



SEMI-ANNUAL GROUNDWATER MONITORING DATA REPORT

TO: Greg Rudloff, USEPA
 Dave Favero, RACER TRUST

CC: Shaun Shields, EGLE RRD

FROM: Rodney Abke & Mike Smith, Applied EcoSystems, Inc.

DATE: June 29, 2023

SUBJECT: RACER Flint West Industrial Land (#12990)
 Semi-Annual Monitoring

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 (All investigations conducted by RACER to-date)
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1.0 INTRODUCTION

Since the previous Data Report (dated December 13, 2022), Applied EcoSystems, Inc. (Æ) conducted a routine groundwater monitoring event (gauging and sampling) on the Site and the adjoining Genesee County Parks (GCP) property to the north on March 21, 2023. This report provides a summary and the results of the groundwater monitoring event.

A Site Location Map is included as Figure 1 and for reference Site investigation locations are included in Figure 2. The Site consists of approximately three acres of land located west of Stevens Street and north of Glenwood Avenue in Flint, Genesee County, Michigan. Almost the entire Site consists of concrete pavement, remaining after the demolition of a former manufacturing building. The Site is secured with a locked chain-link fence.

The Site is developed with a Consumers Energy electrical substation with an equipment shelter in the central portion and a utility conduit shed on the southeast corner. Per John Ebenhoeh with Consumers Energy, the small building on the southeast corner is a shelter for conduits that run under the road to the GM tool and die facility. This building is accessed approximately once per year for approximately two hours. The building in the fenced area is a support equipment shelter for the substation. The fenced area is accessed approximately once per month for approximately two hours, and the building itself is accessed less frequently and for shorter durations.

2.0 MONITORING ACTIVITIES COMPLETED

Groundwater Monitoring¹

- All monitoring wells were gauged for depth to water on March 21, 2023. A Groundwater Contour Map prepared using the March 21, 2023 groundwater elevation data is included as Figure 3 in Appendix A. For reference, previously submitted cross section diagrams showing soil types and groundwater elevations are included in Appendix B as Attachment 1.
- A routine groundwater monitoring event was conducted on March 21, 2023.
- Groundwater samples were collected from monitoring wells MW-103S, MW-104S, MW-108S, MW-110S, MW-112S, MW-114S, and MW-117S¹ to be analyzed for Volatile Organic Compounds (VOCs), dissolved and total metals (arsenic, chromium [total], chromium VI, copper, lead, selenium, and zinc), and PFAS. MW-106SR was not sampled because insufficient water was present in the well to allow sampling.

Analytical results are summarized in Appendix B as Attachment 2. Laboratory analytical reports for all monitoring activities are included in Appendix B as Attachment 3.

¹ A reduction in the number of wells sampled during the semi-annual sampling events was requested in the *November 2021 Subsurface Investigation* report dated January 27, 2022, submitted to USEPA. The request was approved by USEPA on March 4, 2022.

3.0 MONITORING RESULTS

Groundwater (Semiannual Sampling)

Comparison of groundwater data (March 21, 2023) to current EGLE Generic Residential and Non-Residential Cleanup Criteria (GR/NCC) dated December 21, 2020 indicates the following:

Metals: Dissolved Arsenic was detected above drinking water (DW) and/or groundwater to surface water (GSI) criteria as shown in the table below. The concentrations are consistent with expected regional conditions, do not appear to represent a plume, and are considered generally to be naturally occurring. Although EGLE has published state-wide and regional “background” concentrations for soils, no such values have been published for groundwater; however, the concentrations generally are consistent with concentrations encountered by Æ at other uncontaminated sites in the Flint area. The dissolved metals concentrations are considered to be more representative of Site conditions than total metal concentrations for the purposes of this assessment.

Table 1.0 – Dissolved Metals Exceedances in Groundwater

Well ID	Metal	Drinking Water Criterion	GSI Criterion	Result
MW-112S	Dissolved Arsenic	10	10	15
MW-114S	Dissolved Arsenic	10	10	18

- All results are expressed in µg/L.
- Groundwater Results in **red** indicate a criteria exceedance.

VOCs: Exceedances were present as follows:

Table 2.0 – VOCs Exceedances in Groundwater

Well ID	VOC	Drinking Water Criterion	GSI Criterion	Result
MW-114S	Trichloroethene	5	200	173
MW-114S	Vinyl Chloride	2	13	3.95

- All results are expressed in ug/L.
- Groundwater Results in **red** indicate a criteria exceedance.

PFAS: Samples from monitoring wells MW-103S, MW-104S, MW-108S, MW-110S, MW-112S, MW-114S, and MW-117S were analyzed for PFAS during this sampling event. Several PFAS compounds were detected. The concentrations were compared to EGLE GR/NCC for Perfluorooctanoic acid (PFOA), Perfluorooctane sulfonic acid (PFOS), Perfluorononanoic acid (PFNA), Perfluorohexanoic acid (PFHxA), Perfluorohexane sulfonic acid (PFHxS), Perfluorobutane sulfonic acid (PFBS), and (GenX). PFOA did not exceed the drinking water criterion in any sample. PFOS exceeded drinking water criterion (16 ng/L) and/or GSI criteria (12 ng/L) in MW-112S and MW-114S. These results are similar to the previous PFAS results for the groundwater samples collected in March 2022.

A table of all groundwater sample analytical results for all groundwater samples collected on behalf of RACER is included in Appendix B as Attachment 2. Sample analytical results for the March 2023 sampling events are included in Appendix B as Attachment 3. Figure 4 illustrates the GSI and drinking water exceedances in groundwater identified in groundwater samples collected from 2017 through 2023. This date range includes sampling events from approximately one year before the July 2018 pilot test HRC injections, and all sampling events after. For reference, Figure 5 includes data boxes and exceedances identified in soil samples. Figure 6 includes data boxes and exceedances for PFAS results. Low-flow sampling forms for the March 2023 sampling event are included in Appendix D. The Laboratory data validation report is included in Appendix E.

Note that elevated tetrachloroethene levels have been consistently detected in one up-gradient well, MW-105S, since April 2012; and trichloroethene (TCE) also consistently has been detected in the same well, likely as a degradation product of the tetrachloroethene. This well is hydrogeologically downgradient from a former print shop located south of the Site.

The primary Site-specific constituents of concern are TCE and vinyl chloride, which appear to be exhibiting natural attenuation. PFOS concentrations have decreased or remained stable.

While groundwater monitoring results have shown a general downward trend in concentrations of TCE Site-wide over time, TCE concentrations in MW-114S dropped substantially after HRC injection. This is likely due to the location of this well, which is expected to have been most affected by the HRC injection due to likely higher volumes of HRC reaching that well in the short term, as well as generation of anerobic dechlorination conditions. The concentration of TCE in MW-114S subsequently has rebounded. The limited variability of TCE concentrations in MW-111S is likely due to limited injection of HRC upgradient from this well relative to the other wells, as upgradient anerobic dechlorination conditions were not established.

4.0 LABORATORY DATA VALIDATION SUMMARY

On March 21, 2023, Æ collected groundwater samples from seven monitoring wells at the RACER Flint West Industrial Land site using USEPA low-stress sampling protocols. One duplicate sample, one field blank, and one matrix spike and duplicate were collected. Samples were collected in appropriate laboratory-provided bottles with laboratory-provided preservatives and were maintained on ice until delivery under complete chain-of-custody protocols to Merit Laboratories within appropriate holding times. No sample conditions issues were identified in the field or upon laboratory receipt. Samples were analyzed by specified standard methods for VOCs, EGLE 28 PFAS, six total and dissolved metals, and total and dissolved chromium VI. Filtration and preservation for dissolved metals and dissolved chromium VI reportedly were performed immediately upon laboratory receipt instead of during field collection.

Laboratory deliverables include four laboratory reports, quality control reports, and chains-of-custody, two each for PFAS and for VOCs and metals. Each laboratory report contained a case narrative, laboratory accreditation/certification information, laboratory contact information,



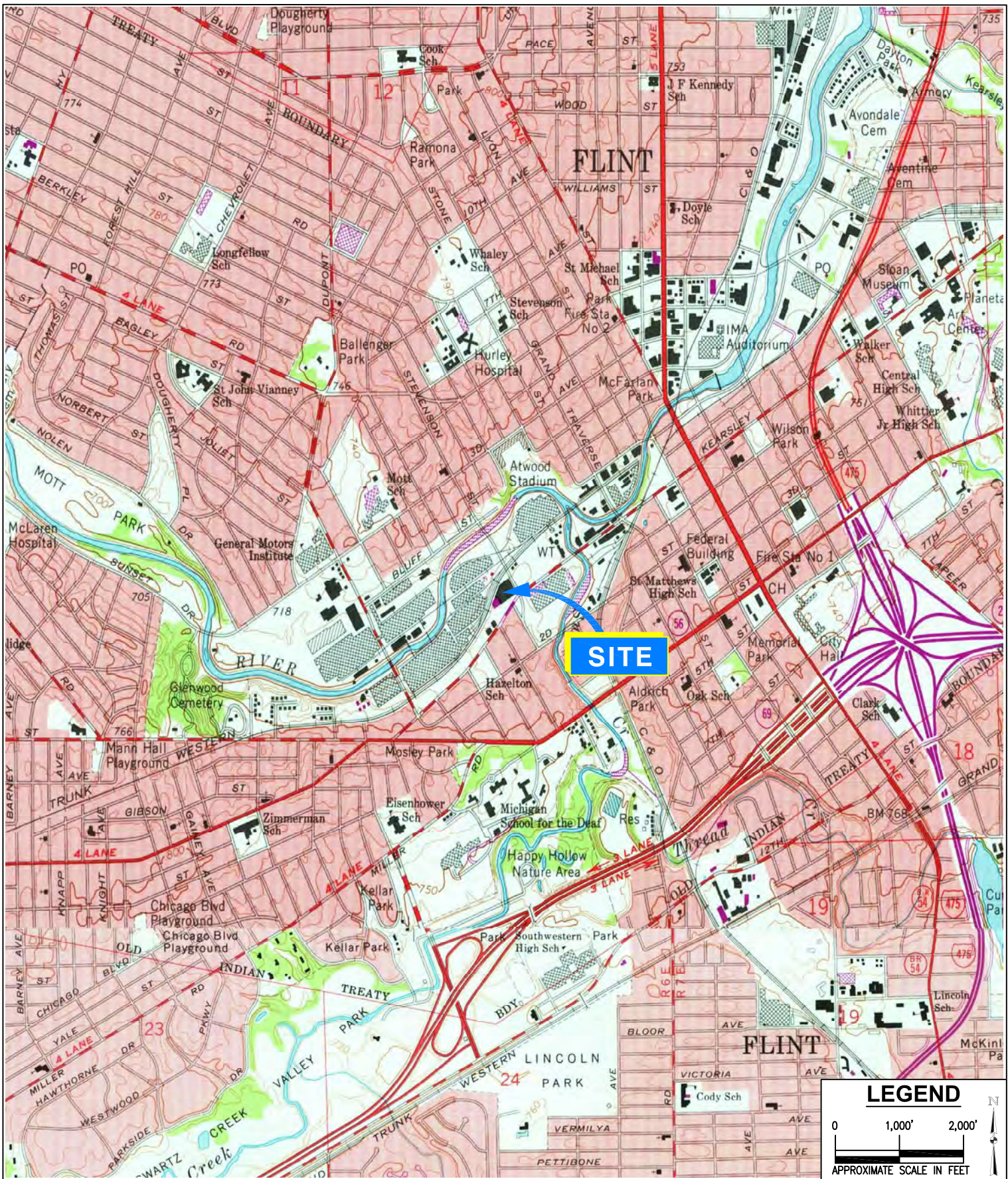
analytical methods, and analyte reporting relative to method detection limits (MDLs) and reporting limits (RLs). Data qualifiers were identified and evaluated in this Laboratory Data Validation report. No samples were analyzed beyond their holding times.

All surrogate recoveries were within their allowable ranges for each surrogate compound, except Carbon disulfide, Tetrahydrofuran, 1,2-Dichloroethane, sec-Butylbenzene, p-Isopropyltoluene, n-Butylbenzene, 1,2,4-Trichlorobenzene, 1,2,3-Trichlorobenzene, Naphthalene, 2-Methylnaphthalene, diethyl ether, chromium VI, FPePA (5:3 FTCA), and PFTrDA, none of which were commonly present in groundwater at the site – indicating satisfactory laboratory performance overall. Analysis of blank samples identified no indications of significant cross-contamination. The equipment blank identified only low concentrations of total chromium and zinc, dissolved copper and zinc, acetone, chloroform, and tetrahydrofuran exceeding reporting limits. The field blank was determined to contain detectable concentrations exceeding RLs and no detectable concentrations of total chromium and zinc, dissolved copper and zinc, and acetone. Low concentrations of carbon tetrachloride and tetrahydrofuran were identified in the trip blank. Accordingly, no significant indications of cross-contamination were identified. Laboratory Control Spike (LCS) and LCS Duplicate analyses indicated potential for PFAS analyte FPePA (5:3 FTCA), and for VOC diethyl ether to be reported high. Matrix spikes and their duplicates indicate potential for PFAS analyte PFTrDA and chromium VI to be reported high. Of these potentially elevated analytes, none were detected in groundwater samples analyzed. No significant data qualifiers were identified in relation to the detected analyte concentrations.

Based on the assessment detailed in the foregoing QA/QC summary, the laboratory data summarized in Table 2 are considered acceptable with the specific qualifications noted herein.

6.0 SCHEDULE

The second 2023 semi-annual monitoring event will be scheduled in September 2023.



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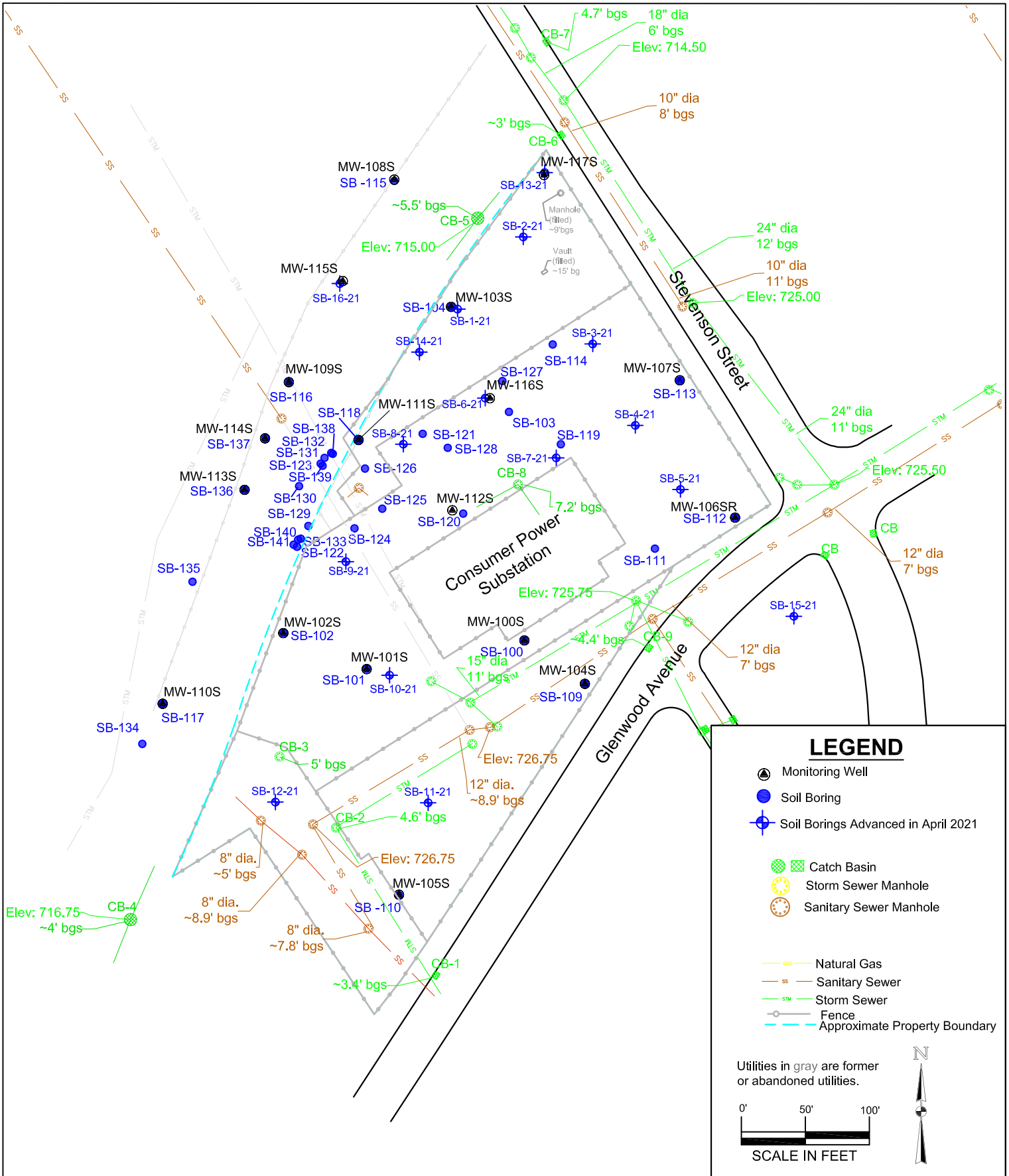
Site Location Map

RACER Flint West #12990

**Glenwood Avenue & Stevenson Street
 Flint, Michigan**

**SOURCE: USGS FLINT SOUTH QUADRANGLE
 (PROVISIONAL EDITION 1975)**

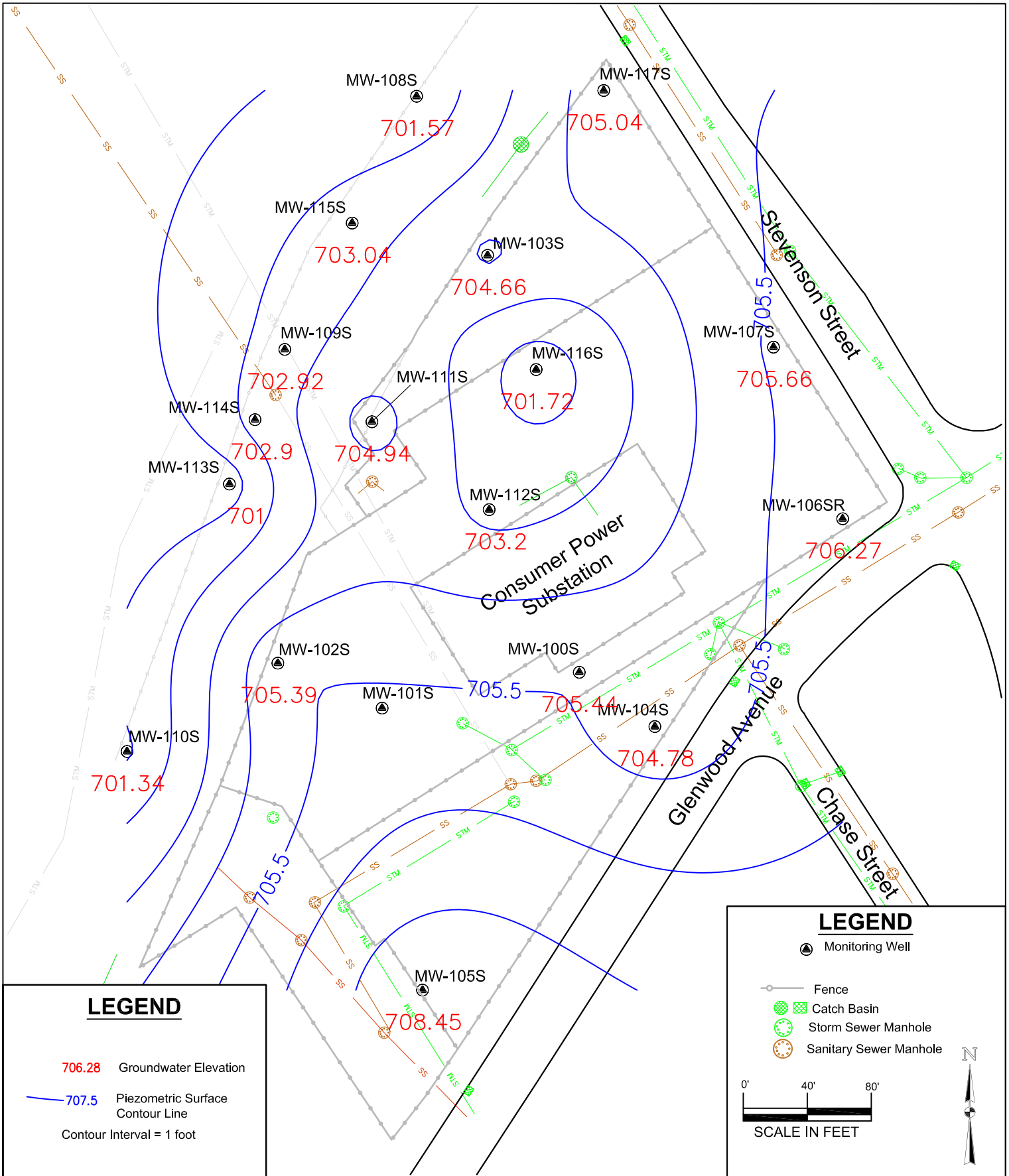
DRAWING DATE:	CHECKED BY:
04/06/2020	MDS
PROJECT:	FIGURE:
11-4317-102	1



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Site Map
 Racer Flint West -1290
 Flint West Industrial Land, Flint, Michigan

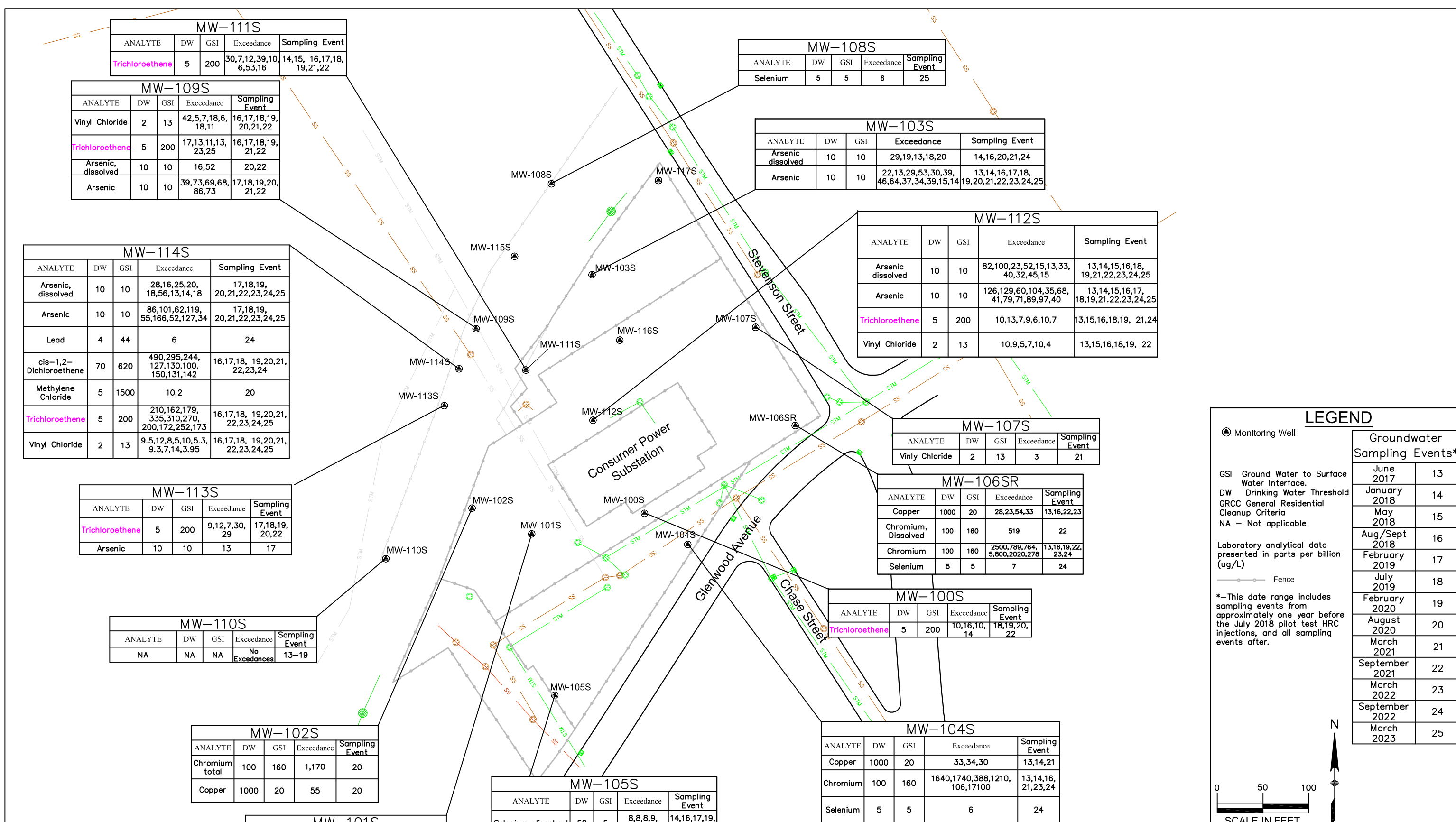
DATE: 01/20/2022	CHECKED BY: MDS
PROJECT: 11-4317-102	FIGURE: 2



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Groundwater Contour Map
 (March 21, 2023)
 Racer Flint West -12990
 Flint West Industrial Land, Flint, Michigan

DATE:	CHECKED BY:
05/17/2023	MDS
PROJECT:	FIGURE:
11-4317-102	3



MW-111S				
ANALYTE	DW	GSI	Exceedance	Sampling Event
Trichloroethene	5	200	30,7,12,39,10,6,53,16	14,15, 16,17,18, 19,21,22

MW-108S				
ANALYTE	DW	GSI	Exceedance	Sampling Event
Selenium	5	5	6	25

MW-109S				
ANALYTE	DW	GSI	Exceedance	Sampling Event
Vinyl Chloride	2	13	42,5,7,18,6,18,11	16,17,18,19, 20,21,22
Trichloroethene	5	200	17,13,11,13,23,25	16,17,18,19, 21,22
Arsenic, dissolved	10	10	16,52	20,22
Arsenic	10	10	39,73,69,68,86,73	17,18,19,20, 21,22

MW-103S				
ANALYTE	DW	GSI	Exceedance	Sampling Event
Arsenic dissolved	10	10	29,19,13,18,20	14,16,20,21,24
Arsenic	10	10	22,13,29,53,30,39,46,64,37,34,39,15,14	13,14,16,17,18, 19,20,21,22,23,24,25

MW-114S				
ANALYTE	DW	GSI	Exceedance	Sampling Event
Arsenic, dissolved	10	10	28,16,25,20,18,56,13,14,18	17,18,19, 20,21,22,23,24,25
Arsenic	10	10	86,101,62,119,55,166,52,127,34	17,18,19, 20,21,22,23,24,25
Lead	4	44	6	24
cis-1,2-Dichloroethene	70	620	490,295,244,127,130,100,150,131,142	16,17,18, 19,20,21, 22,23,24
Methylene Chloride	5	1500	10.2	20
Trichloroethene	5	200	210,162,179,335,310,270,200,172,252,173	16,17,18, 19,20,21, 22,23,24,25
Vinyl Chloride	2	13	9.5,12,8,5,10,5.3,9.3,7,14,3.95	16,17,18, 19,20,21, 22,23,24,25

MW-112S				
ANALYTE	DW	GSI	Exceedance	Sampling Event
Arsenic dissolved	10	10	82,100,23,52,15,13,33,40,32,45,15	13,14,15,16,18, 19,21,22,23,24,25
Arsenic	10	10	126,129,60,104,35,68,41,79,71,89,97,40	13,14,15,16,17, 18,19,21,22,23,24,25
Trichloroethene	5	200	10,13,7,9,6,10,7	13,15,16,18,19, 21,24
Vinyl Chloride	2	13	10,9,5,7,10,4	13,15,16,18,19, 22

MW-113S				
ANALYTE	DW	GSI	Exceedance	Sampling Event
Trichloroethene	5	200	9,12,7,30,29	17,18,19, 20,22
Arsenic	10	10	13	17

MW-107S				
ANALYTE	DW	GSI	Exceedance	Sampling Event
Vinyl Chloride	2	13	3	21

MW-106SR				
ANALYTE	DW	GSI	Exceedance	Sampling Event
Copper	1000	20	28,23,54,33	13,16,22,23
Chromium, Dissolved	100	160	519	22
Chromium	100	160	2500,789,764,5,800,2020,278	13,16,19,22, 23,24
Selenium	5	5	7	24

MW-110S				
ANALYTE	DW	GSI	Exceedance	Sampling Event
NA	NA	NA	No Exceedances	13-19

MW-100S				
ANALYTE	DW	GSI	Exceedance	Sampling Event
Trichloroethene	5	200	10,16,10,14	18,19,20, 22

MW-102S				
ANALYTE	DW	GSI	Exceedance	Sampling Event
Chromium total	100	160	1,170	20
Copper	1000	20	55	20

MW-104S				
ANALYTE	DW	GSI	Exceedance	Sampling Event
Copper	1000	20	33,34,30	13,14,21
Chromium	100	160	1640,1740,388,1210,106,17100	13,14,16, 21,23,24
Selenium	5	5	6	24

MW-101S				
ANALYTE	DW	GSI	Exceedance	Sampling Event
Copper	1000	20	59,21,23,22	13,14,21, 22
Chromium total	100	160	244,351	14,21
Lead total	4	44	17,13	21,22

MW-105S				
ANALYTE	DW	GSI	Exceedance	Sampling Event
Selenium dissolved	50	5	8,8,8,9,9,6	14,16,17,19, 20,22
Selenium	50	5	11,9,9,9,10	14,16,17,19, 20
Tetrachloroethane	5	60	29,43,45,78,43,78,55,101,93	13,14,15, 17,18,19,20, 21,22
Copper	1000	20	40	16
Chromium	100	160	776,141,280	13,14,19

LEGEND

- Monitoring Well
- GSI Ground Water to Surface Water Interface.
- DW Drinking Water Threshold
- GRCC General Residential Cleanup Criteria
- NA - Not applicable
- Laboratory analytical data presented in parts per billion (ug/L)
- Fence

Groundwater Sampling Events*	
June 2017	13
January 2018	14
May 2018	15
Aug/Sept 2018	16
February 2019	17
July 2019	18
February 2020	19
August 2020	20
March 2021	21
September 2021	22
March 2022	23
September 2022	24
March 2023	25

*-This date range includes sampling events from approximately one year before the July 2018 pilot test HRC injections, and all sampling events after.

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Summary of Drinking Water and GSI Exceedances in Groundwater (VOCs)

Racer Flint West -12990
Flint West Industrial Land, Flint, Michigan

DRAWING DATE:	CHECKED BY:
05/17/2023	MDS
PROJECT:	FIGURE:
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01/16/19 SB-139					
ANALYTE	DW	GSI	Exceedance	Sampling Depth	
Trichloroethene	100	4,000	21,000 / 3,440	16'	18'
Methylene Chloride	5	1,500	230 / 32	16'	18'
Vinyl chloride	40	260	ND / 42	16'	18'
cis-1,2-Dichloroethene	1,400	12,000	1,800 / 3,440	16'	18'

04/22/14 SB-131					
ANALYTE	DW	GSI	Exceedance	Sampling Depth	
Trichloroethene	100	4,000	12,160	18'	
Vinyl chloride	40	260	90	18'	
cis-1,2-Dichloroethene	1,400	12,000	2,820	18'	

12/11/2012 SB-116					
ANALYTE	DW	GSI	Exceedance	Sampling Depth	
Vinyl Chloride	40	260	260	12-13'	
cis-1,2-Dichloroethene	1,400	12,000	2,160	12-13'	

7/10/2014 SB-132					
ANALYTE	DW	GSI	Exceedance	Sampling Depth	
Trichloroethene	100	4,000	29,500 / 13,700	11.5-12' / 14.5-15'	
Vinyl chloride	40	260	180 / 89	11.5-12' / 14.5-15'	
cis-1,2-Dichloroethene	1,400	12,000	2,200	11.5-12'	

01/16/19 SB-138					
ANALYTE	DW	GSI	Exceedance	Sampling Depth	
Trichloroethene	100	4,000	2,880 / 2,300	15'	18'
Methylene Chloride	5	1,500	22 / 25.7	15'	18'
cis-1,2-Dichloroethene	1,400	12,000	470 / 550	15'	18'

12/11/2012 SB-118					
ANALYTE	DW	GSI	Exceedance	Sampling Depth	
Vinyl Chloride	40	260	250	16-17'	
cis-1,2-Dichloroethene	1,400	12,000	11,960	16-17'	

03/13/2012 SB-104					
ANALYTE	DW	GSI	Exceedance	Sampling Depth	
Benzene	100	4,000	210	7-8'	

12/10/2012 SB-114					
ANALYTE	DW	GSI	Exceedance	Sampling Depth	
Trichloroethene	100	4,000	1,220	20-21'	
Phenanthrene	56,000	2,100	2,700	7-8'	

4/30/2013 SB-121					
ANALYTE	DW	GSI	Exceedance	Sampling Depth	
Trichloroethene	100	4,000	400	23-24'	
Vinyl Chloride	40	260	110	23-24'	
cis-1,2-Dichloroethene	1,400	12,000	2,970	23-24'	

12/06/2012 SB-112					
ANALYTE	DW	GSI	Exceedance	Sampling Depth	
Naphthalene	35,000	730	840	3.5-4.5'	
1,2,4-Trimethylbenzene	2,100	570	600	3.5-4.5'	
Vinyl Chloride	40	260	80	3.5-4.5'	

12/22/14 SB-137					
ANALYTE	DW	GSI	Exceedance	Sampling Depth	
Trichloroethene	100	4,000	4,250	18'	
Vinyl chloride	40	260	56	20.5'	

12/22/14 SB-136					
ANALYTE	DW	GSI	Exceedance	Sampling Depth	
Trichloroethene	100	4,000	8,760	19'	
Trichloroethene	100	4,000	9,390	20'	

04/22/14 SB-130					
ANALYTE	DW	GSI	Exceedance	Sampling Depth	
Trichloroethene	100	4,000	6,080	18'	
Vinyl chloride	40	260	73	18'	
cis-1,2-Dichloroethene	1,400	12,000	6,380	18'	

04/22/14 SB-129					
ANALYTE	DW	GSI	Exceedance	Sampling Depth	
Trichloroethene	100	4,000	6,170	18'	

01/16/19 SB-140					
ANALYTE	DW	GSI	Exceedance	Sampling Depth	
Trichloroethene	100	4,000	13,100 / 2,870	18'	19'
Methylene Chloride	5	1,500	260 / 30	16'	19'
cis-1,2-Dichloroethene	1,400	12,000	3,500 / 2,870	16'	19'

12/22/14 SB-135					
ANALYTE	DW	GSI	Exceedance	Sampling Depth	
Trichloroethene	100	4,000	7890.0	19'	

12/11/2012 SB-117					
ANALYTE	DW	GSI	Exceedance	Sampling Depth	
Trichloroethene	100	4,000	5,980	18-19'	

01/16/19 SB-141					
ANALYTE	DW	GSI	Exceedance	Sampling Depth	
Trichloroethene	100	4,000	180 / 6,150 / 3,370	16'	18'
Methylene Chloride	5	1,500	25 / 26	18'	19'
cis-1,2-Dichloroethene	1,400	12,000	2,900 / 860	15'	18'

12/22/14 SB-134					
ANALYTE	DW	GSI	Exceedance	Sampling Depth	
Trichloroethene	100	4,000	2,040	20'	

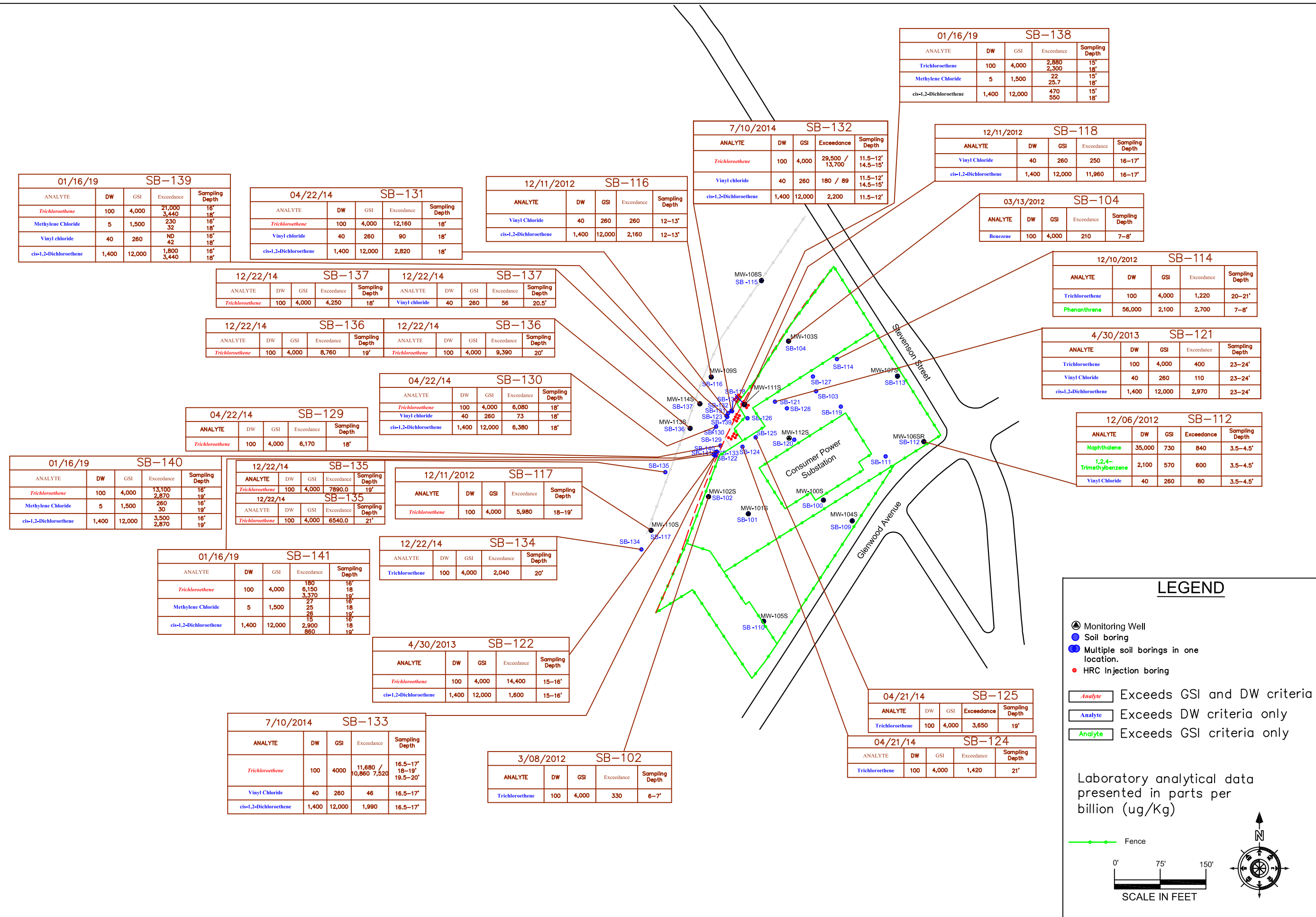
4/30/2013 SB-122					
ANALYTE	DW	GSI	Exceedance	Sampling Depth	
Trichloroethene	100	4,000	14,400	15-16'	
cis-1,2-Dichloroethene	1,400	12,000	1,600	15-16'	

7/10/2014 SB-133					
ANALYTE	DW	GSI	Exceedance	Sampling Depth	
Trichloroethene	100	4000	11,680 / 10,860 / 7,520	16.5-17' / 18-19' / 19.5-20'	
Vinyl Chloride	40	260	46	16.5-17'	
cis-1,2-Dichloroethene	1,400	12,000	1,990	16.5-17'	

3/08/2012 SB-102					
ANALYTE	DW	GSI	Exceedance	Sampling Depth	
Trichloroethene	100	4,000	330	6-7'	

04/21/14 SB-125					
ANALYTE	DW	GSI	Exceedance	Sampling Depth	
Trichloroethene	100	4,000	3,650	19'	

04/21/14 SB-124					
ANALYTE	DW	GSI	Exceedance	Sampling Depth	
Trichloroethene	100	4,000	1,420	21'	



LEGEND

- Monitoring Well
- Soil boring
- Multiple soil borings in one location.
- HRC Injection boring

Analyte Exceeds GSI and DW criteria
Analyte Exceeds DW criteria only
Analyte Exceeds GSI criteria only

Laboratory analytical data presented in parts per billion (ug/Kg)

SCALE IN FEET

CHECKED BY:	MDS
DATE:	04/08/2020
PROJECT:	11-4317-102
FIGURE:	5

Summary of Drinking Water and GSI Exceedances in Soil
2012 - 2019
 Racer Flint West-12990
 Flint West Industrial Land, Flint, Michigan

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 Environmental Management, Consulting & Field Services
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MW-114S

ANALYTE	DW	GSI	9/5/18	9/5/18	2/27/20	8/19/20	3/3/21	9/15/21	3/18/22	9/13/22	3/21/23
PFBS	420	NC	1.7	<9.5	<10	1.8	1.8	<2.0	1.8	1.7	2.2
PFHxS	51	NC	2.4	<9.5	<10	2.3	1.8	1.5	<2.0	<1.8	1.5
PFHxS-LN	NC	NC	<0.88	<9.5	<10	1.6	NA	1.8	<2.0	<1.8	1.5
PFHpS	NC	NC	<0.88	<9.5	<10	<1.8	<2.0	<2.0	<2.0	<1.8	<2.0
PFOS	16	12	26	31	31	29	22	21	16	30	17
PFBA	NC	NC	2.7	<9.5	<20	<9.7	<10	<2.0	<9.8	<9.2	<10
PFPeA	NC	NC	3.6	<9.5	<10	1.1	<4.1	<2.0	<3.9	<3.7	3.4
PFHxA	400,000	NC	3.3	<9.5	<10	<1.9	1.8	<2.0	1.7	<1.8	2.0
PFHpA	NC	NC	2.2	<9.5	<10	<1.8	<2.0	<2.0	<2.0	<1.8	1.3
PFOA	8	12,000	4.3	<9.5	<10	<1.9	<2.0	1.7	2.4	2.2	2.3
PFNA	6	NC	1.3	<9.5	<10	<1.9	<2.0	<2.0	<1.8	0.95	
PFUnDA	NC	NC	<0.31	<9.5	<10	<1.9	<2.0	<2.0	<2.0	<1.8	<2.0
PFDoDA	NC	NC	<0.46	<9.5	<10	<1.9	<2.0	<2.0	<2.0	<1.8	<2.0
PFTdA	NC	NC	<0.75	<9.5	<10	<1.9	<2.0	<2.0	<2.0	<1.8	<2.0
PFTeDA	NC	NC	1.9	<9.5	<10	<1.9	<2.0	<2.0	<2.0	<1.8	<2.0

MW-109S

ANALYTE	DW	GSI	9/5/18	7/17/19	2/27/20	8/19/20	3/3/21	9/15/21
PFBS	420	NC	2.9	<9.7	<9.9	2.7	2.2	1.6
PFHxS	51	NC	3.2	<9.7	<9.9	2.5	1.9	1.9
PFHxS-LN	NC	NC	<1.2	<9.7	<9.9	1.8	NA	<2.0
PFHpS	NC	NC	2.6	<9.7	<9.9	<2.0	<1.9	<2.0
PFOS	16	12	27	28	31	29	21	23
PFBA	NC	NC	2.9	<19	5.5	<10	<9.7	<9.8
PFPeA	NC	NC	<1.1	<9.7	<9.9	3.6	14	2.1
PFHxA	400,000	NC	1.7	<9.7	1.4	3.2	7.6	<2.0
PFHpA	NC	NC	<1.2	<9.7	<9.9	1.5	2	<2.0
PFOA	8	12,000	2.6	<9.7	2.3	3.1	3.6	1.9
PFNA	6	NC	1.2	<9.7	<9.9	<2.0	<1.9	<2.0
PFUnDA	NC	NC	<0.31	<9.7	<9.9	<2.0	<1.9	<2.0
PFDoDA	NC	NC	<0.46	<9.7	<9.9	<2.0	<1.9	<2.0
PFTdA	NC	NC	<0.75	<9.7	<9.9	<2.0	<1.9	<2.0
PFTeDA	NC	NC	1.7	<9.7	<9.9	<2.0	<1.9	<2.0

MW-108S

ANALYTE	DW	GSI	8/30/18	7/17/19	9/13/22	3/21/23
PFBS	420	NC	1.7	<9.7	1.5	1.1
PFHxS	51	NC	2.9	<9.7	2.3	1.6
PFHxS-LN	NC	NC	<0.88	<9.7	<1.8	<2.0
PFHpS	NC	NC	<0.88	<9.7	<1.8	<2.0
PFOS	16	12	6	11	8.8	5.6
PFBA	NC	NC	<2.7	<19	<9.1	<9.8
PFPeA	NC	NC	<1.1	<9.7	<3.6	<3.9
PFHxA	400,000	NC	<0.92	<9.7	<1.8	<2.0
PFHpA	NC	NC	<1.2	<9.7	<1.8	0.98
PFOA	8	12,000	0.58	<9.7	<1.8	<2.0
PFNA	6	NC	<0.94	<9.7	<1.8	0.84
PFUnDA	NC	NC	<0.31	<9.7	<1.8	<2.0
PFDoDA	NC	NC	<0.46	<9.7	<1.8	<2.0
PFTdA	NC	NC	<0.75	<9.7	<1.8	<2.0
PFTeDA	NC	NC	<1.2	<9.7	<1.8	<2.0

MW-103S

ANALYTE	DW	GSI	9/5/18	1/17/19	7/17/19	2/28/20	8/19/20	3/3/21	9/16/21	3/16/22	9/13/22	3/21/23
PFBS	420	NC	2.2	<10	<9.4	<9.5	<2.0	1.6	<2.0	1.6	<1.9	1.7
PFHxS	51	NC	<0.94	<20	<9.4	2.7	2.2	5.9	5	2.1	<1.9	2.6
PFHxS-LN	NC	NC	<0.94	<20	<9.4	<9.5	2.2	NA	3.1	2.1	<1.9	2.0
PFHpS	NC	NC	<0.88	<10	<9.4	<9.5	<2.0	<2.2	<2.0	<2.0	<1.9	<1.9
PFOS	16	12	91	90	93	84	120	91	46	74	73	9.9
PFBA	NC	NC	<2.7	<137	<19	<19	<10	<28	<16	<39	<190	<19
PFPeA	NC	NC	<1.1	<10	<9.4	<9.5	<4.0	<4.3	<3.9	<3.9	<3.9	<3.8
PFHxA	400,000	NC	<0.92	<10	<9.4	<9.5	<2.0	<2.2	<2.0	<2.0	<5.7	<5.7
PFHpA	NC	NC	<1.2	<10	<9.4	<9.5	<2.0	<2.2	<2.0	<2.0	<1.9	<1.9
PFOA	8	12,000	2.6	<10	<9.4	<9.5	<2.0	<2.2	2.7	2.6	2.5	2.5
PFNA	6	NC	1.1	<10	<9.4	<9.5	<2.0	<2.2	<2.0	<2.0	<1.9	<1.9
PFUnDA	NC	NC	0.53	<10	<9.4	<9.5	<2.0	<2.2	<2.0	<2.0	<1.9	<1.9
PFDoDA	NC	NC	<0.31	<10	<9.4	<9.5	<2.0	<2.2	<2.0	<2.0	<1.9	<1.9
PFTdA	NC	NC	<0.46	<10	<9.4	<9.5	<2.0	<2.2	<2.0	<2.0	<1.9	<1.9
PFTeDA	NC	NC	<0.75	<10	<9.4	<9.5	<2.0	<2.2	<2.0	<2.0	<1.9	<1.9
EiFOSSAA	NC	NC	0.90	<10	<9.4	<9.5	<2.0	<4.3	<3.9	<3.9	<1.9	<1.9

MW-111S

ANALYTE	DW	GSI	1/28/18	5/29/18	8/30/18	7/17/19	2/27/20	8/19/20	3/3/21	9/16/21
PFBS	420	NC	<1.9	<9.9	2.4	<9.6	<10	1.5	1.7	<2.0
PFHxS	51	NC	1.9	1.6	3.8	<9.6	<10	1.9	<2.1	<2.0
PFHxS-LN	NC	NC	<1.9	<0.88	<0.88	<9.6	<10	<2.1	<2.1	<2.0
PFOS	16	12	44	47	59	36	32	33	25	11
PFBA	NC	NC	4.8	<2.7	<2.7	<9.6	<20	<10	<10	<2.0
PFPeA	NC	NC	<1.9	<1.1	1.3	<9.6	<10	2.4	4.1	2.9
PFHxA	400,000	NC	2.6	<0.92	<0.92	<9.6	<10	1.6	2.3	<2.0
PFHpA	NC	NC	<1.9	<1.2	<1.2	<9.6	<10	<2.1	<2.1	<2.0
PFOA	8	12,000	6.1	1.7	1.7	<9.6	<10	3	2.1	2
PFNA	6	NC	<1.9	<0.94	<0.94	<9.6	<10	<2.1	<2.1	<2.0
PFUnDA	NC	NC	<1.9	<0.31	<0.31	<9.6	<10	<2.1	<2.1	<2.0
PFDoDA	NC	NC	<1.9	<0.46	<0.46	<9.6	<10	<2.1	<2.1	<2.0
PFTdA	NC	NC	<1.9	0.78	<0.75	<9.6	<10	<2.1	<2.1	<2.0
PFTeDA	NC	NC	<1.9	<1.2	<1.2	<9.6	<10	<2.1	<2.1	<2.0

MW-113S

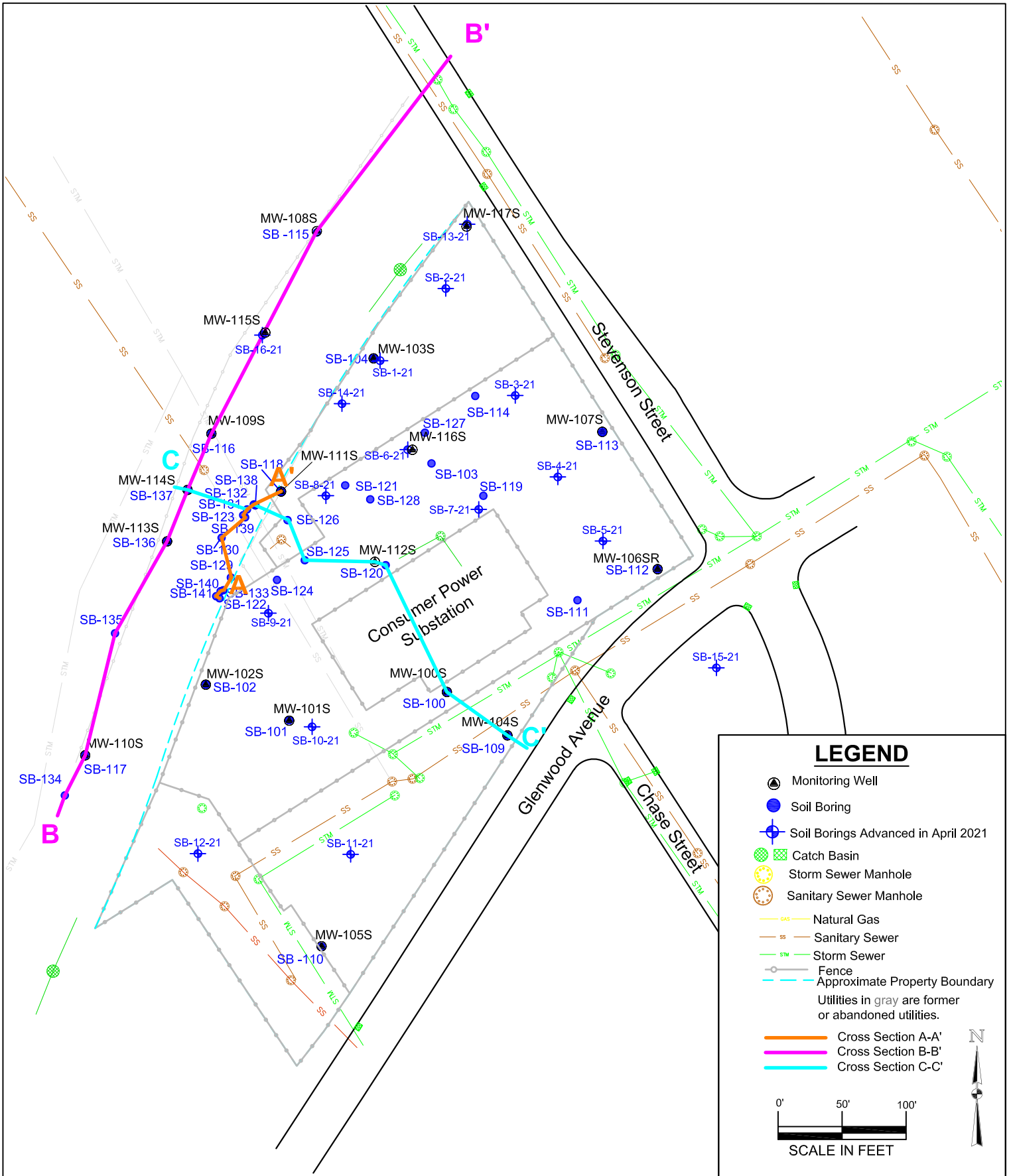
ANALYTE	DW	GSI	8/30/18	7/17/19	2/27/20	8/19/20	3/3/21	9/15/21
PFBS	420	NC	5	<9.5	<9.5	1.8	1.8	1.6
PFHxS	51	NC	2.6	<9.5	<9.5	3.1	<2.0	1.8
PFHxS-LN	NC	NC	<0.88	<9.5	<9.5	2.6	NA	<2.1
PFHpS	NC	NC	<0.88	<9.5	<9.5	<1.9	<2.0	<2.1
PFOS	16	12	13	20	6.2	26	12	23
PFBA	NC	NC	7.1	<19	<19	<9.7	<10	<2.1
PFPeA	NC	NC	<1.1	<9.5	<9.5	1	<4.0	<2.1
PFHxA	400,000	NC	1	<9.5	<9.5	<1.9	<2.0	<2.1
PFHpA	NC	NC	1.3	<9.5	<9.5	<1.9	<2.0	<2.1
PFOA	8	12,000	2.6	<9.5	<9.5	<1.9	<2.0	1.7
PFNA	6	NC	<0.94	<9.5	<9.5	<1.9	<2.0	<2.1
PFUnDA	NC	NC	<0.31	<9.5	<9.5	<1.9	<2.0	<2.1
PFDoDA	NC	NC	<0.46	<9.5	<9.5	<1.9	<2.0	<2.1
PFTdA	NC	NC	<0.75	<9.5	<9.5	<1.9	<2.0	<2.1
PFTeDA	NC	NC	<1.2	<9.5	<9.5	<1.9	<2.0	<2.1

MW-102S

ANALYTE	DW	GSI	1/28/18	5/29/18	8/30/18	07/17/19
PFBS	420	NC	<2	1.3	2	<9.7
PFHxS	51	NC	<2	2	6.1	<9.7
PFHpS	NC	NC	<2	0.81	2.4	<9.7
PFOS	16	12	7	12	11	11
PFBA	NC	NC	4.8	<2.7	3.2	<19
PFPeA	NC	NC	2.3	1.2	1.4	<9.7
PFHxA	400,000	NC	2.5	1.8	4.1	<9.7
PFHpA	NC	NC	<2	1.7	2	<9.7
PFOA	8	12,000	4.1	4.2	6.1	<9.7
PFNA	6	NC	<2	1	<0.94	<9.7
PFUnDA	NC	NC	<2	<0.31	<0.31	<9.7
PFDoDA	NC	NC	<2	<0.46	<0.46	<9.7
PFTdA	NC	NC	<2	<0.75	<0.75	<9.7
PFTeDA	NC	NC	<2	<1.2	<1.2	<9.7

MW-110S

ANALYTE	DW	GSI	8/30/18	7/17/19	2/27/20	8/19/20	3/3/21	9/15/21	3/18/22	9/13/22	3/21/23
PFBS	420	NC	3.6	<9.6	<9.5	1.9	3	1.7	2.3	1.7	2.4
PFHxS	51	NC	4.3	<9.6	<9.5	2	<2.0	<2.1	<2.0	<1.9	<2.0
PFHpS	NC	NC	<0.88								

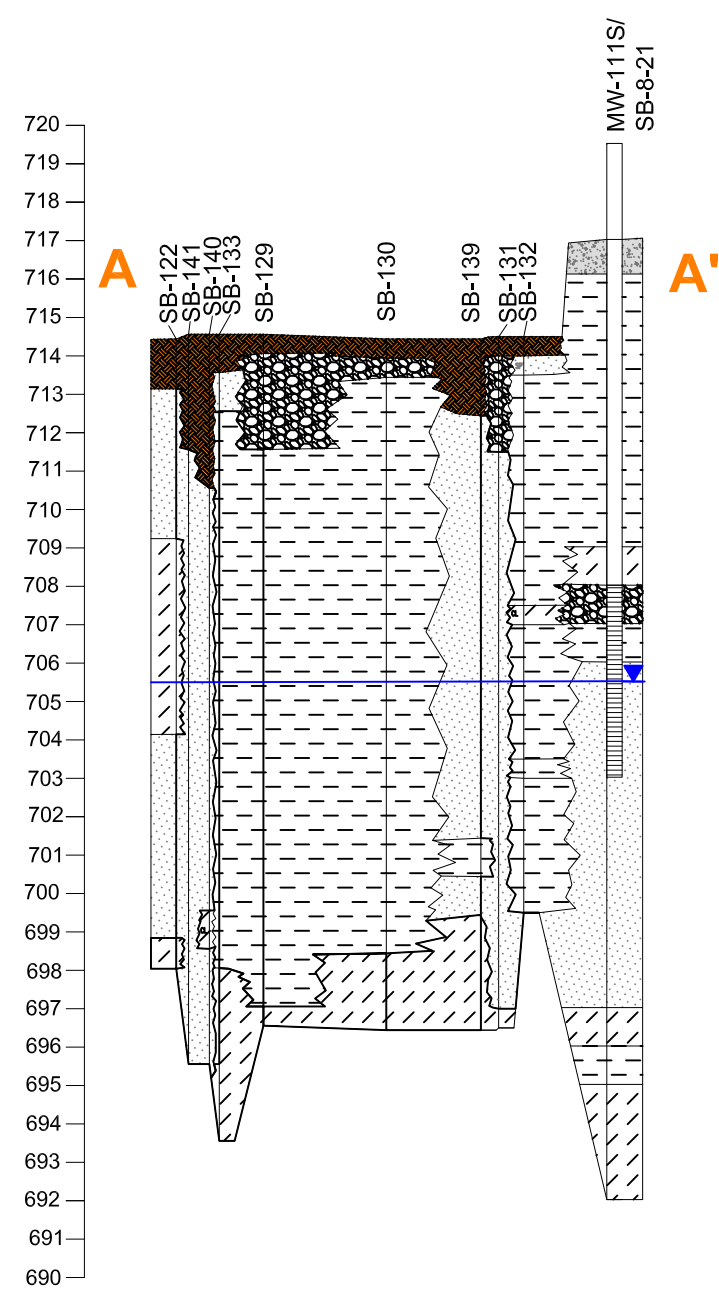
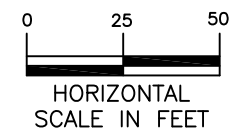



Applied EcoSystems, Inc.
 Environmental Management, Consulting & Field Services
 G-4300 South Saginaw Street, Burton, Michigan 48529
 Phone: 810.715.2525; Fax: 810.715.2526


Cross Section Locations Map

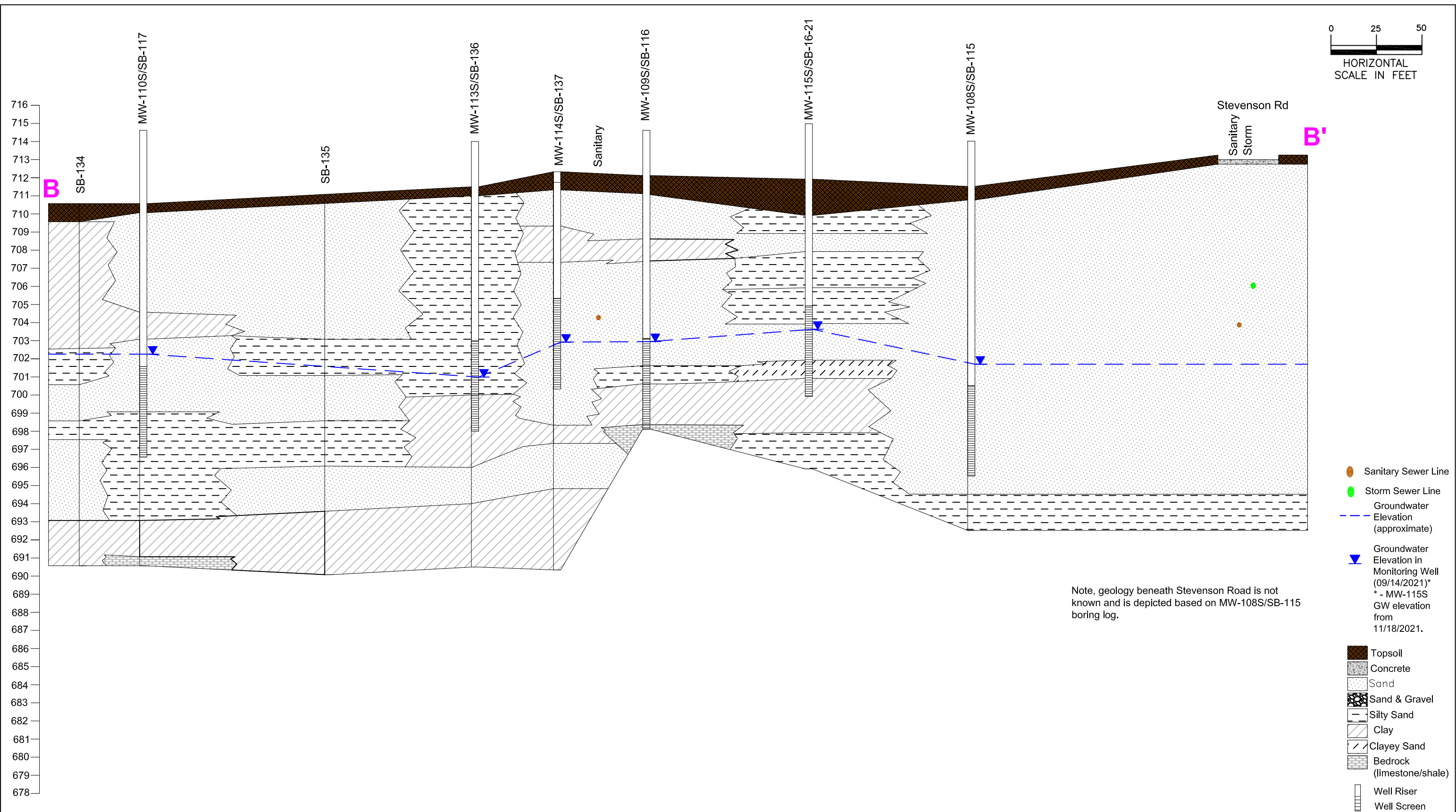
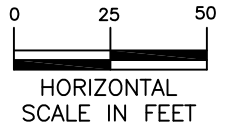
Racer Flint West -12990
Flint West Industrial Land, Flint, Michigan

DATE: 11/30/2022	CHECKED BY: MDS
PROJECT: 11-4317-102	FIGURE: 1A0



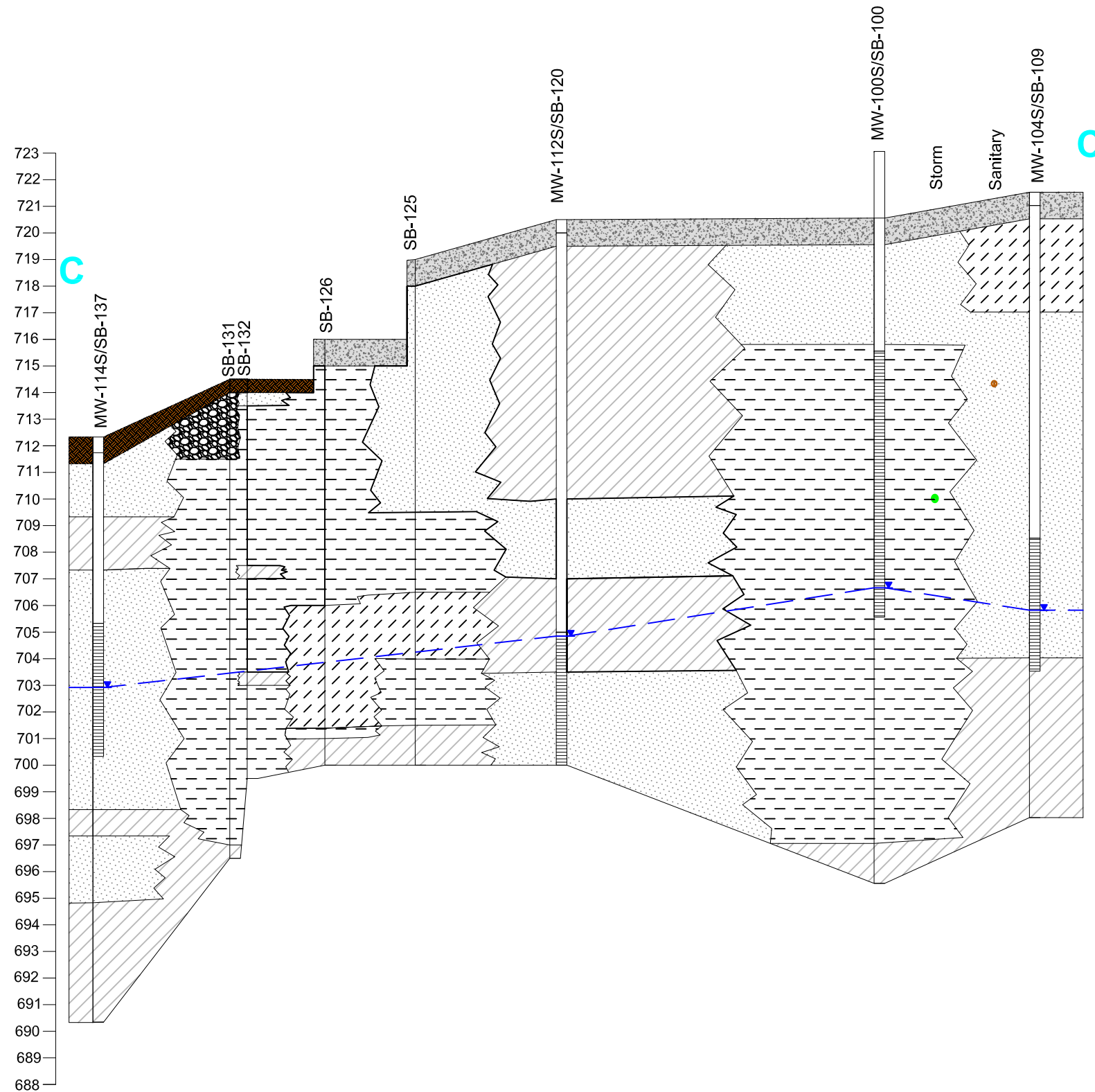
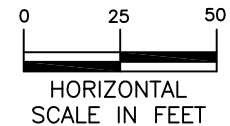
- Sanitary Sewer Line
- Storm Sewer Line
- Groundwater Elevation (approximate)
- Groundwater Elevation in Monitoring Well (09/14/2021)*
* - MW-115S
GW elevation from 11/18/2021.
- Topsoil
- Concrete
- Sand
- Sand & Gravel
- Silty Sand
- Clay
- Clayey Sand
- Bedrock (limestone/shale)
- Well Riser
- Well Screen

 Applied EcoSystems, Inc. Environmental Management, Consulting & Field Services G-4300 South Saginaw Street, Burton, Michigan 48529 Phone: 810.715.2525; Fax: 810.715.2526	Cross Section A-A' Racer Flint West -12990 Flint West Industrial Land, Flint, Michigan		DRAWING DATE: 11/30/2022	CHECKED BY: MDS
	PROJECT: 11-4317-102	FIGURE: 1A1		



Note, geology beneath Stevenson Road is not known and is depicted based on MW-108S/SB-115 boring log.

