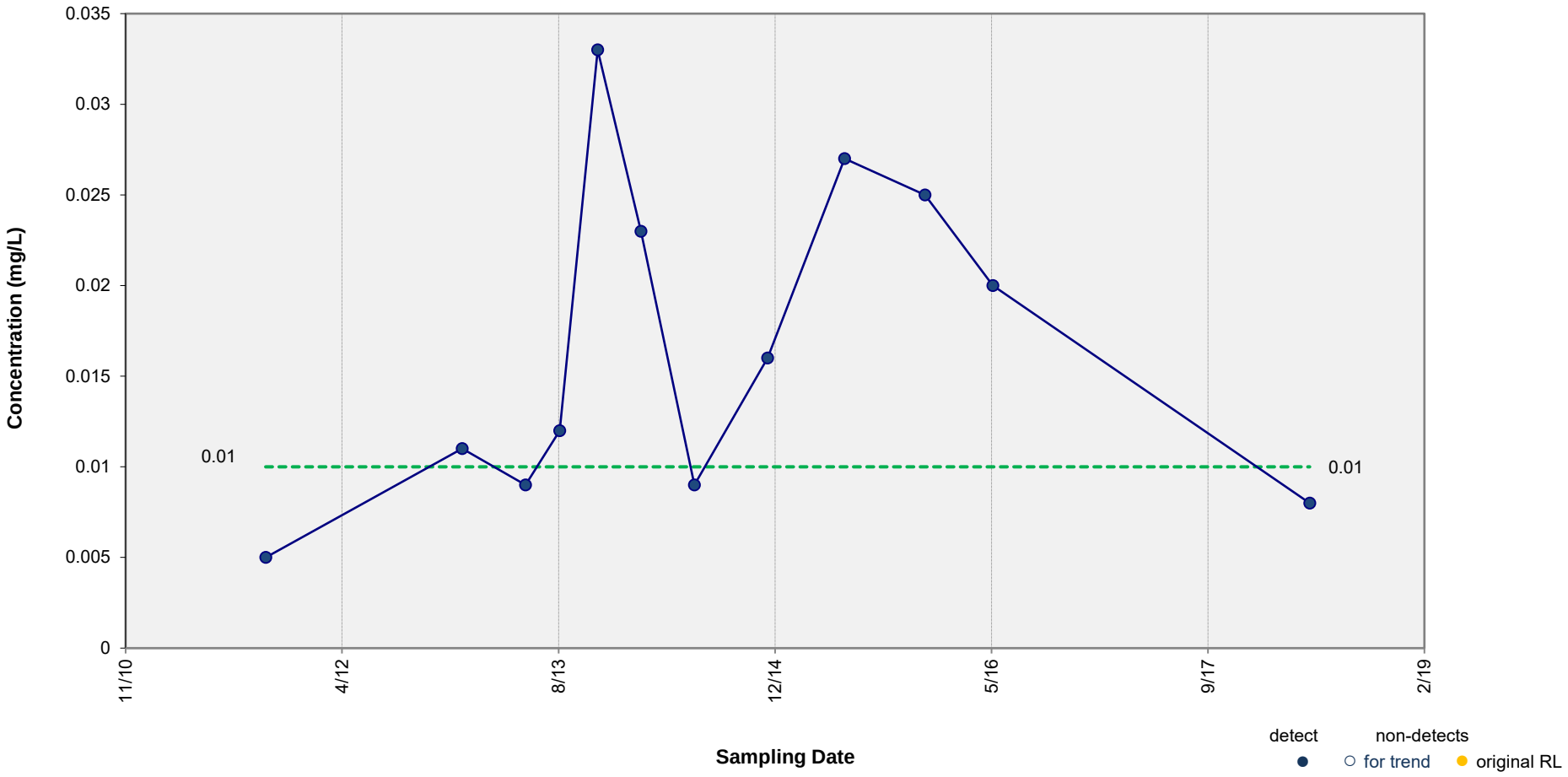
Confidence Interval on the Slope= -1.3E-04 to 6.5E-03 mg/L per day

ARCADIS

Concentration Plot: MW-03(2), Arsenic

RACER Lansing located at 2801 West Saginaw Street in Lansing, Michigan

Attachment 1



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

p value = 0.1680 Note: p value < 0.1 indicates a statistically significant trend (90% confidence level).

Results of Sen's Estimator of Slope: **NA**

Median Slope Estimate = 7.52E-03 mg/L per day

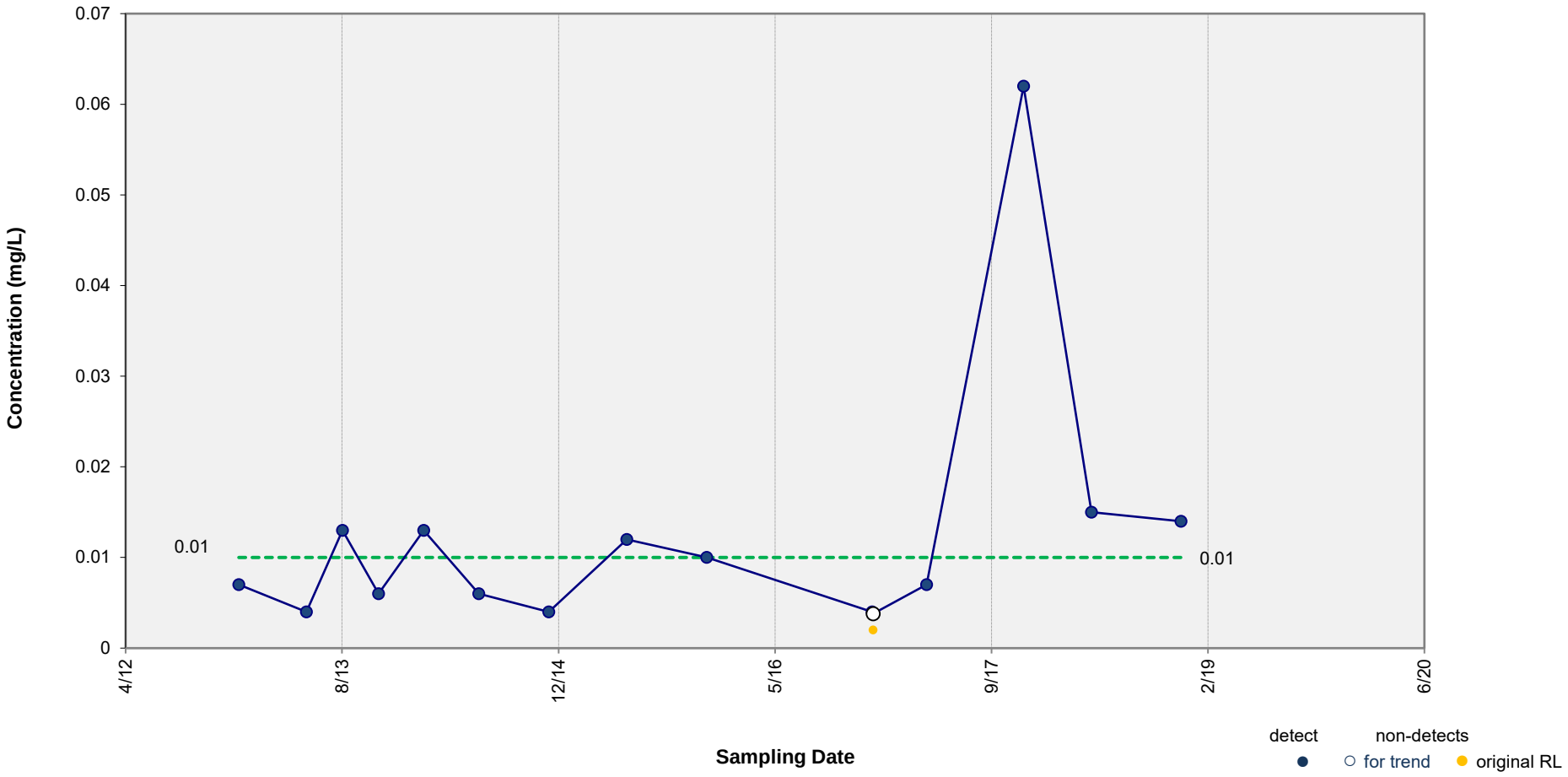
Confidence Interval on the Slope= -3.6E-03 to 1.3E-02 mg/L per day

ARCADIS

Concentration Plot: MW-03-06, Arsenic

RACER Lansing located at 2801 West Saginaw Street in Lansing, Michigan

Attachment 1



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

p value = 0.1846 Note: p value < 0.1 indicates a statistically significant trend (90% confidence level).

Results of Sen's Estimator of Slope: **NA**

Median Slope Estimate = 1.56E-03 mg/L per day

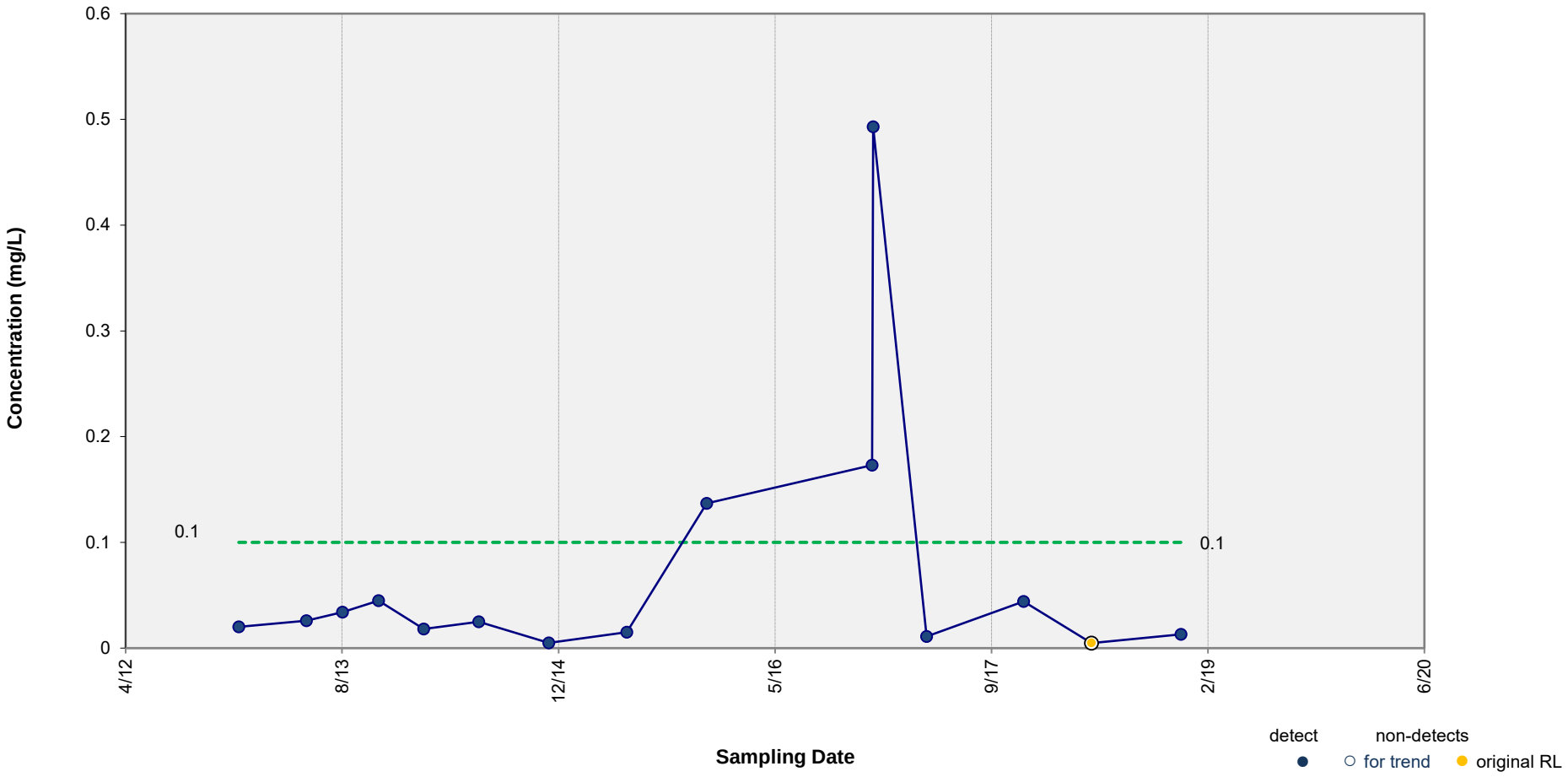
Confidence Interval on the Slope= -1.8E-03 to 6.1E-03 mg/L per day

ARCADIS

Concentration Plot: MW-12-11, Arsenic

RACER Lansing located at 2801 West Saginaw Street in Lansing, Michigan

Attachment 1



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

p value = 0.3461 Note: p value < 0.1 indicates a statistically significant trend (90% confidence level).

Results of Sen's Estimator of Slope: **NA**

Median Slope Estimate = -2.86E-03 mg/L per day

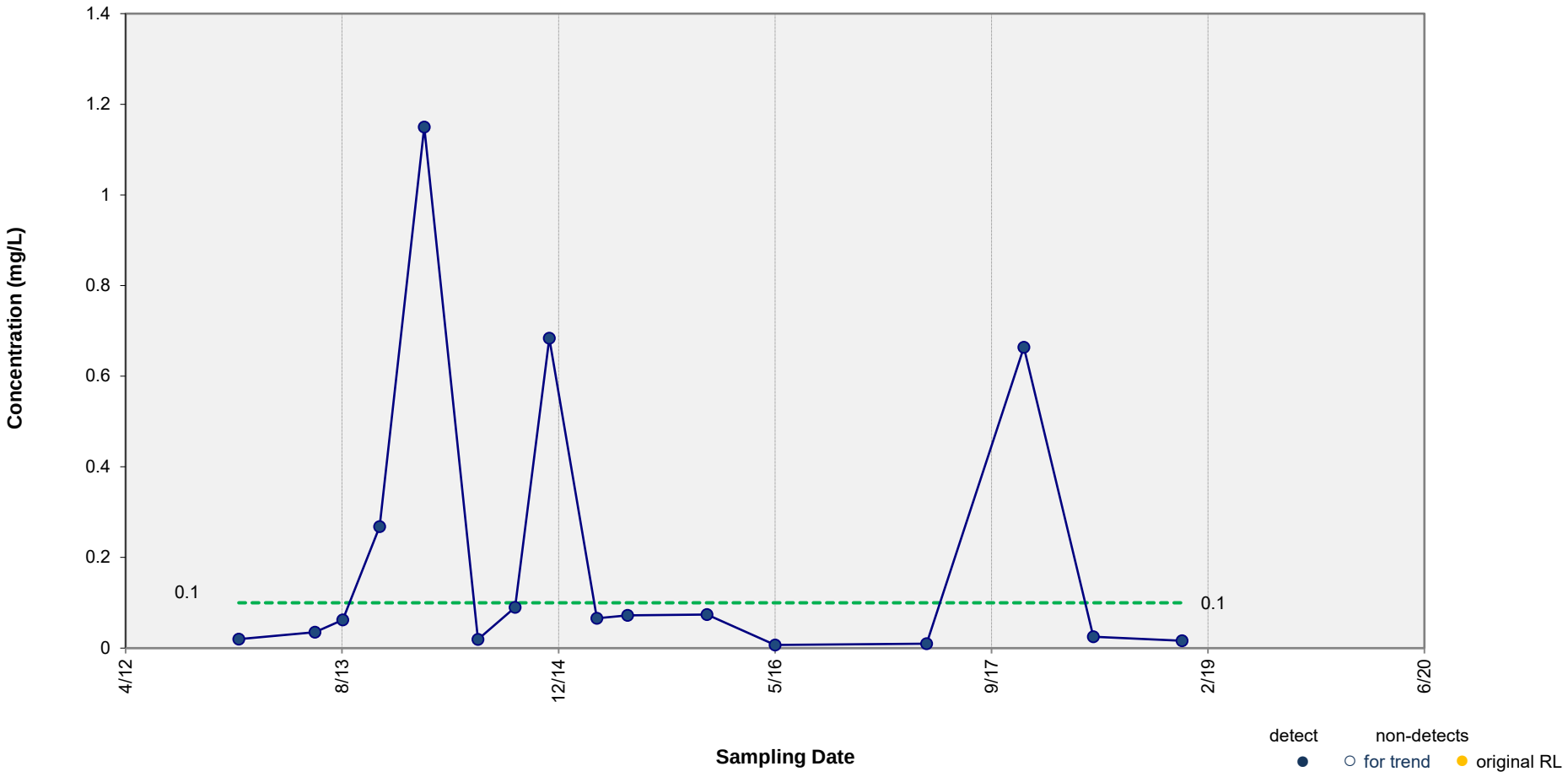
Confidence Interval on the Slope= -1.4E-02 to 3.9E-02 mg/L per day

ARCADIS

Concentration Plot: MW-12-11, Nickel

RACER Lansing located at 2801 West Saginaw Street in Lansing, Michigan

Attachment 1



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

p value = 0.2792 Note: p value < 0.1 indicates a statistically significant trend (90% confidence level).

Results of Sen's Estimator of Slope: **NA**

Median Slope Estimate = -9.99E-03 mg/L per day

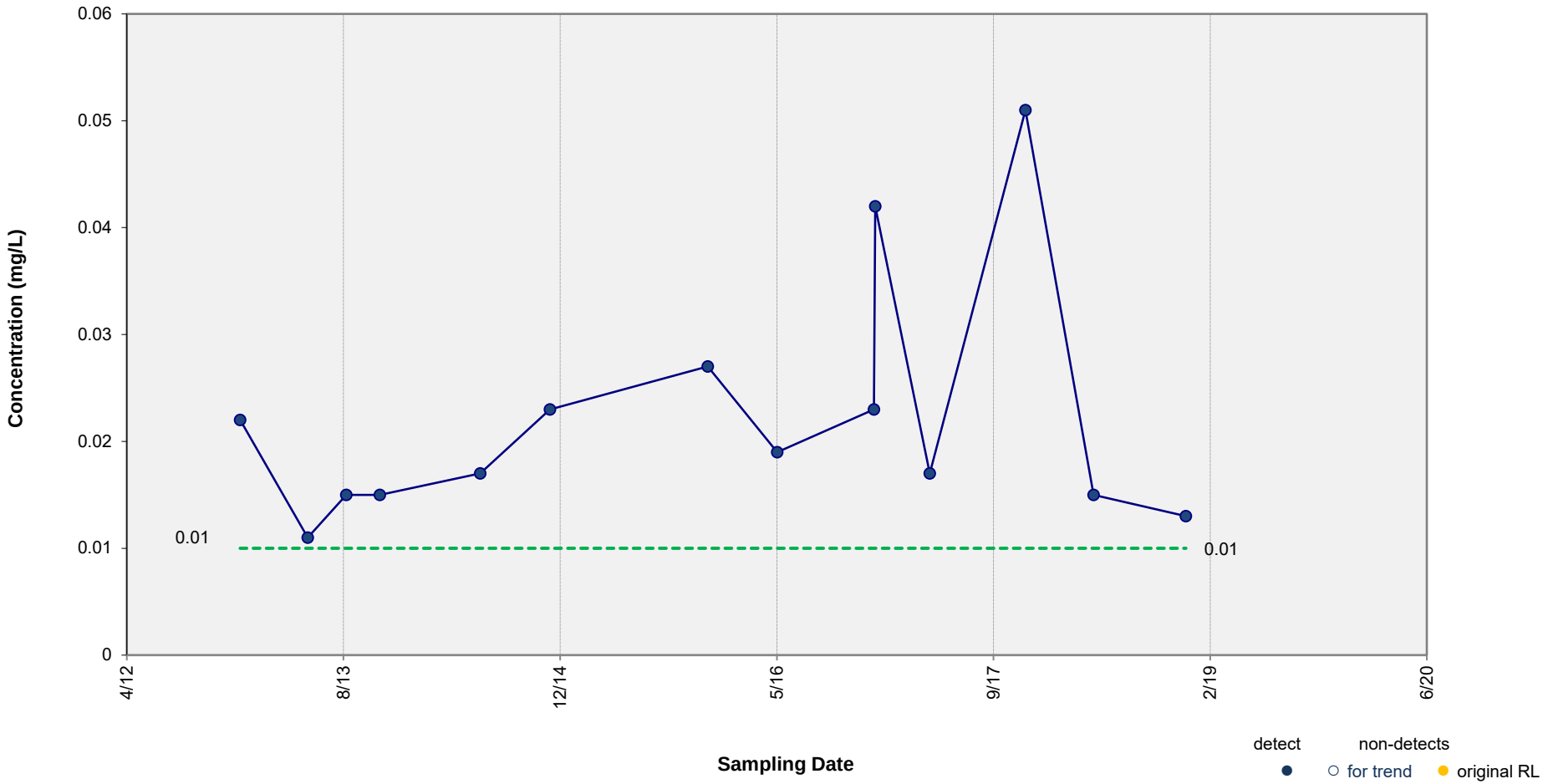
Confidence Interval on the Slope= -5.5E-02 to 3.3E-02 mg/L per day

ARCADIS

Concentration Plot: MW-12-12, Nickel

RACER Lansing located at 2801 West Saginaw Street in Lansing, Michigan

Attachment 1



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

p value = 0.2038 Note: p value < 0.1 indicates a statistically significant trend (90% confidence level).