<p>Applied EcoSystems, Inc. Environmental Management, Consulting & Field Services G-4300 South Saginaw Street, Burton, Michigan 48529 Phone: 810.715.2525; Fax: 810.715.2526</p>	<p>Cross Section B-B'</p> <p>Racer Flint West -12990 Flint West Industrial Land, Flint, Michigan</p>		<p>DRAWING DATE:</p> <p>11/30/2022</p>	<p>CHECKED BY:</p> <p>MDS</p>
	<p>PROJECT:</p> <p>11-4317-102</p>	<p>FIGURE:</p> <p>1A2</p>		



- Sanitary Sewer Line
- Storm Sewer Line
- Groundwater Elevation (approximate)
- Groundwater Elevation in Monitoring Well (09/14/2021)*
* - MW-115S
GW elevation from 11/18/2021.
- Topsoil
- Concrete
- Sand
- Sand & Gravel
- Silty Sand
- Clay
- Clayey Sand
- Bedrock (limestone/shale)
- Well Riser
- Well Screen

<p>Applied EcoSystems, Inc. Environmental Management, Consulting & Field Services G-4300 South Saginaw Street, Burton, Michigan 48529 Phone: 810.715.2525; Fax: 810.715.2526</p>	<p>Cross Section C-C'</p> <p>Racer Flint West -12990 Flint West Industrial Land, Flint, Michigan</p>	DRAWING DATE:	CHECKED BY:
		11/30/2022	MDS
		PROJECT:	FIGURE:
		11-4317-102	1A3

Table 1
Groundwater Analytical Results
RACER - Flint West # 12990

Sample ID			MW-103S	MW-104S	MW-108S	MW-110S	MW-112S	MW-114S	MW-117S	Dupe1	FB-1	EB-1	Trip Blank	MW-103S MS	MW-103S MSD	
Date Collected			03/21/2023	03/21/2023	03/21/2023	03/21/2023	03/21/2023	03/21/2023	03/21/2023	03/21/2023	03/21/2023	03/21/2023	03/21/2023	03/21/2023	03/21/2023	
METALS ANALYTE (ug/L)	DW	GSI														
Arsenic, Dissolved	10	10		8	1.4	0.381	1.18	15	18	0.941	15	<2	<2	NA	256	263
Arsenic	10	10		14	1.38	0.465	2	40	34	1.06	27	<2	<2	NA	271	277
Chromium VI, Dissolved	100	11		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	NA	<10	<10
Chromium VI	100	11		<0.25	<10	<10	<10	<10	<10	<10	<10	<10	<10	NA	3600	3380
Chromium, Dissolved	100	160	G	0.204	0.502	0.27	0.39	0.401	0.182	1.27	0.139	<5	<5	NA	245	254
Chromium	100	160	G	0.406	70	0.559	1.33	0.42	0.514	49	0.496	0.107	0.096	NA	249	247
Copper, Dissolved	1000	20	G	<0.005	1.46	0.856	1.81	<5	0.379	1.13	2.29	0.16	0.558	NA	238	247
Copper	1000	20	G	0.469	3.59	2.42	4.11	<5	1.56	2.16	1	<5	<5	NA	245	237
Lead, Dissolved	4	44	G	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	NA	242	246
Lead	4	44	G	<3	<3	0.508	0.743	<3	0.213	<3	0.38	<3	<3	NA	235	243
Selenium, Dissolved	50	5		<5	<5	4.27	<5	<5	<5	<5	<5	<5	<5	NA	256	260
Selenium	50	5		<5	2.45	6	<5	<5	<5	<5	<5	<5	<5	NA	269	283
Zinc, Dissolved	2400	260	G	1.17	1.87	2.38	26	1.36	4.82	1.24	12	0.671	0.666	NA	246	256
Zinc	2400	260	G	1.68	2.37	6	28	1.82	8	1.65	8	0.757	0.371	NA	260	261
VOC ANALYTE (ug/L)	DW	GSI														
Acetone	730	1700		<50	<50	<50	<50	5.4	<250	<50	<50	11.4	5.5	<50	56	49.3
Acrylonitrile	2.6	2.0 (M); 1.2		<2	<2	<2	<2	<2	<10	<2	<2	<2	<2	<2	54	57
2-Butanone (MEK)	13000	2,200		<25	<25	<25	<25	<25	<130	<25	<25	<25	<25	<25	49	55
Benzene	5	200		0.22	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	58	55
n-Butylbenzene	NC	NC		0.2	<1	<1	<1	<1	0.55	<1	<1	<1	<1	<1	53	54
Bromobenzene	18	NA		<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	48	56
Bromochloromethane	NC	NC		<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	58	58
Bromodichloromethane	80	NC		<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	57	57
Bromoform	80 (A,W)	ID		<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	50	51
Bromomethane	10	4.2; [5(M)]		<5	<5	<5	<5	<5	<30	<5	<5	<5	<5	<5	65	52
sec-Butylbenzene	230	ID		<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	53	55
tert-Butylbenzene	80	ID		<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	48	54
Carbon disulfide	800	NC		0.24	<5	<5	<5	0.23	<30	<5	<5	<5	<5	0.16	60	49
Carbon tetrachloride	5	38	X	<1	<1	2	<1	<1	<5	<1	<1	<1	<1	<1	57	58
Chlorobenzene	100	25		3	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	55	56
Chloroethane	430	1,100		<5	<5	<5	<5	<5	<30	<5	<5	<5	<5	<5	66	55
Chloroform	80	350		<1	0.59	2	<1	<1	<5	<1	<1	<1	0.4	<1	57	56
Chloromethane	260	NC		<5	<5	<5	<5	<5	<30	<5	<5	<5	<5	<5	71	37.98
1,1-Dichloroethane	880	740		<1	<1	<1	<1	0.35	1.3	<1	1	<1	<1	<1	57	55
1,1-Dichloroethene	7	130		<1	<1	<1	<1	<1	0.9	<1	1	<1	<1	<1	59	55
1,2-Dibromo-3-chloropropane	NC	NC		<5	<5	<5	<5	<5	<30	<5	<5	<5	<5	<5	60	56
1,2-Dibromoethane	NC	NC		<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	54	53
1,2-Dichlorobenzene	600	13		0.27	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	55	58
1,2-Dichloroethane	5.0 (A)	360 (X)		<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	59	57
1,2-Dichloropropane	5.0 (A)	230 (X)		<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	57	71
1,3-Dichlorobenzene	6.6	28		<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	55	83
1,4-Dichlorobenzene	75	17		<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	55	55

Table 1
Groundwater Analytical Results
RACER - Flint West # 12990

Sample ID			MW-103S	MW-104S	MW-108S	MW-110S	MW-112S	MW-114S	MW-117S	Dupe1	FB-1	EB-1	Trip Blank	MW-103S MS	MW-103S MSD
Date Collected			03/21/2023	03/21/2023	03/21/2023	03/21/2023	03/21/2023	03/21/2023	03/21/2023	03/21/2023	03/21/2023	03/21/2023	03/21/2023	03/21/2023	03/21/2023
VOC ANALYTE (ug/L)	DW	GSI													
cis-1,2-Dichloroethene	70	620	<1	<1	<1	<1	0.78	59	<1	70	<1	<1	<1	54	55
cis-1,3-Dichloropropene	NC	NC	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	59	56
Dibromochloromethane	80 (A,W)	ID	<5	<5	<5	<5	<5	<30	<5	<5	<5	<5	<5	54	72
Dibromomethane	230	NA	<5	<5	<5	<5	<5	<30	<5	<5	<5	<5	<5	59	78
Dichlorodifluoromethane	1700	ID	<5	<5	<5	<5	<5	<30	<5	<5	<5	<5	<5	71	56
Diethyl ether	10 (E)	ID	<10	<10	<10	<10	<10	<50	<10	<10	<10	<10	<10	61	55
trans-1,2-Dichloroethene	100	1500	<1	<1	<1	<1	<1	0.55	<1	0.57	<1	<1	<1	53	50
trans-1,3-Dichloropropene	NC	NC	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	56	57
trans-1,4-Dichloro-2-butene	NC	NC	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	45	111
Ethylbenzene	74	18	0.12	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	52	53
2-Hexanone	1000	ID	<50	<50	<50	<50	<50	<250	<50	<50	<50	<50	<50	57	70
Hexachloroethane	21	6.7	<5	<5	<5	<5	<5	<30	<5	<5	<5	<5	<5	58	53
p-Isopropyltoluene	NC	NC	0.11	<5	<5	<5	<5	<30	<5	<5	<5	<5	<5	54	59
Isopropylbenzene	800	28	<5	<5	<5	<5	<5	<30	<5	<5	<5	<5	<5	48	54
VOC ANALYTE (ug/L) {cont}	DW	GSI													
2-Methylnaphthalene	260	19	0.45	<5	<5	<5	<5	1.6	<5	<5	<5	<5	<5	58	59
4-Methyl-2-pentanone (MIBK)	1800	ID	<50	<50	<50	<50	0.55	<250	<50	<50	<50	<50	<50	55	56
tert-Methyl butyl ether (MTBE)	40 (E)	7,100 (X)	<5	<5	<5	<5	<5	<30	<5	<5	<5	<5	<5	56	52
Methyl iodide	NC	NC	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	58	51
Methylene chloride	5	1500	<5	<5	<5	<5	<5	<30	<5	<5	<5	0.47	<5	55	58
Naphthalene	520	11	0.21	<5	<5	<5	<5	0.65	<5	<5	<5	<5	<5	63	55
n-Propylbenzene	80	ID	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	48	53
Styrene	100	80	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	49	53
1,1,1,2-Tetrachloroethane	77	ID	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	53	51
1,1,1-Trichloroethane	200	89	<1	<1	<1	<1	<1	1.2	<1	0.93	<1	<1	<1	56	51
1,1,2,2-Tetrachloroethane	8.5	78 (X)	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	47	45
1,1,2-Trichloroethane	5.0 (A)	330 (X)	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	60	54
1,2,3-Trichlorobenzene	NC	NC	0.15	<5	<5	<5	<5	0.5	<5	<5	<5	<5	<5	60	51
1,2,3-Trichloropropane	42	NA	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	49	54
1,2,3-Trimethylbenzene	NC	NC	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	54	55
1,2,4-Trichlorobenzene	NC	NC	0.15	<5	<5	<5	<5	<30	<5	<5	<5	<5	<5	59	70
1,2,4-Trimethylbenzene	63 (E)	17	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	49	54
1,3,5-Trimethylbenzene	72 (E)	45	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	49	51
Tetrachloroethene	5	60	<1	<1	<1	<1	<1	<5	0.14	<1	<1	<1	<1	56	57
Tetrahydrofuran	95	11000	1.28	<90	<90	<90	<90	15.5	<90	<90	<90	5.8	1.9	47.49	54.00
Toluene	790	270	0.18	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	57	55
Trichloroethene	5	200	0.1	<1	<1	<1	1	173	<1	199	<1	<1	<1	58	52
Trichlorofluoromethane	2600	NA	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	66	53
Vinyl chloride	2	13	<1	<1	<1	<1	0.83	3.95	<1	6	<1	<1	<1	70	49
o-Xylene	NC	NC	0.11	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	49	59
p,m-Xylene	NC	NC	0.22	<2	<2	<2	<2	<10	<2	<2	<2	<2	<2	104	55
Xylenes, Total	280	49	0.33	<3	<3	<3	<3	<15	<3	<3	<3	<3	<3	153	114

Table 1
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RACER - Flint West # 12990

Sample ID			MW-103S	MW-104S	MW-108S	MW-110S	MW-112S	MW-114S	MW-117S	Dupe1	FB-1	EB-1	Trip Blank	MW-103S MS	MW-103S MSD
Date Collected			03/21/2023	03/21/2023	03/21/2023	03/21/2023	03/21/2023	03/21/2023	03/21/2023	03/21/2023	03/21/2023	03/21/2023	03/21/2023	03/21/2023	03/21/2023
PFA ANALYTE (ng/L)	DW	GSI													
Perfluorobutanoic acid (PFBA)	NC	NC	99	<9.8	<9.8	<10	<9.6	<10	3	<9.8	<10	<9.5	<9.7	<19	100
Perfluoropentanoic acid (PFPeA)	NC	NC	80	0.88	<3.9	<4.1	<3.8	3.4	0.98	3.5	<4.1	<3.8	<3.9	<3.8	89
Fluorotelomer sulfonic acid (4:2 FTS)	NC	NC	99	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.0	<1.9	<1.9	<1.9	110
Perfluorohexanoic acid (PFHxA)	400,000	NC	82	0.61	<2.0	0.63	<1.9	2	1.3	2	<2.0	<1.9	<1.9	<1.9	93
Perfluorobutane sulfonic acid (PFBS)	420	NC	81	2	1.1	2.4	2	2.2	1.3	2	<2.0	<1.9	<1.9	1.7	85
Perfluoroheptanoic acid (PFHpA)	NC	NC	75	<2.0	0.98	<2.0	1.3	1.3	1.4	1.6	<2.0	<1.9	<1.9	<1.9	80
Perfluoropentane sulfonic acid (PFPeS)	NC	NC	77	0.98	<2.0	1	<1.9	<2.0	<2.0	<2.0	<2.0	<1.9	<1.9	<1.9	82
Fluorotelomer sulfonic acid (6:2 FTS)	NC	NC	100	<3.9	<3.9	<4.1	<3.8	<4.0	<2.0	<3.9	<4.1	<1.9	<1.9	<1.9	110
Perfluorooctanoic acid (PFOA)	8	12,000	79	<2.0	<2.0	<2.0	2.3	2.3	3.2	2.4	<2.0	<1.9	<1.9	<1.9	80
Perfluorohexane sulfonic acid (PFHxS)	51	NC	80	2.2	1.6	<2.0	1.3	1.5	1.4	1.3	<2.0	<1.9	<1.9	2.6	86
Perfluorohexane Sulfonic Acid - LN (PFHxS-LN)	NC	NC	68	1.9	1.6	<2.0	1.3	1.5	<2.0	1.3	<2.0	<1.9	<1.9	2	74
Perfluorohexane Sulfonic Acid - BR (PFHxS-BR)	NC	NC	9.4	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.0	<1.9	<1.9	<1.9	12
Perfluorononanoic acid (PFNA)	6	NC	80	<2.0	0.84	<2.0	0.96	0.95	<2.0	0.99	<2.0	<1.9	<1.9	<1.9	83
Fluorotelomer sulfonic acid (8:2 FTS)	NC	NC	82	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.0	<1.9	<1.9	<1.9	97
Perfluoroheptane sulfonic acid (PFHpS)	NC	NC	82	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.0	<1.9	<1.9	<1.9	79
Perfluorodecanoic acid (PFDA)	NC	NC	76	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.0	<1.9	<1.9	<1.9	80
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	NC	NC	73	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.0	<1.9	<1.9	<1.9	71
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	NC	NC	79	<3.9	<3.9	<4.1	<3.8	<4.0	<4.1	<3.9	<4.1	<3.8	<3.9	<3.8	89
Perfluorooctane sulfonic acid (PFOS)	16	12	91	<2.0	5.5	<2.0	13	17	1.9	15	<2.0	<1.9	<1.9	9.9	94
Perfluorooctane Sulfonic Acid - LN (PFOS-LN)	NC	NC	63	<2.0	2	<2.0	6.4	9	<2.0	8.1	<2.0	<1.9	<1.9	5.8	64
Perfluorooctane Sulfonic Acid - BR (PFOS-BR)	NC	NC	26	<2.0	4	<2.0	6.9	7.8	1.3	7.5	<2.0	<1.9	<1.9	4.1	29

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Date Collected			03/21/2023	03/21/2023	03/21/2023	03/21/2023	03/21/2023	03/21/2023	03/21/2023	03/21/2023	03/21/2023	03/21/2023	03/21/2023	03/21/2023	03/21/2023
PFA ANALYTE (ng/L)	DW	GSI													
Perfluoroundecanoic acid (PFUnDA)	NC	NC	79	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.0	<1.9	<1.9	<1.9	91
Perfluorononane sulfonic acid (PFNS)	NC	NC	77	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.0	<1.9	<1.9	<1.9	78
Perfluorododecanoic acid (PFDoDA)	NC	NC	76	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.0	<1.9	<1.9	<1.9	79
Perfluorodecane sulfonic acid (PFDS)	NC	NC	77	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.0	<1.9	<1.9	<1.9	78
Perfluorotridecanoic acid (PFTrDA)	NC	NC	67	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.0	<1.9	<1.9	<1.9	74
Perfluorooctane sulfonamide (FOSA)	NC	NC	84	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.0	<1.9	<1.9	<1.9	86
Perfluorotetradecanoic acid (PFTeDA)	NC	NC	72	<3.9	<3.9	<4.1	<3.8	<4.0	<4.1	<3.9	<4.1	<3.8	<3.9	<3.8	82
11-chloroeicosafuoro-3-oxaundecane-1-sulfonic acid (11CI-PF3OUdS)	NC	NC	91	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.0	<1.9	<1.9	<1.9	91
9-chlorohexadecafluoro-3-oxanone1-sulfonic acid (9CI-PF3ONS)	NC	NC	83	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.0	<1.9	<1.9	<1.9	91
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NC	NC	76	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.0	<1.9	<1.9	<1.9	83
Hexafluoropropylene oxide dimer (HFPO-DA)	NC	NC	69	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.0	<1.9	<1.9	<1.9	76

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NOTES:

DW - Drinking Water Residential Generic Criteria.

GSI - Groundwater Surface Water Interface Generic Criteria per MDEQ Surface Water Division Rule 57.

Blank cells indicate no detectable concentrations	
Exceeds DW criteria	X
Exceeds GSI criteria	X
Exceeds both DW and GSI criteria	X
Compound also found in associated method blank, suggesting a laboratory artifact.	X
Insufficient data to develop criterion/no criterion	NC
Groundwater to Surface Water Interface Criteria - calculated based on 257ppm total hardness in the Flint River	G
Not Sampled	NS
Filtered in lab	1
Filtered and preserved in lab	2
Not analyzed	NA

PFAS criteria based on EGLE proposed drinking water criteria for selected PFAS compounds.

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Sample ID	MW-103S	MW-104S	MW-106SR	MW-108S	MW-110S	MW-112S	MW-114S	MW-117S	Dupe1	FB-1	EB-1	Trip Blank	MW-103S MS	MW-103S MSD			
Date Collected	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022			
METALS ANALYTE (ug/L)	DW	GSI															
Arsenic, Dissolved	10	10		20	1.779	1.625	0.565	0.968	45	45	0.716	48	0.282	<2	NA	285	290
Arsenic	10	10		57	4	2	0.332	2	97	127	2	176	<2	<2	NA	321	316
Chromium VI, Dissolved	100	11		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	NA	22	31
Chromium VI	100	11		<250	<50	<50	<10	<10	<10	<10	<10	<50	<10	<10	NA	200	196
Chromium, Dissolved	100	160	G	0.2	10	1.056	0.428	1.952	0.728	0.437	0.285	0.254	0.255	<5	NA	255	259
Chromium	100	160	G	0.969	17100	278	1.308	1.516	8	1.219	45	3.597	0.405	<5	NA	252	251
Copper, Dissolved	1000	20	G	<5	1.252	2	0.853	0.626	<5	0.459	3.762	0.529	<5	0.591	NA	251	253
Copper	1000	20	G	<5	129	7	0.747	0.914	<5	8	3.6	22	0.392	<5	NA	245	248
Iron, Dissolved	300	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	300	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead, Dissolved	4	44	G	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	NA	252	248
Lead	4	44	G	<3	0.297	0.271	<3	<3	<3	6	0.407	17	<3	<3	NA	241	252
Manganese, Dissolved	50	4500		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	50	4500		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium, Dissolved	50	5		<5	3.904	4.346	2.48	<5	<5	<5	<5	<5	<5	<5	NA	249	267
Selenium	50	5		<5	6	7	3.116	<5	<5	<5	<5	<5	<5	<5	NA	243	251
Zinc, Dissolved	2400	260	G	0.823	<5	2.639	2.316	1.812	<5	3.777	2.006	3.372	<5	<5	NA	263	262
Zinc	2400	260	G	<5	7	6	2.116	1.038	<5	32	1.893	100	<5	<5	NA	263	259
VOC ANALYTE (ug/L)	DW	GSI															
Acetone	730	1700		<50	<50	<50	<50	<50	6.5	<50	<50	4.7	<50	<50	<50	52	48.7
Acrylonitrile	2.6	2.0 (M); 1.2		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	55	53
2-Butanone (MEK)	13000	2,200		<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	52	49
Benzene	5	200		1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	53	53
n-Butylbenzene	NC	NC		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	55	54
Bromobenzene	18	NA		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	56	55
Bromochloromethane	NC	NC		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	52	51
Bromodichloromethane	80	NC		<1	0.28	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	53	53
Bromoform	80 (A,W)	ID		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	59	58
Bromomethane	10	4.2; [5(M)]		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	51	51
sec-Butylbenzene	230	ID		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	54	53
tert-Butylbenzene	80	ID		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	55	53
Carbon disulfide	800	NC		<5	0.13	0.15	<5	<5	0.15	<5	<5	<5	<5	0.24	<5	50	50
Carbon tetrachloride	5	38	X	<1	<1	<1	2	<1	<1	<1	<1	<1	<1	<1	<1	52	51
Chlorobenzene	100	25		2	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	58	56
Chloroethane	430	1,100		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	49	49
Chloroform	80	350		<1	0.47	<1	2	<1	<1	<1	0.26	<1	2	1	<1	51	51
Chloromethane	260	NC		<5	<5	<5	<5	<5	<5	<5	0.12	<5	<5	0.32	<5	52	52
1,1-Dichloroethane	880	740		<1	<1	<1	<1	<1	0.69	2	<1	2	<1	<1	<1	51	50
1,1-Dichloroethene	7	130		<1	<1	<1	<1	<1	0.39	2	<1	2	<1	<1	<1	49	48
1,2-Dibromo-3-chloropropane	NC	NC		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	64	62
1,2-Dibromoethane	NC	NC		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	57	55
1,2-Dichlorobenzene	600	13		0.17	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	56	55
1,2-Dichloroethane	5.0 (A)	360 (X)		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	51	51
1,2-Dichloropropane	5.0 (A)	230 (X)		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	52	51
1,3-Dichlorobenzene	6.6	28		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	55	55
1,4-Dichlorobenzene	75	17		0.13	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	55	55

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RACER - Flint West # 12990

Sample ID	MW-103S	MW-104S	MW-106SR	MW-108S	MW-110S	MW-112S	MW-114S	MW-117S	Dupe1	FB-1	EB-1	Trip Blank	MW-103S MS	MW-103S MSD			
Date Collected	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022			
VOC ANALYTE (ug/L)	DW	GSI															
cis-1,2-Dichloroethene	70	620	0.16	<1	<1	<1	<1	3	142	<1	136	<1	<1	<1	51	50	
cis-1,3-Dichloropropene	NC	NC	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	55	54	
Dibromochloromethane	80 (A,W)	ID	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	58	56	
Dibromomethane	230	NA	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	54	54	
Dichlorodifluoromethane	1700	ID	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	52	51	
Diethyl ether	10 (E)	ID	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	51	50	
trans-1,2-Dichloroethene	100	1500	<1	<1	<1	<1	<1	0.17	0.95	<1	0.82	<1	<1	<1	50	49	
trans-1,3-Dichloropropene	NC	NC	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	55	55	
trans-1,4-Dichloro-2-butene	NC	NC	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	65	62	
Ethylbenzene	74	18	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	55	53	
2-Hexanone	1000	ID	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	61	57	
Hexachloroethane	21	6.7	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	60	58	
p-Isopropyltoluene	NC	NC	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	54	54	
Isopropylbenzene	800	28	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	55	53	
VOC ANALYTE (ug/L) {cont}	DW	GSI															
2-Methylnaphthalene	260	19	0.24	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	0.16	<5	77	84
4-Methyl-2-pentanone (MIBK)	1800	ID	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	59	56	
tert-Methyl butyl ether (MTBE)	40 (E)	7,100 (X)	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	53	53	
Methyl iodide	NC	NC	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	52	51	
Methylene chloride	5	1500	<5	<5	<5	<5	<5	<5	<5	<5	<5	0.64	0.61	<5	52	52	
Naphthalene	520	11	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	63	64	
n-Propylbenzene	80	ID	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	55	54	
Styrene	100	80	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	55	54	
1,1,1,2-Tetrachloroethane	77	ID	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	56	55	
1,1,1-Trichloroethane	200	89	<1	<1	<1	<1	<1	<1	1	<1	1	<1	<1	<1	50	49	
1,1,2,2-Tetrachloroethane	8.5	78 (X)	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	57	56	
1,1,2-Trichloroethane	5.0 (A)	330 (X)	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	50	53	
1,2,3-Trichlorobenzene	NC	NC	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	58	62	
1,2,3-Trichloropropane	42	NA	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	58	56	
1,2,3-Trimethylbenzene	NC	NC	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	56	55	
1,2,4-Trichlorobenzene	NC	NC	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	57	59	
1,2,4-Trimethylbenzene	63 (E)	17	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	56	54	
1,3,5-Trimethylbenzene	72 (E)	45	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	55	53	
Tetrachloroethene	5	60	<1	<1	<1	<1	<1	<1	<1	0.21	<1	<1	<1	<1	52	51	
Tetrahydrofuran	95	11000	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	0.33	<90	49.11	47.82	
Toluene	790	270	0.16	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	52	51	
Trichloroethene	5	200	<1	<1	<1	<1	<1	7	252	1	219	<1	<1	<1	53	53	
Trichlorofluoromethane	2600	NA	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	53	52	
Vinyl chloride	2	13	0.74	<1	<1	<1	<1	2	14	<1	13	<1	<1	<1	53	54	
o-Xylene	NC	NC	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	55	54	
p,m-Xylene	NC	NC	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	109	107	
Xylenes, Total	280	49	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	164	161	

Table 1
Groundwater Analytical Results
RACER - Flint West # 12990

Sample ID	MW-103S	MW-104S	MW-106SR	MW-108S	MW-110S	MW-112S	MW-114S	MW-117S	Dupe1	FB-1	EB-1	Trip Blank	MW-103S MS	MW-103S MSD		
Date Collected	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022		
PFA ANALYTE (ng/L)	DW	GSI														
Perfluorobutanoic acid (PFBA)	NC	NC	<190	<9.5	<9.5	<9.1	<9.6	<28	<9.2	<10	<9.5	<9.7	<9.8	<10	330	300
Perfluoropentanoic acid (PFPeA)	NC	NC	<3.8	<3.8	1.8	<3.6	<3.8	<3.7	<3.7	<4.0	<3.8	<3.9	<3.9	<4.1	110	110
Fluorotelomer sulfonic acid (4:2 FTS)	NC	NC	<1.9	<1.9	<1.9	<1.8	<1.9	<1.8	<1.8	<2.0	<1.9	<1.9	<2.0	<2.0	120	120
Perfluorohexanoic acid (PFHxA)	400,000	NC	<5.7	<1.9	2.5	<1.8	<1.9	<1.8	<1.8	<2.0	<1.9	<1.9	<2.0	<2.0	110	90
Perfluorobutane sulfonic acid (PFBS)	420	NC	<1.9	1.6	4.3	1.5	1.7	1.4	1.7	1.5	1.5	<1.9	<2.0	<2.0	110	100
Perfluoroheptanoic acid (PFHpA)	NC	NC	<1.9	<1.9	2.1	<1.8	<1.9	<1.8	<1.8	<2.0	<1.9	<1.9	<2.0	<2.0	94	110
Perfluoropentane sulfonic acid (PFPeS)	NC	NC	<1.9	<1.9	<1.9	<1.8	<1.9	<1.8	<1.8	<2.0	<1.9	<1.9	<2.0	<2.0	100	99
Fluorotelomer sulfonic acid (6:2 FTS)	NC	NC	<1.9	<1.9	<1.9	<1.8	<1.9	<1.8	<1.8	<2.0	<1.9	<1.9	<2.0	<2.0	92	100
Perfluorooctanoic acid (PFOA)	8	12,000	2.5	<1.9	13	<1.8	2.5	<1.8	2.2	<2.0	<1.9	<1.9	<2.0	<2.0	92	100
Perfluorohexane sulfonic acid (PFHxS)	51	NC	<1.9	1.7	1.9	2.3	2.5	<1.8	<1.8	<2.0	<1.9	<1.9	<2.0	<2.0	120	110
Perfluorohexane Sulfonic Acid - LN (PFHxS-LN)	NC	NC	<1.9	<1.9	1.6	1.5	1.6	<1.8	<1.8	<2.0	<1.9	<1.9	<2.0	<2.0	97	94
Perfluorohexane Sulfonic Acid - BR (PFHxS-BR)	NC	NC	<1.9	<1.9	<1.9	<1.8	<1.9	<1.8	<1.8	<2.0	<1.9	<1.9	<2.0	<2.0	17	15
Perfluorononanoic acid (PFNA)	6	NC	<1.9	<1.9	<1.9	<1.8	<1.9	<1.8	<1.8	<2.0	<1.9	<1.9	<2.0	<2.0	99	100
Fluorotelomer sulfonic acid (8:2 FTS)	NC	NC	<1.9	<1.9	<1.9	<1.8	<1.9	<1.8	<1.8	<2.0	<1.9	<1.9	<2.0	<2.0	110	110
Perfluoroheptane sulfonic acid (PFHpS)	NC	NC	<1.9	<1.9	<1.9	<1.8	<1.9	<1.8	<1.8	<2.0	<1.9	<1.9	<2.0	<2.0	120	99
Perfluorodecanoic acid (PFDA)	NC	NC	<1.9	<1.9	<1.9	<1.8	<1.9	<1.8	<1.8	<2.0	<1.9	<1.9	<2.0	<2.0	130	99
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	NC	NC	<1.9	<1.9	<1.9	<1.8	<1.9	<1.8	<1.8	<2.0	<1.9	<1.9	<2.0	<2.0	100	96
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	NC	NC	5.1	<3.8	<3.8	<3.6	<3.8	<3.7	<3.7	<4.0	<3.8	<3.9	<3.9	<4.1	110	110
Perfluorooctane sulfonic acid (PFOS)	16	12	73	<1.9	16	8.8	5.6	5.8	30	<2.0	23	<1.9	<2.0	<2.0	200	190
Perfluorooctane Sulfonic Acid - LN (PFOS-LN)	NC	NC	49	<1.9	4.3	2.5	<1.9	2.8	18	<2.0	14	<1.9	<2.0	<2.0	140	130
Perfluorooctane Sulfonic Acid - BR (PFOS-BR)	NC	NC	20	<1.9	11	6.3	4.6	3	12	<2.0	9	<1.9	<2.0	<2.0	62	58

Table 1
Groundwater Analytical Results
RACER - Flint West # 12990

Sample ID	MW-103S	MW-104S	MW-106SR	MW-108S	MW-110S	MW-112S	MW-114S	MW-117S	Dupe1	FB-1	EB-1	Trip Blank	MW-103S MS	MW-103S MSD		
Date Collected	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022		
PFA ANALYTE (ng/L)	DW	GSI														
Perfluoroundecanoic acid (PFUnDA)	NC	NC	<1.9	<1.9	<1.9	<1.8	<1.9	<1.8	<1.8	<2.0	<1.9	<1.9	<2.0	<2.0	95	88
Perfluorononane sulfonic acid (PFNS)	NC	NC	<1.9	<1.9	<1.9	<1.8	<1.9	<1.8	<1.8	<2.0	<1.9	<1.9	<2.0	<2.0	110	100
Perfluorododecanoic acid (PFDoDA)	NC	NC	<1.9	<1.9	<1.9	<1.8	<1.9	<1.8	<1.8	<2.0	<1.9	<1.9	<2.0	<2.0	99	93
Perfluorodecane sulfonic acid (PFDS)	NC	NC	<1.9	<1.9	<1.9	<1.8	<1.9	<1.8	<1.8	<2.0	<1.9	<1.9	<2.0	<2.0	110	91
Perfluorotridecanoic acid (PFTrDA)	NC	NC	<1.9	<1.9	<1.9	<1.8	<1.9	<1.8	<1.8	<2.0	<1.9	<1.9	<2.0	<2.0	84	86
Perfluorooctane sulfonamide (FOSA)	NC	NC	<1.9	<1.9	<1.9	<1.8	<1.9	<1.8	<1.8	<2.0	<1.9	<1.9	<2.0	<2.0	99	88
Perfluorotetradecanoic acid (PFTeDA)	NC	NC	<3.8	<3.8	<3.8	<3.6	<3.8	<3.7	<3.7	<4.0	<3.8	<3.9	<3.9	<4.1	96	110
11-chloroeicosafuoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NC	NC	<1.9	<1.9	<1.9	<1.8	<1.9	<1.8	<1.8	<2.0	<1.9	<1.9	<2.0	<2.0	90	81
9-chlorohexadecafluoro-3-oxanone1-sulfonic acid (9Cl-PF3ONS)	NC	NC	<1.9	<1.9	<1.9	<1.8	<1.9	<1.8	<1.8	<2.0	<1.9	<1.9	<2.0	<2.0	96	91
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NC	NC	<1.9	<1.9	<1.9	<1.8	<1.9	<1.8	<1.8	<2.0	<1.9	<1.9	<2.0	<2.0	110	110
Hexafluoropropylene oxide dimer (HFPO-DA)	NC	NC	<9.6	<9.5	<9.5	<9.1	<9.6	<9.2	<9.2	<10	<9.5	<9.7	<9.8	<10	110	88

1.59

Table 1
Groundwater Analytical Results
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NOTES:

DW - Drinking Water Residential Generic Criteria.

GSI - Groundwater Surface Water Interface Generic Criteria per MDEQ Surface Water Division Rule 57.

Blank cells indicate no detectable concentrations	
Exceeds DW criteria	X
Exceeds GSI criteria	X
Exceeds both DW and GSI criteria	X
Compound also found in associated method blank, suggesting a laboratory artifact.	X
Insufficient data to develop criterion/no criterion	NC
Groundwater to Surface Water Interface Criteria - calculated based on 257ppm total hardness in the Flint River	G
Not Sampled	NS
Filtered in lab	1
Filtered and preserved in lab	2
Not analyzed	NA

PFAS criteria based on EGLE proposed drinking water criteria for selected PFAS compounds.

Table 2
Groundwater Analytical Results
RACER - Flint West # 12990

Sample ID		MW-103S	MW-104S	MW-106SR	MW-108S	MW-110S	MW-112S	MW-114S	MW-117S	Dupe1	FB-1	EB-1	Trip Blank	MW-103S MS	MW-103S MSD		
Date Collected		03/16/2022	03/16/2022	03/16/2022	03/16/2022	03/16/2022	03/16/2022	03/16/2022	03/16/2022	03/16/2022	03/16/2022	03/16/2022	03/16/2022	03/16/2022	03/16/2022		
METALS ANALYTE (ug/L)	DW	GSI															
Arsenic, Dissolved	10	10		8	0.423	0.616	<2	1.91	32	13	1.131	11	0.124	0.364	NA	250	268
Arsenic	10	10		39	0.872	1.593	1.122	9	89	52	0.597	49	<2	0.322	NA	298	298
Chromium VI, Dissolved	100	11		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	NA	<20	<20
Chromium VI	100	11		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	NA	<20	<20
Chromium, Dissolved	100	160	G	0.238	0.725	0.875	0.298	0.216	0.38	0.215	0.417	0.286	0.229	0.216	NA	245	260
Chromium	100	160	G	0.258	106	2,020	0.364	2.794	0.368	0.57	12	0.609	0.203	0.075	NA	257	249
Copper, Dissolved	1000	20	G	<5	0.441	1	0.505	<0.005	<0.005	<5	1.321	<5	<5	<5	NA	234	245
Copper	1000	20	G	<5	1.738	33	0.628	1.805	<0.005	3.007	2.285	3.227	0.161	<5	NA	246	245
Lead, Dissolved	4	44	G	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	NA	231	248
Lead	4	44	G	<3	<3	1.062	<3	0.99	<3	2.466	<3	2.637	<3	<3	NA	252	243
Manganese, Dissolved	50	4500		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	50	4500		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium, Dissolved	50	5		<5	3.52	3.6	3.13	<5	<5	<5	<5	<5	<5	<5	NA	249	271
Selenium	50	5		<5	3.7	3.78	3.16	<5	<5	<5	<5	<5	<5	<5	NA	272	281
Zinc, Dissolved	2400	260	G	1.75	1.968	10	2.015	6	1.144	12	1.719	13	0.44	0.461	NA	249	251
Zinc	2400	260	G	1.72	1.933	31	2.611	8	1.89	37	2.169	23	0.598	0.651	NA	263	262
VOC ANALYTE (ug/L)	DW	GSI															
Acetone	730	1700		<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	14.6	<50	45	46.7
Acrylonitrile	2.6	2.0 (M); 1.2		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	46	49
2-Butanone (MEK)	13000	2,200		<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	48	50
Benzene	5	200		0.54	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	46	43
n-Butylbenzene	NC	NC		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	52	51
Bromobenzene	18	NA		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	51	49
Bromochloromethane	NC	NC		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	51	49
Bromodichloromethane	80	NC		<1	0.19	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	50	48
Bromoform	80 (A,W)	ID		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	51	52
Bromomethane	10	4.2; [5(M)]		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	31	27
sec-Butylbenzene	230	ID		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	52	52
tert-Butylbenzene	80	ID		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	50	49
Carbon disulfide	800	NC		0.18	0.19	0.24	0.2	0.2	0.23	0.19	0.18	0.2	0.26	0.15	0.26	43	41
Carbon tetrachloride	5	38	X	<1	<1	<1	2	<1	<1	<1	<1	<1	<1	<1	<1	45	43
Chlorobenzene	100	25		0.64	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	49	49
Chloroethane	430	1,100		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	29	27
Chloroform	80	350		<1	0.45	<1	0.8	<1	<1	0.14	0.25	0.14	<1	<1	<1	49	47
Chloromethane	260	NC		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	35	34
1,1-Dichloroethane	880	740		<1	<1	<1	<1	<1	0.41	2	<1	2	<1	<1	<1	48	45
1,1-Dichloroethene	7	130		<1	<1	<1	<1	<1	0.38	1	<1	1	<1	<1	<1	43	41
1,2-Dibromo-3-chloropropane	NC	NC		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	76	84
1,2-Dibromoethane	NC	NC		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	52	53
1,2-Dichlorobenzene	600	13		<1	<1	<1	<1	<1	0.12	<1	<1	<1	<1	<1	<1	52	51
1,2-Dichloroethane	5.0 (A)	360 (X)		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	45	42
1,2-Dichloropropane	5.0 (A)	230 (X)		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	45	43
1,3-Dichlorobenzene	6.6	28		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	52	51
1,4-Dichlorobenzene	75	17		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	51	50

Table 2
Groundwater Analytical Results
RACER - Flint West # 12990

Sample ID			MW-103S	MW-104S	MW-106SR	MW-108S	MW-110S	MW-112S	MW-114S	MW-117S	Dupe1	FB-1	EB-1	Trip Blank	MW-103S MS	MW-103S MSD	
Date Collected			03/16/2022	03/16/2022	03/16/2022	03/16/2022	03/16/2022	03/16/2022	03/16/2022	03/16/2022	03/16/2022	03/16/2022	03/16/2022	03/16/2022	03/16/2022	03/16/2022	
VOC ANALYTE (ug/L)	DW	GSI															
cis-1,2-Dichloroethene	70	620	0.12	<1	<1	<1	<1	0.88	131	0.21	124	<1	<1	<1	50	47	
cis-1,3-Dichloropropene	NC	NC	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	52	51	
Dibromochloromethane	80 (A,W)	ID	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	51	51	
Dibromomethane	230	NA	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	53	52	
Dichlorodifluoromethane	1700	ID	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	51	52	
Diethyl ether	10 (E)	ID	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	41	40	
trans-1,2-Dichloroethene	100	1500	<1	<1	<1	<1	<1	0.13	0.75	<1	0.67	<1	<1	<1	46	43	
trans-1,3-Dichloropropene	NC	NC	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	58	54	
trans-1,4-Dichloro-2-butene	NC	NC	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	35	36	
Ethylbenzene	74	18	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	49	47	
2-Hexanone	1000	ID	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	51	54	
Hexachloroethane	21	6.7	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	53	53	
p-Isopropyltoluene	NC	NC	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	52	51	
Isopropylbenzene	800	28	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	49	49	
VOC ANALYTE (ug/L) {cont}	DW	GSI															
2-Methylnaphthalene	260	19	0.3	<5	<5	<5	<5	<5	<5	<5	<5	<5	0.11	0.26	<5	73	77
4-Methyl-2-pentanone (MIBK)	1800	ID	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	52	54	
tert-Methyl butyl ether (MTBE)	40 (E)	7,100 (X)	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	46	45	
Methyl iodide	NC	NC	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	47	44	
Methylene chloride	5	1500	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	0.12	0.22	44	42	
Naphthalene	520	11	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	0.12	<5	57	60	
n-Propylbenzene	80	ID	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	51	49	
Styrene	100	80	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	36	34	
1,1,1,2-Tetrachloroethane	77	ID	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	50	48	
1,1,1-Trichloroethane	200	89	<1	<1	<1	<1	<1	<1	1	<1	1	<1	<1	<1	46	44	
1,1,2,2-Tetrachloroethane	8.5	78 (X)	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	49	51	
1,1,2-Trichloroethane	5.0 (A)	330 (X)	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	51	49	
1,2,3-Trichlorobenzene	NC	NC	0.14	<5	<5	<5	<5	<5	<5	<5	<5	<5	0.2	<5	74	74	
1,2,3-Trichloropropane	42	NA	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	49	50	
1,2,3-Trimethylbenzene	NC	NC	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	52	50	
1,2,4-Trichlorobenzene	NC	NC	0.17	<5	<5	<5	<5	<5	<5	<5	<5	<5	0.14	<5	74	74	
1,2,4-Trimethylbenzene	63 (E)	17	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	39	37	
1,3,5-Trimethylbenzene	72 (E)	45	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	48	47	
Tetrachloroethene	5	60	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	58	56	
Tetrahydrofuran	95	11000	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	2.64	2.72	44.86	49.19	
Toluene	790	270	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	0.12	<1	50	48	
Trichloroethene	5	200	<1	0.21	<1	0.18	<1	1	172	1	162	<1	<1	<1	50	47	
Trichlorofluoromethane	2600	NA	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	37	36	
Vinyl chloride	2	13	0.21	<1	<1	<1	<1	2	7	<1	6	<1	<1	<1	33	31	
o-Xylene	NC	NC	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	48	46	
p,m-Xylene	NC	NC	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	96	91	
Xylenes, Total	280	49	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	144	137	

Table 2
Groundwater Analytical Results
RACER - Flint West # 12990

Sample ID			MW-103S	MW-104S	MW-106SR	MW-108S	MW-110S	MW-112S	MW-114S	MW-117S	Dupe1	FB-1	EB-1	Trip Blank	MW-103S MS	MW-103S MSD
Date Collected			03/16/2022	03/16/2022	03/16/2022	03/16/2022	03/16/2022	03/16/2022	03/16/2022	03/16/2022	03/16/2022	03/16/2022	03/16/2022	03/16/2022	03/16/2022	03/16/2022
PFA ANALYTE (ng/L)	DW	GSI														
Perfluorobutanoic acid (PFBA)	NC	NC	<39	NA	<9.7	NA	<9.8	<31	<9.8	<10	<10	<10	<10	<11	130	120
Perfluoropentanoic acid (PFPeA)	NC	NC	<3.9	NA	1.2	NA	<3.9	<4.1	<3.9	<4.0	<4.1	<4.0	<4.0	<4.2	120	110
Fluorotelomer sulfonic acid (4:2 FTS)	NC	NC	<2.0	NA	<1.9	NA	<2.0	<2.1	<2.0	<2.0	<2.1	<2.0	<2.0	<2.1	110	100
Perfluorohexanoic acid (PFHxA)	400,000	NC	<2.0	NA	2	NA	<2.0	<2.1	1.7	<2.0	<2.1	<2.0	<2.0	<2.1	110	93
Perfluorobutane sulfonic acid (PFBS)	420	NC	1.6	NA	3.6	NA	2.3	1.5	1.5	<2.0	<2.1	<2.0	<2.0	<2.1	110	100
Perfluoroheptanoic acid (PFHpA)	NC	NC	<2.0	NA	2.2	NA	<2.0	<2.1	<2.0	<2.0	<2.1	<2.0	<2.0	<2.1	96	99
Perfluoropentane sulfonic acid (PFPeS)	NC	NC	<2.0	NA	<1.9	NA	<2.0	<2.1	<2.0	<2.0	<2.1	<2.0	<2.0	<2.1	120	100
Fluorotelomer sulfonic acid (6:2 FTS)	NC	NC	<2.0	NA	<1.9	NA	<2.0	<2.1	<2.0	<2.0	<2.1	<2.0	<2.0	<2.1	100	110
Perfluorooctanoic acid (PFOA)	8	12,000	2.6	NA	15	NA	<2.0	<2.1	2.4	<2.0	<2.1	<2.0	<2.0	<2.1	110	93
Perfluorohexane sulfonic acid (PFHxS)	51	NC	2.1	NA	1.6	NA	<2.0	<2.1	<2.0	<2.0	<2.1	<2.0	<2.0	<2.1	120	95
Perfluorohexane Sulfonic Acid - LN (PFHxS-LN)	NC	NC	2.1	NA	<1.9	NA	<2.0	<2.1	<2.0	<2.0	<2.1	<2.0	<2.0	<2.1	100	78
Perfluorohexane Sulfonic Acid - BR (PFHxS-BR)	NC	NC	<2.0	NA	<1.9	NA	<2.0	<2.1	<2.0	<2.0	<2.1	<2.0	<2.0	<2.1	16	15
Perfluorononanoic acid (PFNA)	6	NC	<2.0	NA	<1.9	NA	<2.0	<2.1	<2.0	<2.0	<2.1	<2.0	<2.0	<2.1	110	83
Fluorotelomer sulfonic acid (8:2 FTS)	NC	NC	<2.0	NA	<1.9	NA	<2.0	<2.1	<2.0	<2.0	<2.1	<2.0	<2.0	<2.1	87	110
Perfluoroheptane sulfonic acid (PFHpS)	NC	NC	<2.0	NA	<1.9	NA	<2.0	<2.1	<2.0	<2.0	<2.1	<2.0	<2.0	<2.1	110	95
Perfluorodecanoic acid (PFDA)	NC	NC	<2.0	NA	<1.9	NA	<2.0	<2.1	<2.0	<2.0	<2.1	<2.0	<2.0	<2.1	97	92
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	NC	NC	<2.0	NA	<1.9	NA	<2.0	<2.1	<2.0	<2.0	<2.1	<2.0	<2.0	<2.1	110	110
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	NC	NC	<3.9	NA	<3.9	NA	<3.9	<4.1	<3.9	<4.0	<4.1	<4.0	<4.0	<4.2	110	95
Perfluorooctane sulfonic acid (PFOS)	16	12	74	NA	11	NA	<2.0	10	16	<2.0	13	<2.0	<2.0	<2.1	160	170
Perfluorooctane Sulfonic Acid - LN (PFOS-LN)	NC	NC	47	NA	3.3	NA	<2.0	4.9	6.8	<2.0	5	<2.0	<2.0	<2.1	110	110
Perfluorooctane Sulfonic Acid - BR (PFOS-BR)	NC	NC	25	NA	7.8	NA	<2.0	5.6	9.6	<2.0	7.6	<2.0	<2.0	<2.1	51	52

Table 2
Groundwater Analytical Results
RACER - Flint West # 12990

Sample ID			MW-103S	MW-104S	MW-106SR	MW-108S	MW-110S	MW-112S	MW-114S	MW-117S	Dupe1	FB-1	EB-1	Trip Blank	MW-103S MS	MW-103S MSD
Date Collected			03/16/2022	03/16/2022	03/16/2022	03/16/2022	03/16/2022	03/16/2022	03/16/2022	03/16/2022	03/16/2022	03/16/2022	03/16/2022	03/16/2022	03/16/2022	03/16/2022
PFA ANALYTE (ng/L)	DW	GSI														
Perfluoroundecanoic acid (PFUnDA)	NC	NC	<2.0	NA	<1.9	NA	<2.0	<2.1	<2.0	<2.0	<2.1	<2.0	<2.0	<2.1	100	97
Perfluorononane sulfonic acid (PFNS)	NC	NC	<2.0	NA	<1.9	NA	<2.0	<2.1	<2.0	<2.0	<2.1	<2.0	<2.0	<2.1	110	110
Perfluorododecanoic acid (PFDoDA)	NC	NC	<2.0	NA	<1.9	NA	<2.0	<2.1	<2.0	<2.0	<2.1	<2.0	<2.0	<2.1	97	97
Perfluorodecane sulfonic acid (PFDS)	NC	NC	<2.0	NA	<1.9	NA	<2.0	<2.1	<2.0	<2.0	<2.1	<2.0	<2.0	<2.1	110	110
Perfluorotridecanoic acid (PFTTrDA)	NC	NC	<2.0	NA	<1.9	NA	<2.0	<2.1	<2.0	<2.0	<2.1	<2.0	<2.0	<2.1	120	110
Perfluorooctane sulfonamide (FOSA)	NC	NC	<2.0	NA	<1.9	NA	<2.0	<2.1	<2.0	<2.0	<2.1	<2.0	<2.0	<2.1	110	110
Perfluorotetradecanoic acid (PFTeDA)	NC	NC	<3.9	NA	<3.9	NA	<3.9	<4.1	<3.9	<4.0	<4.1	<4.0	<4.0	<4.2	130	110
PFA ANALYTE (ng/L) {cont}	DW	GSI														
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NC	NC	<2.0	NA	<1.9	NA	<2.0	<2.1	<2.0	<2.0	<2.1	<2.0	<2.0	<2.1	110	110
9-chlorohexadecafluoro-3-oxanone1-sulfonic acid (9Cl-PF3ONS)	NC	NC	<2.0	NA	<1.9	NA	<2.0	<2.1	<2.0	<2.0	<2.1	<2.0	<2.0	<2.1	110	100
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NC	NC	<2.0	NA	<1.9	NA	<2.0	<2.1	<2.0	<2.0	<2.1	<2.0	<2.0	<2.1	93	83
Hexafluoropropylene oxide dimer (HFPO-DA)	NC	NC	<3.9	NA	<3.9	NA	<3.9	<4.1	<3.9	<4.0	<4.1	<4.0	<4.0	<4.2	98	86

1.64

Table 1
Groundwater Analytical Results
RACER - Flint West # 12990

NOTES:

DW - Drinking Water Residential Generic Criteria.

GSI - Groundwater Surface Water Interface Generic Criteria per MDEQ Surface Water Division Rule 57.

Blank cells indicate no detectable concentrations	
Exceeds DW criteria	X
Exceeds GSI criteria	X
Exceeds both DW and GSI criteria	X
Compound also found in associated method blank, suggesting a laboratory artifact.	X
Insufficient data to develop criterion/no criterion	NC
Groundwater to Surface Water Interface Criteria - calculated based on 257ppm total hardness in the Flint River	G
Not Sampled	NS
Filtered in lab	1
Filtered and preserved in lab	2
Not analyzed	NA

PFAS criteria based on EGLE proposed drinking water criteria for selected PFAS compounds.

Table 1
Groundwater Analytical Results
RACER - Flint West # 12990

VOC ANALYTE (ug/L) {cont}	Sample ID	Date Collected	MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105S	MW-106SR	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S	MW-114S	Dupe1	Dupe 2	FB-1	EB-1	FB-2	EB-2	Trip Blank	MW-103S MS	MW-103S MSD
			DW	GSI	09/14/2021	09/14/2021	09/14/2021	09/16/2021	09/14/2021	09/14/2021	09/14/2021	09/15/2021	09/15/2021	09/15/2021	09/15/2021	09/16/2021	09/15/2021	09/15/2021	09/15/2021	09/15/2021	09/15/2021	09/14/2021	09/14/2021	09/15/2021	09/15/2021	09/16/2021
2-Methylnaphthalene	260	19	<5	<5	<5	0.25	<5	0.11	<5	<5	<5	<5	<5	0.15	<5	<5	<50	<5	<5	0.21	0.15	<5	<5	0.25	64	66
4-Methyl-2-pentanone (MIBK)	1800	ID	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	0.31	<50	<500	<50	<50	<50	<50	<50	<50	<50	59	59
tert-Methyl butyl ether (MTBE)	40 (E)	7,100 (X)	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<5	<5	<5	<5	<5	<5	56	55
Methyl iodide	NC	NC	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1	<1	<1	<1	<1	59	60
Methylene chloride	5	1500	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<5	0.55	<5	<5	<5	0.16	53	55
Naphthalene	520	11	<5	<5	<5	0.13	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<5	0.1	<5	<5	<5	0.14	62	62
n-Propylbenzene	80	ID	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1	<1	<1	<1	<1	55	55
Styrene	100	80	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1	<1	<1	<1	<1	57	57
1,1,1,2-Tetrachloroethane	77	ID	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1	<1	<1	<1	<1	56	57
1,1,1-Trichloroethane	200	89	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	1	<1	<1	<1	<1	<1	54	55
1,1,2,2-Tetrachloroethane	8.5	78 (X)	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1	<1	<1	<1	<1	57	56
1,1,2-Trichloroethane	5.0 (A)	330 (X)	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1	<1	<1	<1	<1	57	57
1,2,3-Trichlorobenzene	NC	NC	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<5	<5	<5	<5	<5	0.11	61	61
1,2,3-Trichloropropane	42	NA	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1	<1	<1	<1	<1	56	57
1,2,3-Trimethylbenzene	NC	NC	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1	<1	<1	<1	<1	52	52
1,2,4-Trichlorobenzene	NC	NC	<5	<5	<5	0.11	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<5	<5	<5	<5	<5	0.12	59	59
1,2,4-Trimethylbenzene	63 (E)	17	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1	<1	<1	<1	<1	58	58
1,3,5-Trimethylbenzene	72 (E)	45	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1	<1	<1	<1	<1	58	57
Tetrachloroethene	5	60	<1	<1	<1	<1	<1	93	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1	<1	<1	<1	<1	59	59
Tetrahydrofuran	95	11000	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<900	<90	<90	<90	<90	<90	<90	<90	51.66	52.57
Toluene	790	270	<1	0.11	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	0.11	<1	<1	<1	<1	<1	<1	56	57
Trichloroethene	5	200	14	3	0.67	<1	0.24	0.14	0.11	2	0.34	25	<1	16	4	29	200	4	226	0.11	<1	<1	<1	<1	54	55
Trichlorofluoromethane	2600	NA	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1	<1	<1	<1	<1	50	51
Vinyl chloride	2	13	<1	<1	<1	<1	<1	<1	<1	<1	<1	11	<1	<1	4	1	9.3	4	11	<1	<1	<1	<1	<1	49	49
o-Xylene	NC	NC	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1	<1	<1	<1	<1	55	55
p,m-Xylene	NC	NC	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<20	<2	<2	<2	<2	<2	<2	<2	112	112
Xylenes, Total	280	49	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<30	<3	<3	<3	<3	<3	<3	<3	167	167

Table 1
Groundwater Analytical Results
RACER - Flint West # 12990

PFA ANALYTE (ng/L)	Sample ID	Date Collected	MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105S	MW-106SR	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S	MW-114S	Dupe1	Dupe 2	FB-1	EB-1	FB-2	EB-2	Trip Blank	MW-103S MS	MW-103S MSD
			09/14/2021	09/14/2021	09/14/2021	09/16/2021	09/14/2021	09/14/2021	09/14/2021	09/15/2021	09/15/2021	09/15/2021	09/15/2021	09/15/2021	09/16/2021	09/15/2021	09/15/2021	09/15/2021	09/15/2021	09/15/2021	09/15/2021	09/14/2021	09/14/2021	09/15/2021	09/15/2021	09/16/2021
	DW	GSI																								
Perfluorobutanoic acid (PFBA)	NC	NC	<9.8	<9.7	NA	<16	NA	NA	<9.6	19	NA	<9.8	<10	<9.8	<10	<10	<10	<10	<10	<9.6	<10	<10.0	<9.9	<10	120	110
Perfluoropentanoic acid (PFPeA)	NC	NC	1.1	2.6	NA	<3.9	NA	NA	3.3	<3.9	NA	2.1	1.5	2.9	<4.1	<4.1	<4.0	<4.0	<4.1	<3.8	<4.1	<4.0	<3.9	<4.1	92	88
Fluorotelomer sulfonic acid (4:2 FTS)	NC	NC	<2.0	<1.9	NA	<2.0	NA	NA	<1.9	<1.9	NA	<2.0	<2.1	<2.0	<2.0	<2.1	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.1	100	93
Perfluorohexanoic acid (PFHxA)	400,000	NC	<2.0	2.1	NA	<2.0	NA	NA	3.8	<1.9	NA	<2.0	<2.1	<2.2	<2.0	<2.1	<2.2	<2.0	<2.4	<1.9	<2.0	<2.0	<2.0	<2.1	97	98
Perfluorobutane sulfonic acid (PFBS)	420	NC	1.6	<1.9	NA	<2.0	NA	NA	3.6	<1.9	NA	1.6	1.7	<2.0	<2.0	1.6	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.1	94	100
Perfluoroheptanoic acid (PFHpA)	NC	NC	<2.0	<1.9	NA	<2.0	NA	NA	2.1	<1.9	NA	<2.0	<2.1	<2.0	<2.0	<2.1	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.1	100	93
Perfluoropentane sulfonic acid (PFPeS)	NC	NC	<2.0	<1.9	NA	<2.0	NA	NA	<1.9	<1.9	NA	<2.0	<2.1	<2.0	<2.0	<2.1	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.1	86	88
Fluorotelomer sulfonic acid (6:2 FTS)	NC	NC	<3.9	<3.9	NA	<3.9	NA	NA	<3.8	<3.9	NA	<3.9	<4.2	<3.9	<4.1	<4.1	<4.0	<4.0	<4.1	<3.8	<4.1	<4.0	<3.9	<4.1	84	97
Perfluorooctanoic acid (PFOA)	8	12,000	<2.0	5.5	NA	2.7	NA	NA	17	<1.9	NA	1.9	2.7	2	<2.0	1.7	1.7	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.1	99	92
Perfluorohexane sulfonic acid (PFHxS)	51	NC	<2.0	<1.9	NA	5	NA	NA	2.1	<1.9	NA	1.7	<2.1	<2.0	<2.0	1.8	2.5	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.1	120	100
Perfluorohexane Sulfonic Acid - LN (PFHxS-LN)	NC	NC	<2.0	<1.9	NA	3.1	NA	NA	1.6	<1.9	NA	<2.0	<2.1	<2.0	<2.0	<2.1	1.8	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.1	97	89
Perfluorohexane Sulfonic Acid - BR (PFHxS-BR)	NC	NC	<2.0	<1.9	NA	<2.0	NA	NA	<1.9	<1.9	NA	<2.0	<2.1	<2.0	<2.0	<2.1	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.1	17	13
Perfluorononanoic acid (PFNA)	6	NC	<2.0	<1.9	NA	<2.0	NA	NA	<1.9	<1.9	NA	<2.0	<2.1	<2.0	<2.0	<2.1	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.1	95	84
Fluorotelomer sulfonic acid (8:2 FTS)	NC	NC	<3.9	<3.9	NA	<3.9	NA	NA	<3.8	<3.9	NA	<3.9	<4.2	<3.9	<4.1	<4.1	<4.0	<4.0	<4.1	<3.8	<4.1	<4.0	<3.9	<4.1	95	83
Perfluoroheptane sulfonic acid (PFHpS)	NC	NC	<2.0	<1.9	NA	<2.0	NA	NA	2.5	<1.9	NA	<2.0	<2.1	<2.0	<2.0	<2.1	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.1	86	83
Perfluorodecanoic acid (PFDA)	NC	NC	<2.0	<1.9	NA	<2.0	NA	NA	<1.9	<1.9	NA	<2.0	<2.1	<2.0	<2.0	<2.1	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.1	96	93
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	NC	NC	<2.0	<1.9	NA	<2.0	NA	NA	<1.9	<1.9	NA	<2.0	<2.1	<2.0	<2.0	<2.1	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.1	98	100
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	NC	NC	<3.9	<3.9	NA	<3.9	NA	NA	<3.8	<3.9	NA	<3.9	<4.2	<3.9	<4.1	<4.1	<4.0	<4.0	<4.1	<3.8	<4.1	<4.0	<3.9	<4.1	96	88
Perfluorooctane sulfonic acid (PFOS)	16	12	9.1	37	NA	46	NA	NA	18	6.6	NA	23	5.8	11	6.7	23	21	7.9	18	<1.9	<2.0	<2.0	<2.0	<2.1	140	130
Perfluorooctane Sulfonic Acid - LN (PFOS-LN)	NC	NC	5.5	23	NA	24	NA	NA	2.8	4	NA	12	<2.1	6.3	3.5	10	12	3.9	11	<1.9	<2.0	<2.0	<2.0	<2.1	87	82
Perfluorooctane Sulfonic Acid - BR (PFOS-BR)	NC	NC	3.8	13	NA	20	NA	NA	15	2.6	NA	11	4.5	4.5	3.3	13	8.7	4.1	7.4	<1.9	<2.0	<2.0	<2.0	<2.1	49	43
Perfluoroundecanoic acid (PFUnDA)	NC	NC	<2.0	<1.9	NA	<2.0	NA	NA	<1.9	<1.9	NA	<2.0	<2.1	<2.0	<2.0	<2.1	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.1	100	93
Perfluorononane sulfonic acid (PFNS)	NC	NC	<2.0	<1.9	NA	<2.0	NA	NA	<1.9	<1.9	NA	<2.0	<2.1	<2.0	<2.0	<2.1	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.1	92	80
Perfluorododecanoic acid (PFDoDA)	NC	NC	<2.0	<1.9	NA	<2.0	NA	NA	<1.9	<1.9	NA	<2.0	<2.1	<2.0	<2.0	<2.1	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.1	97	92
Perfluorodecane sulfonic acid (PFDS)	NC	NC	<2.0	<1.9	NA	<2.0	NA	NA	<1.9	<1.9	NA	<2.0	<2.1	<2.0	<2.0	<2.1	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.1	100	81
Perfluorotridecanoic acid (PFTrDA)	NC	NC	<2.0	<1.9	NA	<2.0	NA	NA	<1.9	<1.9	NA	<2.0	<2.1	<2.0	<2.0	<2.1	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.1	110	100
Perfluorooctane sulfonamide (FOSA)	NC	NC	<2.0	<1.9	NA	<2.0	NA	NA	<1.9	<1.9	NA	<2.0	<2.1	<2.0	<2.0	<2.1	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.1	97	86
Perfluorotetradecanoic acid (PFTeDA)	NC	NC	<3.9	<3.9	NA	<3.9	NA	NA	<3.8	<3.9	NA	<3.9	<4.2	<3.9	<4.1	<4.1	<4.0	<4.0	<4.1	<3.8	<4.1	<4.0	<3.9	<4.1	84	81

Table 1
Groundwater Analytical Results
RACER - Flint West # 12990

Sample ID	MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105S	MW-106SR	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S	MW-114S	Dupe1	Dupe 2	FB-1	EB-1	FB-2	EB-2	Trip Blank	MW-103S MS	MW-103S MSD	
Date Collected	09/14/2021	09/14/2021	09/14/2021	09/16/2021	09/14/2021	09/14/2021	09/14/2021	09/15/2021	09/15/2021	09/15/2021	09/15/2021	09/16/2021	09/15/2021	09/15/2021	09/15/2021	09/15/2021	09/15/2021	09/14/2021	09/14/2021	09/15/2021	09/15/2021	09/16/2021	09/16/2021	09/16/2021	
PFA ANALYTE (ng/L) {cont}	DW	GSI																							
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NC	NC	<2.0	<1.9	NA	<2.0	NA	NA	<1.9	<1.9	NA	<2.0	<2.1	<2.0	<2.0	<2.1	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.1	110	95
9-chlorohexadecafluoro-3-oxanone1-sulfonic acid (9Cl-PF3ONS)	NC	NC	<2.0	<1.9	NA	<2.0	NA	NA	<1.9	<1.9	NA	<2.0	<2.1	<2.0	<2.0	<2.1	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.1	100	89
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NC	NC	<2.0	<1.9	NA	<2.0	NA	NA	<1.9	<1.9	NA	<2.0	<2.1	<2.0	<2.0	<2.1	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.1	100	98
Hexafluoropropylene oxide dimer (HFPO-DA)	NC	NC	<9.8	<9.7	NA	<9.8	NA	NA	<9.6	<9.7	NA	<9.8	<10	<9.8	<10	<10	<10	<10	<9.6	<10	<10.0	<9.9	<10	110	100

Table 1
Groundwater Analytical Results
RACER - Flint West # 12990

NOTES:

DW - Drinking Water Residential Generic Criteria.

GSI - Groundwater Surface Water Interface Generic Criteria per MDEQ Surface Water Division Rule 57.

Blank cells indicate no detectable concentrations	
Exceeds DW criteria	X
Exceeds GSI criteria	X
Exceeds both DW and GSI criteria	X
Compound also found in associated method blank, suggesting a laboratory artifact.	X
Insufficient data to develop criterion/no criterion	NC
Groundwater to Surface Water Interface Criteria - calculated based on 257ppm total hardness in the Flint River	G
Not Sampled	NS
Filtered in lab	1
Filtered and preserved in lab	2
Not analyzed	NA

PFAS criteria based on EGLE proposed drinking water criteria for selected PFAS compounds.

Table 1
Groundwater Analytical Results
RACER - Flint West # 12990

Sample ID	MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105S	MW-106SR	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S	MW-114S	Dupe1	Dupe2	Field Blank	FB-2	Equip Blank	EB-2	Trip Blank	MW-109S MS	MW-109S MSD			
Date Collected	NA	03/03/2021	03/02/2021	03/03/2021	03/02/2021	03/02/2021	NA	03/02/2021	03/03/2021	03/03/2021	03/03/2021	03/03/2021	03/02/2021	03/03/2021	03/03/2021	03/02/2021	03/03/2021	03/02/2021	03/03/2021	03/02/2021	03/03/2021	03/03/2021	03/02/2021	03/02/2021			
METALS ANALYTE (ug/L)	DW	GSI	dry				dry									MW-112S	MW-114S										
Arsenic, Dissolved	10	10	NA	<2	<2	18	<2	<2	NA	0.441	<0.002	10	1.03	0.636	33	2	18	30	20	<2	<2	<2	0.114	NA	NA		
Arsenic	10	10	NA	9	0.318	37	0.493	0.423	NA	0.578	0.257	86	2	0.727	79	4	55	77	53	<2	<2	<2	<2	NA	NA		
Chromium, Dissolved	100	160	G	NA	4.09	2	0.212	3.14	0.779	NA	0.181	0.132	0.269	0.194	2.01	0.242	0.39	0.267	0.358	0.236	0.221	0.2	0.171	0.108	NA	NA	
Chromium	100	160	G	NA	351	15	0.229	1210	30	NA	<5	1.03	1.27	0.261	6	0.392	2.35	0.681	0.487	0.361	0.046	<5	<5	<5	NA	NA	
Chromium VI, Dissolved	100	11	NA	<10	<10	<10	<10	<10	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<0.01	<0.01	<0.01	NA	NA		
Chromium VI	100	11	NA	<2	<10	<2	<10	<10	NA	<10	<10	<5	<10	<10	<5	<10	<20	<50	<20	<10	<0.01	<0.01	<0.01	NA	NA		
Copper, Dissolved	1000	20	G	NA	0.579	<5	<5	0.766	0.651	NA	0.517	0.665	<5	1.56	0.682	<5	0.504	0.461	<5	<5	<5	<5	<5	NA	NA		
Copper	1000	20	G	NA	34	1.2	<5	30	1.28	NA	0.59	0.963	1.5	4.08	1.01	<5	1.02	2.64	<5	1.55	<5	<5	<5	NA	NA		
Lead, Dissolved	4	44	G	NA	0.4	<3	<3	<3	NA	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	0.278	<3	<3	<3	NA	NA		
Lead	4	44	G	NA	17	0.412	<3	<3	NA	<3	<3	1.28	0.375	0.223	<3	0.449	1.51	<3	0.947	<3	<3	<3	<3	NA	NA		
Selenium, Dissolved	50	5	NA	<5	<5	<5	<5	<5	NA	<5	<5	<5	<5	<5	<5	3.59	<5	<5	<5	<5	<5	<5	<5	NA	NA		
Selenium	50	5	NA	<5	<5	<5	<5	<5	NA	<5	<5	<5	<5	<5	<5	4.45	<5	<5	<5	<5	<5	<5	<5	NA	NA		
Zinc, Dissolved	2400	260	G	NA	3.28	3.63	2.62	3.3	3.21	NA	10	5	2.92	22	4.98	2.13	5	6	2.44	5	0.816	0.595	0.599	1.53	NA	NA	
Zinc	2400	260	G	NA	75	3.09	2.28	2.44	1.81	NA	8	3.88	5	25	1.35	1.61	3.34	10	1.88	9	0.573	0.491	0.624	0.695	NA	NA	
VOC ANALYTE (ug/L)	DW	GSI																									
Acetone	730	1700	NA	<50	<50	<50	<50	<50	NA	<50	<50	<50	<50	<50	<50	<500	<50	<500	<50	<50	<50	<50	<50	<50	41.44	57	
Acrylonitrile	2.6	2.0 (M); 1.2	NA	<2	<2	<2	<2	<2	NA	<2	<2	<2	<2	<2	<2	<20	<2	<20	<2	<2	<2	<2	<2	<2	<2	58	60
2-Butanone (MEK)	13000	2,200	NA	<25	<25	<25	<25	<25	NA	<25	<25	<25	<25	<25	<25	<250	<25	<250	<25	<25	<25	<25	<25	<25	57	57	
Benzene	5	200	NA	<1	<1	0.71	<1	<1	NA	<1	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1	<1	<1	53	52	
n-Butylbenzene	NC	NC	NA	<1	<1	<1	<1	<1	NA	<1	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1	<1	<1	44	43	
Bromobenzene	18	NA	NA	<1	<1	<1	<1	<1	NA	<1	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1	<1	<1	53	51	
Bromochloromethane	NC	NC	NA	<1	<1	<1	<1	<1	NA	<1	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1	<1	<1	59	57	
Bromodichloromethane	80	NC	NA	<1	<1	<1	<1	<1	NA	<1	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1	<1	<1	58	56	
Bromoform	80 (A,W)	ID	NA	<1	<1	<1	<1	<1	NA	<1	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1	<1	<1	57	56	
Bromomethane	10	4.2; [5(M)]	NA	<5	<5	<5	<5	<5	NA	<5	<5	<5	<5	<5	<5	<50	<5	<50	<5	<5	<5	<5	<5	<5	47	45	
sec-Butylbenzene	230	ID	NA	<1	<1	<1	<1	<1	NA	<1	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1	<1	<1	44	44	
tert-Butylbenzene	80	ID	NA	<1	<1	<1	<1	<1	NA	<1	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1	<1	<1	48	47	
Carbon disulfide	800	NC	NA	<5	<5	<5	<5	<5	NA	<5	<5	<5	<5	<5	<5	<50	<5	<50	<5	<5	<5	<5	<5	<5	55	53	
Carbon tetrachloride	5	38	X	NA	<1	<1	<1	<1	NA	<1	2	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1	<1	<1	52	51	
Chlorobenzene	100	25	NA	<1	<1	4	<1	<1	NA	<1	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1	<1	<1	51	50	
Chloroethane	430	1,100	NA	<5	<5	<5	<5	<5	NA	<5	<5	<5	<5	<5	<5	<50	<5	<50	<5	<5	<5	<5	<5	0.49	45	45	
Chloroform	80	350	NA	<1	<1	<1	1	<1	NA	<1	1	<1	0.34	<1	<1	<10	<1	<10	0.3	<1	0.28	<1	<1	<1	56	55	
Chloromethane	260	NC	NA	<5	<5	<5	<5	<5	NA	<5	<5	<5	<5	<5	<5	<50	<5	<50	<5	<5	<5	<5	<5	<5	40	40	
1,1-Dichloroethane	880	740	NA	<1	<1	<1	<1	<1	NA	<1	<1	0.7	<1	1	1	<1	2.4	1	2.2	<1	<1	<1	<1	<1	56	54	
1,1-Dichloroethene	7	130	NA	<1	<1	<1	<1	<1	NA	<1	<1	1	<1	0.6	0.75	<1	<10	0.82	<10	<1	<1	<1	<1	<1	56	54	
1,2-Dibromo-3-chloropropane	NC	NC	NA	<5	<5	<5	<5	<5	NA	<5	<5	<5	<5	<5	<5	<50	<5	<50	<5	<5	<5	<5	<5	<5	52	53	
1,2-Dibromoethane	NC	NC	NA	<1	<1	<1	<1	<1	NA	<1	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1	<1	<1	54	54	
1,2-Dichlorobenzene	600	13	NA	<1	<1	<1	<1	<1	NA	<1	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1	<1	<1	49	49	
1,2-Dichloroethane	5.0 (A)	360 (X)	NA	<1	<1	<1	<1	<1	NA	<1	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1	<1	<1	53	52	
1,2-Dichloropropane	5.0 (A)	230 (X)	NA	<1	<1	<1	<1	<1	NA	<1	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1	<1	<1	57	55	
1,3-Dichlorobenzene	6.6	28	NA	<1	<1	<1	<1	<1	NA	<1	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1	<1	<1	47	47	
1,4-Dichlorobenzene	75	17	NA	<1	<1	<1	<1	<1	NA	<1	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1	<1	<1	47	47	
cis-1,2-Dichloroethene	70	620	NA	<1	<1	<1	<1	<1	NA	10	<1	15	<1	18	4	0.34	100	4	100	<1	<1	<1	<1	<1	65	63	
cis-1,3-Dichloropropene	NC	NC	NA	<1	<1	<1	<1	<1	NA	<1	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1	<1	<1	58	56	
Dibromochloromethane	80 (A,W)	ID	NA	<5	<5	<5	<5	<5	NA	<5	<5	<5	<5	<5	<5	<50	<5	<50	<5	<5	<5	<5	<5	<5	56	55	
Dibromomethane	230	NA	NA	<5	<5	<5	<5	<5	NA	<5	<5	<5	<5	<5	<5	<50	<5	<50	<5	<5	<5	<5	<5	<5	58	57	
Dichlorodifluoromethane	1700	ID	NA	<5	<5	<5	<5	<5	NA	<5	<5	<5	<5														

Table 1
Groundwater Analytical Results
RACER - Flint West # 12990

Sample ID	MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105S	MW-106SR	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S	MW-114S	Dupe1	Dupe2	Field Blank	FB-2	Equip Blank	EB-2	Trip Blank	MW-109S MS	MW-109S MSD			
Date Collected	NA	03/03/2021	03/02/2021	03/03/2021	03/02/2021	03/02/2021	NA	03/02/2021	03/03/2021	03/03/2021	03/03/2021	03/03/2021	03/02/2021	03/03/2021	03/03/2021	03/02/2021	03/03/2021	03/02/2021	03/03/2021	03/02/2021	03/03/2021	03/03/2021	03/02/2021	03/02/2021			
VOC ANALYTE (ug/L) {cont}	DW	GSI																	MW-112S	MW-114S							
2-Methylnaphthalene	260	19	NA	<5	<5	<5	<5	<5	NA	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	60	60		
4-Methyl-2-pentanone (MIBK)	1800	ID	NA	<50	<50	<50	<50	<50	NA	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	56	57	
tert-Methyl butyl ether (MTBE)	40 (E)	7,100 (X)	NA	<5	<5	<5	<5	<5	NA	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	60	59		
Methyl iodide	NC	NC	NA	<1	<1	<1	<1	<1	NA	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1	57	56	
Methylene chloride	5	1500	NA	<5	<5	<5	<5	<5	NA	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<50	0.65	<5	0.62	<5	58	56	
Naphthalene	520	11	NA	<5	<5	<5	<5	<5	NA	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<50	<5	<5	<5	<5	54	54	
n-Propylbenzene	80	ID	NA	<1	<1	<1	<1	<1	NA	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1	48	47	
Styrene	100	80	NA	<1	<1	<1	<1	<1	NA	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1	<1	52	51
1,1,1,2-Tetrachloroethane	77	ID	NA	<1	<1	<1	<1	<1	NA	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1	<1	52	52
1,1,1-Trichloroethane	200	89	NA	<1	<1	<1	<1	<1	NA	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1	<1	54	52
1,1,2,2-Tetrachloroethane	8.5	78 (X)	NA	<1	<1	<1	<1	<1	NA	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1	<1	55	55
1,1,2-Trichloroethane	5.0 (A)	330 (X)	NA	<1	<1	<1	<1	<1	NA	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1	<1	61	59
1,2,3-Trichlorobenzene	NC	NC	NA	<5	<5	<5	<5	<5	NA	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<50	<5	<5	<5	<5	<5	55	55
1,2,3-Trichloropropane	42	NA	NA	<1	<1	<1	<1	<1	NA	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1	<1	53	53
1,2,3-Trimethylbenzene	NC	NC	NA	<1	<1	<1	<1	<1	NA	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1	<1	47	47
1,2,4-Trichlorobenzene	NC	NC	NA	<5	<5	<5	<5	<5	NA	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<50	<5	<5	<5	<5	<5	53	52
1,2,4-Trimethylbenzene	63 (E)	17	NA	<1	<1	<1	<1	<1	NA	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1	<1	49	49
1,3,5-Trimethylbenzene	72 (E)	45	NA	<1	<1	<1	<1	<1	NA	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1	<1	49	49
Tetrachloroethene	5	60	NA	<1	<1	<1	<1	101	NA	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1	<1	54	52
Tetrahydrofuran	95	11000	NA	<90	<90	<90	<90	<90	NA	<90	<90	<90	<90	<90	<90	<90	<90	<900	<90	<900	<90	<90	<90	<90	<90	57	57.1
Toluene	790	270	NA	<1	<1	0.34	<1	<1	NA	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1	<1	54	52
Trichloroethene	5	200	NA	2	<1	<1	<1	<1	NA	2	<1	23	<1	53	10	5	270	11	280	<1	<1	<1	<1	<1	<1	67	65
Trichlorofluoromethane	2600	NA	NA	<1	<1	<1	<1	<1	NA	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1	<1	55	53
Vinyl chloride	2	13	NA	<1	<1	<1	<1	<1	NA	3	<1	8	<1	2	2	0.62	5.3	3	6.2	<1	<1	<1	<1	<1	<1	49	48
o-Xylene	NC	NC	NA	<1	<1	<1	<1	<1	NA	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1	<1	50	49
p,m-Xylene	NC	NC	NA	<2	<2	<2	<2	<2	NA	<2	<2	<2	<2	<2	<2	<2	<2	<20	<2	<20	<2	<2	<2	<2	<2	99	98
Xylenes, Total	280	49	NA	<3	<3	<3	<3	<3	NA	<3	<3	<3	<3	<3	<3	<3	<3	<30	<3	<30	<3	<3	<3	<3	149	147	

Table 1
Groundwater Analytical Results
RACER - Flint West # 12990

Sample ID	MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105S	MW-106SR	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S	MW-114S	Dupe1	Dupe2	Field Blank	FB-2	Equip Blank	EB-2	Trip Blank	MW-109S MS	MW-109S MSD			
	Date Collected	NA	03/03/2021	03/02/2021	03/03/2021	03/02/2021	03/02/2021	NA	03/02/2021	03/03/2021	03/03/2021	03/03/2021	03/02/2021	03/03/2021	03/03/2021	03/02/2021	03/03/2021	03/02/2021	03/03/2021	03/02/2021	03/03/2021	03/03/2021	03/02/2021	03/02/2021			
PFA ANALYTE (ng/L)	DW	GSI																									
Perfluorobutanoic acid (PFBA)	NC	NC	NA	<10	NA	<28	NA	NA	NA	<10	NA	<9.7	<10.0	<10	<21	<10	<10	<10	<20	<10	<10	<9.6	<10	<10	<9.8	110	110
Perfluoropentanoic acid (PFPeA)	NC	NC	NA	<4.1	NA	<4.3	NA	NA	NA	<4.2	NA	14	<4.0	4.1	<4.1	<4.0	<4.1	<4.1	<3.9	1.6	<4.1	<3.8	<4.0	<4.1	<3.9	110	110
Fluorotelomer sulfonic acid (4:2 FTS)	NC	NC	NA	<2.1	NA	<2.2	NA	NA	NA	<2.1	NA	<1.9	<2.0	<2.1	<2.1	<2.0	<2.0	<2.0	<2.0	<2.1	<2.1	<1.9	<2.0	<2.0	<2.0	82	92
Perfluorohexanoic acid (PFHxA)	400,000	NC	NA	<2.1	NA	<2.2	NA	NA	NA	<2.1	NA	7.6	<2.0	2.3	<2.1	<2.0	1.6	<2.0	1.7	<2.1	<1.9	<2.0	<2.0	<2.0	100	110	
Perfluorobutane sulfonic acid (PFBS)	420	NC	NA	1.9	NA	1.6	NA	NA	NA	1.5	NA	2.2	3	1.7	1.7	1.8	1.8	1.5	1.8	<2.1	<1.9	<2.0	<2.0	<2.0	100	110	
Perfluoroheptanoic acid (PFHpA)	NC	NC	NA	<2.1	NA	<2.2	NA	NA	NA	<2.1	NA	2	<2.0	<2.1	<2.1	<2.0	<2.0	<2.0	<2.1	<2.1	<1.9	<2.0	<2.0	<2.0	93	100	
Perfluoropentane sulfonic acid (PFPeS)	NC	NC	NA	<2.1	NA	<2.2	NA	NA	NA	<2.1	NA	<1.9	<2.0	<2.1	<2.1	<2.0	<2.0	<2.0	<2.1	<2.1	<1.9	<2.0	<2.0	<2.0	99	110	
Fluorotelomer sulfonic acid (6:2 FTS)	NC	NC	NA	<2.1	NA	<2.2	NA	NA	NA	<2.1	NA	<1.9	<2.0	<2.1	<2.1	<2.0	<2.0	<2.0	<2.1	<2.1	<1.9	<2.0	<2.0	<2.0	100	100	
Perfluorooctanoic acid (PFOA)	8	12,000	NA	2.5	NA	<2.2	NA	NA	NA	1.9	NA	3.6	<2.0	2.1	<2.1	<2.0	<2.0	<2.0	1.9	<2.1	<1.9	<2.0	<2.0	<2.0	94	100	
Perfluorohexane sulfonic acid (PFHxS)	51	NC	NA	<2.1	NA	5.9	NA	NA	NA	2.9	NA	1.9	<2.0	<2.1	<2.1	<2.0	1.8	<2.0	1.8	<2.1	<1.9	<2.0	<2.0	<2.0	110	100	
Perfluorohexane Sulfonic Acid - LN (PFHxS-LN)	NC	NC	NA	<2.1	NA	3.4	NA	NA	NA	2.2	NA	<1.9	<2.0	<2.1	<2.1	<2.0	<2.0	<2.0	<2.1	<2.1	<1.9	<2.0	<2.0	<2.0	92	86	
Perfluorohexane Sulfonic Acid - BR (PFHxS-BR)	NC	NC	NA	<2.1	NA	2.6	NA	NA	NA	<2.1	NA	<1.9	<2.0	<2.1	<2.1	<2.0	<2.0	<2.0	<2.1	<2.1	<1.9	<2.0	<2.0	<2.0	16	16	
Perfluorononanoic acid (PFNA)	6	NC	NA	<2.1	NA	<2.2	NA	NA	NA	<2.1	NA	<1.9	<2.0	<2.1	<2.1	<2.0	<2.0	<2.0	<2.1	<2.1	<1.9	<2.0	<2.0	<2.0	110	110	
Fluorotelomer sulfonic acid (8:2 FTS)	NC	NC	NA	<2.1	NA	<2.2	NA	NA	NA	<2.1	NA	<1.9	<2.0	<2.1	<2.1	<2.0	<2.0	<2.0	<2.1	<2.1	<1.9	<2.0	<2.0	<2.0	80	81	
Perfluoroheptane sulfonic acid (PFHpS)	NC	NC	NA	<2.1	NA	<2.2	NA	NA	NA	<2.1	NA	<1.9	<2.0	<2.1	<2.1	<2.0	<2.0	<2.0	<2.1	<2.1	<1.9	<2.0	<2.0	<2.0	110	110	
Perfluorodecanoic acid (PFDA)	NC	NC	NA	<2.1	NA	<2.2	NA	NA	NA	<2.1	NA	<1.9	<2.0	<2.1	<2.1	<2.0	<2.0	<2.0	<2.1	<2.1	<1.9	<2.0	<2.0	<2.0	110	100	
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	NC	NC	NA	<2.1	NA	<2.2	NA	NA	NA	<2.1	NA	<1.9	<2.0	<2.1	<2.1	<2.0	<2.0	<2.0	<2.1	<2.1	<1.9	<2.0	<2.0	<2.0	100	110	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	NC	NC	NA	<4.1	NA	<5.4	NA	NA	NA	<4.2	NA	<3.9	<4.0	<4.1	<4.1	<4.0	<4.1	<3.9	<4.1	<4.1	<3.8	<4.0	<4.1	<3.9	87	97	
Perfluorooctane sulfonic acid (PFOS)	16	12	NA	25	NA	91	NA	NA	NA	16	NA	21	<2.0	25	9	12	22	9.5	25	<2.1	<1.9	<2.0	<2.0	<2.0	120	130	
Perfluorooctane Sulfonic Acid - LN (PFOS-LN)	NC	NC	NA	9.7	NA	65	NA	NA	NA	10	NA	8.7	<2.0	13	4	4.9	12	4.1	14	<2.1	<1.9	<2.0	<2.0	<2.0	79	79	
Perfluorooctane Sulfonic Acid - BR (PFOS-BR)	NC	NC	NA	15	NA	26	NA	NA	NA	5.4	NA	12	<2.0	11	4.5	6.5	9.8	5	10	<2.1	<1.9	<2.0	<2.0	<2.0	43	49	
Perfluoroundecanoic acid (PFUnDA)	NC	NC	NA	<2.1	NA	<2.2	NA	NA	NA	<2.1	NA	<1.9	<2.0	<2.1	<2.1	<2.0	<2.0	<2.0	<2.1	<2.1	<1.9	<2.0	<2.0	<2.0	94	110	
Perfluorononane sulfonic acid (PFNS)	NC	NC	NA	<2.1	NA	<2.2	NA	NA	NA	<2.1	NA	<1.9	<2.0	<2.1	<2.1	<2.0	<2.0	<2.0	<2.1	<2.1	<1.9	<2.0	<2.0	<2.0	89	110	
Perfluorododecanoic acid (PFDoDA)	NC	NC	NA	<2.1	NA	<2.2	NA	NA	NA	<2.1	NA	<1.9	<2.0	<2.1	<2.1	<2.0	<2.0	<2.0	<2.1	<2.1	<1.9	<2.0	<2.0	<2.0	95	96	
Perfluorodecane sulfonic acid (PFDS)	NC	NC	NA	<2.1	NA	<2.2	NA	NA	NA	<2.1	NA	<1.9	<2.0	<2.1	<2.1	<2.0	<2.0	<2.0	<2.1	<2.1	<1.9	<2.0	<2.0	<2.0	92	110	
Perfluorotridecanoic acid (PFTrDA)	NC	NC	NA	<2.1	NA	<2.2	NA	NA	NA	<2.1	NA	<1.9	<2.0	<2.1	<2.1	<2.0	<2.0	<2.0	<2.1	<2.1	<1.9	<2.0	<2.0	<2.0	97	98	
Perfluorooctane sulfonamide (FOSA)	NC	NC	NA	<2.1	NA	<2.2	NA	NA	NA	<2.1	NA	<1.9	<2.0	<2.1	<2.1	<2.0	<2.0	<2.0	<2.1	<2.1	<1.9	<2.0	<2.0	<2.0	100	99	
Perfluorotetradecanoic acid (PFTeDA)	NC	NC	NA	<4.1	NA	<4.3	NA	NA	NA	<4.2	NA	<3.9	<4.0	<4.1	<4.1	<4.0	<4.1	<3.9	<4.1	<4.1	<3.8	<4.0	<4.1	<3.9	100	100	

Table 1
Groundwater Analytical Results
RACER - Flint West # 12990

Sample ID	MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105S	MW-106SR	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S	MW-114S	Dupe1	Dupe2	Field Blank	FB-2	Equip Blank	EB-2	Trip Blank	MW-109S MS	MW-109S MSD			
Date Collected	NA	03/03/2021	03/02/2021	03/03/2021	03/02/2021	03/02/2021	NA	03/02/2021	03/03/2021	03/03/2021	03/03/2021	03/03/2021	03/02/2021	03/03/2021	03/03/2021	03/02/2021	03/03/2021	03/02/2021	03/03/2021	03/02/2021	03/03/2021	03/03/2021	03/02/2021	03/02/2021			
PFA ANALYTE (ng/L) {cont}	DW	GSI														MW-112S	MW-114S										
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NC	NC	NA	<2.1	NA	<2.2	NA	NA	NA	NA	<2.1	NA	<1.9	<2.0	<2.1	<2.1	<2.0	<2.0	<2.0	<2.1	<2.1	<1.9	<2.0	<2.0	<2.0	83	99
9-chlorohexadecafluoro-3-oxanone1-sulfonic acid (9Cl-PF3ONS)	NC	NC	NA	<2.1	NA	<2.2	NA	NA	NA	NA	<2.1	NA	<1.9	<2.0	<2.1	<2.1	<2.0	<2.0	<2.0	<2.1	<2.1	<1.9	<2.0	<2.0	<2.0	89	110
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NC	NC	NA	<2.1	NA	<2.2	NA	NA	NA	NA	<2.1	NA	<1.9	<2.0	<2.1	<2.1	<2.0	<2.0	<2.0	<2.1	<2.1	<1.9	<2.0	<2.0	<2.0	87	99
Hexafluoropropylene oxide dimer (HFPO-DA)	NC	NC	NA	<2.1	NA	<2.2	NA	NA	NA	NA	<2.1	NA	<1.9	<2.0	<2.1	<2.1	<2.0	<2.0	<2.0	<2.1	<2.1	<1.9	<2.0	<2.0	<2.0	81	84

Table 1
 Groundwater Analytical Results
 RACER - Flint West # 12990

NOTES:

DW - Drinking Water Residential Generic Criteria.

GSI - Groundwater Surface Water Interface Generic Criteria per MDEQ Surface Water Division Rule 57.

Blank cells indicate no detectable concentrations	
Exceeds DW criteria	X
Exceeds GSI criteria	X
Exceeds both DW and GSI criteria	X
Compound also found in associated method blank, suggesting a laboratory artifact.	X
Insufficient data to develop criterion/no criterion	NC
Groundwater to Surface Water Interface Criteria - calculated based on 257ppm total hardness in the Flint River	G
Not Sampled	NS
Filtered in lab	1
Filtered and preserved in lab	2
Not analyzed	NA

PFAS criteria based on EGLE proposed drinking water criteria for selected PFAS compounds.

Table 1
Groundwater Analytical Results
RACER - Flint West # 12990

Sample ID	MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105S	MW-106SR	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S	MW-114S	Dupe #1	Dupe #2	Field Blank	Trip Blank	Equip Blank	Field Blank			
Date Collected	08/18/2020	08/18/2020	08/18/2020	08/19/2020	08/18/2020	08/18/2020	08/18/2020	08/18/2020	08/18/2020	08/19/2020	08/19/2020	08/19/2020	08/18/2020	08/19/2020	08/19/2020	08/18/2020	08/19/2020	08/18/2020	08/18/2020	08/19/2020	08/19/2020			
VOC ANALYTE (ug/L) (cont)	DW	GSI																						
Ethylbenzene	74	18	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1
Total Xylenes	280	49	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
p,m-Xylene			<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<20	<2	<20	<2	<2	<2	<2
o-Xylene			<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1
Styrene	100	80	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1
Isopropylbenzene	800	28	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<50	<5	<5	<5	<5
Bromoform	80 (A,W)	ID	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	8.5	78 (X)	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1
1,2,3-Trichloropropane	42	NA	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1
n-Propylbenzene	80	ID	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1
Bromobenzene	18	NA	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1
1,3,5-Trimethylbenzene	72 (E)	45	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1
tert-Butylbenzene	80	ID	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1
1,2,4-Trimethylbenzene	63 (E)	17	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1
sec-Butylbenzene	230	ID	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1
p-Isopropyltoluene	NC	NC	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<50	<5	<5	<5	<5
1,3-Dichlorobenzene	6.6	28	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1
1,4-Dichlorobenzene	75	17	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1
1,2-Dichlorobenzene	600	13	<1	<1	<1	0.13	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1
1,2,3-Trimethylbenzene	NC	NC	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1
n-Butylbenzene	NC	NC	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1
Hexachloroethane	21	6.7	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<50	<5	<5	<5	<5
1,2-Dibromo-3-chloropropane	NC	NC	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<50	<5	<5	<5	<5
1,2,4-Trichlorobenzene	NC	NC	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<50	<5	<5	<5	<5
1,2,3-Trichlorobenzene	NC	NC	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<50	<5	0.1	<5	<5
Naphthalene	520	11	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<50	<5	<5	<5	<5
2-Methylnaphthalene	260	19	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<50	<5	0.15	0.15	<5

Table 1
Groundwater Analytical Results
RACER - Flint West # 12990

Sample ID	MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105S	MW-106SR	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S	MW-114S	Dupe #1	Dupe #2	Field Blank	Trip Blank	Equip Blank	Field Blank		
Date Collected	08/18/2020	08/18/2020	08/18/2020	08/19/2020	08/18/2020	08/18/2020	08/18/2020	08/18/2020	08/19/2020	08/19/2020	08/19/2020	08/19/2020	08/18/2020	08/19/2020	08/19/2020	08/18/2020	08/19/2020	08/18/2020	08/18/2020	08/19/2020	08/19/2020		
PFA ANALYTE (ng/L)	DW	GSI														MW-112S	MW-114S						
Perfluorobutanoic acid (PFBA)	NC	NC	<9.8	<9.7	NA	<10	NA	NA	<10	<10	NA	<10	<10.0	<10	<9.9	<9.7	<9.7	<10	<10	<9.8	<9.9	<9.9	<10
Perfluoropentanoic acid (PFPeA)	NC	NC	<3.9	1.9	NA	<4.0	NA	NA	3.1	<4.1	NA	3.6	1.1	2.4	<4.0	1	1.1	<4.1	1.1	<3.9	<3.9	<3.9	<4.1
Fluorotelomer sulfonic acid (4:2 FTS)	NC	NC	<2.0	<1.9	NA	<2.0	NA	NA	<2.0	<2.1	NA	<2.0	<2.0	<2.1	<2.0	<1.9	<1.9	<2.1	<2.0	<2.0	<2.0	<2.0	<2.0
Perfluorohexanoic acid (PFHxA)	400,000	NC	<2.0	<1.9	NA	<2.0	NA	NA	3.7	<2.1	NA	3.2	<2.0	1.6	<2.0	<1.9	<1.9	<2.1	<2.0	<2.0	<2.0	<2.0	<2.0
Perfluorobutane sulfonic acid (PFBS)	420	NC	1.6	1.9	NA	<2.0	NA	NA	3.2	<2.1	NA	2.7	1.9	1.5	<2.0	1.8	1.8	1.8	<2.0	<2.0	<2.0	<2.0	<2.0
Perfluoroheptanoic acid (PFHpA)	NC	NC	<2.0	<1.9	NA	<2.0	NA	NA	3	<2.1	NA	1.5	<2.0	<2.1	<2.0	<1.9	<1.9	<2.1	<2.0	<2.0	<2.0	<2.0	<2.0
Perfluoropentane sulfonic acid (PFPeS)	NC	NC	<2.0	<1.9	NA	<2.0	NA	NA	<2.0	<2.1	NA	<2.0	<2.0	<2.1	<2.0	<1.9	<1.9	<2.1	<2.0	<2.0	<2.0	<2.0	<2.0
Fluorotelomer sulfonic acid (6:2 FTS)	NC	NC	<2.0	<1.9	NA	<2.0	NA	NA	<2.0	<2.1	NA	<2.0	<2.0	<2.1	<2.0	<1.9	<1.9	<2.1	<2.0	<2.0	<2.0	<2.0	<2.0
Perfluorooctanoic acid (PFOA)	8	12,000	<2.0	3.2	NA	<2.0	NA	NA	11	<2.1	NA	3.1	2.8	3	<2.0	<1.9	1.8	<2.1	2.1	<2.0	<2.0	<2.0	<2.0
Perfluorohexane sulfonic acid (PFHxS)	51	NC	<2.0	1.9	NA	2.2	NA	NA	3.1	<2.1	NA	2.5	2	1.9	<2.0	3.1	2.3	<2.1	3.1	<2.0	<2.0	<2.0	<2.0
Perfluorohexane Sulfonic Acid - LN (PFHxS-LN)	NC	NC	<2.0	1.6	NA	2.2	NA	NA	2.3	<2.1	NA	1.8	<2.0	<2.1	<2.0	2.6	1.6	<2.1	2.4	<2.0	<2.0	<2.0	<2.0
Perfluorohexane Sulfonic Acid - BR (PFHxS-BR)	NC	NC	<2.0	<1.9	NA	<2.0	NA	NA	<2.0	<2.1	NA	<2.0	<2.0	<2.1	<2.0	<1.9	<1.9	<2.1	<2.0	<2.0	<2.0	<2.0	<2.0
Perfluorononanoic acid (PFNA)	6	NC	<2.0	<1.9	NA	<2.0	NA	NA	<2.0	<2.1	NA	<2.0	<2.0	<2.1	<2.0	<1.9	<1.9	<2.1	<2.0	<2.0	<2.0	<2.0	<2.0
Fluorotelomer sulfonic acid (8:2 FTS)	NC	NC	<2.0	<1.9	NA	<2.0	NA	NA	<2.0	<2.1	NA	<2.0	<2.0	<2.1	<2.0	<1.9	<1.9	<2.1	<2.0	<2.0	<2.0	<2.0	<2.0
Perfluoroheptane sulfonic acid (PFHpS)	NC	NC	<2.0	<1.9	NA	<2.0	NA	NA	<2.0	<2.1	NA	<2.0	<2.0	<2.1	<2.0	<1.9	<1.9	<2.1	<2.0	<2.0	<2.0	<2.0	<2.0
Perfluorodecanoic acid (PFDA)	NC	NC	<2.0	<1.9	NA	<2.0	NA	NA	<2.0	<2.1	NA	<2.0	<2.0	<2.1	<2.0	<1.9	<1.9	<2.1	<2.0	<2.0	<2.0	<2.0	<2.0
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	NC	NC	<2.0	<1.9	NA	<2.0	NA	NA	<2.0	<2.1	NA	<2.0	<2.0	<2.1	<2.0	<1.9	<1.9	<2.1	<2.0	<2.0	<2.0	<2.0	<2.0
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	NC	NC	<3.9	<3.9	NA	<4.0	NA	NA	<4.0	<4.1	NA	<4.0	<4.0	<4.1	<4.0	<3.9	<3.9	<4.1	<4.1	<3.9	<3.9	<3.9	<4.1
Perfluorooctane sulfonic acid (PFOS)	16	12	18	30	NA	120	NA	NA	7.3	24	NA	29	5.9	33	11	26	29	13	36	<2.0	<2.0	<2.0	<2.0
Perfluorooctane Sulfonic Acid - LN (PFOS-LN)	NC	NC	8.5	12	NA	81	NA	NA	<2.0	15	NA	15	<2.0	17	5.2	5.7	18	5.9	21	<2.0	<2.0	<2.0	<2.0
Perfluorooctane Sulfonic Acid - BR (PFOS-BR)	NC	NC	8.9	18	NA	40	NA	NA	5.8	7.1	NA	13	4.5	15	4.9	19	12	5.8	14	<2.0	<2.0	<2.0	<2.0
Perfluoroundecanoic acid (PFUnDA)	NC	NC	<2.0	<1.9	NA	<2.0	NA	NA	<2.0	<2.1	NA	<2.0	<2.0	<2.1	<2.0	<1.9	<1.9	<2.1	<2.0	<2.0	<2.0	<2.0	<2.0
Perfluorononane sulfonic acid (PFNS)	NC	NC	<2.0	<1.9	NA	<2.0	NA	NA	<2.0	<2.1	NA	<2.0	<2.0	<2.1	<2.0	<1.9	<1.9	<2.1	<2.0	<2.0	<2.0	<2.0	<2.0
Perfluorododecanoic acid (PFDoDA)	NC	NC	<2.0	<1.9	NA	<2.0	NA	NA	<2.0	<2.1	NA	<2.0	<2.0	<2.1	<2.0	<1.9	<1.9	<2.1	<2.0	<2.0	<2.0	<2.0	<2.0
Perfluorodecane sulfonic acid (PFDS)	NC	NC	<2.0	<1.9	NA	<2.0	NA	NA	<2.0	<2.1	NA	<2.0	<2.0	<2.1	<2.0	<1.9	<1.9	<2.1	<2.0	<2.0	<2.0	<2.0	<2.0
Perfluorotridecanoic acid (PFTriDA)	NC	NC	<2.0	<1.9	NA	<2.0	NA	NA	<2.0	<2.1	NA	<2.0	<2.0	<2.1	<2.0	<1.9	<1.9	<2.1	<2.0	<2.0	<2.0	<2.0	<2.0
Perfluorooctane sulfonamide (FOSA)	NC	NC	<2.0	<1.9	NA	<2.0	NA	NA	<2.0	<2.1	NA	<2.0	<2.0	<2.1	<2.0	<1.9	<1.9	<2.1	<2.0	<2.0	<2.0	<2.0	<2.0
Perfluorotetradecanoic acid (PFTeDA)	NC	NC	<3.9	<3.9	NA	<4.0	NA	NA	<4.0	<4.1	NA	<4.0	<4.0	<4.1	<4.0	<3.9	<3.9	<4.1	<4.1	<3.9	<3.9	<3.9	<4.1

Table 1
Groundwater Analytical Results
RACER - Flint West # 12990

Sample ID	MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105S	MW-106SR	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S	MW-114S	Dupe #1	Dupe #2	Field Blank	Trip Blank	Equip Blank	Field Blank	
Date Collected	08/18/2020	08/18/2020	08/18/2020	08/19/2020	08/18/2020	08/18/2020	08/18/2020	08/18/2020	08/19/2020	08/19/2020	08/19/2020	08/19/2020	08/18/2020	08/19/2020	08/19/2020	08/18/2020	08/19/2020	08/18/2020	08/18/2020	08/19/2020	08/19/2020	
PFA ANALYTE (ng/L) {cont}	DW	GSI														MW-112S	MW-114S					
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NC	NC	<2.0	<1.9	NA	<2.0	NA	NA	<2.0	<2.1	NA	<2.0	<2.0	<2.1	<2.0	<1.9	<1.9	<2.1	<2.0	<2.0	<2.0	<2.0
9-chlorohexadecafluoro-3-oxanone1-sulfonic acid (9Cl-PF3ONS)	NC	NC	<2.0	<1.9	NA	<2.0	NA	NA	<2.0	<2.1	NA	<2.0	<2.0	<2.1	<2.0	<1.9	<1.9	<2.1	<2.0	<2.0	<2.0	<2.0
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NC	NC	<2.0	<1.9	NA	<2.0	NA	NA	<2.0	<2.1	NA	<2.0	<2.0	<2.1	<2.0	<1.9	<1.9	<2.1	<2.0	<2.0	<2.0	<2.0
Hexafluoropropylene oxide dimer (HFPO-DA)	NC	NC	<2.0	<1.9	NA	<2.0	NA	NA	<2.0	<2.1	NA	<2.0	<2.0	<2.1	<2.0	<1.9	<1.9	<2.1	<2.0	<2.0	<2.0	<2.0

Table 1
Groundwater Analytical Results
RACER - Flint West # 12990

NOTES:

DW - Drinking Water Residential Generic Criteria.

GSI - Groundwater Surface Water Interface Generic Criteria per MDEQ Surface Water Division Rule 57.

Blank cells indicate no detectable concentrations	
Exceeds DW criteria	X
Exceeds GSI criteria	X
Exceeds both DW and GSI criteria	X
Compound also found in associated method blank, suggesting a laboratory artifact.	X
Insufficient data to develop criterion/no criterion	NC
Groundwater to Surface Water Interface Criteria - calculated based on 257ppm total hardness in the Flint River	G
Not Sampled	NS
Filtered in lab	1
Filtered and preserved in lab	2
Not analyzed due to turbidity	NA

PFAS criteria based on EGLE proposed drinking water criteria for selected PFAS compounds.

Table 1
Groundwater Analytical Results
RACER - Flint West # 12990

Sample ID	MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105S	MW-106SR	MW-107S	MW-108S	MW-109	MW-110S	MW-111S	MW-112S	MW-113S	MW-114S	Dupe 1	Dupe 2	Field Blank	Equip Blank	Field Blank	Equipment Blank	Trip	Equip	Field
Date Collected	02/25/2020	02/25/2020	02/25/2020	02/28/2020	02/25/2020	02/25/2020	02/25/2020	02/25/2020	02/27/2020	02/27/2020	02/27/2020	02/27/2020	02/27/2020	02/27/2020	02/27/2020	02/27/2020	02/27/2020	02/25/2020	02/25/2020	02/27/2020	02/27/2020	02/28/2020	02/28/2020	02/28/2020
VOC ANALYTE (ug/L) {cont}	DW	GSI																MW-112S	MW-114S					
Ethylbenzene	74	18	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Total Xylenes	280	49	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
p,m-Xylene			<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
o-Xylene			<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Styrene	100	80	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Isopropylbenzene	800	28	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Bromoform	80 (A,W)	ID	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	8.5	78 (X)	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichloropropane	42	NA	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
n-Propylbenzene	80	ID	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Bromobenzene	18	NA	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,3,5-Trimethylbenzene	72 (E)	45	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
tert-Butylbenzene	80	ID	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trimethylbenzene	63 (E)	17	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
sec-Butylbenzene	230	ID	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
p-Isopropyltoluene	NC	NC	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
1,3-Dichlorobenzene	6.6	28	0.32	0.25	0.11	<1	0.37	0.26	0.23	0.26	0.13	0.1	0.14	0.21	0.19	0.17	<1	0.2	<1	<1	0.12	<1	<1	<1
1,4-Dichlorobenzene	75	17	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	0.13	<1
1,2-Dichlorobenzene	600	13	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	0.15	<1	<1	0.11	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trimethylbenzene	NC	NC	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
n-Butylbenzene	NC	NC	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Hexachloroethane	21	6.7	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
1,2-Dibromo-3-chloropropane	NC	NC	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
1,2,4-Trichlorobenzene	NC	NC	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	0.18	0.13	0.12
1,2,3-Trichlorobenzene	NC	NC	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	0.12	0.16	<5
Naphthalene	520	11	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	0.17	0.15	0.13	<5	<5
2-Methylnaphthalene	260	19	<5	<5	0.1	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	0.18	0.15	0.12	<5	0.13

Table 1
Groundwater Analytical Results
RACER - Flint West # 12990

Sample ID	MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105S	MW-106SR	MW-107S	MW-108S	MW-109	MW-110S	MW-111S	MW-112S	MW-113S	MW-114S	Dupe 1	Dupe 2	Field Blank	Equip Blank	Field Blank	Equipment Blank	Trip	Equip	Field	
Date Collected	02/25/2020	02/25/2020	02/25/2020	02/28/2020	02/25/2020	02/25/2020	02/25/2020	02/25/2020	02/27/2020	02/27/2020	02/27/2020	02/27/2020	02/27/2020	02/27/2020	02/27/2020	02/27/2020	02/27/2020	02/25/2020	02/25/2020	02/27/2020	02/27/2020	02/28/2020	02/28/2020	02/28/2020	
PFA ANALYTE (ng/L)	DW	GSI																							
Perfluorobutanoic acid (PFBA)	NC	NC	<20	<21	NA	<19	NA	NA	8.1	<19	NA	5.5	<19	<20	<19	<19	<20	<20	<19	<19	<21	<19	<20	<19	<19
Perfluoropentanoic acid (PFPeA)	NC	NC	<9.8	<10	NA	<9.5	NA	NA	<10	<9.6	NA	<9.9	<9.5	<10	<9.4	<9.5	<10	<10	<9.7	<9.6	<9.6	<10	<9.7	<10	<9.5
Fluorotelomer sulfonic acid (4:2 FTS)	NC	NC	<9.8	<10	NA	<9.5	NA	NA	<10	<9.6	NA	<9.9	<9.5	<10	<9.4	<9.5	<10	<10	<9.7	<9.6	<9.6	<10	<9.7	<10	<9.5
Perfluorohexanoic acid (PFHxA)	400,000	NC	<9.8	1.7	NA	<9.5	NA	NA	3.5	<9.6	NA	1.4	<9.5	<10	<9.4	<9.5	<10	<10	<9.7	<9.6	<9.6	<10	<9.7	<10	<9.5
Perfluorobutane sulfonic acid (PFBS)	420	NC	2.7	2.3	NA	<9.5	NA	NA	4.5	1.9	NA	<9.9	<9.5	<10	<9.4	<9.5	<10	<10	<9.7	<9.6	<9.6	<10	<9.7	<10	<9.5
Perfluoroheptanoic acid (PFHpA)	NC	NC	<9.8	<10	NA	<9.5	NA	NA	2.8	<9.6	NA	<9.9	<9.5	<10	<9.4	<9.5	<10	<10	<9.7	<9.6	<9.6	<10	<9.7	<10	<9.5
Perfluoropentane sulfonic acid (PFPeS)	NC	NC	<9.8	<10	NA	<9.5	NA	NA	<10	<9.6	NA	<9.9	<9.5	<10	<9.4	<9.5	<10	<10	<9.7	<9.6	<9.6	<10	<9.7	<10	<9.5
Fluorotelomer sulfonic acid (6:2 FTS)	NC	NC	<9.8	<10	NA	<9.5	NA	NA	<10	<9.6	NA	<9.9	<9.5	<10	<9.4	<9.5	<10	<10	<9.7	<9.6	<9.6	<10	<9.7	<10	<9.5
Perfluorooctanoic acid (PFOA)	8	12,000	<9.8	<10	NA	<9.5	NA	NA	8.7	<9.6	NA	2.3	<9.5	<10	<9.4	<9.5	<10	<10	<9.7	<9.6	<9.6	<10	<9.7	<10	<9.5
Perfluorohexane sulfonic acid (PFHxS)	51	NC	<9.8	<10	NA	2.7	NA	NA	<10	<9.6	NA	<9.9	<9.5	<10	<9.4	<9.5	<10	<10	<9.7	<9.6	<9.6	<10	<9.7	<10	<9.5
Perfluorohexane Sulfonic Acid - LN (PFHxS-LN)	NC	NC	<9.8	<10	NA	3	NA	NA	<10	<9.6	NA	<9.9	<9.5	<10	<9.4	<9.5	<10	<10	<9.7	<9.6	<9.6	<10	<9.7	<10	<9.5
Perfluorohexane Sulfonic Acid - BR (PFHxS-BR)	NC	NC	<9.8	<10	NA	<9.5	NA	NA	<10	<9.6	NA	<9.9	<9.5	<10	<9.4	<9.5	<10	<10	<9.7	<9.6	<9.6	<10	<9.7	<10	<9.5
Perfluorononanoic acid (PFNA)	6	NC	<9.8	<10	NA	<9.5	NA	NA	<10	<9.6	NA	<9.9	<9.5	<10	<9.4	<9.5	<10	<10	<9.7	<9.6	<9.6	<10	<9.7	<10	<9.5
Fluorotelomer sulfonic acid (8:2 FTS)	NC	NC	<9.8	<10	NA	<9.5	NA	NA	<10	<9.6	NA	<9.9	<9.5	<10	<9.4	<9.5	<10	<10	<9.7	<9.6	<9.6	<10	<9.7	<10	<9.5
Perfluoroheptane sulfonic acid (PFHpS)	NC	NC	<9.8	<10	NA	<9.5	NA	NA	<10	<9.6	NA	<9.9	<9.5	<10	<9.4	<9.5	<10	<10	<9.7	<9.6	<9.6	<10	<9.7	<10	<9.5
Perfluorodecanoic acid (PFDA)	NC	NC	<9.8	<10	NA	<9.5	NA	NA	<10	<9.6	NA	<9.9	<9.5	<10	<9.4	<9.5	<10	<10	<9.7	<9.6	<9.6	<10	<9.7	<10	<9.5
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	NC	NC	<9.8	<10	NA	<9.5	NA	NA	<10	<9.6	NA	<9.9	<9.5	<10	<9.4	<9.5	<10	<10	<9.7	<9.6	<9.6	<10	<9.7	<10	<9.5
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	NC	NC	<9.8	<10	NA	<9.5	NA	NA	<10	<9.6	NA	<9.9	<9.5	<10	<9.4	<9.5	<10	<10	<9.7	<9.6	<9.6	<10	<9.7	<10	<9.5
Perfluorooctane sulfonic acid (PFOS)	16	12	20	21	NA	84	NA	NA	7.3	14	NA	31	<9.5	32	22	6.2	31	19	35	<9.6	<9.6	<10	<9.7	<10	<9.5
Perfluorooctane Sulfonic Acid - LN (PFOS-LN)	NC	NC	7.4	7.8	NA	47	NA	NA	<10	6.8	NA	11	<9.5	14	9.1	<9.5	15	8.4	17	<9.6	<9.6	<10	<9.7	<10	<9.5
Perfluorooctane Sulfonic Acid - BR (PFOS-BR)	NC	NC	12	12	NA	35	NA	NA	6.4	6	NA	19	<9.5	16	11	4.2	14	9.1	17	<9.6	<9.6	<10	<9.7	<10	<9.5
Perfluoroundecanoic acid (PFUnDA)	NC	NC	<9.8	<10	NA	<9.5	NA	NA	<10	<9.6	NA	<9.9	<9.5	<10	<9.4	<9.5	<10	<10	<9.7	<9.6	<9.6	<10	<9.7	<10	<9.5
Perfluorononane sulfonic acid (PFNS)	NC	NC	<9.8	<10	NA	<9.5	NA	NA	<10	<9.6	NA	<9.9	<9.5	<10	<9.4	<9.5	<10	<10	<9.7	<9.6	<9.6	<10	<9.7	<10	<9.5
Perfluorododecanoic acid (PFDDA)	NC	NC	<9.8	<10	NA	<9.5	NA	NA	<10	<9.6	NA	<9.9	<9.5	<10	<9.4	<9.5	<10	<10	<9.7	<9.6	<9.6	<10	<9.7	<10	<9.5
Perfluorodecane sulfonic acid (PFDS)	NC	NC	<9.8	<10	NA	<9.5	NA	NA	<10	<9.6	NA	<9.9	<9.5	<10	<9.4	<9.5	<10	<10	<9.7	<9.6	<9.6	<10	<9.7	<10	<9.5
Perfluorotridecanoic acid (PFTrDA)	NC	NC	<9.8	<10	NA	<9.5	NA	NA	<10	<9.6	NA	<9.9	<9.5	<10	<9.4	<9.5	<10	<10	<9.7	<9.6	<9.6	<10	<9.7	<10	<9.5
Perfluorooctane sulfonamide (FOSA)	NC	NC	<9.8	<10	NA	<9.5	NA	NA	<10	<9.6	NA	<9.9	<9.5	<10	<9.4	<9.5	<10	<10	<9.7	<9.6	<9.6	<10	<9.7	<10	<9.5
Perfluorotetradecanoic acid (PFTeDA)	NC	NC	<9.8	<10	NA	<9.5	NA	NA	<10	<9.6	NA	<9.9	<9.5	<10	<9.4	<9.5	<10	<10	<9.7	<9.6	<9.6	<10	<9.7	<10	<9.5

Table 1
Groundwater Analytical Results
RACER - Flint West # 12990

NOTES:

DW - Drinking Water Residential Generic Criteria.

GSI - Groundwater Surface Water Interface Generic Criteria per MDEQ Surface Water Division Rule 57.

Blank cells indicate no detectable concentrations	
Exceeds DW criteria	X
Exceeds GSI criteria	X
Exceeds both DW and GSI criteria	X
Compound also found in associated method blank, suggesting a laboratory artifact.	X
Insufficient data to develop criterion/no criterion	NC
Groundwater to Surface Water Interface Criteria - calculated based on 257ppm total hardness in the Flint River	G
Not Sampled	NS
Filtered in lab	1
Filtered and preserved in lab	2
Not analyzed due to turbidity	NA

PFAS criteria based on EGLE proposed drinking water criteria for selected PFAS compounds.

Table 1
Groundwater Analytical Results
RACER - Flint West # 12990

Sample ID	MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105S	MW-106SR	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S	MW-114S	Dupe 1	Dupe 2	Equipment Blank	Equipment Blank	Field Blank	Field Blank	Trip Blank	Trip Blank
Date Collected	07/16/2019	07/16/2019	07/17/2019	07/17/2019	07/16/2019	07/16/2019	07/16/2019	07/16/2019	07/17/2019	07/17/2019	07/17/2019	07/17/2019	07/17/2019	07/16/2019	07/17/2019	07/16/2019	07/17/2019	07/16/2019	07/17/2019	07/16/2019	07/17/2019	07/16/2019	07/17/2019
VOC ANALYTE (ug/L) {cont}	DW	GSI	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	74	18	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Total Xylenes	280	49	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
Styrene	100	80	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Isopropylbenzene	800	28	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<30	<5	<30	<5	<5	<5
Bromoform	80 (A,W)	ID	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1	<5	<1	<1	<1
1,1,2,2-Tetrachloroethane	8.5	78 (X)	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1	<5	<1	<1	<1
1,2,3-Trichloropropane	42	NA	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1	<5	<1	<1	<1
n-Propylbenzene	80	ID	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1	<5	<1	<1	<1
Bromobenzene	18	NA	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1	<5	<1	<1	<1
1,3,5-Trimethylbenzene	72 (E)	45	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1	<5	<1	<1	<1
tert-Butylbenzene	80	ID	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1	<5	<1	<1	<1
1,2,4-Trimethylbenzene	63 (E)	17	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1	<5	<1	<1	<1
sec-Butylbenzene	230	ID	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1	<5	<1	<1	<1
p-Isopropyltoluene	NC	NC	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<30	<5	<30	<5	<5	<5
1,3-Dichlorobenzene	6.6	28	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1	<5	<1	<1	<1
1,4-Dichlorobenzene	75	17	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1	<5	<1	<1	<1
1,2-Dichlorobenzene	600	13	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1	<5	<1	<1	<1
1,2,3-Trimethylbenzene	NC	NC	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1	<5	<1	<1	<1
n-Butylbenzene	NC	NC	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1	<5	<1	<1	<1
Hexachloroethane	21	6.7	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<30	<5	<30	<5	<5	<5
1,2-Dibromo-3-chloropropane	NC	NC	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<30	<5	<30	<5	<5	<5
1,2,4-Trichlorobenzene	NC	NC	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<30	<5	<30	<5	<5	<5
1,2,3-Trichlorobenzene	NC	NC	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<30	<5	<30	<5	<5	<5
Naphthalene	520	11	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<30	<5	<30	<5	<5	<5
2-Methylnaphthalene	260	19	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<30	<5	<30	<5	0.26	<5
																						0.22	<5

Table 1
Groundwater Analytical Results
RACER - Flint West # 12990

Sample ID	MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105S	MW-106SR	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S	MW-114S	Dupe 1	Dupe 2	Equipment Blank	Equipment Blank	Field Blank	Field Blank	Trip Blank	Trip Blank		
Date Collected	07/16/2019	07/16/2019	07/17/2019	07/17/2019	07/16/2019	07/16/2019	07/16/2019	07/16/2019	07/17/2019	07/17/2019	07/17/2019	07/17/2019	07/16/2019	07/17/2019	07/17/2019	07/16/2019	07/17/2019	07/16/2019	07/17/2019	07/16/2019	07/17/2019	07/16/2019	07/17/2019		
PFA ANALYTE (ng/L)	DW	GSI	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	MW-114S	NS	NS	NS	7/17/2019	NS	7/17/2019		
Perfluorobutanoic acid (PFBA)	NC	NC	NA	NA	<19	<19	NA	NA	NA	NA	<19	<19	20	<19	NA	<19	<19	NA	<19	NA	<19	NA	<20	NA	<19
Perfluoropentanoic acid (PFPeA)	NC	NC	NA	NA	<9.7	<9.4	NA	NA	NA	NA	<9.7	<9.7	<9.6	<9.6	NA	<9.5	<9.5	NA	<9.5	NA	<9.4	NA	<10	NA	<9.3
Fluorotelomer sulfonic acid (4:2 FTS)	NC	NC	NA	NA	<9.7	<9.4	NA	NA	NA	NA	<9.7	<9.7	<9.6	<9.6	NA	<9.5	<9.5	NA	<9.5	NA	<9.4	NA	<10	NA	<9.3
Perfluorohexanoic acid (PFHxA)	NC	NC	NA	NA	<9.7	<9.4	NA	NA	NA	NA	<9.7	<9.7	<9.6	<9.6	NA	<9.5	<9.5	NA	<9.5	NA	<9.4	NA	<10	NA	<9.3
Perfluorobutane sulfonic acid (PFBS)	NC	NC	NA	NA	<9.7	<9.4	NA	NA	NA	NA	<9.7	<9.7	<9.6	<9.6	NA	<9.5	<9.5	NA	<9.5	NA	<9.4	NA	<10	NA	<9.3
Perfluoroheptanoic acid (PFHpA)	NC	NC	NA	NA	<9.7	<9.4	NA	NA	NA	NA	<9.7	<9.7	<9.6	<9.6	NA	<9.5	<9.5	NA	<9.5	NA	<9.4	NA	<10	NA	<9.3
Perfluoropentane sulfonic acid (PFPeS)	NC	NC	NA	NA	<9.7	<9.4	NA	NA	NA	NA	<9.7	<9.7	<9.6	<9.6	NA	<9.5	<9.5	NA	<9.5	NA	<9.4	NA	<10	NA	<9.3
Fluorotelomer sulfonic acid (6:2 FTS)	NC	NC	NA	NA	<9.7	<9.4	NA	NA	NA	NA	<9.7	<9.7	<9.6	<9.6	NA	<9.5	<9.5	NA	<9.5	NA	<9.4	NA	<10	NA	<9.3
Perfluorooctanoic acid (PFOA)	CC	12,000	NA	NA	<9.7	<9.4	NA	NA	NA	NA	<9.7	<9.7	<9.6	<9.6	NA	<9.5	<9.5	NA	<9.5	NA	<9.4	NA	<10	NA	<9.3
Perfluorohexane sulfonic acid (PFHxS)	NC	NC	NA	NA	<9.7	<9.4	NA	NA	NA	NA	<9.7	<9.7	<9.6	<9.6	NA	<9.5	<9.5	NA	<9.5	NA	<9.4	NA	<10	NA	<9.3
Perfluorohexane Sulfonic Acid - LN (PFHxS-LN)	NC	NC	NA	NA	<9.7	<9.4	NA	NA	NA	NA	<9.7	<9.7	<9.6	<9.6	NA	<9.5	<9.5	NA	<9.5	NA	<9.4	NA	<10	NA	<9.3
Perfluorohexane Sulfonic Acid - BR (PFHxS-BR)	NC	NC	NA	NA	<9.7	<9.4	NA	NA	NA	NA	<9.7	<9.7	<9.6	<9.6	NA	<9.5	<9.5	NA	<9.5	NA	<9.4	NA	<10	NA	<9.3
Perfluorononanoic acid (PFNA)	NC	NC	NA	NA	<9.7	<9.4	NA	NA	NA	NA	<9.7	<9.7	<9.6	<9.6	NA	<9.5	<9.5	NA	<9.5	NA	<9.4	NA	<10	NA	<9.3
Fluorotelomer sulfonic acid (8:2 FTS)	NC	NC	NA	NA	<9.7	<9.4	NA	NA	NA	NA	<9.7	<9.7	<9.6	<9.6	NA	<9.5	<9.5	NA	<9.5	NA	<9.4	NA	<10	NA	<9.3
Perfluoroheptane sulfonic acid (PFHpS)	NC	NC	NA	NA	<9.7	<9.4	NA	NA	NA	NA	<9.7	<9.7	<9.6	<9.6	NA	<9.5	<9.5	NA	<9.5	NA	<9.4	NA	<10	NA	<9.3
Perfluorodecanoic acid (PFDA)	NC	NC	NA	NA	<9.7	<9.4	NA	NA	NA	NA	<9.7	<9.7	<9.6	<9.6	NA	<9.5	<9.5	NA	<9.5	NA	<9.4	NA	<10	NA	<9.3
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	NC	NC	NA	NA	<9.7	<9.4	NA	NA	NA	NA	<9.7	<9.7	<9.6	<9.6	NA	<9.5	<9.5	NA	<9.5	NA	<9.4	NA	<10	NA	<9.3
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	NC	NC	NA	NA	<9.7	<9.4	NA	NA	NA	NA	<9.7	<9.7	<9.6	<9.6	NA	<9.5	<9.5	NA	<9.5	NA	<9.4	NA	<10	NA	<9.3
Perfluorooctane sulfonic acid (PFOS)	CC	12	NA	NA	11	93	NA	NA	NA	NA	11	28	<9.6	36	NA	20	31	NA	32	NA	<9.4	NA	<10	NA	<9.3
Perfluorooctane Sulfonic Acid - LN (PFOS-LN)	NC	NC	NA	NA	<9.7	44	NA	NA	NA	NA	<9.7	12	<9.6	16	NA	<9.5	17	NA	16	NA	<9.4	NA	<10	NA	<9.3
Perfluorooctane Sulfonic Acid - BR (PFOS-BR)	NC	NC	NA	NA	<9.7	48	NA	NA	NA	NA	<9.7	16	<9.6	21	NA	16	15	NA	16	NA	<9.4	NA	<10	NA	<9.3
Perfluoroundecanoic acid (PFUnDA)	NC	NC	NA	NA	<9.7	<9.4	NA	NA	NA	NA	<9.7	<9.7	<9.6	<9.6	NA	<9.5	<9.5	NA	<9.5	NA	<9.4	NA	<10	NA	<9.3
Perfluorononane sulfonic acid (PFNS)	NC	NC	NA	NA	<9.7	<9.4	NA	NA	NA	NA	<9.7	<9.7	<9.6	<9.6	NA	<9.5	<9.5	NA	<9.5	NA	<9.4	NA	<10	NA	<9.3
Perfluorododecanoic acid (PFDoDA)	NC	NC	NA	NA	<9.7	<9.4	NA	NA	NA	NA	<9.7	<9.7	<9.6	<9.6	NA	<9.5	<9.5	NA	<9.5	NA	<9.4	NA	<10	NA	<9.3
Perfluorodecane sulfonic acid (PFDS)	NC	NC	NA	NA	<9.7	<9.4	NA	NA	NA	NA	<9.7	<9.7	<9.6	<9.6	NA	<9.5	<9.5	NA	<9.5	NA	<9.4	NA	<10	NA	<9.3
Perfluorotridecanoic acid (PFTriDA)	NC	NC	NA	NA	<9.7	<9.4	NA	NA	NA	NA	<9.7	<9.7	<9.6	<9.6	NA	<9.5	<9.5	NA	<9.5	NA	<9.4	NA	<10	NA	<9.3
Perfluorooctane sulfonamide (FOSA)	NC	NC	NA	NA	<9.7	<9.4	NA	NA	NA	NA	<9.7	<9.7	<9.6	<9.6	NA	<9.5	<9.5	NA	<9.5	NA	<9.4	NA	<10	NA	<9.3
Perfluorotetradecanoic acid (PFTeDA)	NC	NC	NA	NA	<9.7	<9.4	NA	NA	NA	NA	<9.7	<9.7	<9.6	<9.6	NA	<9.5	<9.5	NA	<9.5	NA	<9.4	NA	<10	NA	<9.3

Table 1
Groundwater Analytical Results
RACER - Flint West # 12990

NOTES:

DW - Drinking Water Residential Generic Criteria.

GSI - Groundwater Surface Water Interface Generic Criteria per MDEQ Surface Water Division Rule 57.

Blank cells indicate no detectable concentrations	
Exceeds DW criteria	X
Exceeds GSI criteria	X
Exceeds both DW and GSI criteria	X
Compound also found in associated method blank, suggesting a laboratory artifact.	X
Insufficient data to develop criterion/no criterion	NC
Groundwater to Surface Water Interface Criteria - calculated based on 257ppm total hardness in the Flint River	G
Not Sampled	NS
Filtered in lab	1
Filtered and preserved in lab	2
Not analyzed due to turbidity	NA
Combined PFOA and PFOS concentrations compared to 0.070 ppb (70 ppt) for the drinking water pathway.	CC

Table 1
Groundwater Analytical Results
RACER - Flint West # 12990

Sample ID	MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105S	MW-106SR	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S	MW-114S	Field Dup (Dupe-1)	Field Dup (Dupe-2)	Trip Blank	Field Blank	Field Blank	Equip Blank			
Date Collected	DRY	DRY	02/27/19	02/28/19	02/27/19	02/27/19	NS	02/27/19	02/28/19	02/28/19	02/28/19	02/28/19	02/28/19	02/28/19	02/28/19	02/28/19	02/28/19	02/28/19	02/27/19	02/28/19	02/28/19			
METALS ANALYTE (ug/L)	DW	GSI														MW-112S	MW-114S							
Arsenic (dissolved)	10	10				10			0.711	0.445	2	1.05	0.317	35	1.11	28	9	20						
Arsenic	10	10				30			0.33	0.265	39	1.952	0.759	102	13	86	0.101	80						
Chromium (dissolved)	100	160	G			2.604	0.103	0.105	1.711		0.155	0.246	0.172	4.979	0.357	1.61	0.172	0.436		0.131	0.052			
Chromium (total)	100	160	G			4.664	0.251	43	65		0.354	0.6	0.522	4.651	0.507	13	0.258	0.417	0.412	0.175	0.748	0.655		
Chromium VI (dissolved)	100	160																						
Chromium VI	100	160																						
Copper (dissolved)	1000	20	G			0.937		1.208	1.375		1.733	0.993		0.704	1.32		1.34	0.823		0.434	1.685	1.53	1.47	
Copper	1000	20	G			0.679		1.871	2.247		1.124	0.979	0.381	0.963	0.691		3.06	1.92		2.25	2.092	1.59	1.24	
Lead (dissolved)	4	44	G								0.706													
Lead	4	44	G									0.23	0.206				1.14	0.191		0.208				
Selenium (dissolved)	50	5				2		4	8															
Selenium	50	5				3		4	9															
Zinc (dissolved)	2400	260	G			7	3.45	1	5		11	6	3	3	7	4	8	4	3	3	4	6	7	
Zinc	2400	260	G			1.482		0.892	1.577		7	2.24	2.19	1.61	0.776	0.774	13	3.98		5	1.814	2.27	0.962	
VOC ANALYTE (ug/L)	DW	GSI																						
Acetone	730	1,700				7.88		8.1	6.7		7.8	7.6	9.51	9.07	8.79	12.41	11.34	33.8	11.74	35.1	6.99	7.3	9.10	9.36
Methyl iodide	NC	NC																						
Carbon disulfide	800	NC																						
2 Butanone (MEK)	13,000	2,200				3.13						0.34	0.3	0.33	1.61	1.95	11.1	1.63	11.9	0.64		0.78	0.77	
Chloromethane	260	NC																						
Vinyl Chloride	2	13				0.64					0.88		5			2	1	12	2	12				
Chloroethane	430	1,100																						
trichlorofluoromethane	2,600	NA																						
1,1-Dichloroethene	7	130										0.6			0.41				0.38					
Methylene Chloride	5	1,500																						
trans-1,2-Dichloroethene	100	1,500										0.41					1.9		1.80					
1,1-Dichloroethane	880	740									0.55		0.97		0.76	0.82		3.2	0.79	3.5				
cis-1,2-Dichloroethene	70	620									2		9		13	2	2	295	1	290				
Tetrahydrofuran	95	11,000				2.3										1.9	11.1			11.9				
Chloroform	80	350						2							0.25									
1,1,1-Trichloroethane	200	89																				1.7		
4-Methyl-2-pentanone (MIBK)	1800	ID													0.31				0.38					
2-Hexanone	1000	ID																						
Carbon tetrachloride	5.0	38	X									2												
Benzene	5.0	200				1					0.24													
Bromodichloromethane	80.0	NC					0.25																	
Trichloroethene	5.0	200									1	0.25	13		39	3	9	162	3	163				
Toluene	790	270				0.32																		
Tetrachloroethene	5.0	60									78													
Chlorobenzene	100	25				2																		
Styrene	100	80												0.58	0.28				0.64					

Table 1
Groundwater Analytical Results
RACER - Flint West # 12990

Sample ID	MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105S	MW-106SR	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S	MW-114S	Field Dup (Dupe-1)	Field Dup (Dupe-2)	Trip Blank	Field Blank	Field Blank	Equip Blank	
Date Collected	DRY	DRY	02/27/19	02/28/19	02/27/19	02/27/19	NS	02/27/19	02/28/19	02/28/19	02/28/19	02/28/19	02/28/19	02/28/19	02/28/19	02/28/19	02/28/19	02/28/19	02/27/19	02/28/19	02/28/19	
VOC ANALYTE (ug/L) {cont}	DW	GSI																				
Ethylbenzene	74	18																				
Total Xylenes	280	49																				
1,2-Dichlorobenzene	600	13																				
1,3-Dichlorobenzene	6.6	28																				
Naphthalene	520	11																				
2-Methylnaphthalene	260	19				0.18																
Diethyl ether	10 (E)	ID																				
tert-Methyl butyl ether (MTBE)	40 (E)	7,100 (X)																				
Acrylonitrile	2.6	2.0 (M); 1.2																				
Dichlorodifluoromethane	1,700	ID																				
Bromomethane	10	4.2; [5(M)]																				
1,2-Dichloroethane	5.0 (A)	360 (X)																				
1,2-Dichloropropane	5.0 (A)	230 (X)																				
cis-1,3-Dichloropropene	NC	NC																				
trans-1,3-Dichloropropene	NC	NC																				
1,1,2-Trichloroethane	5.0 (A)	330 (X)																				
trans-1,4-Dichloro-2-butene	NC	NC																				
Dibromochloromethane	80 (A,W)	ID																				
1,2-Dibromoethane	NC	NC																				
1,1,1,2-Tetrachloroethane	77	ID																				
Isopropylbenzene	800	28																				
Bromoform	80 (A,W)	ID																				
1,1,2,2-Tetrachloroethane	8.5	78 (X)																				
1,2,3-Trichloropropane	42	NA																				
n-Propylbenzene	80	ID																				
Bromobenzene	18	NA																				
1,3,5-Trimethylbenzene	72 (E)	45																				
tert-Butylbenzene	80	ID																				
1,2,4-Trimethylbenzene	63 (E)	17																				
1,2,4-Trichlorobenzene	NC	NC																				
1,2,3-Trichlorobenzene	NC	NC																				
n-Butylbenzene	NC	NC																				

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Groundwater Analytical Results
RACER - Flint West # 12990

Sample ID	MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105S	MW-106SR	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S	MW-114S	Field Dup (Dupe-1)	Field Dup (Dupe-2)	Trip Blank	Field Blank	Field Blank	Equip Blank
Date Collected	DRY	DRY	02/27/19	02/28/19	02/27/19	02/27/19	NS	02/27/19	02/28/19	02/28/19	02/28/19	02/28/19	02/28/19	02/28/19	02/28/19	02/28/19	02/28/19	02/28/19	02/27/19	02/28/19	02/28/19
PFA ANALYTE (ng/L)	DW	GSI	NS	NS	NS	01/17/19	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Perfluorobutane sulfonic acid (PFBS)	NC	NC																			
Perfluoropentane sulfonic acid (PFPeS)	NC	NC																			
Perfluorohexane sulfonic acid (PFHxS)	NC	NC																			
Perfluoroheptane sulfonic acid (PFHpS)	NC	NC																			
Perfluorooctane sulfonic acid (PFOS)	CC	12				90											90				
Perfluorononane sulfonic acid (PFNS)	NC	NC																			
Perfluorodecane sulfonic acid (PFDS)	NC	NC																			
Perfluorobutanoic acid (PFBA)	NC	NC																			
Perfluoropentanoic acid (PFPeA)	NC	NC																			
Perfluorohexanoic acid (PFHxA)	NC	NC																			
Perfluoroheptanoic acid (PFHpA)	NC	NC																			
Perfluorooctanoic acid (PFOA)	CC	12,000																			
Perfluorononanoic acid (PFNA)	NC	NC																			
Perfluorodecanoic acid (PFDA)	NC	NC																			
Perfluoroundecanoic acid (PFUnDA)	NC	NC																			
Perfluorododecanoic acid (PFDoDA)	NC	NC																			
Perfluorotridecanoic acid (PFTrDA)	NC	NC																			
Perfluorotetradecanoic acid (PFTeDA)	NC	NC																			
Perfluorooctane sulfonamide (FOSA)	NC	NC																			
N-Methyl perfluorooctane sulfonamidoacetic acid	NC	NC																			
N-Ethyl perfluorooctane sulfonamidoacetic acid	NC	NC																			
Fluorotelomer sulfonic acid (4:2 FTS)	NC	NC																			
Fluorotelomer sulfonic acid (6:2 FTS)	NC	NC																			
Fluorotelomer sulfonic acid (8:2 FTS)	NC	NC																			

Table 1
Groundwater Analytical Results
RACER - Flint West # 12990

NOTES:

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Blank cells indicate no detectable concentrations	
Exceeds DW criteria	X
Exceeds GSI criteria	X
Exceeds both DW and GSI criteria	X
Compound also found in associated method blank, suggesting a laboratory artifact.	X
Insufficient data to develop criterion/no criterion	NC
Groundwater to Surface Water Interface Criteria - calculated based on 257ppm total hardness in the Flint River	G
Not Sampled	NS
Filtered in lab	1
Filtered and preserved in lab	2
Not analyzed due to turbidity	NA
Combined PFOA and PFOS concentrations compared to 0.070 ppb (70 ppt) for the drinking water pathway.	CC

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Groundwater Analytical Results
RACER - Flint West # 12990

Sample ID	MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105S	MW-106SR	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S	MW-114S	Field Dup (Dup-1)	Field Dup (Dup-2)	Trip Blank	Trip Blank	Field Blank	Field Blank (FB2)	Equip Blank	Equip Blank				
Date Collected	9/5/18	9/5/18	8/30/18	9/5/18	9/5/18	9/5/18	9/5/18	8/30/18	8/30/18	9/5/18	8/30/18	8/30/18	9/5/18	8/30/18	9/5/18	9/5/18	9/5/18	8/30/18	9/5/18	8/30/18	9/5/18	8/30/18	9/5/18				
METALS ANALYTE (ug/L)	DW	GSI														MW-104S	MW-109S										
Arsenic (dissolved)	10	10				19				4	1		52		1		3				1		1				
Arsenic	10	10				53		1	1				104		2		5				1		1				
Chromium (dissolved)	100	160	G		1			10	1	6				1	4			1									
Chromium (total)	100	160	G		2	6		388	62	789				1				13									
Chromium VI (dissolved)	100	160				1																					
Chromium VI	100	160												5													
Copper (dissolved)	1000	20	G	1	1	1		2	1	4	2	1	1	7	1		1	2	1								
Copper	1000	20	G		1	1		13	2	23	1	1	1		1			3	1								
Lead (dissolved)	4	44	G																								
Lead	4	44	G							1	1																
Selenium (dissolved)	50	5		1	4	2	3	3	8	1			2	4		5	1		1	9		2	1	1			
Selenium	50	5		2	4	4	4	3	9	5			4	1	3	2	3	3	3	6		2	1	1			
Zinc (dissolved)	2400	260	G	2	4	3	1	3	2	2	4	3	3	5	6	2	5	4	1	2		2	2	1	1		
Zinc	2400	260	G	3	2	5	2	5	2	6	2	4	5	3	2	4	5	3	1	2		1	1	1	1		
VOC ANALYTE (ug/L)	DW	GSI																									
Acetone	730	1,700			2.55	2.72	5.20	0.81	1.12	0.63	0.61		2.32			4.98	2.11	18.6			2.75	5.13	4.54	1.26	7.48	1.74	7.35
Methyl iodide	NC	NC																									
Carbon disulfide	800	NC																									
2 Butanone (MEK)	13,000	2,200					1.14									1.09								0.32	2.48		
Chloromethane	260	NC																									
Vinyl Chloride	2.0	13										42				5		9.5									
Chloroethane	430	1,100																									
trichlorofluoromethane	2,600	NA																									
1,1-Dichloroethene	7.0	130											2			0.66											
Methylene Chloride	5.0	1,500																									
trans-1,2-Dichloroethene	100	1,500											0.7														
1,1-Dichloroethane	880	740											1		0.27	0.63		3.6									
cis-1,2-Dichloroethene	70	620		9									0.34		68		5	2		490	0.36	65					
Tetrahydrofuran	95	11,000																16									
Chloroform	80	350						1						1									0.4	0.4	0.3		
1,1,1-Trichloroethane	200	89																									
4-Methyl-2-pentanone (MIBK)	1800	ID																									
2-Hexanone	1000	ID																									
Carbon tetrachloride	5.0	38 (X)												4													
Benzene	5.0	200					0.67																				
Bromodichloromethane	80.0	NC								0.5															0.35		
Trichloroethene	5.0	200		4	4	0.39						1		17		12	7	1	210			17					
Toluene	790	270																									
Tetrachloroethene	5.0	60								40										40		0.22					
Chlorobenzene	100	25																									
Styrene	100	80																									

Table 1
Groundwater Analytical Results
RACER - Flint West # 12990

Sample ID	MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105S	MW-106SR	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S	MW-114S	Field Dup (Dup-1)	Field Dup (Dup-2)	Trip Blank	Trip Blank	Field Blank	Field Blank (FB2)	Equip Blank	Equip Blank
Date Collected	9/5/18	9/5/18	8/30/18	9/5/18	9/5/18	9/5/18	9/5/18	8/30/18	8/30/18	9/5/18	8/30/18	8/30/18	9/5/18	8/30/18	9/5/18	9/5/18	9/5/18	8/30/18	9/5/18	8/30/18	9/5/18	8/30/18	9/5/18
VOC ANALYTE (ug/L) {cont}	DW	GSI																					
Ethylbenzene	74	18																					
Total Xylenes	280	49																					
1,2 -Dichlorobenzene	600	13																					
1,3 -Dichlorobenzene	6.6	28																					
Naphthalene	520	11																					
2-Methylnaphthalene	260	19															0.23						
Diethyl ether	10 (E)	ID																					
tert-Methyl butyl ether (MTBE)	40 (E)	7,100 (X)																					
Acrylonitrile	2.6	2.0 (M); 1.2																					
Dichlorodifluoromethane	1,700	ID																					
Bromomethane	10	4.2; [5(M)]																					
1,2-Dichloroethane	5.0 (A)	360 (X)																					
Trichloroethene	5.0 (A)	200 (X)																					
1,2-Dichloropropane	5.0 (A)	230 (X)																					
cis-1,3-Dichloropropene	NC	NC																					
trans-1,3-Dichloropropene	NC	NC																					
1,1,2-Trichloroethane	5.0 (A)	330 (X)																					
trans-1,4-Dichloro-2-butene	NC	NC																					
Dibromochloromethane	80 (A,W)	ID																					
1,2-Dibromoethane	NC	NC																					
1,1,1,2-Tetrachloroethane	77	ID																					
Isopropylbenzene	800	28																					
Bromoform	80 (A,W)	ID																					
1,1,2,2-Tetrachloroethane	8.5	78 (X)																					
1,2,3-Trichloropropane	42	NA																					
n-Propylbenzene	80	ID																					
Bromobenzene	18	NA																					
1,3,5-Trimethylbenzene	72 (E)	45																					
tert-Butylbenzene	80	ID																					
1,2,4-Trimethylbenzene	63 (E)	17																					
1,2,4-Trichlorobenzene	NC	NC																				0.21	
1,2,3-Trichlorobenzene	NC	NC																				0.21	
n-Butylbenzene	NC	NC																					

Table 1
Groundwater Analytical Results
RACER - Flint West # 12990

Sample ID	MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105S	MW-106SR	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S	MW-114S	Field Dup (Dup-1)	Field Dup (Dup-2)	Trip Blank	Trip Blank	Field Blank	Field Blank (FB2)	Equip Blank	Equip Blank
Date Collected	9/5/18	9/5/18	8/30/18	9/5/18	9/5/18	9/5/18	9/5/18	8/30/18	8/30/18	9/5/18	8/30/18	8/30/18	9/5/18	8/30/18	9/5/18	9/5/18	9/5/18	8/30/18	9/5/18	8/30/18	9/5/18	8/30/18	9/5/18
PFA ANALYTE (ng/L)	DW	GSI																					
Perfluorobutane sulfonic acid (PFBS)	NC	NC	2.5	1.4	2	2.2	1.3	1.8	4.6		1.7	2.9	3.6	2.4	1.4	5	1.7	2.3	1.7				
Perfluoropentane sulfonic acid (PFPeS)	NC	NC																					
Perfluorohexane sulfonic acid (PFHxS)	NC	NC	4	1.9	6.1		2.1	12	3.3	2.7	2.9	3.2	4.3	3.8		2.6	2.4	12	2.6				
Perfluoroheptane sulfonic acid (PFHpS)	NC	NC	1.4	1.2	2.4			2.5	1.3			2.6						2.1					
Perfluorooctane sulfonic acid (PFOS)	CC	12	20	33	11	91			7.3	18	6	27	8.5	59	10	13	26		30				
Perfluorononane sulfonic acid (PFNS)	NC	NC																					
Perfluorodecane sulfonic acid (PFDS)	NC	NC																					
Perfluorobutanoic acid (PFBA)	NC	NC		3.8	3.2			3.2	5.9			2.9	6.7		48	7.1	2.7		3.2				
Perfluoropentanoic acid (PFPeA)	NC	NC		1.2	1.4				1.1				3	1.3			3.6						
Perfluorohexanoic acid (PFHxA)	NC	NC	1	1.5	4.1		1.2	1.6	2			1.7	4.8		1	3.3	1.7			1.3	1.6	1.2	
Perfluoroheptanoic acid (PFHpA)	NC	NC			2				2				3.7		1.3	3.3	2.4						
Perfluorooctanoic acid (PFOA)	CC	12,000	2	4.5	6.1	2.6	0.79	4.5	12	2.1	0.58	2.6	11	1.7	2.2	2.6	4.3	4.1	2.8				
Perfluorononanoic acid (PFNA)	NC	NC		1.2		1.1						1.2				1.3		1.1					
Perfluorodecanoic acid (PFDA)	NC	NC				0.53			0.58														
Perfluoroundecanoic acid (PFUnDA)	NC	NC																					
Perfluorododecanoic acid (PFDoDA)	NC	NC																					
Perfluorotridecanoic acid (PFTrDA)	NC	NC																					
Perfluorotetradecanoic acid (PFTeDA)	NC	NC					1.6		2.8			1.7				1.9				3.3	1.8	1.9	1.7
Perfluorooctane sulfonamide (FOSA)	NC	NC																			0.44		
N-Methyl perfluorooctane sulfonamidoacetic acid	NC	NC																					
N-Ethyl perfluorooctane sulfonamidoacetic acid	NC	NC				0.9																	
Fluorotelomer sulfonic acid (4:2 FTS)	NC	NC																					
Fluorotelomer sulfonic acid (6:2 FTS)	NC	NC																					
Fluorotelomer sulfonic acid (8:2 FTS)	NC	NC																					

Table 1
Groundwater Analytical Results
RACER - Flint West # 12990

NOTES:

DW - Drinking Water Residential Generic Criteria.

GSI - Groundwater Surface Water Interface Generic Criteria per MDEQ Surface Water Division Rule 57.

Blank cells indicate no detectable concentrations	
Exceeds DW criteria	X
Exceeds GSI criteria	X
Exceeds both DW and GSI criteria	X
Compound also found in associated method blank, suggesting a laboratory artifact.	X
Insufficient data to develop criterion/no criterion	NC
Groundwater to Surface Water Interface Criteria - calculated based on 257ppm total hardness in the Flint River	G
Not Sampled	NS
Filtered in lab	1
Filtered and preserved in lab	2
Not analyzed due to turbidity	NA
Combined PFOA and PFOS concentrations compared to 0.070 ppb (70 ppt) for the drinking water pathway.	CC

Table 1
Groundwater Analytical Results
RACER - Flint West # 12990

Sample ID	MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105S	MW-106SR	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S	Field Dupe	Trip Blank	Field Blank	Equip Blank
Date Collected	5/29/18	5/29/18	5/29/18	5/29/18	5/29/18	5/29/18	5/29/18	5/29/18	5/29/18	5/29/18	5/29/18	5/29/18	5/29/18	5/29/18	5/29/18		5/29/18	5/29/18
METALS ANALYTE (ug/L)	DW	GSI	DRY			DRY		DRY		NS	NS	NS		NS	MW-102S			
Arsenic (dissolved)	10	10				1.41							23					
Arsenic	10	10				9							60					
Chromium (dissolved)	100	160	G	1.62	14	0.168		1.01		0.328			4.13	0.431		14		
Chromium (total)	100	160	G	2.64	14	0.276		44		0.208			4.17	0.296		14		0.095
Chromium VI (dissolved)	100	160																
Chromium VI (total)	100	160																
Copper (dissolved)	1000	20	G	0.381	0.498			0.816		1.73			0.611			0.469		
Copper	1000	20	G	0.748	0.341			1.78		1.43			2.42					
Lead (dissolved)	4	44	G															
Lead	4	44	G	0.408		0.068		0.304		0.121			0.067	0.062				
Selenium (dissolved)	50	5																
Selenium	50	5																
Zinc (dissolved)	2400	260	G	6	8	7		8		12			15	8		9		
Zinc	2400	260	G	6	7	8		7		8			6	4.76		9		1.79
VOC ANALYTE (ug/L)	DW	GSI																
Acetone	730	1,700		5	4.5	6.4		5.6					5.9	8.2		5.6	4.8	8.4
Methyl iodide	NC	NC																
Carbon disulfide	800	NC																
2 Butanone (MEK)	13,000	2,200																
Chloromethane	260	NC																
Vinyl Chloride	2.0	13											9					
Chloroethane	430	1,100																
trichlorofluoromethane	2,600	NA																
1,1-Dichloroethene	7.0	130											1					
Methylene Chloride	5.0	1,500											0.17					
trans-1,2-Dichloroethene	100	1,500											0.25					
1,1-Dichloroethane	880	740											1					
cis-1,2-Dichloroethene	70	620											3					
Tetrahydrofuran	95	11,000														4.8		
Chloroform	80	350																0.46
1,1,1-Trichloroethane	200	89																
4-Methyl-2-pentanone (MIBK)	1800	ID																
2-Hexanone	1000	ID																
Carbon tetrachloride	5.0	38 (X)																
Benzene	5.0	200											0.20					
Bromodichloromethane	80.0	NC																
Trichloroethene	5.0	200		1	0.67							7	13		0.7			
Toluene	790	270			0.39													
Tetrachloroethene	5.0	60					45											
Chlorobenzene	100	25																
Styrene	100	80																

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Groundwater Analytical Results
RACER - Flint West # 12990

Sample ID	MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105S	MW-106SR	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S	Field Dupe	Trip Blank	Field Blank	Equip Blank
Date Collected	5/29/18	5/29/18	5/29/18	5/29/18	5/29/18	5/29/18	5/29/18	5/29/18	5/29/18	5/29/18	5/29/18	5/29/18	5/29/18	5/29/18	5/29/18		5/29/18	5/29/18
VOC ANALYTE (ug/L) {cont}	DW	GSI																
Ethylbenzene	74	18																
Total Xylenes	280	49																
1,2 -Dichlorobenzene	600	13																
1,3 -Dichlorobenzene	6.6	28			0.23													
1,2,4-Trimethylbenzene	63	17																
1,2,3-Trimethylbenzene	NC	NC																
Naphthalene	520	11			0.21													
2-Methylnaphthalene	260	19																
Diethyl ether	10 (E)	ID																
tert-Methyl butyl ether (MTBE)	40 (E)	7,100 (X)																
Acrylonitrile	2.6	2.0 (M); 1.2																
Dichlorodifluoromethane	1,700	ID																
Bromomethane	10	4.2; [5(M)]																
1,2-Dichloroethane	5.0 (A)	360 (X)																
Trichloroethene	5.0 (A)	200 (X)																
1,2-Dichloropropane	5.0 (A)	230 (X)																
cis-1,3-Dichloropropene	NC	NC																
trans-1,3-Dichloropropene	NC	NC																
1,1,2-Trichloroethane	5.0 (A)	330 (X)																
trans-1,4-Dichloro-2-butene	NC	NC																
Dibromochloromethane	80 (A,W)	ID																
1,2-Dibromoethane	NC	NC																
1,1,1,2-Tetrachloroethane	77	ID																
Isopropylbenzene	800	28																
Bromoform	80 (A,W)	ID																
1,1,2,2-Tetrachloroethane	8.5	78 (X)																
1,2,3-Trichloropropane	42	NA																
n-Propylbenzene	80	ID																
Bromobenzene	18	NA																
1,3,5-Trimethylbenzene	72 (E)	45																
tert-Butylbenzene	80	ID																
1,2,4-Trimethylbenzene	63 (E)	17																
1,2,3-Trichlorobenzene	NC	NC																
n-Butylbenzene	NC	NC																
1,4-Dioxane (EPA SIM8270)	7.2	2,800 (X)											0.13		0.025	0.025		

Table 1
Groundwater Analytical Results
RACER - Flint West # 12990

Sample ID	MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105S	MW-106SR	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S	Field Dupe	Trip Blank	Field Blank	Equip Blank
Date Collected	5/29/18	5/29/18	5/29/18	5/29/18	5/29/18	5/29/18	5/29/18	5/29/18	5/29/18	5/29/18	5/29/18	5/29/18	5/29/18	5/29/18	5/29/18		5/29/18	5/29/18
PFA ANALYTE (ng/L)	DW	GSI																
Perfluorobutane sulfonic acid (PFBS)	NC	NC			1.3												1.2	
Perfluoropentane sulfonic acid (PFPeS)	NC	NC																
Perfluorohexane sulfonic acid (PFHxS)	NC	NC		1.4	2							1.6					2	
Perfluoroheptane sulfonic acid (PFHpS)	NC	NC			0.18												1.1	
Perfluorooctane sulfonic acid (PFOS)	CC	12 (X)		12	12							47	27				12	
Perfluorononane sulfonic acid (PFNS)	NC	NC																
Perfluorodecane sulfonic acid (PFDS)	NC	NC																
Perfluorobutanoic acid (PFBA)	NC	NC											41					
Perfluoropentanoic acid (PFPeA)	NC	NC			1.2								1.7					
Perfluorohexanoic acid (PFHxA)	NC	NC			1.8												2.5	
Perfluoroheptanoic acid (PFHpA)	NC	NC			1.7													
Perfluorooctanoic acid (PFOA)	CC	12,000 (X)		2	4.2							1.7	2.5				4.3	
Perfluorononanoic acid (PFNA)	NC	NC		1.1	1								1.8					
Perfluorodecanoic acid (PFDA)	NC	NC																
Perfluoroundecanoic acid (PFUnDA)	NC	NC											0.61					
Perfluorododecanoic acid (PFDoDA)	NC	NC		0.51														
Perfluorotridecanoic acid (PFTrDA)	NC	NC		0.82								0.78	0.85				0.94	1.1
Perfluorotetradecanoic acid (PFTeDA)	NC	NC		1.4	1.2													
Perfluorooctane sulfonamide (FOSA)	NC	NC																
N-Methyl perfluorooctane sulfonamidoacetic acid	NC	NC																
N-Ethyl perfluorooctane sulfonamidoacetic acid	NC	NC																
Fluorotelomer sulfonic acid (4:2 FTS)	NC	NC																
Fluorotelomer sulfonic acid (6:2 FTS)	NC	NC																
Fluorotelomer sulfonic acid (8:2 FTS)	NC	NC																

Table 1
Groundwater Analytical Results
RACER - Flint West # 12990

NOTES:

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Blank cells indicate no detectable concentrations	
Exceeds DW criteria	X
Exceeds GSI criteria	X
Exceeds both DW and GSI criteria	X
Compound also found in associated method blank, suggesting a laboratory artifact.	X
Insufficient data to develop criterion/no criterion	NC
Groundwater to Surface Water Interface Criteria - calculated based on 257ppm total hardness in the Flint River	G
Not Sampled	NS
Filtered in lab	1
Filtered and preserved in lab	2
Not analyzed due to turbidity	NA
Combined PFOA and PFOS concentrations compared to 0.070 ppb (70 ppt) for the drinking water pathway.	CC

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Groundwater Analytical Results
RACER - Flint West # 12990

Sample ID			MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105S	MW-106SR	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S	Field Dupe	Trip Blank	Field Blank	Equip Blank	
Date Collected			1/28/18	1/28/18	1/28/18	1/28/18	1/28/18	1/28/18	1/28/18	1/28/18	1/28/18	1/28/18	1/28/18	1/28/18	1/28/18	1/28/18	1/28/18	1/28/18	1/28/18	1/28/18	
METALS ANALYTE (ug/L)	DW	GSI																			
Arsenic (dissolved)	10	10		2	1.094	29	<2	<2		0.548				4	100		108				
Arsenic	10	10		3	3	34	<2	<2		<2				10	129		131				
Chromium (dissolved)	100	160	G	41	9	<5	86	13		<5				37	1.217		0.537				
Chromium (total)	100	160	G	244	28	<5	1,740	141		<5				68	1.540		0.4368				
Chromium VI (dissolved)	100	160		<10	<10	<10	<10	<10		<10				<10	<10		<10				
Chromium VI (total)	100	160		<10	<10	<20	<10	<10		<10				<10	<20		<20				
Copper (dissolved)	1000	20	G	5	2.446	0.908	5	1.182		1.134				3.403	0.547		0.555				
Copper	1000	20	G	21	4.359	0.736	34	3.337		1.057				7	1.333		1.671				
Lead (dissolved)	4	44	G	1.836	1.058	<3	<3	<3		<3				2.084	<3		<3				
Lead	4	44	G	4	3	<3	0.739	<3		<3				6	<3		1.217				
Selenium (dissolved)	50	5		2	4	<5	2	8		1				1	1		1				
Selenium	50	5		2	4	<5	2	11		1				1	<5		1				
Zinc (dissolved)	2400	260	G	8	5	1.90	<5	2		2.24				7	2.480		2.5				
Zinc	2400	260	G	18	11	2.55	14	2.31		1.55				12	6		15				
VOC ANALYTE (ug/L)	DW	GSI																			
Acetone	730	1,700																		6.3	6.4
Methyl iodide	NC	NC																			
Carbon disulfide	800	NC																			
2 Butanone (MEK)	13,000	2,200																			
Chloromethane	260	NC																			
Vinyl Chloride	2.0	13				0.29				0.77					2		1				
Chloroethane	430	1,100															0.31				
trichlorofluoromethane	2,600	NA																			
1,1-Dichloroethene	7.0	130												0.31							
Methylene Chloride	5.0	1,500																			
trans-1,2-Dichloroethene	100	1,500												0.16							
1,1-Dichloroethane	880	740								0.97				2	0.70		0.75				
cis-1,2-Dichloroethene	70	620								2.00				51	3		2				
Tetrahydrofuran	95	11,000																			
Chloroform	80	350						2.00						0.24							
1,1,1-Trichloroethane	200	89																			
4-Methyl-2-pentanone (MIBK)	1800	ID															0.410				
2-Hexanone	1000	ID															0.95				
Carbon tetrachloride	5.0	45																			
Benzene	5.0	200				0.20				0.18											
Bromodichloromethane	80.0	NC					0.68														
Trichloroethene	5.0	200		3						5.00				30	2		0.83				
Toluene	790	270																			
Tetrachloroethene	5.0	60							43												
Chlorobenzene	100	25																			
Styrene	100	80																			

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RACER - Flint West # 12990

Sample ID	MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105S	MW-106SR	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S	Field Dupe	Trip Blank	Field Blank	Equip Blank
Date Collected	1/28/18	1/28/18	1/28/18	1/28/18	1/28/18	1/28/18	1/28/18	1/28/18	1/28/18	1/28/18	1/28/18	1/28/18	1/28/18	1/28/18	1/28/18	1/28/18	1/28/18	1/28/18
VOC ANALYTE (ug/L) {cont}	DW	GSI																
Ethylbenzene	74	18																
Total Xylenes	280	41																
1,2-Dichlorobenzene	600	13																
1,3-Dichlorobenzene	6.6	28			0.36	0.46	0.43		0.23				0.30	0.30		0.26		
1,2,4-Trimethylbenzene	63	17																
1,2,3-Trimethylbenzene	NC	NC																
Naphthalene	520	11																
2-Methylnaphthalene	260	19																
Diethyl ether	10 (E)	ID																
tert-Methyl butyl ether (MTBE)	40 (E)	7,100 (X)																
Acrylonitrile	2.6	2.0 (M); 1.2																
Dichlorodifluoromethane	1,700	ID																
Bromomethane	10	35																
1,2-Dichloroethane	5.0 (A)	360 (X)																
Trichloroethene	5.0 (A)	200 (X)																
1,2-Dichloropropane	5.0 (A)	230 (X)																
cis-1,3-Dichloropropene	NC	NC																
trans-1,3-Dichloropropene	NC	NC																
1,1,2-Trichloroethane	5.0 (A)	330 (X)																
trans-1,4-Dichloro-2-butene	NC	NC																
Dibromochloromethane	80 (A,W)	ID																
1,2-Dibromoethane	NC	NC																
1,1,1,2-Tetrachloroethane	77	ID																
Isopropylbenzene	800	28																
Bromoform	80 (A,W)	ID																
1,1,2,2-Tetrachloroethane	8.5	78 (X)																
1,2,3-Trichloropropane	42	NA																
n-Propylbenzene	80	ID																
Bromobenzene	18	NA																
1,3,5-Trimethylbenzene	72 (E)	45																
tert-Butylbenzene	80	ID																
1,2,4-Trimethylbenzene	63 (E)	17																
1,2,3-Trichlorobenzene	NC	NC																
n-Butylbenzene	NC	NC																
1,4-Dioxane (EPA8260)	7.2	2,800 (X)																

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Groundwater Analytical Results
RACER - Flint West # 12990

Sample ID			MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105S	MW-106SR	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S	Field Dupe	Trip Blank	Field Blank	Equip Blank
Date Collected			1/28/18	1/28/18	1/28/18	1/28/18	1/28/18	1/28/18	1/28/18	1/28/18	1/28/18	1/28/18	1/28/18	1/28/18	1/28/18	1/28/18	1/28/18	1/28/18	1/28/18	1/28/18
PFA ANALYTE (ng/L)	DW	GSI																		
Perfluorobutanesulfonic acid (PFBS)	NC	NC													8.1		5.3			
Perfluorohexanesulfonic acid (PFHxS)	NC	NC												1.9						
Perfluoroheptanesulfonic Acid (PFHpS)	NC	NC																		
Perfluorooctanesulfonic acid (PFOS)	CC	12 (X)		35	7									44	16		16			
Perfluorodecanesulfonic acid (PFDS)	NC	NC																		
Perfluorobutanoic acid (PFBA)	NC	NC		3.1	4.8									4.8	180		180			
Perfluoropentanoic acid (PFPeA)	NC	NC			2.3															
Perfluorohexanoic acid (PFHxA)	NC	NC			2.5									2.6						
Perfluoroheptanoic acid (PFHpA)	NC	NC																		
Perfluorooctanoic acid (PFOA)	CC	12,000 (X)		4.4	4.1									6.1	4.2		4			
Perfluorononanoic acid (PFNA)	NC	NC																		
Perfluorodecanoic acid (PFDA)	NC	NC																		
Perfluoroundecanoic acid (PFUnA)	NC	NC																		
Perfluorododecanoic acid (PFDoA)	NC	NC																		
Perfluorotridecanoic Acid (PFTriA)	NC	NC																		
Perfluorotetradecanoic acid (PFTeA)	NC	NC																		
Perfluorooctane Sulfonamide (FOSA)	NC	NC																		

Table 1
Groundwater Analytical Results
RACER - Flint West # 12990

NOTES:

DW - Drinking Water Residential Generic Criteria.