Results of Sen's Estimator of Slope: **NA**

Median Slope Estimate = 2.21E-03 mg/L per day

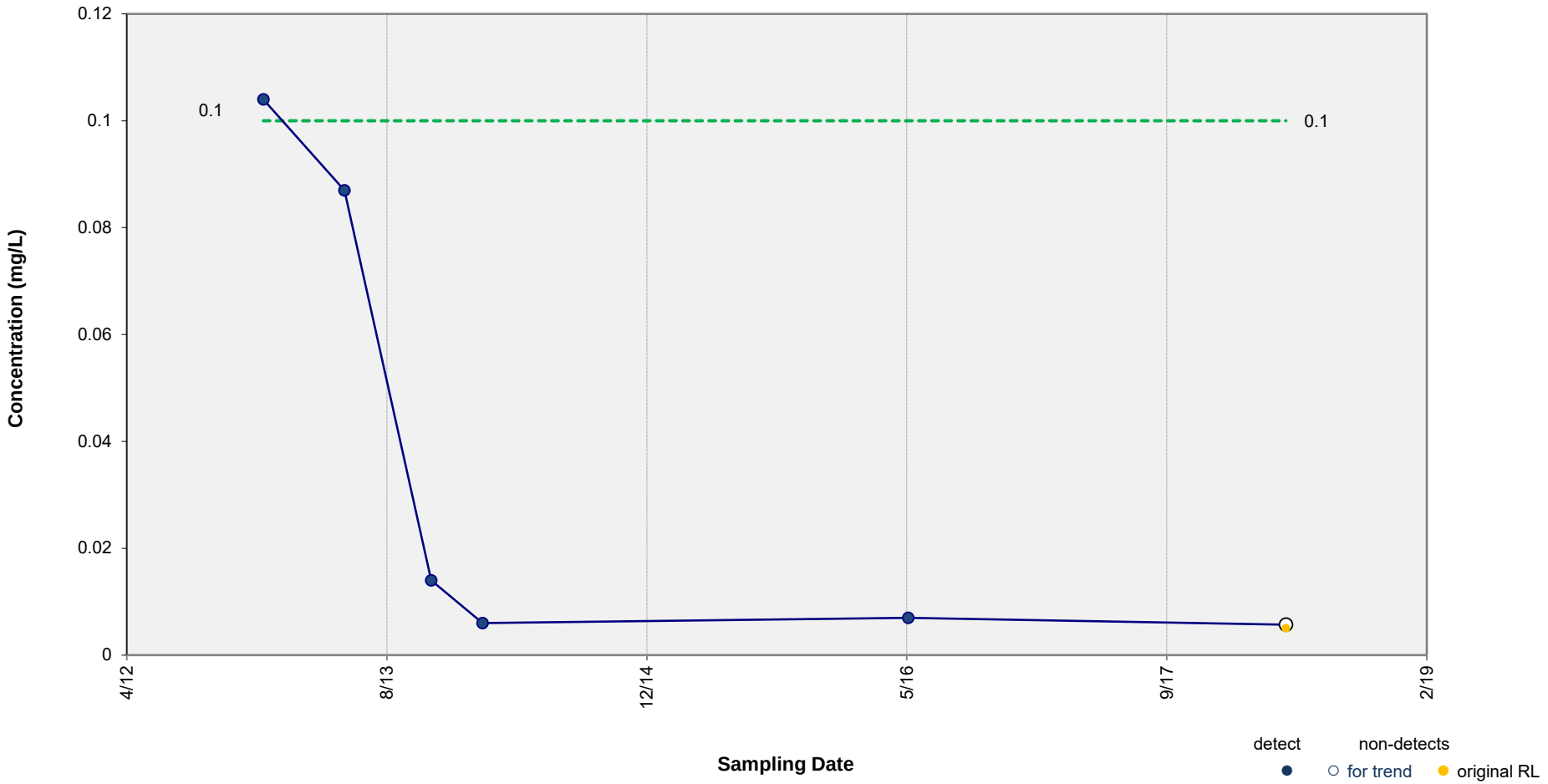
Confidence Interval on the Slope= -2.7E-03 to 1.4E-02 mg/L per day

ARCADIS

Concentration Plot: MW-12-16, Arsenic

RACER Lansing located at 2801 West Saginaw Street in Lansing, Michigan

Attachment 1



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

p value = 0.0083 Note: p value < 0.1 indicates a statistically significant trend (90% confidence level).

Results of Sen's Estimator of Slope: **NA**

Median Slope Estimate = -7.38E-02 mg/L per day

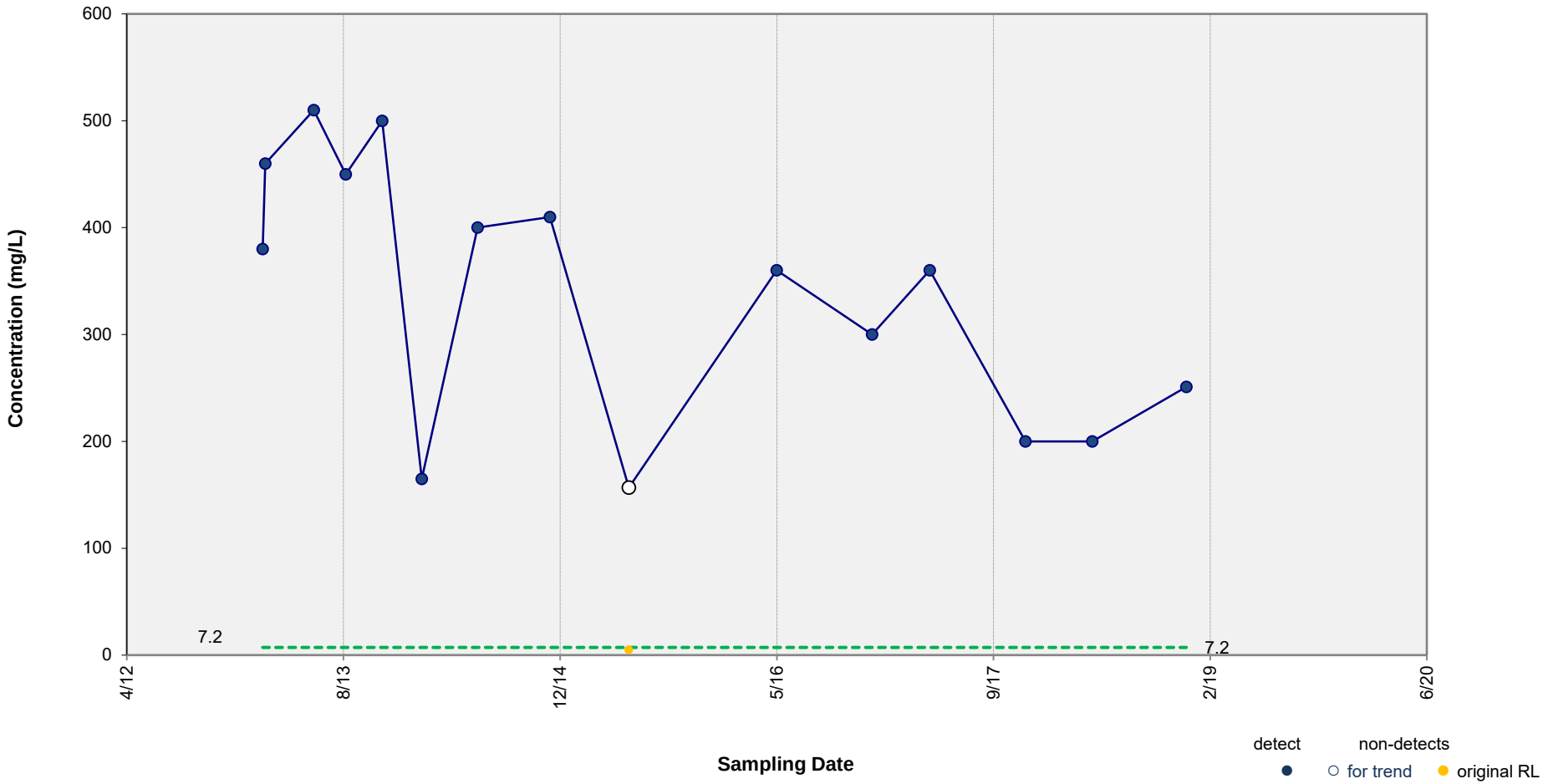
Confidence Interval on the Slope= -2.7E-01 to -5.4E-03 mg/L per day

ARCADIS

Concentration Plot: MW-12-18, Nickel

RACER Lansing located at 2801 West Saginaw Street in Lansing, Michigan

Attachment 1



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

p value = 0.0086 Note: p value < 0.1 indicates a statistically significant trend (90% confidence level).

Results of Sen's Estimator of Slope: **NA**

Median Slope Estimate = -1.06E+02 mg/L per day

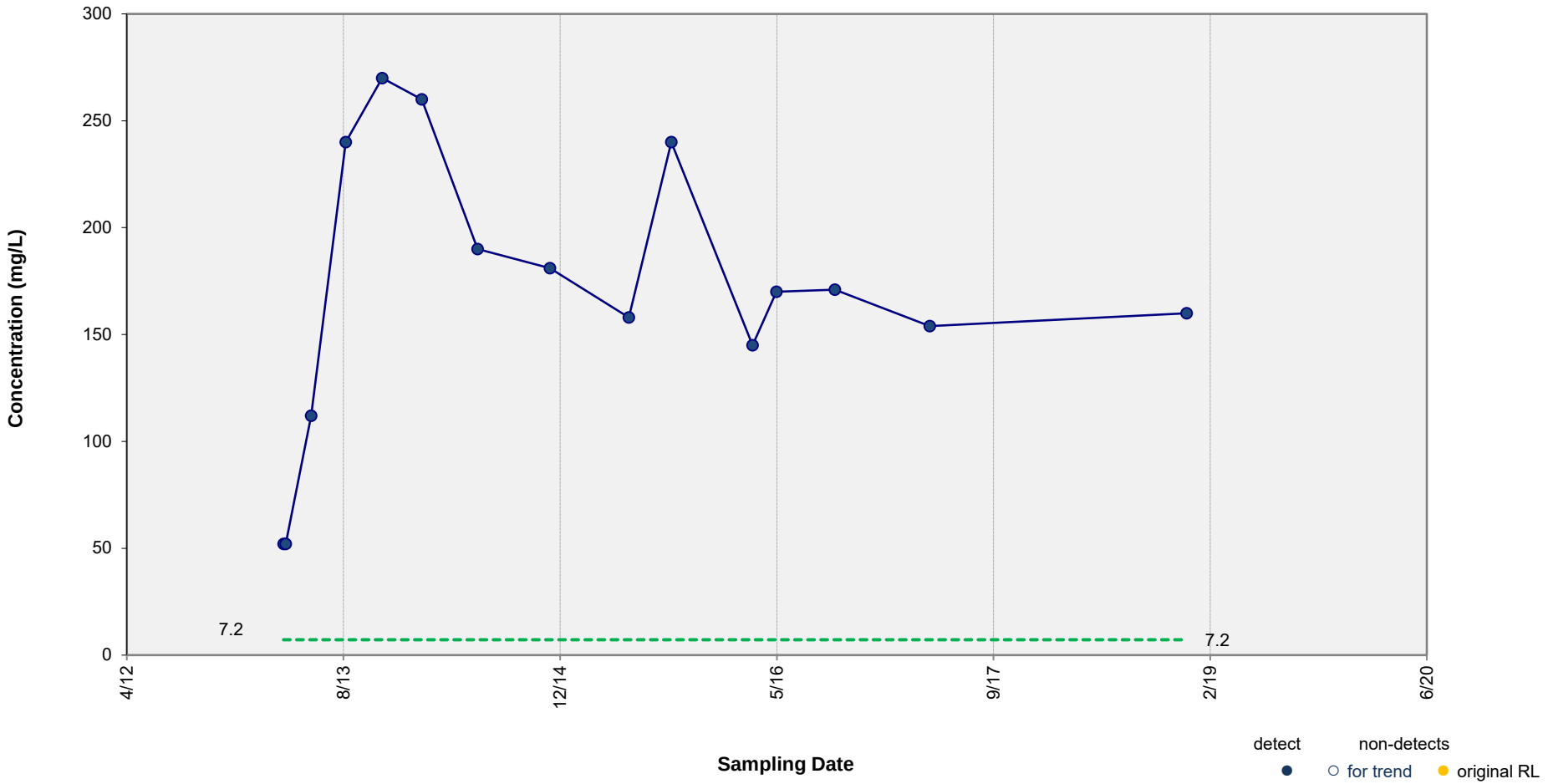
Confidence Interval on the Slope= -1.6E+02 to -5.8E+01 mg/L per day

ARCADIS

Concentration Plot: MW-12-21, 1,4-Dioxane

RACER Lansing located at 2801 West Saginaw Street in Lansing, Michigan

Attachment 1



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

p value = 0.5000 Note: p value < 0.1 indicates a statistically significant trend (90% confidence level).

Results of Sen's Estimator of Slope: **NA**

Median Slope Estimate = 0.00E+00 mg/L per day

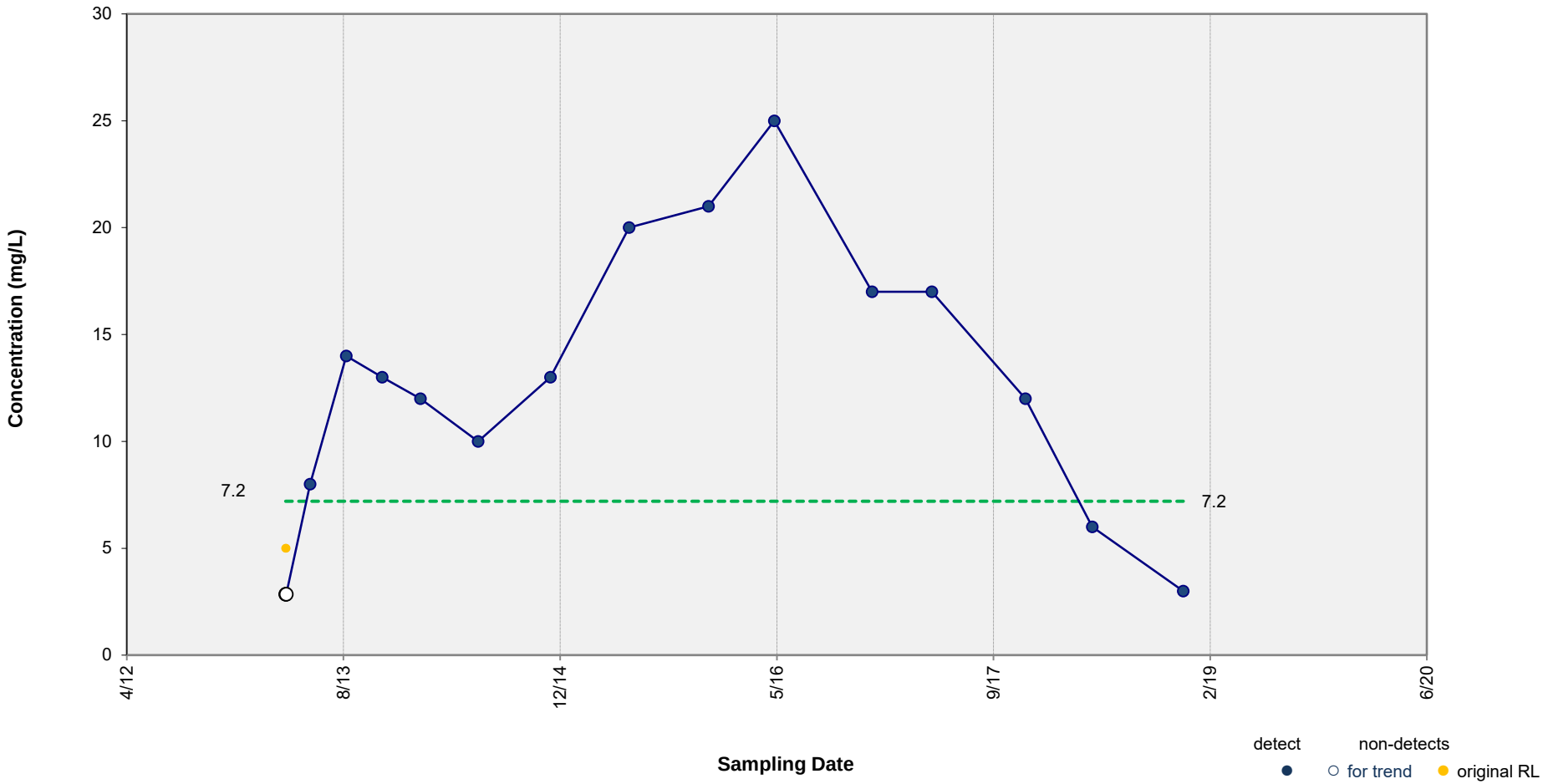
Confidence Interval on the Slope= -4.6E+01 to 6.8E+01 mg/L per day

ARCADIS

Concentration Plot: MW-13-22, 1,4-Dioxane

RACER Lansing located at 2801 West Saginaw Street in Lansing, Michigan

Attachment 1



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

p value = 0.1492 Note: p value < 0.1 indicates a statistically significant trend (90% confidence level).