GSI - Groundwater Surface Water Interface Generic Criteria per MDEQ Surface Water Division Rule 57.

Blank cells indicate no detectable concentrations	
Exceeds DW criteria	X
Exceeds GSI criteria	X
Exceeds both DW and GSI criteria	X
Compound also found in associated method blank, suggesting a laboratory artifact.	X
Insufficient data to develop criterion/no criterion	NC
Groundwater to Surface Water Interface Criteria - calculated based on 257ppm total hardness in the Flint River	G
Not Sampled	NS
Filtered in lab	1
Filtered and preserved in lab	2
Not analyzed due to turbidity	NA
Combined PFOA and PFOS concentrations compared to 0.070 ppb (70 ppt) for the drinking water pathway.	CC

Table 1
GROUNDWATER ANALYTICAL DATA
RACER - Flint West #12990
As Erroneously Labeled in May 23, 2016 Laboratory Report

Sample ID	MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105S	MW-106SR	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S	Trip Blank	Field Blank	Trip Blank	Field Blank	Dup1	Trip Blank	Field Blank	Dup2	Dup3
Date Collected	6/13/17	6/13/17	6/13/17	6/13/17	6/13/17	6/13/17	6/13/17	6/13/17	NS	NS	NS	6/13/17	6/13/17	NS	6/13/17	6/13/17			6/13/17				
ANALYTE (ug/L)	DW	GSi																					
Arsenic (dissolved)	10	10			0.85		9.00	0.41	0.64	0.58				NS	NS	NS	1.37	82.00	NS			84.000	
Arsenic	10	10			0.63	3.00	13.00	0.53	0.56	1.11	0.44			NS	NS	NS	1.45	126.00	NS			123.000	
Chromium (dissolved)	100	160	G		1.57	12.00	0.22	28.00	37.00	100.00	0.16			NS	NS	NS	2.69	0.34	NS			0.62	
Chromium (total)	100	160	G		21	72.00	1.50	1640.00	776.00	2500.00				NS	NS	NS	7.00	0.37	NS			0.7	
Chromium VI (dissolved)	100	160				8.00	0.86							NS	NS	NS			NS				
Chromium VI (total)	100	160				6.00								NS	NS	NS			NS				
Copper (dissolved)	1000	20	G		0.59	1.56	0.86	6.00	2.38	4.31	1.61			NS	NS	NS	1.34		NS			0.4	
Copper	1000	20	G		2.47	8.00	1.81	33.00	8.00	28.00	1.60			NS	NS	NS	1.38		NS			0.62	
Lead (dissolved)	4	44	G			0.15	0.09		0.06	0.18	0.13			NS	NS	NS	0.21	0.06	NS				
Lead	4	44	G		0.547	2.82	0.53	0.14	0.22	0.76	0.14			NS	NS	NS	0.96	0.08	NS			0.066	
Selenium (dissolved)	50	5												NS	NS	NS			NS				
Selenium	50	5												NS	NS	NS			NS				
Zinc (dissolved)	2400	260	G		1.69	2.09	2.48	3.13	5.00	2.20	4.41			NS	NS	NS	1.72	2.22	NS			2.25	
Zinc	2400	260	G		3.16	9.00	3.22	2.59	13.00	4.68	3.01			NS	NS	NS	2.54	4.07	NS			5	

Sample ID	MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105S	MW-106SR	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S	Trip Blank	Field Blank	Trip Blank	Field Blank	Dup1	Trip Blank	Field Blank	Dup3	Dup3	
Date Collected	6/13/17	6/13/17	6/13/17	6/13/17	6/13/17	6/13/17	6/13/17	6/13/17	NS	NS	NS	6/13/17	6/13/17	NS	6/13/17	6/13/17			6/13/17					
ANALYTE (ug/L)	DW	GSi																						
Acetone	730	1,700			4.29	2.15	3.86	2.50	4.15	2.26	2.40			NS	NS	NS	4.31	5.87	NS			3.04	5.67	4.61
Methyl iodide	NC	NC												NS	NS	NS			NS					
Carbon disulfide	800	NC												NS	NS	NS			NS					
2 Butanone (MEK)	13,000	2,200			0.89								0.80	2.00	NS			0.9		NS			1.37	
Chloromethane	260	NC												NS	NS	NS			NS					
Vinyl Chloride	2.0	13												NS	NS	NS			NS				12	
Chloroethane	430	1,100												NS	NS	NS			NS				2.05	
trichlorofluoromethane	2,600	NA			0.56									NS	NS	NS			NS					
1,1-Dichloroethene	7.0	130												NS	NS	NS			NS					
Methylene Chloride	5.0	1,500												NS	NS	NS			NS					
trans-1,2-Dichloroethene	100	1,500												NS	NS	NS			NS					
1,1-Dichloroethane	880	740												NS	NS	NS			NS					
cis-1,2-Dichloroethene	70	620												NS	NS	NS			NS					
Tetrahydrofuran	95	11,000												NS	NS	NS			NS					
Chloroform	80	350						1.00						NS	NS	NS			NS					
1,1,1-Trichloroethane	200	89												NS	NS	NS			NS					
4-Methyl-2-pentanone (MIBK)	1800	ID								0.15				NS	NS	NS			NS					
2-Hexanone	1000	ID												NS	NS	NS			NS					
Carbontetrachloride	5.0	45												NS	NS	NS			NS					
Benzene	5.0	200												NS	NS	NS			NS					
Bromodichloromethane	80.0	NC					0.55							NS	NS	NS			NS					
Trichloroethene	5.0	200			0.97	0.74								NS	NS	NS			NS					
Toluene	790	270												NS	NS	NS			NS					
Tetrachloroethene	5.0	60							29.00					NS	NS	NS			NS					
Chlorobenzene	100	25												NS	NS	NS			NS					
Styrene	100	80												NS	NS	NS			NS					
Ethylbenzene	74	18												NS	NS	NS			NS					
Total Xylenes	280	41												NS	NS	NS			NS					
1,2 -Dichlorobenzene	600	13												NS	NS	NS			NS					
1,2,4-Trimethylbenzene	63	17												NS	NS	NS			NS					
1,2,3-Trimethylbenzene	NC	NC												NS	NS	NS			NS					
Naphthalene	520	11												NS	NS	NS			NS					
2-Methylnaphthalene	280	19												NS	NS	NS			NS					
Diethyl ether	10 (E)	ID												NS	NS	NS			NS					
tert-Methyl butyl ether (MTBE)	40 (E)	7,100 (X)												NS	NS	NS			NS					
Acrylonitrile	2.6	2.0 (M); 1.2												NS	NS	NS			NS					
Dichlorodifluoromethane	1,700	ID												NS	NS	NS			NS					
Bromomethane	10	35												NS	NS	NS			NS					
1,2-Dichloroethane	5.0 (A)	360 (X)												NS	NS	NS			NS					
Trichloroethane	5.0 (A)	200 (X)												NS	NS	NS			NS					
1,2-Dichloropropane	5.0 (A)	230 (X)												NS	NS	NS			NS					
cis-1,3-Dichloropropene	NC	NC												NS	NS	NS			NS					
trans-1,3-Dichloropropene	NC	NC												NS	NS	NS			NS					
1,1,2-Trichloroethane	5.0 (A)	330 (X)												NS	NS	NS			NS					
trans-1,4-Dichloro-2-butene	NC	NC												NS	NS	NS			NS					
Dibromochloromethane	80 (A,W)	ID												NS	NS	NS			NS					
1,2-Dibromoethane	NC	NC												NS	NS	NS			NS					
1,1,1,2-Tetrachloroethane	77	ID												NS	NS	NS			NS					
Isopropylbenzene	800	28												NS	NS	NS			NS					
Bromoform	80 (A,W)	ID												NS	NS	NS			NS					
1,1,2,2-Tetrachloroethane	8.5	78 (X)												NS	NS	NS			NS					
1,2,3-Trichloropropane	42	NA												NS	NS	NS			NS					
n-Propylbenzene	80	ID												NS	NS	NS			NS					
Bromobenzene	18	NA												NS	NS	NS			NS					
1,3,5-Trimethylbenzene	72 (E)	45												NS	NS	NS			NS					
tert-Butylbenzene	80	ID												NS	NS	NS			NS					
1,2,4-Trimethylbenzene	63 (E)	17												NS	NS	NS			NS					
1,2,3-Trichlorobenzene	NC	NC												NS	NS	NS			NS					
n-Butylbenzene	NC	NC												NS	NS	NS			NS					

NOTES:

Blank cells indicate no detectable concentrations	Blank cells indicate no detectable concentrations
X	Exceeds DW criteria
X	Exceeds GSI criteria
X	Exceeds both DW and GSI criteria
X	Compound also found in associated method blank, suggesting a laboratory artifact.
NC	Insufficient data to develop criterion/no criterion
G	Groundwater to Surface Water Interface Criteria - calculated based on 257ppm total hardness in the Flint River

Table 1
Groundwater Analytical Results
RACER - Flint West # 12990

ANALYTE (ug/L)	Sample ID Date Collected		MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105S	MW-106SR	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S			Dup	Dup		
			10/27/16	10/27/16	11/1/16	10/31/16	11/1/16	11/1/16	10/27/16	10/27/16	10/31/16	10/31/16	10/31/16	10/31/16	10/27/16	10/31/16	10/27/16	10/31/16	10/27/16	10/31/16		
	DW	GSI																				
Arsenic (dissolved)	10	10			1.63			1.23		0.79	15			6	108	4			34			
Arsenic	10	10	1.69	0.7	4			6	0.93	1.05	52	1.26		11	265	17			259	2		
Chromium (dissolved)	100	160	G 0.95	20	6		24	407	340	0.18	0.56			0.41	2.41	2.86			0.59	0.64		
Chromium (total)	100	160	G 10	63	8	0.059	146	6540	619	19	1.31	0.62		2	9	22			6	1.38		
Chromium VI (dissolved)	100	160											14									
Chromium VI (total)	100	160																				
Copper (dissolved)	1000	20	G 0.91	4.31	2.20	0.99	2.22	31	32	1.25		6		6	6				3	0.86		
Copper	1000	20	G 5	18	1.41	1.1	4.16	203	64	2.46		6	1.85	6	10	2.94			6	1.63		
Lead (dissolved)	4	44	G 0.144	0.148	0.97	0.116		0.85	0.451			0.151	0.075	0.978	1.651				0.191	0.361		
Lead	4	44	G 2.32	0.895	1.33	0.306		3.00	0.632	0.35	0.161	0.479	0.523	1.3	5	2.855			3.000	0.928		
Selenium (dissolved)	50	5																				
Selenium	50	5																				
Selenium (dissolved)	2400	260	G 20.6	2.28	5	4.19		390	2.89	10	2.36	3.46		8	16	2.05			10	6		
Zinc (dissolved)	2400	260	G 12	5	6	2.35		1380	2	11		3.59	2.3	7	32	9			21	6		
	Sample ID		MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105S	MW-106SR	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S	Trip Blank	Field Blank	Dup	Trip Blank	Field Blank	Dup
	Date Collected		10/27/16	10/27/16	11/1/16	10/31/16	11/1/16	11/1/16	10/27/16	10/27/16	10/31/16	10/31/16	10/31/16	10/31/16	10/27/16	10/31/16	10/27/16	10/27/16	10/27/16	10/31/16	10/31/16	10/31/16
	DW	GSI																				
Acetone	730	1,700													10							
Methyl Iodide	NC	NC																				
Carbon disulfide	800	NC																				
2 Butanone (MEK)	13,000	2,200																				
Chloromethane	260	NC																				
Vinyl Chloride	2.0	13									8			72	2						2	
Chloroethane	430	1,100													3						3	
1,1,1-Trichloroethane	2,600	NA																				
1,1-Dichloroethane	7.0	130										3		4								
Methylene Chloride	5.0	1,500																				
trans-1,2-Dichloroethane	100	1,500																				
1,1-Dichloroethane	880	740										2		2								
cis-1,2-Dichloroethane	70	620								2		32		10	2	11					2	
Tetrahydrofuran	95	11,000																				
Chloroform	80	350				1					3											2
1,1,1-Trichloroethane	200	89																				
4-Methyl-2-pentanone (MIBK)	1800	ID																				
2-Hexanone	1000	ID																				
Carbontetrachloride	5.0	45									2											1
Benzene	5.0	200																				
Bromodichloromethane	80.0	NC																				
Trichloroethane	5.0	200	3	2						3		119		41	3	50					2	
Toluene	790	270																				
Tetrachloroethane	5.0	60						34														
Chlorobenzene	100	25																				
Styrene	100	80																				
Ethylbenzene	74	18																				
Total Xylenes	280	41																				
1,2-Dichlorobenzene	600	13																				
1,2,4-Trimethylbenzene	63	17																				
1,2,3-Trimethylbenzene	NC	NC																				
Naphthalene	520	11																				
2-Methylnaphthalene	260	19																				
Diethyl ether	10 (E)	ID																				
tert-Methyl butyl ether (MTBE)	40 (E)	7,100 (X)																				
Acrylonitrile	2.6	2.0 (M); 1.2																				
Dichlorodifluoromethane	1,700	ID																				
Bromomethane	10	35																				
1,2-Dichloroethane	5.0 (A)	360 (X)																				
Trichloroethane	5.0 (A)	200 (X)																				
1,2-Dichloropropane	5.0 (A)	230 (X)																				
cis-1,3-Dichloropropene	NC	NC																				
trans-1,3-Dichloropropene	NC	NC																				
1,1,2-Trichloroethane	5.0 (A)	330 (X)																				
trans-1,4-Dichloro-2-butene	NC	NC																				
Dibromochloromethane	80 (A,W)	ID																				
1,2-Dibromoethane	NC	NC																				
1,1,1,2-Tetrachloroethane	77	ID																				
Isopropylbenzene	800	28																				
Bromoform	80 (A,W)	ID																				
1,1,2,2-Tetrachloroethane	8.5	78 (X)																				
1,2,3-Trichloropropane	42	NA																				
n-Propylbenzene	80	ID																				
Bromobenzene	18	NA																				
1,3,5-Trimethylbenzene	72 (E)	45																				
tert-Butylbenzene	80	ID																				
1,2,4-Trimethylbenzene	63 (E)	17																				
1,2,3-Trichlorobenzene	NC	NC																				

NOTES:

Blank cells	indicate no detectable concentrations
X	Exceeds DW criteria
X	Exceeds GSI criteria
X	Exceeds both DW and GSI criteria
NC	Insufficient data to develop criterion/no criterion
G	Groundwater to Surface Water Interface Criteria - calculated based on 257ppm total hardness in the Flint River
NS	No Sample
1	Filtered in lab
2	Filtered and preserved in lab
NA	Not analyzed due to turbidity

Detected Concentrations for compounds also found in the method blank that appear to be laboratory artifacts are not provided.

Table 1
GROUNDWATER ANALYTICAL DATA
RACER - Flint West #12990

Sample ID	MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105S	MW-106SR	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S	Trip Blank	Field Blank
Date Collected	DRY	10/26/15	10/26/15	10/27/15	10/26/15	10/26/15	10/26/15	10/26/15	10/26/15	10/27/15	10/27/15	10/27/15	10/26/15	10/27/15	10/26/15	10/26/15
ANALYTE (ug/L)	DW	GSI														
Arsenic (dissolved)	10	10		4							3.31	0.51	4	1.09		
Arsenic	10	10	DRY	4.3	20	140	13.6	70	53	68	18.4	40	30	60	235	30
Chromium (dissolved)	100	160	G	2.39	7.1	0.51		23	128		0.67	0.5	0.66	4.35	0.57	0.76
Chromium	100	160	G	49.1	90	120	10,000	16.2	446,000	29.5	70	70	16.4	1,140	150	220
Copper (dissolved)	1000	20	G	DRY			1.04	1.89	1.5	4.88	2.28	7.11	12	2.85	115	3.13
Copper	1000	20	G	14.42	37.44	160	210	820	2,760	70	90	90	90	70	200	80
Lead (dissolved)	4	44	G	DRY			1.57		1.11						1.27	
Lead	4	44	G	7.61	20.45	80	29.78	180	300	16.86	90	70	20.3	40	100	50
Selenium (dissolved)	50	5	DRY		1.3		1.9	9.9	4.6	2.2	1.4	2	1.2		102	
Selenium	50	5	DRY	12	16		15	17					16			
Zinc (dissolved)	2400	260	G	35	111	12	42	24	22	17	16	15	19	34	101	84
Zinc	2400	260	G	40.3	100	410	160	800	1,600	110	350	230	70	140	450	170

Sample ID	MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105S	MW-106SR	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S	Trip Blank	Field Blank
Date Collected	DRY	10/26/15	10/26/15	10/27/15	10/26/15	10/26/15	10/26/15	10/26/15	10/26/15	10/26/15	10/27/15	10/27/15	10/27/15	10/26/15	10/27/15	10/26/15
ANALYTE (ug/L)	DW	GSI														
Acetone	730	1,700	DRY													
Methyl iodide	NC	NC	DRY													
Carbon disulfide	800	NC	DRY													
2 Butanone (MEK)	13,000	2,200	DRY		1.74										0.82	0.79
Chloromethane	260	NC	DRY													
Vinyl Chloride	2.0	13	DRY							20		97				
Chloroethane	430	1,100	DRY													
trichlorofluoromethane	2,600	NA	DRY													
1,1-Dichloroethene	7.0	130	DRY							5.3		4	0.76			
Methylene Chloride	5.0	1,500	DRY													
trans-1,2-Dichloroethene	100	1,500	DRY									1		0.27		
1,1-Dichloroethane	880	740	DRY								3.3	2		1		
cis-1,2-Dichloroethene	70	620	DRY					0.42	0.66	80		42	1	23		
Tetrahydrofuran	95	11,000	DRY													
Chloroform	80	350	DRY			2				3						
1,1,1-Trichloroethane	200	89	DRY									0.33		0.45		
4-Methyl-2-pentanone (MIBK)	1800	1000000000	DRY											1.09		
2-Hexanone	1000	1000000000	DRY											1.64		
Carbontetrachloride	5.0	45	DRY								3					
Benzene	5.0	200	DRY		0.21		0.26	0.22						0.2		
Bromodichloromethane	80.0	NC	DRY			0.65										
Trichloroethene	5.0	200	DRY	3	0.68	0.68		2	0.33	200		92		67		
Toluene	790	270	DRY				0.58	0.4	0.31				0.37			
Tetrachloroethene	5.0	60	DRY				58									
Chlorobenzene	100	25	DRY													
Styrene	100	80	DRY													
Ethylbenzene	74	18	DRY													
Total Xylenes	280	41	DRY													
1,2 -Dichlorobenzene	600	13	DRY													
1,2,4-Trimethylbenzene	63	17	DRY													
1,2,3-Trimethylbenzene	NC	NC	DRY													
Naphthalene	520	11	DRY													
2-Methylnaphthalene	260	19	DRY													

NOTES:

	Blank cells indicate no detectable concentrations
X	Exceeds DW criteria
X	Exceeds GSI criteria
X	Exceeds both DW and GSI criteria
X	Compound also found in associated method blank, suggesting a laboratory artifact.
NC	Insufficient data to develop criterion/no criterion
G	Groundwater to Surface Water Interface Criteria - calculated based on 257ppm total hardness in the Flint River

Table 1
GROUNDWATER ANALYTICAL DATA
RACER - Flint West #12990

	Sample ID	MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105S	MW-106SR	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S	Dup1	Dup2
	Date Collected	DRY	4/28/15	4/28/15	4/30/15	4/28/15	4/28/15	4/28/15	4/28/15	4/30/15	4/30/15	4/30/15	4/30/15	4/28/15	4/30/15	4/28/15	4/30/15
ANALYTE (ug/L)	DW	GSI															
Arsenic (dissolved)	10	10			6									16			6
Arsenic	10	10		4	23			5				2	6	277	6		20
Chromium (dissolved)	100	160	G		22		5	8									10
Chromium	100	160	G	17	24		1590	829	58300				29	9	73	16	
Copper (dissolved)	1000	20	G														
Copper	1000	20	G	31	9	40	13	306						14	12		
Lead (dissolved)	4	44	G														
Lead	4	44	G	24				26					9	11			
Selenium (dissolved)	50	5					9										
Selenium	50	5					9										
Zinc (dissolved)	2400	260	G	9		8		120		6			9	39	22	11	
Zinc	2400	260	G	9		8		133		6			9	39	22	11	
Final Field Turbidity Reading, before filtering stated in ug/L			785E+3	432E+3	595E+3	1010E+3	1105E+3	1694E+3	479E+3	453E+3	505E+3	585E+3	617E+3	829E+3	729E+3		
	Sample ID	MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105SR	MW-106S	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S	Dup1	Dup2
	Date Collected	DRY	4/28/15	4/28/15	4/30/15	4/28/15	4/28/15	4/28/15	4/28/15	4/30/15	4/30/15	4/30/15	4/30/15	4/28/15	4/30/15	4/28/15	4/30/15
ANALYTE (ug/L)	DW	GSI															
PNA	varies	varies															

	Sample ID	MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105SR	MW-106S	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S	Dup1	Dup2
	Date Collected	DRY	4/28/15	4/28/15	4/30/15	4/28/15	4/28/15	4/28/15	4/28/15	4/30/15	4/30/15	4/30/15	4/30/15	4/28/15	4/30/15	4/28/15	4/30/15
ANALYTE (ug/L)	DW	GSI															
Acetone	730	1,700												10			
Methyl iodide	NC	NC															
Carbon disulfide	800	NC						0.17						0.16			
2 Butanone (MEK)	13,000	2,200												6.6			
Chloromethane	260	NC	4	6	2	6	5	5	4	4	4	5	5	4	2		3
Vinyl Chloride	2.0	13							0.6		21		4	4	2		
Chloroethane	430	1,100			0.7									5			0.77
trichlorofluoromethane	2,600	NA															
1,1-Dichloroethene	7.0	130									4		0.88				
Methylene Chloride	5.0	1,500															
trans-1,2-Dichloroethene	100	1,500									1		0.99		0.26		
1,1-Dichloroethane	880	740							0.56		2		2	0.52	3		
cis-1,2-Dichloroethene	70	620							2		51		48	0.66	19		
Tetrahydrofuran	95	11,000															
Chloroform	80	350				1		0.7		1	0.28		0.29	0.21	0.19		
1,1,1-Trichloroethane	200	89									0.51		0.36				
4-Methyl-2-pentanone (MIBK)	1800	1E+09												1			
2-Hexanone	1000	1E+09												3			
Carbontetrachloride	5.0	45								2							
Benzene	5.0	200	0.26		0.23												0.25
Bromodichloromethane	80.0	NC															
Trichloroethene	5.0	200	2	0.51					2		138		78	0.62	36		
Toluene	790	270	0.71					0.18									
Tetrachloroethene	5.0	60						69									
Chlorobenzene	100	25															0.17
Styrene	100	80			0.15												0.21
Ethylbenzene	?	?															
Total Xylenes	280	41															
1,2-Dichlorobenzene	?	?															
1,2,4-Trimethylbenzene	63	17															
1,2,3-Trimethylbenzene	NC	NC															
Naphthalene	520	11															
2-Methylnaphthalene	260	19															

NOTES:

	Blank cells indicate no detectable concentrations
X	Exceeds DW criteria
X	Exceeds GSI criteria
X	Exceeds both DW and GSI criteria
X	Compound also found in associated method blank, suggesting a laboratory artifact.
NC	Insufficient data to develop criterion/no criterion
G	Groundwater to Surface Water Interface Criteria - calculated based on 257ppm total hardness in the Flint River

Table 1
GROUNDWATER ANALYTICAL DATA
RACER - Flint West #12990

ANALYTE (ug/L)	Sample ID		MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105S	MW-106SR	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S	Dup1	Dup2	
	Date Collected		12/22/14	12/22/14	11/18/14	12/22/14	11/18/14	11/18/14	11/18/14	11/18/14	11/20/14	11/20/14	11/18/14	11/20/14	11/18/14	11/20/14	11/18/14	11/20/14	
	DW	GSI																	
Arsenic (dissolved)	10	10	na										17		20				
Arsenic	10	10	29	4	12	na	12	42	13	2	5	16	55	9	400	40	11.00	5.00	
Cadmium (dissolved)	5	5	GX	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	
Cadmium	5	5	GX	6.90	na	na	na	na	na	na	na	na	na	na	na	na	na	na	
Chromium (dissolved)	100	160	G	na	na	7	na	9	6	15			7	7			10		
Chromium	100	160	GX	na	na	62	na	17,800	42,600	68,000	14	19	16	69	237	140	822	14,000	11
Copper (dissolved)	1,000	20	G	na			na												
Copper	1,000	20	GX	230	32	22	na	716	802	402	29	31	26	736	22	502	300	583	21
Lead (dissolved)	4	44	G	na			na												
Lead	4	44	GX	70	21	14	na	6	29	44	6	15	32	249	20	354	289	5	23
Selenium (dissolved)	50	5		na			na	14	5										
Selenium	50	5		na			na	16	5									6	
Zinc (dissolved)	2,400	260	G	na	66		na	28	15	9	13	11	25	34	9	23	36	43	
Zinc	2,400	260	GX	493	74	33	na	29	52	210	27	222	47	556	36	920	504	23	75

ANALYTE (ug/L)	Sample ID		MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105S	MW-106SR	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S	Dup1	Dup2
	Date Collected		12/22/14	12/22/14	11/18/14	12/22/14	11/18/14	11/18/14	11/18/14	11/18/14	11/20/14	11/20/14	11/18/14	11/20/14	11/18/14	11/20/14		
	DW	GSI																
Acetone	730	1,700		1.83	2.77	na									42			
Methyl iodide	NC	NC				na												
Carbon disulfide	800	NC		0.29		na	0.70											
2 Butanone (MEK)	13,000	2,200		0.55		na									24			
Chloromethane	260	NC				na	0.27	0.35		0.33		0.53	0.58	0.88		0.48	0.58	
Vinyl Chloride	2.0	13				na				0.58		12			3			
Chloroethane	430	1,100				na									0.88			
trichlorofluoromethane	2,600	NA				na												
1,1-Dichloroethene	7.0	130				na						5						
Methylene Chloride	5.0	1,500				na												
trans-1,2-Dichloroethene	100	1,500				na						0.9						
1,1-Dichloroethane	880	740				na				0.71		1		0.76	0.47			
cis-1,2-Dichloroethene	70	620		1		na				2	0.57	45		1	3	9		0.56
Tetrahydrofuran	95	11,000				na												
Chloroform	80	350				na	3				2	0.18					3	2
1,1,1-Trichloroethane	200	89				na						0.37				0.29		
4-Methyl-2-pentanone (MIBK)	1800	1000000000				na									3.88			
2-Hexanone	1000	1000000000				na									12			
Carbontetrachloride	5.0	45				na					2							2
Benzene	5.0	200				na						0.12		0.29				
Bromodichloromethane	80.0	NC				na	0.54										0.46	
Trichloroethene	5.0	200		2	4	0.36	na			5		160		7		61	0.3	
Toluene	790	270				na							0.22		0.51			
Tetrachloroethene	5.0	60		0.23		na		73				0.2				0.20		
Chlorobenzene	100	25				na												
Styrene	100	80				na												
Ethylbenzene	74	18				na									0.17			
Total Xylenes	280	41				na												
1,2 -Dichlorobenzene	600	13				na												
1,2,4-Trimethylbenzene	63	17				na												
1,2,3-Trimethylbenzene	NC	NC				na												
Naphthalene	520	11				na												
2-Methylnaphthalene	260	19				na												

NOTES:

	Blank cells indicate no detectable concentrations
X	Exceeds DW criteria
X	Exceeds GSI criteria G =
X	Exceeds both DW and GSI criteria
X	Compound also found in associated method blank, suggesting a laboratory artifact.
NC	Insufficient data to develop criterion/no criterion
G	Groundwater to Surface Water Interface Criteria - calculated based on 257ppm total hardness in the Flint River
na	Sample not analyzed for this constituent

Table 1
GROUNDWATER ANALYTICAL DATA
RACER - Flint West #12990

	Sample ID	MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105S	MW-106SR	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S	Dup1	Dup2	Dup3
	Date Collected	6/25/14	6/25/14	6/25/14	6/26/14	6/25/14	6/26/14	6/25/14	6/25/14	6/26/14	6/26/14	6/26/14	6/26/14	6/25/14	6/26/14			
ANALYTE (ug/L)	DW	GSI																
Arsenic (dissolved)	10	10												19				
Chromium (dissolved)	100	160	G		51										152			
Copper (dissolved)	1,000	20	G												4			
Lead (dissolved)	4	44	G			25	22	23				15			5			
Selenium (dissolved)	50	5			66		8			6								
Zinc (dissolved)	2,400	260	G	5	11		10			5	7			8	13			

	Sample ID	MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105SR	MW-106S	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S	Dup1	Dup2	Dup3
	Date Collected	6/25/14	6/25/14	6/25/14	6/26/14	6/25/14	6/26/14	6/25/14	6/25/14	6/26/14	6/26/14	6/26/14	6/26/14	6/25/14	6/26/14			
ANALYTE (ug/L)	DW	GSI																
Acetone	730	1,700	1.74	1.45	2.04	2.67	1.55	1.86	1.59	2.82	1.32	1.47	1.29	1.48	4.93	1.32		
Methyl iodide	NC	NC																
Carbon disulfide	800	NC												0.42	0.36			
2 Butanone (MEK)	13,000	2,200							0.4	0.65	0.29		0.29	1.99				
Chloromethane	260	NC	0.32			0.34									0.29			
Vinyl Chloride	2.0	13									10			21	2			
Chloroethane	430	1,100												2.9				
trichlorofluoromethane	2,600	NA																
1,1-Dichloroethene	7.0	130										4		2.00	0.39			
Methylene Chloride	5.0	1,500																
trans-1,2-Dichloroethene	100	1,500									0.7			0.64	0.24			
1,1-Dichloroethane	880	740												1.00	3.00			
cis-1,2-Dichloroethene	70	620	0.62									3		7	59			
Tetrahydrofuran	95	11,000										70.0						
Chloroform	80	350				5.00		0.22		0.5	0.37				0.320			
1,1,1-Trichloroethane	200	89									0.50				1.00			
4-Methyl-2-pentanone (M)	1800	1000000000												0.83				
2-Hexanone	1000	1000000000												1.46				
Carbontetrachloride	5.0	45									2							
Benzene	5.0	200																
Bromodichloromethane	80.0	NC				0.82												
Trichloroethene	5.0	200	5	1	3		26		2		104		2	24	69			
Toluene	790	270																
Tetrachloroethene	5.0	60																
Chlorobenzene	100	25																
Styrene	100	80																
Ethylbenzene	74	18																
Total Xylenes	280	41																
1,2-Dichlorobenzene	600	13																
1,2,4-Trimethylbenzene	63	17																
1,2,3-Trimethylbenzene	NC	NC																
Naphthalene	520	11																
2-Methylnaphthalene	260	19																

NOTES:

	Blank cells indicate no detectable concentrations
X	Exceeds DW criteria
X	Exceeds GSI criteria G
X	Exceeds both DW and GSI criteria
X	Compound also found in associated method blank, suggesting a laboratory artifact.
NC	Insufficient data to develop criterion/no criterion
G	Groundwater to Surface Water Interface Criteria - calculated based on 257ppm total hardness in the Flint River

Table 1
GROUNDWATER ANALYTICAL DATA
RACER - Flint West #12990

ANALYTE (ug/L)	Sample ID		MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105S	MW-106SR	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S	SB124-TWT	SB125-TWT	SB127-TWT	SB129-TWT	SB130-TWT	SB131-TWT	SB124-TWB	SB125-TWB	SB127-TWB	SB129-TWB	SB130-TWB	SB131-TWB	Dup1	Dup2	Dup3
	Date Collected	DW	GSI	4/3/14	4/3/14	3/29/14	4/3/14	4/3/14	4/3/14	4/3/14	3/29/14	3/29/14	3/29/14	3/29/14	4/3/14	3/29/14	4/22/14	4/22/14	4/22/14	4/22/14	4/22/14	4/22/14	4/22/14	4/22/14	4/22/14	4/22/14	4/22/14	4/22/14	3/29/14		
Arsenic (dissolved)	10	10			11				4				21		19			17	57		4	3	2	3	30	38					
Chromium (dissolved)	100	160	G		35		22	18					7	12		128				147	64	25	16		17	89	19	33	14		
Copper (dissolved)	1,000	20	G										28						5	22	140	28	42			12	24	94	144		
Lead (dissolved)	4	44	G										24						5	23	208	16	47	1	19	11	31	14			
Selenium (dissolved)	50	5						6	5		5					12					4		12			5	3				
Zinc (dissolved)	2,400	260	G	97		23	5		62	5	16	18	81	21	9	24	311	167	82	323	326	103	241	400	166	68	241	191	12		

ANALYTE (ug/L)	Sample ID		MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105SR	MW-106S	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S	SB124-TWT	SB125-TWT	SB127-TWT	SB129-TWT	SB130-TWT	SB131-TWT	SB124-TWB	SB125-TWB	SB127-TWB	SB129-TWB	SB130-TWB	SB131-TWB	Dup1	Dup2	Dup3					
	Date Collected	DW	GSI																																	
Acetone	730	1,700		1.13	2.36		0.88	1.82	3.58	3.82		1.22	2.11	0.72	5.17	0.93	5.7			9.1	5.7				10.3	66	25.8	5.9		5.8	1.06					
Methyl iodide	NC	NC																																		
Carbon disulfide	800	NC																						0.86	0.4											
2 Butanone (MEK)	13,000	2,200		0.73	0.86		0.41	0.83	0.78	0.94					2.98									11.6	8.6											
Chloromethane	260	NC																					0.33		0.61											
Vinyl Chloride	2.0	13								0.64																		2	4							
Chloroethane	430	1,100													0.6	1.13																				
trichlorofluoromethane	2,600	NA																																		
1,1-Dichloroethene	7.0	130										4		1	0.40															1						
Methylene Chloride	5.0	1,500																																		
trans-1,2-Dichloroethene	100	1,500																											0.28	0.26						
1,1-Dichloroethane	880	740								0.21																			2.00	2.00						
cis-1,2-Dichloroethene	70	620								3																			0.36	0.93	3.00	21.00	43.00			
Tetrahydrofuran	95	11,000																																		
Chloroform	80	350					3.00				0.35	0.35		0.29										0.042					0.41	0.29						
1,1,1-Trichloroethane	200	89										0.48		0.75									0.72					0.71	0.73							
4-Methyl-2-pentanone (M)	1800	1000000000													0.67										0.590	2.190										
2-Hexanone	1000	1000000000																						0.210	2.170	4.570										
Carbontetrachloride	5.0	45									2																									
Benzene	5.0	200									0.25																									
Bromodichloromethane	80.0	NC					0.89																													
Trichloroethene	5.0	200		3	2																															
Toluene	790	270																																		
Tetrachloroethene	5.0	60																																		
Chlorobenzene	100	25																																		
Styrene	100	80																																		
Ethylbenzene	74	18																																		
Total Xylenes	280	41																																		
1,2 -Dichlorobenzene	600	13																																		
1,2,4-Trimethylbenzene	63	17																																		
1,2,3-Trimethylbenzene	NC	NC																																		
Naphthalene	520	11																																		
2-Methylnaphthalene	260	19																																		

NOTES:

Blank cells indicate no detectable concentrations

X Exceeds DW criteria

X Exceeds GSI criteria G

X Exceeds both DW and GSI criteria

X Compound also found in associated method blank, suggesting a laboratory artifact.

NC Insufficient data to develop criterion/no criterion

G Groundwater to Surface Water Interface Criteria - calculated based on 257ppm total hardness in the Flint River



Analytical Laboratory Report

Report ID: S46506.01(01)
Generated on 04/04/2023

Report to

Attention: Rodney Abke
Applied Ecosystems
G4300 S. Saginaw Street
Burton, MI 48529

Phone: 810-715-2525 FAX:
Email: rabke@appliedecosystems.com

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

Report Summary

Lab Sample ID(s): S46506.01-S46506.07
Project: RACER Flint West #12990
Collected Date(s): 03/21/2023
Submitted Date/Time: 03/21/2023 15:20
Sampled by: Unknown
P.O. #: 795930

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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).

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

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

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

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

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

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

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

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

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

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

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

Report Narrative

There is no additional narrative for this analytical report



Analytical Laboratory Report

Laboratory Certifications

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

Qualifier Descriptions

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

Glossary of Abbreviations

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



Analytical Laboratory Report

Method Summary

Method	Version
E200.8	EPA Method 200.8 Revision 5.4
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



Analytical Laboratory Report

Sample Summary (7 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S46506.01	Field Blank	Groundwater	03/21/23 09:35
S46506.02	MW 104S	Groundwater	03/21/23 10:05
S46506.03	MW 112S	Groundwater	03/21/23 11:20
S46506.04	MW-110S	Groundwater	03/21/23 12:23
S46506.05	MW-114S	Groundwater	03/21/23 13:18
S46506.06	MW-108S	Groundwater	03/21/23 14:03
S46506.07	Dupe	Groundwater	03/21/23 00:01



Analytical Laboratory Report

Lab Sample ID: S46506.01

Sample Tag: Field Blank

Collected Date/Time: 03/21/2023 09:35

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	250ml Plastic	None	Yes	5.6	IR
3	40ml Glass	HCL	Yes	5.6	IR
1	125ml Plastic	HNO3	Yes	5.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/27/23 11:44	ASW	
Metal Digestion	Completed	SW3015A	03/24/23 10:15	CCM	f
Metal Digestion	Completed	SW3015A	03/24/23 10:15	CCM	

Inorganics

Method: SM3500-Cr B, Run Date: 03/21/23 17:05, Analyst: JKB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chromium VI, Dissolved	Not detected	0.01	0.004	mg/L	1	18540-29-9	c

Method: SM3500-Cr B, Run Date: 03/21/23 16:20, Analyst: JKB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chromium VI	Not detected	0.01	0.004	mg/L	1	18540-29-9	

Metals

Method: E200.8, Run Date: 03/24/23 11:44, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	Not detected	0.002	0.000102	mg/L	2	7440-38-2	
Chromium	0.000107	0.005	0.0000386	mg/L	2	7440-47-3	b
Copper	Not detected	0.005	0.000150	mg/L	2	7440-50-8	
Lead	Not detected	0.003	0.0000760	mg/L	2	7439-92-1	
Selenium	Not detected	0.005	0.000838	mg/L	2	7782-49-2	
Zinc	0.000757	0.005	0.000292	mg/L	2	7440-66-6	b

Method: E200.8, Run Date: 03/24/23 11:45, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic, Dissolved	Not detected	0.002	0.000102	mg/L	2	7440-38-2	f
Chromium, Dissolved	Not detected	0.005	0.0000386	mg/L	2	7440-47-3	f
Copper, Dissolved	0.000160	0.005	0.000150	mg/L	2	7440-50-8	bf
Lead, Dissolved	Not detected	0.003	0.0000760	mg/L	2	7439-92-1	f
Selenium, Dissolved	Not detected	0.005	0.000838	mg/L	2	7782-49-2	f
Zinc, Dissolved	0.000671	0.005	0.000292	mg/L	2	7440-66-6	bf

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/24/23 15:13, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10	0.27	ug/L	1	60-29-7	
Acetone	11.4	50	4.0	ug/L	1	67-64-1	J

f-Filtered and preserved in lab

c-Filtered in lab

b-Value detected less than reporting limit, but greater than MDL

J-Estimated value less than reporting limit, but greater than MDL



Analytical Laboratory Report

Lab Sample ID: S46506.01 (continued)

Sample Tag: Field Blank

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/24/23 15:13, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Methyl iodide	Not detected	1	0.24	ug/L	1	74-88-4	
Carbon disulfide	Not detected	5	0.13	ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5	0.25	ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2	0.38	ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25	3.3	ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5	0.57	ug/L	1	75-71-8	
Chloromethane	Not detected	5	0.20	ug/L	1	74-87-3	
Vinyl chloride	Not detected	1	0.24	ug/L	1	75-01-4	
Bromomethane	Not detected	5	0.18	ug/L	1	74-83-9	
Chloroethane	Not detected	5	0.21	ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1	0.28	ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1	0.27	ug/L	1	75-35-4	
Methylene chloride	Not detected	5	0.16	ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1	0.14	ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1	0.15	ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1	0.21	ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90	1.2	ug/L	1	109-99-9	
Chloroform	Not detected	1	0.15	ug/L	1	67-66-3	
Bromochloromethane	Not detected	1	0.36	ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1	0.27	ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50	0.35	ug/L	1	108-10-1	
2-Hexanone	Not detected	50	0.19	ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1	0.19	ug/L	1	56-23-5	
Benzene	Not detected	1	0.11	ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1	0.17	ug/L	1	107-06-2	
Trichloroethene	Not detected	1	0.29	ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1	0.18	ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1	0.19	ug/L	1	75-27-4	
Dibromomethane	Not detected	5	0.45	ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1	0.17	ug/L	1	10061-01-5	
Toluene	Not detected	1	0.17	ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1	0.20	ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1	0.34	ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1	0.13	ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1	0.26	ug/L	1	110-57-6	
Dibromochloromethane	Not detected	5	0.20	ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1	0.12	ug/L	1	106-93-4	
Chlorobenzene	Not detected	1	0.16	ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1	0.22	ug/L	1	630-20-6	
Ethylbenzene	Not detected	1	0.10	ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2	0.42	ug/L	1		
o-Xylene	Not detected	1	0.16	ug/L	1	95-47-6	
Styrene	Not detected	1	0.13	ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5	0.12	ug/L	1	98-82-8	
Bromoform	Not detected	1	0.35	ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1	0.27	ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1	0.54	ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1	0.12	ug/L	1	103-65-1	
Bromobenzene	Not detected	1	0.15	ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1	0.18	ug/L	1	108-67-8	



Analytical Laboratory Report

Lab Sample ID: S46506.01 (continued)

Sample Tag: Field Blank

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/24/23 15:13, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
tert-Butylbenzene	Not detected	1	0.14	ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1	0.16	ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1	0.16	ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5	0.19	ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1	0.20	ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1	0.18	ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1	0.13	ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1	0.14	ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1	0.17	ug/L	1	104-51-8	
Hexachloroethane	Not detected	5	0.35	ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5	0.48	ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5	0.24	ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5	0.25	ug/L	1	87-61-6	
Naphthalene	Not detected	5	0.18	ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5	0.21	ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S46506.02

Sample Tag: MW 104S

Collected Date/Time: 03/21/2023 10:05

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	250ml Plastic	None	Yes	5.6	IR
3	40ml Glass	HCL	Yes	5.6	IR
1	125ml Plastic	HNO3	Yes	5.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/27/23 11:44	ASW	
Metal Digestion	Completed	SW3015A	03/24/23 10:15	CCM	f
Metal Digestion	Completed	SW3015A	03/24/23 10:15	CCM	

Inorganics

Method: SM3500-Cr B, Run Date: 03/21/23 17:10, Analyst: JKB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chromium VI, Dissolved	Not detected	0.01	0.004	mg/L	1	18540-29-9	c

Method: SM3500-Cr B, Run Date: 03/21/23 16:25, Analyst: JKB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chromium VI	Not detected	0.01	0.004	mg/L	1	18540-29-9	

Metals

Method: E200.8, Run Date: 03/24/23 11:50, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	0.00138	0.002	0.000255	mg/L	5	7440-38-2	b
Chromium	0.070	0.005	0.0000965	mg/L	5	7440-47-3	
Copper	0.00359	0.005	0.000377	mg/L	5	7440-50-8	b
Lead	Not detected	0.003	0.000190	mg/L	5	7439-92-1	
Selenium	0.00245	0.005	0.00209	mg/L	5	7782-49-2	b
Zinc	0.00237	0.005	0.000730	mg/L	5	7440-66-6	b

Method: E200.8, Run Date: 03/24/23 11:58, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic, Dissolved	0.00140	0.002	0.000255	mg/L	5	7440-38-2	bf
Chromium, Dissolved	0.000502	0.005	0.0000965	mg/L	5	7440-47-3	bf
Copper, Dissolved	0.00146	0.005	0.000377	mg/L	5	7440-50-8	bf
Lead, Dissolved	Not detected	0.003	0.000190	mg/L	5	7439-92-1	f
Selenium, Dissolved	Not detected	0.005	0.00209	mg/L	5	7782-49-2	f
Zinc, Dissolved	0.00187	0.005	0.000730	mg/L	5	7440-66-6	bf

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/24/23 20:19, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10	0.27	ug/L	1	60-29-7	
Acetone	Not detected	50	4.0	ug/L	1	67-64-1	

f-Filtered and preserved in lab

c-Filtered in lab

b-Value detected less than reporting limit, but greater than MDL



Analytical Laboratory Report

Lab Sample ID: S46506.02 (continued)

Sample Tag: MW 104S

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/24/23 20:19, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Methyl iodide	Not detected	1	0.24	ug/L	1	74-88-4	
Carbon disulfide	Not detected	5	0.13	ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5	0.25	ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2	0.38	ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25	3.3	ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5	0.57	ug/L	1	75-71-8	
Chloromethane	Not detected	5	0.20	ug/L	1	74-87-3	
Vinyl chloride	Not detected	1	0.24	ug/L	1	75-01-4	
Bromomethane	Not detected	5	0.18	ug/L	1	74-83-9	
Chloroethane	Not detected	5	0.21	ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1	0.28	ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1	0.27	ug/L	1	75-35-4	
Methylene chloride	Not detected	5	0.16	ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1	0.14	ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1	0.15	ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1	0.21	ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90	1.2	ug/L	1	109-99-9	
Chloroform	0.59	1	0.15	ug/L	1	67-66-3	J
Bromochloromethane	Not detected	1	0.36	ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1	0.27	ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50	0.35	ug/L	1	108-10-1	
2-Hexanone	Not detected	50	0.19	ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1	0.19	ug/L	1	56-23-5	
Benzene	Not detected	1	0.11	ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1	0.17	ug/L	1	107-06-2	
Trichloroethene	Not detected	1	0.29	ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1	0.18	ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1	0.19	ug/L	1	75-27-4	
Dibromomethane	Not detected	5	0.45	ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1	0.17	ug/L	1	10061-01-5	
Toluene	Not detected	1	0.17	ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1	0.20	ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1	0.34	ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1	0.13	ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1	0.26	ug/L	1	110-57-6	
Dibromochloromethane	Not detected	5	0.20	ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1	0.12	ug/L	1	106-93-4	
Chlorobenzene	Not detected	1	0.16	ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1	0.22	ug/L	1	630-20-6	
Ethylbenzene	Not detected	1	0.10	ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2	0.42	ug/L	1		
o-Xylene	Not detected	1	0.16	ug/L	1	95-47-6	
Styrene	Not detected	1	0.13	ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5	0.12	ug/L	1	98-82-8	
Bromoform	Not detected	1	0.35	ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1	0.27	ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1	0.54	ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1	0.12	ug/L	1	103-65-1	
Bromobenzene	Not detected	1	0.15	ug/L	1	108-86-1	

J-Estimated value less than reporting limit, but greater than MDL



Analytical Laboratory Report

Lab Sample ID: S46506.02 (continued)

Sample Tag: MW 104S

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/24/23 20:19, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,3,5-Trimethylbenzene	Not detected	1	0.18	ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1	0.14	ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1	0.16	ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1	0.16	ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5	0.19	ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1	0.20	ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1	0.18	ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1	0.13	ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1	0.14	ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1	0.17	ug/L	1	104-51-8	
Hexachloroethane	Not detected	5	0.35	ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5	0.48	ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5	0.24	ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5	0.25	ug/L	1	87-61-6	
Naphthalene	Not detected	5	0.18	ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5	0.21	ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S46506.03

Sample Tag: MW 112S

Collected Date/Time: 03/21/2023 11:20

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	250ml Plastic	None	Yes	5.6	IR
3	40ml Glass	HCL	Yes	5.6	IR
1	125ml Plastic	HNO3	Yes	5.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/27/23 11:44	ASW	
Metal Digestion	Completed	SW3015A	03/24/23 10:15	CCM	f
Metal Digestion	Completed	SW3015A	03/24/23 10:15	CCM	

Inorganics

Method: SM3500-Cr B, Run Date: 03/21/23 17:15, Analyst: JKB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chromium VI, Dissolved	Not detected	0.01	0.004	mg/L	1	18540-29-9	c

Method: SM3500-Cr B, Run Date: 03/21/23 16:40, Analyst: JKB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chromium VI	Not detected	0.25	0.10	mg/L	25	18540-29-9	

Metals

Method: E200.8, Run Date: 03/24/23 12:00, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	0.040	0.002	0.000255	mg/L	5	7440-38-2	
Chromium	0.000420	0.005	0.0000965	mg/L	5	7440-47-3	b
Copper	Not detected	0.005	0.000377	mg/L	5	7440-50-8	
Lead	Not detected	0.003	0.000190	mg/L	5	7439-92-1	
Selenium	Not detected	0.005	0.00209	mg/L	5	7782-49-2	
Zinc	0.00182	0.005	0.000730	mg/L	5	7440-66-6	b

Method: E200.8, Run Date: 03/24/23 12:02, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic, Dissolved	0.015	0.002	0.000255	mg/L	5	7440-38-2	f
Chromium, Dissolved	0.000401	0.005	0.0000965	mg/L	5	7440-47-3	bf
Copper, Dissolved	Not detected	0.005	0.000377	mg/L	5	7440-50-8	f
Lead, Dissolved	Not detected	0.003	0.000190	mg/L	5	7439-92-1	f
Selenium, Dissolved	Not detected	0.005	0.00209	mg/L	5	7782-49-2	f
Zinc, Dissolved	0.00136	0.005	0.000730	mg/L	5	7440-66-6	bf

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/24/23 20:42, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10	0.27	ug/L	1	60-29-7	
Acetone	5.4	50	4.0	ug/L	1	67-64-1	J

f-Filtered and preserved in lab

c-Filtered in lab

b-Value detected less than reporting limit, but greater than MDL

J-Estimated value less than reporting limit, but greater than MDL



Analytical Laboratory Report

Lab Sample ID: S46506.03 (continued)

Sample Tag: MW 112S

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/24/23 20:42, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Methyl iodide	Not detected	1	0.24	ug/L	1	74-88-4	
Carbon disulfide	0.23	5	0.13	ug/L	1	75-15-0	JB
tert-Methyl butyl ether (MTBE)	Not detected	5	0.25	ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2	0.38	ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25	3.3	ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5	0.57	ug/L	1	75-71-8	
Chloromethane	Not detected	5	0.20	ug/L	1	74-87-3	
Vinyl chloride	0.83	1	0.24	ug/L	1	75-01-4	J
Bromomethane	Not detected	5	0.18	ug/L	1	74-83-9	
Chloroethane	Not detected	5	0.21	ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1	0.28	ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1	0.27	ug/L	1	75-35-4	
Methylene chloride	Not detected	5	0.16	ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1	0.14	ug/L	1	156-60-5	
1,1-Dichloroethane	0.35	1	0.15	ug/L	1	75-34-3	J
cis-1,2-Dichloroethene	0.78	1	0.21	ug/L	1	156-59-2	J
Tetrahydrofuran*	Not detected	90	1.2	ug/L	1	109-99-9	
Chloroform	Not detected	1	0.15	ug/L	1	67-66-3	
Bromochloromethane	Not detected	1	0.36	ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1	0.27	ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	0.55	50	0.35	ug/L	1	108-10-1	J
2-Hexanone	Not detected	50	0.19	ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1	0.19	ug/L	1	56-23-5	
Benzene	Not detected	1	0.11	ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1	0.17	ug/L	1	107-06-2	
Trichloroethene	1	1	0.29	ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1	0.18	ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1	0.19	ug/L	1	75-27-4	
Dibromomethane	Not detected	5	0.45	ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1	0.17	ug/L	1	10061-01-5	
Toluene	Not detected	1	0.17	ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1	0.20	ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1	0.34	ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1	0.13	ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1	0.26	ug/L	1	110-57-6	
Dibromochloromethane	Not detected	5	0.20	ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1	0.12	ug/L	1	106-93-4	
Chlorobenzene	Not detected	1	0.16	ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1	0.22	ug/L	1	630-20-6	
Ethylbenzene	Not detected	1	0.10	ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2	0.42	ug/L	1		
o-Xylene	Not detected	1	0.16	ug/L	1	95-47-6	
Styrene	Not detected	1	0.13	ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5	0.12	ug/L	1	98-82-8	
Bromoform	Not detected	1	0.35	ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1	0.27	ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1	0.54	ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1	0.12	ug/L	1	103-65-1	
Bromobenzene	Not detected	1	0.15	ug/L	1	108-86-1	

J-Estimated value less than reporting limit, but greater than MDL B-Compound also found in associated method blank



Analytical Laboratory Report

Lab Sample ID: S46506.03 (continued)

Sample Tag: MW 112S

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/24/23 20:42, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,3,5-Trimethylbenzene	Not detected	1	0.18	ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1	0.14	ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1	0.16	ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1	0.16	ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5	0.19	ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1	0.20	ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1	0.18	ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1	0.13	ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1	0.14	ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1	0.17	ug/L	1	104-51-8	
Hexachloroethane	Not detected	5	0.35	ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5	0.48	ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5	0.24	ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5	0.25	ug/L	1	87-61-6	
Naphthalene	Not detected	5	0.18	ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5	0.21	ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S46506.04

Sample Tag: MW-110S

Collected Date/Time: 03/21/2023 12:23

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	250ml Plastic	None	Yes	5.6	IR
3	40ml Glass	HCL	Yes	5.6	IR
1	125ml Plastic	HNO3	Yes	5.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/27/23 11:44	ASW	
Metal Digestion	Completed	SW3015A	03/24/23 10:15	CCM	f
Metal Digestion	Completed	SW3015A	03/24/23 10:15	CCM	

Inorganics

Method: SM3500-Cr B, Run Date: 03/21/23 17:20, Analyst: JKB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chromium VI, Dissolved	Not detected	0.01	0.004	mg/L	1	18540-29-9	c

Method: SM3500-Cr B, Run Date: 03/21/23 16:45, Analyst: JKB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chromium VI	Not detected	0.01	0.004	mg/L	1	18540-29-9	

Metals

Method: E200.8, Run Date: 03/24/23 12:05, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	0.002	0.002	0.000255	mg/L	5	7440-38-2	
Chromium	0.00133	0.005	0.0000965	mg/L	5	7440-47-3	b
Copper	0.00411	0.005	0.000377	mg/L	5	7440-50-8	b
Lead	0.000743	0.003	0.000190	mg/L	5	7439-92-1	b
Selenium	Not detected	0.005	0.00209	mg/L	5	7782-49-2	
Zinc	0.028	0.005	0.000730	mg/L	5	7440-66-6	

Method: E200.8, Run Date: 03/24/23 12:16, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic, Dissolved	0.00118	0.002	0.000255	mg/L	5	7440-38-2	bf
Chromium, Dissolved	0.000390	0.005	0.0000965	mg/L	5	7440-47-3	bf
Copper, Dissolved	0.00181	0.005	0.000377	mg/L	5	7440-50-8	bf
Lead, Dissolved	Not detected	0.003	0.000190	mg/L	5	7439-92-1	f
Selenium, Dissolved	Not detected	0.005	0.00209	mg/L	5	7782-49-2	f
Zinc, Dissolved	0.026	0.005	0.000730	mg/L	5	7440-66-6	f

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/24/23 21:05, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10	0.27	ug/L	1	60-29-7	
Acetone	Not detected	50	4.0	ug/L	1	67-64-1	

f-Filtered and preserved in lab

c-Filtered in lab

b-Value detected less than reporting limit, but greater than MDL



Analytical Laboratory Report

Lab Sample ID: S46506.04 (continued)

Sample Tag: MW-110S

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/24/23 21:05, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Methyl iodide	Not detected	1	0.24	ug/L	1	74-88-4	
Carbon disulfide	Not detected	5	0.13	ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5	0.25	ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2	0.38	ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25	3.3	ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5	0.57	ug/L	1	75-71-8	
Chloromethane	Not detected	5	0.20	ug/L	1	74-87-3	
Vinyl chloride	Not detected	1	0.24	ug/L	1	75-01-4	
Bromomethane	Not detected	5	0.18	ug/L	1	74-83-9	
Chloroethane	Not detected	5	0.21	ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1	0.28	ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1	0.27	ug/L	1	75-35-4	
Methylene chloride	Not detected	5	0.16	ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1	0.14	ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1	0.15	ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1	0.21	ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90	1.2	ug/L	1	109-99-9	
Chloroform	Not detected	1	0.15	ug/L	1	67-66-3	
Bromochloromethane	Not detected	1	0.36	ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1	0.27	ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50	0.35	ug/L	1	108-10-1	
2-Hexanone	Not detected	50	0.19	ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1	0.19	ug/L	1	56-23-5	
Benzene	Not detected	1	0.11	ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1	0.17	ug/L	1	107-06-2	
Trichloroethene	Not detected	1	0.29	ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1	0.18	ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1	0.19	ug/L	1	75-27-4	
Dibromomethane	Not detected	5	0.45	ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1	0.17	ug/L	1	10061-01-5	
Toluene	Not detected	1	0.17	ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1	0.20	ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1	0.34	ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1	0.13	ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1	0.26	ug/L	1	110-57-6	
Dibromochloromethane	Not detected	5	0.20	ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1	0.12	ug/L	1	106-93-4	
Chlorobenzene	Not detected	1	0.16	ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1	0.22	ug/L	1	630-20-6	
Ethylbenzene	Not detected	1	0.10	ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2	0.42	ug/L	1		
o-Xylene	Not detected	1	0.16	ug/L	1	95-47-6	
Styrene	Not detected	1	0.13	ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5	0.12	ug/L	1	98-82-8	
Bromoform	Not detected	1	0.35	ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1	0.27	ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1	0.54	ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1	0.12	ug/L	1	103-65-1	
Bromobenzene	Not detected	1	0.15	ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1	0.18	ug/L	1	108-67-8	



Analytical Laboratory Report

Lab Sample ID: S46506.04 (continued)

Sample Tag: MW-110S

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/24/23 21:05, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
tert-Butylbenzene	Not detected	1	0.14	ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1	0.16	ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1	0.16	ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5	0.19	ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1	0.20	ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1	0.18	ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1	0.13	ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1	0.14	ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1	0.17	ug/L	1	104-51-8	
Hexachloroethane	Not detected	5	0.35	ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5	0.48	ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5	0.24	ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5	0.25	ug/L	1	87-61-6	
Naphthalene	Not detected	5	0.18	ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5	0.21	ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S46506.05

Sample Tag: MW-114S

Collected Date/Time: 03/21/2023 13:18

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	250ml Plastic	None	Yes	5.6	IR
3	40ml Glass	HCL	Yes	5.6	IR
1	125ml Plastic	HNO3	Yes	5.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/27/23 11:44	ASW	
Metal Digestion	Completed	SW3015A	03/24/23 10:15	CCM	f
Metal Digestion	Completed	SW3015A	03/24/23 10:15	CCM	

Inorganics

Method: SM3500-Cr B, Run Date: 03/21/23 17:25, Analyst: JKB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chromium VI, Dissolved	Not detected	0.01	0.004	mg/L	1	18540-29-9	c

Method: SM3500-Cr B, Run Date: 03/21/23 16:50, Analyst: JKB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chromium VI	Not detected	0.01	0.004	mg/L	1	18540-29-9	

Metals

Method: E200.8, Run Date: 03/24/23 12:18, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	0.034	0.002	0.000255	mg/L	5	7440-38-2	
Chromium	0.000514	0.005	0.0000965	mg/L	5	7440-47-3	b
Copper	0.00156	0.005	0.000377	mg/L	5	7440-50-8	b
Lead	0.000213	0.003	0.000190	mg/L	5	7439-92-1	b
Selenium	Not detected	0.005	0.00209	mg/L	5	7782-49-2	
Zinc	0.008	0.005	0.000730	mg/L	5	7440-66-6	

Method: E200.8, Run Date: 03/24/23 12:19, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic, Dissolved	0.018	0.002	0.000255	mg/L	5	7440-38-2	f
Chromium, Dissolved	0.000182	0.005	0.0000965	mg/L	5	7440-47-3	bf
Copper, Dissolved	0.000379	0.005	0.000377	mg/L	5	7440-50-8	bf
Lead, Dissolved	Not detected	0.003	0.000190	mg/L	5	7439-92-1	f
Selenium, Dissolved	Not detected	0.005	0.00209	mg/L	5	7782-49-2	f
Zinc, Dissolved	0.00482	0.005	0.000730	mg/L	5	7440-66-6	bf

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/28/23 15:53, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	50	0.50	ug/L	5	60-29-7	Y

f-Filtered and preserved in lab

c-Filtered in lab

b-Value detected less than reporting limit, but greater than MDL

Y-Elevated reporting limit due to high target concentration



Analytical Laboratory Report

Lab Sample ID: S46506.05 (continued)

Sample Tag: MW-114S

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/28/23 15:53, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	250	43	ug/L	5	67-64-1	Y
Methyl iodide	Not detected	5	0.15	ug/L	5	74-88-4	Y
Carbon disulfide	Not detected	30	0.50	ug/L	5	75-15-0	Y
tert-Methyl butyl ether (MTBE)	Not detected	30	0.50	ug/L	5	1634-04-4	Y
Acrylonitrile	Not detected	10	0.50	ug/L	5	107-13-1	Y
2-Butanone (MEK)	Not detected	130	24	ug/L	5	78-93-3	Y
Dichlorodifluoromethane	Not detected	30	2.0	ug/L	5	75-71-8	Y
Chloromethane	Not detected	30	0.50	ug/L	5	74-87-3	Y
Vinyl chloride	3.95	5	0.50	ug/L	5	75-01-4	JY
Bromomethane	Not detected	30	0.50	ug/L	5	74-83-9	Y
Chloroethane	Not detected	30	1.0	ug/L	5	75-00-3	Y
Trichlorofluoromethane	Not detected	5	2.0	ug/L	5	75-69-4	Y
1,1-Dichloroethene	0.90	5	0.50	ug/L	5	75-35-4	JY
Methylene chloride	Not detected	30	0.50	ug/L	5	75-09-2	Y
trans-1,2-Dichloroethene	0.55	5	0.50	ug/L	5	156-60-5	JY
1,1-Dichloroethane	1.30	5	0.50	ug/L	5	75-34-3	JY
cis-1,2-Dichloroethene	59	5	0.50	ug/L	5	156-59-2	Y
Tetrahydrofuran*	15.5	450	1.0	ug/L	5	109-99-9	JBY
Chloroform	Not detected	5	0.50	ug/L	5	67-66-3	Y
Bromochloromethane	Not detected	5	0.50	ug/L	5	74-97-5	Y
1,1,1-Trichloroethane	1.20	5	0.50	ug/L	5	71-55-6	JY
4-Methyl-2-pentanone (MIBK)	Not detected	250	0.50	ug/L	5	108-10-1	Y
2-Hexanone	Not detected	250	0.50	ug/L	5	591-78-6	Y
Carbon tetrachloride	Not detected	5	0.50	ug/L	5	56-23-5	Y
Benzene	Not detected	5	0.50	ug/L	5	71-43-2	Y
1,2-Dichloroethane	Not detected	5	0.50	ug/L	5	107-06-2	Y
Trichloroethene	173	5	0.50	ug/L	5	79-01-6	Y
1,2-Dichloropropane	Not detected	5	0.50	ug/L	5	78-87-5	Y
Bromodichloromethane	Not detected	5	0.50	ug/L	5	75-27-4	Y
Dibromomethane	Not detected	30	0.50	ug/L	5	74-95-3	Y
cis-1,3-Dichloropropene	Not detected	5	0.50	ug/L	5	10061-01-5	Y
Toluene	Not detected	5	0.50	ug/L	5	108-88-3	Y
trans-1,3-Dichloropropene	Not detected	5	0.50	ug/L	5	10061-02-6	Y
1,1,2-Trichloroethane	Not detected	5	0.25	ug/L	5	79-00-5	Y
Tetrachloroethene	Not detected	5	1.0	ug/L	5	127-18-4	Y
trans-1,4-Dichloro-2-butene	Not detected	5	0.50	ug/L	5	110-57-6	Y
Dibromochloromethane	Not detected	30	0.10	ug/L	5	124-48-1	Y
1,2-Dibromoethane	Not detected	5	0.50	ug/L	5	106-93-4	Y
Chlorobenzene	Not detected	5	0.50	ug/L	5	108-90-7	Y
1,1,1,2-Tetrachloroethane	Not detected	5	0.50	ug/L	5	630-20-6	Y
Ethylbenzene	Not detected	5	0.50	ug/L	5	100-41-4	Y
p,m-Xylene*	Not detected	10	1.0	ug/L	5		Y
o-Xylene	Not detected	5	0.25	ug/L	5	95-47-6	Y
Styrene	Not detected	5	0.50	ug/L	5	100-42-5	Y
Isopropylbenzene	Not detected	30	0.15	ug/L	5	98-82-8	Y
Bromoform	Not detected	5	0.50	ug/L	5	75-25-2	Y
1,1,2,2-Tetrachloroethane	Not detected	5	0.25	ug/L	5	79-34-5	Y

Y-Elevated reporting limit due to high target concentration

J-Estimated value less than reporting limit, but greater than MDL

B-Compound also found in associated method blank



Analytical Laboratory Report

Lab Sample ID: S46506.05 (continued)

Sample Tag: MW-114S

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/28/23 15:53, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2,3-Trichloropropane	Not detected	5	0.50	ug/L	5	96-18-4	Y
n-Propylbenzene	Not detected	5	0.50	ug/L	5	103-65-1	Y
Bromobenzene	Not detected	5	0.50	ug/L	5	108-86-1	Y
1,3,5-Trimethylbenzene	Not detected	5	0.50	ug/L	5	108-67-8	Y
tert-Butylbenzene	Not detected	5	0.50	ug/L	5	98-06-6	Y
1,2,4-Trimethylbenzene	Not detected	5	0.50	ug/L	5	95-63-6	Y
sec-Butylbenzene	Not detected	5	0.25	ug/L	5	135-98-8	Y
p-Isopropyltoluene	Not detected	30	0.20	ug/L	5	99-87-6	Y
1,3-Dichlorobenzene	Not detected	5	0.50	ug/L	5	541-73-1	Y
1,4-Dichlorobenzene	Not detected	5	0.50	ug/L	5	106-46-7	Y
1,2-Dichlorobenzene	Not detected	5	0.50	ug/L	5	95-50-1	Y
1,2,3-Trimethylbenzene	Not detected	5	0.20	ug/L	5	526-73-8	Y
n-Butylbenzene	0.55	5	0.20	ug/L	5	104-51-8	JBY
Hexachloroethane	Not detected	30	0.50	ug/L	5	67-72-1	Y
1,2-Dibromo-3-chloropropane	Not detected	30	0.50	ug/L	5	96-12-8	Y
1,2,4-Trichlorobenzene	Not detected	30	0.50	ug/L	5	120-82-1	Y
1,2,3-Trichlorobenzene	0.50	30	0.20	ug/L	5	87-61-6	JBY
Naphthalene	0.65	30	0.50	ug/L	5	91-20-3	JBY
2-Methylnaphthalene	1.60	30	0.50	ug/L	5	91-57-6	JBY

Y-Elevated reporting limit due to high target concentration

J-Estimated value less than reporting limit, but greater than MDL B-Compound also found in associated method blank



Analytical Laboratory Report

Lab Sample ID: S46506.06

Sample Tag: MW-108S

Collected Date/Time: 03/21/2023 14:03

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	250ml Plastic	None	Yes	5.6	IR
3	40ml Glass	HCL	Yes	5.6	IR
1	125ml Plastic	HNO3	Yes	5.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/27/23 11:44	ASW	
Metal Digestion	Completed	SW3015A	03/24/23 10:15	CCM	f
Metal Digestion	Completed	SW3015A	03/24/23 10:15	CCM	

Inorganics

Method: SM3500-Cr B, Run Date: 03/21/23 17:30, Analyst: JKB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chromium VI, Dissolved	Not detected	0.01	0.004	mg/L	1	18540-29-9	c

Method: SM3500-Cr B, Run Date: 03/21/23 16:55, Analyst: JKB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chromium VI	Not detected	0.01	0.004	mg/L	1	18540-29-9	

Metals

Method: E200.8, Run Date: 03/24/23 12:21, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	0.000465	0.002	0.000255	mg/L	5	7440-38-2	b
Chromium	0.000559	0.005	0.0000965	mg/L	5	7440-47-3	b
Copper	0.00242	0.005	0.000377	mg/L	5	7440-50-8	b
Lead	0.000508	0.003	0.000190	mg/L	5	7439-92-1	b
Selenium	0.006	0.005	0.00209	mg/L	5	7782-49-2	
Zinc	0.006	0.005	0.000730	mg/L	5	7440-66-6	

Method: E200.8, Run Date: 03/24/23 12:25, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic, Dissolved	0.000381	0.002	0.000255	mg/L	5	7440-38-2	bf
Chromium, Dissolved	0.000270	0.005	0.0000965	mg/L	5	7440-47-3	bf
Copper, Dissolved	0.000856	0.005	0.000377	mg/L	5	7440-50-8	bf
Lead, Dissolved	Not detected	0.003	0.000190	mg/L	5	7439-92-1	f
Selenium, Dissolved	0.00427	0.005	0.00209	mg/L	5	7782-49-2	bf
Zinc, Dissolved	0.00238	0.005	0.000730	mg/L	5	7440-66-6	bf

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/24/23 21:29, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10	0.27	ug/L	1	60-29-7	
Acetone	Not detected	50	4.0	ug/L	1	67-64-1	

f-Filtered and preserved in lab

c-Filtered in lab

b-Value detected less than reporting limit, but greater than MDL



Analytical Laboratory Report

Lab Sample ID: S46506.06 (continued)

Sample Tag: MW-108S

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/24/23 21:29, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Methyl iodide	Not detected	1	0.24	ug/L	1	74-88-4	
Carbon disulfide	Not detected	5	0.13	ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5	0.25	ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2	0.38	ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25	3.3	ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5	0.57	ug/L	1	75-71-8	
Chloromethane	Not detected	5	0.20	ug/L	1	74-87-3	
Vinyl chloride	Not detected	1	0.24	ug/L	1	75-01-4	
Bromomethane	Not detected	5	0.18	ug/L	1	74-83-9	
Chloroethane	Not detected	5	0.21	ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1	0.28	ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1	0.27	ug/L	1	75-35-4	
Methylene chloride	Not detected	5	0.16	ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1	0.14	ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1	0.15	ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1	0.21	ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90	1.2	ug/L	1	109-99-9	
Chloroform	2	1	0.15	ug/L	1	67-66-3	
Bromochloromethane	Not detected	1	0.36	ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1	0.27	ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50	0.35	ug/L	1	108-10-1	
2-Hexanone	Not detected	50	0.19	ug/L	1	591-78-6	
Carbon tetrachloride	2	1	0.19	ug/L	1	56-23-5	
Benzene	Not detected	1	0.11	ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1	0.17	ug/L	1	107-06-2	
Trichloroethene	Not detected	1	0.29	ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1	0.18	ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1	0.19	ug/L	1	75-27-4	
Dibromomethane	Not detected	5	0.45	ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1	0.17	ug/L	1	10061-01-5	
Toluene	Not detected	1	0.17	ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1	0.20	ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1	0.34	ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1	0.13	ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1	0.26	ug/L	1	110-57-6	
Dibromochloromethane	Not detected	5	0.20	ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1	0.12	ug/L	1	106-93-4	
Chlorobenzene	Not detected	1	0.16	ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1	0.22	ug/L	1	630-20-6	
Ethylbenzene	Not detected	1	0.10	ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2	0.42	ug/L	1		
o-Xylene	Not detected	1	0.16	ug/L	1	95-47-6	
Styrene	Not detected	1	0.13	ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5	0.12	ug/L	1	98-82-8	
Bromoform	Not detected	1	0.35	ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1	0.27	ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1	0.54	ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1	0.12	ug/L	1	103-65-1	
Bromobenzene	Not detected	1	0.15	ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1	0.18	ug/L	1	108-67-8	



Analytical Laboratory Report

Lab Sample ID: S46506.06 (continued)

Sample Tag: MW-108S

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/24/23 21:29, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
tert-Butylbenzene	Not detected	1	0.14	ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1	0.16	ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1	0.16	ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5	0.19	ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1	0.20	ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1	0.18	ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1	0.13	ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1	0.14	ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1	0.17	ug/L	1	104-51-8	
Hexachloroethane	Not detected	5	0.35	ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5	0.48	ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5	0.24	ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5	0.25	ug/L	1	87-61-6	
Naphthalene	Not detected	5	0.18	ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5	0.21	ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S46506.07

Sample Tag: Dupe

Collected Date/Time: 03/21/2023 00:01

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	250ml Plastic	None	Yes	5.6	IR
3	40ml Glass	HCL	Yes	5.6	IR
1	125ml Plastic	HNO3	Yes	5.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/27/23 11:44	ASW	
Metal Digestion	Completed	SW3015A	03/24/23 10:15	CCM	f
Metal Digestion	Completed	SW3015A	03/24/23 10:15	CCM	

Inorganics

Method: SM3500-Cr B, Run Date: 03/21/23 17:35, Analyst: JKB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chromium VI, Dissolved	Not detected	0.01	0.004	mg/L	1	18540-29-9	c

Method: SM3500-Cr B, Run Date: 03/21/23 17:00, Analyst: JKB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chromium VI	Not detected	0.01	0.004	mg/L	1	18540-29-9	

Metals

Method: E200.8, Run Date: 03/24/23 12:26, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	0.027	0.002	0.000255	mg/L	5	7440-38-2	
Chromium	0.000496	0.005	0.0000965	mg/L	5	7440-47-3	b
Copper	0.00100	0.005	0.000377	mg/L	5	7440-50-8	b
Lead	0.000380	0.003	0.000190	mg/L	5	7439-92-1	b
Selenium	Not detected	0.005	0.00209	mg/L	5	7782-49-2	
Zinc	0.008	0.005	0.000730	mg/L	5	7440-66-6	

Method: E200.8, Run Date: 03/24/23 12:29, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic, Dissolved	0.015	0.002	0.000255	mg/L	5	7440-38-2	f
Chromium, Dissolved	0.000139	0.005	0.0000965	mg/L	5	7440-47-3	bf
Copper, Dissolved	0.00229	0.005	0.000377	mg/L	5	7440-50-8	bf
Lead, Dissolved	Not detected	0.003	0.000190	mg/L	5	7439-92-1	f
Selenium, Dissolved	Not detected	0.005	0.00209	mg/L	5	7782-49-2	f
Zinc, Dissolved	0.012	0.005	0.000730	mg/L	5	7440-66-6	f

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/24/23 21:52, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10	0.27	ug/L	1	60-29-7	
Acetone	Not detected	50	4.0	ug/L	1	67-64-1	

f-Filtered and preserved in lab

c-Filtered in lab

b-Value detected less than reporting limit, but greater than MDL



Analytical Laboratory Report

Lab Sample ID: S46506.07 (continued)

Sample Tag: Dupe

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/24/23 21:52, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Methyl iodide	Not detected	1	0.24	ug/L	1	74-88-4	
Carbon disulfide	Not detected	5	0.13	ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5	0.25	ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2	0.38	ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25	3.3	ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5	0.57	ug/L	1	75-71-8	
Chloromethane	Not detected	5	0.20	ug/L	1	74-87-3	
Vinyl chloride	6	1	0.24	ug/L	1	75-01-4	
Bromomethane	Not detected	5	0.18	ug/L	1	74-83-9	
Chloroethane	Not detected	5	0.21	ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1	0.28	ug/L	1	75-69-4	
1,1-Dichloroethene	1	1	0.27	ug/L	1	75-35-4	
Methylene chloride	Not detected	5	0.16	ug/L	1	75-09-2	
trans-1,2-Dichloroethene	0.57	1	0.14	ug/L	1	156-60-5	J
1,1-Dichloroethane	1	1	0.15	ug/L	1	75-34-3	
cis-1,2-Dichloroethene	70	1	0.21	ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90	1.2	ug/L	1	109-99-9	
Chloroform	Not detected	1	0.15	ug/L	1	67-66-3	
Bromochloromethane	Not detected	1	0.36	ug/L	1	74-97-5	
1,1,1-Trichloroethane	0.93	1	0.27	ug/L	1	71-55-6	J
4-Methyl-2-pentanone (MIBK)	Not detected	50	0.35	ug/L	1	108-10-1	
2-Hexanone	Not detected	50	0.19	ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1	0.19	ug/L	1	56-23-5	
Benzene	Not detected	1	0.11	ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1	0.17	ug/L	1	107-06-2	
Trichloroethene	199	1	0.29	ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1	0.18	ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1	0.19	ug/L	1	75-27-4	
Dibromomethane	Not detected	5	0.45	ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1	0.17	ug/L	1	10061-01-5	
Toluene	Not detected	1	0.17	ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1	0.20	ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1	0.34	ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1	0.13	ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1	0.26	ug/L	1	110-57-6	
Dibromochloromethane	Not detected	5	0.20	ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1	0.12	ug/L	1	106-93-4	
Chlorobenzene	Not detected	1	0.16	ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1	0.22	ug/L	1	630-20-6	
Ethylbenzene	Not detected	1	0.10	ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2	0.42	ug/L	1		
o-Xylene	Not detected	1	0.16	ug/L	1	95-47-6	
Styrene	Not detected	1	0.13	ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5	0.12	ug/L	1	98-82-8	
Bromoform	Not detected	1	0.35	ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1	0.27	ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1	0.54	ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1	0.12	ug/L	1	103-65-1	
Bromobenzene	Not detected	1	0.15	ug/L	1	108-86-1	

J-Estimated value less than reporting limit, but greater than MDL



Analytical Laboratory Report

Lab Sample ID: S46506.07 (continued)

Sample Tag: Dupe

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/24/23 21:52, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,3,5-Trimethylbenzene	Not detected	1	0.18	ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1	0.14	ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1	0.16	ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1	0.16	ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5	0.19	ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1	0.20	ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1	0.18	ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1	0.13	ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1	0.14	ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1	0.17	ug/L	1	104-51-8	
Hexachloroethane	Not detected	5	0.35	ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5	0.48	ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5	0.24	ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5	0.25	ug/L	1	87-61-6	
Naphthalene	Not detected	5	0.18	ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5	0.21	ug/L	1	91-57-6	

Merit Laboratories Login Checklist

Lab Set ID:S46506

Client:APPLIED (Applied Ecosystems)

Project: RACER Flint West #12990

Submitted:03/21/2023 15:20 Login User: MMC

Attention: Rodney Abke

Address: Applied Ecosystems
G4300 S. Saginaw Street
Burton, MI 48529

Phone: 810-715-2525

FAX:

Email: rabke@appliedecosystems.com

Selection	Description	Note
Sample Receiving		
01.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Samples are received at 4C +/- 2C Thermometer # IR 5.6
02.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Received on ice/ cooling process begun
03.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Samples shipped
04.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Samples left in 24 hr. drop box
05.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Are there custody seals/tape or is the drop box locked
Chain of Custody		
06.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	COC adequately filled out
07.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	COC signed and relinquished to the lab
08.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Sample tag on bottles match COC
09.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Subcontracting needed? Subcontracted to:
Preservation		
10.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Do sample have correct chemical preservation
11.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Completed pH checks on preserved samples? (no VOAs)
12.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Did any samples need to be preserved in the lab?
Bottle Conditions		
13.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	All bottles intact
14.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Appropriate analytical bottles are used
15.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Merit bottles used
16.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Sufficient sample volume received
17.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Samples require laboratory filtration
18.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Samples submitted within holding time
19.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Do water VOC 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: S46506 Submitted: 03/21/2023 15:20

Client: APPLIED (Applied Ecosystems)

Project: RACER Flint West #12990

Initial Preservation Check: 03/21/2023 16:04 MMC

Preservation Recheck (E200.8): N/A

Attention: Rodney Abke

Address: Applied Ecosystems
G4300 S. Saginaw Street
Burton, MI 48529

Phone: 810-715-2525

FAX:

Email: rabke@appliedecosystems.com

Sample ID	Bottle / Preservation	pH (Orig)	Add ml	pH (New)	Notes
S46506.01	125ml Plastic HNO3	<2			
S46506.02	125ml Plastic HNO3	<2			
S46506.03	125ml Plastic HNO3	<2			
S46506.04	125ml Plastic HNO3	<2			
S46506.05	125ml Plastic HNO3	<2			
S46506.06	125ml Plastic HNO3	<2			
S46506.07	125ml Plastic HNO3	<2			



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

C.O.C. PAGE # 2 OF 2

REPORT TO

CHAIN OF CUSTODY RECORD

INVOICE TO

CONTACT NAME Rodney Abke
 COMPANY Applied EcoSystems
 ADDRESS G-4300 South Saginaw Street
 CITY Burton STATE MI ZIP CODE 48529
 PHONE NO. 810-715-2525 FAX NO. 810-715-2526 P.O. NO. PO795930
 E-MAIL ADDRESS rabke@appliedecosystems.com QUOTE NO.

CONTACT NAME Monica Wallingford SAME
 COMPANY Revitalizing Auto Communities Environmental Response (RACER) Trust
 ADDRESS
 CITY STATE ZIP CODE
 PHONE NO. 313.486.2978 E-MAIL ADDRESS mwallingford@racertrust.org

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

PROJECT NO./NAME RACER Flint West #12990 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 report to MDLs

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

MERCIT LAB NO. <small>FOR LAB USE ONLY</small>	YEAR		SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	NONE	HCl	HNO ₃	H ₂ SO ₄	NaOH	MeOH	OTHER	VOCs	Metals, dissolved*	Metals, Total*
	DATE	TIME													
46506.01	3-21-23	9:35	Field Blank	GW	5		1	3						3	1
.02	3-21-23	10:05	MW 104S	GW	5		1	3						3	1
.03	3-21-23	11:20	MW 112 S	GW	5		1	3						3	1
.04	3-21-23	12:23	MW-110S	GW	5		1	3						3	1
.05	3-21-23	13:18	MW-114S	GW	5		1	3						3	1
.06	3-21-23	14:03	MW-108S	GW	5		1	3						3	1
.07	3-21-23	-	Dupe	GW	5		1	3						3	1

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

* - Metals list includes:
 Ar, Cr-total, CR-Hex, Cu
 Pb, Se, Zn
 report down to MCLs

RELINQUISHED BY: Cecilia Slonik Sampler DATE 3-21-23 TIME 14:15
 SIGNATURE/ORGANIZATION AE
 RECEIVED BY: Jessica Alvarado DATE 3-21-23 TIME 14:15
 SIGNATURE/ORGANIZATION

RELINQUISHED BY: Jessica Alvarado DATE 3/21/23 TIME 15:20
 SIGNATURE/ORGANIZATION
 RECEIVED BY: M. Alvarado DATE 3/21/23 TIME 15:20
 SIGNATURE/ORGANIZATION
 SEAL NO. SEAL INTACT YES NO INITIALS
 NOTES: TEMP. ON ARRIVAL 5.6



Quality Control Report

Report ID: QC-S46506-01
Generated on 04/05/2023

Report to
Attention: Rodney Abke
Applied Ecosystems
G4300 S. Saginaw Street
Burton, MI 48529

Report Produced by
Merit Laboratories
2680 East Lansing Drive
East Lansing, MI 48823

Phone: 810-715-2525 FAX:

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

Report Summary

Lab Sample ID(s): S46506.01-S46506.07
Project: RACER Flint West #12990
Submitted Date/Time: 03/21/2023 15:20
Sampled by: Unknown
P.O. #: 795930

QC Report Sections

Cover Page (Page 1)
Analysis Summary (Pages 2-8)
Prep Batch Summary (Pages 9-11)
Surrogates per Lab Sample (Pages 12-18)
Surrogates per QC Sample (Pages 19-20)
Batch QC Results (Pages 21-33)

Report Flag Descriptions

*: QC result is outside of indicated control limits
W: Surrogate result not applicable due to sample dilution

I certify that this data package is in compliance with the terms and conditions of the program, and project, and contractual requirements both technically and for completeness. Release of the data contained in this hardcopy data package and its computer-readable data submitted has been authorized by the Quality Assurance Manager and his/her designee, as verified by the following signature.

Barbara Ball
Quality Assurance Manager

QC Report - Analysis Summary

Lab Sample ID: S46506.01

Sample Tag: Field Blank

Collected Date/Time: 03/21/2023 09:35

Matrix: Groundwater

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Inorganics						
Chromium VI, Dissolved	SM3500-Cr B	03/21/23 17:05	CHR230321-W1	CHR230321-W1	No	BLK/LCS/MS/DUP
Chromium VI	SM3500-Cr B	03/21/23 16:20	CHR230321-W1	CHR230321-W1	No	BLK/LCS/MS/DUP
Metals						
Arsenic, Dissolved	E200.8	03/24/23 11:45	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Arsenic	E200.8	03/24/23 11:44	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Chromium, Dissolved	E200.8	03/24/23 11:45	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Chromium	E200.8	03/24/23 11:44	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Copper, Dissolved	E200.8	03/24/23 11:45	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Copper	E200.8	03/24/23 11:44	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Lead, Dissolved	E200.8	03/24/23 11:45	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Lead	E200.8	03/24/23 11:44	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Selenium, Dissolved	E200.8	03/24/23 11:45	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Selenium	E200.8	03/24/23 11:44	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Zinc, Dissolved	E200.8	03/24/23 11:45	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Zinc	E200.8	03/24/23 11:44	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Organics - Volatiles						
Volatile Organics - DEQ List	SW5030C/8260C	03/24/23 15:13	230324A3	VF230324W1	Yes	BLK/LCS/LCSD

QC Report - Analysis Summary

Lab Sample ID: S46506.02

Sample Tag: MW 104S

Collected Date/Time: 03/21/2023 10:05

Matrix: Groundwater

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Chromium VI, Dissolved	SM3500-Cr B	03/21/23 17:10	CHR230321-W1	CHR230321-W1	No	BLK/LCS/MS/DUP
Chromium VI	SM3500-Cr B	03/21/23 16:25	CHR230321-W1	CHR230321-W1	No	BLK/LCS/MS/DUP
<i>Metals</i>						
Arsenic, Dissolved	E200.8	03/24/23 11:58	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Arsenic	E200.8	03/24/23 11:50	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Chromium, Dissolved	E200.8	03/24/23 11:58	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Chromium	E200.8	03/24/23 11:50	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Copper, Dissolved	E200.8	03/24/23 11:58	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Copper	E200.8	03/24/23 11:50	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Lead, Dissolved	E200.8	03/24/23 11:58	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Lead	E200.8	03/24/23 11:50	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Selenium, Dissolved	E200.8	03/24/23 11:58	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Selenium	E200.8	03/24/23 11:50	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Zinc, Dissolved	E200.8	03/24/23 11:58	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Zinc	E200.8	03/24/23 11:50	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
<i>Organics - Volatiles</i>						
Volatile Organics - DEQ List	SW5030C/8260C	03/24/23 20:19	230324A3	VF230324W1	Yes	BLK/LCS/LCSD

QC Report - Analysis Summary

Lab Sample ID: S46506.03

Sample Tag: MW 112S

Collected Date/Time: 03/21/2023 11:20

Matrix: Groundwater

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Chromium VI, Dissolved	SM3500-Cr B	03/21/23 17:15	CHR230321-W1	CHR230321-W1	No	BLK/LCS/MS/DUP
Chromium VI	SM3500-Cr B	03/21/23 16:40	CHR230321-W1	CHR230321-W1	No	BLK/LCS/MS/DUP
<i>Metals</i>						
Arsenic, Dissolved	E200.8	03/24/23 12:02	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Arsenic	E200.8	03/24/23 12:00	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Chromium, Dissolved	E200.8	03/24/23 12:02	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Chromium	E200.8	03/24/23 12:00	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Copper, Dissolved	E200.8	03/24/23 12:02	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Copper	E200.8	03/24/23 12:00	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Lead, Dissolved	E200.8	03/24/23 12:02	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Lead	E200.8	03/24/23 12:00	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Selenium, Dissolved	E200.8	03/24/23 12:02	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Selenium	E200.8	03/24/23 12:00	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Zinc, Dissolved	E200.8	03/24/23 12:02	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Zinc	E200.8	03/24/23 12:00	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
<i>Organics - Volatiles</i>						
Volatile Organics - DEQ List	SW5030C/8260C	03/24/23 20:42	230324A3	VF230324W1	Yes	BLK/LCS/LCSD

QC Report - Analysis Summary

Lab Sample ID: S46506.04

Sample Tag: MW-110S

Collected Date/Time: 03/21/2023 12:23

Matrix: Groundwater

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Chromium VI, Dissolved	SM3500-Cr B	03/21/23 17:20	CHR230321-W1	CHR230321-W1	No	BLK/LCS/MS/DUP
Chromium VI	SM3500-Cr B	03/21/23 16:45	CHR230321-W1	CHR230321-W1	No	BLK/LCS/MS/DUP
<i>Metals</i>						
Arsenic, Dissolved	E200.8	03/24/23 12:16	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Arsenic	E200.8	03/24/23 12:05	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Chromium, Dissolved	E200.8	03/24/23 12:16	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Chromium	E200.8	03/24/23 12:05	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Copper, Dissolved	E200.8	03/24/23 12:16	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Copper	E200.8	03/24/23 12:05	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Lead, Dissolved	E200.8	03/24/23 12:16	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Lead	E200.8	03/24/23 12:05	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Selenium, Dissolved	E200.8	03/24/23 12:16	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Selenium	E200.8	03/24/23 12:05	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Zinc, Dissolved	E200.8	03/24/23 12:16	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Zinc	E200.8	03/24/23 12:05	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
<i>Organics - Volatiles</i>						
Volatile Organics - DEQ List	SW5030C/8260C	03/24/23 21:05	230324A3	VF230324W1	Yes	BLK/LCS/LCSD

QC Report - Analysis Summary

Lab Sample ID: S46506.05

Sample Tag: MW-114S

Collected Date/Time: 03/21/2023 13:18

Matrix: Groundwater

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Inorganics						
Chromium VI, Dissolved	SM3500-Cr B	03/21/23 17:25	CHR230321-W1	CHR230321-W1	No	BLK/LCS/MS/DUP
Chromium VI	SM3500-Cr B	03/21/23 16:50	CHR230321-W1	CHR230321-W1	No	BLK/LCS/MS/DUP
Metals						
Arsenic, Dissolved	E200.8	03/24/23 12:19	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Arsenic	E200.8	03/24/23 12:18	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Chromium, Dissolved	E200.8	03/24/23 12:19	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Chromium	E200.8	03/24/23 12:18	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Copper, Dissolved	E200.8	03/24/23 12:19	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Copper	E200.8	03/24/23 12:18	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Lead, Dissolved	E200.8	03/24/23 12:19	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Lead	E200.8	03/24/23 12:18	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Selenium, Dissolved	E200.8	03/24/23 12:19	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Selenium	E200.8	03/24/23 12:18	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Zinc, Dissolved	E200.8	03/24/23 12:19	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Zinc	E200.8	03/24/23 12:18	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Organics - Volatiles						
Volatile Organics - DEQ List	SW5030C/8260C	03/28/23 15:53	230328A9	VF230328W2	Yes	BLK/LCS/LCSD

QC Report - Analysis Summary

Lab Sample ID: S46506.06

Sample Tag: MW-108S

Collected Date/Time: 03/21/2023 14:03

Matrix: Groundwater

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Inorganics						
Chromium VI, Dissolved	SM3500-Cr B	03/21/23 17:30	CHR230321-W1	CHR230321-W1	No	BLK/LCS/MS/DUP
Chromium VI	SM3500-Cr B	03/21/23 16:55	CHR230321-W1	CHR230321-W1	No	BLK/LCS/MS/DUP
Metals						
Arsenic, Dissolved	E200.8	03/24/23 12:25	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Arsenic	E200.8	03/24/23 12:21	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Chromium, Dissolved	E200.8	03/24/23 12:25	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Chromium	E200.8	03/24/23 12:21	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Copper, Dissolved	E200.8	03/24/23 12:25	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Copper	E200.8	03/24/23 12:21	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Lead, Dissolved	E200.8	03/24/23 12:25	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Lead	E200.8	03/24/23 12:21	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Selenium, Dissolved	E200.8	03/24/23 12:25	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Selenium	E200.8	03/24/23 12:21	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Zinc, Dissolved	E200.8	03/24/23 12:25	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Zinc	E200.8	03/24/23 12:21	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Organics - Volatiles						
Volatile Organics - DEQ List	SW5030C/8260C	03/24/23 21:29	230324A3	VF230324W1	Yes	BLK/LCS/LCSD

QC Report - Analysis Summary

Lab Sample ID: S46506.07

Sample Tag: Dupe

Collected Date/Time: 03/21/2023 00:01

Matrix: Groundwater

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Chromium VI, Dissolved	SM3500-Cr B	03/21/23 17:35	CHR230321-W1	CHR230321-W1	No	BLK/LCS/MS/DUP
Chromium VI	SM3500-Cr B	03/21/23 17:00	CHR230321-W1	CHR230321-W1	No	BLK/LCS/MS/DUP
<i>Metals</i>						
Arsenic, Dissolved	E200.8	03/24/23 12:29	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Arsenic	E200.8	03/24/23 12:26	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Chromium, Dissolved	E200.8	03/24/23 12:29	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Chromium	E200.8	03/24/23 12:26	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Copper, Dissolved	E200.8	03/24/23 12:29	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Copper	E200.8	03/24/23 12:26	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Lead, Dissolved	E200.8	03/24/23 12:29	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Lead	E200.8	03/24/23 12:26	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Selenium, Dissolved	E200.8	03/24/23 12:29	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Selenium	E200.8	03/24/23 12:26	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Zinc, Dissolved	E200.8	03/24/23 12:29	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Zinc	E200.8	03/24/23 12:26	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
<i>Organics - Volatiles</i>						
Volatile Organics - DEQ List	SW5030C/8260C	03/24/23 21:52	230324A3	VF230324W1	Yes	BLK/LCS/LCSD

QC Report - Prep Batch Summary

Inorganics, Prep Batch ID: CHR230321-W1

Surrogates: No, QC Types: BLK/LCS/MS/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S46506.01	Chromium VI, Dissolved	SM3500-Cr B	03/21/23 17:05	CHR230321-W1
S46506.01	Chromium VI	SM3500-Cr B	03/21/23 16:20	CHR230321-W1
S46506.02	Chromium VI, Dissolved	SM3500-Cr B	03/21/23 17:10	CHR230321-W1
S46506.02	Chromium VI	SM3500-Cr B	03/21/23 16:25	CHR230321-W1
S46506.03	Chromium VI, Dissolved	SM3500-Cr B	03/21/23 17:15	CHR230321-W1
S46506.03	Chromium VI	SM3500-Cr B	03/21/23 16:40	CHR230321-W1
S46506.04	Chromium VI, Dissolved	SM3500-Cr B	03/21/23 17:20	CHR230321-W1
S46506.04	Chromium VI	SM3500-Cr B	03/21/23 16:45	CHR230321-W1
S46506.05	Chromium VI, Dissolved	SM3500-Cr B	03/21/23 17:25	CHR230321-W1
S46506.05	Chromium VI	SM3500-Cr B	03/21/23 16:50	CHR230321-W1
S46506.06	Chromium VI, Dissolved	SM3500-Cr B	03/21/23 17:30	CHR230321-W1
S46506.06	Chromium VI	SM3500-Cr B	03/21/23 16:55	CHR230321-W1
S46506.07	Chromium VI, Dissolved	SM3500-Cr B	03/21/23 17:35	CHR230321-W1
S46506.07	Chromium VI	SM3500-Cr B	03/21/23 17:00	CHR230321-W1

Metals, Prep Batch ID: MTD-032423-2

Surrogates: No, QC Types: BLK/LCS/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S46506.01	Arsenic, Dissolved	E200.8	03/24/23 11:45	MT4-23-0324B
S46506.01	Arsenic	E200.8	03/24/23 11:44	MT4-23-0324B
S46506.01	Chromium, Dissolved	E200.8	03/24/23 11:45	MT4-23-0324B
S46506.01	Chromium	E200.8	03/24/23 11:44	MT4-23-0324B
S46506.01	Copper, Dissolved	E200.8	03/24/23 11:45	MT4-23-0324B
S46506.01	Copper	E200.8	03/24/23 11:44	MT4-23-0324B
S46506.01	Lead, Dissolved	E200.8	03/24/23 11:45	MT4-23-0324B
S46506.01	Lead	E200.8	03/24/23 11:44	MT4-23-0324B
S46506.01	Selenium, Dissolved	E200.8	03/24/23 11:45	MT4-23-0324B
S46506.01	Selenium	E200.8	03/24/23 11:44	MT4-23-0324B
S46506.01	Zinc, Dissolved	E200.8	03/24/23 11:45	MT4-23-0324B
S46506.01	Zinc	E200.8	03/24/23 11:44	MT4-23-0324B
S46506.02	Arsenic, Dissolved	E200.8	03/24/23 11:58	MT4-23-0324B
S46506.02	Arsenic	E200.8	03/24/23 11:50	MT4-23-0324B
S46506.02	Chromium, Dissolved	E200.8	03/24/23 11:58	MT4-23-0324B
S46506.02	Chromium	E200.8	03/24/23 11:50	MT4-23-0324B
S46506.02	Copper, Dissolved	E200.8	03/24/23 11:58	MT4-23-0324B
S46506.02	Copper	E200.8	03/24/23 11:50	MT4-23-0324B
S46506.02	Lead, Dissolved	E200.8	03/24/23 11:58	MT4-23-0324B
S46506.02	Lead	E200.8	03/24/23 11:50	MT4-23-0324B
S46506.02	Selenium, Dissolved	E200.8	03/24/23 11:58	MT4-23-0324B
S46506.02	Selenium	E200.8	03/24/23 11:50	MT4-23-0324B
S46506.02	Zinc, Dissolved	E200.8	03/24/23 11:58	MT4-23-0324B
S46506.02	Zinc	E200.8	03/24/23 11:50	MT4-23-0324B
S46506.03	Arsenic, Dissolved	E200.8	03/24/23 12:02	MT4-23-0324B
S46506.03	Arsenic	E200.8	03/24/23 12:00	MT4-23-0324B
S46506.03	Chromium, Dissolved	E200.8	03/24/23 12:02	MT4-23-0324B
S46506.03	Chromium	E200.8	03/24/23 12:00	MT4-23-0324B
S46506.03	Copper, Dissolved	E200.8	03/24/23 12:02	MT4-23-0324B
S46506.03	Copper	E200.8	03/24/23 12:00	MT4-23-0324B
S46506.03	Lead, Dissolved	E200.8	03/24/23 12:02	MT4-23-0324B
S46506.03	Lead	E200.8	03/24/23 12:00	MT4-23-0324B

QC Report - Prep Batch Summary

Metals, Prep Batch ID: MTD-032423-2 (continued)

Surrogates: No, QC Types: BLK/LCS/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S46506.03	Selenium, Dissolved	E200.8	03/24/23 12:02	MT4-23-0324B
S46506.03	Selenium	E200.8	03/24/23 12:00	MT4-23-0324B
S46506.03	Zinc, Dissolved	E200.8	03/24/23 12:02	MT4-23-0324B
S46506.03	Zinc	E200.8	03/24/23 12:00	MT4-23-0324B
S46506.04	Arsenic, Dissolved	E200.8	03/24/23 12:16	MT4-23-0324B
S46506.04	Arsenic	E200.8	03/24/23 12:05	MT4-23-0324B
S46506.04	Chromium, Dissolved	E200.8	03/24/23 12:16	MT4-23-0324B
S46506.04	Chromium	E200.8	03/24/23 12:05	MT4-23-0324B
S46506.04	Copper, Dissolved	E200.8	03/24/23 12:16	MT4-23-0324B
S46506.04	Copper	E200.8	03/24/23 12:05	MT4-23-0324B
S46506.04	Lead, Dissolved	E200.8	03/24/23 12:16	MT4-23-0324B
S46506.04	Lead	E200.8	03/24/23 12:05	MT4-23-0324B
S46506.04	Selenium, Dissolved	E200.8	03/24/23 12:16	MT4-23-0324B
S46506.04	Selenium	E200.8	03/24/23 12:05	MT4-23-0324B
S46506.04	Zinc, Dissolved	E200.8	03/24/23 12:16	MT4-23-0324B
S46506.04	Zinc	E200.8	03/24/23 12:05	MT4-23-0324B
S46506.05	Arsenic, Dissolved	E200.8	03/24/23 12:19	MT4-23-0324B
S46506.05	Arsenic	E200.8	03/24/23 12:18	MT4-23-0324B
S46506.05	Chromium, Dissolved	E200.8	03/24/23 12:19	MT4-23-0324B
S46506.05	Chromium	E200.8	03/24/23 12:18	MT4-23-0324B
S46506.05	Copper, Dissolved	E200.8	03/24/23 12:19	MT4-23-0324B
S46506.05	Copper	E200.8	03/24/23 12:18	MT4-23-0324B
S46506.05	Lead, Dissolved	E200.8	03/24/23 12:19	MT4-23-0324B
S46506.05	Lead	E200.8	03/24/23 12:18	MT4-23-0324B
S46506.05	Selenium, Dissolved	E200.8	03/24/23 12:19	MT4-23-0324B
S46506.05	Selenium	E200.8	03/24/23 12:18	MT4-23-0324B
S46506.05	Zinc, Dissolved	E200.8	03/24/23 12:19	MT4-23-0324B
S46506.05	Zinc	E200.8	03/24/23 12:18	MT4-23-0324B
S46506.06	Arsenic, Dissolved	E200.8	03/24/23 12:25	MT4-23-0324B
S46506.06	Arsenic	E200.8	03/24/23 12:21	MT4-23-0324B
S46506.06	Chromium, Dissolved	E200.8	03/24/23 12:25	MT4-23-0324B
S46506.06	Chromium	E200.8	03/24/23 12:21	MT4-23-0324B
S46506.06	Copper, Dissolved	E200.8	03/24/23 12:25	MT4-23-0324B
S46506.06	Copper	E200.8	03/24/23 12:21	MT4-23-0324B
S46506.06	Lead, Dissolved	E200.8	03/24/23 12:25	MT4-23-0324B
S46506.06	Lead	E200.8	03/24/23 12:21	MT4-23-0324B
S46506.06	Selenium, Dissolved	E200.8	03/24/23 12:25	MT4-23-0324B
S46506.06	Selenium	E200.8	03/24/23 12:21	MT4-23-0324B
S46506.06	Zinc, Dissolved	E200.8	03/24/23 12:25	MT4-23-0324B
S46506.06	Zinc	E200.8	03/24/23 12:21	MT4-23-0324B
S46506.07	Arsenic, Dissolved	E200.8	03/24/23 12:29	MT4-23-0324B
S46506.07	Arsenic	E200.8	03/24/23 12:26	MT4-23-0324B
S46506.07	Chromium, Dissolved	E200.8	03/24/23 12:29	MT4-23-0324B
S46506.07	Chromium	E200.8	03/24/23 12:26	MT4-23-0324B
S46506.07	Copper, Dissolved	E200.8	03/24/23 12:29	MT4-23-0324B
S46506.07	Copper	E200.8	03/24/23 12:26	MT4-23-0324B
S46506.07	Lead, Dissolved	E200.8	03/24/23 12:29	MT4-23-0324B
S46506.07	Lead	E200.8	03/24/23 12:26	MT4-23-0324B
S46506.07	Selenium, Dissolved	E200.8	03/24/23 12:29	MT4-23-0324B

QC Report - Prep Batch Summary

Metals, Prep Batch ID: MTD-032423-2 (continued)

Surrogates: No, QC Types: BLK/LCS/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S46506.07	Selenium	E200.8	03/24/23 12:26	MT4-23-0324B
S46506.07	Zinc, Dissolved	E200.8	03/24/23 12:29	MT4-23-0324B
S46506.07	Zinc	E200.8	03/24/23 12:26	MT4-23-0324B

Organics - Volatiles, Prep Batch ID: VF230324W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S46506.01	Volatile Organics - DEQ List	SW5030C/8260C	03/24/23 15:13	230324A3
S46506.02	Volatile Organics - DEQ List	SW5030C/8260C	03/24/23 20:19	230324A3
S46506.03	Volatile Organics - DEQ List	SW5030C/8260C	03/24/23 20:42	230324A3
S46506.04	Volatile Organics - DEQ List	SW5030C/8260C	03/24/23 21:05	230324A3
S46506.06	Volatile Organics - DEQ List	SW5030C/8260C	03/24/23 21:29	230324A3
S46506.07	Volatile Organics - DEQ List	SW5030C/8260C	03/24/23 21:52	230324A3

Organics - Volatiles, Prep Batch ID: VF230328W2

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S46506.05	Volatile Organics - DEQ List	SW5030C/8260C	03/28/23 15:53	230328A9

QC Report - Surrogates per Lab Sample

Lab Sample ID: S46506.01

Sample Tag: Field Blank

Collected Date/Time: 03/21/2023 09:35

Matrix: Groundwater

COC Reference:

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 230324A3, Run Date: 03/24/2023 15:13, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		102.1	80.0	124.0
1,2-Dichloroethane-D4		102.5	72.0	125.0
Toluene-D8		100.1	89.0	112.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S46506.02

Sample Tag: MW 104S

Collected Date/Time: 03/21/2023 10:05

Matrix: Groundwater

COC Reference:

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 230324A3, Run Date: 03/24/2023 20:19, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		102.6	80.0	124.0
1,2-Dichloroethane-D4		99.7	72.0	125.0
Toluene-D8		99.9	89.0	112.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S46506.03

Sample Tag: MW 112S

Collected Date/Time: 03/21/2023 11:20

Matrix: Groundwater

COC Reference:

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 230324A3, Run Date: 03/24/2023 20:42, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		101.9	80.0	124.0
1,2-Dichloroethane-D4		103.6	72.0	125.0
Toluene-D8		100.2	89.0	112.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S46506.04

Sample Tag: MW-110S

Collected Date/Time: 03/21/2023 12:23

Matrix: Groundwater

COC Reference:

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 230324A3, Run Date: 03/24/2023 21:05, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		99.6	80.0	124.0
1,2-Dichloroethane-D4		103.1	72.0	125.0
Toluene-D8		99.8	89.0	112.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S46506.05

Sample Tag: MW-114S

Collected Date/Time: 03/21/2023 13:18

Matrix: Groundwater

COC Reference:

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 230328A9, Run Date: 03/28/2023 15:53, Matrix: WW, Dilution: 5

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		100.1	80.0	124.0
1,2-Dichloroethane-D4		91.8	72.0	125.0
Toluene-D8		99.8	89.0	112.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S46506.06

Sample Tag: MW-108S

Collected Date/Time: 03/21/2023 14:03

Matrix: Groundwater

COC Reference:

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 230324A3, Run Date: 03/24/2023 21:29, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		100.7	80.0	124.0
1,2-Dichloroethane-D4		104.0	72.0	125.0
Toluene-D8		99.3	89.0	112.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S46506.07

Sample Tag: Dupe

Collected Date/Time: 03/21/2023 00:01

Matrix: Groundwater

COC Reference:

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 230324A3, Run Date: 03/24/2023 21:52, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		100.4	80.0	124.0
1,2-Dichloroethane-D4		99.2	72.0	125.0
Toluene-D8		99.8	89.0	112.0

QC Report - Surrogates per QC Sample

Organics - Volatiles, Prep Batch ID: VF230324W1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 230324A3.BLKW24A

Run in Batch: 230324A3, Run Date: 03/24/2023 14:03, Prep Date: 03/24/2023, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		101.9	80.0	124.0
1,2-Dichloroethane-D4		101.2	72.0	125.0
Toluene-D8		100.6	89.0	112.0

Laboratory Control Sample (LCS)

Lab Sample ID: 230324A3.LCSW24A

Run in Batch: 230324A3, Run Date: 03/24/2023 12:28, Prep Date: 03/24/2023, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		103.0	80.0	124.0
1,2-Dichloroethane-D4		101.5	72.0	125.0
Toluene-D8		100.0	89.0	112.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 230324A3.LCSDW24A, Parent Sample ID: 230324A3.LCSW24A

Run in Batch: 230324A3, Run Date: 03/24/2023 12:52, Prep Date: 03/24/2023, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		102.1	80.0	124.0
1,2-Dichloroethane-D4		99.7	72.0	125.0
Toluene-D8		100.2	89.0	112.0

QC Report - Surrogates per QC Sample

Organics - Volatiles, Prep Batch ID: VF230328W2

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 230328A9.BLKW28A

Run in Batch: 230328A9, Run Date: 03/28/2023 14:50, Prep Date: 03/28/2023, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		101.3	80.0	124.0
1,2-Dichloroethane-D4		96.5	72.0	125.0
Toluene-D8		99.0	89.0	112.0

Laboratory Control Sample (LCS)

Lab Sample ID: 230328A9.LCSW28A

Run in Batch: 230328A9, Run Date: 03/28/2023 13:34, Prep Date: 03/28/2023, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		101.4	80.0	124.0
1,2-Dichloroethane-D4		93.7	72.0	125.0
Toluene-D8		99.8	89.0	112.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 230328A9.LCSDW28A, Parent Sample ID: 230328A9.LCSW28A

Run in Batch: 230328A9, Run Date: 03/28/2023 13:53, Prep Date: 03/28/2023, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		102.9	80.0	124.0
1,2-Dichloroethane-D4		94.6	72.0	125.0
Toluene-D8		99.3	89.0	112.0

QC Report - Batch QC Results

Inorganics, Prep Batch ID: CHR230321-W1

Surrogates: No, QC Types: BLK/LCS/MS/DUP

Blank (BLK)

Lab Sample ID: CHR230321-W1.LRB1

Run in Batch: CHR230321-W1, Run Date: 03/21/2023 16:00, Prep Date: 03/21/2023, Matrix: Liquid, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Chromium VI		ND	0.01	mg/L

Laboratory Control Sample (LCS)

Lab Sample ID: CHR230321-W1.LCS1

Run in Batch: CHR230321-W1, Run Date: 03/21/2023 16:15, Prep Date: 03/21/2023, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Chromium VI		107	90	110

Matrix Spike (MS)

Lab Sample ID: CHR230321-W1.MS1, Parent Sample ID: S46506.02

Run in Batch: CHR230321-W1, Run Date: 03/21/2023 16:35, Prep Date: 03/21/2023, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Chromium VI		100	80	120

Duplicate (DUP)

Lab Sample ID: CHR230321-W1.DP1, Parent Sample ID: S46506.01

Run in Batch: CHR230321-W1, Run Date: 03/21/2023 16:30, Prep Date: 03/21/2023, Matrix: Liquid, Dilution: 1

Analyte	Flags	RPD	RPD CL
Chromium VI		<1	15

QC Report - Batch QC Results

Metals, Prep Batch ID: MTD-032423-2

Surrogates: No, QC Types: BLK/LCS/MS/MSD

Blank (BLK)

Lab Sample ID: MT4-23-0324B.018.LRB

Run in Batch: MT4-23-0324B, Run Date: 03/24/2023 11:43, Prep Date: 03/24/2023, Matrix: Liquid, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Arsenic		ND	0.0004	mg/L
Chromium		ND	0.001	mg/L
Copper		ND	0.001	mg/L
Lead		ND	0.0006	mg/L
Selenium		ND	0.001	mg/L
Zinc		ND	0.001	mg/L

Laboratory Control Sample (LCS)

Lab Sample ID: MT4-23-0324B.017.LCS

Run in Batch: MT4-23-0324B, Run Date: 03/24/2023 11:33, Prep Date: 03/24/2023, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Arsenic		101	85	115
Chromium		100	85	115
Copper		101	85	115
Lead		101	85	115
Selenium		102	85	115
Zinc		100	85	115

Matrix Spike (MS)

Lab Sample ID: MT4-23-0324B.035.MS, Parent Sample ID: S46527.02

Run in Batch: MT4-23-0324B, Run Date: 03/24/2023 12:08, Prep Date: 03/24/2023, Matrix: Liquid, Dilution: 5

Analyte	Flags	% Rec	LCL	UCL
Arsenic		105	75	125
Chromium		100	75	125
Copper		98	75	125
Lead		94	75	125
Selenium		108	75	125
Zinc		104	75	125

Matrix Spike (MS)

Lab Sample ID: MT4-23-0324B.058.MS, Parent Sample ID: S46527.02

Run in Batch: MT4-23-0324B, Run Date: 03/24/2023 12:38, Prep Date: 03/24/2023, Matrix: Liquid, Dilution: 5

Analyte	Flags	% Rec	LCL	UCL
Arsenic		97	75	125
Chromium		98	75	125
Copper		95	75	125
Lead		97	75	125
Selenium		102	75	125
Zinc		98	75	125

Matrix Spike Duplicate (MSD)

Lab Sample ID: MT4-23-0324B.036.MSD, Parent Sample ID: MT4-23-0324B.035.MS

Run in Batch: MT4-23-0324B, Run Date: 03/24/2023 12:09, Prep Date: 03/24/2023, Matrix: Liquid, Dilution: 5

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Arsenic		108	75	125	2	20
Chromium		99	75	125	1	20

QC Report - Batch QC Results

Metals, Prep Batch ID: MTD-032423-2 (continued)

Surrogates: No, QC Types: BLK/LCS/MS/MSD

Matrix Spike Duplicate (MSD) (continued)

Lab Sample ID: MT4-23-0324B.036.MSD, Parent Sample ID: MT4-23-0324B.035.MS

Run in Batch: MT4-23-0324B, Run Date: 03/24/2023 12:09, Prep Date: 03/24/2023, Matrix: Liquid, Dilution: 5

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Copper		95	75	125	3	20
Lead		97	75	125	3	20
Selenium		113	75	125	5	20
Zinc		104	75	125	0	20

Matrix Spike Duplicate (MSD)

Lab Sample ID: MT4-23-0324B.059.MSD, Parent Sample ID: MT4-23-0324B.058.MS

Run in Batch: MT4-23-0324B, Run Date: 03/24/2023 12:39, Prep Date: 03/24/2023, Matrix: Liquid, Dilution: 5

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Arsenic		100	75	125	3	20
Chromium		102	75	125	4	20
Copper		99	75	125	4	20
Lead		98	75	125	2	20
Selenium		104	75	125	2	20
Zinc		102	75	125	4	20

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF230324W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 230324A3.BLKW24A

Run in Batch: 230324A3, Run Date: 03/24/2023 14:03, Prep Date: 03/24/2023, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Diethyl ether		ND	1.00	ug/l
Acetone		ND	10.00	ug/l
Methyl iodide		ND	1.00	ug/l
Carbon disulfide		ND	1.00	ug/l
tert-Methyl butyl ether (MTBE)		ND	1.00	ug/l
Acrylonitrile		ND	1.00	ug/l
2-Butanone (MEK)		ND	10.00	ug/l
Dichlorodifluoromethane		ND	1.00	ug/l
Chloromethane		ND	1.00	ug/l
Vinyl chloride		ND	1.00	ug/l
Bromomethane		ND	1.00	ug/l
Chloroethane		ND	1.00	ug/l
Trichlorofluoromethane		ND	1.00	ug/l
1,1-Dichloroethene		ND	1.00	ug/l
Methylene chloride		ND	1.00	ug/l
trans-1,2-Dichloroethene		ND	1.00	ug/l
1,1-Dichloroethane		ND	1.00	ug/l
cis-1,2-Dichloroethene		ND	1.00	ug/l
Tetrahydrofuran		ND	10.00	ug/l
Chloroform		ND	1.00	ug/l
Bromochloromethane		ND	1.00	ug/l
1,1,1-Trichloroethane		ND	1.00	ug/l
4-Methyl-2-pentanone (MIBK)		ND	10.00	ug/l
2-Hexanone		ND	10.00	ug/l
Carbon tetrachloride		ND	1.00	ug/l
Benzene		ND	1.00	ug/l
1,2-Dichloroethane		ND	1.00	ug/l
Trichloroethene		ND	1.00	ug/l
1,2-Dichloropropane		ND	1.00	ug/l
Bromodichloromethane		ND	1.00	ug/l
Dibromomethane		ND	1.00	ug/l
cis-1,3-Dichloropropene		ND	1.00	ug/l
Toluene		ND	1.00	ug/l
trans-1,3-Dichloropropene		ND	1.00	ug/l
1,1,2-Trichloroethane		ND	1.00	ug/l
Tetrachloroethene		ND	1.00	ug/l
trans-1,4-Dichloro-2-butene		ND	1.00	ug/l
Dibromochloromethane		ND	1.00	ug/l
1,2-Dibromoethane		ND	1.00	ug/l
Chlorobenzene		ND	1.00	ug/l
1,1,1,2-Tetrachloroethane		ND	1.00	ug/l
Ethylbenzene		ND	1.00	ug/l
p,m-Xylene		ND	1.00	ug/l
o-Xylene		ND	1.00	ug/l
Styrene		ND	1.00	ug/l
Isopropylbenzene		ND	1.00	ug/l

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF230324W1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK) (continued)

Lab Sample ID: 230324A3.BLKW24A

Run in Batch: 230324A3, Run Date: 03/24/2023 14:03, Prep Date: 03/24/2023, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Bromoform		ND	1.00	ug/l
1,1,2,2-Tetrachloroethane		ND	1.00	ug/l
1,2,3-Trichloropropane		ND	1.00	ug/l
n-Propylbenzene		ND	1.00	ug/l
Bromobenzene		ND	1.00	ug/l
1,3,5-Trimethylbenzene		ND	1.00	ug/l
tert-Butylbenzene		ND	1.00	ug/l
1,2,4-Trimethylbenzene		ND	1.00	ug/l
sec-Butylbenzene		ND	1.00	ug/l
p-Isopropyltoluene		ND	1.00	ug/l
1,3-Dichlorobenzene		ND	1.00	ug/l
1,4-Dichlorobenzene		ND	1.00	ug/l
1,2-Dichlorobenzene		ND	1.00	ug/l
1,2,3-Trimethylbenzene		ND	1.00	ug/l
n-Butylbenzene		ND	1.00	ug/l
Hexachloroethane		ND	1.00	ug/l
1,2-Dibromo-3-chloropropane		ND	1.00	ug/l
1,2,4-Trichlorobenzene		ND	1.00	ug/l
1,2,3-Trichlorobenzene		ND	1.00	ug/l
Naphthalene		ND	1.00	ug/l
2-Methylnaphthalene		ND	1.00	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 230324A3.LCSW24A

Run in Batch: 230324A3, Run Date: 03/24/2023 12:28, Prep Date: 03/24/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Diethyl ether		95.8	67.4	121.2
Acetone		91.5	29.9	161.5
Methyl iodide		98.4	68.8	116.4
Carbon disulfide		98.4	63.8	137.4
tert-Methyl butyl ether (MTBE)		93.5	73.2	122.4
Acrylonitrile		94.7	69.9	128.9
2-Butanone (MEK)		101.5	44.0	134.4
Dichlorodifluoromethane		89.4	10.0	222.8
Chloromethane		98.5	23.8	166.5
Vinyl chloride		98.1	43.5	149.1
Bromomethane		96.7	56.8	151.3
Chloroethane		97.4	53.4	149.4
Trichlorofluoromethane		100.0	59.7	151.8
1,1-Dichloroethene		98.5	69.6	139.4
Methylene chloride		96.0	73.3	121.1
trans-1,2-Dichloroethene		97.6	73.6	129.3
1,1-Dichloroethane		98.2	71.5	126.2
cis-1,2-Dichloroethene		98.9	76.6	122.1
Tetrahydrofuran		89.6	59.0	117.9
Chloroform		98.6	78.4	124.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF230324W1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: 230324A3.LCSW24A

Run in Batch: 230324A3, Run Date: 03/24/2023 12:28, Prep Date: 03/24/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Bromochloromethane		96.4	78.2	120.8
1,1,1-Trichloroethane		97.8	79.4	130.9
4-Methyl-2-pentanone (MIBK)		98.7	71.6	125.2
2-Hexanone		102.2	55.4	136.9
Carbon tetrachloride		100.8	72.6	133.0
Benzene		98.1	79.9	124.9
1,2-Dichloroethane		93.1	76.0	126.3
Trichloroethene		100.3	79.7	124.2
1,2-Dichloropropane		98.3	78.6	126.4
Bromodichloromethane		99.0	80.4	128.2
Dibromomethane		97.9	76.9	122.1
cis-1,3-Dichloropropene		102.5	79.8	129.9
Toluene		99.0	79.8	124.5
trans-1,3-Dichloropropene		100.7	74.0	131.3
1,1,2-Trichloroethane		101.1	78.7	123.1
Tetrachloroethene		102.1	74.5	124.5
trans-1,4-Dichloro-2-butene		97.8	68.6	135.4
Dibromochloromethane		100.0	74.6	127.2
1,2-Dibromoethane		96.8	70.3	133.7
Chlorobenzene		98.0	79.2	122.7
1,1,1,2-Tetrachloroethane		98.5	80.3	128.2
Ethylbenzene		99.6	79.5	129.1
p,m-Xylene		97.0	79.4	132.2
o-Xylene		97.5	80.2	131.0
Styrene		96.8	69.5	126.7
Isopropylbenzene		100.6	74.4	121.5
Bromoform		101.2	69.4	128.0
1,1,2,2-Tetrachloroethane		101.5	79.8	126.3
1,2,3-Trichloropropane		97.4	78.3	138.8
n-Propylbenzene		102.1	82.0	130.7
Bromobenzene		97.0	78.7	124.6
1,3,5-Trimethylbenzene		99.4	81.3	128.9
tert-Butylbenzene		98.3	80.7	128.9
1,2,4-Trimethylbenzene		98.8	81.4	130.8
sec-Butylbenzene		99.5	77.4	129.8
p-Isopropyltoluene		99.3	79.8	137.5
1,3-Dichlorobenzene		94.4	77.0	131.3
1,4-Dichlorobenzene		93.5	20.7	137.7
1,2-Dichlorobenzene		94.3	10.0	166.2
1,2,3-Trimethylbenzene		95.4	76.3	124.2
n-Butylbenzene		100.6	80.0	133.3
Hexachloroethane		100.3	23.8	138.1
1,2-Dibromo-3-chloropropane		99.8	21.2	189.4
1,2,4-Trichlorobenzene		98.5	27.4	143.4
1,2,3-Trichlorobenzene		98.3	75.4	131.4
Naphthalene		98.0	32.9	135.8

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF230324W1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: 230324A3.LCSW24A

Run in Batch: 230324A3, Run Date: 03/24/2023 12:28, Prep Date: 03/24/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
2-Methylnaphthalene		95.1	25.5	165.5

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 230324A3.LCSDW24A, Parent Sample ID: 230324A3.LCSW24A

Run in Batch: 230324A3, Run Date: 03/24/2023 12:52, Prep Date: 03/24/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Diethyl ether		95.7	67.4	121.2	0.2	30.0
Acetone		91.4	29.9	161.5	0.1	30.0
Methyl iodide		97.3	68.8	116.4	1.2	30.0
Carbon disulfide		95.9	63.8	137.4	2.6	30.0
tert-Methyl butyl ether (MTBE)		92.4	73.2	122.4	1.2	30.0
Acrylonitrile		96.8	69.9	128.9	2.2	30.0
2-Butanone (MEK)		95.6	44.0	134.4	6.0	30.0
Dichlorodifluoromethane		85.3	10.0	222.8	4.6	30.0
Chloromethane		98.8	23.8	166.5	0.3	30.0
Vinyl chloride		87.4	43.5	149.1	11.6	30.0
Bromomethane		96.0	56.8	151.3	0.7	30.0
Chloroethane		99.1	53.4	149.4	1.7	30.0
Trichlorofluoromethane		97.9	59.7	151.8	2.1	30.0
1,1-Dichloroethene		95.8	69.6	139.4	2.8	30.0
Methylene chloride		95.0	73.3	121.1	1.0	30.0
trans-1,2-Dichloroethene		95.6	73.6	129.3	2.0	30.0
1,1-Dichloroethane		95.9	71.5	126.2	2.3	30.0
cis-1,2-Dichloroethene		96.1	76.6	122.1	2.9	30.0
Tetrahydrofuran		83.9	59.0	117.9	6.6	30.0
Chloroform		97.0	78.4	124.0	1.6	30.0
Bromochloromethane		95.8	78.2	120.8	0.6	30.0
1,1,1-Trichloroethane		96.4	79.4	130.9	1.5	30.0
4-Methyl-2-pentanone (MIBK)		95.3	71.6	125.2	3.5	30.0
2-Hexanone		96.2	55.4	136.9	6.0	30.0
Carbon tetrachloride		98.3	72.6	133.0	2.5	30.0
Benzene		96.5	79.9	124.9	1.6	30.0
1,2-Dichloroethane		92.8	76.0	126.3	0.3	30.0
Trichloroethene		96.7	79.7	124.2	3.7	30.0
1,2-Dichloropropane		96.1	78.6	126.4	2.3	30.0
Bromodichloromethane		98.2	80.4	128.2	0.8	30.0
Dibromomethane		98.0	76.9	122.1	0.1	30.0
cis-1,3-Dichloropropene		100.2	79.8	129.9	2.2	30.0
Toluene		96.9	79.8	124.5	2.1	30.0
trans-1,3-Dichloropropene		100.2	74.0	131.3	0.5	30.0
1,1,2-Trichloroethane		97.9	78.7	123.1	3.2	30.0
Tetrachloroethene		98.8	74.5	124.5	3.3	30.0
trans-1,4-Dichloro-2-butene		97.9	68.6	135.4	0.1	30.0
Dibromochloromethane		98.1	74.6	127.2	1.9	30.0
1,2-Dibromoethane		97.5	70.3	133.7	0.8	30.0
Chlorobenzene		96.9	79.2	122.7	1.2	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF230324W1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Laboratory Control Sample Duplicate (LCSD) (continued)

Lab Sample ID: 230324A3.LCSDW24A, Parent Sample ID: 230324A3.LCSW24A

Run in Batch: 230324A3, Run Date: 03/24/2023 12:52, Prep Date: 03/24/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,1,1,2-Tetrachloroethane		97.2	80.3	128.2	1.3	30.0
Ethylbenzene		96.8	79.5	129.1	2.9	30.0
p,m-Xylene		95.9	79.4	132.2	1.1	30.0
o-Xylene		95.7	80.2	131.0	1.9	30.0
Styrene		95.4	69.5	126.7	1.4	30.0
Isopropylbenzene		99.5	74.4	121.5	1.1	30.0
Bromoform		100.5	69.4	128.0	0.7	30.0
1,1,1,2-Tetrachloroethane		98.9	79.8	126.3	2.6	30.0
1,2,3-Trichloropropane		96.3	78.3	138.8	1.1	30.0
n-Propylbenzene		100.7	82.0	130.7	1.4	30.0
Bromobenzene		95.7	78.7	124.6	1.3	30.0
1,3,5-Trimethylbenzene		96.3	81.3	128.9	3.1	30.0
tert-Butylbenzene		96.3	80.7	128.9	2.0	30.0
1,2,4-Trimethylbenzene		96.5	81.4	130.8	2.3	30.0
sec-Butylbenzene		98.6	77.4	129.8	0.9	30.0
p-Isopropyltoluene		98.5	79.8	137.5	0.7	30.0
1,3-Dichlorobenzene		93.9	77.0	131.3	0.5	30.0
1,4-Dichlorobenzene		93.3	20.7	137.7	0.2	30.0
1,2-Dichlorobenzene		94.1	10.0	166.2	0.1	30.0
1,2,3-Trimethylbenzene		96.2	76.3	124.2	0.9	30.0
n-Butylbenzene		98.8	80.0	133.3	1.8	30.0
Hexachloroethane		99.1	23.8	138.1	1.1	30.0
1,2-Dibromo-3-chloropropane		97.9	21.2	189.4	1.8	30.0
1,2,4-Trichlorobenzene		101.9	27.4	143.4	3.3	30.0
1,2,3-Trichlorobenzene		99.7	75.4	131.4	1.4	30.0
Naphthalene		99.8	32.9	135.8	1.8	30.0
2-Methylnaphthalene		98.3	25.5	165.5	3.3	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF230328W2

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 230328A9.BLKW28A

Run in Batch: 230328A9, Run Date: 03/28/2023 14:50, Prep Date: 03/28/2023, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Diethyl ether		ND	1.00	ug/l
Acetone		ND	10.00	ug/l
Methyl iodide		ND	1.00	ug/l
Carbon disulfide	J*	0.18	1.00	ug/l
tert-Methyl butyl ether (MTBE)		ND	1.00	ug/l
Acrylonitrile		ND	1.00	ug/l
2-Butanone (MEK)		ND	10.00	ug/l
Dichlorodifluoromethane		ND	1.00	ug/l
Chloromethane		ND	1.00	ug/l
Vinyl chloride		ND	1.00	ug/l
Bromomethane		ND	1.00	ug/l
Chloroethane		ND	1.00	ug/l
Trichlorofluoromethane		ND	1.00	ug/l
1,1-Dichloroethene		ND	1.00	ug/l
Methylene chloride		ND	1.00	ug/l
trans-1,2-Dichloroethene		ND	1.00	ug/l
1,1-Dichloroethane		ND	1.00	ug/l
cis-1,2-Dichloroethene		ND	1.00	ug/l
Tetrahydrofuran	J*	3.31	10.00	ug/l
Chloroform		ND	1.00	ug/l
Bromochloromethane		ND	1.00	ug/l
1,1,1-Trichloroethane		ND	1.00	ug/l
4-Methyl-2-pentanone (MIBK)		ND	10.00	ug/l
2-Hexanone		ND	10.00	ug/l
Carbon tetrachloride		ND	1.00	ug/l
Benzene		ND	1.00	ug/l
1,2-Dichloroethane	J*	0.14	1.00	ug/l
Trichloroethene		ND	1.00	ug/l
1,2-Dichloropropane		ND	1.00	ug/l
Bromodichloromethane		ND	1.00	ug/l
Dibromomethane		ND	1.00	ug/l
cis-1,3-Dichloropropene		ND	1.00	ug/l
Toluene		ND	1.00	ug/l
trans-1,3-Dichloropropene		ND	1.00	ug/l
1,1,2-Trichloroethane		ND	1.00	ug/l
Tetrachloroethene		ND	1.00	ug/l
trans-1,4-Dichloro-2-butene		ND	1.00	ug/l
Dibromochloromethane		ND	1.00	ug/l
1,2-Dibromoethane		ND	1.00	ug/l
Chlorobenzene		ND	1.00	ug/l
1,1,1,2-Tetrachloroethane		ND	1.00	ug/l
Ethylbenzene		ND	1.00	ug/l
p,m-Xylene		ND	1.00	ug/l
o-Xylene		ND	1.00	ug/l
Styrene		ND	1.00	ug/l
Isopropylbenzene		ND	1.00	ug/l

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF230328W2 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK) (continued)

Lab Sample ID: 230328A9.BLKW28A

Run in Batch: 230328A9, Run Date: 03/28/2023 14:50, Prep Date: 03/28/2023, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Bromoform		ND	1.00	ug/l
1,1,2,2-Tetrachloroethane		ND	1.00	ug/l
1,2,3-Trichloropropane		ND	1.00	ug/l
n-Propylbenzene		ND	1.00	ug/l
Bromobenzene		ND	1.00	ug/l
1,3,5-Trimethylbenzene		ND	1.00	ug/l
tert-Butylbenzene		ND	1.00	ug/l
1,2,4-Trimethylbenzene		ND	1.00	ug/l
sec-Butylbenzene	J*	0.13	1.00	ug/l
p-Isopropyltoluene	J*	0.13	1.00	ug/l
1,3-Dichlorobenzene		ND	1.00	ug/l
1,4-Dichlorobenzene		ND	1.00	ug/l
1,2-Dichlorobenzene		ND	1.00	ug/l
1,2,3-Trimethylbenzene		ND	1.00	ug/l
n-Butylbenzene	J*	0.25	1.00	ug/l
Hexachloroethane		ND	1.00	ug/l
1,2-Dibromo-3-chloropropane		ND	1.00	ug/l
1,2,4-Trichlorobenzene	J*	0.26	1.00	ug/l
1,2,3-Trichlorobenzene	J*	0.27	1.00	ug/l
Naphthalene	J*	0.22	1.00	ug/l
2-Methylnaphthalene	J*	0.69	1.00	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 230328A9.LCSW28A

Run in Batch: 230328A9, Run Date: 03/28/2023 13:34, Prep Date: 03/28/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Diethyl ether	*	124.4	67.4	121.2
Acetone		95.7	29.9	161.5
Methyl iodide		104.4	68.8	116.4
Carbon disulfide		103.2	63.8	137.4
tert-Methyl butyl ether (MTBE)		100.9	73.2	122.4
Acrylonitrile		100.4	69.9	128.9
2-Butanone (MEK)		90.7	44.0	134.4
Dichlorodifluoromethane		123.0	10.0	222.8
Chloromethane		133.1	23.8	166.5
Vinyl chloride		129.4	43.5	149.1
Bromomethane		141.0	56.8	151.3
Chloroethane		141.3	53.4	149.4
Trichlorofluoromethane		140.9	59.7	151.8
1,1-Dichloroethene		108.3	69.6	139.4
Methylene chloride		99.5	73.3	121.1
trans-1,2-Dichloroethene		103.9	73.6	129.3
1,1-Dichloroethane		104.3	71.5	126.2
cis-1,2-Dichloroethene		101.6	76.6	122.1
Tetrahydrofuran		83.2	59.0	117.9
Chloroform		103.2	78.4	124.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF230328W2 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: 230328A9.LCSW28A

Run in Batch: 230328A9, Run Date: 03/28/2023 13:34, Prep Date: 03/28/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Bromochloromethane		100.8	78.2	120.8
1,1,1-Trichloroethane		104.9	79.4	130.9
4-Methyl-2-pentanone (MIBK)		100.7	71.6	125.2
2-Hexanone		101.3	55.4	136.9
Carbon tetrachloride		114.0	72.6	133.0
Benzene		106.5	79.9	124.9
1,2-Dichloroethane		107.5	76.0	126.3
Trichloroethene		108.4	79.7	124.2
1,2-Dichloropropane		104.2	78.6	126.4
Bromodichloromethane		109.1	80.4	128.2
Dibromomethane		108.9	76.9	122.1
cis-1,3-Dichloropropene		109.2	79.8	129.9
Toluene		108.2	79.8	124.5
trans-1,3-Dichloropropene		112.7	74.0	131.3
1,1,2-Trichloroethane		110.2	78.7	123.1
Tetrachloroethene		109.8	74.5	124.5
trans-1,4-Dichloro-2-butene		106.9	68.6	135.4
Dibromochloromethane		109.1	74.6	127.2
1,2-Dibromoethane		107.3	70.3	133.7
Chlorobenzene		107.8	79.2	122.7
1,1,1,2-Tetrachloroethane		107.4	80.3	128.2
Ethylbenzene		109.7	79.5	129.1
p,m-Xylene		109.9	79.4	132.2
o-Xylene		109.8	80.2	131.0
Styrene		110.2	69.5	126.7
Isopropylbenzene		110.5	74.4	121.5
Bromoform		110.0	69.4	128.0
1,1,2,2-Tetrachloroethane		102.8	79.8	126.3
1,2,3-Trichloropropane		104.0	78.3	138.8
n-Propylbenzene		111.3	82.0	130.7
Bromobenzene		107.2	78.7	124.6
1,3,5-Trimethylbenzene		110.8	81.3	128.9
tert-Butylbenzene		111.3	80.7	128.9
1,2,4-Trimethylbenzene		109.1	81.4	130.8
sec-Butylbenzene		110.6	77.4	129.8
p-Isopropyltoluene		110.5	79.8	137.5
1,3-Dichlorobenzene		108.9	77.0	131.3
1,4-Dichlorobenzene		106.9	20.7	137.7
1,2-Dichlorobenzene		105.3	10.0	166.2
1,2,3-Trimethylbenzene		106.8	76.3	124.2
n-Butylbenzene		111.3	80.0	133.3
Hexachloroethane		108.3	23.8	138.1
1,2-Dibromo-3-chloropropane		105.8	21.2	189.4
1,2,4-Trichlorobenzene		108.2	27.4	143.4
1,2,3-Trichlorobenzene		107.9	75.4	131.4
Naphthalene		106.6	32.9	135.8

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF230328W2 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: 230328A9.LCSW28A

Run in Batch: 230328A9, Run Date: 03/28/2023 13:34, Prep Date: 03/28/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
2-Methylnaphthalene		116.0	25.5	165.5

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 230328A9.LCSDW28A, Parent Sample ID: 230328A9.LCSW28A

Run in Batch: 230328A9, Run Date: 03/28/2023 13:53, Prep Date: 03/28/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Diethyl ether		104.9	67.4	121.2	17.0	30.0
Acetone		95.6	29.9	161.5	0.2	30.0
Methyl iodide		104.4	68.8	116.4	0.0	30.0
Carbon disulfide		100.0	63.8	137.4	3.1	30.0
tert-Methyl butyl ether (MTBE)		107.0	73.2	122.4	5.8	30.0
Acrylonitrile		95.1	69.9	128.9	5.5	30.0
2-Butanone (MEK)		94.2	44.0	134.4	3.8	30.0
Dichlorodifluoromethane		121.0	10.0	222.8	1.7	30.0
Chloromethane		131.4	23.8	166.5	1.2	30.0
Vinyl chloride		120.5	43.5	149.1	7.1	30.0
Bromomethane		121.1	56.8	151.3	15.1	30.0
Chloroethane		115.1	53.4	149.4	20.5	30.0
Trichlorofluoromethane		122.0	59.7	151.8	14.4	30.0
1,1-Dichloroethene		101.7	69.6	139.4	6.3	30.0
Methylene chloride		102.3	73.3	121.1	2.7	30.0
trans-1,2-Dichloroethene		101.2	73.6	129.3	2.7	30.0
1,1-Dichloroethane		102.5	71.5	126.2	1.8	30.0
cis-1,2-Dichloroethene		101.7	76.6	122.1	0.1	30.0
Tetrahydrofuran		83.1	59.0	117.9	0.1	30.0
Chloroform		106.1	78.4	124.0	2.7	30.0
Bromochloromethane		107.9	78.2	120.8	6.8	30.0
1,1,1-Trichloroethane		103.5	79.4	130.9	1.3	30.0
4-Methyl-2-pentanone (MIBK)		96.9	71.6	125.2	3.9	30.0
2-Hexanone		94.7	55.4	136.9	6.8	30.0
Carbon tetrachloride		108.5	72.6	133.0	5.0	30.0
Benzene		103.4	79.9	124.9	3.0	30.0
1,2-Dichloroethane		112.4	76.0	126.3	4.5	30.0
Trichloroethene		105.2	79.7	124.2	3.0	30.0
1,2-Dichloropropane		104.7	78.6	126.4	0.6	30.0
Bromodichloromethane		112.1	80.4	128.2	2.7	30.0
Dibromomethane		110.7	76.9	122.1	1.7	30.0
cis-1,3-Dichloropropene		108.7	79.8	129.9	0.4	30.0
Toluene		106.8	79.8	124.5	1.3	30.0
trans-1,3-Dichloropropene		112.1	74.0	131.3	0.6	30.0
1,1,2-Trichloroethane		108.7	78.7	123.1	1.4	30.0
Tetrachloroethene		104.9	74.5	124.5	4.5	30.0
trans-1,4-Dichloro-2-butene		104.0	68.6	135.4	2.7	30.0
Dibromochloromethane		110.0	74.6	127.2	0.8	30.0
1,2-Dibromoethane		106.8	70.3	133.7	0.5	30.0
Chlorobenzene		106.1	79.2	122.7	1.6	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF230328W2 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Laboratory Control Sample Duplicate (LCSD) (continued)

Lab Sample ID: 230328A9.LCSDW28A, Parent Sample ID: 230328A9.LCSW28A

Run in Batch: 230328A9, Run Date: 03/28/2023 13:53, Prep Date: 03/28/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,1,1,2-Tetrachloroethane		110.3	80.3	128.2	2.7	30.0
Ethylbenzene		105.7	79.5	129.1	3.7	30.0
p,m-Xylene		107.0	79.4	132.2	2.7	30.0
o-Xylene		109.4	80.2	131.0	0.4	30.0
Styrene		110.2	69.5	126.7	0.0	30.0
Isopropylbenzene		105.8	74.4	121.5	4.4	30.0
Bromoform		110.1	69.4	128.0	0.1	30.0
1,1,2,2-Tetrachloroethane		101.6	79.8	126.3	1.1	30.0
1,2,3-Trichloropropane		104.3	78.3	138.8	0.3	30.0
n-Propylbenzene		106.7	82.0	130.7	4.3	30.0
Bromobenzene		108.5	78.7	124.6	1.2	30.0
1,3,5-Trimethylbenzene		107.6	81.3	128.9	2.9	30.0
tert-Butylbenzene		106.9	80.7	128.9	4.1	30.0
1,2,4-Trimethylbenzene		108.7	81.4	130.8	0.4	30.0
sec-Butylbenzene		104.5	77.4	129.8	5.7	30.0
p-Isopropyltoluene		106.5	79.8	137.5	3.6	30.0
1,3-Dichlorobenzene		107.6	77.0	131.3	1.2	30.0
1,4-Dichlorobenzene		104.3	20.7	137.7	2.4	30.0
1,2-Dichlorobenzene		107.8	10.0	166.2	2.3	30.0
1,2,3-Trimethylbenzene		106.1	76.3	124.2	0.6	30.0
n-Butylbenzene		106.6	80.0	133.3	4.4	30.0
Hexachloroethane		103.6	23.8	138.1	4.5	30.0
1,2-Dibromo-3-chloropropane		101.3	21.2	189.4	4.3	30.0
1,2,4-Trichlorobenzene		109.6	27.4	143.4	1.3	30.0
1,2,3-Trichlorobenzene		108.5	75.4	131.4	0.6	30.0
Naphthalene		107.7	32.9	135.8	1.0	30.0
2-Methylnaphthalene		116.2	25.5	165.5	0.2	30.0



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C.O.C. PAGE # 2 OF 2

REPORT TO

CHAIN OF CUSTODY RECORD

INVOICE TO

CONTACT NAME Rodney Abke
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 ADDRESS
 CITY STATE ZIP CODE
 PHONE NO. 313.486.2978 E-MAIL ADDRESS mwallingford@racertrust.org

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

PROJECT NO./NAME RACER Flint West #12990 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 report to MDLs

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

Containers & Preservatives

MERIT LAB NO. <small>FOR LAB USE ONLY</small>	YEAR		SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	NONE	HCl	HNO ₃	H ₂ SO ₄	NaOH	MeOH	OTHER	VOCs	Metals, dissolved*	Metals, Total*							Certifications		Project Locations		Special Instructions
	DATE	TIME																				<input type="checkbox"/> OHIO VAP	<input type="checkbox"/> Drinking Water	<input type="checkbox"/> DoD	<input type="checkbox"/> NPDES	
46506.01	3-21-23	9:35	Field Blank	GW	5		1	3					3	1	1											* - Metals list includes:
.02	3-21-23	10:05	MW 1045	GW	5		1	3					3	1	1											Ar, Cr-total, CR-Hex, Cu
.03	3-21-23	11:20	MW 112 S	GW	5		1	3					3	1	1											Pb, Se, Zn
.04	3-21-23	12:23	MW-1105	GW	5		1	3					3	1	1											
.05	3-21-23	13:18	MW-1145	GW	5		1	3					3	1	1											report down to MCLs
.06	3-21-23	14:03	MW-1085	GW	5		1	3					3	1	1											
.07	3-21-23		Dupe	GW	5		1	3					3	1	1											

RELINQUISHED BY: Cecilia Stan R Sampler DATE 3-21-23 TIME 14:15
 SIGNATURE/ORGANIZATION AE
 RECEIVED BY: Joseph Alvarado DATE 3-21-23 TIME 14:15
 SIGNATURE/ORGANIZATION
 RECEIVED BY: DATE TIME
 SIGNATURE/ORGANIZATION

RELINQUISHED BY: Tierah Mays DATE 3/21/23 TIME 15:20
 SIGNATURE/ORGANIZATION
 RECEIVED BY: M. Alvarado DATE 3/21/23 TIME 15:20
 SIGNATURE/ORGANIZATION
 SEAL NO. SEAL INTACT YES NO INITIALS
 NOTES: TEMP. ON ARRIVAL 5.6
 SEAL NO. SEAL INTACT YES NO INITIALS



Analytical Laboratory Report

Report ID: S46507.01(01)
Generated on 04/11/2023

Report to

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

Report Summary

Lab Sample ID(s): S46507.01-S46507.07
Project: RACER Flint West #12990
Collected Date(s): 03/21/2023
Submitted Date/Time: 03/21/2023 15:20
Sampled by: Unknown
P.O. #: 795930

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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).