Results of Sen's Estimator of Slope: **NA**

Median Slope Estimate = 3.44E+00 mg/L per day

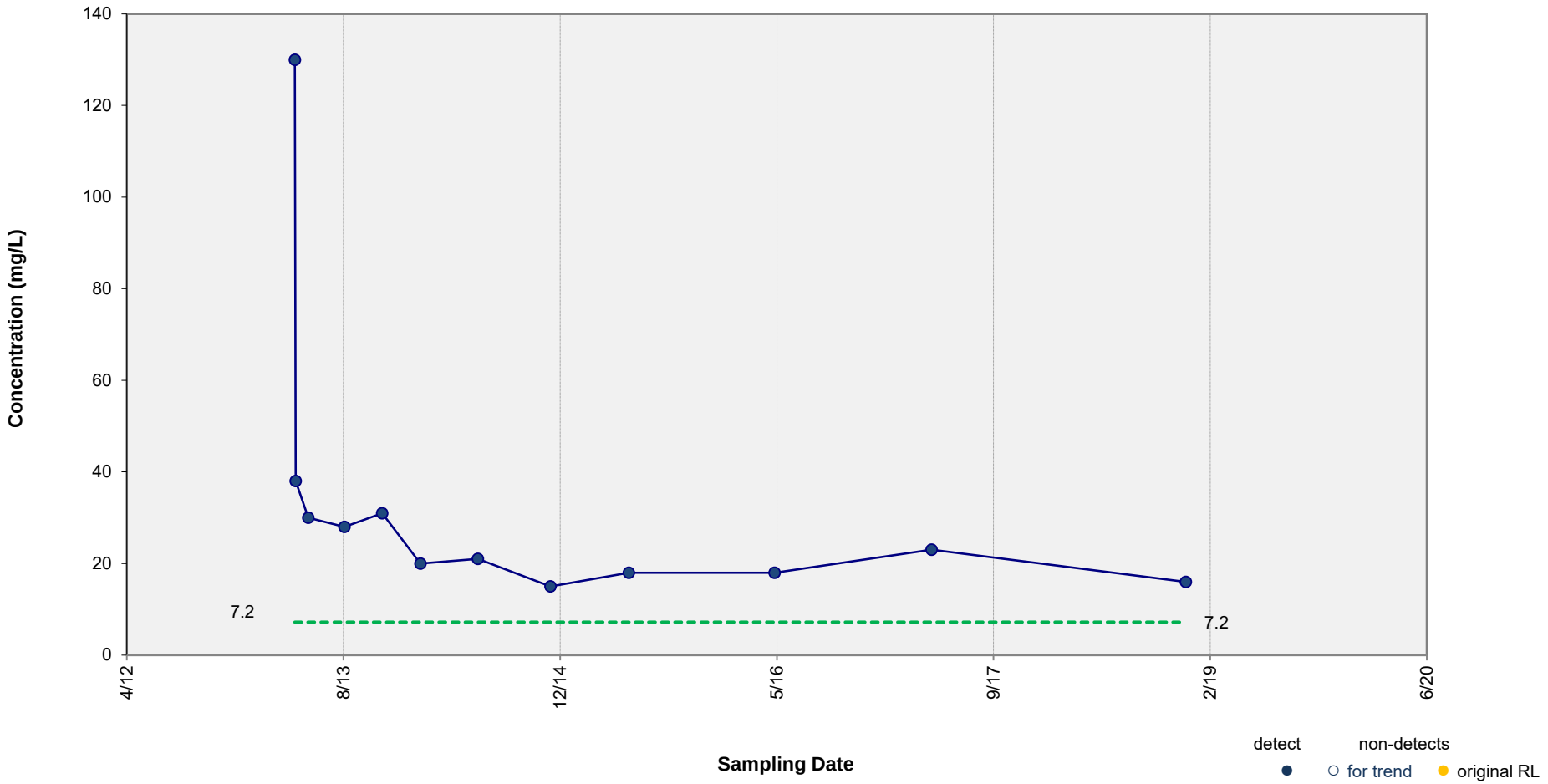
Confidence Interval on the Slope= -2.2E+00 to 9.7E+00 mg/L per day

ARCADIS

Concentration Plot: MW-13-25, 1,4-Dioxane

RACER Lansing located at 2801 West Saginaw Street in Lansing, Michigan

Attachment 1



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

p value = 0.0019 Note: p value < 0.1 indicates a statistically significant trend (90% confidence level).

Results of Sen's Estimator of Slope: **NA**

Median Slope Estimate = -1.57E+01 mg/L per day

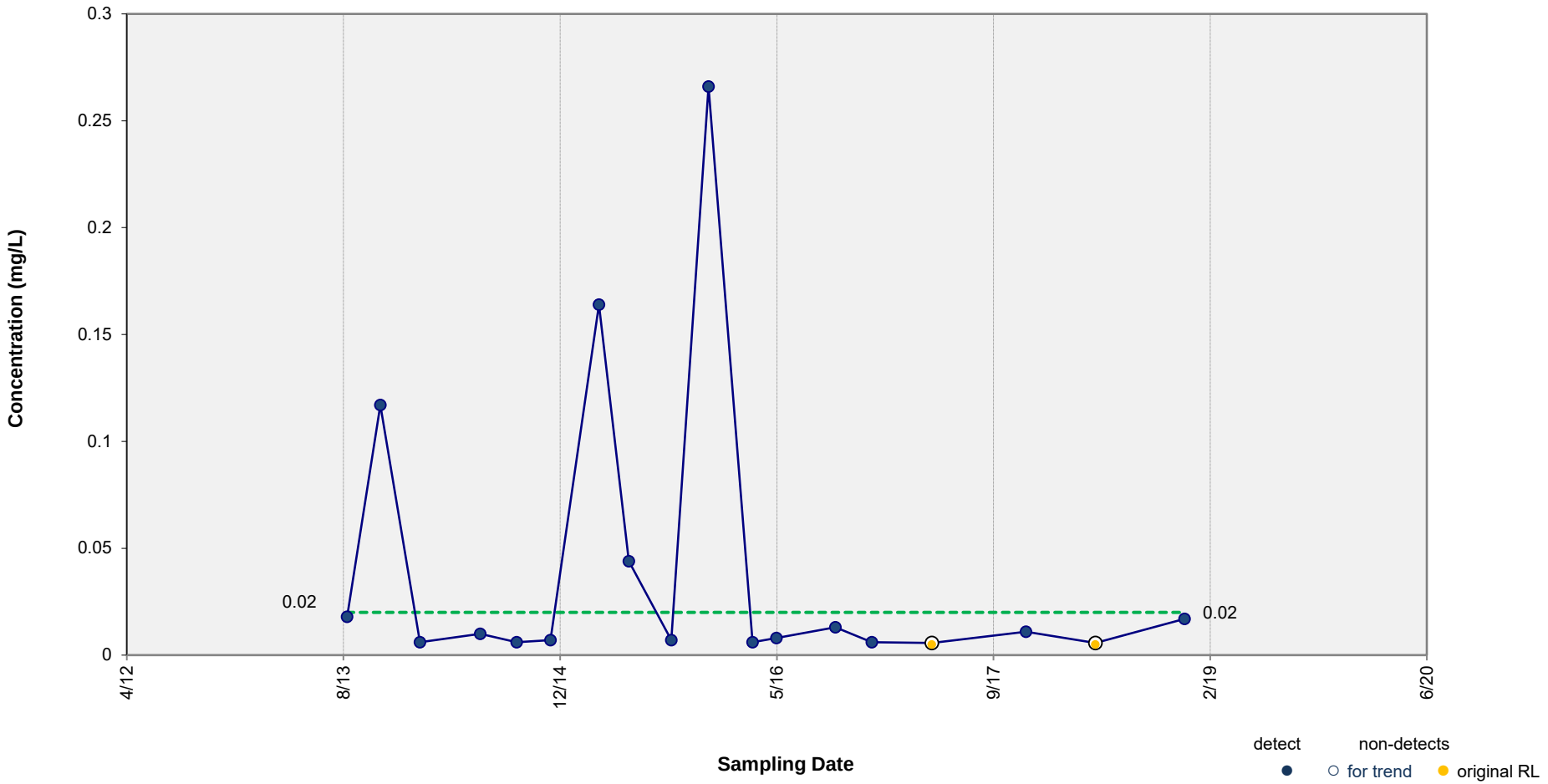
Confidence Interval on the Slope= -3.9E+01 to -6.2E+00 mg/L per day

ARCADIS

Concentration Plot: MW-13-29, 1,4-Dioxane

RACER Lansing located at 2801 West Saginaw Street in Lansing, Michigan

Attachment 1



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

p value = 0.1605 Note: p value < 0.1 indicates a statistically significant trend (90% confidence level).

Results of Sen's Estimator of Slope: **NA**

Median Slope Estimate = -1.33E-03 mg/L per day

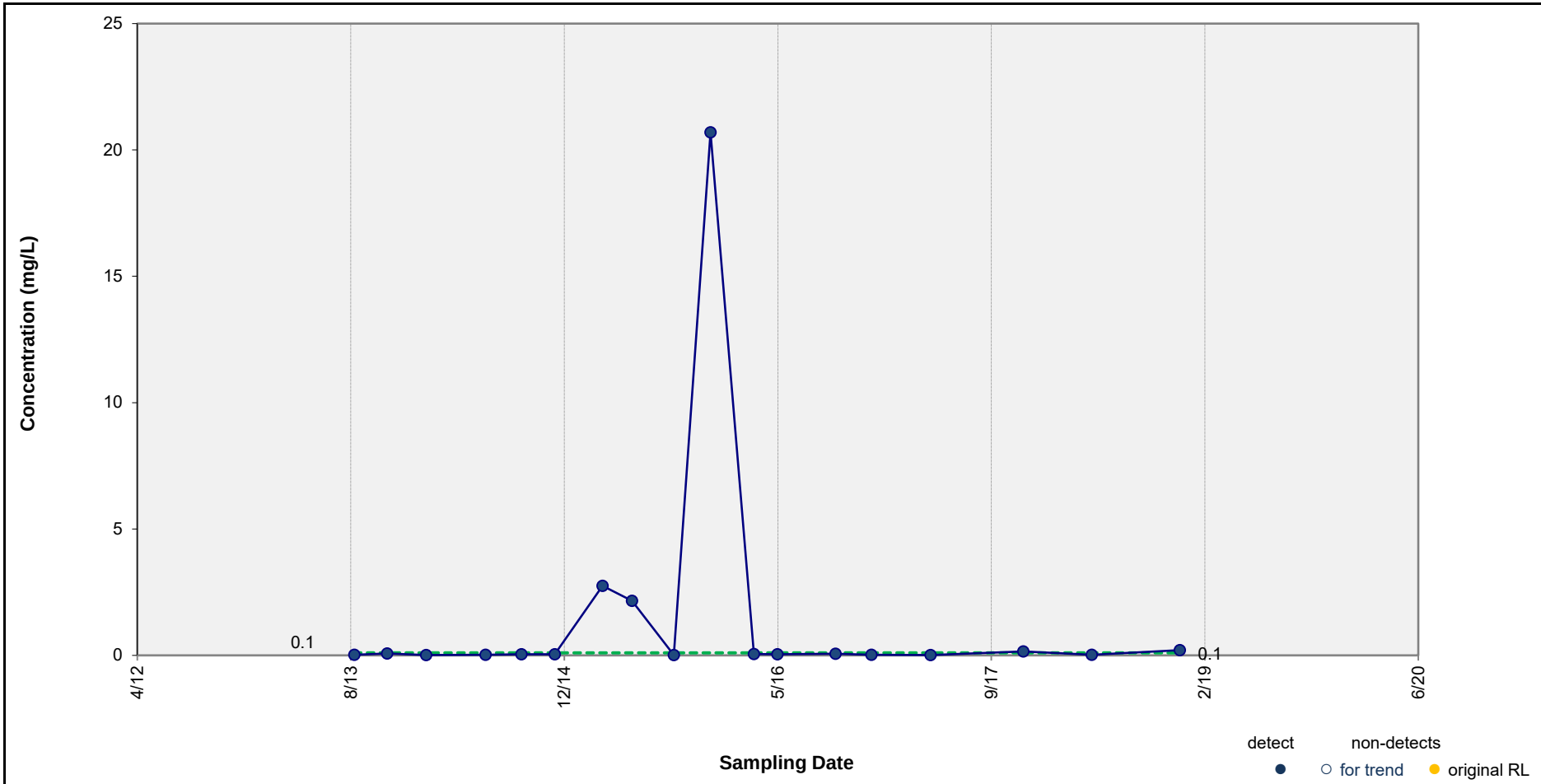
Confidence Interval on the Slope= -9.9E-03 to 2.4E-03 mg/L per day

ARCADIS

Concentration Plot: MW-13-31, Copper

RACER Lansing located at 2801 West Saginaw Street in Lansing, Michigan

Attachment 1



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

p value = 0.2722 Note: p value < 0.1 indicates a statistically significant trend (90% confidence level).

Results of Sen's Estimator of Slope: **NA**

Median Slope Estimate = 9.69E-03 mg/L per day

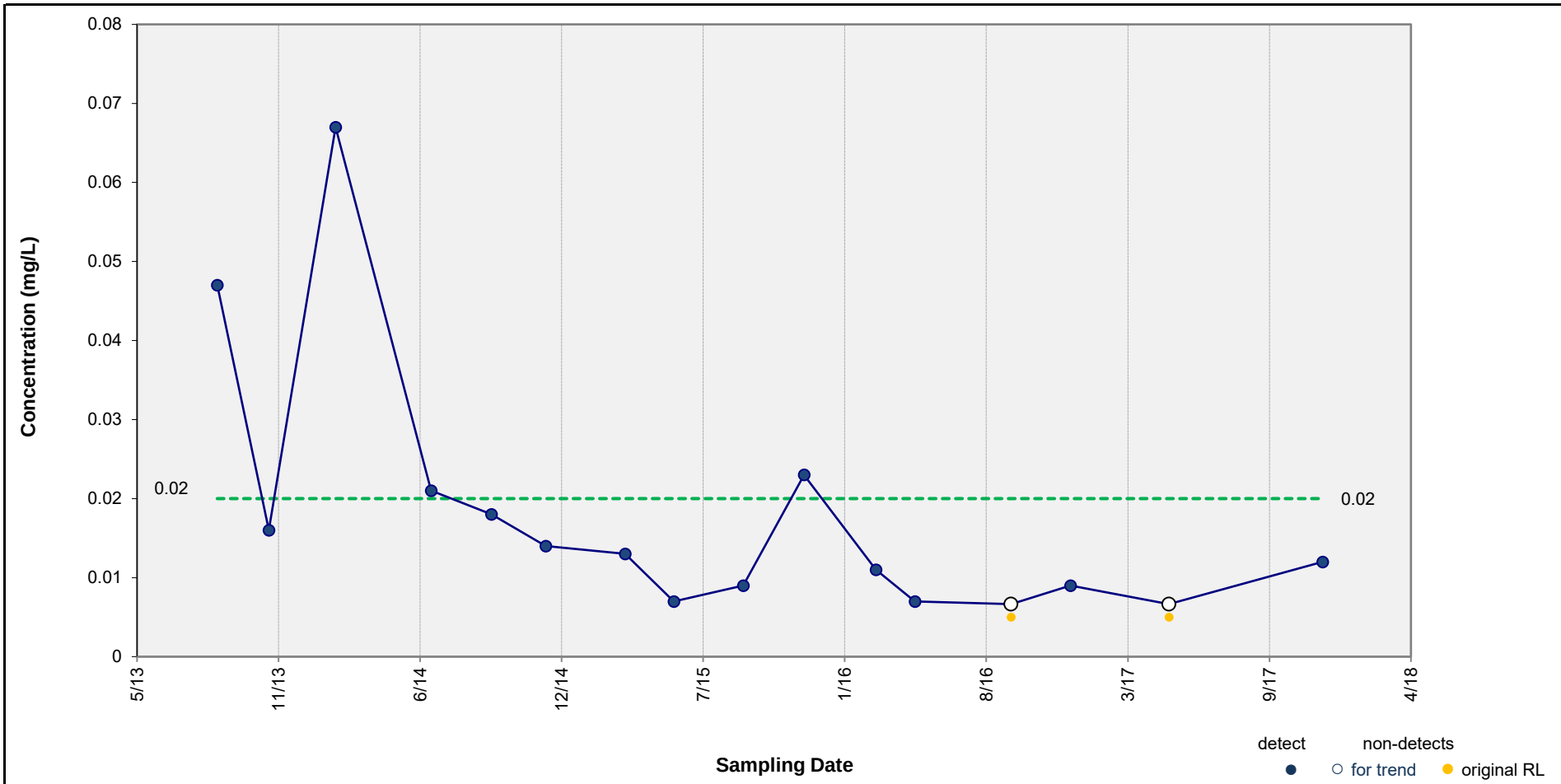
Confidence Interval on the Slope= -2.7E-02 to 7.4E-02 mg/L per day

ARCADIS

Concentration Plot: MW-13-31, Nickel

RACER Lansing located at 2801 West Saginaw Street in Lansing, Michigan

Attachment 1



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

p value = 0.0011 Note: p value < 0.1 indicates a statistically significant trend (90% confidence level).

Results of Sen's Estimator of Slope: **NA**

Median Slope Estimate = -1.24E-02 mg/L per day

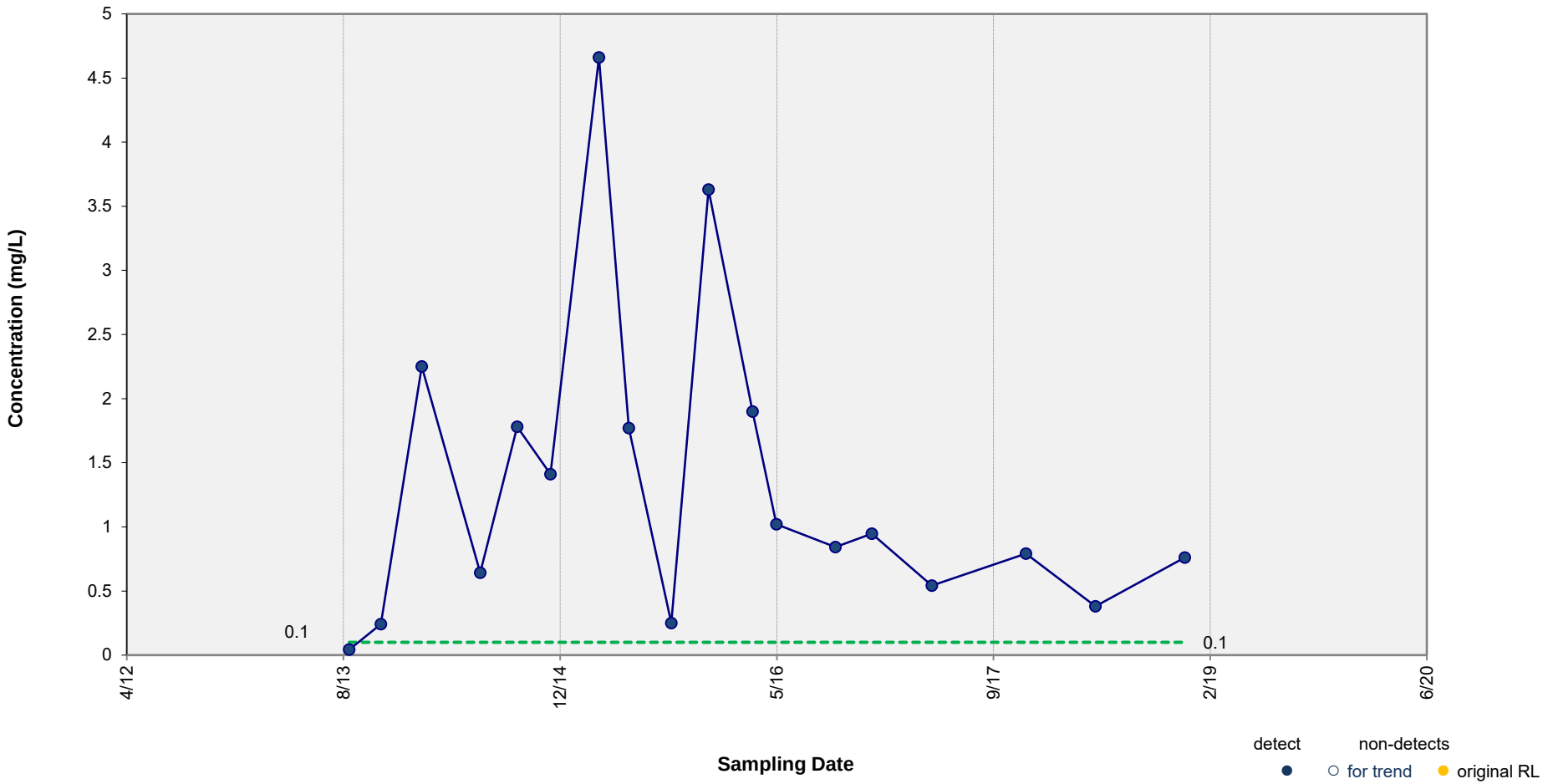
Confidence Interval on the Slope= -2.7E-02 to -6.3E-03 mg/L per day

ARCADIS

Concentration Plot: MW-13-32, Copper

RACER Lansing located at 2801 West Saginaw Street in Lansing, Michigan

Attachment 1



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

p value = 0.2722 Note: p value < 0.1 indicates a statistically significant trend (90% confidence level).

Results of Sen's Estimator of Slope: **NA**

Median Slope Estimate = -3.32E-01 mg/L per day

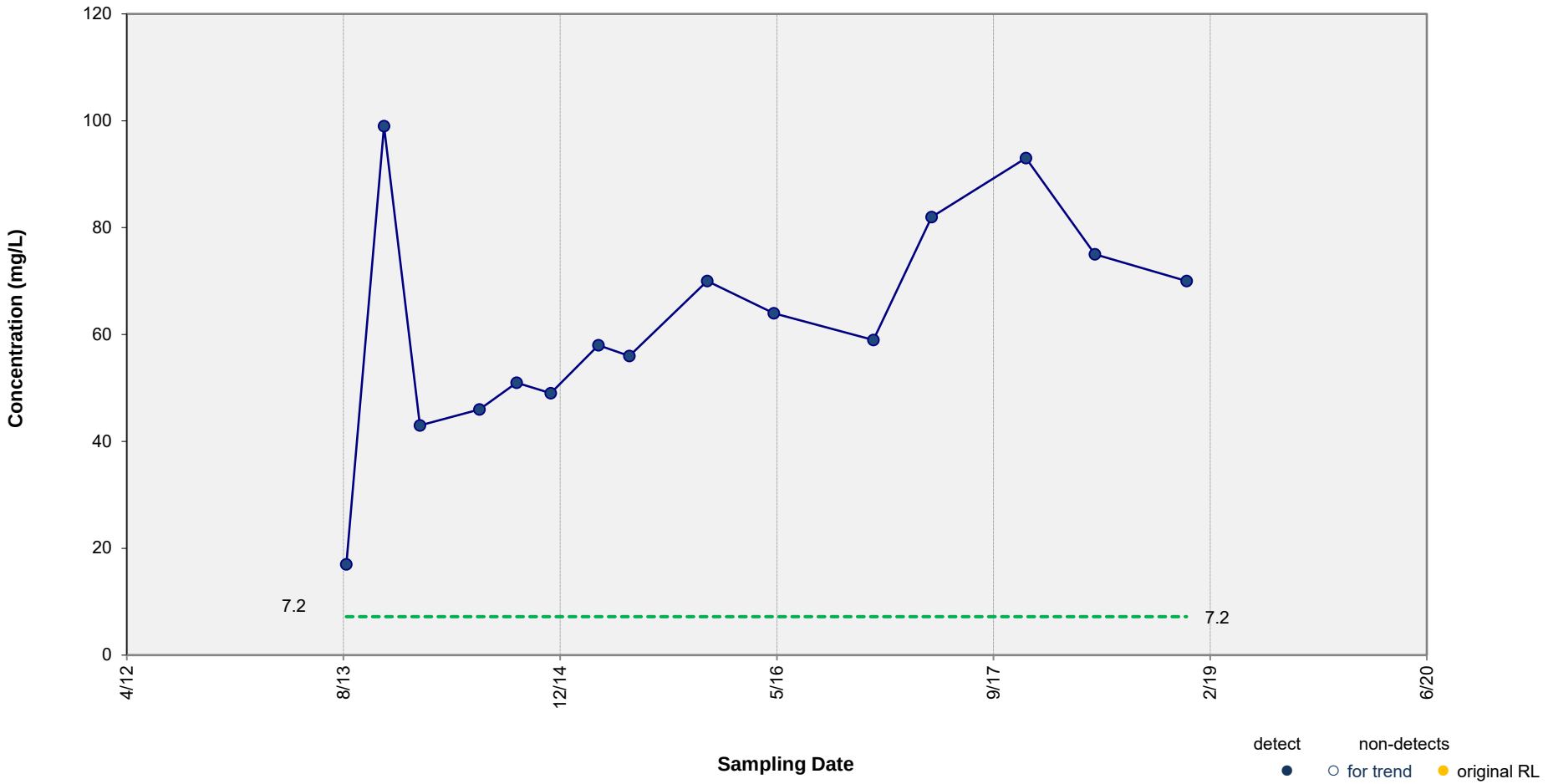
Confidence Interval on the Slope= -1.1E+00 to 3.7E-01 mg/L per day

ARCADIS

Concentration Plot: MW-13-32, Nickel

RACER Lansing located at 2801 West Saginaw Street in Lansing, Michigan

Attachment 1



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

p value = 0.0024 Note: p value < 0.1 indicates a statistically significant trend (90% confidence level).

Results of Sen's Estimator of Slope: **NA**

Median Slope Estimate = 2.32E+01 mg/L per day

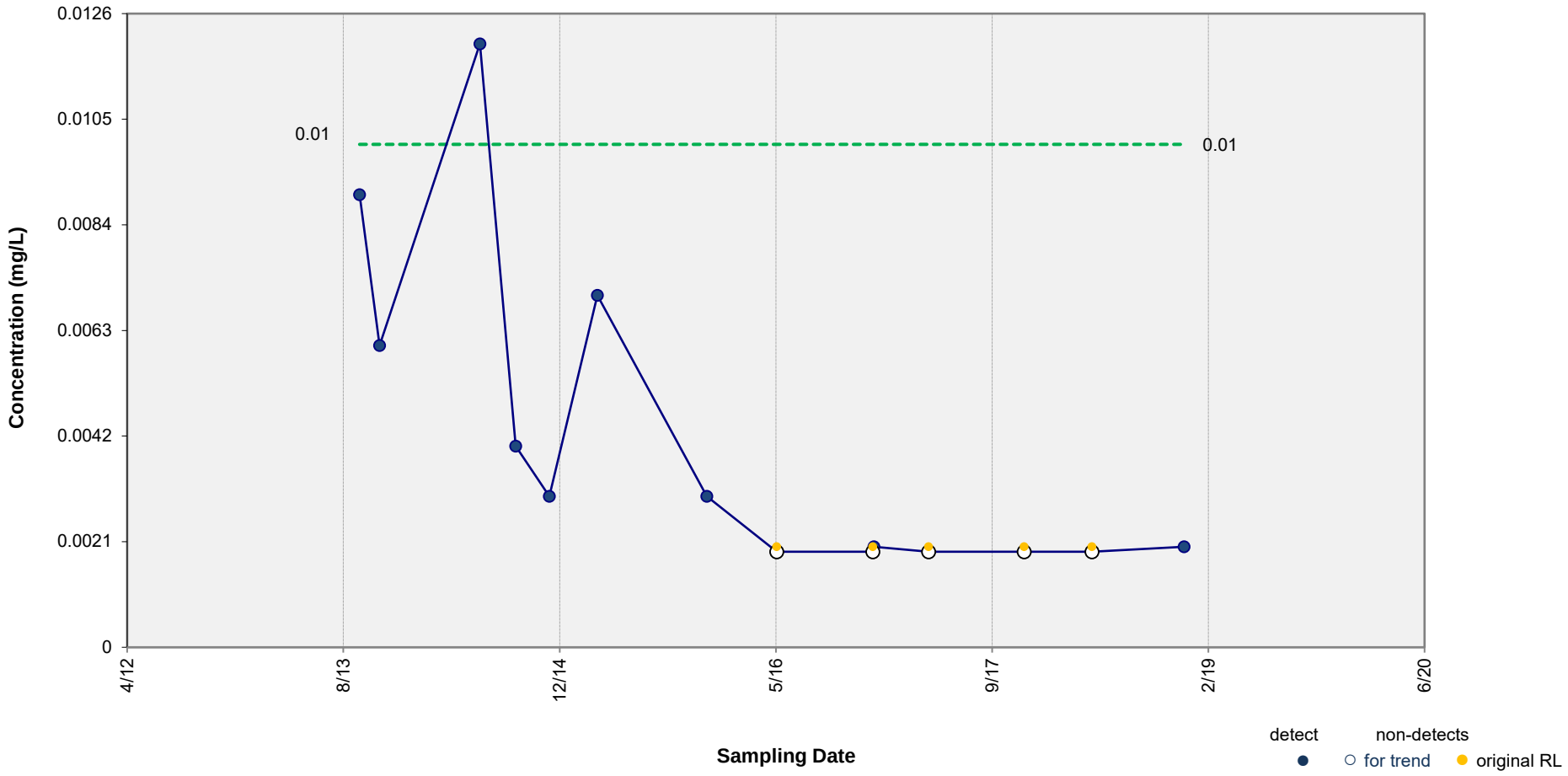
Confidence Interval on the Slope= 1.5E+01 to 3.6E+01 mg/L per day

ARCADIS

Concentration Plot: MW-13-34, 1,4-Dioxane

RACER Lansing located at 2801 West Saginaw Street in Lansing, Michigan

Attachment 1



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

p value = 0.0012 Note: p value < 0.1 indicates a statistically significant trend (90% confidence level).

Results of Sen's Estimator of Slope: **NA**

Median Slope Estimate = -2.49E-03 mg/L per day

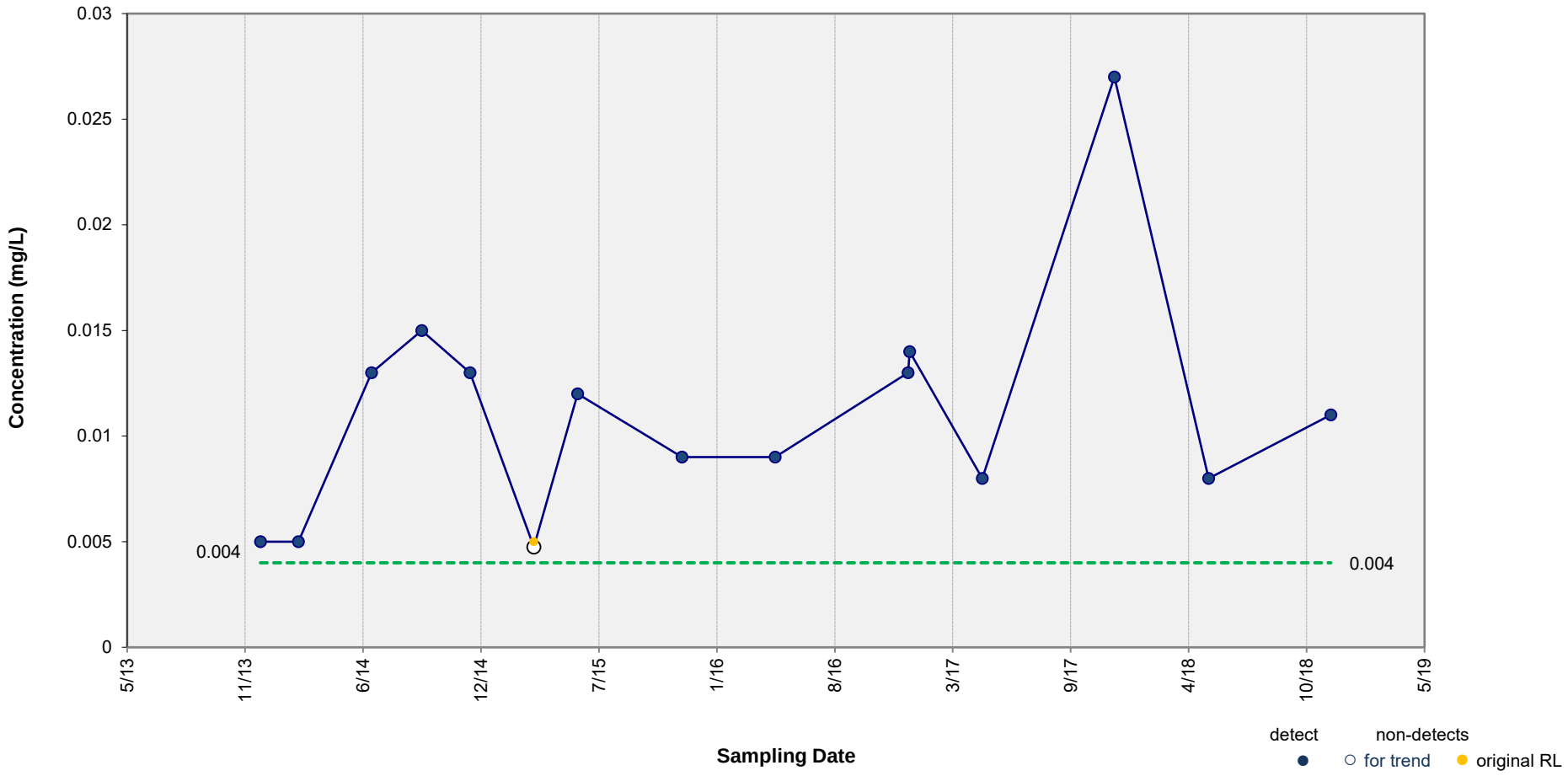
Confidence Interval on the Slope= -4.5E-03 to -1.2E-03 mg/L per day

ARCADIS

Concentration Plot: MW-13-35, Arsenic

RACER Lansing located at 2801 West Saginaw Street in Lansing, Michigan

Attachment 1



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

p value = 0.2747 Note: p value < 0.1 indicates a statistically significant trend (90% confidence level).

Results of Sen's Estimator of Slope: **NA**

Median Slope Estimate = 1.82E-03 mg/L per day

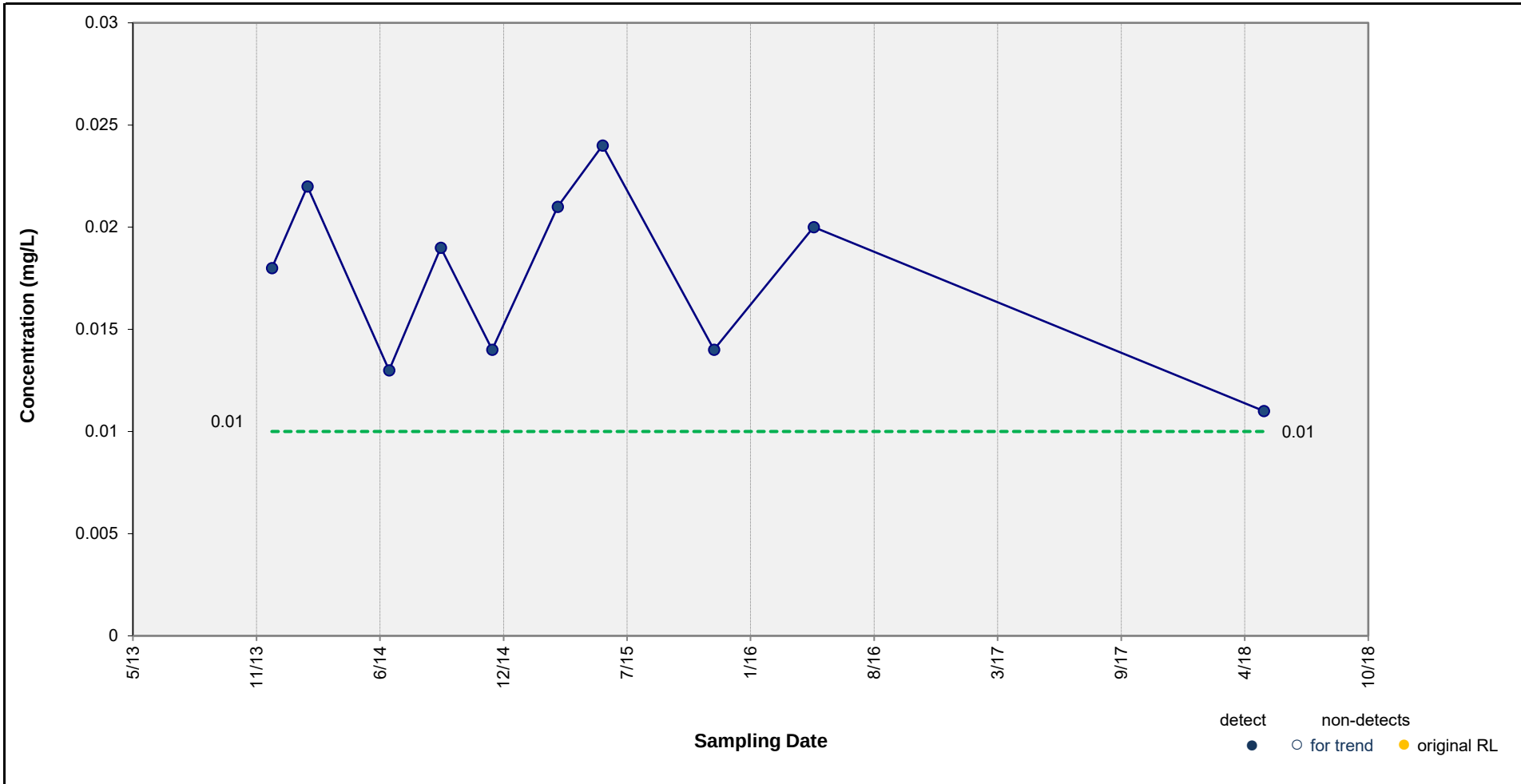
Confidence Interval on the Slope= -1.4E-03 to 6.1E-03 mg/L per day

ARCADIS

Concentration Plot: MW-13-36R, Vanadium

RACER Lansing located at 2801 West Saginaw Street in Lansing, Michigan

Attachment 1



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

p value = 0.3980 Note: p value < 0.1 indicates a statistically significant trend (90% confidence level).