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

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

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

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

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

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

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

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

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

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

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

Report Narrative

There is no additional narrative for this analytical report



Analytical Laboratory Report

Laboratory Certifications

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

Qualifier Descriptions

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

Glossary of Abbreviations

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



Analytical Laboratory Report

Method Summary

Method	Version
ASTMD7979-19M	ASTM Method D7979 - 19 Modified (Isotopic Dilution)

Parameter Summary

Parameter	Synonym	Cas #
PFBA	Perfluorobutanoic Acid	375-22-4
PFPeA	Perfluoropentanoic Acid	2706-90-3
4:2 FTSA	4:2 Fluorotelomer Sulfonic Acid	757124-72-4
PFHxA	Perfluorohexanoic Acid	307-24-4
PFBS	Perfluorobutane sulfonic Acid	375-73-5
PFHpA	Perfluoroheptanoic Acid	375-85-9
PFPeS	Perfluoropentane Sulfonic Acid	2706-91-4
6:2 FTSA	6:2 Fluorotelomer Sulfonic Acid	27619-97-2
PFOA	Perfluorooctanoic Acid	335-67-1
PFHxS	Perfluorohexane Sulfonic Acid	355-46-4
PFHxS-LN	Perfluorohexane Sulfonic Acid - LN	355-46-4-LN
PFHxS-BR	Perfluorohexane Sulfonic Acid - BR	355-46-4-BR
PFNA	Perfluorononanoic Acid	375-95-1
8:2 FTSA	8:2 Fluorotelomer Sulfonic Acid	39108-34-4
PFHpS	Perfluoroheptane Sulfonic Acid	375-92-8
PFDA	Perfluorodecanoic Acid	335-76-2
N-MeFOSAA	N-methyl perfluorooctanesulfonamidoacetic acid	2355-31-9
EtFOSAA	N-Ethyl Perfluorooctane Sulfonamidoacetic Acid	2991-50-6
PFOS	Perfluorooctane Sulfonic Acid	1763-23-1
PFOS-LN	Perfluorooctane Sulfonic Acid - LN	1763-23-1-LN
PFOS-BR	Perfluorooctane Sulfonic Acid - BR	1763-23-1-BR
PFUnDA	Perfluoroundecanoic Acid	2058-94-8
PFNS	Perfluorononane Sulfonic Acid	68259-12-1
PFDoDA	Perfluorododecanoic Acid	307-55-1
PFDS	Perfluorodecane Sulfonic Acid	335-77-3
PFTTrDA	Perfluorotridecanoic Acid	72629-94-8
FOSA	Perfluorooctane Sulfonamide	754-91-6
PFTeDA	Perfluorotetradecanoic Acid	376-06-7
11Cl-PF3OUdS	11-chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	763051-92-9
9Cl-PF3ONS	9-chlorohexadecafluoro-3-oxanone1-sulfonic acid	756426-58-1
ADONA	4,8-dioxa-3H-perfluorononanoic acid	919005-14-4
HFPO-DA	Hexafluoropropylene oxide dimer	13252-13-6



Analytical Laboratory Report

Sample Summary (7 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S46507.01	Field Blank	Groundwater	03/21/23 09:35
S46507.02	MW104S	Groundwater	03/21/23 10:05
S46507.03	MW112S	Groundwater	03/21/23 11:20
S46507.04	MW-110S	Groundwater	03/21/23 12:23
S46507.05	MW-114S	Groundwater	03/21/23 13:18
S46507.06	MW-1018S	Groundwater	03/21/23 14:03
S46507.07	Dupe	Groundwater	03/21/23 00:01



Analytical Laboratory Report

Lab Sample ID: S46507.01

Sample Tag: Field Blank

Collected Date/Time: 03/21/2023 09:35

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	5.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	11.43/6.52/10	ASTMD7979-19M	03/27/23 16:00	PTW	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 03/29/23 02:05, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	10	1.6	ng/L	2.04	375-22-4	
PFPeA*	Not detected	4.1	0.82	ng/L	2.04	2706-90-3	
4:2 FTSA*	Not detected	2.0	0.82	ng/L	2.04	757124-72-4	
PFHxA*	Not detected	2.0	0.41	ng/L	2.04	307-24-4	
PFBS*	Not detected	2.0	0.82	ng/L	2.04	375-73-5	
PFHpA*	Not detected	2.0	1.0	ng/L	2.04	375-85-9	
PFPeS*	Not detected	2.0	0.82	ng/L	2.04	2706-91-4	
6:2 FTSA*	Not detected	4.1	1.2	ng/L	2.04	27619-97-2	
PFOA*	Not detected	2.0	1.6	ng/L	2.04	335-67-1	
PFHxS*	Not detected	2.0	1.2	ng/L	2.04	355-46-4	
PFHxS-LN*	Not detected	2.0	1.2	ng/L	2.04	355-46-4-LN	
PFHxS-BR*	Not detected	2.0	1.2	ng/L	2.04	355-46-4-BR	
PFNA*	Not detected	2.0	0.82	ng/L	2.04	375-95-1	
8:2 FTSA*	Not detected	2.0	1.0	ng/L	2.04	39108-34-4	
PFHpS*	Not detected	2.0	1.2	ng/L	2.04	375-92-8	
PFDA*	Not detected	2.0	0.61	ng/L	2.04	335-76-2	
N-MeFOSAA*	Not detected	2.0	1.4	ng/L	2.04	2355-31-9	
EtFOSAA*	Not detected	4.1	2.0	ng/L	2.04	2991-50-6	
PFOS*	Not detected	2.0	1.2	ng/L	2.04	1763-23-1	
PFOS-LN*	Not detected	2.0	1.2	ng/L	2.04	1763-23-1-LN	
PFOS-BR*	Not detected	2.0	1.2	ng/L	2.04	1763-23-1-BR	
PFUnDA*	Not detected	2.0	1.0	ng/L	2.04	2058-94-8	
PFNS*	Not detected	2.0	1.0	ng/L	2.04	68259-12-1	
PFDoDA*	Not detected	2.0	0.61	ng/L	2.04	307-55-1	
PFDS*	Not detected	2.0	1.2	ng/L	2.04	335-77-3	
PFTTrDA*	Not detected	2.0	1.0	ng/L	2.04	72629-94-8	
FOSA*	Not detected	2.0	0.82	ng/L	2.04	754-91-6	
PFTeDA*	Not detected	4.1	0.41	ng/L	2.04	376-06-7	
11Cl-PF3OUdS*	Not detected	2.0	0.82	ng/L	2.04	763051-92-9	
9Cl-PF3ONS*	Not detected	2.0	0.82	ng/L	2.04	756426-58-1	
ADONA*	Not detected	2.0	1.0	ng/L	2.04	919005-14-4	
HFPO-DA*	Not detected	2.0	2.0	ng/L	2.04	13252-13-6	



Analytical Laboratory Report

Lab Sample ID: S46507.02

Sample Tag: MW104S

Collected Date/Time: 03/21/2023 10:05

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	5.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	12.02/6.42/11	ASTMD7979-19M	03/27/23 16:00	PTW	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 03/29/23 02:24, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	9.8	1.6	ng/L	1.96	375-22-4	
PFPeA*	0.88	3.9	0.78	ng/L	1.96	2706-90-3	J
4:2 FTSA*	Not detected	2.0	0.78	ng/L	1.96	757124-72-4	
PFHxA*	0.61	2.0	0.39	ng/L	1.96	307-24-4	J
PFBS*	2.0	2.0	0.78	ng/L	1.96	375-73-5	
PFHpA*	Not detected	2.0	0.98	ng/L	1.96	375-85-9	
PFPeS*	0.98	2.0	0.78	ng/L	1.96	2706-91-4	J
6:2 FTSA*	Not detected	3.9	1.2	ng/L	1.96	27619-97-2	
PFOA*	Not detected	2.0	1.6	ng/L	1.96	335-67-1	
PFHxS*	2.2	2.0	1.2	ng/L	1.96	355-46-4	
PFHxS-LN*	1.9	2.0	1.2	ng/L	1.96	355-46-4-LN	J
PFHxS-BR*	Not detected	2.0	1.2	ng/L	1.96	355-46-4-BR	
PFNA*	Not detected	2.0	0.78	ng/L	1.96	375-95-1	
8:2 FTSA*	Not detected	2.0	0.98	ng/L	1.96	39108-34-4	
PFHpS*	Not detected	2.0	1.2	ng/L	1.96	375-92-8	
PFDA*	Not detected	2.0	0.59	ng/L	1.96	335-76-2	
N-MeFOSAA*	Not detected	2.0	1.4	ng/L	1.96	2355-31-9	
EtFOSAA*	Not detected	3.9	2.0	ng/L	1.96	2991-50-6	
PFOS*	Not detected	2.0	1.2	ng/L	1.96	1763-23-1	
PFOS-LN*	Not detected	2.0	1.2	ng/L	1.96	1763-23-1-LN	
PFOS-BR*	Not detected	2.0	1.2	ng/L	1.96	1763-23-1-BR	
PFUnDA*	Not detected	2.0	0.98	ng/L	1.96	2058-94-8	
PFNS*	Not detected	2.0	0.98	ng/L	1.96	68259-12-1	
PFDoDA*	Not detected	2.0	0.59	ng/L	1.96	307-55-1	
PFDS*	Not detected	2.0	1.2	ng/L	1.96	335-77-3	
PFTTrDA*	Not detected	2.0	0.98	ng/L	1.96	72629-94-8	
FOSA*	Not detected	2.0	0.78	ng/L	1.96	754-91-6	
PFTeDA*	Not detected	3.9	0.39	ng/L	1.96	376-06-7	
11Cl-PF3OUdS*	Not detected	2.0	0.78	ng/L	1.96	763051-92-9	
9Cl-PF3ONS*	Not detected	2.0	0.78	ng/L	1.96	756426-58-1	
ADONA*	Not detected	2.0	0.98	ng/L	1.96	919005-14-4	
HFPO-DA*	Not detected	2.0	2.0	ng/L	1.96	13252-13-6	

J-Estimated value less than reporting limit, but greater than MDL



Analytical Laboratory Report

Lab Sample ID: S46507.03

Sample Tag: MW112S

Collected Date/Time: 03/21/2023 11:20

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	5.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	11.69/6.46/10	ASTMD7979-19M	03/27/23 16:00	PTW	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 03/29/23 02:44, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	9.6	1.5	ng/L	1.91	375-22-4	
PFPeA*	Not detected	3.8	0.76	ng/L	1.91	2706-90-3	
4:2 FTSA*	Not detected	1.9	0.76	ng/L	1.91	757124-72-4	
PFHxA*	Not detected	1.9	0.38	ng/L	1.91	307-24-4	
PFBS*	2.0	1.9	0.76	ng/L	1.91	375-73-5	
PFHpA*	1.3	1.9	0.96	ng/L	1.91	375-85-9	J
PFPeS*	Not detected	1.9	0.76	ng/L	1.91	2706-91-4	
6:2 FTSA*	Not detected	3.8	1.1	ng/L	1.91	27619-97-2	
PFOA*	2.3	1.9	1.5	ng/L	1.91	335-67-1	
PFHxS*	1.3	1.9	1.1	ng/L	1.91	355-46-4	J
PFHxS-LN*	1.3	1.9	1.1	ng/L	1.91	355-46-4-LN	J
PFHxS-BR*	Not detected	1.9	1.1	ng/L	1.91	355-46-4-BR	
PFNA*	0.96	1.9	0.76	ng/L	1.91	375-95-1	J
8:2 FTSA*	Not detected	1.9	0.96	ng/L	1.91	39108-34-4	
PFHpS*	Not detected	1.9	1.1	ng/L	1.91	375-92-8	
PFDA*	Not detected	1.9	0.57	ng/L	1.91	335-76-2	
N-MeFOSAA*	Not detected	1.9	1.3	ng/L	1.91	2355-31-9	
EtFOSAA*	Not detected	3.8	1.9	ng/L	1.91	2991-50-6	
PFOS*	13	1.9	1.1	ng/L	1.91	1763-23-1	
PFOS-LN*	6.4	1.9	1.1	ng/L	1.91	1763-23-1-LN	
PFOS-BR*	6.9	1.9	1.1	ng/L	1.91	1763-23-1-BR	
PFUnDA*	Not detected	1.9	0.96	ng/L	1.91	2058-94-8	
PFNS*	Not detected	1.9	0.96	ng/L	1.91	68259-12-1	
PFDoDA*	Not detected	1.9	0.57	ng/L	1.91	307-55-1	
PFDS*	Not detected	1.9	1.1	ng/L	1.91	335-77-3	
PFTTrDA*	Not detected	1.9	0.96	ng/L	1.91	72629-94-8	
FOSA*	Not detected	1.9	0.76	ng/L	1.91	754-91-6	
PFTeDA*	Not detected	3.8	0.38	ng/L	1.91	376-06-7	
11Cl-PF3OUdS*	Not detected	1.9	0.76	ng/L	1.91	763051-92-9	
9Cl-PF3ONS*	Not detected	1.9	0.76	ng/L	1.91	756426-58-1	
ADONA*	Not detected	1.9	0.96	ng/L	1.91	919005-14-4	
HFPO-DA*	Not detected	1.9	1.9	ng/L	1.91	13252-13-6	

J-Estimated value less than reporting limit, but greater than MDL



Analytical Laboratory Report

Lab Sample ID: S46507.04

Sample Tag: MW-110S

Collected Date/Time: 03/21/2023 12:23

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	5.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	11.86/6.47/11	ASTMD7979-19M	03/27/23 16:00	PTW	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 03/29/23 03:04, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	10	1.6	ng/L	2.04	375-22-4	
PFPeA*	Not detected	4.1	0.82	ng/L	2.04	2706-90-3	
4:2 FTSA*	Not detected	2.0	0.82	ng/L	2.04	757124-72-4	
PFHxA*	0.63	2.0	0.41	ng/L	2.04	307-24-4	J
PFBS*	2.4	2.0	0.82	ng/L	2.04	375-73-5	
PFHpA*	Not detected	2.0	1.0	ng/L	2.04	375-85-9	
PFPeS*	1.00	2.0	0.82	ng/L	2.04	2706-91-4	J
6:2 FTSA*	Not detected	4.1	1.2	ng/L	2.04	27619-97-2	
PFOA*	Not detected	2.0	1.6	ng/L	2.04	335-67-1	
PFHxS*	Not detected	2.0	1.2	ng/L	2.04	355-46-4	
PFHxS-LN*	Not detected	2.0	1.2	ng/L	2.04	355-46-4-LN	
PFHxS-BR*	Not detected	2.0	1.2	ng/L	2.04	355-46-4-BR	
PFNA*	Not detected	2.0	0.82	ng/L	2.04	375-95-1	
8:2 FTSA*	Not detected	2.0	1.0	ng/L	2.04	39108-34-4	
PFHpS*	Not detected	2.0	1.2	ng/L	2.04	375-92-8	
PFDA*	Not detected	2.0	0.61	ng/L	2.04	335-76-2	
N-MeFOSAA*	Not detected	2.0	1.4	ng/L	2.04	2355-31-9	
EtFOSAA*	Not detected	4.1	2.0	ng/L	2.04	2991-50-6	
PFOS*	Not detected	2.0	1.2	ng/L	2.04	1763-23-1	
PFOS-LN*	Not detected	2.0	1.2	ng/L	2.04	1763-23-1-LN	
PFOS-BR*	Not detected	2.0	1.2	ng/L	2.04	1763-23-1-BR	
PFUnDA*	Not detected	2.0	1.0	ng/L	2.04	2058-94-8	
PFNS*	Not detected	2.0	1.0	ng/L	2.04	68259-12-1	
PFDoDA*	Not detected	2.0	0.61	ng/L	2.04	307-55-1	
PFDS*	Not detected	2.0	1.2	ng/L	2.04	335-77-3	
PFTTrDA*	Not detected	2.0	1.0	ng/L	2.04	72629-94-8	
FOSA*	Not detected	2.0	0.82	ng/L	2.04	754-91-6	
PFTeDA*	Not detected	4.1	0.41	ng/L	2.04	376-06-7	
11Cl-PF3OUdS*	Not detected	2.0	0.82	ng/L	2.04	763051-92-9	
9Cl-PF3ONS*	Not detected	2.0	0.82	ng/L	2.04	756426-58-1	
ADONA*	Not detected	2.0	1.0	ng/L	2.04	919005-14-4	
HFPO-DA*	Not detected	2.0	2.0	ng/L	2.04	13252-13-6	

J-Estimated value less than reporting limit, but greater than MDL



Analytical Laboratory Report

Lab Sample ID: S46507.05

Sample Tag: MW-114S

Collected Date/Time: 03/21/2023 13:18

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	5.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	11.93/6.49/11	ASTMD7979-19M	03/27/23 16:00	PTW	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 03/29/23 03:23, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	10	1.6	ng/L	2.02	375-22-4	
PFPeA*	3.4	4.0	0.81	ng/L	2.02	2706-90-3	J
4:2 FTSA*	Not detected	2.0	0.81	ng/L	2.02	757124-72-4	
PFHxA*	2.0	2.0	0.40	ng/L	2.02	307-24-4	
PFBS*	2.2	2.0	0.81	ng/L	2.02	375-73-5	
PFHpA*	1.3	2.0	1.0	ng/L	2.02	375-85-9	J
PFPeS*	Not detected	2.0	0.81	ng/L	2.02	2706-91-4	
6:2 FTSA*	Not detected	4.0	1.2	ng/L	2.02	27619-97-2	
PFOA*	2.3	2.0	1.6	ng/L	2.02	335-67-1	
PFHxS*	1.5	2.0	1.2	ng/L	2.02	355-46-4	J
PFHxS-LN*	1.5	2.0	1.2	ng/L	2.02	355-46-4-LN	J
PFHxS-BR*	Not detected	2.0	1.2	ng/L	2.02	355-46-4-BR	
PFNA*	0.95	2.0	0.81	ng/L	2.02	375-95-1	J
8:2 FTSA*	Not detected	2.0	1.0	ng/L	2.02	39108-34-4	
PFHpS*	Not detected	2.0	1.2	ng/L	2.02	375-92-8	
PFDA*	Not detected	2.0	0.61	ng/L	2.02	335-76-2	
N-MeFOSAA*	Not detected	2.0	1.4	ng/L	2.02	2355-31-9	
EtFOSAA*	Not detected	4.0	2.0	ng/L	2.02	2991-50-6	
PFOS*	17	2.0	1.2	ng/L	2.02	1763-23-1	
PFOS-LN*	9.0	2.0	1.2	ng/L	2.02	1763-23-1-LN	
PFOS-BR*	7.8	2.0	1.2	ng/L	2.02	1763-23-1-BR	
PFUnDA*	Not detected	2.0	1.0	ng/L	2.02	2058-94-8	
PFNS*	Not detected	2.0	1.0	ng/L	2.02	68259-12-1	
PFDoDA*	Not detected	2.0	0.61	ng/L	2.02	307-55-1	
PFDS*	Not detected	2.0	1.2	ng/L	2.02	335-77-3	
PFTTrDA*	Not detected	2.0	1.0	ng/L	2.02	72629-94-8	
FOSA*	Not detected	2.0	0.81	ng/L	2.02	754-91-6	
PFTeDA*	Not detected	4.0	0.40	ng/L	2.02	376-06-7	
11Cl-PF3OUdS*	Not detected	2.0	0.81	ng/L	2.02	763051-92-9	
9Cl-PF3ONS*	Not detected	2.0	0.81	ng/L	2.02	756426-58-1	
ADONA*	Not detected	2.0	1.0	ng/L	2.02	919005-14-4	
HFPO-DA*	Not detected	2.0	2.0	ng/L	2.02	13252-13-6	

J-Estimated value less than reporting limit, but greater than MDL



Analytical Laboratory Report

Lab Sample ID: S46507.06

Sample Tag: MW-1018S

Collected Date/Time: 03/21/2023 14:03

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	5.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	12.09/6.45/11	ASTMD7979-19M	03/27/23 16:00	PTW	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 03/29/23 03:43, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	9.8	1.6	ng/L	1.95	375-22-4	
PFPeA*	Not detected	3.9	0.78	ng/L	1.95	2706-90-3	
4:2 FTSA*	Not detected	2.0	0.78	ng/L	1.95	757124-72-4	
PFHxA*	Not detected	2.0	0.39	ng/L	1.95	307-24-4	
PFBS*	1.1	2.0	0.78	ng/L	1.95	375-73-5	J
PFHpA*	0.98	2.0	0.98	ng/L	1.95	375-85-9	J
PFPeS*	Not detected	2.0	0.78	ng/L	1.95	2706-91-4	
6:2 FTSA*	Not detected	3.9	1.2	ng/L	1.95	27619-97-2	
PFOA*	Not detected	2.0	1.6	ng/L	1.95	335-67-1	
PFHxS*	1.6	2.0	1.2	ng/L	1.95	355-46-4	J
PFHxS-LN*	1.6	2.0	1.2	ng/L	1.95	355-46-4-LN	J
PFHxS-BR*	Not detected	2.0	1.2	ng/L	1.95	355-46-4-BR	
PFNA*	0.84	2.0	0.78	ng/L	1.95	375-95-1	J
8:2 FTSA*	Not detected	2.0	0.98	ng/L	1.95	39108-34-4	
PFHpS*	Not detected	2.0	1.2	ng/L	1.95	375-92-8	
PFDA*	Not detected	2.0	0.59	ng/L	1.95	335-76-2	
N-MeFOSAA*	Not detected	2.0	1.4	ng/L	1.95	2355-31-9	
EtFOSAA*	Not detected	3.9	2.0	ng/L	1.95	2991-50-6	
PFOS*	5.5	2.0	1.2	ng/L	1.95	1763-23-1	
PFOS-LN*	2.0	2.0	1.2	ng/L	1.95	1763-23-1-LN	
PFOS-BR*	4.0	2.0	1.2	ng/L	1.95	1763-23-1-BR	
PFUnDA*	Not detected	2.0	0.98	ng/L	1.95	2058-94-8	
PFNS*	Not detected	2.0	0.98	ng/L	1.95	68259-12-1	
PFDODA*	Not detected	2.0	0.59	ng/L	1.95	307-55-1	
PFDS*	Not detected	2.0	1.2	ng/L	1.95	335-77-3	
PFTTrDA*	Not detected	2.0	0.98	ng/L	1.95	72629-94-8	
FOSA*	Not detected	2.0	0.78	ng/L	1.95	754-91-6	
PFTeDA*	Not detected	3.9	0.39	ng/L	1.95	376-06-7	
11Cl-PF3OUdS*	Not detected	2.0	0.78	ng/L	1.95	763051-92-9	
9Cl-PF3ONS*	Not detected	2.0	0.78	ng/L	1.95	756426-58-1	
ADONA*	Not detected	2.0	0.98	ng/L	1.95	919005-14-4	
HFPO-DA*	Not detected	2.0	2.0	ng/L	1.95	13252-13-6	

J-Estimated value less than reporting limit, but greater than MDL



Analytical Laboratory Report

Lab Sample ID: S46507.07

Sample Tag: Dupe

Collected Date/Time: 03/21/2023 00:01

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	5.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	12.11/6.48/11	ASTMD7979-19M	03/27/23 16:00	PTW	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 03/29/23 04:02, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	9.8	1.6	ng/L	1.95	375-22-4	
PFPeA*	3.5	3.9	0.78	ng/L	1.95	2706-90-3	J
4:2 FTSA*	Not detected	2.0	0.78	ng/L	1.95	757124-72-4	
PFHxA*	2.0	2.0	0.39	ng/L	1.95	307-24-4	
PFBS*	2.0	2.0	0.78	ng/L	1.95	375-73-5	
PFHpA*	1.6	2.0	0.98	ng/L	1.95	375-85-9	J
PFPeS*	Not detected	2.0	0.78	ng/L	1.95	2706-91-4	
6:2 FTSA*	Not detected	3.9	1.2	ng/L	1.95	27619-97-2	
PFOA*	2.4	2.0	1.6	ng/L	1.95	335-67-1	
PFHxS*	1.3	2.0	1.2	ng/L	1.95	355-46-4	J
PFHxS-LN*	1.3	2.0	1.2	ng/L	1.95	355-46-4-LN	J
PFHxS-BR*	Not detected	2.0	1.2	ng/L	1.95	355-46-4-BR	
PFNA*	0.99	2.0	0.78	ng/L	1.95	375-95-1	J
8:2 FTSA*	Not detected	2.0	0.98	ng/L	1.95	39108-34-4	
PFHpS*	Not detected	2.0	1.2	ng/L	1.95	375-92-8	
PFDA*	Not detected	2.0	0.59	ng/L	1.95	335-76-2	
N-MeFOSAA*	Not detected	2.0	1.4	ng/L	1.95	2355-31-9	
EtFOSAA*	Not detected	3.9	2.0	ng/L	1.95	2991-50-6	
PFOS*	15	2.0	1.2	ng/L	1.95	1763-23-1	
PFOS-LN*	8.1	2.0	1.2	ng/L	1.95	1763-23-1-LN	
PFOS-BR*	7.5	2.0	1.2	ng/L	1.95	1763-23-1-BR	
PFUnDA*	Not detected	2.0	0.98	ng/L	1.95	2058-94-8	
PFNS*	Not detected	2.0	0.98	ng/L	1.95	68259-12-1	
PFDoDA*	Not detected	2.0	0.59	ng/L	1.95	307-55-1	
PFDS*	Not detected	2.0	1.2	ng/L	1.95	335-77-3	
PFTTrDA*	Not detected	2.0	0.98	ng/L	1.95	72629-94-8	
FOSA*	Not detected	2.0	0.78	ng/L	1.95	754-91-6	
PFTeDA*	Not detected	3.9	0.39	ng/L	1.95	376-06-7	
11Cl-PF3OUdS*	Not detected	2.0	0.78	ng/L	1.95	763051-92-9	
9Cl-PF3ONS*	Not detected	2.0	0.78	ng/L	1.95	756426-58-1	
ADONA*	Not detected	2.0	0.98	ng/L	1.95	919005-14-4	
HFPO-DA*	Not detected	2.0	2.0	ng/L	1.95	13252-13-6	

J-Estimated value less than reporting limit, but greater than MDL

Merit Laboratories Login Checklist

Lab Set ID:S46507

Client:APPLIED (Applied Ecosystems)

Project: RACER Flint West #12990

Submitted:03/21/2023 15:20 Login User: MMC

Attention: Rodney Abke

Address: Applied Ecosystems
G4300 S. Saginaw Street
Burton, MI 48529

Phone: 810-715-2525

FAX:

Email: rabke@appliedecosystems.com

Selection	Description	Note
Sample Receiving		
01.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Samples are received at 4C +/- 2C Thermometer # IR 5.6
02.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Received on ice/ cooling process begun
03.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Samples shipped
04.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Samples left in 24 hr. drop box
05.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Are there custody seals/tape or is the drop box locked
Chain of Custody		
06.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	COC adequately filled out
07.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	COC signed and relinquished to the lab
08.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Sample tag on bottles match COC
09.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Subcontracting needed? Subcontracted to:
Preservation		
10.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Do sample have correct chemical preservation
11.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Completed pH checks on preserved samples? (no VOAs)
12.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Did any samples need to be preserved in the lab?
Bottle Conditions		
13.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	All bottles intact
14.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Appropriate analytical bottles are used
15.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Merit bottles used
16.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Sufficient sample volume received
17.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Samples require laboratory filtration
18.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Samples submitted within holding time
19.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> 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: _____



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

REPORT TO **CHAIN OF CUSTODY RECORD** **INVOICE TO**

CONTACT NAME Rodney Abke
 COMPANY Applied EcoSystems
 ADDRESS G-4300 South Saginaw Street
 CITY Burton STATE MI ZIP CODE 48529
 PHONE NO. 810-715-2525 FAX NO. 810-715-2526 P.O. NO. PO795930
 E-MAIL ADDRESS rabke@appliedecosystems.com QUOTE NO.

CONTACT NAME Monica Wallingford SAME
 COMPANY Revitalizing Auto Communities Environmental Response (RACER) Trust
 ADDRESS
 CITY STATE ZIP CODE
 PHONE NO. 313.486.2978 E-MAIL ADDRESS mwallingford@racertrust.org

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

PROJECT NO./NAME RACER Flint West #12990 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 report to MDLs

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

Containers & Preservatives

MERIT LAB NO. <small>FOR LAB USE ONLY</small>	YEAR		SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	NONE	HCl	HNO ₃	H ₂ SO ₄	NaOH	MeOH	OTHER	PFAS/PFOS **										Certifications		Project Locations		Special Instructions		
	DATE	TIME																					<input type="checkbox"/> OHIO VAP	<input type="checkbox"/> Drinking Water	<input type="checkbox"/> DoD	<input type="checkbox"/> NPDES	<input type="checkbox"/> Detroit	<input type="checkbox"/> New York	<input type="checkbox"/> Other
46507.01	3-21-23	9:35	Field Blank	GW	3								3															** - 28 Compound List	
.02	3-21-23	10:05	MW104S	GW	3								3																
.03	3-21-23	11:20	MW102S	GW	3								3																report down to MDLs
.04	3-21-23	12:23	MW-110S	GW	3								3																
.05	3-21-23	1:38	MW-114S	GW	3								3																
.06	3-21-23	4:03	MW-108S	GW	3								3																
.07	3-21-23	—	Dupe	GW	3								3																

RELINQUISHED BY: Caleb Stanton Sampler DATE 3-21-23 TIME 14:15
 RECEIVED BY: Francis Wallingford DATE 3-21-23 TIME 15:15
 RELINQUISHED BY: DATE TIME
 RECEIVED BY: DATE TIME

RELINQUISHED BY: Francis Wallingford DATE 3/21/23 TIME 15:20
 RECEIVED BY: M. Walcott DATE 3/21/23 TIME 15:20
 SEAL NO. SEAL INTACT YES NO INITIALS
 SEAL NO. SEAL INTACT YES NO INITIALS
 NOTES: TEMP. ON ARRIVAL 5.6



Quality Control Report

Report ID: QC-S46507-01
Generated on 04/12/2023

Report to

Attention: Rodney Abke
Applied Ecosystems
G4300 S. Saginaw Street
Burton, MI 48529

Phone: 810-715-2525 FAX:

Report Produced by

Merit Laboratories
2680 East Lansing Drive
East Lansing, MI 48823

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

Report Summary

Lab Sample ID(s): S46507.01-S46507.07
Project: RACER Flint West #12990
Submitted Date/Time: 03/21/2023 15:20
Sampled by: Unknown
P.O. #: 795930

QC Report Sections

Cover Page (Page 1)
Analysis Summary (Pages 2-8)
Prep Batch Summary (Page 9)
Internal Standards per Lab Sample (Pages 10-16)
Internal Standards per QC Sample (Pages 17-21)
Batch QC Results (Pages 22-25)

Report Flag Descriptions

*: QC result is outside of indicated control limits
W: Surrogate result not applicable due to sample dilution

I certify that this data package is in compliance with the terms and conditions of the program, and project, and contractual requirements both technically and for completeness. Release of the data contained in this hardcopy data package and its computer-readable data submitted has been authorized by the Quality Assurance Manager and his/her designee, as verified by the following signature.

Barbara Ball
Quality Assurance Manager

QC Report - Analysis Summary

Lab Sample ID: S46507.01

Sample Tag: Field Blank

Collected Date/Time: 03/21/2023 09:35

Matrix: Groundwater

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
28 PFAs	ASTMD7979-19M	03/29/23 02:05	SE230328	PF230327W1	Yes	BLK/LCS/LCSD/MS/DU

QC Report - Analysis Summary

Lab Sample ID: S46507.02

Sample Tag: MW104S

Collected Date/Time: 03/21/2023 10:05

Matrix: Groundwater

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
28 PFAs	ASTMD7979-19M	03/29/23 02:24	SE230328	PF230327W1	Yes	BLK/LCS/LCSD/MS/DU

QC Report - Analysis Summary

Lab Sample ID: S46507.03

Sample Tag: MW112S

Collected Date/Time: 03/21/2023 11:20

Matrix: Groundwater

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
28 PFAs	ASTMD7979-19M	03/29/23 02:44	SE230328	PF230327W1	Yes	BLK/LCS/LCSD/MS/DU

QC Report - Analysis Summary

Lab Sample ID: S46507.04

Sample Tag: MW-110S

Collected Date/Time: 03/21/2023 12:23

Matrix: Groundwater

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
28 PFAs	ASTMD7979-19M	03/29/23 03:04	SE230328	PF230327W1	Yes	BLK/LCS/LCSD/MS/DU

QC Report - Analysis Summary

Lab Sample ID: S46507.05

Sample Tag: MW-114S

Collected Date/Time: 03/21/2023 13:18

Matrix: Groundwater

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
28 PFAs	ASTMD7979-19M	03/29/23 03:23	SE230328	PF230327W1	Yes	BLK/LCS/LCSD/MS/DU

QC Report - Analysis Summary

Lab Sample ID: S46507.06

Sample Tag: MW-1018S

Collected Date/Time: 03/21/2023 14:03

Matrix: Groundwater

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
28 PFAs	ASTMD7979-19M	03/29/23 03:43	SE230328	PF230327W1	Yes	BLK/LCS/LCSD/MS/DU

QC Report - Analysis Summary

Lab Sample ID: S46507.07

Sample Tag: Dupe

Collected Date/Time: 03/21/2023 00:01

Matrix: Groundwater

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
28 PFAs	ASTMD7979-19M	03/29/23 04:02	SE230328	PF230327W1	Yes	BLK/LCS/LCSD/MS/DU

QC Report - Prep Batch Summary

Organics - Volatiles, Prep Batch ID: PF230327W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S46507.01	28 PFAs	ASTMD7979-19M	03/29/23 02:05	SE230328
S46507.02	28 PFAs	ASTMD7979-19M	03/29/23 02:24	SE230328
S46507.03	28 PFAs	ASTMD7979-19M	03/29/23 02:44	SE230328
S46507.04	28 PFAs	ASTMD7979-19M	03/29/23 03:04	SE230328
S46507.05	28 PFAs	ASTMD7979-19M	03/29/23 03:23	SE230328
S46507.06	28 PFAs	ASTMD7979-19M	03/29/23 03:43	SE230328
S46507.07	28 PFAs	ASTMD7979-19M	03/29/23 04:02	SE230328

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S46507.01

Sample Tag: Field Blank

Collected Date/Time: 03/21/2023 09:35

Matrix: Groundwater

COC Reference:

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: SE230328, Run Date: 03/29/2023 02:05, Matrix: WW, Dilution: 2.04

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		99.1	50.0	150.0
M2-6:2FTSA		87.7	50.0	150.0
M2-8:2FTSA		86.8	50.0	150.0
M2PFTeDA		108.2	12.0	218.0
M3PFBS		107.3	50.0	150.0
M3PFHxS		101.1	50.0	150.0
M4PFHpA		114.4	50.0	150.0
M5PFHxA		111.6	50.0	150.0
M5PFPeA		114.5	50.0	150.0
M6PFDA		99.6	50.0	150.0
M7PFUnDA		100.3	50.0	150.0
M8FOSA		103.0	50.0	150.0
M8PFOA		108.7	50.0	150.0
M8PFOS		103.3	50.0	150.0
M9-PFNA		113.0	50.0	150.0
MPFBA		119.1	50.0	150.0
MPFDoDA		105.5	50.0	150.0
d3N-MeFOSAA		105.1	50.0	150.0
d5EtFOSAA		118.3	50.0	150.0
MHFPO-DA		104.6	50.0	150.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S46507.02

Sample Tag: MW104S

Collected Date/Time: 03/21/2023 10:05

Matrix: Groundwater

COC Reference:

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: SE230328, Run Date: 03/29/2023 02:24, Matrix: WW, Dilution: 1.96

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		79.4	50.0	150.0
M2-6:2FTSA		79.9	50.0	150.0
M2-8:2FTSA		84.2	50.0	150.0
M2PFTeDA		119.9	12.0	218.0
M3PFBS		106.0	50.0	150.0
M3PFHxS		97.8	50.0	150.0
M4PFHpA		105.8	50.0	150.0
M5PFHxA		102.4	50.0	150.0
M5PFPeA		113.6	50.0	150.0
M6PFDA		99.5	50.0	150.0
M7PFUnDA		101.3	50.0	150.0
M8FOSA		104.2	50.0	150.0
M8PFOA		108.0	50.0	150.0
M8PFOS		102.4	50.0	150.0
M9-PFNA		107.6	50.0	150.0
MPFBA		123.7	50.0	150.0
MPFDoDA		110.6	50.0	150.0
d3N-MeFOSAA		105.7	50.0	150.0
d5EtFOSAA		114.7	50.0	150.0
MHFPO-DA		104.2	50.0	150.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S46507.03

Sample Tag: MW112S

Collected Date/Time: 03/21/2023 11:20

Matrix: Groundwater

COC Reference:

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: SE230328, Run Date: 03/29/2023 02:44, Matrix: WW, Dilution: 1.91

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		124.5	50.0	150.0
M2-6:2FTSA		118.1	50.0	150.0
M2-8:2FTSA		115.4	50.0	150.0
M2PFTeDA		110.3	12.0	218.0
M3PFBS		103.5	50.0	150.0
M3PFHxS		95.5	50.0	150.0
M4PFHpA		109.5	50.0	150.0
M5PFHxA		104.6	50.0	150.0
M5PFPeA		105.5	50.0	150.0
M6PFDA		99.9	50.0	150.0
M7PFUnDA		100.8	50.0	150.0
M8FOSA		99.9	50.0	150.0
M8PFOA		106.7	50.0	150.0
M8PFOS		93.9	50.0	150.0
M9-PFNA		110.6	50.0	150.0
MPFBA		113.9	50.0	150.0
MPFDoDA		98.4	50.0	150.0
d3N-MeFOSAA		128.5	50.0	150.0
d5EtFOSAA		138.9	50.0	150.0
MHFPO-DA		89.6	50.0	150.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S46507.04

Sample Tag: MW-110S

Collected Date/Time: 03/21/2023 12:23

Matrix: Groundwater

COC Reference:

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: SE230328, Run Date: 03/29/2023 03:04, Matrix: WW, Dilution: 2.04

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		99.0	50.0	150.0
M2-6:2FTSA		85.1	50.0	150.0
M2-8:2FTSA		81.3	50.0	150.0
M2PFTeDA		124.2	12.0	218.0
M3PFBS		115.6	50.0	150.0
M3PFHxS		104.7	50.0	150.0
M4PFHpA		117.0	50.0	150.0
M5PFHxA		112.5	50.0	150.0
M5PFPeA		123.2	50.0	150.0
M6PFDA		108.5	50.0	150.0
M7PFUnDA		109.9	50.0	150.0
M8FOSA		110.9	50.0	150.0
M8PFOA		114.7	50.0	150.0
M8PFOS		108.7	50.0	150.0
M9-PFNA		119.6	50.0	150.0
MPFBA		133.3	50.0	150.0
MPFDoDA		115.4	50.0	150.0
d3N-MeFOSAA		118.1	50.0	150.0
d5EtFOSAA		113.9	50.0	150.0
MHFPO-DA		113.1	50.0	150.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S46507.05

Sample Tag: MW-114S

Collected Date/Time: 03/21/2023 13:18

Matrix: Groundwater

COC Reference:

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: SE230328, Run Date: 03/29/2023 03:23, Matrix: WW, Dilution: 2.02

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		92.1	50.0	150.0
M2-6:2FTSA		85.8	50.0	150.0
M2-8:2FTSA		82.7	50.0	150.0
M2PFTeDA		116.3	12.0	218.0
M3PFBS		114.9	50.0	150.0
M3PFHxS		111.1	50.0	150.0
M4PFHpA		117.1	50.0	150.0
M5PFHxA		117.5	50.0	150.0
M5PFPeA		120.2	50.0	150.0
M6PFDA		107.0	50.0	150.0
M7PFUnDA		109.7	50.0	150.0
M8FOSA		109.4	50.0	150.0
M8PFOA		116.5	50.0	150.0
M8PFOS		105.4	50.0	150.0
M9-PFNA		115.1	50.0	150.0
MPFBA		133.0	50.0	150.0
MPFDoDA		118.2	50.0	150.0
d3N-MeFOSAA		114.4	50.0	150.0
d5EtFOSAA		120.1	50.0	150.0
MHFPO-DA		108.3	50.0	150.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S46507.06

Sample Tag: MW-1018S

Collected Date/Time: 03/21/2023 14:03

Matrix: Groundwater

COC Reference:

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: SE230328, Run Date: 03/29/2023 03:43, Matrix: WW, Dilution: 1.95

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		93.2	50.0	150.0
M2-6:2FTSA		79.1	50.0	150.0
M2-8:2FTSA		92.5	50.0	150.0
M2PFTeDA		110.4	12.0	218.0
M3PFBS		108.1	50.0	150.0
M3PFHxS		101.9	50.0	150.0
M4PFHpA		116.7	50.0	150.0
M5PFHxA		110.8	50.0	150.0
M5PFPeA		118.6	50.0	150.0
M6PFDA		99.7	50.0	150.0
M7PFUnDA		106.4	50.0	150.0
M8FOSA		105.0	50.0	150.0
M8PFOA		115.0	50.0	150.0
M8PFOS		108.6	50.0	150.0
M9-PFNA		116.7	50.0	150.0
MPFBA		129.4	50.0	150.0
MPFDoDA		105.5	50.0	150.0
d3N-MeFOSAA		110.7	50.0	150.0
d5EtFOSAA		119.1	50.0	150.0
MHFPO-DA		102.7	50.0	150.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S46507.07

Sample Tag: Dupe

Collected Date/Time: 03/21/2023 00:01

Matrix: Groundwater

COC Reference:

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: SE230328, Run Date: 03/29/2023 04:02, Matrix: WW, Dilution: 1.95

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		96.8	50.0	150.0
M2-6:2FTSA		81.7	50.0	150.0
M2-8:2FTSA		98.1	50.0	150.0
M2PFTeDA		119.6	12.0	218.0
M3PFBS		116.4	50.0	150.0
M3PFHxS		104.5	50.0	150.0
M4PFHpA		119.5	50.0	150.0
M5PFHxA		113.1	50.0	150.0
M5PFPeA		121.3	50.0	150.0
M6PFDA		103.0	50.0	150.0
M7PFUnDA		110.6	50.0	150.0
M8FOSA		109.4	50.0	150.0
M8PFOA		117.3	50.0	150.0
M8PFOS		113.3	50.0	150.0
M9-PFNA		118.2	50.0	150.0
MPFBA		135.0	50.0	150.0
MPFDoDA		112.7	50.0	150.0
d3N-MeFOSAA		111.5	50.0	150.0
d5EtFOSAA		126.6	50.0	150.0
MHFPO-DA		109.1	50.0	150.0

QC Report - Internal Standards per QC Sample

Organics - Volatiles, Prep Batch ID: PF230327W1

QC Types: BLK/LCS/LCSD/MS/DUP

Blank (BLK)

Lab Sample ID: SE230328.BLK230327

Run in Batch: SE230328, Run Date: 03/28/2023 19:54, Prep Date: 03/27/2023, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		105.0	50.0	150.0
M2-6:2FTSA		100.6	50.0	150.0
M2-8:2FTSA		95.7	50.0	150.0
M2PFTeDA		84.5	12.0	218.0
M3PFBS		109.3	50.0	150.0
M3PFHxS		105.7	50.0	150.0
M4PFHpA		113.1	50.0	150.0
M5PFHxA		104.7	50.0	150.0
M5PFPeA		111.0	50.0	150.0
M6PFDA		96.4	50.0	150.0
M7PFUnDA		104.2	50.0	150.0
M8FOSA		102.8	50.0	150.0
M8PFOA		108.6	50.0	150.0
M8PFOS		110.8	50.0	150.0
M9-PFNA		116.7	50.0	150.0
MPFBA		115.0	50.0	150.0
MPFDoDA		102.5	50.0	150.0
d3N-MeFOSAA		104.6	50.0	150.0
d5EtFOSAA		117.2	50.0	150.0
MHFPO-DA		103.8	50.0	150.0

QC Report - Internal Standards per QC Sample

Laboratory Control Sample (LCS)

Lab Sample ID: SE230328.LCS230327

Run in Batch: SE230328, Run Date: 03/28/2023 19:15, Prep Date: 03/27/2023, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		109.1	50.0	150.0
M2-6:2FTSA		96.5	50.0	150.0
M2-8:2FTSA		96.2	50.0	150.0
M2PFTeDA		117.9	12.0	218.0
M3PFBS		103.5	50.0	150.0
M3PFHxS		102.8	50.0	150.0
M4PFHpA		110.1	50.0	150.0
M5PFHxA		104.6	50.0	150.0
M5PFPeA		106.9	50.0	150.0
M6PFDA		94.0	50.0	150.0
M7PFUnDA		108.6	50.0	150.0
M8FOSA		98.8	50.0	150.0
M8PFOA		102.9	50.0	150.0
M8PFOS		103.4	50.0	150.0
M9-PFNA		108.7	50.0	150.0
MPFBA		107.4	50.0	150.0
MPFDoDA		104.9	50.0	150.0
d3N-MeFOSAA		107.5	50.0	150.0
d5EtFOSAA		108.0	50.0	150.0
MHFPO-DA		99.2	50.0	150.0

QC Report - Internal Standards per QC Sample

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: SE230328.LCSD230327, Parent Sample ID: SE230328.LCS230327

Run in Batch: SE230328, Run Date: 03/28/2023 19:35, Prep Date: 03/27/2023, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		105.7	50.0	150.0
M2-6:2FTSA		98.0	50.0	150.0
M2-8:2FTSA		102.6	50.0	150.0
M2PFTeDA		103.7	12.0	218.0
M3PFBS		104.5	50.0	150.0
M3PFHxS		102.8	50.0	150.0
M4PFHpA		109.8	50.0	150.0
M5PFHxA		104.9	50.0	150.0
M5PFPeA		107.5	50.0	150.0
M6PFDA		99.8	50.0	150.0
M7PFUnDA		103.2	50.0	150.0
M8FOSA		96.7	50.0	150.0
M8PFOA		110.1	50.0	150.0
M8PFOS		107.1	50.0	150.0
M9-PFNA		107.8	50.0	150.0
MPFBA		109.0	50.0	150.0
MPFDoDA		102.9	50.0	150.0
d3N-MeFOSAA		108.2	50.0	150.0
d5EtFOSAA		111.6	50.0	150.0
MHFPO-DA		101.5	50.0	150.0

QC Report - Internal Standards per QC Sample

Matrix Spike (MS)

Lab Sample ID: SE230328.4645101M, Parent Sample ID: S46451.01

Run in Batch: SE230328, Run Date: 03/28/2023 21:12, Prep Date: 03/27/2023, Matrix: WW, Dilution: 1.96

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		98.4	50.0	150.0
M2-6:2FTSA		94.1	50.0	150.0
M2-8:2FTSA		100.0	50.0	150.0
M2PFTeDA		121.5	12.0	218.0
M3PFBS		114.8	50.0	150.0
M3PFHxS		108.1	50.0	150.0
M4PFHpA		125.9	50.0	150.0
M5PFHxA		116.3	50.0	150.0
M5PFPeA		123.8	50.0	150.0
M6PFDA		106.2	50.0	150.0
M7PFUnDA		115.3	50.0	150.0
M8FOSA		112.0	50.0	150.0
M8PFOA		121.7	50.0	150.0
M8PFOS		113.1	50.0	150.0
M9-PFNA		119.8	50.0	150.0
MPFBA		132.4	50.0	150.0
MPFDoDA		115.7	50.0	150.0
d3N-MeFOSAA		121.2	50.0	150.0
d5EtFOSAA		133.1	50.0	150.0
MHFPO-DA		111.4	50.0	150.0

QC Report - Internal Standards per QC Sample

Duplicate (DUP)

Lab Sample ID: SE230328.4645102RD, Parent Sample ID: S46451.02

Run in Batch: SE230328, Run Date: 03/29/2023 15:22, Prep Date: 03/27/2023, Matrix: WW, Dilution: 1.98

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		85.0	50.0	150.0
M2-6:2FTSA		94.4	50.0	150.0
M2-8:2FTSA		91.0	50.0	150.0
M2PFTeDA		123.7	12.0	218.0
M3PFBS		94.7	50.0	150.0
M3PFHxS		91.7	50.0	150.0
M4PFHpA		86.1	50.0	150.0
M5PFHxA		85.0	50.0	150.0
M5PFPeA		87.2	50.0	150.0
M6PFDA		91.6	50.0	150.0
M7PFUnDA		90.2	50.0	150.0
M8FOSA		93.9	50.0	150.0
M8PFOA		91.3	50.0	150.0
M8PFOS		96.6	50.0	150.0
M9-PFNA		89.1	50.0	150.0
MPFBA		92.1	50.0	150.0
MPFDoDA		101.9	50.0	150.0
d3N-MeFOSAA		94.6	50.0	150.0
d5EtFOSAA		94.9	50.0	150.0
MHFPO-DA		94.4	50.0	150.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF230327W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/DUP

Blank (BLK)

Lab Sample ID: SE230328.BLK230327

Run in Batch: SE230328, Run Date: 03/28/2023 19:54, Prep Date: 03/27/2023, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
PFBA		ND	10	ng/l
PFMPA		ND	2	ng/l
FPrPA (3:3 FTCA)		ND	4	ng/l
PFPPrS		ND	2	ng/l
PFPeA		ND	4	ng/l
PFMBA		ND	2	ng/l
4:2 FTSA		ND	2	ng/l
NFDHA		ND	2	ng/l
PFHxA		ND	2	ng/l
PFBS		ND	2	ng/l
HFPO-DA		ND	2	ng/l
FPePA (5:3 FTCA)		ND	4	ng/l
PFEESA		ND	2	ng/l
PFHpA		ND	2	ng/l
PFPeS		ND	2	ng/l
ADONA		ND	2	ng/l
6:2 FTSA		ND	4	ng/l
PFBSA		ND	2	ng/l
PFOA		ND	2	ng/l
PFHxS-BR		ND	2	ng/l
PFHxS		ND	2	ng/l
PFHxS-LN		ND	2	ng/l
FHpPA (7:3 FTCA)		ND	4	ng/l
PFNA		ND	2	ng/l
PFECHS		ND	2	ng/l
8:2 FTSA		ND	2	ng/l
PFHpS		ND	2	ng/l
N-MeFOSAA		ND	2	ng/l
PFDA		ND	2	ng/l
PFOS-BR		ND	2	ng/l
PFOS		ND	2	ng/l
EtFOSAA		ND	4	ng/l
PFOS-LN		ND	2	ng/l
PFUnDA		ND	2	ng/l
PFHxSA		ND	2	ng/l
9CL-PF3ONS		ND	2	ng/l
PFNS		ND	2	ng/l
PFDoDA		ND	2	ng/l
PFDS		ND	2	ng/l
PFTTrDA		ND	2	ng/l
11CL-PF3OUdS		ND	2	ng/l
PFTeDA		ND	4	ng/l
FOSA		ND	2	ng/l

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF230327W1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/DUP

Laboratory Control Sample (LCS)

Lab Sample ID: SE230328.LCS230327

Run in Batch: SE230328, Run Date: 03/28/2023 19:15, Prep Date: 03/27/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
PFBA		92.2	70.0	130.0
PFMPA		89.6	70.0	130.0
FPrPA (3:3 FTCA)		89.0	70.0	130.0
PFPPrS		91.8	70.0	130.0
PFPeA		97.4	70.0	130.0
PFMBA		85.6	70.0	130.0
4:2 FTSA		103.8	70.0	130.0
NFDHA		91.8	70.0	130.0
PFHxA		93.6	70.0	130.0
PFBS		89.6	70.0	130.0
HFPO-DA		80.6	70.0	130.0
FPePA (5:3 FTCA)		76.0	70.0	130.0
PFEESA		89.8	70.0	130.0
PFHpA		88.4	70.0	130.0
PFPeS		95.2	70.0	130.0
ADONA		97.6	70.0	130.0
6:2 FTSA		112.4	70.0	130.0
PFBSA		89.8	70.0	130.0
PFOA		91.8	70.0	130.0
PFHxS		87.4	70.0	130.0
FHpPA (7:3 FTCA)		93.4	70.0	130.0
PFNA		86.6	70.0	130.0
PFECHS		111.2	70.0	130.0
8:2 FTSA		116.2	70.0	130.0
PFHpS		79.8	70.0	130.0
N-MeFOSAA		82.2	70.0	130.0
PFDA		93.2	70.0	130.0
PFOS		89.8	70.0	130.0
EtFOSAA		97.6	70.0	130.0
PFUnDA		90.6	70.0	130.0
PFHxSA		89.0	70.0	130.0
9CL-PF3ONS		102.0	70.0	130.0
PFNS		82.4	70.0	130.0
PFDoDA		89.2	70.0	130.0
PFDS		89.2	70.0	130.0
PFTTrDA		87.0	70.0	130.0
11CL-PF3OUdS		96.2	70.0	130.0
PFTeDA		86.0	70.0	130.0
FOSA		93.4	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: SE230328.LCSD230327, Parent Sample ID: SE230328.LCS230327

Run in Batch: SE230328, Run Date: 03/28/2023 19:35, Prep Date: 03/27/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
PFBA		88.8	70.0	130.0	3.8	30.0
PFMPA		85.2	70.0	130.0	5.0	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF230327W1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/DUP

Laboratory Control Sample Duplicate (LCSD) (continued)

Lab Sample ID: SE230328.LCSD230327, Parent Sample ID: SE230328.LCS230327

Run in Batch: SE230328, Run Date: 03/28/2023 19:35, Prep Date: 03/27/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
FPrPA (3:3 FTCA)		94.6	70.0	130.0	6.1	30.0
PFPPrS		89.0	70.0	130.0	3.1	30.0
PFPeA		91.8	70.0	130.0	5.9	30.0
PFMBA		82.2	70.0	130.0	4.1	30.0
4:2 FTSA		101.8	70.0	130.0	1.9	30.0
NFDHA		86.8	70.0	130.0	5.6	30.0
PFHxA		92.6	70.0	130.0	1.1	30.0
PFBS		87.6	70.0	130.0	2.3	30.0
HFPO-DA		76.2	70.0	130.0	5.6	30.0
FPePA (5:3 FTCA)		83.2	70.0	130.0	9.0	30.0
PFEESA		85.4	70.0	130.0	5.0	30.0
PFHpA		81.6	70.0	130.0	8.0	30.0
PFPeS		89.0	70.0	130.0	6.7	30.0
ADONA		82.0	70.0	130.0	17.4	30.0
6:2 FTSA		106.8	70.0	130.0	5.1	30.0
PFBSA		89.4	70.0	130.0	0.4	30.0
PFOA		83.0	70.0	130.0	10.1	30.0
PFHxS		83.0	70.0	130.0	5.2	30.0
FHpPA (7:3 FTCA)		84.4	70.0	130.0	10.1	30.0
PFNA		86.8	70.0	130.0	0.2	30.0
PFECHS		104.0	70.0	130.0	6.7	30.0
8:2 FTSA		100.6	70.0	130.0	14.4	30.0
PFHpS		84.6	70.0	130.0	5.8	30.0
N-MeFOSAA		80.4	70.0	130.0	2.2	30.0
PFDA		81.6	70.0	130.0	13.3	30.0
PFOS		83.0	70.0	130.0	7.9	30.0
EtFOSAA		84.2	70.0	130.0	14.7	30.0
PFUnDA		91.0	70.0	130.0	0.4	30.0
PFHxSA		93.6	70.0	130.0	5.0	30.0
9CL-PF3ONS		86.4	70.0	130.0	16.6	30.0
PFNS		84.0	70.0	130.0	1.9	30.0
PFDoDA		83.0	70.0	130.0	7.2	30.0
PFDS		77.8	70.0	130.0	13.7	30.0
PFTTrDA		76.2	70.0	130.0	13.2	30.0
11CL-PF3OUdS		87.4	70.0	130.0	9.6	30.0
PFTeDA		83.4	70.0	130.0	3.1	30.0
FOSA		95.6	70.0	130.0	2.3	30.0

Matrix Spike (MS)

Lab Sample ID: SE230328.4645101M, Parent Sample ID: S46451.01

Run in Batch: SE230328, Run Date: 03/28/2023 21:12, Prep Date: 03/27/2023, Matrix: WW, Dilution: 1.96

Analyte	Flags	% Rec	LCL	UCL
PFOA		74.9	70.0	130.0
PFOS		80.6	70.0	130.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF230327W1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/DUP

Duplicate (DUP)

Lab Sample ID: SE230328.4645102RD, Parent Sample ID: S46451.02

Run in Batch: SE230328, Run Date: 03/29/2023 15:22, Prep Date: 03/27/2023, Matrix: WW, Dilution: 1.98

Analyte	Flags	RPD	RPD CL
PFOA		5.1	30.0
PFOS		18.2	30.0
PFOS-LN		NC	30.0
PFOS-BR		NC	30.0



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REPORT TO **CHAIN OF CUSTODY RECORD** **INVOICE TO**

CONTACT NAME Rodney Abke
 COMPANY Applied EcoSystems
 ADDRESS G-4300 South Saginaw Street
 CITY Burton STATE MI ZIP CODE 48529
 PHONE NO. 810-715-2525 FAX NO. 810-715-2526 P.O. NO. PO795930
 E-MAIL ADDRESS rabke@appliedecosystems.com QUOTE NO.

CONTACT NAME Monica Wallingford SAME
 COMPANY Revitalizing Auto Communities Environmental Response (RACER) Trust
 ADDRESS
 CITY STATE ZIP CODE
 PHONE NO. 313.486.2978 E-MAIL ADDRESS mwallingford@racertrust.org

PROJECT NO./NAME RACER Flint West #12990 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 report to MDLs

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

MERIT LAB NO. <small>FOR LAB USE ONLY</small>	YEAR		SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	NONE	HCl	HNO ₃	H ₂ SO ₄	NaOH	MeOH	OTHER	PFAS/PFOS **	Certifications		Project Locations		Special Instructions
	DATE	TIME												<input type="checkbox"/> OHIO VAP	<input type="checkbox"/> Drinking Water	<input type="checkbox"/> DoD	<input type="checkbox"/> NPDES	
46507.01	3-21-23	9:35	Field Blank	fw	3								3					** - 28 Compound List
.02	3-21-23	10:05	MW 104 S	fw	3								3					
.03	3-21-23	11:20	MW 102 S	fw	3								3					report down to MDLs
.04	3-21-23	12:23	MW-110S	fw	3								3					
.05	3-21-23	1:38	MW-114S	fw	3								3					
.06	3-21-23	4:03	MW-108S	fw	3								3					
.07	3-21-23	—	Dupe	fw	3								3					

RELINQUISHED BY: Caleb Stanin Sampler DATE 3-21-23 TIME 14:15
 RECEIVED BY: Francis Wallingford DATE 3-21-23 TIME 14:15
 RELINQUISHED BY: DATE TIME
 RECEIVED BY: DATE TIME

RELINQUISHED BY: Francis Wallingford DATE 3/20/23 TIME 15:20
 RECEIVED BY: M. Walcott DATE 3/21/23 TIME 15:20
 SEAL NO. SEAL INTACT YES NO INITIALS NOTES: TEMP. ON ARRIVAL 5.6
 SEAL NO. SEAL INTACT YES NO INITIALS



Analytical Laboratory Report

Report ID: S46527.01(01)
Generated on 04/04/2023

Report to

Attention: Rodney Abke
Applied Ecosystems
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Report produced by

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Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S46527.01-S46527.06
Project: RACER Flint West #12990
Collected Date(s): 03/21/2023
Submitted Date/Time: 03/22/2023 08:15
Sampled by: Unknown
P.O. #: 795930

Table of Contents

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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).

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

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

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

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

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

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

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

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

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

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

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

Report Narrative

There is no additional narrative for this analytical report



Analytical Laboratory Report

Laboratory Certifications

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

Qualifier Descriptions

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

Glossary of Abbreviations

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



Analytical Laboratory Report

Method Summary

Method	Version
E200.8	EPA Method 200.8 Revision 5.4
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



Analytical Laboratory Report

Sample Summary (6 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S46527.01	MW-117S	Groundwater	03/21/23 14:30
S46527.02	MW-103S	Groundwater	03/21/23 15:41
S46527.03	MSMW-103S	Groundwater	03/21/23 15:41
S46527.04	MSDMW-103S	Groundwater	03/21/23 15:41
S46527.05	Equip Blank	Water	03/21/23 15:55
S46527.06	Trip Blank	Water	03/21/23 00:01



Analytical Laboratory Report

Lab Sample ID: S46527.01

Sample Tag: MW-117S

Collected Date/Time: 03/21/2023 14:30

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	250ml Plastic	None	Yes	5.0	IR
3	40ml Glass	HCL	Yes	5.0	IR
1	125ml Plastic	HNO3	Yes	5.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/27/23 11:44	ASW	
Metal Digestion	Completed	SW3015A	03/24/23 10:15	CCM	f
Metal Digestion	Completed	SW3015A	03/24/23 10:15	CCM	

Inorganics

Method: SM3500-Cr B, Run Date: 03/22/23 13:50, Analyst: JKB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chromium VI, Dissolved	Not detected	0.01	0.004	mg/L	1	18540-29-9	c

Method: SM3500-Cr B, Run Date: 03/22/23 13:20, Analyst: JKB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chromium VI	Not detected	0.01	0.004	mg/L	1	18540-29-9	

Metals

Method: E200.8, Run Date: 03/24/23 12:32, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	0.00106	0.002	0.000255	mg/L	5	7440-38-2	b
Chromium	0.049	0.005	0.0000965	mg/L	5	7440-47-3	
Copper	0.00216	0.005	0.000377	mg/L	5	7440-50-8	b
Lead	Not detected	0.003	0.000190	mg/L	5	7439-92-1	
Selenium	Not detected	0.005	0.00209	mg/L	5	7782-49-2	
Zinc	0.00165	0.005	0.000730	mg/L	5	7440-66-6	b

Method: E200.8, Run Date: 03/24/23 12:35, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic, Dissolved	0.000941	0.002	0.000255	mg/L	5	7440-38-2	bf
Chromium, Dissolved	0.00127	0.005	0.0000965	mg/L	5	7440-47-3	bf
Copper, Dissolved	0.00113	0.005	0.000377	mg/L	5	7440-50-8	bf
Lead, Dissolved	Not detected	0.003	0.000190	mg/L	5	7439-92-1	f
Selenium, Dissolved	Not detected	0.005	0.00209	mg/L	5	7782-49-2	f
Zinc, Dissolved	0.00124	0.005	0.000730	mg/L	5	7440-66-6	bf

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/25/23 02:11, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10	0.27	ug/L	1	60-29-7	
Acetone	Not detected	50	4.0	ug/L	1	67-64-1	

f-Filtered and preserved in lab

c-Filtered in lab

b-Value detected less than reporting limit, but greater than MDL



Analytical Laboratory Report

Lab Sample ID: S46527.01 (continued)

Sample Tag: MW-117S

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/25/23 02:11, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Methyl iodide	Not detected	1	0.24	ug/L	1	74-88-4	
Carbon disulfide	Not detected	5	0.13	ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5	0.25	ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2	0.38	ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25	3.3	ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5	0.57	ug/L	1	75-71-8	
Chloromethane	Not detected	5	0.20	ug/L	1	74-87-3	
Vinyl chloride	Not detected	1	0.24	ug/L	1	75-01-4	
Bromomethane	Not detected	5	0.18	ug/L	1	74-83-9	
Chloroethane	Not detected	5	0.21	ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1	0.28	ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1	0.27	ug/L	1	75-35-4	
Methylene chloride	Not detected	5	0.16	ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1	0.14	ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1	0.15	ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1	0.21	ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90	1.2	ug/L	1	109-99-9	
Chloroform	Not detected	1	0.15	ug/L	1	67-66-3	
Bromochloromethane	Not detected	1	0.36	ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1	0.27	ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50	0.35	ug/L	1	108-10-1	
2-Hexanone	Not detected	50	0.19	ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1	0.19	ug/L	1	56-23-5	
Benzene	Not detected	1	0.11	ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1	0.17	ug/L	1	107-06-2	
Trichloroethene	Not detected	1	0.29	ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1	0.18	ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1	0.19	ug/L	1	75-27-4	
Dibromomethane	Not detected	5	0.45	ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1	0.17	ug/L	1	10061-01-5	
Toluene	Not detected	1	0.17	ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1	0.20	ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1	0.34	ug/L	1	79-00-5	
Tetrachloroethene	0.14	1	0.13	ug/L	1	127-18-4	J
trans-1,4-Dichloro-2-butene	Not detected	1	0.26	ug/L	1	110-57-6	
Dibromochloromethane	Not detected	5	0.20	ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1	0.12	ug/L	1	106-93-4	
Chlorobenzene	Not detected	1	0.16	ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1	0.22	ug/L	1	630-20-6	
Ethylbenzene	Not detected	1	0.10	ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2	0.42	ug/L	1		
o-Xylene	Not detected	1	0.16	ug/L	1	95-47-6	
Styrene	Not detected	1	0.13	ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5	0.12	ug/L	1	98-82-8	
Bromoform	Not detected	1	0.35	ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1	0.27	ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1	0.54	ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1	0.12	ug/L	1	103-65-1	
Bromobenzene	Not detected	1	0.15	ug/L	1	108-86-1	

J-Estimated value less than reporting limit, but greater than MDL



Analytical Laboratory Report

Lab Sample ID: S46527.01 (continued)

Sample Tag: MW-117S

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/25/23 02:11, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,3,5-Trimethylbenzene	Not detected	1	0.18	ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1	0.14	ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1	0.16	ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1	0.16	ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5	0.19	ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1	0.20	ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1	0.18	ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1	0.13	ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1	0.14	ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1	0.17	ug/L	1	104-51-8	
Hexachloroethane	Not detected	5	0.35	ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5	0.48	ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5	0.24	ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5	0.25	ug/L	1	87-61-6	
Naphthalene	Not detected	5	0.18	ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5	0.21	ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S46527.02

Sample Tag: MW-103S

Collected Date/Time: 03/21/2023 15:41

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	250ml Plastic	None	Yes	5.0	IR
3	40ml Glass	HCL	Yes	5.0	IR
1	125ml Plastic	HNO3	Yes	5.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/27/23 11:44	ASW	
Metal Digestion	Completed	SW3015A	03/24/23 10:15	CCM	f
Metal Digestion	Completed	SW3015A	03/24/23 10:15	CCM	

Inorganics

Method: SM3500-Cr B, Run Date: 03/22/23 13:55, Analyst: JKB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chromium VI, Dissolved	Not detected	0.01	0.004	mg/L	1	18540-29-9	c

Method: SM3500-Cr B, Run Date: 03/22/23 13:30, Analyst: JKB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chromium VI	Not detected	0.25	0.10	mg/L	25	18540-29-9	

Metals

Method: E200.8, Run Date: 03/24/23 12:07, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	0.014	0.002	0.000255	mg/L	5	7440-38-2	
Chromium	0.000406	0.005	0.0000965	mg/L	5	7440-47-3	b
Copper	0.000469	0.005	0.000377	mg/L	5	7440-50-8	b
Lead	Not detected	0.003	0.000190	mg/L	5	7439-92-1	
Selenium	Not detected	0.005	0.00209	mg/L	5	7782-49-2	
Zinc	0.00168	0.005	0.000730	mg/L	5	7440-66-6	b

Method: E200.8, Run Date: 03/24/23 12:37, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic, Dissolved	0.008	0.002	0.000255	mg/L	5	7440-38-2	f
Chromium, Dissolved	0.000204	0.005	0.0000965	mg/L	5	7440-47-3	bf
Copper, Dissolved	Not detected	0.005	0.000377	mg/L	5	7440-50-8	f
Lead, Dissolved	Not detected	0.003	0.000190	mg/L	5	7439-92-1	f
Selenium, Dissolved	Not detected	0.005	0.00209	mg/L	5	7782-49-2	f
Zinc, Dissolved	0.00117	0.005	0.000730	mg/L	5	7440-66-6	bf

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/27/23 23:23, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10	0.10	ug/L	1	60-29-7	
Acetone	Not detected	50	8.5	ug/L	1	67-64-1	

f-Filtered and preserved in lab

c-Filtered in lab

b-Value detected less than reporting limit, but greater than MDL



Analytical Laboratory Report

Lab Sample ID: S46527.02 (continued)

Sample Tag: MW-103S

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/27/23 23:23, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Methyl iodide	Not detected	1	0.030	ug/L	1	74-88-4	
Carbon disulfide	0.24	5	0.10	ug/L	1	75-15-0	J
tert-Methyl butyl ether (MTBE)	Not detected	5	0.10	ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2	0.10	ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25	4.7	ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5	0.40	ug/L	1	75-71-8	
Chloromethane	Not detected	5	0.10	ug/L	1	74-87-3	
Vinyl chloride	Not detected	1	0.10	ug/L	1	75-01-4	
Bromomethane	Not detected	5	0.10	ug/L	1	74-83-9	
Chloroethane	Not detected	5	0.20	ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1	0.40	ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1	0.10	ug/L	1	75-35-4	
Methylene chloride	Not detected	5	0.10	ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1	0.10	ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1	0.10	ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1	0.10	ug/L	1	156-59-2	
Tetrahydrofuran*	1.28	90	0.20	ug/L	1	109-99-9	JB
Chloroform	Not detected	1	0.10	ug/L	1	67-66-3	
Bromochloromethane	Not detected	1	0.10	ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1	0.10	ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50	0.10	ug/L	1	108-10-1	
2-Hexanone	Not detected	50	0.10	ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1	0.10	ug/L	1	56-23-5	
Benzene	0.22	1	0.10	ug/L	1	71-43-2	J
1,2-Dichloroethane	Not detected	1	0.10	ug/L	1	107-06-2	
Trichloroethene	0.10	1	0.10	ug/L	1	79-01-6	J
1,2-Dichloropropane	Not detected	1	0.10	ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1	0.10	ug/L	1	75-27-4	
Dibromomethane	Not detected	5	0.10	ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1	0.10	ug/L	1	10061-01-5	
Toluene	0.18	1	0.10	ug/L	1	108-88-3	J
trans-1,3-Dichloropropene	Not detected	1	0.10	ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1	0.050	ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1	0.20	ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1	0.10	ug/L	1	110-57-6	
Dibromochloromethane	Not detected	5	0.020	ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1	0.10	ug/L	1	106-93-4	
Chlorobenzene	3	1	0.10	ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1	0.10	ug/L	1	630-20-6	
Ethylbenzene	0.12	1	0.10	ug/L	1	100-41-4	J
p,m-Xylene*	0.22	2	0.20	ug/L	1		J
o-Xylene	0.110	1	0.050	ug/L	1	95-47-6	J
Styrene	Not detected	1	0.10	ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5	0.030	ug/L	1	98-82-8	
Bromoform	Not detected	1	0.10	ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1	0.050	ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1	0.10	ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1	0.10	ug/L	1	103-65-1	

J-Estimated value less than reporting limit, but greater than MDL

B-Compound also found in associated method blank



Analytical Laboratory Report

Lab Sample ID: S46527.02 (continued)

Sample Tag: MW-103S

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/27/23 23:23, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Bromobenzene	Not detected	1	0.10	ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1	0.10	ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1	0.10	ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1	0.10	ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1	0.050	ug/L	1	135-98-8	
p-Isopropyltoluene	0.110	5	0.040	ug/L	1	99-87-6	JB
1,3-Dichlorobenzene	Not detected	1	0.10	ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1	0.10	ug/L	1	106-46-7	
1,2-Dichlorobenzene	0.27	1	0.10	ug/L	1	95-50-1	J
1,2,3-Trimethylbenzene	Not detected	1	0.040	ug/L	1	526-73-8	
n-Butylbenzene	0.200	1	0.040	ug/L	1	104-51-8	JB
Hexachloroethane	Not detected	5	0.10	ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5	0.10	ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	0.15	5	0.10	ug/L	1	120-82-1	JB
1,2,3-Trichlorobenzene	0.150	5	0.040	ug/L	1	87-61-6	JB
Naphthalene	0.21	5	0.10	ug/L	1	91-20-3	JB
2-Methylnaphthalene	0.45	5	0.10	ug/L	1	91-57-6	JB

J-Estimated value less than reporting limit, but greater than MDL B-Compound also found in associated method blank



Analytical Laboratory Report

Lab Sample ID: S46527.03

Sample Tag: MSMW-103S

Collected Date/Time: 03/21/2023 15:41

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	250ml Plastic	None	Yes	5.0	IR
3	40ml Glass	HCL	Yes	5.0	IR
1	125ml Plastic	HNO3	Yes	5.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/27/23 11:44	ASW	
Metal Digestion	Completed	SW3015A	03/24/23 10:15	CCM	f
Metal Digestion	Completed	SW3015A	03/24/23 10:15	CCM	

Inorganics

Method: SM3500-Cr B, Run Date: 03/22/23 14:00, Analyst: JKB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chromium VI, Dissolved	Not detected	0.01	0.004	mg/L	1	18540-29-9	c

Method: SM3500-Cr B, Run Date: 03/22/23 13:35, Analyst: JKB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chromium VI	3.6	0.25	0.10	mg/L	25	18540-29-9	

Metals

Method: E200.8, Run Date: 03/24/23 12:08, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	0.271	0.002	0.000255	mg/L	5	7440-38-2	
Chromium	0.249	0.005	0.0000965	mg/L	5	7440-47-3	
Copper	0.245	0.005	0.000377	mg/L	5	7440-50-8	
Lead	0.235	0.003	0.000190	mg/L	5	7439-92-1	
Selenium	0.269	0.005	0.00209	mg/L	5	7782-49-2	
Zinc	0.260	0.005	0.000730	mg/L	5	7440-66-6	

Method: E200.8, Run Date: 03/24/23 12:38, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic, Dissolved	0.256	0.002	0.000255	mg/L	5	7440-38-2	f
Chromium, Dissolved	0.245	0.005	0.0000965	mg/L	5	7440-47-3	f
Copper, Dissolved	0.238	0.005	0.000377	mg/L	5	7440-50-8	f
Lead, Dissolved	0.242	0.003	0.000190	mg/L	5	7439-92-1	f
Selenium, Dissolved	0.256	0.005	0.00209	mg/L	5	7782-49-2	f
Zinc, Dissolved	0.246	0.005	0.000730	mg/L	5	7440-66-6	f

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/28/23 05:12, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	61	10	0.10	ug/L	1	60-29-7	1
Acetone	56	50	8.5	ug/L	1	67-64-1	1

f-Filtered and preserved in lab

c-Filtered in lab

1-Spiked at 50ug/L



Analytical Laboratory Report

Lab Sample ID: S46527.03 (continued)

Sample Tag: MSMW-103S

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/28/23 05:12, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Methyl iodide	58	1	0.030	ug/L	1	74-88-4	1
Carbon disulfide	60	5	0.10	ug/L	1	75-15-0	1
tert-Methyl butyl ether (MTBE)	56	5	0.10	ug/L	1	1634-04-4	1
Acrylonitrile	54	2	0.10	ug/L	1	107-13-1	1
2-Butanone (MEK)	49	25	4.7	ug/L	1	78-93-3	1
Dichlorodifluoromethane	71	5	0.40	ug/L	1	75-71-8	1
Chloromethane	71	5	0.10	ug/L	1	74-87-3	1
Vinyl chloride	70	1	0.10	ug/L	1	75-01-4	1
Bromomethane	65	5	0.10	ug/L	1	74-83-9	1
Chloroethane	66	5	0.20	ug/L	1	75-00-3	1
Trichlorofluoromethane	66	1	0.40	ug/L	1	75-69-4	1
1,1-Dichloroethene	59	1	0.10	ug/L	1	75-35-4	1
Methylene chloride	55	5	0.10	ug/L	1	75-09-2	1
trans-1,2-Dichloroethene	53	1	0.10	ug/L	1	156-60-5	1
1,1-Dichloroethane	57	1	0.10	ug/L	1	75-34-3	1
cis-1,2-Dichloroethene	54	1	0.10	ug/L	1	156-59-2	1
Tetrahydrofuran*	47.49	90	0.20	ug/L	1	109-99-9	J1
Chloroform	57	1	0.10	ug/L	1	67-66-3	1
Bromochloromethane	58	1	0.10	ug/L	1	74-97-5	1
1,1,1-Trichloroethane	56	1	0.10	ug/L	1	71-55-6	1
4-Methyl-2-pentanone (MIBK)	55	50	0.10	ug/L	1	108-10-1	1
2-Hexanone	57	50	0.10	ug/L	1	591-78-6	1
Carbon tetrachloride	57	1	0.10	ug/L	1	56-23-5	1
Benzene	58	1	0.10	ug/L	1	71-43-2	1
1,2-Dichloroethane	59	1	0.10	ug/L	1	107-06-2	1
Trichloroethene	58	1	0.10	ug/L	1	79-01-6	1
1,2-Dichloropropane	57	1	0.10	ug/L	1	78-87-5	1
Bromodichloromethane	57	1	0.10	ug/L	1	75-27-4	1
Dibromomethane	59	5	0.10	ug/L	1	74-95-3	1
cis-1,3-Dichloropropene	59	1	0.10	ug/L	1	10061-01-5	1
Toluene	57	1	0.10	ug/L	1	108-88-3	1
trans-1,3-Dichloropropene	56	1	0.10	ug/L	1	10061-02-6	1
1,1,2-Trichloroethane	60	1	0.050	ug/L	1	79-00-5	1
Tetrachloroethene	56	1	0.20	ug/L	1	127-18-4	1
trans-1,4-Dichloro-2-butene	45	1	0.10	ug/L	1	110-57-6	1
Dibromochloromethane	54	5	0.020	ug/L	1	124-48-1	1
1,2-Dibromoethane	54	1	0.10	ug/L	1	106-93-4	1
Chlorobenzene	55	1	0.10	ug/L	1	108-90-7	1
1,1,1,2-Tetrachloroethane	53	1	0.10	ug/L	1	630-20-6	1
Ethylbenzene	52	1	0.10	ug/L	1	100-41-4	1
p,m-Xylene*	104	2	0.20	ug/L	1		1
o-Xylene	49	1	0.050	ug/L	1	95-47-6	1
Styrene	49	1	0.10	ug/L	1	100-42-5	1
Isopropylbenzene	48	5	0.030	ug/L	1	98-82-8	1
Bromoform	50	1	0.10	ug/L	1	75-25-2	1
1,1,2,2-Tetrachloroethane	47	1	0.050	ug/L	1	79-34-5	1
1,2,3-Trichloropropane	49	1	0.10	ug/L	1	96-18-4	1
n-Propylbenzene	48	1	0.10	ug/L	1	103-65-1	1