Results of Sen's Estimator of Slope: **NA**

Median Slope Estimate = -2.40E-03 mg/L per day

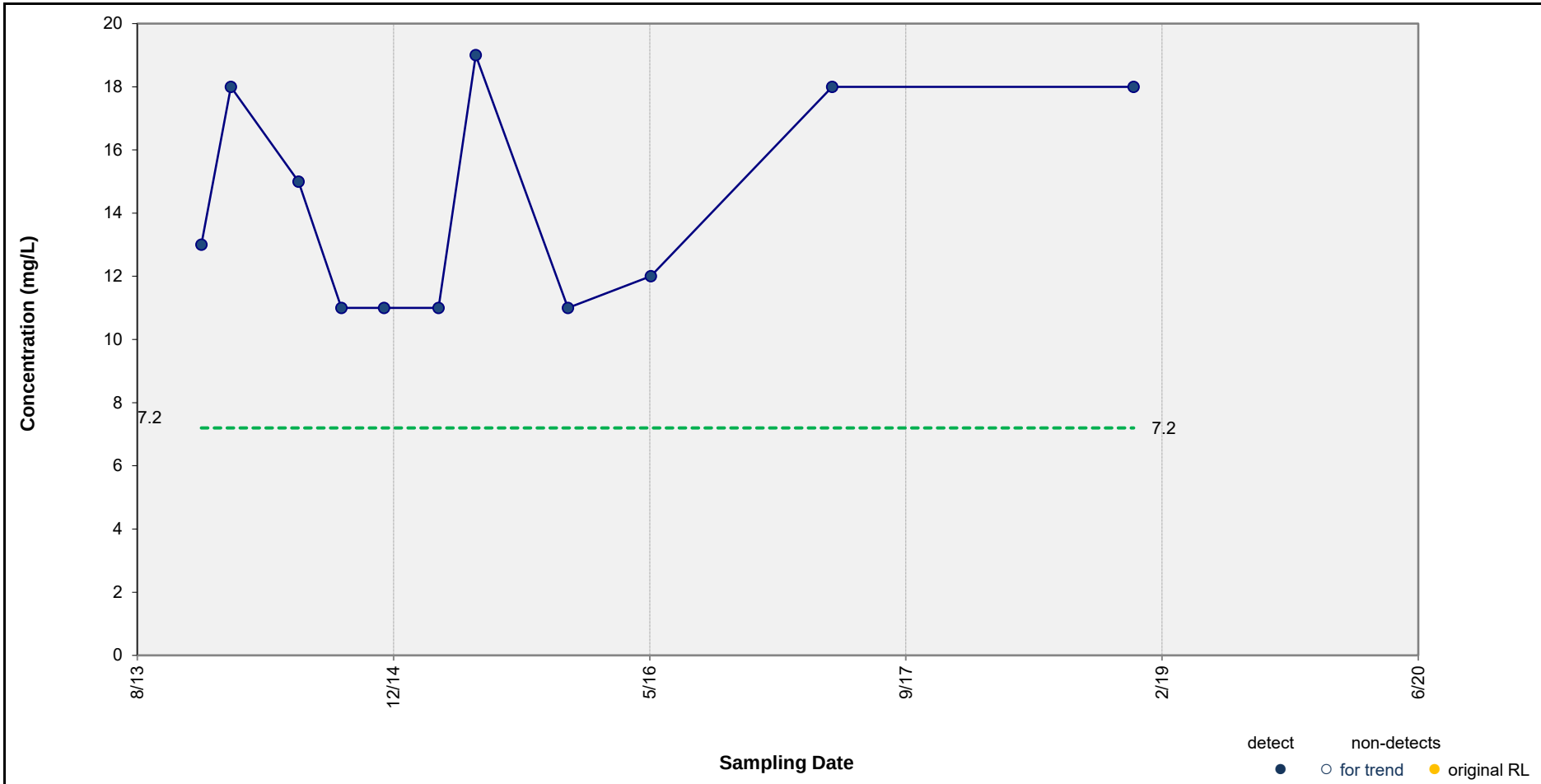
Confidence Interval on the Slope= -1.0E-02 to 6.3E-03 mg/L per day

ARCADIS

Concentration Plot: MW-13-41, Arsenic

RACER Lansing located at 2801 West Saginaw Street in Lansing, Michigan

Attachment 1



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

p value = 0.3429 Note: p value < 0.1 indicates a statistically significant trend (90% confidence level).

Results of Sen's Estimator of Slope: **NA**

Median Slope Estimate = 0.00E+00 mg/L per day

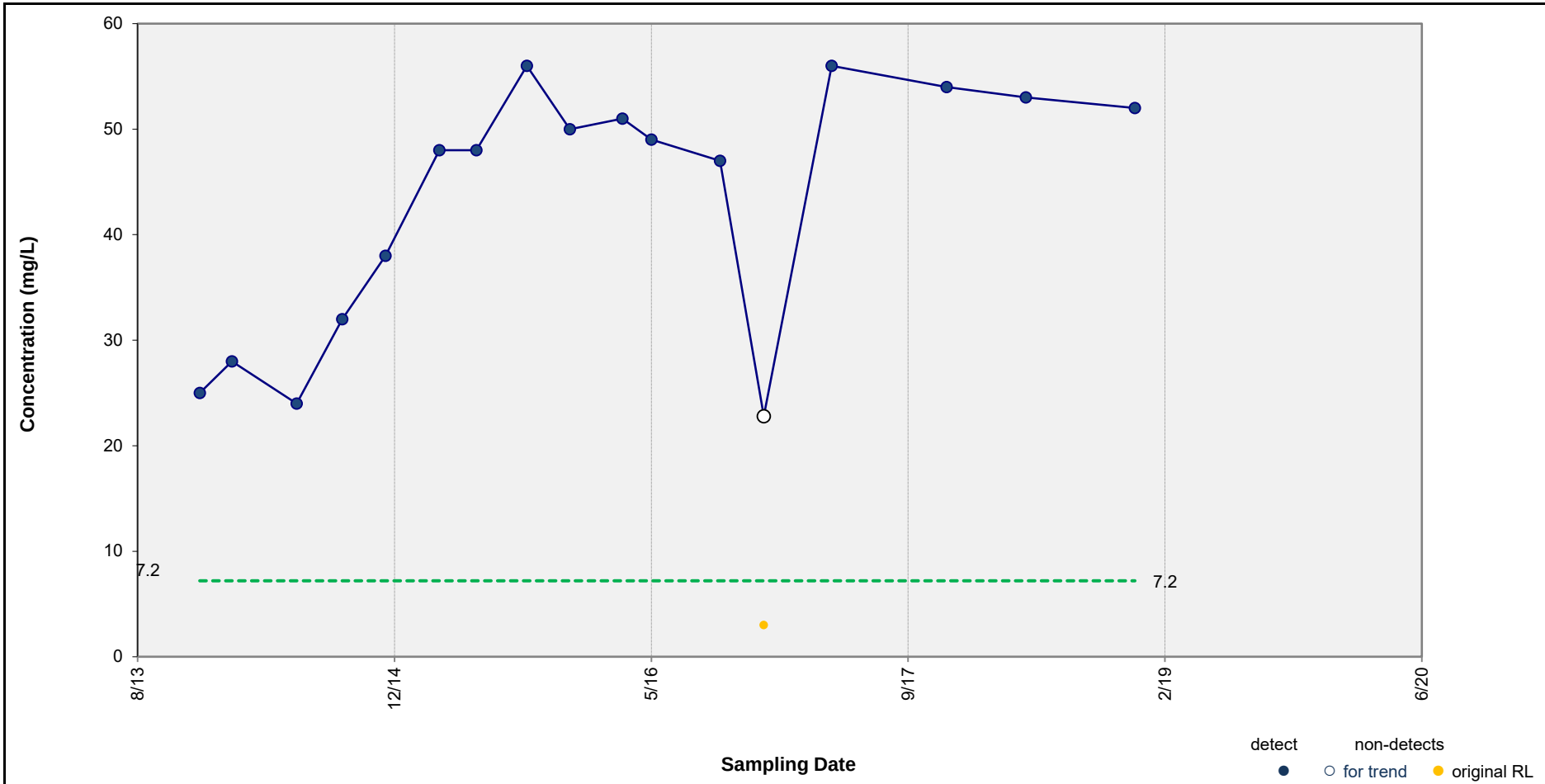
Confidence Interval on the Slope= -2.3E+00 to 4.4E+00 mg/L per day

ARCADIS

Concentration Plot: MW-13-41, 1,4-Dioxane

RACER Lansing located at 2801 West Saginaw Street in Lansing, Michigan

Attachment 1



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

p value = 0.0037 Note: p value < 0.1 indicates a statistically significant trend (90% confidence level).

Results of Sen's Estimator of Slope: **NA**

Median Slope Estimate = 1.37E+01 mg/L per day

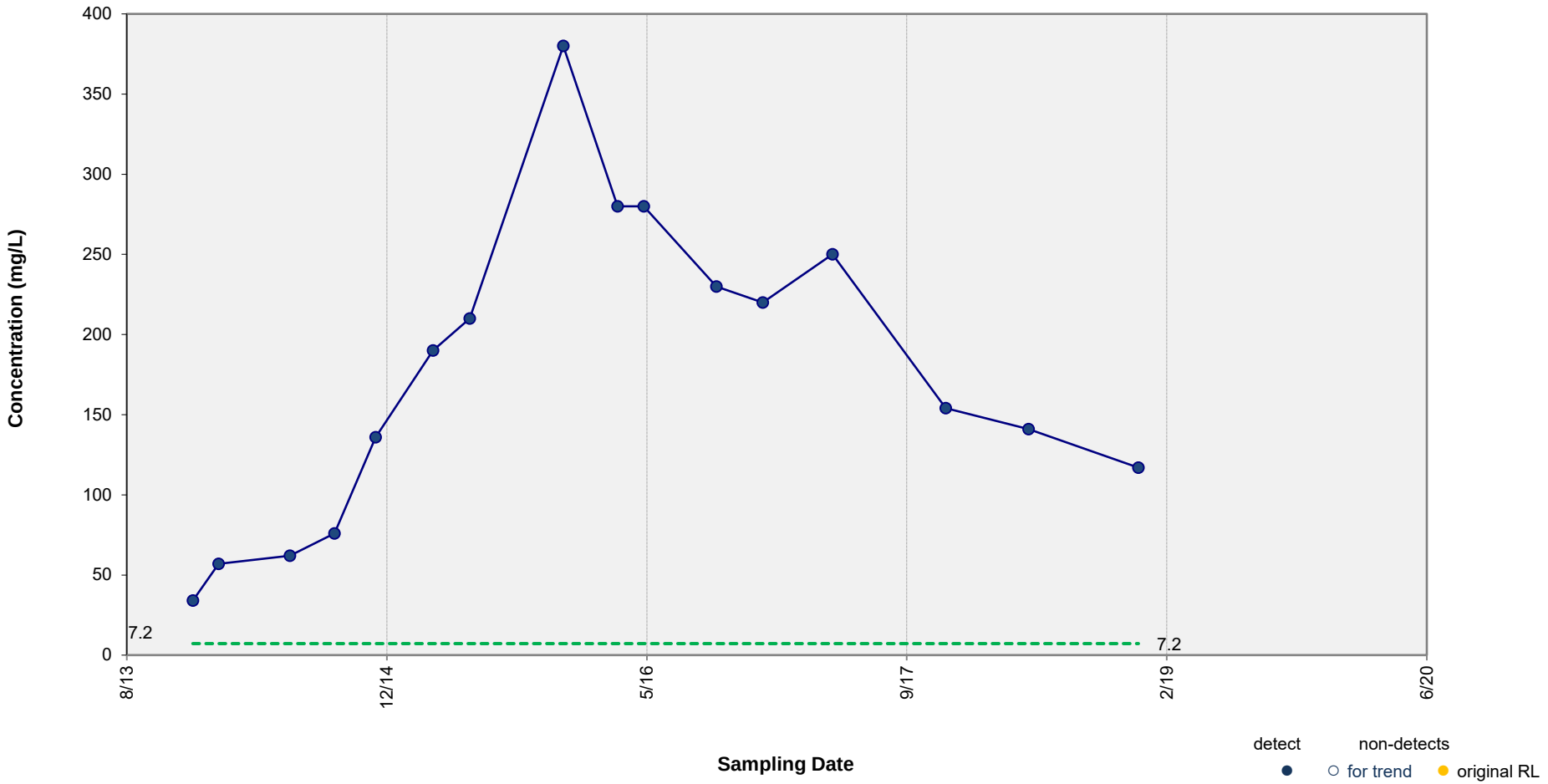
Confidence Interval on the Slope= 4.8E+00 to 2.4E+01 mg/L per day

ARCADIS

Concentration Plot: MW-13-45, 1,4-Dioxane

RACER Lansing located at 2801 West Saginaw Street in Lansing, Michigan

Attachment 1



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

p value = 0.0434 Note: p value < 0.1 indicates a statistically significant trend (90% confidence level).

Results of Sen's Estimator of Slope: **NA**

Median Slope Estimate = 7.57E+01 mg/L per day

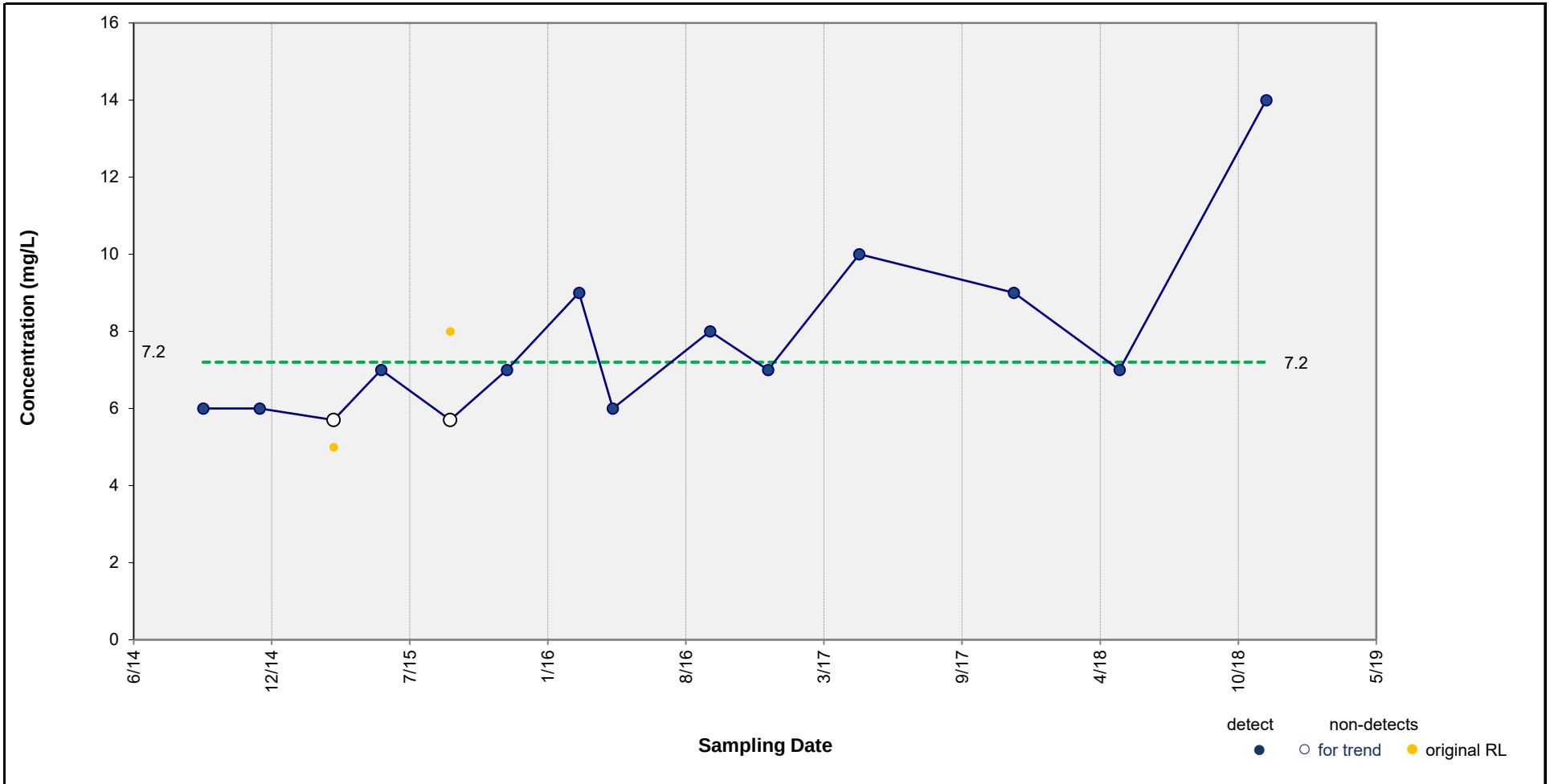
Confidence Interval on the Slope= 3.0E+00 to 1.8E+02 mg/L per day

ARCADIS

Concentration Plot: MW-13-48, 1,4-Dioxane

RACER Lansing located at 2801 West Saginaw Street in Lansing, Michigan

Attachment 1



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

p value = 0.0043 Note: p value < 0.1 indicates a statistically significant trend (90% confidence level).

Results of Sen's Estimator of Slope: **NA**

Median Slope Estimate = 2.75E+00 mg/L per day

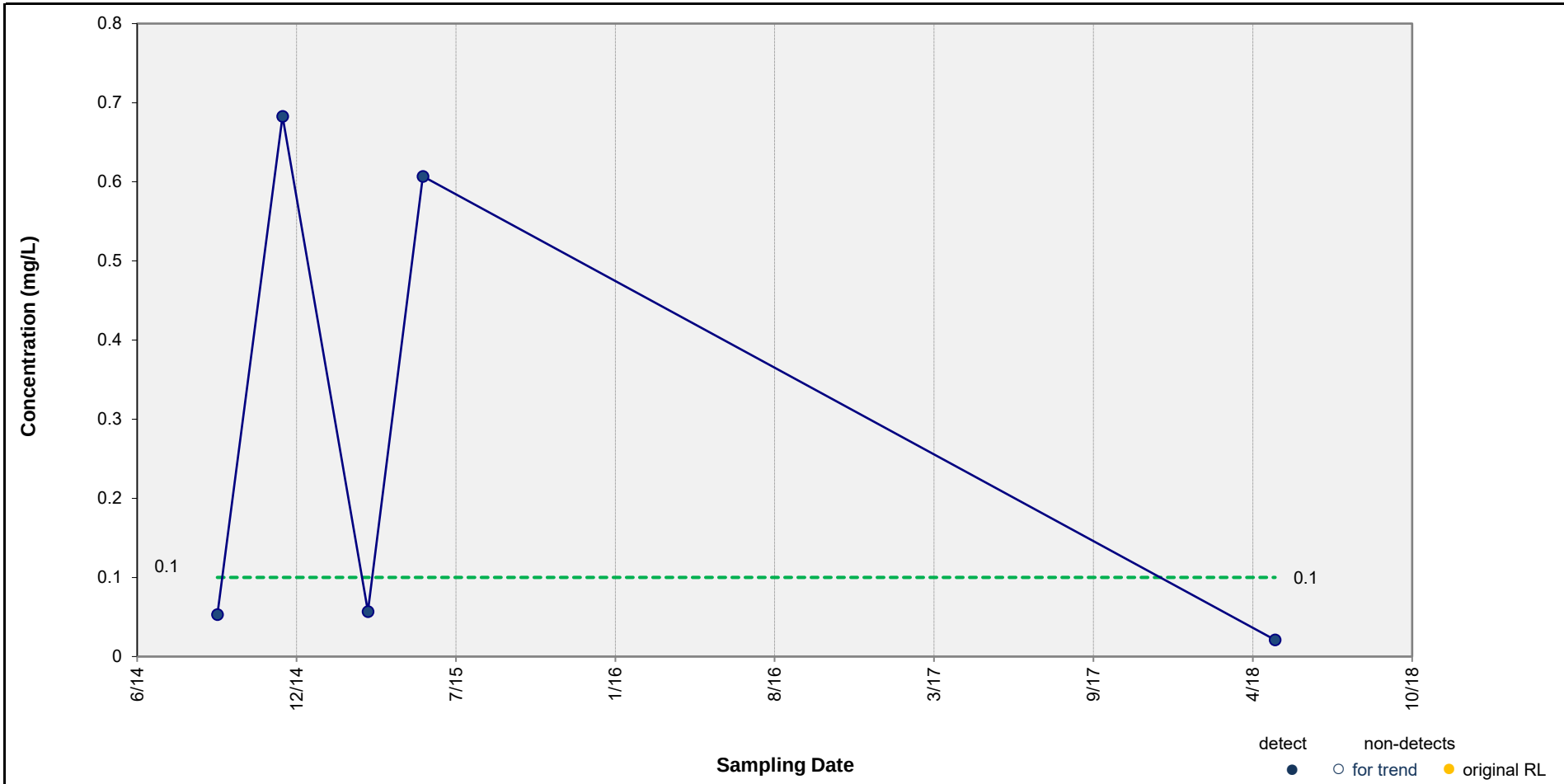
Confidence Interval on the Slope= 1.1E+00 to 5.2E+00 mg/L per day

ARCADIS

Concentration Plot: MW-14-56, 1,4-Dioxane

RACER Lansing located at 2801 West Saginaw Street in Lansing, Michigan

Attachment 1



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

p value = 0.4080 Note: p value < 0.1 indicates a statistically significant trend (90% confidence level).

Results of Sen's Estimator of Slope: **NA**

Median Slope Estimate = -2.79E-02 mg/L per day

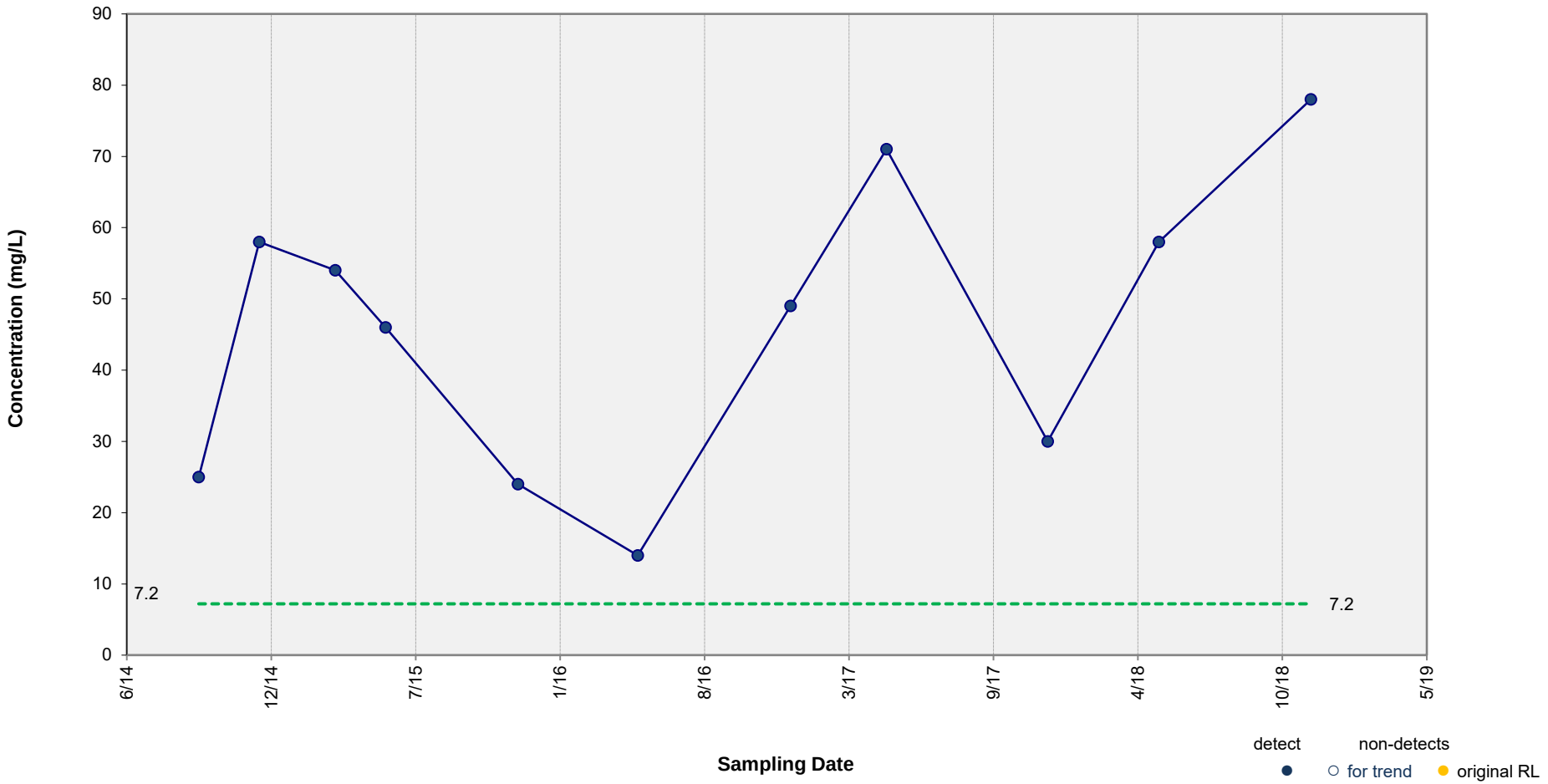
Confidence Interval on the Slope= -2.4E+00 to 4.1E+00 mg/L per day

ARCADIS

Concentration Plot: MW-14-56, Nickel

RACER Lansing located at 2801 West Saginaw Street in Lansing, Michigan

Attachment 1



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

p value = 0.1550 Note: p value < 0.1 indicates a statistically significant trend (90% confidence level).

Results of Sen's Estimator of Slope: **NA**

Median Slope Estimate = 1.37E+01 mg/L per day

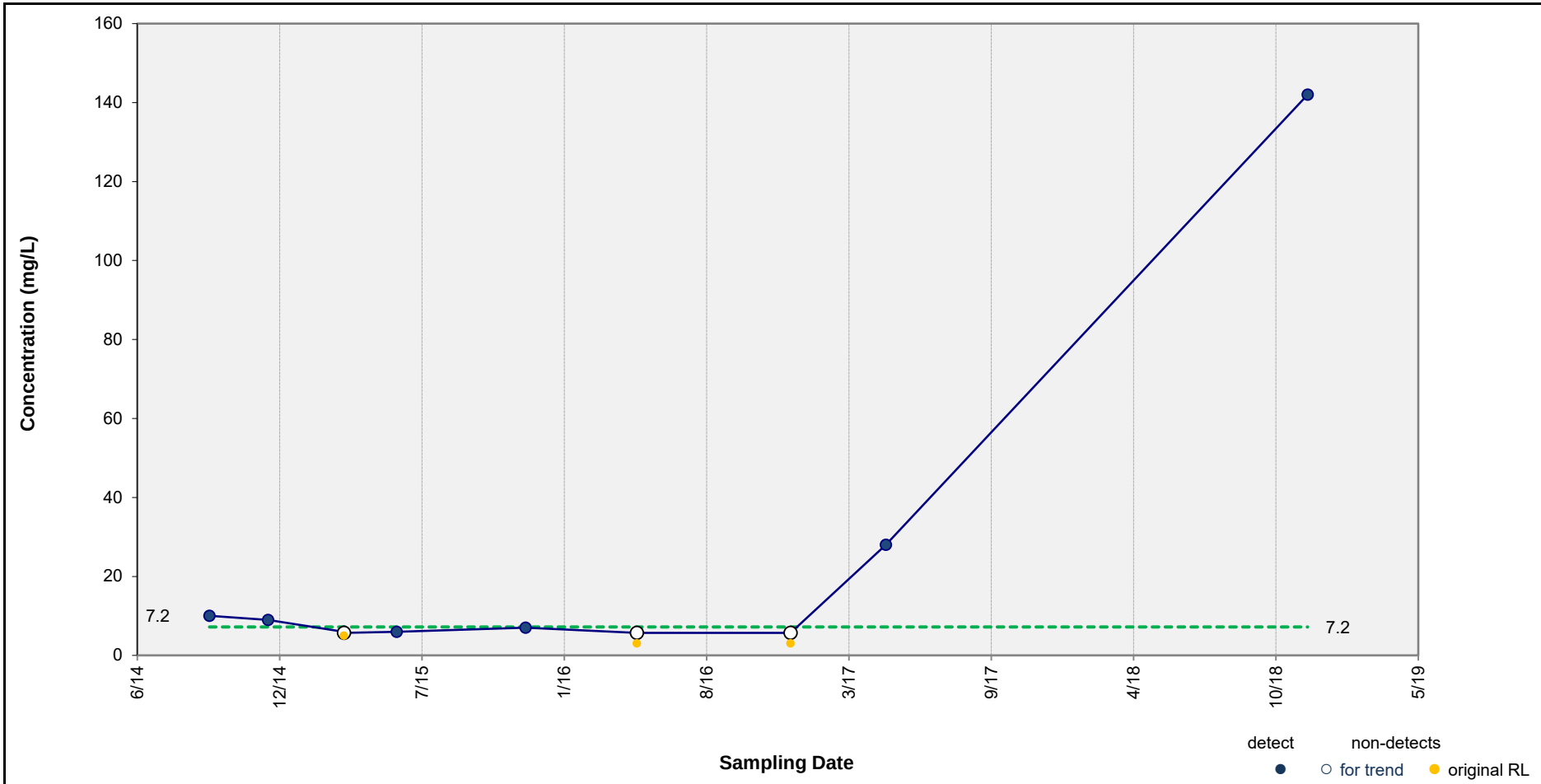
Confidence Interval on the Slope= -1.7E+01 to 3.6E+01 mg/L per day

ARCADIS

Concentration Plot: MW-14-58, 1,4-Dioxane

RACER Lansing located at 2801 West Saginaw Street in Lansing, Michigan

Attachment 1



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

p value = 0.5000 Note: p value < 0.1 indicates a statistically significant trend (90% confidence level).

Results of Sen's Estimator of Slope: **NA**

Median Slope Estimate = 0.00E+00 mg/L per day

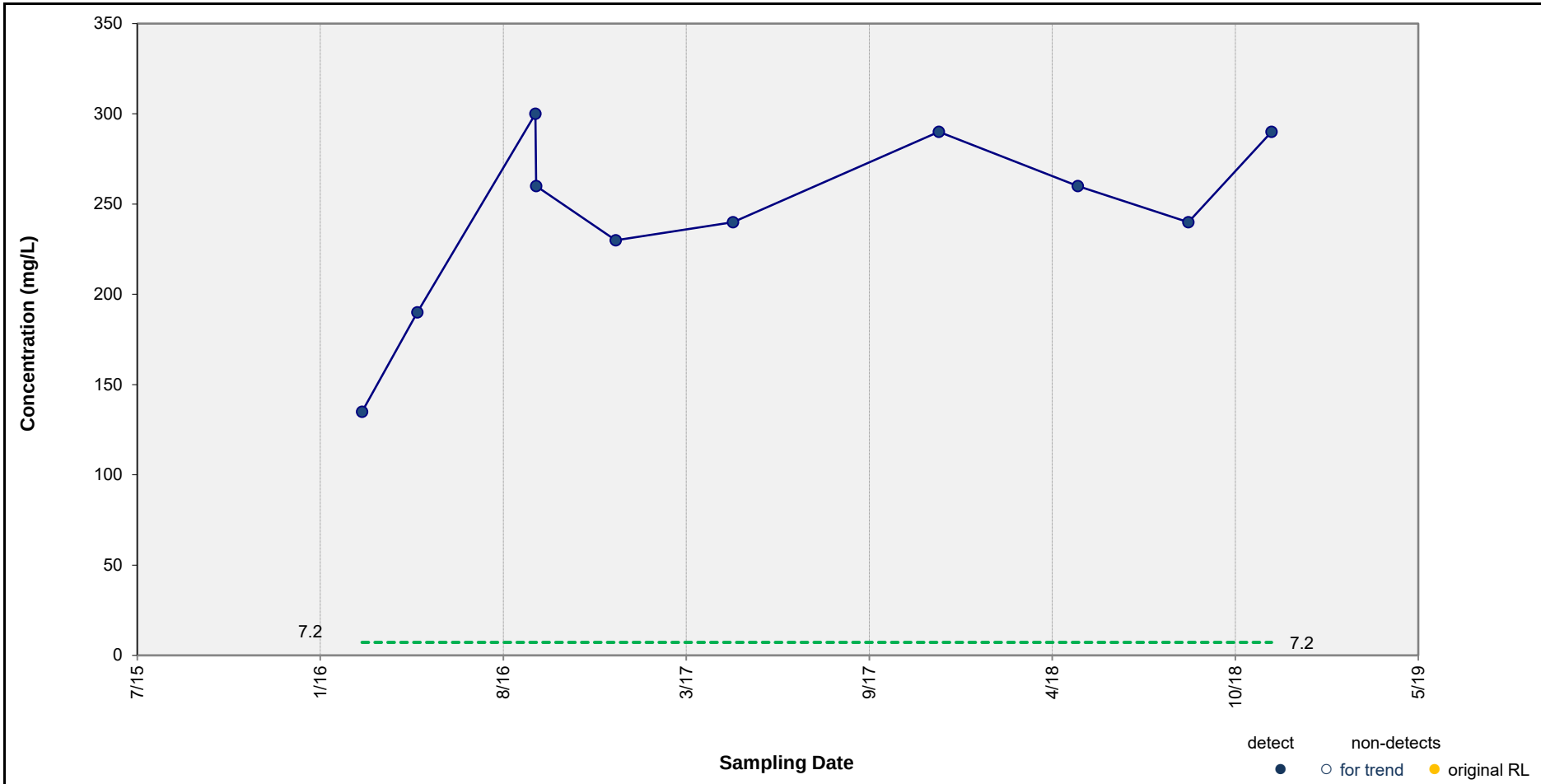
Confidence Interval on the Slope= -5.4E+00 to 2.9E+01 mg/L per day

ARCADIS

Concentration Plot: MW-14-61, 1,4-Dioxane

RACER Lansing located at 2801 West Saginaw Street in Lansing, Michigan

Attachment 1



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

p value = 0.0930 Note: p value < 0.1 indicates a statistically significant trend (90% confidence level).

Results of Sen's Estimator of Slope: **NA**

Median Slope Estimate = 7.81E+01 mg/L per day

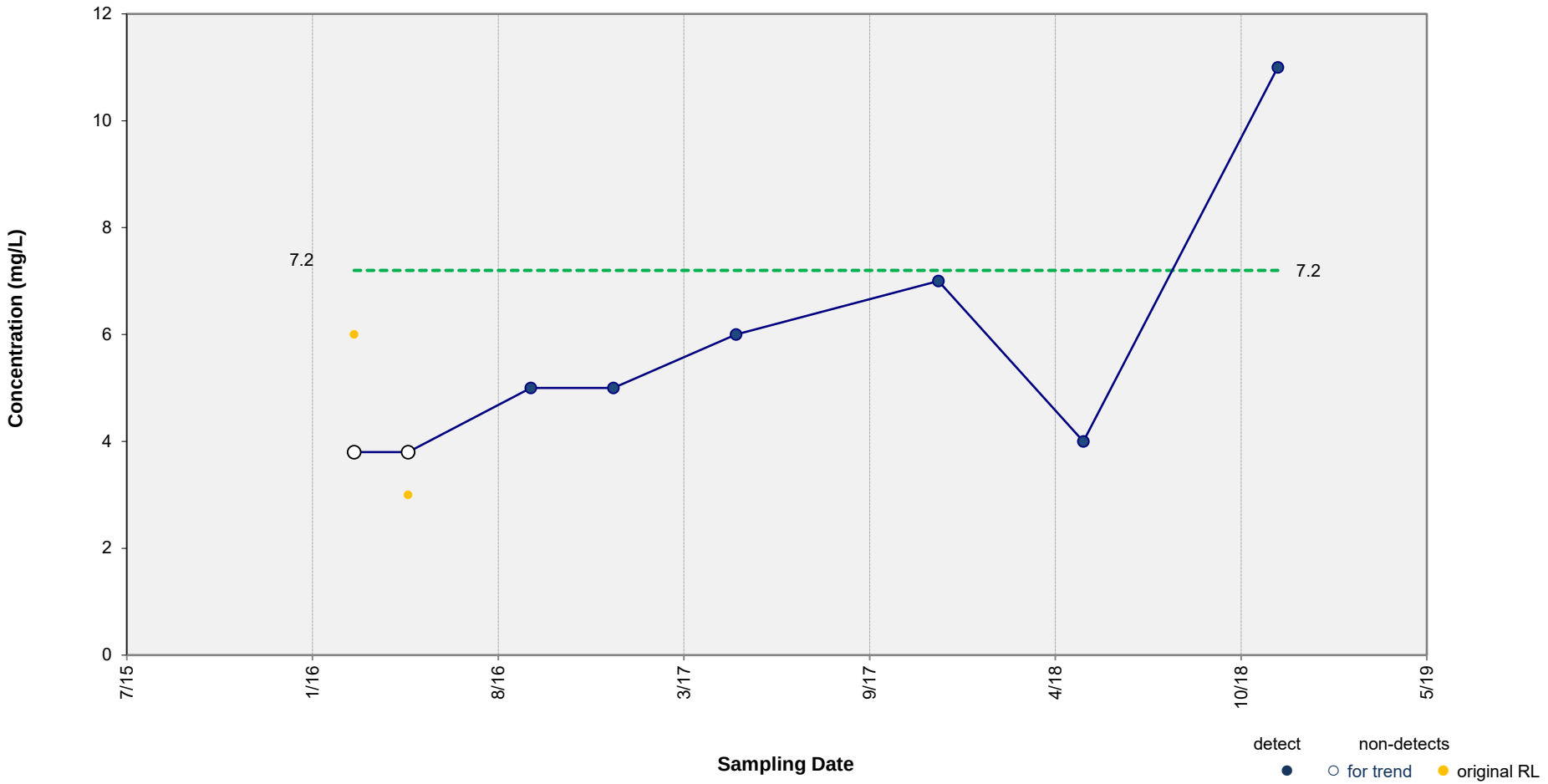
Confidence Interval on the Slope= -7.3E+00 to 1.6E+02 mg/L per day

ARCADIS

Concentration Plot: MW-15-72, 1,4-Dioxane

RACER Lansing located at 2801 West Saginaw Street in Lansing, Michigan

Attachment 1



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

p value = 0.0160 Note: p value < 0.1 indicates a statistically significant trend (90% confidence level).

Results of Sen's Estimator of Slope: **NA**

Median Slope Estimate = 5.39E+00 mg/L per day

Confidence Interval on the Slope= 2.6E-01 to 7.4E+00 mg/L per day

ARCADIS

Concentration Plot: MW-15-73, 1,4-Dioxane

RACER Lansing located at 2801 West Saginaw Street in Lansing, Michigan

Attachment 1

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

p value = 0.4430 Note: p value < 0.1 indicates a statistically significant trend (90% confidence level).