1-Spiked at 50ug/L

J-Estimated value less than reporting limit, but greater than MDL



Analytical Laboratory Report

Lab Sample ID: S46527.03 (continued)

Sample Tag: MSMW-103S

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/28/23 05:12, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Bromobenzene	48	1	0.10	ug/L	1	108-86-1	1
1,3,5-Trimethylbenzene	49	1	0.10	ug/L	1	108-67-8	1
tert-Butylbenzene	48	1	0.10	ug/L	1	98-06-6	1
1,2,4-Trimethylbenzene	49	1	0.10	ug/L	1	95-63-6	1
sec-Butylbenzene	53	1	0.050	ug/L	1	135-98-8	1
p-Isopropyltoluene	54	5	0.040	ug/L	1	99-87-6	1
1,3-Dichlorobenzene	55	1	0.10	ug/L	1	541-73-1	1
1,4-Dichlorobenzene	55	1	0.10	ug/L	1	106-46-7	1
1,2-Dichlorobenzene	55	1	0.10	ug/L	1	95-50-1	1
1,2,3-Trimethylbenzene	54	1	0.040	ug/L	1	526-73-8	1
n-Butylbenzene	53	1	0.040	ug/L	1	104-51-8	1
Hexachloroethane	58	5	0.10	ug/L	1	67-72-1	1
1,2-Dibromo-3-chloropropane	60	5	0.10	ug/L	1	96-12-8	1
1,2,4-Trichlorobenzene	59	5	0.10	ug/L	1	120-82-1	1
1,2,3-Trichlorobenzene	60	5	0.040	ug/L	1	87-61-6	1
Naphthalene	63	5	0.10	ug/L	1	91-20-3	1
2-Methylnaphthalene	58	5	0.10	ug/L	1	91-57-6	1

1-Spiked at 50ug/L



Analytical Laboratory Report

Lab Sample ID: S46527.04

Sample Tag: MSDMW-103S

Collected Date/Time: 03/21/2023 15:41

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	250ml Plastic	None	Yes	5.0	IR
3	40ml Glass	HCL	Yes	5.0	IR
1	125ml Plastic	HNO3	Yes	5.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/27/23 11:44	ASW	
Metal Digestion	Completed	SW3015A	03/24/23 10:15	CCM	f
Metal Digestion	Completed	SW3015A	03/24/23 10:15	CCM	

Inorganics

Method: SM3500-Cr B, Run Date: 03/22/23 14:05, Analyst: JKB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chromium VI, Dissolved	Not detected	0.01	0.004	mg/L	1	18540-29-9	c

Method: SM3500-Cr B, Run Date: 03/22/23 13:40, Analyst: JKB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chromium VI	3.38	0.25	0.10	mg/L	25	18540-29-9	

Metals

Method: E200.8, Run Date: 03/24/23 12:09, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	0.277	0.002	0.000255	mg/L	5	7440-38-2	
Chromium	0.247	0.005	0.0000965	mg/L	5	7440-47-3	
Copper	0.237	0.005	0.000377	mg/L	5	7440-50-8	
Lead	0.243	0.003	0.000190	mg/L	5	7439-92-1	
Selenium	0.283	0.005	0.00209	mg/L	5	7782-49-2	
Zinc	0.261	0.005	0.000730	mg/L	5	7440-66-6	

Method: E200.8, Run Date: 03/24/23 12:39, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic, Dissolved	0.263	0.002	0.000255	mg/L	5	7440-38-2	f
Chromium, Dissolved	0.254	0.005	0.0000965	mg/L	5	7440-47-3	f
Copper, Dissolved	0.247	0.005	0.000377	mg/L	5	7440-50-8	f
Lead, Dissolved	0.246	0.003	0.000190	mg/L	5	7439-92-1	f
Selenium, Dissolved	0.260	0.005	0.00209	mg/L	5	7782-49-2	f
Zinc, Dissolved	0.256	0.005	0.000730	mg/L	5	7440-66-6	f

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/28/23 05:32, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	59	10	0.10	ug/L	1	60-29-7	1
Acetone	51	50	8.5	ug/L	1	67-64-1	1

f-Filtered and preserved in lab

c-Filtered in lab

1-Spiked at 50ug/L



Analytical Laboratory Report

Lab Sample ID: S46527.04 (continued)

Sample Tag: MSDMW-103S

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/28/23 05:32, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Methyl iodide	52	1	0.030	ug/L	1	74-88-4	1
Carbon disulfide	53	5	0.10	ug/L	1	75-15-0	1
tert-Methyl butyl ether (MTBE)	51	5	0.10	ug/L	1	1634-04-4	1
Acrylonitrile	51	2	0.10	ug/L	1	107-13-1	1
2-Butanone (MEK)	45	25	4.7	ug/L	1	78-93-3	1
Dichlorodifluoromethane	70	5	0.40	ug/L	1	75-71-8	1
Chloromethane	83	5	0.10	ug/L	1	74-87-3	1
Vinyl chloride	78	1	0.10	ug/L	1	75-01-4	1
Bromomethane	70	5	0.10	ug/L	1	74-83-9	1
Chloroethane	71	5	0.20	ug/L	1	75-00-3	1
Trichlorofluoromethane	72	1	0.40	ug/L	1	75-69-4	1
1,1-Dichloroethene	58	1	0.10	ug/L	1	75-35-4	1
Methylene chloride	49	5	0.10	ug/L	1	75-09-2	1
trans-1,2-Dichloroethene	52	1	0.10	ug/L	1	156-60-5	1
1,1-Dichloroethane	51	1	0.10	ug/L	1	75-34-3	1
cis-1,2-Dichloroethene	50	1	0.10	ug/L	1	156-59-2	1
Tetrahydrofuran*	37.98	90	0.20	ug/L	1	109-99-9	J1
Chloroform	51	1	0.10	ug/L	1	67-66-3	1
Bromochloromethane	51	1	0.10	ug/L	1	74-97-5	1
1,1,1-Trichloroethane	53	1	0.10	ug/L	1	71-55-6	1
4-Methyl-2-pentanone (MIBK)	57	50	0.10	ug/L	1	108-10-1	1
2-Hexanone	49.30	50	0.10	ug/L	1	591-78-6	J1
Carbon tetrachloride	58	1	0.10	ug/L	1	56-23-5	1
Benzene	54	1	0.10	ug/L	1	71-43-2	1
1,2-Dichloroethane	54	1	0.10	ug/L	1	107-06-2	1
Trichloroethene	56	1	0.10	ug/L	1	79-01-6	1
1,2-Dichloropropane	52	1	0.10	ug/L	1	78-87-5	1
Bromodichloromethane	54	1	0.10	ug/L	1	75-27-4	1
Dibromomethane	55	5	0.10	ug/L	1	74-95-3	1
cis-1,3-Dichloropropene	57	1	0.10	ug/L	1	10061-01-5	1
Toluene	55	1	0.10	ug/L	1	108-88-3	1
trans-1,3-Dichloropropene	53	1	0.10	ug/L	1	10061-02-6	1
1,1,2-Trichloroethane	54	1	0.050	ug/L	1	79-00-5	1
Tetrachloroethene	56	1	0.20	ug/L	1	127-18-4	1
trans-1,4-Dichloro-2-butene	49	1	0.10	ug/L	1	110-57-6	1
Dibromochloromethane	55	5	0.020	ug/L	1	124-48-1	1
1,2-Dibromoethane	55	1	0.10	ug/L	1	106-93-4	1
Chlorobenzene	57	1	0.10	ug/L	1	108-90-7	1
1,1,1,2-Tetrachloroethane	55	1	0.10	ug/L	1	630-20-6	1
Ethylbenzene	56	1	0.10	ug/L	1	100-41-4	1
p,m-Xylene*	111	2	0.20	ug/L	1		1
o-Xylene	56	1	0.050	ug/L	1	95-47-6	1
Styrene	55	1	0.10	ug/L	1	100-42-5	1
Isopropylbenzene	56	5	0.030	ug/L	1	98-82-8	1
Bromoform	55	1	0.10	ug/L	1	75-25-2	1
1,1,2,2-Tetrachloroethane	53	1	0.050	ug/L	1	79-34-5	1
1,2,3-Trichloropropane	54	1	0.10	ug/L	1	96-18-4	1
n-Propylbenzene	56	1	0.10	ug/L	1	103-65-1	1

1-Spiked at 50ug/L

J-Estimated value less than reporting limit, but greater than MDL



Analytical Laboratory Report

Lab Sample ID: S46527.04 (continued)

Sample Tag: MSDMW-103S

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/28/23 05:32, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Bromobenzene	55	1	0.10	ug/L	1	108-86-1	1
1,3,5-Trimethylbenzene	57	1	0.10	ug/L	1	108-67-8	1
tert-Butylbenzene	56	1	0.10	ug/L	1	98-06-6	1
1,2,4-Trimethylbenzene	55	1	0.10	ug/L	1	95-63-6	1
sec-Butylbenzene	54	1	0.050	ug/L	1	135-98-8	1
p-Isopropyltoluene	55	5	0.040	ug/L	1	99-87-6	1
1,3-Dichlorobenzene	54	1	0.10	ug/L	1	541-73-1	1
1,4-Dichlorobenzene	53	1	0.10	ug/L	1	106-46-7	1
1,2-Dichlorobenzene	53	1	0.10	ug/L	1	95-50-1	1
1,2,3-Trimethylbenzene	53	1	0.040	ug/L	1	526-73-8	1
n-Butylbenzene	55	1	0.040	ug/L	1	104-51-8	1
Hexachloroethane	57	5	0.10	ug/L	1	67-72-1	1
1,2-Dibromo-3-chloropropane	59	5	0.10	ug/L	1	96-12-8	1
1,2,4-Trichlorobenzene	59	5	0.10	ug/L	1	120-82-1	1
1,2,3-Trichlorobenzene	55	5	0.040	ug/L	1	87-61-6	1
Naphthalene	58	5	0.10	ug/L	1	91-20-3	1
2-Methylnaphthalene	58	5	0.10	ug/L	1	91-57-6	1

1-Spiked at 50ug/L



Analytical Laboratory Report

Lab Sample ID: S46527.05

Sample Tag: Equip Blank

Collected Date/Time: 03/21/2023 15:55

Matrix: Water

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	250ml Plastic	None	Yes	5.0	IR
3	40ml Glass	HCL	Yes	5.0	IR
1	125ml Plastic	HNO3	Yes	5.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/27/23 11:44	ASW	
Metal Digestion	Completed	SW3015A	03/24/23 10:15	CCM	f
Metal Digestion	Completed	SW3015A	03/24/23 10:15	CCM	

Inorganics

Method: SM3500-Cr B, Run Date: 03/22/23 14:10, Analyst: JKB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chromium VI, Dissolved	Not detected	0.01	0.004	mg/L	1	18540-29-9	c

Method: SM3500-Cr B, Run Date: 03/22/23 13:45, Analyst: JKB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chromium VI	Not detected	0.01	0.004	mg/L	1	18540-29-9	

Metals

Method: E200.8, Run Date: 03/24/23 11:46, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	Not detected	0.002	0.000102	mg/L	2	7440-38-2	
Chromium	0.000096	0.005	0.0000386	mg/L	2	7440-47-3	b
Copper	Not detected	0.005	0.000150	mg/L	2	7440-50-8	
Lead	Not detected	0.003	0.0000760	mg/L	2	7439-92-1	
Selenium	Not detected	0.005	0.000838	mg/L	2	7782-49-2	
Zinc	0.000371	0.005	0.000292	mg/L	2	7440-66-6	b

Method: E200.8, Run Date: 03/24/23 11:47, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic, Dissolved	Not detected	0.002	0.000102	mg/L	2	7440-38-2	f
Chromium, Dissolved	Not detected	0.005	0.0000386	mg/L	2	7440-47-3	f
Copper, Dissolved	0.000558	0.005	0.000150	mg/L	2	7440-50-8	bf
Lead, Dissolved	Not detected	0.003	0.0000760	mg/L	2	7439-92-1	f
Selenium, Dissolved	Not detected	0.005	0.000838	mg/L	2	7782-49-2	f
Zinc, Dissolved	0.000666	0.005	0.000292	mg/L	2	7440-66-6	bf

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/25/23 02:58, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10	0.27	ug/L	1	60-29-7	
Acetone	5.5	50	4.0	ug/L	1	67-64-1	J

f-Filtered and preserved in lab

c-Filtered in lab

b-Value detected less than reporting limit, but greater than MDL

J-Estimated value less than reporting limit, but greater than MDL



Analytical Laboratory Report

Lab Sample ID: S46527.05 (continued)

Sample Tag: Equip Blank

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/25/23 02:58, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Methyl iodide	Not detected	1	0.24	ug/L	1	74-88-4	
Carbon disulfide	Not detected	5	0.13	ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5	0.25	ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2	0.38	ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25	3.3	ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5	0.57	ug/L	1	75-71-8	
Chloromethane	Not detected	5	0.20	ug/L	1	74-87-3	
Vinyl chloride	Not detected	1	0.24	ug/L	1	75-01-4	
Bromomethane	Not detected	5	0.18	ug/L	1	74-83-9	
Chloroethane	Not detected	5	0.21	ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1	0.28	ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1	0.27	ug/L	1	75-35-4	
Methylene chloride	0.47	5	0.16	ug/L	1	75-09-2	J
trans-1,2-Dichloroethene	Not detected	1	0.14	ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1	0.15	ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1	0.21	ug/L	1	156-59-2	
Tetrahydrofuran*	5.8	90	1.2	ug/L	1	109-99-9	JB
Chloroform	0.40	1	0.15	ug/L	1	67-66-3	J
Bromochloromethane	Not detected	1	0.36	ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1	0.27	ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50	0.35	ug/L	1	108-10-1	
2-Hexanone	Not detected	50	0.19	ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1	0.19	ug/L	1	56-23-5	
Benzene	Not detected	1	0.11	ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1	0.17	ug/L	1	107-06-2	
Trichloroethene	Not detected	1	0.29	ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1	0.18	ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1	0.19	ug/L	1	75-27-4	
Dibromomethane	Not detected	5	0.45	ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1	0.17	ug/L	1	10061-01-5	
Toluene	Not detected	1	0.17	ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1	0.20	ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1	0.34	ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1	0.13	ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1	0.26	ug/L	1	110-57-6	
Dibromochloromethane	Not detected	5	0.20	ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1	0.12	ug/L	1	106-93-4	
Chlorobenzene	Not detected	1	0.16	ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1	0.22	ug/L	1	630-20-6	
Ethylbenzene	Not detected	1	0.10	ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2	0.42	ug/L	1		
o-Xylene	Not detected	1	0.16	ug/L	1	95-47-6	
Styrene	Not detected	1	0.13	ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5	0.12	ug/L	1	98-82-8	
Bromoform	Not detected	1	0.35	ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1	0.27	ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1	0.54	ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1	0.12	ug/L	1	103-65-1	

J-Estimated value less than reporting limit, but greater than MDL

B-Compound also found in associated method blank



Analytical Laboratory Report

Lab Sample ID: S46527.05 (continued)

Sample Tag: Equip Blank

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/25/23 02:58, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Bromobenzene	Not detected	1	0.15	ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1	0.18	ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1	0.14	ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1	0.16	ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1	0.16	ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5	0.19	ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1	0.20	ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1	0.18	ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1	0.13	ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1	0.14	ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1	0.17	ug/L	1	104-51-8	
Hexachloroethane	Not detected	5	0.35	ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5	0.48	ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5	0.24	ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5	0.25	ug/L	1	87-61-6	
Naphthalene	Not detected	5	0.18	ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5	0.21	ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S46527.06

Sample Tag: Trip Blank

Collected Date/Time: 03/21/2023 00:01

Matrix: Water

COC Reference:

Sample Containers

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

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/27/23 11:44	ASW	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/25/23 01:47, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10	0.27	ug/L	1	60-29-7	
Acetone	Not detected	50	4.0	ug/L	1	67-64-1	
Methyl iodide	Not detected	1	0.24	ug/L	1	74-88-4	
Carbon disulfide	0.16	5	0.13	ug/L	1	75-15-0	JB
tert-Methyl butyl ether (MTBE)	Not detected	5	0.25	ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2	0.38	ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25	3.3	ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5	0.57	ug/L	1	75-71-8	
Chloromethane	Not detected	5	0.20	ug/L	1	74-87-3	
Vinyl chloride	Not detected	1	0.24	ug/L	1	75-01-4	
Bromomethane	Not detected	5	0.18	ug/L	1	74-83-9	
Chloroethane	Not detected	5	0.21	ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1	0.28	ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1	0.27	ug/L	1	75-35-4	
Methylene chloride	Not detected	5	0.16	ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1	0.14	ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1	0.15	ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1	0.21	ug/L	1	156-59-2	
Tetrahydrofuran*	1.9	90	1.2	ug/L	1	109-99-9	JB
Chloroform	Not detected	1	0.15	ug/L	1	67-66-3	
Bromochloromethane	Not detected	1	0.36	ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1	0.27	ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50	0.35	ug/L	1	108-10-1	
2-Hexanone	Not detected	50	0.19	ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1	0.19	ug/L	1	56-23-5	
Benzene	Not detected	1	0.11	ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1	0.17	ug/L	1	107-06-2	
Trichloroethene	Not detected	1	0.29	ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1	0.18	ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1	0.19	ug/L	1	75-27-4	
Dibromomethane	Not detected	5	0.45	ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1	0.17	ug/L	1	10061-01-5	
Toluene	Not detected	1	0.17	ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1	0.20	ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1	0.34	ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1	0.13	ug/L	1	127-18-4	

J-Estimated value less than reporting limit, but greater than MDL B-Compound also found in associated method blank



Analytical Laboratory Report

Lab Sample ID: S46527.06 (continued)

Sample Tag: Trip Blank

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/25/23 01:47, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
trans-1,4-Dichloro-2-butene	Not detected	1	0.26	ug/L	1	110-57-6	
Dibromochloromethane	Not detected	5	0.20	ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1	0.12	ug/L	1	106-93-4	
Chlorobenzene	Not detected	1	0.16	ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1	0.22	ug/L	1	630-20-6	
Ethylbenzene	Not detected	1	0.10	ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2	0.42	ug/L	1		
o-Xylene	Not detected	1	0.16	ug/L	1	95-47-6	
Styrene	Not detected	1	0.13	ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5	0.12	ug/L	1	98-82-8	
Bromoform	Not detected	1	0.35	ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1	0.27	ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1	0.54	ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1	0.12	ug/L	1	103-65-1	
Bromobenzene	Not detected	1	0.15	ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1	0.18	ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1	0.14	ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1	0.16	ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1	0.16	ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5	0.19	ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1	0.20	ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1	0.18	ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1	0.13	ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1	0.14	ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1	0.17	ug/L	1	104-51-8	
Hexachloroethane	Not detected	5	0.35	ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5	0.48	ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5	0.24	ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5	0.25	ug/L	1	87-61-6	
Naphthalene	Not detected	5	0.18	ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5	0.21	ug/L	1	91-57-6	

Merit Laboratories Login Checklist

Lab Set ID:S46527

Client:APPLIED (Applied Ecosystems)

Project: RACER Flint West #12990

Submitted:03/22/2023 08:15 Login User: MMC

Attention: Rodney Abke

Address: Applied Ecosystems
G4300 S. Saginaw Street
Burton, MI 48529

Phone: 810-715-2525

FAX:

Email: rabke@appliedecosystems.com

Selection	Description	Note
Sample Receiving		
01.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Samples are received at 4C +/- 2C Thermometer # IR 5.0
02.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Received on ice/ cooling process begun
03.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Samples shipped
04.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Samples left in 24 hr. drop box
05.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Are there custody seals/tape or is the drop box locked
Chain of Custody		
06.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	COC adequately filled out Trip Blank not listed on COC
07.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	COC signed and relinquished to the lab
08.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Sample tag on bottles match COC
09.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Subcontracting needed? Subcontracted to:
Preservation		
10.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Do sample have correct chemical preservation
11.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Completed pH checks on preserved samples? (no VOAs)
12.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Did any samples need to be preserved in the lab?
Bottle Conditions		
13.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	All bottles intact
14.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Appropriate analytical bottles are used
15.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Merit bottles used
16.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Sufficient sample volume received
17.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Samples require laboratory filtration
18.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Samples submitted within holding time
19.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Do water VOC 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: S46527 Submitted: 03/22/2023 08:15

Client: APPLIED (Applied Ecosystems)

Project: RACER Flint West #12990

Initial Preservation Check: 03/22/2023 09:59 MMC

Preservation Recheck (E200.8): N/A

Attention: Rodney Abke

Address: Applied Ecosystems
G4300 S. Saginaw Street
Burton, MI 48529

Phone: 810-715-2525

FAX:

Email: rabke@appliedecosystems.com

Sample ID	Bottle / Preservation	pH (Orig)	Add ml	pH (New)	Notes
S46527.01	125ml Plastic HNO3	<2			
S46527.02	125ml Plastic HNO3	<2			
S46527.03	125ml Plastic HNO3	<2			
S46527.04	125ml Plastic HNO3	<2			
S46527.05	125ml Plastic HNO3	<2			



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

REPORT TO

CHAIN OF CUSTODY RECORD

INVOICE TO

CONTACT NAME: Rodney Abke
 COMPANY: Applied EcoSystems
 ADDRESS: G-4300 South Saginaw Street
 CITY: Burton STATE: MI ZIP CODE: 48529
 PHONE NO.: 810-715-2525 FAX NO.: 810-715-2526 P.O. NO.: PO795930
 E-MAIL ADDRESS: rabke@appliedecosystems.com QUOTE NO.:

CONTACT NAME: Monica Wallingford SAME
 COMPANY: Revitalizing Auto Communities Environmental Response (RACER) Trust
 ADDRESS:
 CITY: STATE: ZIP CODE:
 PHONE NO.: 313.486.2978 E-MAIL ADDRESS: mwallingford@racertrust.org

PROJECT NO./NAME: RACER Flint West #12990 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 report to MDLs

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

Containers & Preservatives

MATERIAL	# OF BOTTLES	NOPE	HD	HNO3	H2SO4	HCl	HClO4	OTHER	VOCs	Metals, dissolved*	Metals, Total*	Certifications	
												<input type="checkbox"/> OHIO VAP	<input type="checkbox"/> Drinking Water
GW	5	1	3	1					X	X	X	<input type="checkbox"/> DoD	<input type="checkbox"/> NPDES
GW	5	1	3	1					X	X	X	<input type="checkbox"/> Detroit	<input type="checkbox"/> New York
GW	5	1	2	1					X	X	X	<input type="checkbox"/> Other	
GW	5	1	3	1					X	X	X	Special Instructions	
GW	5	1	3	1					X	X	X	* - Metals list includes: Ar, Cr-total, CR-Hex, Cu Pb, Se, Zn	
GW	5	1	3	1					X	X	X	report down to MCLs	

MERIT LAB NO. <small>FOR LAB USE ONLY</small>	YEAR		SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATERIAL	# OF BOTTLES	NOPE	HD	HNO3	H2SO4	HCl	HClO4	OTHER	VOCs	Metals, dissolved*	Metals, Total*
	DATE	TIME													
46527.01	3-21-23	1430	MW-1175	GW	5	1	3	1						X	X
.02	3-21-23	1541	MW-1035	GW	5	1	3	1						X	X
.03	3-21-23	1541	MSMW-1035	GW	5	1	2	1						X	X
.04	3-21-23	1541	MSDMW-1035	GW	5	1	3	1						X	X
.05	3-21-23	1555	Equip Blank	GW	5	1	3	1						X	X
.06															

RELINQUISHED BY: *Carl O Slek* Sampler DATE: 3-21-23 TIME: 1400
 RECEIVED BY: _____ DATE: _____ TIME: _____
 RELINQUISHED BY: _____ DATE: _____ TIME: _____
 RECEIVED BY: _____ DATE: _____ TIME: _____

RELINQUISHED BY: _____ DATE: _____ TIME: _____
 RECEIVED BY: *Pat* DATE: 3/22/23 TIME: 0815
 SEAL NO. SEAL INTACT YES NO INITIALS _____ NOTES: TEMP. ON ARRIVAL 50
 SEAL NO. SEAL INTACT YES NO INITIALS _____

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



Quality Control Report

Report ID: QC-S46527-01
Generated on 04/05/2023

Report to

Attention: Rodney Abke
Applied Ecosystems
G4300 S. Saginaw Street
Burton, MI 48529

Phone: 810-715-2525 FAX:

Report Produced by

Merit Laboratories
2680 East Lansing Drive
East Lansing, MI 48823

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

Report Summary

Lab Sample ID(s): S46527.01-S46527.06
Project: RACER Flint West #12990
Submitted Date/Time: 03/22/2023 08:15
Sampled by: Unknown
P.O. #: 795930

QC Report Sections

- Cover Page (Page 1)
- Analysis Summary (Pages 2-7)
- Prep Batch Summary (Pages 8-9)
- Surrogates per Lab Sample (Pages 10-13)
- Surrogates per QC Sample (Pages 14-15)
- Batch QC Results (Pages 16-28)

Report Flag Descriptions

- *: QC result is outside of indicated control limits
- W: Surrogate result not applicable due to sample dilution

I certify that this data package is in compliance with the terms and conditions of the program, and project, and contractual requirements both technically and for completeness. Release of the data contained in this hardcopy data package and its computer-readable data submitted has been authorized by the Quality Assurance Manager and his/her designee, as verified by the following signature.

Barbara Ball
Quality Assurance Manager

QC Report - Analysis Summary

Lab Sample ID: S46527.01

Sample Tag: MW-117S

Collected Date/Time: 03/21/2023 14:30

Matrix: Groundwater

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Chromium VI, Dissolved	SM3500-Cr B	03/22/23 13:50	CHR230322-W1	CHR230322-W1	No	BLK/LCS/MS/MSD/DU
Chromium VI	SM3500-Cr B	03/22/23 13:20	CHR230322-W1	CHR230322-W1	No	BLK/LCS/MS/MSD/DU
<i>Metals</i>						
Arsenic, Dissolved	E200.8	03/24/23 12:35	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Arsenic	E200.8	03/24/23 12:32	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Chromium, Dissolved	E200.8	03/24/23 12:35	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Chromium	E200.8	03/24/23 12:32	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Copper, Dissolved	E200.8	03/24/23 12:35	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Copper	E200.8	03/24/23 12:32	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Lead, Dissolved	E200.8	03/24/23 12:35	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Lead	E200.8	03/24/23 12:32	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Selenium, Dissolved	E200.8	03/24/23 12:35	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Selenium	E200.8	03/24/23 12:32	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Zinc, Dissolved	E200.8	03/24/23 12:35	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Zinc	E200.8	03/24/23 12:32	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
<i>Organics - Volatiles</i>						
Volatile Organics - DEQ List	SW5030C/8260C	03/25/23 02:11	230324B3	VF230324W3	Yes	BLK/LCS/LCSD

QC Report - Analysis Summary

Lab Sample ID: S46527.02

Sample Tag: MW-103S

Collected Date/Time: 03/21/2023 15:41

Matrix: Groundwater

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Inorganics						
Chromium VI, Dissolved	SM3500-Cr B	03/22/23 13:55	CHR230322-W1	CHR230322-W1	No	BLK/LCS/MS/MSD/DU
Chromium VI	SM3500-Cr B	03/22/23 13:30	CHR230322-W1	CHR230322-W1	No	BLK/LCS/MS/MSD/DU
Metals						
Arsenic, Dissolved	E200.8	03/24/23 12:37	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Arsenic	E200.8	03/24/23 12:07	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Chromium, Dissolved	E200.8	03/24/23 12:37	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Chromium	E200.8	03/24/23 12:07	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Copper, Dissolved	E200.8	03/24/23 12:37	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Copper	E200.8	03/24/23 12:07	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Lead, Dissolved	E200.8	03/24/23 12:37	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Lead	E200.8	03/24/23 12:07	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Selenium, Dissolved	E200.8	03/24/23 12:37	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Selenium	E200.8	03/24/23 12:07	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Zinc, Dissolved	E200.8	03/24/23 12:37	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Zinc	E200.8	03/24/23 12:07	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Organics - Volatiles						
Volatile Organics - DEQ List	SW5030C/8260C	03/27/23 23:23	230327B9	VF230327W4	Yes	BLK/LCS/LCSD

QC Report - Analysis Summary

Lab Sample ID: S46527.03

Sample Tag: MSMW-103S

Collected Date/Time: 03/21/2023 15:41

Matrix: Groundwater

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Chromium VI, Dissolved	SM3500-Cr B	03/22/23 14:00	CHR230322-W1	CHR230322-W1	No	BLK/LCS/MS/MSD/DU
Chromium VI	SM3500-Cr B	03/22/23 13:35	CHR230322-W1	CHR230322-W1	No	BLK/LCS/MS/MSD/DU
<i>Metals</i>						
Arsenic, Dissolved	E200.8	03/24/23 12:38	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Arsenic	E200.8	03/24/23 12:08	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Chromium, Dissolved	E200.8	03/24/23 12:38	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Chromium	E200.8	03/24/23 12:08	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Copper, Dissolved	E200.8	03/24/23 12:38	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Copper	E200.8	03/24/23 12:08	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Lead, Dissolved	E200.8	03/24/23 12:38	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Lead	E200.8	03/24/23 12:08	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Selenium, Dissolved	E200.8	03/24/23 12:38	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Selenium	E200.8	03/24/23 12:08	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Zinc, Dissolved	E200.8	03/24/23 12:38	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Zinc	E200.8	03/24/23 12:08	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
<i>Organics - Volatiles</i>						
Volatile Organics - DEQ List	SW5030C/8260C	03/28/23 05:12	230327B9	VF230327W4	Yes	BLK/LCS/LCSD

QC Report - Analysis Summary

Lab Sample ID: S46527.04

Sample Tag: MSDMW-103S

Collected Date/Time: 03/21/2023 15:41

Matrix: Groundwater

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Chromium VI, Dissolved	SM3500-Cr B	03/22/23 14:05	CHR230322-W1	CHR230322-W1	No	BLK/LCS/MS/MSD/DU
Chromium VI	SM3500-Cr B	03/22/23 13:40	CHR230322-W1	CHR230322-W1	No	BLK/LCS/MS/MSD/DU
<i>Metals</i>						
Arsenic, Dissolved	E200.8	03/24/23 12:39	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Arsenic	E200.8	03/24/23 12:09	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Chromium, Dissolved	E200.8	03/24/23 12:39	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Chromium	E200.8	03/24/23 12:09	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Copper, Dissolved	E200.8	03/24/23 12:39	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Copper	E200.8	03/24/23 12:09	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Lead, Dissolved	E200.8	03/24/23 12:39	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Lead	E200.8	03/24/23 12:09	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Selenium, Dissolved	E200.8	03/24/23 12:39	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Selenium	E200.8	03/24/23 12:09	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Zinc, Dissolved	E200.8	03/24/23 12:39	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Zinc	E200.8	03/24/23 12:09	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
<i>Organics - Volatiles</i>						
Volatile Organics - DEQ List	SW5030C/8260C	03/28/23 05:32	230327B9	VF230327W4	Yes	BLK/LCS/LCSD

QC Report - Analysis Summary

Lab Sample ID: S46527.05

Sample Tag: Equip Blank

Collected Date/Time: 03/21/2023 15:55

Matrix: Water

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Chromium VI, Dissolved	SM3500-Cr B	03/22/23 14:10	CHR230322-W1	CHR230322-W1	No	BLK/LCS/MS/MSD/DU
Chromium VI	SM3500-Cr B	03/22/23 13:45	CHR230322-W1	CHR230322-W1	No	BLK/LCS/MS/MSD/DU
<i>Metals</i>						
Arsenic, Dissolved	E200.8	03/24/23 11:47	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Arsenic	E200.8	03/24/23 11:46	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Chromium, Dissolved	E200.8	03/24/23 11:47	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Chromium	E200.8	03/24/23 11:46	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Copper, Dissolved	E200.8	03/24/23 11:47	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Copper	E200.8	03/24/23 11:46	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Lead, Dissolved	E200.8	03/24/23 11:47	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Lead	E200.8	03/24/23 11:46	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Selenium, Dissolved	E200.8	03/24/23 11:47	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Selenium	E200.8	03/24/23 11:46	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Zinc, Dissolved	E200.8	03/24/23 11:47	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
Zinc	E200.8	03/24/23 11:46	MT4-23-0324B	MTD-032423-2	No	BLK/LCS/MS/MSD
<i>Organics - Volatiles</i>						
Volatile Organics - DEQ List	SW5030C/8260C	03/25/23 02:58	230324B3	VF230324W3	Yes	BLK/LCS/LCSD

QC Report - Analysis Summary

Lab Sample ID: S46527.06

Sample Tag: Trip Blank

Collected Date/Time: 03/21/2023 00:01

Matrix: Water

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
Volatile Organics - DEQ List	SW5030C/8260C	03/25/23 01:47	230324B3	VF230324W3	Yes	BLK/LCS/LCSD

QC Report - Prep Batch Summary

Inorganics, Prep Batch ID: CHR230322-W1

Surrogates: No, QC Types: BLK/LCS/MS/MSD/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S46527.01	Chromium VI, Dissolved	SM3500-Cr B	03/22/23 13:50	CHR230322-W1
S46527.01	Chromium VI	SM3500-Cr B	03/22/23 13:20	CHR230322-W1
S46527.02	Chromium VI, Dissolved	SM3500-Cr B	03/22/23 13:55	CHR230322-W1
S46527.02	Chromium VI	SM3500-Cr B	03/22/23 13:30	CHR230322-W1
S46527.03	Chromium VI, Dissolved	SM3500-Cr B	03/22/23 14:00	CHR230322-W1
S46527.03	Chromium VI	SM3500-Cr B	03/22/23 13:35	CHR230322-W1
S46527.04	Chromium VI, Dissolved	SM3500-Cr B	03/22/23 14:05	CHR230322-W1
S46527.04	Chromium VI	SM3500-Cr B	03/22/23 13:40	CHR230322-W1
S46527.05	Chromium VI, Dissolved	SM3500-Cr B	03/22/23 14:10	CHR230322-W1
S46527.05	Chromium VI	SM3500-Cr B	03/22/23 13:45	CHR230322-W1

Metals, Prep Batch ID: MTD-032423-2

Surrogates: No, QC Types: BLK/LCS/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S46527.01	Arsenic, Dissolved	E200.8	03/24/23 12:35	MT4-23-0324B
S46527.01	Arsenic	E200.8	03/24/23 12:32	MT4-23-0324B
S46527.01	Chromium, Dissolved	E200.8	03/24/23 12:35	MT4-23-0324B
S46527.01	Chromium	E200.8	03/24/23 12:32	MT4-23-0324B
S46527.01	Copper, Dissolved	E200.8	03/24/23 12:35	MT4-23-0324B
S46527.01	Copper	E200.8	03/24/23 12:32	MT4-23-0324B
S46527.01	Lead, Dissolved	E200.8	03/24/23 12:35	MT4-23-0324B
S46527.01	Lead	E200.8	03/24/23 12:32	MT4-23-0324B
S46527.01	Selenium, Dissolved	E200.8	03/24/23 12:35	MT4-23-0324B
S46527.01	Selenium	E200.8	03/24/23 12:32	MT4-23-0324B
S46527.01	Zinc, Dissolved	E200.8	03/24/23 12:35	MT4-23-0324B
S46527.01	Zinc	E200.8	03/24/23 12:32	MT4-23-0324B
S46527.02	Arsenic, Dissolved	E200.8	03/24/23 12:37	MT4-23-0324B
S46527.02	Arsenic	E200.8	03/24/23 12:07	MT4-23-0324B
S46527.02	Chromium, Dissolved	E200.8	03/24/23 12:37	MT4-23-0324B
S46527.02	Chromium	E200.8	03/24/23 12:07	MT4-23-0324B
S46527.02	Copper, Dissolved	E200.8	03/24/23 12:37	MT4-23-0324B
S46527.02	Copper	E200.8	03/24/23 12:07	MT4-23-0324B
S46527.02	Lead, Dissolved	E200.8	03/24/23 12:37	MT4-23-0324B
S46527.02	Lead	E200.8	03/24/23 12:07	MT4-23-0324B
S46527.02	Selenium, Dissolved	E200.8	03/24/23 12:37	MT4-23-0324B
S46527.02	Selenium	E200.8	03/24/23 12:07	MT4-23-0324B
S46527.02	Zinc, Dissolved	E200.8	03/24/23 12:37	MT4-23-0324B
S46527.02	Zinc	E200.8	03/24/23 12:07	MT4-23-0324B
S46527.03	Arsenic, Dissolved	E200.8	03/24/23 12:38	MT4-23-0324B
S46527.03	Arsenic	E200.8	03/24/23 12:08	MT4-23-0324B
S46527.03	Chromium, Dissolved	E200.8	03/24/23 12:38	MT4-23-0324B
S46527.03	Chromium	E200.8	03/24/23 12:08	MT4-23-0324B
S46527.03	Copper, Dissolved	E200.8	03/24/23 12:38	MT4-23-0324B
S46527.03	Copper	E200.8	03/24/23 12:08	MT4-23-0324B
S46527.03	Lead, Dissolved	E200.8	03/24/23 12:38	MT4-23-0324B
S46527.03	Lead	E200.8	03/24/23 12:08	MT4-23-0324B
S46527.03	Selenium, Dissolved	E200.8	03/24/23 12:38	MT4-23-0324B
S46527.03	Selenium	E200.8	03/24/23 12:08	MT4-23-0324B
S46527.03	Zinc, Dissolved	E200.8	03/24/23 12:38	MT4-23-0324B
S46527.03	Zinc	E200.8	03/24/23 12:08	MT4-23-0324B

QC Report - Prep Batch Summary

Metals, Prep Batch ID: MTD-032423-2 (continued)

Surrogates: No, QC Types: BLK/LCS/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S46527.04	Arsenic, Dissolved	E200.8	03/24/23 12:39	MT4-23-0324B
S46527.04	Arsenic	E200.8	03/24/23 12:09	MT4-23-0324B
S46527.04	Chromium, Dissolved	E200.8	03/24/23 12:39	MT4-23-0324B
S46527.04	Chromium	E200.8	03/24/23 12:09	MT4-23-0324B
S46527.04	Copper, Dissolved	E200.8	03/24/23 12:39	MT4-23-0324B
S46527.04	Copper	E200.8	03/24/23 12:09	MT4-23-0324B
S46527.04	Lead, Dissolved	E200.8	03/24/23 12:39	MT4-23-0324B
S46527.04	Lead	E200.8	03/24/23 12:09	MT4-23-0324B
S46527.04	Selenium, Dissolved	E200.8	03/24/23 12:39	MT4-23-0324B
S46527.04	Selenium	E200.8	03/24/23 12:09	MT4-23-0324B
S46527.04	Zinc, Dissolved	E200.8	03/24/23 12:39	MT4-23-0324B
S46527.04	Zinc	E200.8	03/24/23 12:09	MT4-23-0324B
S46527.05	Arsenic, Dissolved	E200.8	03/24/23 11:47	MT4-23-0324B
S46527.05	Arsenic	E200.8	03/24/23 11:46	MT4-23-0324B
S46527.05	Chromium, Dissolved	E200.8	03/24/23 11:47	MT4-23-0324B
S46527.05	Chromium	E200.8	03/24/23 11:46	MT4-23-0324B
S46527.05	Copper, Dissolved	E200.8	03/24/23 11:47	MT4-23-0324B
S46527.05	Copper	E200.8	03/24/23 11:46	MT4-23-0324B
S46527.05	Lead, Dissolved	E200.8	03/24/23 11:47	MT4-23-0324B
S46527.05	Lead	E200.8	03/24/23 11:46	MT4-23-0324B
S46527.05	Selenium, Dissolved	E200.8	03/24/23 11:47	MT4-23-0324B
S46527.05	Selenium	E200.8	03/24/23 11:46	MT4-23-0324B
S46527.05	Zinc, Dissolved	E200.8	03/24/23 11:47	MT4-23-0324B
S46527.05	Zinc	E200.8	03/24/23 11:46	MT4-23-0324B

Organics - Volatiles, Prep Batch ID: VF230324W3

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S46527.01	Volatile Organics - DEQ List	SW5030C/8260C	03/25/23 02:11	230324B3
S46527.05	Volatile Organics - DEQ List	SW5030C/8260C	03/25/23 02:58	230324B3
S46527.06	Volatile Organics - DEQ List	SW5030C/8260C	03/25/23 01:47	230324B3

Organics - Volatiles, Prep Batch ID: VF230327W4

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S46527.02	Volatile Organics - DEQ List	SW5030C/8260C	03/27/23 23:23	230327B9
S46527.03	Volatile Organics - DEQ List	SW5030C/8260C	03/28/23 05:12	230327B9
S46527.04	Volatile Organics - DEQ List	SW5030C/8260C	03/28/23 05:32	230327B9

QC Report - Surrogates per Lab Sample

Lab Sample ID: S46527.01

Sample Tag: MW-117S

Collected Date/Time: 03/21/2023 14:30

Matrix: Groundwater

COC Reference:

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 230324B3, Run Date: 03/25/2023 02:11, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		100.8	80.0	124.0
1,2-Dichloroethane-D4		100.9	72.0	125.0
Toluene-D8		100.0	89.0	112.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S46527.02

Sample Tag: MW-103S

Collected Date/Time: 03/21/2023 15:41

Matrix: Groundwater

COC Reference:

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 230327B9, Run Date: 03/27/2023 23:23, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		94.6	80.0	124.0
1,2-Dichloroethane-D4		99.4	72.0	125.0
Toluene-D8		100.8	89.0	112.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S46527.05

Sample Tag: Equip Blank

Collected Date/Time: 03/21/2023 15:55

Matrix: Water

COC Reference:

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 230324B3, Run Date: 03/25/2023 02:58, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		102.6	80.0	124.0
1,2-Dichloroethane-D4		102.7	72.0	125.0
Toluene-D8		99.3	89.0	112.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S46527.06

Sample Tag: Trip Blank

Collected Date/Time: 03/21/2023 00:01

Matrix: Water

COC Reference:

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 230324B3, Run Date: 03/25/2023 01:47, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		102.1	80.0	124.0
1,2-Dichloroethane-D4		102.2	72.0	125.0
Toluene-D8		99.0	89.0	112.0

QC Report - Surrogates per QC Sample

Organics - Volatiles, Prep Batch ID: VF230324W3

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 230324B3.BLKW24B

Run in Batch: 230324B3, Run Date: 03/25/2023 01:24, Prep Date: 03/24/2023, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		101.5	80.0	124.0
1,2-Dichloroethane-D4		99.3	72.0	125.0
Toluene-D8		100.2	89.0	112.0

Laboratory Control Sample (LCS)

Lab Sample ID: 230324B3.LCSW24B

Run in Batch: 230324B3, Run Date: 03/24/2023 23:50, Prep Date: 03/24/2023, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		102.6	80.0	124.0
1,2-Dichloroethane-D4		105.3	72.0	125.0
Toluene-D8		100.7	89.0	112.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 230324B3.LCSDW24B, Parent Sample ID: 230324B3.LCSW24B

Run in Batch: 230324B3, Run Date: 03/25/2023 00:13, Prep Date: 03/24/2023, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		102.6	80.0	124.0
1,2-Dichloroethane-D4		102.5	72.0	125.0
Toluene-D8		98.9	89.0	112.0

QC Report - Surrogates per QC Sample

Organics - Volatiles, Prep Batch ID: VF230327W4

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 230327B9.BLKW27B

Run in Batch: 230327B9, Run Date: 03/27/2023 23:03, Prep Date: 03/27/2023, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		95.2	80.0	124.0
1,2-Dichloroethane-D4		100.0	72.0	125.0
Toluene-D8		101.4	89.0	112.0

Laboratory Control Sample (LCS)

Lab Sample ID: 230327B9.LCSW27B

Run in Batch: 230327B9, Run Date: 03/27/2023 21:46, Prep Date: 03/27/2023, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		95.6	80.0	124.0
1,2-Dichloroethane-D4		99.6	72.0	125.0
Toluene-D8		101.8	89.0	112.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 230327B9.LCSDW27B, Parent Sample ID: 230327B9.LCSW27B

Run in Batch: 230327B9, Run Date: 03/27/2023 22:05, Prep Date: 03/27/2023, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		97.2	80.0	124.0
1,2-Dichloroethane-D4		95.1	72.0	125.0
Toluene-D8		102.3	89.0	112.0

QC Report - Batch QC Results

Inorganics, Prep Batch ID: CHR230322-W1

Surrogates: No, QC Types: BLK/LCS/MS/MSD/DUP

Blank (BLK)

Lab Sample ID: CHR230322-W1.LRB1

Run in Batch: CHR230322-W1, Run Date: 03/22/2023 13:00, Prep Date: 03/22/2023, Matrix: Liquid, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Chromium VI		ND	0.01	mg/L

Laboratory Control Sample (LCS)

Lab Sample ID: CHR230322-W1.LCS1

Run in Batch: CHR230322-W1, Run Date: 03/22/2023 13:15, Prep Date: 03/22/2023, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Chromium VI		108	90	110

Matrix Spike (MS)

Lab Sample ID: CHR230322-W1.MS1, Parent Sample ID: S46527.02

Run in Batch: CHR230322-W1, Run Date: 03/22/2023 13:35, Prep Date: 03/22/2023, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Chromium VI	*	72	80	120

Matrix Spike (MS)

Lab Sample ID: CHR230322-W1.MS2, Parent Sample ID: S46527.02

Run in Batch: CHR230322-W1, Run Date: 03/22/2023 14:00, Prep Date: 03/22/2023, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Chromium VI	*	0	80	120

Matrix Spike Duplicate (MSD)

Lab Sample ID: CHR230322-W1.MSD1, Parent Sample ID: CHR230322-W1.MS1

Run in Batch: CHR230322-W1, Run Date: 03/22/2023 13:40, Prep Date: 03/22/2023, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Chromium VI	*	67	80	120	6	15

Matrix Spike Duplicate (MSD)

Lab Sample ID: CHR230322-W1.MSD2, Parent Sample ID: CHR230322-W1.MS2

Run in Batch: CHR230322-W1, Run Date: 03/22/2023 14:05, Prep Date: 03/22/2023, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Chromium VI	*	0	80	120	NC	15

Duplicate (DUP)

Lab Sample ID: CHR230322-W1.DP1, Parent Sample ID: S46527.01

Run in Batch: CHR230322-W1, Run Date: 03/22/2023 13:25, Prep Date: 03/22/2023, Matrix: Liquid, Dilution: 1

Analyte	Flags	RPD	RPD CL
Chromium VI		<1	15

QC Report - Batch QC Results

Metals, Prep Batch ID: MTD-032423-2

Surrogates: No, QC Types: BLK/LCS/MS/MSD

Blank (BLK)

Lab Sample ID: MT4-23-0324B.018.LRB

Run in Batch: MT4-23-0324B, Run Date: 03/24/2023 11:43, Prep Date: 03/24/2023, Matrix: Liquid, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Arsenic		ND	0.0004	mg/L
Chromium		ND	0.001	mg/L
Copper		ND	0.001	mg/L
Lead		ND	0.0006	mg/L
Selenium		ND	0.001	mg/L
Zinc		ND	0.001	mg/L

Laboratory Control Sample (LCS)

Lab Sample ID: MT4-23-0324B.017.LCS

Run in Batch: MT4-23-0324B, Run Date: 03/24/2023 11:33, Prep Date: 03/24/2023, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Arsenic		101	85	115
Chromium		100	85	115
Copper		101	85	115
Lead		101	85	115
Selenium		102	85	115
Zinc		100	85	115

Matrix Spike (MS)

Lab Sample ID: MT4-23-0324B.035.MS, Parent Sample ID: S46527.02

Run in Batch: MT4-23-0324B, Run Date: 03/24/2023 12:08, Prep Date: 03/24/2023, Matrix: Liquid, Dilution: 5

Analyte	Flags	% Rec	LCL	UCL
Arsenic		105	75	125
Chromium		100	75	125
Copper		98	75	125
Lead		94	75	125
Selenium		108	75	125
Zinc		104	75	125

Matrix Spike (MS)

Lab Sample ID: MT4-23-0324B.058.MS, Parent Sample ID: S46527.02

Run in Batch: MT4-23-0324B, Run Date: 03/24/2023 12:38, Prep Date: 03/24/2023, Matrix: Liquid, Dilution: 5

Analyte	Flags	% Rec	LCL	UCL
Arsenic		97	75	125
Chromium		98	75	125
Copper		95	75	125
Lead		97	75	125
Selenium		102	75	125
Zinc		98	75	125

Matrix Spike Duplicate (MSD)

Lab Sample ID: MT4-23-0324B.036.MSD, Parent Sample ID: MT4-23-0324B.035.MS

Run in Batch: MT4-23-0324B, Run Date: 03/24/2023 12:09, Prep Date: 03/24/2023, Matrix: Liquid, Dilution: 5

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Arsenic		108	75	125	2	20
Chromium		99	75	125	1	20

QC Report - Batch QC Results

Metals, Prep Batch ID: MTD-032423-2 (continued)

Surrogates: No, QC Types: BLK/LCS/MS/MSD

Matrix Spike Duplicate (MSD) (continued)

Lab Sample ID: MT4-23-0324B.036.MSD, Parent Sample ID: MT4-23-0324B.035.MS

Run in Batch: MT4-23-0324B, Run Date: 03/24/2023 12:09, Prep Date: 03/24/2023, Matrix: Liquid, Dilution: 5

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Copper		95	75	125	3	20
Lead		97	75	125	3	20
Selenium		113	75	125	5	20
Zinc		104	75	125	0	20

Matrix Spike Duplicate (MSD)

Lab Sample ID: MT4-23-0324B.059.MSD, Parent Sample ID: MT4-23-0324B.058.MS

Run in Batch: MT4-23-0324B, Run Date: 03/24/2023 12:39, Prep Date: 03/24/2023, Matrix: Liquid, Dilution: 5

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Arsenic		100	75	125	3	20
Chromium		102	75	125	4	20
Copper		99	75	125	4	20
Lead		98	75	125	2	20
Selenium		104	75	125	2	20
Zinc		102	75	125	4	20

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF230324W3

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 230324B3.BLKW24B

Run in Batch: 230324B3, Run Date: 03/25/2023 01:24, Prep Date: 03/24/2023, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Diethyl ether		ND	1.00	ug/l
Acetone		ND	10.00	ug/l
Methyl iodide		ND	1.00	ug/l
Carbon disulfide		ND	1.00	ug/l
tert-Methyl butyl ether (MTBE)		ND	1.00	ug/l
Acrylonitrile		ND	1.00	ug/l
2-Butanone (MEK)		ND	10.00	ug/l
Dichlorodifluoromethane		ND	1.00	ug/l
Chloromethane		ND	1.00	ug/l
Vinyl chloride		ND	1.00	ug/l
Bromomethane		ND	1.00	ug/l
Chloroethane		ND	1.00	ug/l
Trichlorofluoromethane		ND	1.00	ug/l
1,1-Dichloroethene		ND	1.00	ug/l
Methylene chloride		ND	1.00	ug/l
trans-1,2-Dichloroethene		ND	1.00	ug/l
1,1-Dichloroethane		ND	1.00	ug/l
cis-1,2-Dichloroethene		ND	1.00	ug/l
Tetrahydrofuran		ND	10.00	ug/l
Chloroform		ND	1.00	ug/l
Bromochloromethane		ND	1.00	ug/l
1,1,1-Trichloroethane		ND	1.00	ug/l
4-Methyl-2-pentanone (MIBK)		ND	10.00	ug/l
2-Hexanone		ND	10.00	ug/l
Carbon tetrachloride		ND	1.00	ug/l
Benzene		ND	1.00	ug/l
1,2-Dichloroethane		ND	1.00	ug/l
Trichloroethene		ND	1.00	ug/l
1,2-Dichloropropane		ND	1.00	ug/l
Bromodichloromethane		ND	1.00	ug/l
Dibromomethane		ND	1.00	ug/l
cis-1,3-Dichloropropene		ND	1.00	ug/l
Toluene		ND	1.00	ug/l
trans-1,3-Dichloropropene		ND	1.00	ug/l
1,1,2-Trichloroethane		ND	1.00	ug/l
Tetrachloroethene		ND	1.00	ug/l
trans-1,4-Dichloro-2-butene		ND	1.00	ug/l
Dibromochloromethane		ND	1.00	ug/l
1,2-Dibromoethane		ND	1.00	ug/l
Chlorobenzene		ND	1.00	ug/l
1,1,1,2-Tetrachloroethane		ND	1.00	ug/l
Ethylbenzene		ND	1.00	ug/l
p,m-Xylene		ND	1.00	ug/l
o-Xylene		ND	1.00	ug/l
Styrene		ND	1.00	ug/l
Isopropylbenzene		ND	1.00	ug/l

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF230324W3 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK) (continued)

Lab Sample ID: 230324B3.BLKW24B

Run in Batch: 230324B3, Run Date: 03/25/2023 01:24, Prep Date: 03/24/2023, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Bromoform		ND	1.00	ug/l
1,1,2,2-Tetrachloroethane		ND	1.00	ug/l
1,2,3-Trichloropropane		ND	1.00	ug/l
n-Propylbenzene		ND	1.00	ug/l
Bromobenzene		ND	1.00	ug/l
1,3,5-Trimethylbenzene		ND	1.00	ug/l
tert-Butylbenzene		ND	1.00	ug/l
1,2,4-Trimethylbenzene		ND	1.00	ug/l
sec-Butylbenzene		ND	1.00	ug/l
p-Isopropyltoluene		ND	1.00	ug/l
1,3-Dichlorobenzene		ND	1.00	ug/l
1,4-Dichlorobenzene		ND	1.00	ug/l
1,2-Dichlorobenzene		ND	1.00	ug/l
1,2,3-Trimethylbenzene		ND	1.00	ug/l
n-Butylbenzene		ND	1.00	ug/l
Hexachloroethane		ND	1.00	ug/l
1,2-Dibromo-3-chloropropane		ND	1.00	ug/l
1,2,4-Trichlorobenzene		ND	1.00	ug/l
1,2,3-Trichlorobenzene		ND	1.00	ug/l
Naphthalene		ND	1.00	ug/l
2-Methylnaphthalene		ND	1.00	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 230324B3.LCSW24B

Run in Batch: 230324B3, Run Date: 03/24/2023 23:50, Prep Date: 03/24/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Diethyl ether		98.3	67.4	121.2
Acetone		104.6	29.9	161.5
Methyl iodide		99.1	68.8	116.4
Carbon disulfide		95.6	63.8	137.4
tert-Methyl butyl ether (MTBE)		89.6	73.2	122.4
Acrylonitrile		98.0	69.9	128.9
2-Butanone (MEK)		103.9	44.0	134.4
Dichlorodifluoromethane		86.5	10.0	222.8
Chloromethane		98.1	23.8	166.5
Vinyl chloride		99.3	43.5	149.1
Bromomethane		100.5	56.8	151.3
Chloroethane		102.4	53.4	149.4
Trichlorofluoromethane		101.6	59.7	151.8
1,1-Dichloroethene		96.2	69.6	139.4
Methylene chloride		98.7	73.3	121.1
trans-1,2-Dichloroethene		97.8	73.6	129.3
1,1-Dichloroethane		100.5	71.5	126.2
cis-1,2-Dichloroethene		99.4	76.6	122.1
Tetrahydrofuran		92.8	59.0	117.9
Chloroform		102.1	78.4	124.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF230324W3 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: 230324B3.LCSW24B

Run in Batch: 230324B3, Run Date: 03/24/2023 23:50, Prep Date: 03/24/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Bromochloromethane		101.7	78.2	120.8
1,1,1-Trichloroethane		97.1	79.4	130.9
4-Methyl-2-pentanone (MIBK)		101.1	71.6	125.2
2-Hexanone		105.1	55.4	136.9
Carbon tetrachloride		100.5	72.6	133.0
Benzene		100.8	79.9	124.9
1,2-Dichloroethane		96.1	76.0	126.3
Trichloroethene		101.5	79.7	124.2
1,2-Dichloropropane		99.8	78.6	126.4
Bromodichloromethane		102.5	80.4	128.2
Dibromomethane		102.0	76.9	122.1
cis-1,3-Dichloropropene		103.1	79.8	129.9
Toluene		101.1	79.8	124.5
trans-1,3-Dichloropropene		100.9	74.0	131.3
1,1,2-Trichloroethane		103.4	78.7	123.1
Tetrachloroethene		100.2	74.5	124.5
trans-1,4-Dichloro-2-butene		92.9	68.6	135.4
Dibromochloromethane		102.5	74.6	127.2
1,2-Dibromoethane		101.9	70.3	133.7
Chlorobenzene		100.7	79.2	122.7
1,1,1,2-Tetrachloroethane		101.5	80.3	128.2
Ethylbenzene		99.8	79.5	129.1
p,m-Xylene		98.3	79.4	132.2
o-Xylene		98.8	80.2	131.0
Styrene		99.8	69.5	126.7
Isopropylbenzene		101.4	74.4	121.5
Bromoform		104.2	69.4	128.0
1,1,2,2-Tetrachloroethane		105.6	79.8	126.3
1,2,3-Trichloropropane		101.6	78.3	138.8
n-Propylbenzene		102.0	82.0	130.7
Bromobenzene		99.5	78.7	124.6
1,3,5-Trimethylbenzene		99.8	81.3	128.9
tert-Butylbenzene		98.3	80.7	128.9
1,2,4-Trimethylbenzene		99.8	81.4	130.8
sec-Butylbenzene		98.1	77.4	129.8
p-Isopropyltoluene		98.3	79.8	137.5
1,3-Dichlorobenzene		96.8	77.0	131.3
1,4-Dichlorobenzene		95.8	20.7	137.7
1,2-Dichlorobenzene		97.2	10.0	166.2
1,2,3-Trimethylbenzene		93.4	76.3	124.2
n-Butylbenzene		97.8	80.0	133.3
Hexachloroethane		95.6	23.8	138.1
1,2-Dibromo-3-chloropropane		103.9	21.2	189.4
1,2,4-Trichlorobenzene		103.2	27.4	143.4
1,2,3-Trichlorobenzene		105.2	75.4	131.4
Naphthalene		105.7	32.9	135.8

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF230324W3 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: 230324B3.LCSW24B

Run in Batch: 230324B3, Run Date: 03/24/2023 23:50, Prep Date: 03/24/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
2-Methylnaphthalene		97.9	25.5	165.5

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 230324B3.LCSDW24B, Parent Sample ID: 230324B3.LCSW24B

Run in Batch: 230324B3, Run Date: 03/25/2023 00:13, Prep Date: 03/24/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Diethyl ether		101.0	67.4	121.2	2.7	30.0
Acetone		105.5	29.9	161.5	0.9	30.0
Methyl iodide		94.6	68.8	116.4	4.7	30.0
Carbon disulfide		88.9	63.8	137.4	7.2	30.0
tert-Methyl butyl ether (MTBE)		87.7	73.2	122.4	2.2	30.0
Acrylonitrile		102.8	69.9	128.9	4.8	30.0
2-Butanone (MEK)		109.4	44.0	134.4	5.1	30.0
Dichlorodifluoromethane		81.8	10.0	222.8	5.7	30.0
Chloromethane		96.6	23.8	166.5	1.5	30.0
Vinyl chloride		95.4	43.5	149.1	4.0	30.0
Bromomethane		96.1	56.8	151.3	4.5	30.0
Chloroethane		96.9	53.4	149.4	5.5	30.0
Trichlorofluoromethane		95.6	59.7	151.8	6.0	30.0
1,1-Dichloroethene		90.2	69.6	139.4	6.5	30.0
Methylene chloride		95.9	73.3	121.1	3.0	30.0
trans-1,2-Dichloroethene		93.4	73.6	129.3	4.6	30.0
1,1-Dichloroethane		95.6	71.5	126.2	4.9	30.0
cis-1,2-Dichloroethene		96.6	76.6	122.1	2.9	30.0
Tetrahydrofuran		100.0	59.0	117.9	7.5	30.0
Chloroform		98.1	78.4	124.0	3.9	30.0
Bromochloromethane		98.1	78.2	120.8	3.6	30.0
1,1,1-Trichloroethane		92.2	79.4	130.9	5.2	30.0
4-Methyl-2-pentanone (MIBK)		103.9	71.6	125.2	2.8	30.0
2-Hexanone		106.0	55.4	136.9	0.9	30.0
Carbon tetrachloride		91.9	72.6	133.0	8.9	30.0
Benzene		94.9	79.9	124.9	6.0	30.0
1,2-Dichloroethane		93.4	76.0	126.3	2.8	30.0
Trichloroethene		95.6	79.7	124.2	6.0	30.0
1,2-Dichloropropane		95.4	78.6	126.4	4.5	30.0
Bromodichloromethane		99.3	80.4	128.2	3.2	30.0
Dibromomethane		99.5	76.9	122.1	2.5	30.0
cis-1,3-Dichloropropene		98.9	79.8	129.9	4.1	30.0
Toluene		95.9	79.8	124.5	5.3	30.0
trans-1,3-Dichloropropene		99.3	74.0	131.3	1.6	30.0
1,1,2-Trichloroethane		100.6	78.7	123.1	2.7	30.0
Tetrachloroethene		94.3	74.5	124.5	6.1	30.0
trans-1,4-Dichloro-2-butene		95.0	68.6	135.4	2.3	30.0
Dibromochloromethane		100.2	74.6	127.2	2.3	30.0
1,2-Dibromoethane		100.5	70.3	133.7	1.4	30.0
Chlorobenzene		96.0	79.2	122.7	4.8	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF230324W3 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Laboratory Control Sample Duplicate (LCSD) (continued)

Lab Sample ID: 230324B3.LCSDW24B, Parent Sample ID: 230324B3.LCSW24B

Run in Batch: 230324B3, Run Date: 03/25/2023 00:13, Prep Date: 03/24/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,1,1,2-Tetrachloroethane		96.9	80.3	128.2	4.6	30.0
Ethylbenzene		95.1	79.5	129.1	4.7	30.0
p,m-Xylene		93.9	79.4	132.2	4.5	30.0
o-Xylene		94.5	80.2	131.0	4.5	30.0
Styrene		96.2	69.5	126.7	3.8	30.0
Isopropylbenzene		95.7	74.4	121.5	5.7	30.0
Bromoform		103.6	69.4	128.0	0.6	30.0
1,1,2,2-Tetrachloroethane		105.7	79.8	126.3	0.1	30.0
1,2,3-Trichloropropane		102.6	78.3	138.8	1.0	30.0
n-Propylbenzene		97.1	82.0	130.7	4.8	30.0
Bromobenzene		96.5	78.7	124.6	3.1	30.0
1,3,5-Trimethylbenzene		93.9	81.3	128.9	6.1	30.0
tert-Butylbenzene		93.1	80.7	128.9	5.5	30.0
1,2,4-Trimethylbenzene		94.5	81.4	130.8	5.5	30.0
sec-Butylbenzene		94.0	77.4	129.8	4.2	30.0
p-Isopropyltoluene		94.0	79.8	137.5	4.5	30.0
1,3-Dichlorobenzene		93.2	77.0	131.3	3.8	30.0
1,4-Dichlorobenzene		94.1	20.7	137.7	1.9	30.0
1,2-Dichlorobenzene		94.4	10.0	166.2	2.9	30.0
1,2,3-Trimethylbenzene		89.1	76.3	124.2	4.6	30.0
n-Butylbenzene		93.3	80.0	133.3	4.7	30.0
Hexachloroethane		89.2	23.8	138.1	6.9	30.0
1,2-Dibromo-3-chloropropane		109.3	21.2	189.4	5.1	30.0
1,2,4-Trichlorobenzene		103.7	27.4	143.4	0.5	30.0
1,2,3-Trichlorobenzene		103.5	75.4	131.4	1.7	30.0
Naphthalene		108.6	32.9	135.8	2.7	30.0
2-Methylnaphthalene		101.5	25.5	165.5	3.6	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF230327W4

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 230327B9.BLKW27B

Run in Batch: 230327B9, Run Date: 03/27/2023 23:03, Prep Date: 03/27/2023, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Diethyl ether		ND	1.00	ug/l
Acetone		ND	10.00	ug/l
Methyl iodide		ND	1.00	ug/l
Carbon disulfide		ND	1.00	ug/l
tert-Methyl butyl ether (MTBE)		ND	1.00	ug/l
Acrylonitrile		ND	1.00	ug/l
2-Butanone (MEK)		ND	10.00	ug/l
Dichlorodifluoromethane		ND	1.00	ug/l
Chloromethane		ND	1.00	ug/l
Vinyl chloride		ND	1.00	ug/l
Bromomethane		ND	1.00	ug/l
Chloroethane		ND	1.00	ug/l
Trichlorofluoromethane		ND	1.00	ug/l
1,1-Dichloroethene		ND	1.00	ug/l
Methylene chloride		ND	1.00	ug/l
trans-1,2-Dichloroethene		ND	1.00	ug/l
1,1-Dichloroethane		ND	1.00	ug/l
cis-1,2-Dichloroethene		ND	1.00	ug/l
Tetrahydrofuran		ND	10.00	ug/l
Chloroform		ND	1.00	ug/l
Bromochloromethane		ND	1.00	ug/l
1,1,1-Trichloroethane		ND	1.00	ug/l
4-Methyl-2-pentanone (MIBK)		ND	10.00	ug/l
2-Hexanone		ND	10.00	ug/l
Carbon tetrachloride		ND	1.00	ug/l
Benzene		ND	1.00	ug/l
1,2-Dichloroethane		ND	1.00	ug/l
Trichloroethene		ND	1.00	ug/l
1,2-Dichloropropane		ND	1.00	ug/l
Bromodichloromethane		ND	1.00	ug/l
Dibromomethane		ND	1.00	ug/l
cis-1,3-Dichloropropene		ND	1.00	ug/l
Toluene		ND	1.00	ug/l
trans-1,3-Dichloropropene		ND	1.00	ug/l
1,1,2-Trichloroethane		ND	1.00	ug/l
Tetrachloroethene		ND	1.00	ug/l
trans-1,4-Dichloro-2-butene		ND	1.00	ug/l
Dibromochloromethane		ND	1.00	ug/l
1,2-Dibromoethane		ND	1.00	ug/l
Chlorobenzene		ND	1.00	ug/l
1,1,1,2-Tetrachloroethane		ND	1.00	ug/l
Ethylbenzene		ND	1.00	ug/l
p,m-Xylene		ND	1.00	ug/l
o-Xylene		ND	1.00	ug/l
Styrene		ND	1.00	ug/l
Isopropylbenzene		ND	1.00	ug/l

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF230327W4 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK) (continued)

Lab Sample ID: 230327B9.BLKW27B

Run in Batch: 230327B9, Run Date: 03/27/2023 23:03, Prep Date: 03/27/2023, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Bromoform		ND	1.00	ug/l
1,1,2,2-Tetrachloroethane		ND	1.00	ug/l
1,2,3-Trichloropropane		ND	1.00	ug/l
n-Propylbenzene		ND	1.00	ug/l
Bromobenzene		ND	1.00	ug/l
1,3,5-Trimethylbenzene		ND	1.00	ug/l
tert-Butylbenzene		ND	1.00	ug/l
1,2,4-Trimethylbenzene		ND	1.00	ug/l
sec-Butylbenzene		ND	1.00	ug/l
p-Isopropyltoluene		ND	1.00	ug/l
1,3-Dichlorobenzene		ND	1.00	ug/l
1,4-Dichlorobenzene		ND	1.00	ug/l
1,2-Dichlorobenzene		ND	1.00	ug/l
1,2,3-Trimethylbenzene		ND	1.00	ug/l
n-Butylbenzene		ND	1.00	ug/l
Hexachloroethane		ND	1.00	ug/l
1,2-Dibromo-3-chloropropane		ND	1.00	ug/l
1,2,4-Trichlorobenzene		ND	1.00	ug/l
1,2,3-Trichlorobenzene		ND	1.00	ug/l
Naphthalene		ND	1.00	ug/l
2-Methylnaphthalene		ND	1.00	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 230327B9.LCSW27B

Run in Batch: 230327B9, Run Date: 03/27/2023 21:46, Prep Date: 03/27/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Diethyl ether		121.1	67.4	121.2
Acetone		105.2	29.9	161.5
Methyl iodide		110.7	68.8	116.4
Carbon disulfide		115.5	63.8	137.4
tert-Methyl butyl ether (MTBE)		112.7	73.2	122.4
Acrylonitrile		113.6	69.9	128.9
2-Butanone (MEK)		99.4	44.0	134.4
Dichlorodifluoromethane		129.5	10.0	222.8
Chloromethane		146.4	23.8	166.5
Vinyl chloride		138.7	43.5	149.1
Bromomethane		132.4	56.8	151.3
Chloroethane		133.4	53.4	149.4
Trichlorofluoromethane		127.5	59.7	151.8
1,1-Dichloroethene		115.8	69.6	139.4
Methylene chloride		114.5	73.3	121.1
trans-1,2-Dichloroethene		116.1	73.6	129.3
1,1-Dichloroethane		117.3	71.5	126.2
cis-1,2-Dichloroethene		113.0	76.6	122.1
Tetrahydrofuran		98.5	59.0	117.9
Chloroform		113.5	78.4	124.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF230327W4 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: 230327B9.LCSW27B

Run in Batch: 230327B9, Run Date: 03/27/2023 21:46, Prep Date: 03/27/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Bromochloromethane		113.4	78.2	120.8
1,1,1-Trichloroethane		109.6	79.4	130.9
4-Methyl-2-pentanone (MIBK)		105.2	71.6	125.2
2-Hexanone		104.6	55.4	136.9
Carbon tetrachloride		110.0	72.6	133.0
Benzene		114.0	79.9	124.9
1,2-Dichloroethane		113.4	76.0	126.3
Trichloroethene		111.1	79.7	124.2
1,2-Dichloropropane		117.3	78.6	126.4
Bromodichloromethane		116.8	80.4	128.2
Dibromomethane		109.8	76.9	122.1
cis-1,3-Dichloropropene		117.3	79.8	129.9
Toluene		112.5	79.8	124.5
trans-1,3-Dichloropropene		114.9	74.0	131.3
1,1,2-Trichloroethane		116.3	78.7	123.1
Tetrachloroethene		105.9	74.5	124.5
trans-1,4-Dichloro-2-butene		108.4	68.6	135.4
Dibromochloromethane		110.7	74.6	127.2
1,2-Dibromoethane		109.6	70.3	133.7
Chlorobenzene		107.7	79.2	122.7
1,1,1,2-Tetrachloroethane		107.8	80.3	128.2
Ethylbenzene		108.5	79.5	129.1
p,m-Xylene		108.1	79.4	132.2
o-Xylene		110.3	80.2	131.0
Styrene		111.6	69.5	126.7
Isopropylbenzene		107.6	74.4	121.5
Bromoform		104.5	69.4	128.0
1,1,2,2-Tetrachloroethane		107.1	79.8	126.3
1,2,3-Trichloropropane		102.8	78.3	138.8
n-Propylbenzene		108.9	82.0	130.7
Bromobenzene		105.4	78.7	124.6
1,3,5-Trimethylbenzene		108.1	81.3	128.9
tert-Butylbenzene		107.3	80.7	128.9
1,2,4-Trimethylbenzene		107.4	81.4	130.8
sec-Butylbenzene		112.1	77.4	129.8
p-Isopropyltoluene		112.8	79.8	137.5
1,3-Dichlorobenzene		113.2	77.0	131.3
1,4-Dichlorobenzene		109.7	20.7	137.7
1,2-Dichlorobenzene		110.0	10.0	166.2
1,2,3-Trimethylbenzene		111.7	76.3	124.2
n-Butylbenzene		114.1	80.0	133.3
Hexachloroethane		104.8	23.8	138.1
1,2-Dibromo-3-chloropropane		104.4	21.2	189.4
1,2,4-Trichlorobenzene		110.6	27.4	143.4
1,2,3-Trichlorobenzene		112.7	75.4	131.4
Naphthalene		112.3	32.9	135.8

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF230327W4 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: 230327B9.LCSW27B

Run in Batch: 230327B9, Run Date: 03/27/2023 21:46, Prep Date: 03/27/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
2-Methylnaphthalene		116.9	25.5	165.5

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 230327B9.LCSDW27B, Parent Sample ID: 230327B9.LCSW27B

Run in Batch: 230327B9, Run Date: 03/27/2023 22:05, Prep Date: 03/27/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Diethyl ether		110.1	67.4	121.2	9.6	30.0
Acetone		100.4	29.9	161.5	4.7	30.0
Methyl iodide		104.1	68.8	116.4	6.2	30.0
Carbon disulfide		108.9	63.8	137.4	5.8	30.0
tert-Methyl butyl ether (MTBE)		104.9	73.2	122.4	7.1	30.0
Acrylonitrile		109.8	69.9	128.9	3.4	30.0
2-Butanone (MEK)		96.7	44.0	134.4	2.8	30.0
Dichlorodifluoromethane		128.6	10.0	222.8	0.7	30.0
Chloromethane		139.3	23.8	166.5	4.9	30.0
Vinyl chloride		129.2	43.5	149.1	7.0	30.0
Bromomethane		123.0	56.8	151.3	7.3	30.0
Chloroethane		123.9	53.4	149.4	7.4	30.0
Trichlorofluoromethane		121.9	59.7	151.8	4.4	30.0
1,1-Dichloroethene		109.7	69.6	139.4	5.4	30.0
Methylene chloride		107.1	73.3	121.1	6.7	30.0
trans-1,2-Dichloroethene		110.0	73.6	129.3	5.4	30.0
1,1-Dichloroethane		108.4	71.5	126.2	7.9	30.0
cis-1,2-Dichloroethene		105.5	76.6	122.1	6.8	30.0
Tetrahydrofuran		95.7	59.0	117.9	2.9	30.0
Chloroform		106.2	78.4	124.0	6.6	30.0
Bromochloromethane		103.1	78.2	120.8	9.5	30.0
1,1,1-Trichloroethane		104.8	79.4	130.9	4.5	30.0
4-Methyl-2-pentanone (MIBK)		104.8	71.6	125.2	0.4	30.0
2-Hexanone		104.5	55.4	136.9	0.1	30.0
Carbon tetrachloride		107.8	72.6	133.0	2.0	30.0
Benzene		108.2	79.9	124.9	5.2	30.0
1,2-Dichloroethane		107.0	76.0	126.3	5.8	30.0
Trichloroethene		107.6	79.7	124.2	3.2	30.0
1,2-Dichloropropane		110.5	78.6	126.4	6.0	30.0
Bromodichloromethane		110.4	80.4	128.2	5.6	30.0
Dibromomethane		106.0	76.9	122.1	3.6	30.0
cis-1,3-Dichloropropene		110.2	79.8	129.9	6.2	30.0
Toluene		108.4	79.8	124.5	3.7	30.0
trans-1,3-Dichloropropene		110.7	74.0	131.3	3.7	30.0
1,1,2-Trichloroethane		112.2	78.7	123.1	3.6	30.0
Tetrachloroethene		103.3	74.5	124.5	2.5	30.0
trans-1,4-Dichloro-2-butene		105.7	68.6	135.4	2.5	30.0
Dibromochloromethane		105.8	74.6	127.2	4.5	30.0
1,2-Dibromoethane		106.2	70.3	133.7	3.2	30.0
Chlorobenzene		105.7	79.2	122.7	1.9	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF230327W4 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Laboratory Control Sample Duplicate (LCSD) (continued)

Lab Sample ID: 230327B9.LCSDW27B, Parent Sample ID: 230327B9.LCSW27B

Run in Batch: 230327B9, Run Date: 03/27/2023 22:05, Prep Date: 03/27/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,1,1,2-Tetrachloroethane		103.6	80.3	128.2	3.9	30.0
Ethylbenzene		106.6	79.5	129.1	1.8	30.0
p,m-Xylene		107.1	79.4	132.2	0.9	30.0
o-Xylene		108.2	80.2	131.0	2.0	30.0
Styrene		107.7	69.5	126.7	3.5	30.0
Isopropylbenzene		105.9	74.4	121.5	1.6	30.0
Bromoform		102.9	69.4	128.0	1.5	30.0
1,1,2,2-Tetrachloroethane		104.7	79.8	126.3	2.3	30.0
1,2,3-Trichloropropane		104.2	78.3	138.8	1.4	30.0
n-Propylbenzene		107.5	82.0	130.7	1.3	30.0
Bromobenzene		102.8	78.7	124.6	2.5	30.0
1,3,5-Trimethylbenzene		105.9	81.3	128.9	2.1	30.0
tert-Butylbenzene		107.4	80.7	128.9	0.1	30.0
1,2,4-Trimethylbenzene		105.4	81.4	130.8	1.9	30.0
sec-Butylbenzene		108.7	77.4	129.8	3.0	30.0
p-Isopropyltoluene		110.3	79.8	137.5	2.2	30.0
1,3-Dichlorobenzene		108.0	77.0	131.3	4.7	30.0
1,4-Dichlorobenzene		103.7	20.7	137.7	5.6	30.0
1,2-Dichlorobenzene		105.4	10.0	166.2	4.2	30.0
1,2,3-Trimethylbenzene		106.3	76.3	124.2	4.9	30.0
n-Butylbenzene		113.1	80.0	133.3	0.8	30.0
Hexachloroethane		101.0	23.8	138.1	3.6	30.0
1,2-Dibromo-3-chloropropane		99.8	21.2	189.4	4.5	30.0
1,2,4-Trichlorobenzene		106.1	27.4	143.4	4.2	30.0
1,2,3-Trichlorobenzene		107.0	75.4	131.4	5.2	30.0
Naphthalene		108.7	32.9	135.8	3.3	30.0
2-Methylnaphthalene		114.5	25.5	165.5	2.0	30.0



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C.O.C. PAGE # 1 OF 2

REPORT TO

CHAIN OF CUSTODY RECORD

INVOICE TO

CONTACT NAME: Rodney Abke
 COMPANY: Applied EcoSystems
 ADDRESS: G-4300 South Saginaw Street
 CITY: Burton STATE: MI ZIP CODE: 48529
 PHONE NO.: 810-715-2525 FAX NO.: 810-715-2526 P.O. NO.: PO795930
 E-MAIL ADDRESS: rabke@appliedecosystems.com QUOTE NO.:

CONTACT NAME: Monica Wallingford SAME
 COMPANY: Revitalizing Auto Communities Environmental Response (RACER) Trust
 ADDRESS:
 CITY: STATE: ZIP CODE:
 PHONE NO.: 313.486.2978 E-MAIL ADDRESS: mwallingford@racertrust.org

PROJECT NO./NAME: RACER Flint West #12990 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 report to MDLs

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

Containers & Preservatives

MATERIAL	# OF BOTTLES	NOPE	HD	HNO3	H2SO4	HCl	HClO4	OTHER	VOCs	Metals, dissolved*	Metals, Total*	Certifications	
												<input type="checkbox"/> OHIO VAP	<input type="checkbox"/> Drinking Water
GW	5	1	3	1					X	X	X	<input type="checkbox"/> DoD	<input type="checkbox"/> NPDES
GW	5	1	3	1					X	X	X	<input type="checkbox"/> Detroit	<input type="checkbox"/> New York
GW	5	1	2	1					X	X	X	<input type="checkbox"/> Other	
GW	5	1	3	1					X	X	X	Special Instructions	
GW	5	1	3	1					X	X	X	* - Metals list includes: Ar, Cr-total, CR-Hex, Cu Pb, Se, Zn	
GW	5	1	3	1					X	X	X	report down to MCLs	

MERIT LAB NO. <small>FOR LAB USE ONLY</small>	YEAR		SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATERIAL	# OF BOTTLES	NOPE	HD	HNO3	H2SO4	HCl	HClO4	OTHER	VOCs	Metals, dissolved*	Metals, Total*
	DATE	TIME													
46527.01	3-21-23	1430	MW-1175	GW	5	1	3	1						X	X
.02	3-21-23	1541	MW-1035	GW	5	1	3	1						X	X
.03	3-21-23	1541	MSMW-1035	GW	5	1	2	1						X	X
.04	3-21-23	1541	MSDMW-1035	GW	5	1	3	1						X	X
.05	3-21-23	1555	Equip Blank	GW	5	1	3	1						X	X
.06															

RELINQUISHED BY: Carl O Slek Sampler DATE: 3-21-23 TIME: 1400
 RECEIVED BY: _____ DATE: _____ TIME: _____
 RELINQUISHED BY: _____ DATE: _____ TIME: _____
 RECEIVED BY: _____ DATE: _____ TIME: _____

RELINQUISHED BY: _____ DATE: _____ TIME: _____
 RECEIVED BY: [Signature] DATE: 3/22/23 TIME: 0815
 SEAL NO. SEAL INTACT YES NO INITIALS _____ NOTES: TEMP. ON ARRIVAL 50
 SEAL NO. SEAL INTACT YES NO INITIALS _____

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



Analytical Laboratory Report

Report ID: S46528.01(01)
Generated on 04/12/2023

Report to

Attention: Rodney Abke
Applied Ecosystems
G4300 S. Saginaw Street
Burton, MI 48529

Phone: 810-715-2525 FAX:
Email: rabke@appliedecosystems.com

Report produced by

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

Report Summary

Lab Sample ID(s): S46528.01-S46528.06
Project: RACER Flint West #12990
Collected Date(s): 03/21/2023
Submitted Date/Time: 03/22/2023 08:15
Sampled by: Unknown
P.O. #: 795930

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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).