Results of Sen's Estimator of Slope: **NA**

Median Slope Estimate = 3.94E+00 mg/L per day

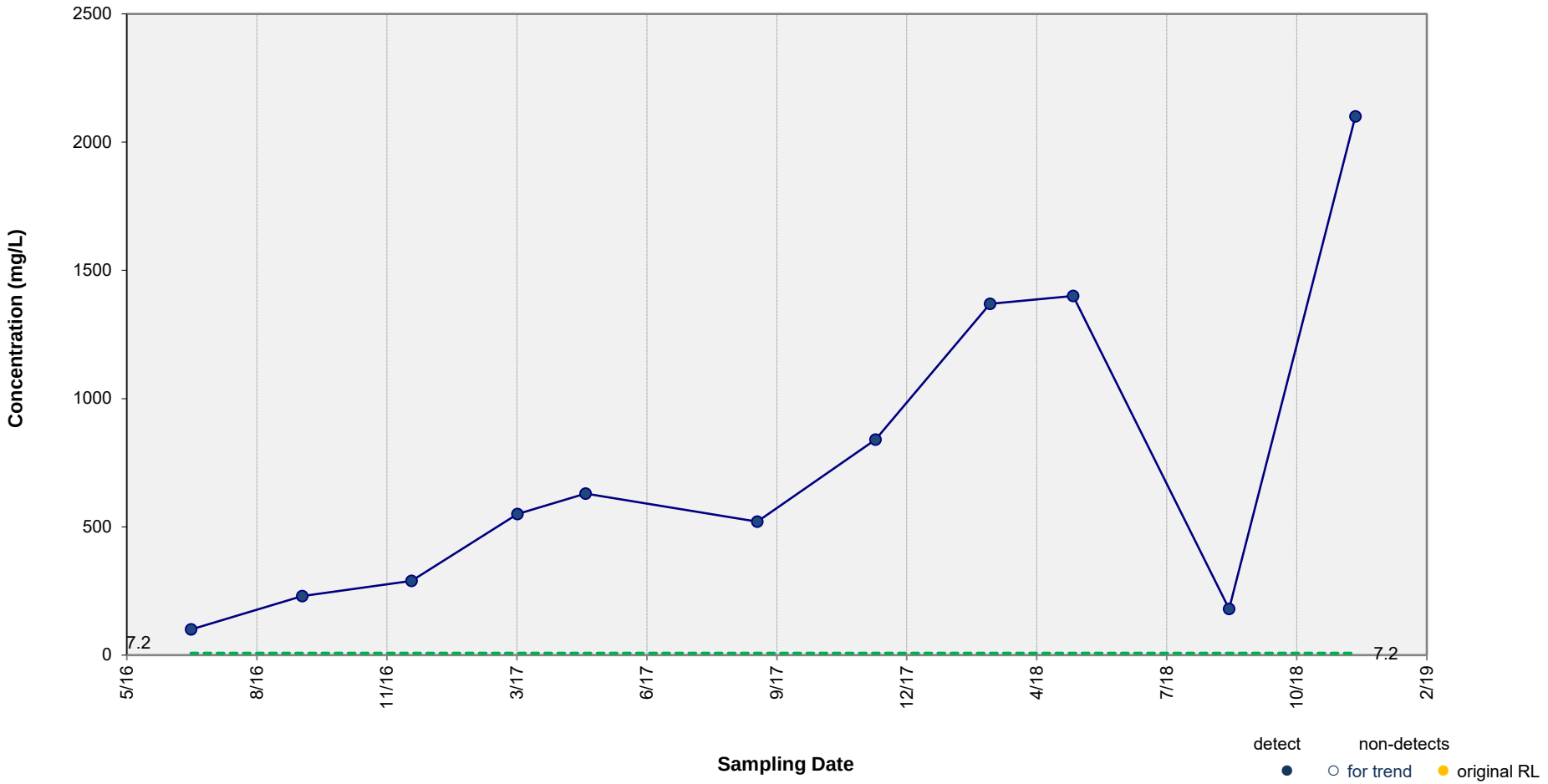
Confidence Interval on the Slope= -2.6E+01 to 1.3E+01 mg/L per day

ARCADIS

Concentration Plot: MW-16-80, 1,4-Dioxane

RACER Lansing located at 2801 West Saginaw Street in Lansing, Michigan

Attachment 1



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

p value = 0.0041 Note: p value < 0.1 indicates a statistically significant trend (90% confidence level).

Results of Sen's Estimator of Slope: **NA**

Median Slope Estimate = 1.92E+03 mg/L per day

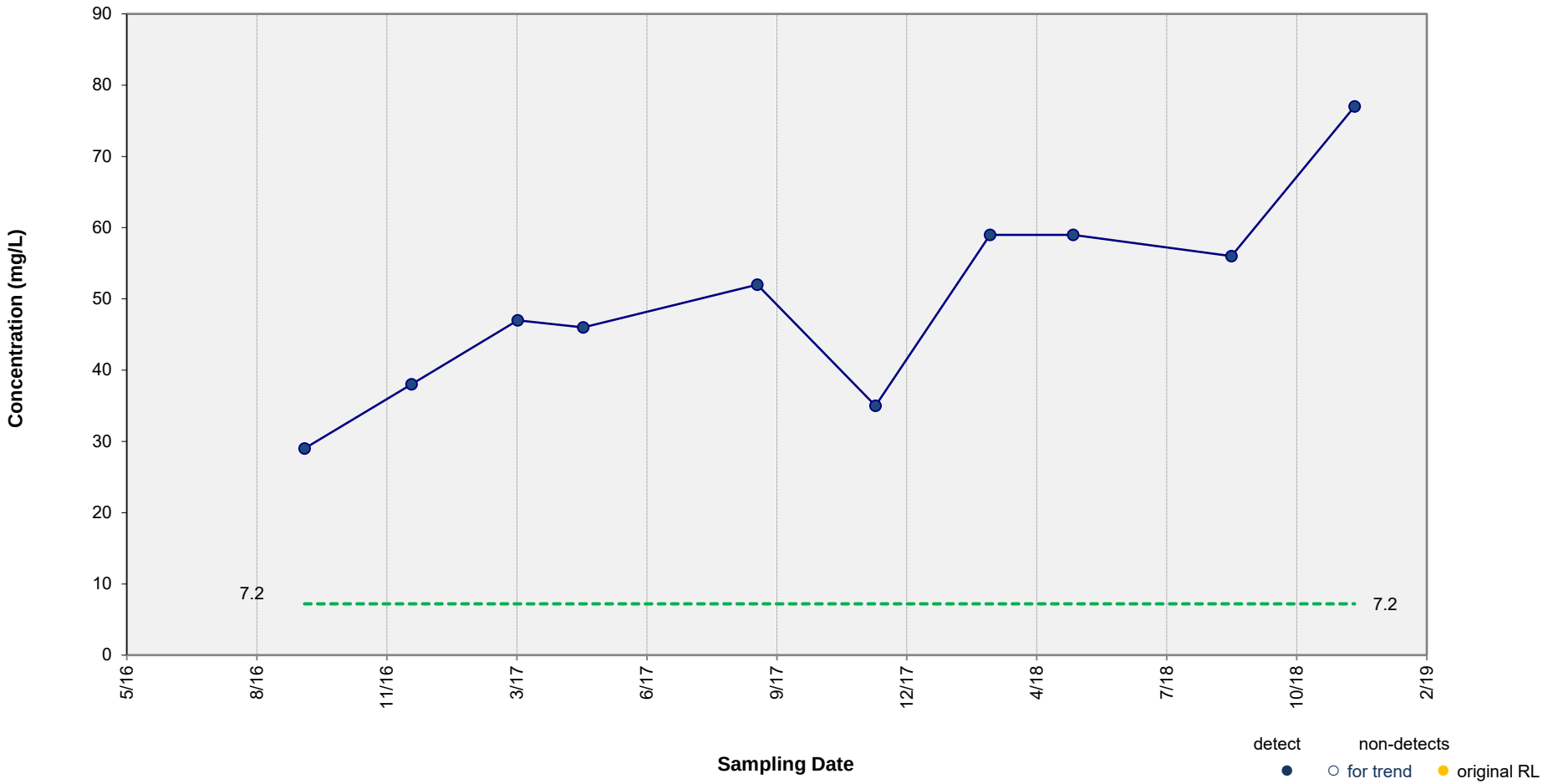
Confidence Interval on the Slope= 9.6E+02 to 2.3E+03 mg/L per day

ARCADIS

Concentration Plot: MW-16-81, 1,4-Dioxane

RACER Lansing located at 2801 West Saginaw Street in Lansing, Michigan

Attachment 1



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

p value = 0.0035 Note: p value < 0.1 indicates a statistically significant trend (90% confidence level).

Results of Sen's Estimator of Slope: **NA**

Median Slope Estimate = 4.48E+01 mg/L per day

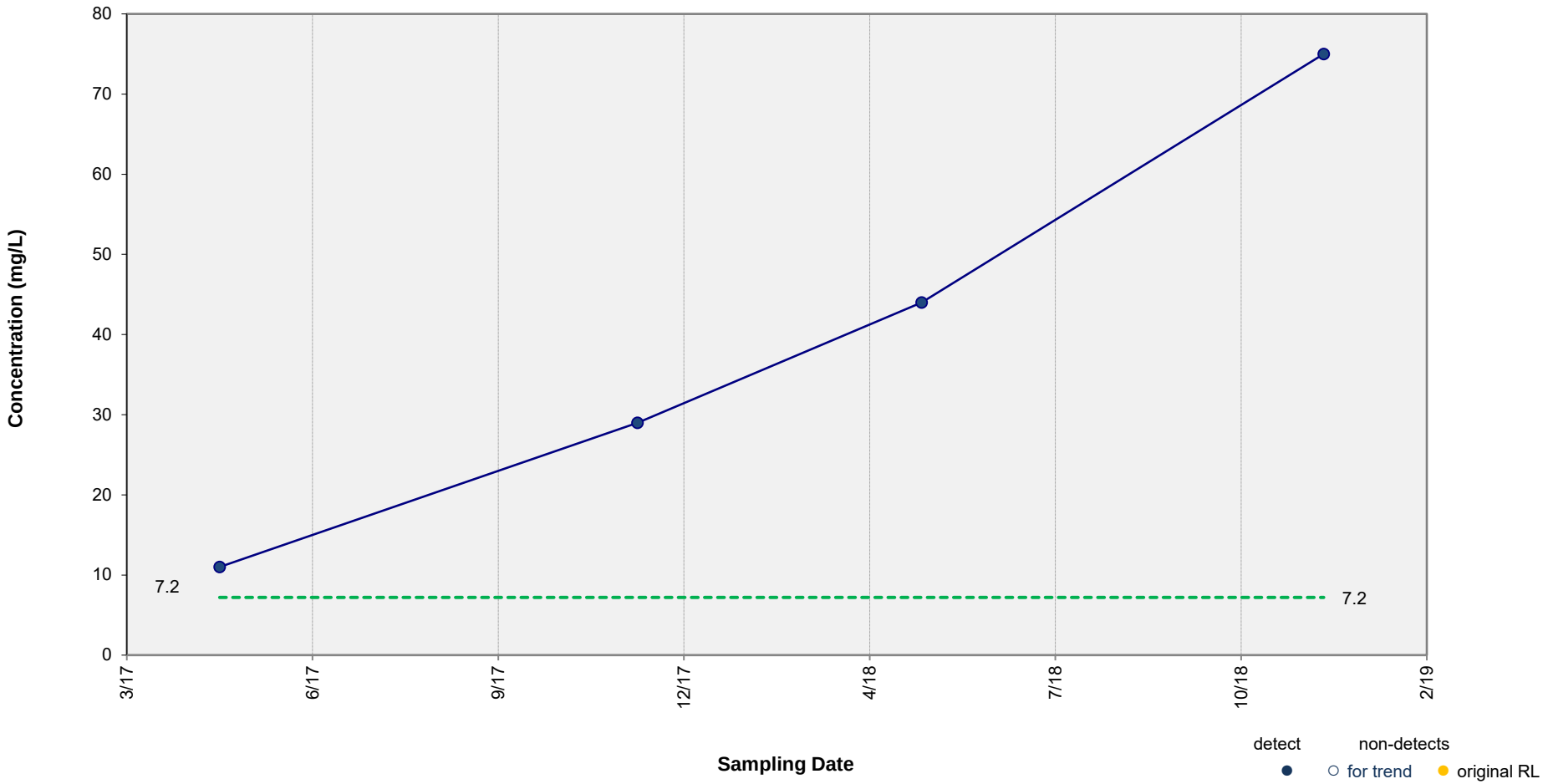
Confidence Interval on the Slope= 2.7E+01 to 5.9E+01 mg/L per day

ARCADIS

Concentration Plot: MW-16-84, 1,4-Dioxane

RACER Lansing located at 2801 West Saginaw Street in Lansing, Michigan

Attachment 1



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

p value = 0.0420 Note: p value < 0.1 indicates a statistically significant trend (90% confidence level).

Results of Sen's Estimator of Slope: **NA**

Median Slope Estimate = #VALUE! mg/L per day

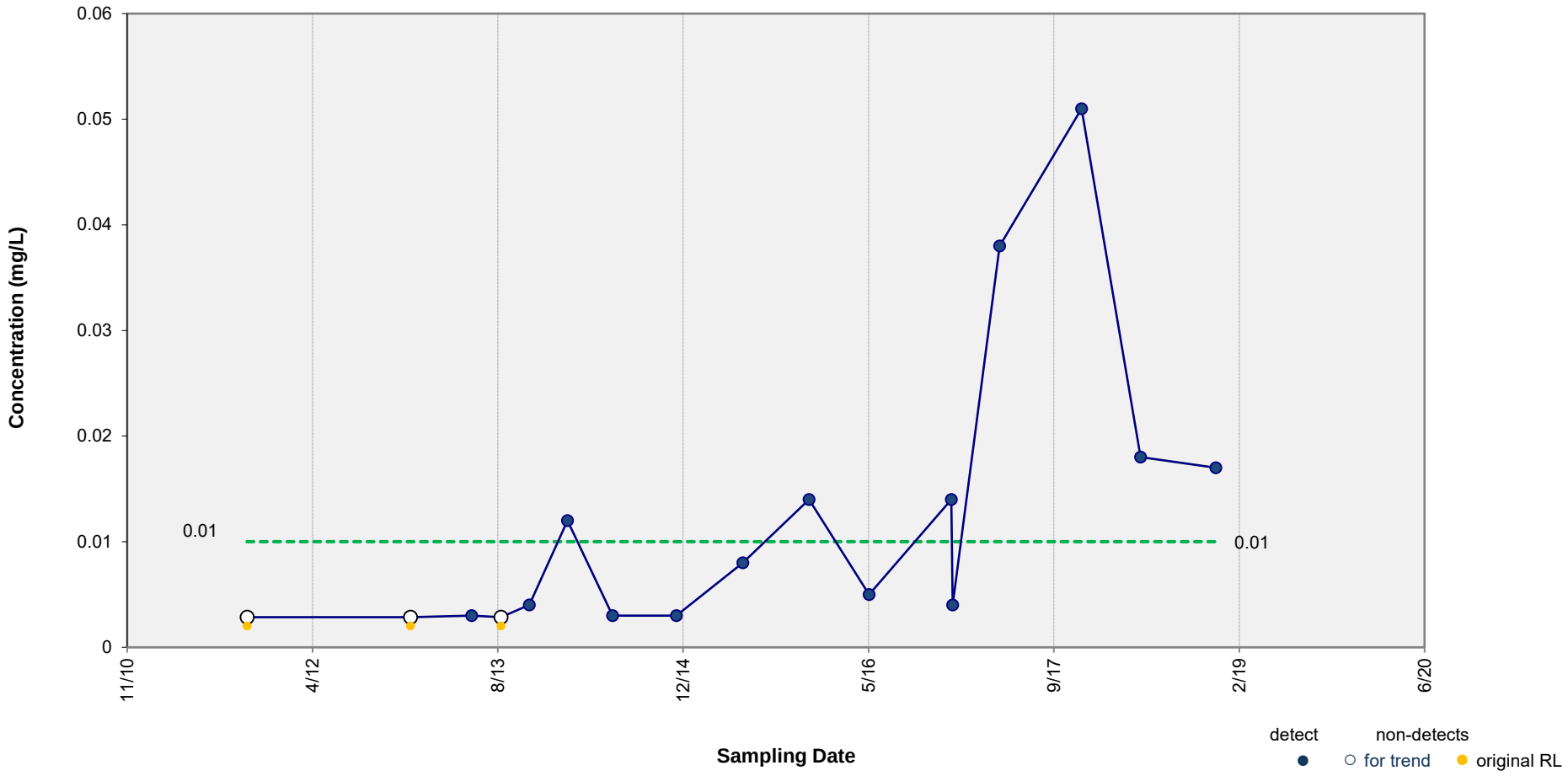
Confidence Interval on the Slope= #VALUE! to #VALUE! mg/L per day

ARCADIS

Concentration Plot: MW-17-86, 1,4-Dioxane

RACER Lansing located at 2801 West Saginaw Street in Lansing, Michigan

Attachment 1



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

p value = <0.001 Note: p value < 0.1 indicates a statistically significant trend (90% confidence level).

Results of Sen's Estimator of Slope: **NA**

Median Slope Estimate = 7.03E-03 mg/L per day

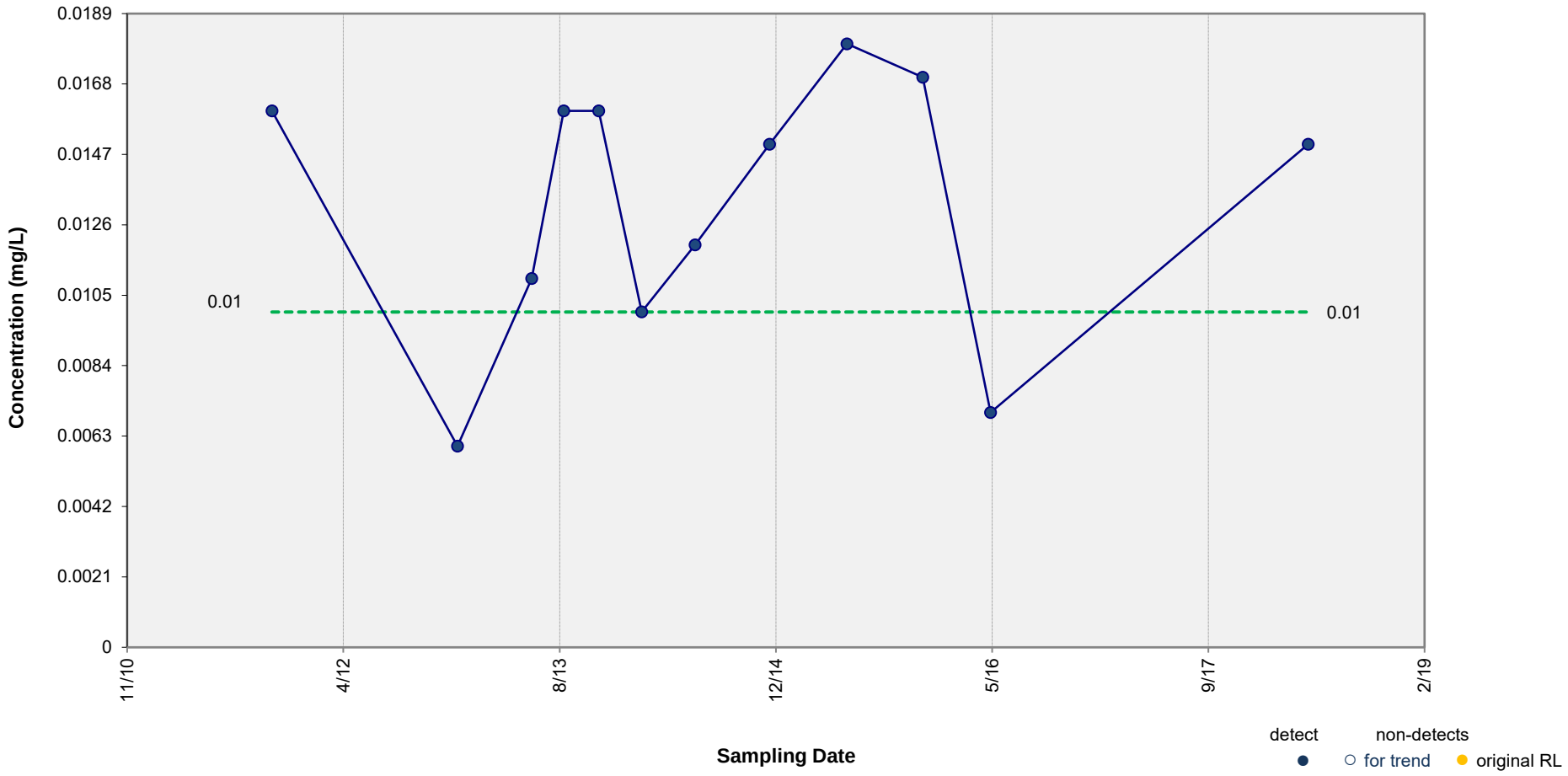
Confidence Interval on the Slope= 2.3E-03 to 1.1E-02 mg/L per day

ARCADIS

Concentration Plot: MWBP-10-UST5-6, Arsenic

RACER Lansing located at 2801 West Saginaw Street in Lansing, Michigan

Attachment 1



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

p value = 0.3137 Note: p value < 0.1 indicates a statistically significant trend (90% confidence level).

Results of Sen's Estimator of Slope: **NA**

Median Slope Estimate = 1.01E-03 mg/L per day

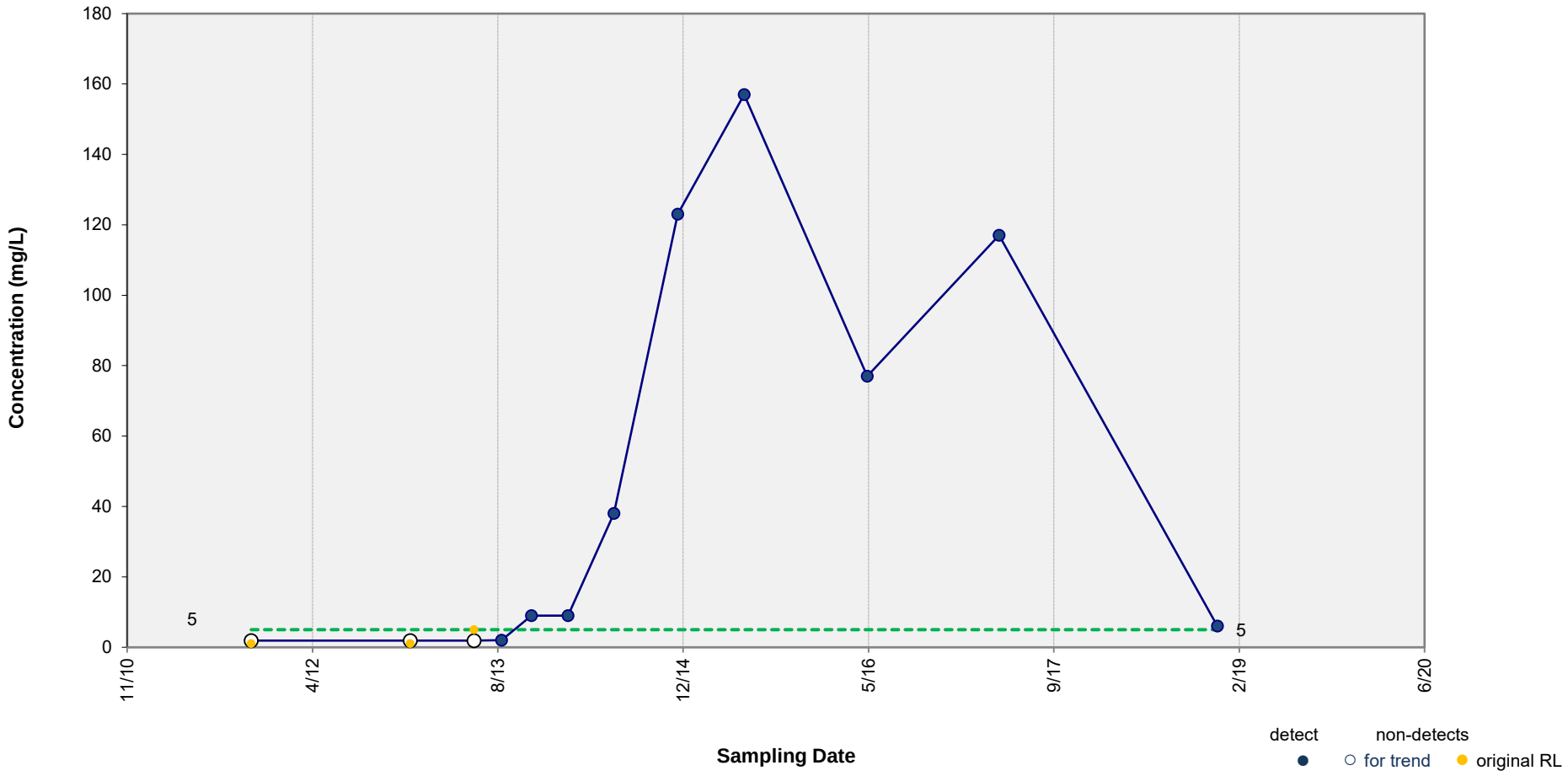
Confidence Interval on the Slope= -2.5E-03 to 6.5E-03 mg/L per day

ARCADIS

Concentration Plot: MWBP-12-UST1-4, Arsenic

RACER Lansing located at 2801 West Saginaw Street in Lansing, Michigan

Attachment 1



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

p value = 0.0034 Note: p value < 0.1 indicates a statistically significant trend (90% confidence level).

Results of Sen's Estimator of Slope: **NA**

Median Slope Estimate = 5.90E+01 mg/L per day

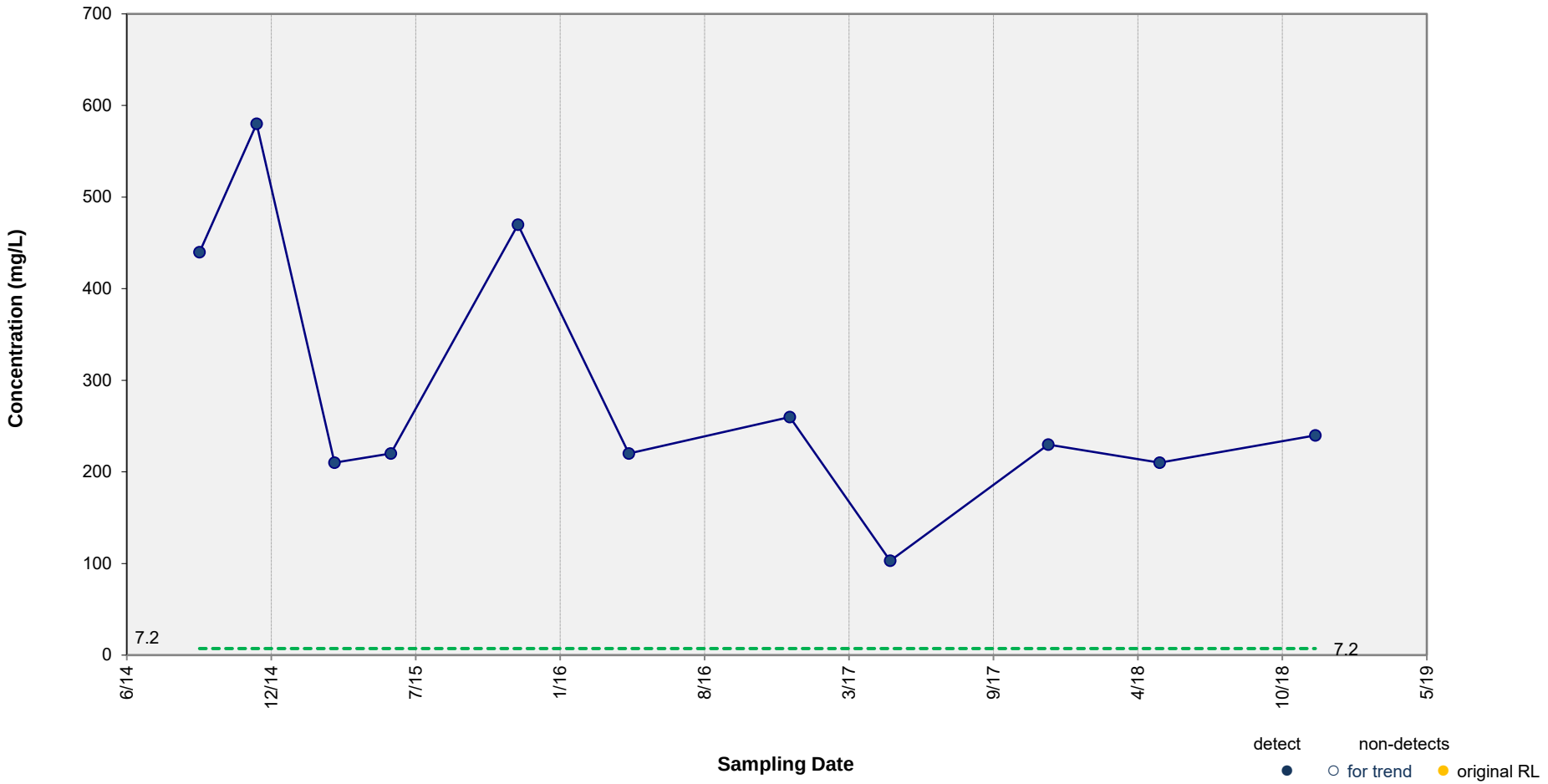
Confidence Interval on the Slope= 2.0E+00 to 8.6E+01 mg/L per day

ARCADIS

Concentration Plot: MWBP-12-UST1-4, Benzene

RACER Lansing located at 2801 West Saginaw Street in Lansing, Michigan

Attachment 1



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

p value = 0.1736 Note: p value < 0.1 indicates a statistically significant trend (90% confidence level).

Results of Sen's Estimator of Slope: **NA**

Median Slope Estimate = -1.29E+02 mg/L per day

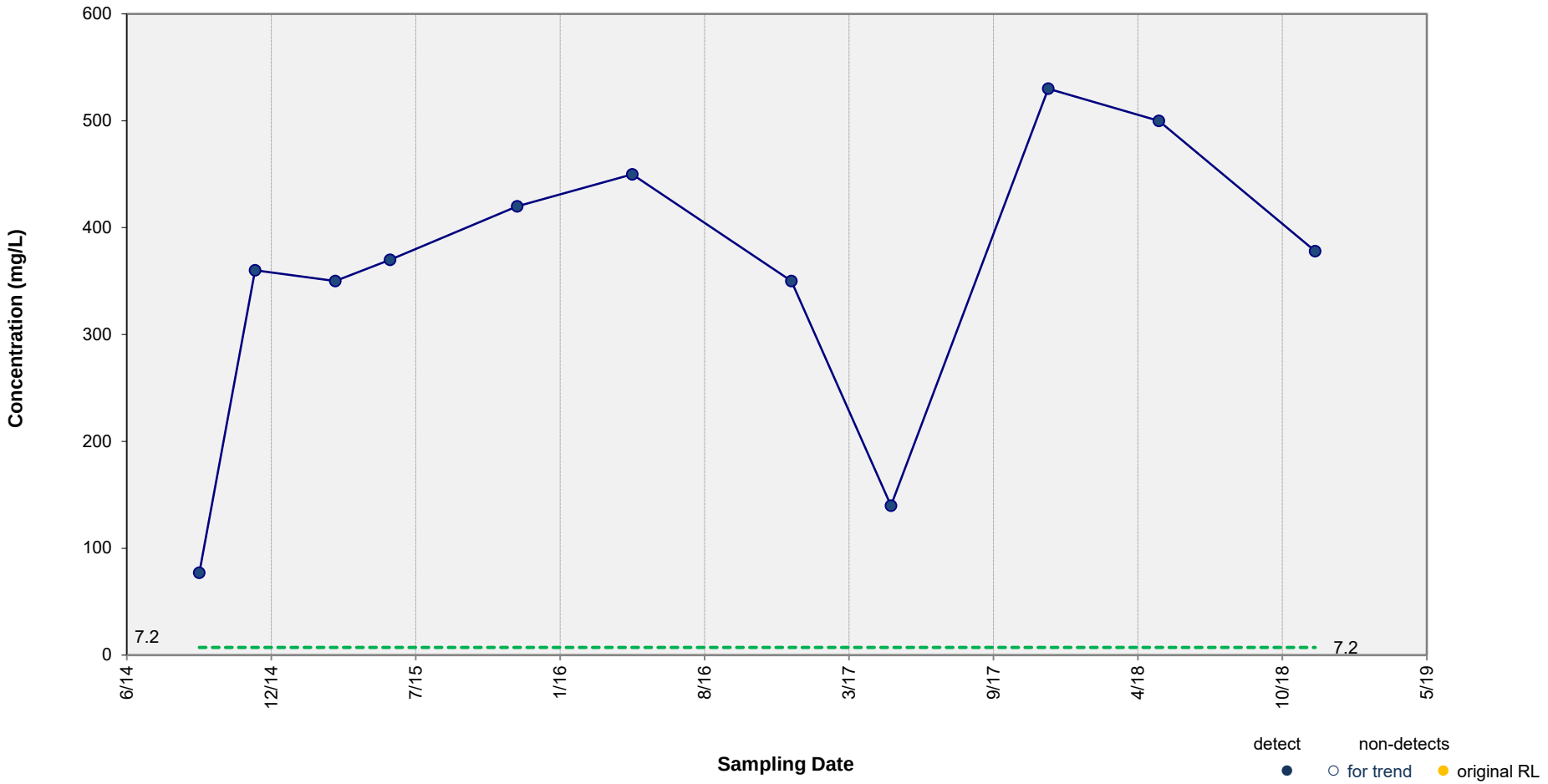
Confidence Interval on the Slope= -3.0E+02 to 1.7E+01 mg/L per day

ARCADIS

Concentration Plot: PW-14-02, 1,4-Dioxane

RACER Lansing located at 2801 West Saginaw Street in Lansing, Michigan

Attachment 1



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

p value = 0.0505 Note: p value < 0.1 indicates a statistically significant trend (90% confidence level).

Results of Sen's Estimator of Slope: **NA**

Median Slope Estimate = 1.32E+02 mg/L per day

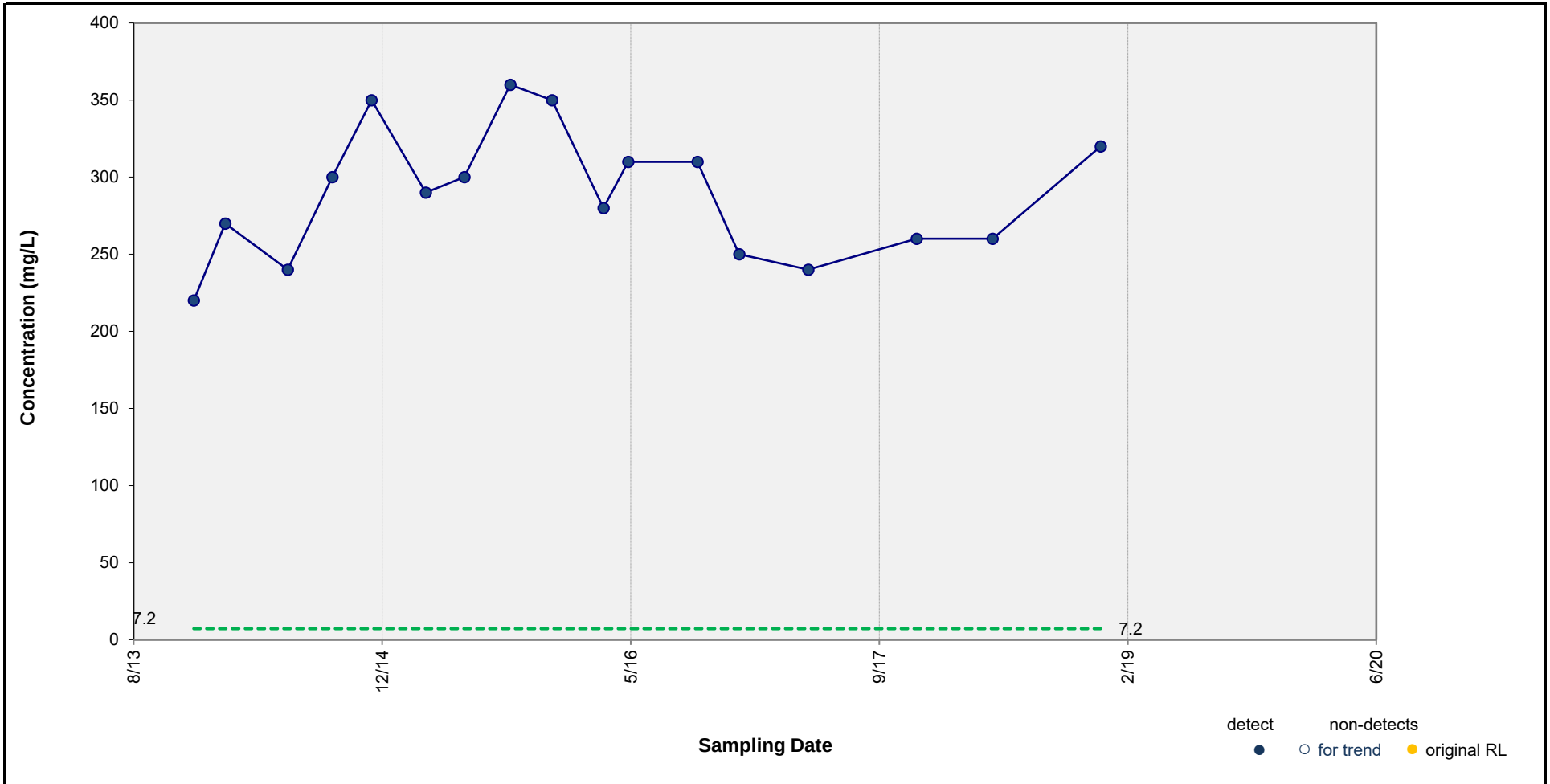
Confidence Interval on the Slope= -4.3E-01 to 2.4E+02 mg/L per day

ARCADIS

Concentration Plot: PW-14-03, 1,4-Dioxane

RACER Lansing located at 2801 West Saginaw Street in Lansing, Michigan

Attachment 1



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

p value = 0.3703 Note: p value < 0.1 indicates a statistically significant trend (90% confidence level).

Results of Sen's Estimator of Slope: **NA**

Median Slope Estimate = 1.17E+01 mg/L per day

Confidence Interval on the Slope= -3.4E+01 to 3.7E+01 mg/L per day

ARCADIS

Concentration Plot: MW-13-43, 1,4-Dioxane

RACER Lansing located at 2801 West Saginaw Street in Lansing, Michigan

Attachment 1