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

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

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

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

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

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

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

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

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

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

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

Report Narrative

There is no additional narrative for this analytical report



Analytical Laboratory Report

Laboratory Certifications

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

Qualifier Descriptions

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

Glossary of Abbreviations

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



Analytical Laboratory Report

Method Summary

Method	Version
ASTMD7979-19M	ASTM Method D7979 - 19 Modified (Isotopic Dilution)

Parameter Summary

Parameter	Synonym	Cas #
PFBA	Perfluorobutanoic Acid	375-22-4
PFPeA	Perfluoropentanoic Acid	2706-90-3
4:2 FTSA	4:2 Fluorotelomer Sulfonic Acid	757124-72-4
PFHxA	Perfluorohexanoic Acid	307-24-4
PFBS	Perfluorobutane sulfonic Acid	375-73-5
PFHpA	Perfluoroheptanoic Acid	375-85-9
PFPeS	Perfluoropentane Sulfonic Acid	2706-91-4
6:2 FTSA	6:2 Fluorotelomer Sulfonic Acid	27619-97-2
PFOA	Perfluorooctanoic Acid	335-67-1
PFHxS	Perfluorohexane Sulfonic Acid	355-46-4
PFHxS-LN	Perfluorohexane Sulfonic Acid - LN	355-46-4-LN
PFHxS-BR	Perfluorohexane Sulfonic Acid - BR	355-46-4-BR
PFNA	Perfluorononanoic Acid	375-95-1
8:2 FTSA	8:2 Fluorotelomer Sulfonic Acid	39108-34-4
PFHpS	Perfluoroheptane Sulfonic Acid	375-92-8
PFDA	Perfluorodecanoic Acid	335-76-2
N-MeFOSAA	N-methyl perfluorooctanesulfonamidoacetic acid	2355-31-9
EtFOSAA	N-Ethyl Perfluorooctane Sulfonamidoacetic Acid	2991-50-6
PFOS	Perfluorooctane Sulfonic Acid	1763-23-1
PFOS-LN	Perfluorooctane Sulfonic Acid - LN	1763-23-1-LN
PFOS-BR	Perfluorooctane Sulfonic Acid - BR	1763-23-1-BR
PFUnDA	Perfluoroundecanoic Acid	2058-94-8
PFNS	Perfluorononane Sulfonic Acid	68259-12-1
PFDoDA	Perfluorododecanoic Acid	307-55-1
PFDS	Perfluorodecane Sulfonic Acid	335-77-3
PFTTrDA	Perfluorotridecanoic Acid	72629-94-8
FOSA	Perfluorooctane Sulfonamide	754-91-6
PFTeDA	Perfluorotetradecanoic Acid	376-06-7
11Cl-PF3OUdS	11-chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	763051-92-9
9Cl-PF3ONS	9-chlorohexadecafluoro-3-oxanone1-sulfonic acid	756426-58-1
ADONA	4,8-dioxa-3H-perfluorononanoic acid	919005-14-4
HFPO-DA	Hexafluoropropylene oxide dimer	13252-13-6



Analytical Laboratory Report

Sample Summary (6 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S46528.01	MW-117S	Groundwater	03/21/23 14:38
S46528.02	MW-103S	Groundwater	03/21/23 15:41
S46528.03	MSMW-103S	Groundwater	03/21/23 15:41
S46528.04	MSDMW-103S	Groundwater	03/21/23 15:41
S46528.05	Equip Blank	Water	03/21/23 15:55
S46528.06	Trip Blank	Water	03/21/23 00:01



Analytical Laboratory Report

Lab Sample ID: S46528.01

Sample Tag: MW-117S

Collected Date/Time: 03/21/2023 14:38

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	5.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	11.84/6.46/11	ASTMD7979-19M	03/30/23 13:00	PTW	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 03/30/23 18:59, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	3.0	10	1.6	ng/L	2.04	375-22-4	J
PFPeA*	0.98	4.1	0.82	ng/L	2.04	2706-90-3	J
4:2 FTSA*	Not detected	2.0	0.82	ng/L	2.04	757124-72-4	
PFHxA*	1.3	2.0	0.41	ng/L	2.04	307-24-4	J
PFBS*	1.3	2.0	0.82	ng/L	2.04	375-73-5	J
PFHpA*	1.4	2.0	1.0	ng/L	2.04	375-85-9	J
PFPeS*	Not detected	2.0	0.82	ng/L	2.04	2706-91-4	
6:2 FTSA*	Not detected	2.0	1.2	ng/L	2.04	27619-97-2	
PFOA*	3.2	2.0	1.6	ng/L	2.04	335-67-1	
PFHxS*	1.4	2.0	1.2	ng/L	2.04	355-46-4	J
PFHxS-LN*	Not detected	2.0	1.2	ng/L	2.04	355-46-4-LN	
PFHxS-BR*	Not detected	2.0	1.2	ng/L	2.04	355-46-4-BR	
PFNA*	Not detected	2.0	0.82	ng/L	2.04	375-95-1	
8:2 FTSA*	Not detected	2.0	1.0	ng/L	2.04	39108-34-4	
PFHpS*	Not detected	2.0	1.2	ng/L	2.04	375-92-8	
PFDA*	Not detected	2.0	0.61	ng/L	2.04	335-76-2	
N-MeFOSAA*	Not detected	2.0	1.4	ng/L	2.04	2355-31-9	
EtFOSAA*	Not detected	4.1	2.0	ng/L	2.04	2991-50-6	
PFOS*	1.9	2.0	1.2	ng/L	2.04	1763-23-1	J
PFOS-LN*	Not detected	2.0	1.2	ng/L	2.04	1763-23-1-LN	
PFOS-BR*	1.3	2.0	1.2	ng/L	2.04	1763-23-1-BR	J
PFUnDA*	Not detected	2.0	1.0	ng/L	2.04	2058-94-8	
PFNS*	Not detected	2.0	1.0	ng/L	2.04	68259-12-1	
PFDoDA*	Not detected	2.0	0.61	ng/L	2.04	307-55-1	
PFDS*	Not detected	2.0	1.2	ng/L	2.04	335-77-3	
PFTTrDA*	Not detected	2.0	1.0	ng/L	2.04	72629-94-8	
FOSA*	Not detected	2.0	0.82	ng/L	2.04	754-91-6	
PFTeDA*	Not detected	4.1	0.41	ng/L	2.04	376-06-7	
11Cl-PF3OUdS*	Not detected	2.0	0.82	ng/L	2.04	763051-92-9	
9Cl-PF3ONS*	Not detected	2.0	0.82	ng/L	2.04	756426-58-1	
ADONA*	Not detected	2.0	1.0	ng/L	2.04	919005-14-4	
HFPO-DA*	Not detected	2.0	2.0	ng/L	2.04	13252-13-6	

J-Estimated value less than reporting limit, but greater than MDL



Analytical Laboratory Report

Lab Sample ID: S46528.02

Sample Tag: MW-103S

Collected Date/Time: 03/21/2023 15:41

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	5.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	11.66/6.46/10	ASTMD7979-19M	03/30/23 13:00	PTW	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 03/30/23 19:19, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	19	1.5	ng/L	1.92	375-22-4	X
PFPeA*	Not detected	3.8	0.77	ng/L	1.92	2706-90-3	
4:2 FTSA*	Not detected	1.9	0.77	ng/L	1.92	757124-72-4	
PFHxA*	Not detected	1.9	0.38	ng/L	1.92	307-24-4	
PFBS*	1.7	1.9	0.77	ng/L	1.92	375-73-5	J
PFHpA*	Not detected	1.9	0.96	ng/L	1.92	375-85-9	
PFPeS*	Not detected	1.9	0.77	ng/L	1.92	2706-91-4	
6:2 FTSA*	Not detected	1.9	1.2	ng/L	1.92	27619-97-2	
PFOA*	Not detected	1.9	1.5	ng/L	1.92	335-67-1	
PFHxS*	2.6	1.9	1.2	ng/L	1.92	355-46-4	
PFHxS-LN*	2.0	1.9	1.2	ng/L	1.92	355-46-4-LN	
PFHxS-BR*	Not detected	1.9	1.2	ng/L	1.92	355-46-4-BR	
PFNA*	Not detected	1.9	0.77	ng/L	1.92	375-95-1	
8:2 FTSA*	Not detected	1.9	0.96	ng/L	1.92	39108-34-4	
PFHpS*	Not detected	1.9	1.2	ng/L	1.92	375-92-8	
PFDA*	Not detected	1.9	0.58	ng/L	1.92	335-76-2	
N-MeFOSAA*	Not detected	1.9	1.3	ng/L	1.92	2355-31-9	
EtFOSAA*	Not detected	3.8	1.9	ng/L	1.92	2991-50-6	
PFOS*	9.9	1.9	1.2	ng/L	1.92	1763-23-1	
PFOS-LN*	5.8	1.9	1.2	ng/L	1.92	1763-23-1-LN	
PFOS-BR*	4.1	1.9	1.2	ng/L	1.92	1763-23-1-BR	
PFUnDA*	Not detected	1.9	0.96	ng/L	1.92	2058-94-8	
PFNS*	Not detected	1.9	0.96	ng/L	1.92	68259-12-1	
PFDODA*	Not detected	1.9	0.58	ng/L	1.92	307-55-1	
PFDS*	Not detected	1.9	1.2	ng/L	1.92	335-77-3	
PFTTrDA*	Not detected	1.9	0.96	ng/L	1.92	72629-94-8	
FOSA*	Not detected	1.9	0.77	ng/L	1.92	754-91-6	
PFTeDA*	Not detected	3.8	0.38	ng/L	1.92	376-06-7	
11Cl-PF3OUdS*	Not detected	1.9	0.77	ng/L	1.92	763051-92-9	
9Cl-PF3ONS*	Not detected	1.9	0.77	ng/L	1.92	756426-58-1	
ADONA*	Not detected	1.9	0.96	ng/L	1.92	919005-14-4	
HFPO-DA*	Not detected	1.9	1.9	ng/L	1.92	13252-13-6	

X-Elevated reporting limit due to matrix interference

J-Estimated value less than reporting limit, but greater than MDL



Analytical Laboratory Report

Lab Sample ID: S46528.03

Sample Tag: MSMW-103S

Collected Date/Time: 03/21/2023 15:41

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	5.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	11.95/6.45/11	ASTMD7979-19M	03/30/23 13:00	PTW	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 03/30/23 19:38, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	100	10	1.6	ng/L	2	375-22-4	1
PFPeA*	89	4.0	0.80	ng/L	2	2706-90-3	1
4:2 FTSA*	110	2.0	0.80	ng/L	2	757124-72-4	1
PFHxA*	93	2.0	0.40	ng/L	2	307-24-4	1
PFBS*	85	2.0	0.80	ng/L	2	375-73-5	1
PFHpA*	80	2.0	1.0	ng/L	2	375-85-9	1
PFPeS*	82	2.0	0.80	ng/L	2	2706-91-4	1
6:2 FTSA*	110	2.0	1.2	ng/L	2	27619-97-2	1
PFOA*	80	2.0	1.6	ng/L	2	335-67-1	1
PFHxS*	86	2.0	1.2	ng/L	2	355-46-4	1
PFHxS-LN*	74	2.0	1.2	ng/L	2	355-46-4-LN	1
PFHxS-BR*	12	2.0	1.2	ng/L	2	355-46-4-BR	1
PFNA*	83	2.0	0.80	ng/L	2	375-95-1	1
8:2 FTSA*	97	2.0	1.0	ng/L	2	39108-34-4	1
PFHpS*	79	2.0	1.2	ng/L	2	375-92-8	1
PFDA*	80	2.0	0.60	ng/L	2	335-76-2	1
N-MeFOSAA*	71	2.0	1.4	ng/L	2	2355-31-9	1
EtFOSAA*	89	4.0	2.0	ng/L	2	2991-50-6	1
PFOS*	94	2.0	1.2	ng/L	2	1763-23-1	1
PFOS-LN*	64	2.0	1.2	ng/L	2	1763-23-1-LN	1
PFOS-BR*	29	2.0	1.2	ng/L	2	1763-23-1-BR	1
PFUnDA*	91	2.0	1.0	ng/L	2	2058-94-8	1
PFNS*	78	2.0	1.0	ng/L	2	68259-12-1	1
PFDODA*	79	2.0	0.60	ng/L	2	307-55-1	1
PFDS*	78	2.0	1.2	ng/L	2	335-77-3	1
PFTTrDA*	74	2.0	1.0	ng/L	2	72629-94-8	1
FOSA*	86	2.0	0.80	ng/L	2	754-91-6	1
PFTeDA*	82	4.0	0.40	ng/L	2	376-06-7	1
11Cl-PF3OUdS*	91	2.0	0.80	ng/L	2	763051-92-9	1
9Cl-PF3ONS*	91	2.0	0.80	ng/L	2	756426-58-1	1
ADONA*	83	2.0	1.0	ng/L	2	919005-14-4	1
HFPO-DA*	76	2.0	2.0	ng/L	2	13252-13-6	1

1-spiked @ 100ng/L



Analytical Laboratory Report

Lab Sample ID: S46528.04

Sample Tag: MSDMW-103S

Collected Date/Time: 03/21/2023 15:41

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	5.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	12.11/6.49/11	ASTMD7979-19M	03/30/23 13:00	PTW	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 03/30/23 19:58, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	99	9.8	1.6	ng/L	1.96	375-22-4	1
PFPeA*	80	3.9	0.78	ng/L	1.96	2706-90-3	1
4:2 FTSA*	99	2.0	0.78	ng/L	1.96	757124-72-4	1
PFHxA*	82	2.0	0.39	ng/L	1.96	307-24-4	1
PFBS*	81	2.0	0.78	ng/L	1.96	375-73-5	1
PFHpA*	75	2.0	0.98	ng/L	1.96	375-85-9	1
PFPeS*	77	2.0	0.78	ng/L	1.96	2706-91-4	1
6:2 FTSA*	100	2.0	1.2	ng/L	1.96	27619-97-2	1
PFOA*	79	2.0	1.6	ng/L	1.96	335-67-1	1
PFHxS*	80	2.0	1.2	ng/L	1.96	355-46-4	1
PFHxS-LN*	68	2.0	1.2	ng/L	1.96	355-46-4-LN	1
PFHxS-BR*	9.4	2.0	1.2	ng/L	1.96	355-46-4-BR	1
PFNA*	80	2.0	0.78	ng/L	1.96	375-95-1	1
8:2 FTSA*	82	2.0	0.98	ng/L	1.96	39108-34-4	1
PFHpS*	82	2.0	1.2	ng/L	1.96	375-92-8	1
PFDA*	76	2.0	0.59	ng/L	1.96	335-76-2	1
N-MeFOSAA*	73	2.0	1.4	ng/L	1.96	2355-31-9	1
EtFOSAA*	79	3.9	2.0	ng/L	1.96	2991-50-6	1
PFOS*	91	2.0	1.2	ng/L	1.96	1763-23-1	1
PFOS-LN*	63	2.0	1.2	ng/L	1.96	1763-23-1-LN	1
PFOS-BR*	26	2.0	1.2	ng/L	1.96	1763-23-1-BR	1
PFUnDA*	79	2.0	0.98	ng/L	1.96	2058-94-8	1
PFNS*	77	2.0	0.98	ng/L	1.96	68259-12-1	1
PFDODA*	76	2.0	0.59	ng/L	1.96	307-55-1	1
PFDS*	77	2.0	1.2	ng/L	1.96	335-77-3	1
PFTTrDA*	67	2.0	0.98	ng/L	1.96	72629-94-8	1
FOSA*	84	2.0	0.78	ng/L	1.96	754-91-6	1
PFTeDA*	72	3.9	0.39	ng/L	1.96	376-06-7	1
11Cl-PF3OUdS*	91	2.0	0.78	ng/L	1.96	763051-92-9	1
9Cl-PF3ONS*	83	2.0	0.78	ng/L	1.96	756426-58-1	1
ADONA*	76	2.0	0.98	ng/L	1.96	919005-14-4	1
HFPO-DA*	69	2.0	2.0	ng/L	1.96	13252-13-6	1

1-spiked @ 98ng/L



Analytical Laboratory Report

Lab Sample ID: S46528.05

Sample Tag: Equip Blank

Collected Date/Time: 03/21/2023 15:55

Matrix: Water

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	5.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	11.70/6.41/10	ASTMD7979-19M	03/30/23 13:00	PTW	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 03/30/23 20:17, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	9.5	1.5	ng/L	1.89	375-22-4	
PFPeA*	Not detected	3.8	0.76	ng/L	1.89	2706-90-3	
4:2 FTSA*	Not detected	1.9	0.76	ng/L	1.89	757124-72-4	
PFHxA*	Not detected	1.9	0.38	ng/L	1.89	307-24-4	
PFBS*	Not detected	1.9	0.76	ng/L	1.89	375-73-5	
PFHpA*	Not detected	1.9	0.95	ng/L	1.89	375-85-9	
PFPeS*	Not detected	1.9	0.76	ng/L	1.89	2706-91-4	
6:2 FTSA*	Not detected	1.9	1.1	ng/L	1.89	27619-97-2	
PFOA*	Not detected	1.9	1.5	ng/L	1.89	335-67-1	
PFHxS*	Not detected	1.9	1.1	ng/L	1.89	355-46-4	
PFHxS-LN*	Not detected	1.9	1.1	ng/L	1.89	355-46-4-LN	
PFHxS-BR*	Not detected	1.9	1.1	ng/L	1.89	355-46-4-BR	
PFNA*	Not detected	1.9	0.76	ng/L	1.89	375-95-1	
8:2 FTSA*	Not detected	1.9	0.95	ng/L	1.89	39108-34-4	
PFHpS*	Not detected	1.9	1.1	ng/L	1.89	375-92-8	
PFDA*	Not detected	1.9	0.57	ng/L	1.89	335-76-2	
N-MeFOSAA*	Not detected	1.9	1.3	ng/L	1.89	2355-31-9	
EtFOSAA*	Not detected	3.8	1.9	ng/L	1.89	2991-50-6	
PFOS*	Not detected	1.9	1.1	ng/L	1.89	1763-23-1	
PFOS-LN*	Not detected	1.9	1.1	ng/L	1.89	1763-23-1-LN	
PFOS-BR*	Not detected	1.9	1.1	ng/L	1.89	1763-23-1-BR	
PFUnDA*	Not detected	1.9	0.95	ng/L	1.89	2058-94-8	
PFNS*	Not detected	1.9	0.95	ng/L	1.89	68259-12-1	
PFDoDA*	Not detected	1.9	0.57	ng/L	1.89	307-55-1	
PFDS*	Not detected	1.9	1.1	ng/L	1.89	335-77-3	
PFTTrDA*	Not detected	1.9	0.95	ng/L	1.89	72629-94-8	
FOSA*	Not detected	1.9	0.76	ng/L	1.89	754-91-6	
PFTeDA*	Not detected	3.8	0.38	ng/L	1.89	376-06-7	
11Cl-PF3OUdS*	Not detected	1.9	0.76	ng/L	1.89	763051-92-9	
9Cl-PF3ONS*	Not detected	1.9	0.76	ng/L	1.89	756426-58-1	
ADONA*	Not detected	1.9	0.95	ng/L	1.89	919005-14-4	
HFPO-DA*	Not detected	1.9	1.9	ng/L	1.89	13252-13-6	



Analytical Laboratory Report

Lab Sample ID: S46528.06

Sample Tag: Trip Blank

Collected Date/Time: 03/21/2023 00:01

Matrix: Water

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	5.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	11.67/6.49/10	ASTMD7979-19M	03/30/23 13:00	PTW	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 03/30/23 20:37, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	9.7	1.5	ng/L	1.93	375-22-4	
PFPeA*	Not detected	3.9	0.77	ng/L	1.93	2706-90-3	
4:2 FTSA*	Not detected	1.9	0.77	ng/L	1.93	757124-72-4	
PFHxA*	Not detected	1.9	0.39	ng/L	1.93	307-24-4	
PFBS*	Not detected	1.9	0.77	ng/L	1.93	375-73-5	
PFHpA*	Not detected	1.9	0.97	ng/L	1.93	375-85-9	
PFPeS*	Not detected	1.9	0.77	ng/L	1.93	2706-91-4	
6:2 FTSA*	Not detected	1.9	1.2	ng/L	1.93	27619-97-2	
PFOA*	Not detected	1.9	1.5	ng/L	1.93	335-67-1	
PFHxS*	Not detected	1.9	1.2	ng/L	1.93	355-46-4	
PFHxS-LN*	Not detected	1.9	1.2	ng/L	1.93	355-46-4-LN	
PFHxS-BR*	Not detected	1.9	1.2	ng/L	1.93	355-46-4-BR	
PFNA*	Not detected	1.9	0.77	ng/L	1.93	375-95-1	
8:2 FTSA*	Not detected	1.9	0.97	ng/L	1.93	39108-34-4	
PFHpS*	Not detected	1.9	1.2	ng/L	1.93	375-92-8	
PFDA*	Not detected	1.9	0.58	ng/L	1.93	335-76-2	
N-MeFOSAA*	Not detected	1.9	1.4	ng/L	1.93	2355-31-9	
EtFOSAA*	Not detected	3.9	1.9	ng/L	1.93	2991-50-6	
PFOS*	Not detected	1.9	1.2	ng/L	1.93	1763-23-1	
PFOS-LN*	Not detected	1.9	1.2	ng/L	1.93	1763-23-1-LN	
PFOS-BR*	Not detected	1.9	1.2	ng/L	1.93	1763-23-1-BR	
PFUnDA*	Not detected	1.9	0.97	ng/L	1.93	2058-94-8	
PFNS*	Not detected	1.9	0.97	ng/L	1.93	68259-12-1	
PFDODA*	Not detected	1.9	0.58	ng/L	1.93	307-55-1	
PFDS*	Not detected	1.9	1.2	ng/L	1.93	335-77-3	
PFTTrDA*	Not detected	1.9	0.97	ng/L	1.93	72629-94-8	
FOSA*	Not detected	1.9	0.77	ng/L	1.93	754-91-6	
PFTeDA*	Not detected	3.9	0.39	ng/L	1.93	376-06-7	
11Cl-PF3OUdS*	Not detected	1.9	0.77	ng/L	1.93	763051-92-9	
9Cl-PF3ONS*	Not detected	1.9	0.77	ng/L	1.93	756426-58-1	
ADONA*	Not detected	1.9	0.97	ng/L	1.93	919005-14-4	
HFPO-DA*	Not detected	1.9	1.9	ng/L	1.93	13252-13-6	

Merit Laboratories Login Checklist

Lab Set ID:S46528

Client:APPLIED (Applied Ecosystems)

Project: RACER Flint West #12990

Submitted:03/22/2023 08:15 Login User: MMC

Attention: Rodney Abke

Address: Applied Ecosystems
G4300 S. Saginaw Street
Burton, MI 48529

Phone: 810-715-2525

FAX:

Email: rabke@appliedecosystems.com

Selection	Description	Note
-----------	-------------	------

Sample Receiving

- | | | |
|-----|--|--|
| 01. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Samples are received at 4C +/- 2C Thermometer # IR 5.0 |
| 02. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Received on ice/ cooling process begun |
| 03. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Samples shipped |
| 04. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Samples left in 24 hr. drop box |
| 05. | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A | Are there custody seals/tape or is the drop box locked |

Chain of Custody

- | | | |
|-----|--|--|
| 06. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | COC adequately filled out Trip Blank not listed on COC |
| 07. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | COC signed and relinquished to the lab |
| 08. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Sample tag on bottles match COC |
| 09. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Subcontracting needed? Subcontracted to: |

Preservation

- | | | |
|-----|--|---|
| 10. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Do sample have correct chemical preservation |
| 11. | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A | Completed pH checks on preserved samples? (no VOAs) |
| 12. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Did any samples need to be preserved in the lab? |

Bottle Conditions

- | | | |
|-----|--|---|
| 13. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | All bottles intact |
| 14. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Appropriate analytical bottles are used |
| 15. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Merit bottles used |
| 16. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Sufficient sample volume received |
| 17. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Samples require laboratory filtration |
| 18. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Samples submitted within holding time |
| 19. | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> 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: _____



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

C.O.C. PAGE # 2 OF 2

REPORT TO

CHAIN OF CUSTODY RECORD

INVOICE TO

CONTACT NAME: Rodney Abke
 COMPANY: Applied EcoSystems
 ADDRESS: G-4300 South Saginaw Street
 CITY: Burton STATE: MI ZIP CODE: 48529
 PHONE NO.: 810-715-2525 FAX NO.: 810-715-2526
 E-MAIL ADDRESS: rabke@appliedecosystems.com
 QUOTE NO.: PO795930

CONTACT NAME: Monica Wallingford SAME
 COMPANY: Revitalizing Auto Communities Environmental Response (RACER) Trust
 ADDRESS:
 CITY: STATE: ZIP CODE:
 PHONE NO.: 313.486.2978 E-MAIL ADDRESS: mwallingford@racertrust.org

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

PROJECT NO./NAME: RACER Flint West #12990
 TURNAROUND TIME REQUIRED: 1 DAY 2 DAYS 3 DAYS STANDARD OTHER
 DELIVERABLES REQUIRED: STD LEVEL II LEVEL III LEVEL IV EDD OTHER report to MDLs

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

MERIT LAB NO. <small>FOR LAB USE ONLY</small>	YEAR		SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives								PFAS/PFOS **
	DATE	TIME				NOVAE	HC	HNO ₃	H ₂ O ₂	NaOH	Mech	OTHER		
4652801	3-21-23	1538	MW-1175	GW	3									X
02	3-21-23	1541	MW-1035	GW	3									X
03	3-21-23	1541	MSMW-1035	GW	3									X
04	3-21-23	1541	MSDMW-1035	GW	3									X
05	3-21-23	1555	Equip Blank	GW	3									X
06														

Certifications
 OHIO VAP Drinking Water
 DoD NPDES

Project Locations
 Detroit New York
 Other

Special Instructions

** - 28 Compound List

report down to MDLs

RELINQUISHED BY: *Colin Stoll* Sampler DATE: 3/21/23 TIME: 1615
 RECEIVED BY: DATE: TIME:
 RELINQUISHED BY: DATE: TIME:
 RECEIVED BY: DATE: TIME:

RELINQUISHED BY: DATE: TIME:
 RECEIVED BY: *[Signature]* DATE: 3/24/23 TIME: 0815
 SEAL NO. SEAL INTACT YES NO INITIALS: _____
 SEAL NO. SEAL INTACT YES NO INITIALS: _____
 NOTES: TEMP. ON ARRIVAL: 5.0



Quality Control Report

Report ID: QC-S46528-01
Generated on 04/12/2023

Report to

Attention: Rodney Abke
Applied Ecosystems
G4300 S. Saginaw Street
Burton, MI 48529

Phone: 810-715-2525 FAX:

Report Produced by

Merit Laboratories
2680 East Lansing Drive
East Lansing, MI 48823

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

Report Summary

Lab Sample ID(s): S46528.01-S46528.06
Project: RACER Flint West #12990
Submitted Date/Time: 03/22/2023 08:15
Sampled by: Unknown
P.O. #: 795930

QC Report Sections

- Cover Page (Page 1)
- Analysis Summary (Pages 2-7)
- Prep Batch Summary (Page 8)
- Internal Standards per Lab Sample (Pages 9-12)
- Internal Standards per QC Sample (Pages 13-17)
- Batch QC Results (Pages 18-22)

Report Flag Descriptions

- *: QC result is outside of indicated control limits
- W: Surrogate result not applicable due to sample dilution

I certify that this data package is in compliance with the terms and conditions of the program, and project, and contractual requirements both technically and for completeness. Release of the data contained in this hardcopy data package and its computer-readable data submitted has been authorized by the Quality Assurance Manager and his/her designee, as verified by the following signature.

Barbara Ball
Quality Assurance Manager

QC Report - Analysis Summary

Lab Sample ID: S46528.01

Sample Tag: MW-117S

Collected Date/Time: 03/21/2023 14:38

Matrix: Groundwater

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
28 PFAs	ASTMD7979-19M	03/30/23 18:59	SE230330	PF230330W1	Yes	BLK/LCS/LCSD/MS/MS

QC Report - Analysis Summary

Lab Sample ID: S46528.02

Sample Tag: MW-103S

Collected Date/Time: 03/21/2023 15:41

Matrix: Groundwater

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
28 PFAs	ASTMD7979-19M	03/30/23 19:19	SE230330	PF230330W1	Yes	BLK/LCS/LCSD/MS/MS

QC Report - Analysis Summary

Lab Sample ID: S46528.03

Sample Tag: MSMW-103S

Collected Date/Time: 03/21/2023 15:41

Matrix: Groundwater

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
28 PFAs	ASTMD7979-19M	03/30/23 19:38	SE230330	PF230330W1	Yes	BLK/LCS/LCSD/MS/MS

QC Report - Analysis Summary

Lab Sample ID: S46528.04

Sample Tag: MSDMW-103S

Collected Date/Time: 03/21/2023 15:41

Matrix: Groundwater

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
28 PFAs	ASTMD7979-19M	03/30/23 19:58	SE230330	PF230330W1	Yes	BLK/LCS/LCSD/MS/MS

QC Report - Analysis Summary

Lab Sample ID: S46528.05

Sample Tag: Equip Blank

Collected Date/Time: 03/21/2023 15:55

Matrix: Water

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
28 PFAs	ASTMD7979-19M	03/30/23 20:17	SE230330	PF230330W1	Yes	BLK/LCS/LCSD/MS/MS

QC Report - Analysis Summary

Lab Sample ID: S46528.06

Sample Tag: Trip Blank

Collected Date/Time: 03/21/2023 00:01

Matrix: Water

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
28 PFAs	ASTMD7979-19M	03/30/23 20:37	SE230330	PF230330W1	Yes	BLK/LCS/LCSD/MS/MS

QC Report - Prep Batch Summary

Organics - Volatiles, Prep Batch ID: PF230330W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S46528.01	28 PFAs	ASTMD7979-19M	03/30/23 18:59	SE230330
S46528.02	28 PFAs	ASTMD7979-19M	03/30/23 19:19	SE230330
S46528.03	28 PFAs	ASTMD7979-19M	03/30/23 19:38	SE230330
S46528.04	28 PFAs	ASTMD7979-19M	03/30/23 19:58	SE230330
S46528.05	28 PFAs	ASTMD7979-19M	03/30/23 20:17	SE230330
S46528.06	28 PFAs	ASTMD7979-19M	03/30/23 20:37	SE230330

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S46528.01

Sample Tag: MW-117S

Collected Date/Time: 03/21/2023 14:38

Matrix: Groundwater

COC Reference:

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: SE230330, Run Date: 03/30/2023 18:59, Matrix: WW, Dilution: 2.04

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		93.5	50.0	150.0
M2-6:2FTSA		104.2	50.0	150.0
M2-8:2FTSA		101.6	50.0	150.0
M2PFTeDA		158.5	12.0	218.0
M3PFBS		135.1	50.0	150.0
M3PFHxS		127.3	50.0	150.0
M4PFHpA		126.4	50.0	150.0
M5PFHxA		130.9	50.0	150.0
M5PFPeA		137.8	50.0	150.0
M6PFDA		131.2	50.0	150.0
M7PFUnDA		135.9	50.0	150.0
M8FOSA		126.6	50.0	150.0
M8PFOA		128.5	50.0	150.0
M8PFOS		131.9	50.0	150.0
M9-PFNA		122.9	50.0	150.0
MPFBA		141.9	50.0	150.0
MPFDoDA		146.1	50.0	150.0
d3N-MeFOSAA		122.7	50.0	150.0
d5EtFOSAA		119.5	50.0	150.0
MHFPO-DA		144.2	50.0	150.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S46528.02

Sample Tag: MW-103S

Collected Date/Time: 03/21/2023 15:41

Matrix: Groundwater

COC Reference:

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: SE230330, Run Date: 03/30/2023 19:19, Matrix: WW, Dilution: 1.92

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		102.1	50.0	150.0
M2-6:2FTSA		97.8	50.0	150.0
M2-8:2FTSA		100.2	50.0	150.0
M2PFTeDA		152.2	12.0	218.0
M3PFBS		126.9	50.0	150.0
M3PFHxS		117.5	50.0	150.0
M4PFHpA		119.6	50.0	150.0
M5PFHxA		120.9	50.0	150.0
M5PFPeA		130.4	50.0	150.0
M6PFDA		118.1	50.0	150.0
M7PFUnDA		122.4	50.0	150.0
M8FOSA		128.3	50.0	150.0
M8PFOA		121.1	50.0	150.0
M8PFOS		129.4	50.0	150.0
M9-PFNA		116.7	50.0	150.0
MPFBA		136.6	50.0	150.0
MPFDoDA		139.7	50.0	150.0
d3N-MeFOSAA		118.3	50.0	150.0
d5EtFOSAA		115.9	50.0	150.0
MHFPO-DA		126.1	50.0	150.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S46528.05

Sample Tag: Equip Blank

Collected Date/Time: 03/21/2023 15:55

Matrix: Water

COC Reference:

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: SE230330, Run Date: 03/30/2023 20:17, Matrix: WW, Dilution: 1.89

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		111.9	50.0	150.0
M2-6:2FTSA		113.9	50.0	150.0
M2-8:2FTSA		109.0	50.0	150.0
M2PFTeDA		120.3	12.0	218.0
M3PFBS		124.4	50.0	150.0
M3PFHxS		124.9	50.0	150.0
M4PFHpA		122.6	50.0	150.0
M5PFHxA		129.7	50.0	150.0
M5PFPeA		130.6	50.0	150.0
M6PFDA		128.0	50.0	150.0
M7PFUnDA		123.4	50.0	150.0
M8FOSA		117.1	50.0	150.0
M8PFOA		128.2	50.0	150.0
M8PFOS		125.9	50.0	150.0
M9-PFNA		121.9	50.0	150.0
MPFBA		130.7	50.0	150.0
MPFDoDA		128.6	50.0	150.0
d3N-MeFOSAA		118.1	50.0	150.0
d5EtFOSAA		112.0	50.0	150.0
MHFPO-DA		125.7	50.0	150.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S46528.06

Sample Tag: Trip Blank

Collected Date/Time: 03/21/2023 00:01

Matrix: Water

COC Reference:

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: SE230330, Run Date: 03/30/2023 20:37, Matrix: WW, Dilution: 1.93

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		118.3	50.0	150.0
M2-6:2FTSA		118.5	50.0	150.0
M2-8:2FTSA		104.9	50.0	150.0
M2PFTeDA		116.8	12.0	218.0
M3PFBS		130.8	50.0	150.0
M3PFHxS		119.0	50.0	150.0
M4PFHpA		119.9	50.0	150.0
M5PFHxA		126.0	50.0	150.0
M5PFPeA		131.9	50.0	150.0
M6PFDA		124.4	50.0	150.0
M7PFUnDA		124.4	50.0	150.0
M8FOSA		124.6	50.0	150.0
M8PFOA		125.1	50.0	150.0
M8PFOS		125.6	50.0	150.0
M9-PFNA		114.1	50.0	150.0
MPFBA		131.5	50.0	150.0
MPFDoDA		132.5	50.0	150.0
d3N-MeFOSAA		118.7	50.0	150.0
d5EtFOSAA		114.0	50.0	150.0
MHFPO-DA		136.9	50.0	150.0

QC Report - Internal Standards per QC Sample

Organics - Volatiles, Prep Batch ID: PF230330W1

QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: SE230330.BLK230330

Run in Batch: SE230330, Run Date: 03/30/2023 13:47, Prep Date: 03/30/2023, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		97.6	50.0	150.0
M2-6:2FTSA		98.6	50.0	150.0
M2-8:2FTSA		96.7	50.0	150.0
M2PFTeDA		106.0	12.0	218.0
M3PFBS		98.6	50.0	150.0
M3PFHxS		98.4	50.0	150.0
M4PFHpA		98.3	50.0	150.0
M5PFHxA		102.6	50.0	150.0
M5PFPeA		102.0	50.0	150.0
M6PFDA		101.8	50.0	150.0
M7PFUnDA		99.2	50.0	150.0
M8FOSA		97.1	50.0	150.0
M8PFOA		101.0	50.0	150.0
M8PFOS		100.6	50.0	150.0
M9-PFNA		99.7	50.0	150.0
MPFBA		99.1	50.0	150.0
MPFDoDA		106.8	50.0	150.0
d3N-MeFOSAA		98.1	50.0	150.0
d5EtFOSAA		97.4	50.0	150.0
MHFPO-DA		104.1	50.0	150.0

QC Report - Internal Standards per QC Sample

Laboratory Control Sample (LCS)

Lab Sample ID: SE230330.LCS230330

Run in Batch: SE230330, Run Date: 03/30/2023 13:08, Prep Date: 03/30/2023, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		112.7	50.0	150.0
M2-6:2FTSA		113.2	50.0	150.0
M2-8:2FTSA		112.7	50.0	150.0
M2PFTeDA		159.1	12.0	218.0
M3PFBS		119.9	50.0	150.0
M3PFHxS		117.2	50.0	150.0
M4PFHpA		115.5	50.0	150.0
M5PFHxA		121.4	50.0	150.0
M5PFPeA		119.8	50.0	150.0
M6PFDA		117.7	50.0	150.0
M7PFUnDA		117.3	50.0	150.0
M8FOSA		116.1	50.0	150.0
M8PFOA		117.1	50.0	150.0
M8PFOS		116.7	50.0	150.0
M9-PFNA		108.3	50.0	150.0
MPFBA		125.1	50.0	150.0
MPFDoDA		133.4	50.0	150.0
d3N-MeFOSAA		125.1	50.0	150.0
d5EtFOSAA		115.6	50.0	150.0
MHFPO-DA		124.9	50.0	150.0

QC Report - Internal Standards per QC Sample

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: SE230330.LCSD230330, Parent Sample ID: SE230330.LCS230330

Run in Batch: SE230330, Run Date: 03/30/2023 13:27, Prep Date: 03/30/2023, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		108.5	50.0	150.0
M2-6:2FTSA		104.9	50.0	150.0
M2-8:2FTSA		107.1	50.0	150.0
M2PFTeDA		124.6	12.0	218.0
M3PFBS		111.1	50.0	150.0
M3PFHxS		105.7	50.0	150.0
M4PFHpA		103.8	50.0	150.0
M5PFHxA		107.8	50.0	150.0
M5PFPeA		112.1	50.0	150.0
M6PFDA		101.5	50.0	150.0
M7PFUnDA		104.3	50.0	150.0
M8FOSA		104.3	50.0	150.0
M8PFOA		105.6	50.0	150.0
M8PFOS		108.3	50.0	150.0
M9-PFNA		99.1	50.0	150.0
MPFBA		105.2	50.0	150.0
MPFDoDA		117.3	50.0	150.0
d3N-MeFOSAA		104.7	50.0	150.0
d5EtFOSAA		115.0	50.0	150.0
MHFPO-DA		115.2	50.0	150.0

QC Report - Internal Standards per QC Sample

Matrix Spike (MS)

Lab Sample ID: SE230330.4652803M, Parent Sample ID: S46528.02

Run in Batch: SE230330, Run Date: 03/30/2023 19:38, Prep Date: 03/30/2023, Matrix: WW, Dilution: 2

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		87.1	50.0	150.0
M2-6:2FTSA		85.3	50.0	150.0
M2-8:2FTSA		93.9	50.0	150.0
M2PFTeDA		150.1	12.0	218.0
M3PFBS		116.3	50.0	150.0
M3PFHxS		116.5	50.0	150.0
M4PFHpA		110.7	50.0	150.0
M5PFHxA		112.9	50.0	150.0
M5PFPeA		119.9	50.0	150.0
M6PFDA		118.9	50.0	150.0
M7PFUnDA		121.2	50.0	150.0
M8FOSA		118.1	50.0	150.0
M8PFOA		114.5	50.0	150.0
M8PFOS		116.4	50.0	150.0
M9-PFNA		108.1	50.0	150.0
MPFBA		124.3	50.0	150.0
MPFDoDA		137.0	50.0	150.0
d3N-MeFOSAA		112.9	50.0	150.0
d5EtFOSAA		105.9	50.0	150.0
MHFPO-DA		124.9	50.0	150.0

QC Report - Internal Standards per QC Sample

Matrix Spike Duplicate (MSD)

Lab Sample ID: SE230330.4652804N, Parent Sample ID: SE230330.4652803M

Run in Batch: SE230330, Run Date: 03/30/2023 19:58, Prep Date: 03/30/2023, Matrix: WW, Dilution: 1.96

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		90.9	50.0	150.0
M2-6:2FTSA		85.5	50.0	150.0
M2-8:2FTSA		92.7	50.0	150.0
M2PFTeDA		155.4	12.0	218.0
M3PFBS		120.5	50.0	150.0
M3PFHxS		116.6	50.0	150.0
M4PFHpA		117.5	50.0	150.0
M5PFHxA		125.1	50.0	150.0
M5PFPeA		125.4	50.0	150.0
M6PFDA		124.2	50.0	150.0
M7PFUnDA		126.7	50.0	150.0
M8FOSA		118.7	50.0	150.0
M8PFOA		119.5	50.0	150.0
M8PFOS		116.6	50.0	150.0
M9-PFNA		110.4	50.0	150.0
MPFBA		127.3	50.0	150.0
MPFDoDA		137.6	50.0	150.0
d3N-MeFOSAA		113.6	50.0	150.0
d5EtFOSAA		110.2	50.0	150.0
MHFPO-DA		126.9	50.0	150.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF230330W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: SE230330.BLK230330

Run in Batch: SE230330, Run Date: 03/30/2023 13:47, Prep Date: 03/30/2023, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
PFBA		ND	10	ng/l
PFMPA		ND	2	ng/l
FPrPA (3:3 FTCA)		ND	4	ng/l
PFPPrS		ND	2	ng/l
PFPeA		ND	4	ng/l
PFMBA		ND	2	ng/l
4:2 FTSA		ND	2	ng/l
NFDHA		ND	2	ng/l
PFHxA		ND	2	ng/l
PFBS		ND	2	ng/l
HFPO-DA		ND	2	ng/l
PFEESA		ND	2	ng/l
FPePA (5:3 FTCA)		ND	4	ng/l
PFHpA		ND	2	ng/l
PFPeS		ND	2	ng/l
ADONA		ND	2	ng/l
6:2 FTSA		ND	2	ng/l
PFBSA		ND	2	ng/l
PFOA		ND	2	ng/l
PFHxS-BR		ND	2	ng/l
PFHxS		ND	2	ng/l
PFHxS-LN		ND	2	ng/l
PFNA		ND	2	ng/l
FHpPA (7:3 FTCA)		ND	4	ng/l
PFECHS		ND	2	ng/l
8:2 FTSA		ND	2	ng/l
PFHpS		ND	2	ng/l
N-MeFOSAA		ND	2	ng/l
PFDA		ND	2	ng/l
PFOS-BR		ND	2	ng/l
PFOS		ND	2	ng/l
EtFOSAA		ND	4	ng/l
PFOS-LN		ND	2	ng/l
PFUnDA		ND	2	ng/l
PFHxSA		ND	2	ng/l
9CL-PF3ONS		ND	2	ng/l
PFNS		ND	2	ng/l
PFDoDA		ND	2	ng/l
PFDS		ND	2	ng/l
PFTTrDA		ND	2	ng/l
11CL-PF3OUdS		ND	2	ng/l
PFTeDA		ND	4	ng/l
FOSA		ND	2	ng/l

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF230330W1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Laboratory Control Sample (LCS)

Lab Sample ID: SE230330.LCS230330

Run in Batch: SE230330, Run Date: 03/30/2023 13:08, Prep Date: 03/30/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
PFBA		79.6	70.0	130.0
PFMPA		81.2	70.0	130.0
FPrPA (3:3 FTCA)		81.2	70.0	130.0
PFPPrS		82.8	70.0	130.0
PFPeA		85.2	70.0	130.0
PFMBA		82.0	70.0	130.0
4:2 FTSA		105.6	70.0	130.0
NFDHA		84.0	70.0	130.0
PFHxA		84.6	70.0	130.0
PFBS		78.6	70.0	130.0
HFPO-DA		72.8	70.0	130.0
PFEESA		78.2	70.0	130.0
FPePA (5:3 FTCA)	*	69.2	70.0	130.0
PFHpA		74.2	70.0	130.0
PFPeS		81.2	70.0	130.0
ADONA		77.2	70.0	130.0
6:2 FTSA		96.8	70.0	130.0
PFBSA		79.2	70.0	130.0
PFOA		80.4	70.0	130.0
PFHxS		80.0	70.0	130.0
PFNA		78.2	70.0	130.0
FHpPA (7:3 FTCA)		78.2	70.0	130.0
PFECHS		97.0	70.0	130.0
8:2 FTSA		95.8	70.0	130.0
PFHpS		76.0	70.0	130.0
N-MeFOSAA		71.0	70.0	130.0
PFDA		80.0	70.0	130.0
PFOS		76.6	70.0	130.0
EtFOSAA		84.6	70.0	130.0
PFUnDA		85.8	70.0	130.0
PFHxSA		84.6	70.0	130.0
9CL-PF3ONS		85.0	70.0	130.0
PFNS		81.2	70.0	130.0
PFDoDA		80.2	70.0	130.0
PFDS		74.0	70.0	130.0
PFTTrDA		71.2	70.0	130.0
11CL-PF3OUdS		88.8	70.0	130.0
PFTeDA		76.0	70.0	130.0
FOSA		80.2	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: SE230330.LCSD230330, Parent Sample ID: SE230330.LCS230330

Run in Batch: SE230330, Run Date: 03/30/2023 13:27, Prep Date: 03/30/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
PFBA		93.2	70.0	130.0	15.7	30.0
PFMPA		89.8	70.0	130.0	10.1	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF230330W1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Laboratory Control Sample Duplicate (LCSD) (continued)

Lab Sample ID: SE230330.LCSD230330, Parent Sample ID: SE230330.LCS230330

Run in Batch: SE230330, Run Date: 03/30/2023 13:27, Prep Date: 03/30/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
FPrPA (3:3 FTCA)		87.2	70.0	130.0	7.1	30.0
PFPPrS		88.6	70.0	130.0	6.8	30.0
PFPeA		88.8	70.0	130.0	4.1	30.0
PFMBA		84.6	70.0	130.0	3.1	30.0
4:2 FTSA		104.0	70.0	130.0	1.5	30.0
NFDHA		90.4	70.0	130.0	7.3	30.0
PFHxA		91.8	70.0	130.0	8.2	30.0
PFBS		86.4	70.0	130.0	9.5	30.0
HFPO-DA		77.0	70.0	130.0	5.6	30.0
PFEESA		85.4	70.0	130.0	8.8	30.0
FPePA (5:3 FTCA)		73.0	70.0	130.0	5.3	30.0
PFHpA		85.2	70.0	130.0	13.8	30.0
PFPeS		81.0	70.0	130.0	0.2	30.0
ADONA		85.2	70.0	130.0	9.9	30.0
6:2 FTSA		99.2	70.0	130.0	2.4	30.0
PFBSA		87.6	70.0	130.0	10.1	30.0
PFOA		85.8	70.0	130.0	6.5	30.0
PFHxS		89.6	70.0	130.0	11.3	30.0
PFNA		92.2	70.0	130.0	16.4	30.0
FHpPA (7:3 FTCA)		88.8	70.0	130.0	12.7	30.0
PFECHS		105.4	70.0	130.0	8.3	30.0
8:2 FTSA		104.4	70.0	130.0	8.6	30.0
PFHpS		85.8	70.0	130.0	12.1	30.0
N-MeFOSAA		82.2	70.0	130.0	14.6	30.0
PFDA		89.8	70.0	130.0	11.5	30.0
PFOS		85.6	70.0	130.0	11.1	30.0
EtFOSAA		74.2	70.0	130.0	13.1	30.0
PFUnDA		91.0	70.0	130.0	5.9	30.0
PFHxSA		92.8	70.0	130.0	9.2	30.0
9CL-PF3ONS		92.2	70.0	130.0	8.1	30.0
PFNS		80.0	70.0	130.0	1.5	30.0
PFDoDA		85.8	70.0	130.0	6.7	30.0
PFDS		77.0	70.0	130.0	4.0	30.0
PFTTrDA		77.4	70.0	130.0	8.3	30.0
11CL-PF3OUdS		92.4	70.0	130.0	4.0	30.0
PFTeDA		86.0	70.0	130.0	12.3	30.0
FOSA		92.2	70.0	130.0	13.9	30.0

Matrix Spike (MS)

Lab Sample ID: SE230330.4652803M, Parent Sample ID: S46528.02

Run in Batch: SE230330, Run Date: 03/30/2023 19:38, Prep Date: 03/30/2023, Matrix: WW, Dilution: 2

Analyte	Flags	% Rec	LCL	UCL
PFBA		84.0	70.0	130.0
PFPeA		89.0	70.0	130.0
4:2 FTSA		110.0	70.0	130.0
PFHxA		93.0	70.0	130.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF230330W1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Matrix Spike (MS) (continued)

Lab Sample ID: SE230330.4652803M, Parent Sample ID: S46528.02

Run in Batch: SE230330, Run Date: 03/30/2023 19:38, Prep Date: 03/30/2023, Matrix: WW, Dilution: 2

Analyte	Flags	% Rec	LCL	UCL
PFBS		85.0	70.0	130.0
PFHpA		80.0	70.0	130.0
PFPeS		82.0	70.0	130.0
6:2 FTSA		110.0	70.0	130.0
PFOA		80.0	70.0	130.0
PFHxS		83.4	70.0	130.0
PFNA		83.0	70.0	130.0
8:2 FTSA		97.0	70.0	130.0
PFHpS		79.0	70.0	130.0
PFDA		80.0	70.0	130.0
N-MeFOSAA		71.0	70.0	130.0
EtFOSAA		89.0	70.0	130.0
PFOS		84.1	70.0	130.0
PFUnDA		91.0	70.0	130.0
PFNS		78.0	70.0	130.0
PFDoDA		79.0	70.0	130.0
PFDS		78.0	70.0	130.0
PFTTrDA		74.0	70.0	130.0
FOSA		86.0	70.0	130.0
PFTeDA		82.0	70.0	130.0
11CL-PF3OUdS		91.0	70.0	130.0
9CL-PF3ONS		91.0	70.0	130.0
ADONA		83.0	70.0	130.0
HFPO-DA		76.0	70.0	130.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: SE230330.4652804N, Parent Sample ID: SE230330.4652803M

Run in Batch: SE230330, Run Date: 03/30/2023 19:58, Prep Date: 03/30/2023, Matrix: WW, Dilution: 1.96

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
PFBA		84.7	70.0	130.0	1.0	30.0
PFPeA		81.6	70.0	130.0	10.7	30.0
4:2 FTSA		101.0	70.0	130.0	10.5	30.0
PFHxA		83.7	70.0	130.0	12.6	30.0
PFBS		82.7	70.0	130.0	4.8	30.0
PFHpA		76.5	70.0	130.0	6.5	30.0
PFPeS		78.6	70.0	130.0	6.3	30.0
6:2 FTSA		102.0	70.0	130.0	9.5	30.0
PFOA		80.6	70.0	130.0	1.3	30.0
PFHxS		79.0	70.0	130.0	7.2	30.0
PFNA		81.6	70.0	130.0	3.7	30.0
8:2 FTSA		83.7	70.0	130.0	16.8	30.0
PFHpS		83.7	70.0	130.0	3.7	30.0
PFDA		77.6	70.0	130.0	5.1	30.0
N-MeFOSAA		74.5	70.0	130.0	2.8	30.0
EtFOSAA		80.6	70.0	130.0	11.9	30.0
PFOS		82.8	70.0	130.0	3.2	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF230330W1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Matrix Spike Duplicate (MSD) (continued)

Lab Sample ID: SE230330.4652804N, Parent Sample ID: SE230330.4652803M

Run in Batch: SE230330, Run Date: 03/30/2023 19:58, Prep Date: 03/30/2023, Matrix: WW, Dilution: 1.96

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
PFUnDA		80.6	70.0	130.0	14.1	30.0
PFNS		78.6	70.0	130.0	1.3	30.0
PFDoDA		77.6	70.0	130.0	3.9	30.0
PFDS		78.6	70.0	130.0	1.3	30.0
PFTTrDA	*	68.4	70.0	130.0	9.9	30.0
FOSA		85.7	70.0	130.0	2.4	30.0
PFTeDA		73.5	70.0	130.0	13.0	30.0
11CL-PF3OUdS		92.9	70.0	130.0	0.0	30.0
9CL-PF3ONS		84.7	70.0	130.0	9.2	30.0
ADONA		77.6	70.0	130.0	8.8	30.0
HFPO-DA		70.4	70.0	130.0	9.7	30.0



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 www.meritlabs.com

C.O.C. PAGE # 2 OF 2

REPORT TO

CHAIN OF CUSTODY RECORD

INVOICE TO

CONTACT NAME: Rodney Abke
 COMPANY: Applied EcoSystems
 ADDRESS: G-4300 South Saginaw Street
 CITY: Burton STATE: MI ZIP CODE: 48529
 PHONE NO.: 810-715-2525 FAX NO.: 810-715-2526
 E-MAIL ADDRESS: rabke@appliedecosystems.com
 QUOTE NO.: PO795930

CONTACT NAME: Monica Wallingford SAME
 COMPANY: Revitalizing Auto Communities Environmental Response (RACER) Trust
 ADDRESS:
 CITY: STATE: ZIP CODE:
 PHONE NO.: 313.486.2978 E-MAIL ADDRESS: mwallingford@racertrust.org

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

PROJECT NO./NAME: RACER Flint West #12990
 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 report to MDLs
 MATRIX CODE: GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID
 SL=SLUDGE DW=DRINKING WATER G=OIL WP=WIPE A=AIR W=WASTE

MERIT LAB NO. <small>FOR LAB USE ONLY</small>	YEAR		SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives								PFAS/PFOS **
	DATE	TIME				NOVAE	HC	HNO ₃	H ₂ O ₂	NaOH	Mech	OTHER		
4652801	3-21-23	1538	MW-1175	GW	3								X	
02	3-21-23	1541	MW-1035	GW	3								X	
03	3-21-23	1541	MSMW-1035	GW	3								X	
04	3-21-23	1541	MSDMW-1035	GW	3								X	
05	3-21-23	1555	Equip Blank	GW	3								X	
06														

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

** - 28 Compound List

report down to MDLs

RELINQUISHED BY: *Colin Stoll* Sampler DATE: 3/21/23 TIME: 1615
 RECEIVED BY: DATE: TIME:
 RELINQUISHED BY: DATE: TIME:
 RECEIVED BY: DATE: TIME:

RELINQUISHED BY: DATE: TIME:
 RECEIVED BY: *[Signature]* DATE: 3/24/23 TIME: 0815
 SEAL NO. SEAL INTACT YES NO INITIALS
 SEAL NO. SEAL INTACT YES NO INITIALS
 NOTES: TEMP. ON ARRIVAL: 5.0

TABLE 2
SOIL ANALYTICAL DATA (Metals and Detected VOCs)
RACER - Flint West #12990

Sample ID:	SB-122	SB-123	SB124-4	SB124-10	SB124-21	SB125-4	SB125-13	SB125-19	SB126-4	SB126-11	SB126-15	SB127-4	SB127-8	SB127-15	SB127-20	SB128-3	SB128-7	SB128-10					
Date Collected:	4/30/2013	4/30/2013	4/21/14	4/21/14	4/21/14	4/21/14	4/21/14	4/21/14	4/21/14	4/21/14	4/21/14	4/21/14	4/21/14	4/21/14	4/21/14	4/21/14	4/21/14	4/21/14					
Depth:	15-16	5-6	4	10	21	4	13	19	4	11	15	4	8	15	20	3	7	10					
ANALYTE (ug/kg)	DW	GSI																					
Arsenic	5,800	5,800	D&G=B			1,130	1,100	1,830	570	1,440	1,410	1,300	1,250	1,180	410	1,630	2,060	1,780	500	1,550	1,150		
Chromium	18,000	18,000	D&G=B			1,220	1,460	3,350	2,050	3,260	4,240	1,220	2,920	2,870	1,980	2,560	4,540	610	1,460	2,860	5,890		
Copper	5,800,000	120,000	GX			1,700	2,300	8,200	7,400	6,100	11,400	3,400	3,100	5,600	1,600	3,000	5,800	1,200	3,900	5,600	5,300		
Lead	700,000	5,000,000	GX			2,510	3,120	7,580	13,800	5,100	8,590	2,280	3,790	5,470	4,710	5,740	7,330	950	6,250	11,400	6,950		
Selenium	4,000	410	G=B					210			210			160									
Zinc	2,400,000	2,600,000	G=B			4,600	5,100	19,000	11,400	12,200	20,800	5,900	8,600	14,700	3,700	10,300	20,300	2,400	6,000	13,200	9,900		
ANALYTE (ug/kg)	DW	GSI																					
2 Butanone (MEK)	260,000	44,000				45	71	56			165	79	82	150	75	46	66	148	126	44	123	127	
Acetone	15,000	NC																					
Vinyl Chloride	40	260									23												
1,1-Dichloroethene	140	2,600																					
trans-1,2-Dichloroethene	2,000	30,000																					
1,1-Dichloroethane	18,000	15,000																					
Methylene chloride	5	1,500				100	18																
cis-1,2-Dichloroethene	1,400	12,000				1,600		58			350												
Tetrahydrofuran	1,900	220,000				170	190	190	150	180	180	140	190	210	190	190	170	190	150	150	140		
Chloroform	1,600	7,000									16												
1,1,1-Trichloroethane	4,000	1,800									11												
Benzene	100	4,000																					
Trichloroethene	100	4,000				14,400	41				1,420												
Tetrachloroethene	100	1,200					18																
Toluene	16,000	5,400						11															
Ethylbenzene	1,500	360																					
Total Xylenes	5,600	820																					
Isopropylbenzene	91,000	3,200																				16	
n-Propylbenzene	1,600	NC																					
1,2-Dichlorobenzene	14,000	280																				21	
1,2,4-Trimethylbenzene	2,100	570																					
1,2,3-Trimethylbenzene	NC	NC																				13.5	
1,3,5-Trimethylbenzene	72	45																					
p-isopropyltoluene	NC	NC																					
1,2,3-Trichlorobenzene	NC	NC																					
Naphthalene	35,000	730							14.4	17		13.7			12.9						345.7	46.9	
2-Methylnaphthalene	57,000	4,200							14	39		13	19								10	820	46

NOTES:

Blank cells indicate no detectable concentration
X Exceeds DW criteria
X Exceeds GSI criteria
X Exceeds both DW and GSI criteria
X Compound also found in associated groundwater
NC Insufficient data to develop criterion
GX Interface Criteria - calculated based on 257ppm total hardness

TABLE 2
SOIL ANALYTICAL DATA (Metals and Detected VOCs)
RACER - Flint West #12990

Sample ID:		SB129-4	SB129-8	SB129-18	SB130-4	SB130-10	SB130-18	SB131-4	SB131-10	SB131-18	SB132-12	SB132-15	SB133-17	SB133-19	SB133-20	SB134-18	SB134-20	SB135-19	SB135-21	
Date Collected:		4/22/14	4/22/14	4/22/14	4/22/14	4/22/14	4/22/14	4/22/14	4/22/14	4/22/14	7/10/14	7/10/14	7/10/14	7/10/14	7/10/14	12/22/14	12/22/14	12/22/14	12/22/14	
Depth:		4	8	18	4	10	18	4	10	18	12	15	17	19	20	18	20	19	21	
ANALYTE (ug/kg)	DW	GSI																		
Arsenic	5,800	5,800	D&G=B	2,790	1,740	1,460	3,580	1,700	1,980	1,630	1,300	2,080				380	1,690	1,900	2,080	
Chromium	18,000	18,000	D&G=B	2,550	4,080	4,730	3,090	1,150	2,770	1,640	2,800	2,620								
Copper	5,800,000	120,000	GX	13,000	3,600	7,200	17,700	1,700	9,800	8,500	3,100	7,900				4,500	3,000	4,000	3,900	
Lead	700,000	5,000,000	GX	104,000	6,100	7,420	123,000	2,110	6,510	36,400	4,740	6,020				5,690	3,380	2,850	2,890	
Selenium	4,000	410	G=B	130		150	140													
Zinc	2,400,000	2,600,000	G=B	21,300	13,100	19,200	51,800	5,800	18,000	16,800	13,600	18,600				5,900	19,500	17,500	15,300	
ANALYTE (ug/kg)	DW	GSI																		
2 Butanone (MEK)	260,000	44,000		40	53	82	69	68	70	79	65	164								
Acetone	15,000	NC																		
Vinyl Chloride	40	260						73		90	180	89	46					14		
1,1-Dichloroethene	140	2,600						34		18										
trans-1,2-Dichloroethene	2,000	30,000						100		62			18					11		
1,1-Dichloroethane	18,000	15,000						69		35			13							
Methylene chloride	5	1,500																		
cis-1,2-Dichloroethene	1,400	12,000			300			6,380		2,820	2,200	1,200	1,990	530	270		120	1,100	800	
Tetrahydrofuran	1,900	220,000		150	180	180	180	170	160	150	180	160	1,500	300	150	160	117			
Chloroform	1,600	7,000																		
1,1,1-Trichloroethane	4,000	1,800			33.40									25	35	18			8.7	
Benzene	100	4,000						36												
Trichloroethene	100	4,000			6,170			6,080	28		12,160	29,500	13,700	11,680	10,860	7,520		2,040	7,890	6,540
Tetrachloroethene	100	1,200												17						
Toluene	16,000	5,400		13	19	31			45							70				
Ethylbenzene	1,500	360				15										16				
Total Xylenes	5,600	820		21		92			91							85				
Isopropylbenzene	91,000	3,200				13														
n-Propylbenzene	1,600	NC				16										14				
1,2 -Dichlorobenzene	14,000	280																		
1,2,4-Trimethylbenzene	2,100	570		14		24			22											
1,2,3-Trimethylbenzene	NC	NC				13.4			11.8											
1,3,5-Trimethylbenzene	72	45																		
p-isopropyltoluene	NC	NC																		
1,2,3-Trichlorobenzene	NC	NC																		
Naphthalene	35,000	730		39.5	12.5		51.5		100.3							36.6				
2-Methylnaphthalene	57,000	4,200		43			54.1		71.8				15	12	9.2	29				

NOTES:

Blank cells	Blank cells indicate no detectable concentration
X	Exceeds DW criteria
X	Exceeds GSI criteria
X	Exceeds both DW and GSI criteria
X	Compound also found in associated samples
NC	Insufficient data to develop criterion
GX	Interface Criteria - calculated based on 257ppm total hardness

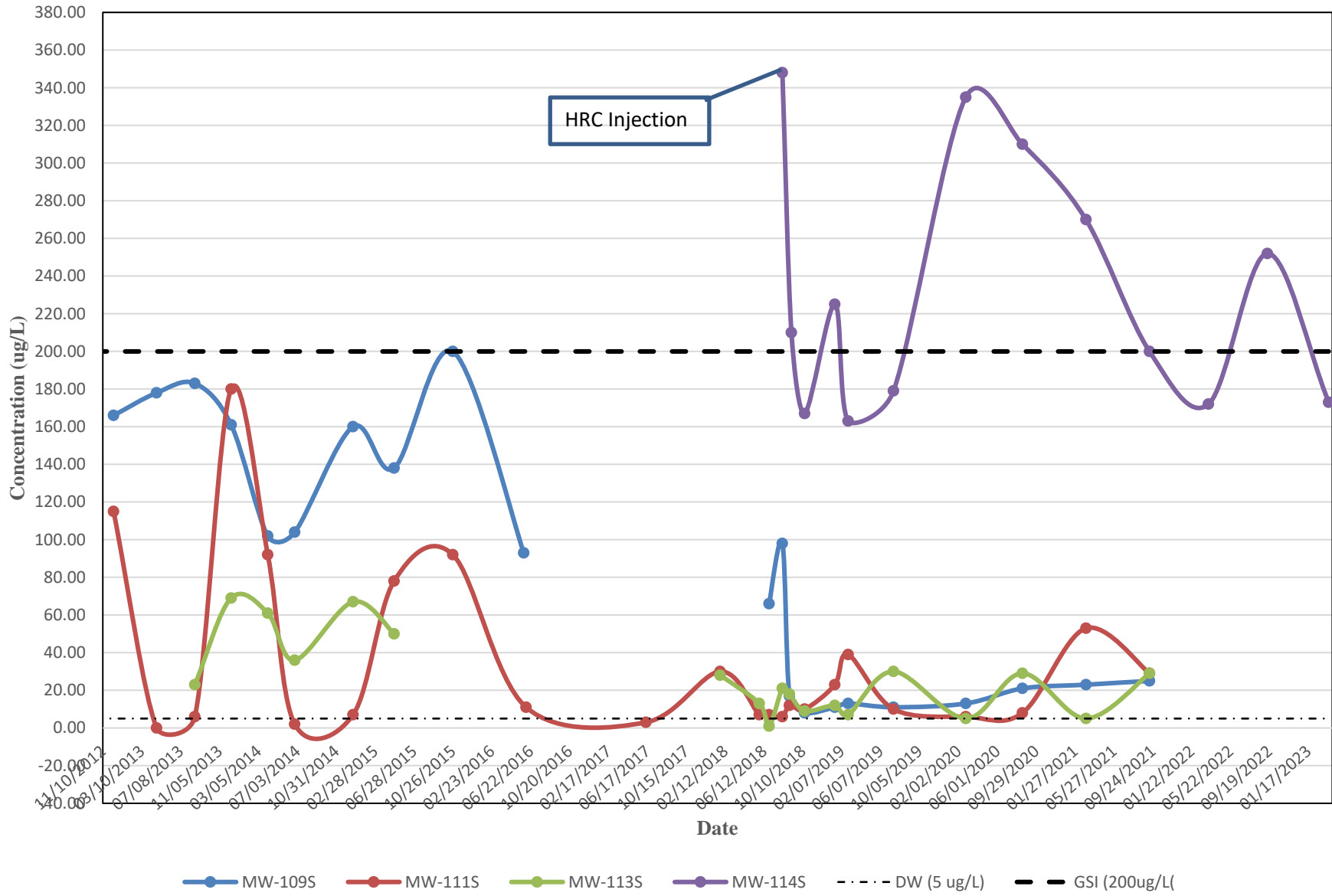
TABLE 2
SOIL ANALYTICAL DATA (Metals and Detected VOCs)
RACER - Flint West #12990

Sample ID:		SB136-19	SB136-21	SB137-18	SB137-20.5	SB138-15	SB138-18	SB139-16	DUP-1	SB139-18	SB140-16	SB140-19	SB141-16	SB141-18	SB141-19		
Date Collected:		12/22/14	12/22/14	12/22/14	12/22/14	1/16/2019	1/16/2019	1/16/2019	1/16/2019	1/16/2019	1/16/2019	1/16/2019	1/16/2019	1/16/2019	1/16/2019		
Depth:		19	21	18	20.5	15	18	16	(SB139-16)	18	16	19	16	18	19		
ANALYTE (ug/kg)	DW	GSI															
Arsenic	5,800	5,800	D&G=B	1,870	3,350	1,660	3,040										
Chromium	18,000	18,000	D&G=B														
Copper	5,800,000	120,000	GX	4,600	4,300	4,200	4,500										
Lead	700,000	5,000,000	GX	3,060	3,740	2,810	3,240										
Selenium	4,000	410	G=B														
Zinc	2,400,000	2,600,000	G=B	13,600	18,800	13,500	27,300										
ANALYTE (ug/kg)	DW	GSI															
2 Butanone (MEK)	260,000	44,000									2,300						
Acetone	15,000	NC								430						360	
Vinyl Chloride	40	260				56				42							
1,1-Dichloroethene	140	2,600								63							
trans-1,2-Dichloroethene	2,000	30,000				14			13	200							
1,1-Dichloroethane	18,000	15,000								90							
Methylene chloride	5	1,500						22	25.7	230	210	32	260	30	27	25	26
cis-1,2-Dichloroethene	1,400	12,000		340	450	670	290	470	550	1,800	1000	8,850	3,500	150	15	2,900	860
Tetrahydrofuran	1,900	220,000						174	121	1,800	1750	180	1,800	155	161	170	155
Chloroform	1,600	7,000															
1,1,1-Trichloroethane	4,000	1,800		12.5		20.5			7.4				14.8				
Benzene	100	4,000								20							
Trichloroethene	100	4,000		8,760	9,390	4,250		2,880	2,300	21,000	16,300	3,440	13,100	2,870	180	6,150	3,370
Tetrachloroethene	100	1,200										11.9					
Toluene	16,000	5,400															
Ethylbenzene	1,500	360															
Total Xylenes	5,600	820															
Isopropylbenzene	91,000	3,200															
n-Propylbenzene	1,600	NC															
1,2 -Dichlorobenzene	14,000	280								136							
1,2,4-Trimethylbenzene	2,100	570															
1,2,3-Trimethylbenzene	NC	NC															
1,3,5-Trimethylbenzene	72	45															
p-isopropyltoluene	NC	NC															
1,2,3-Trichlorobenzene	NC	NC									130						
Naphthalene	35,000	730															
2-Methylnaphthalene	57,000	4,200															

NOTES:

Blank cells	Blank cells indicate no detectable concentration
X	Exceeds DW criteria
X	Exceeds GSI criteria
X	Exceeds both DW and GSI criteria
X	Compound also found in associated groundwater
NC	Insufficient data to develop criterion
GX	Interface Criteria - calculated based on 257ppm total hardness

TCE in MW-109S, MW-111S, MW-113S, MW-114S (downgradient wells)



Low-Flow Test Report:

Test Date / Time: 3/21/2023 2:58:18 PM

Project: Racer (6)

Operator Name: AE

Location Name: MW-103S-220913	Pump Type: Peristaltic Tubing Type: Poly Flow Cell Volume: 130 ml	Instrument Used: Aqua TROLL 500 Serial Number: 861862
--------------------------------------	--	--

Test Notes:

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth to Water
		+/- 0.1	+/- 3	+/- 10 %	+/- 10	+/- 10 %	+/- 10 %	+/- 3
3/21/2023 2:58 PM	00:00	8.01 pH	14.10 °C	0.07 µS/cm	9.62 mg/L	1,267.5 NTU	236.1 mV	
3/21/2023 3:01 PM	03:00	7.71 pH	12.98 °C	0.07 µS/cm	9.86 mg/L	752.10 NTU	252.7 mV	
3/21/2023 3:04 PM	06:00	7.58 pH	12.65 °C	0.07 µS/cm	9.93 mg/L	525.34 NTU	-138.8 mV	
3/21/2023 3:07 PM	09:00	8.32 pH	12.52 °C	0.07 µS/cm	9.94 mg/L	393.20 NTU	38.8 mV	
3/21/2023 3:10 PM	12:00	9.00 pH	12.46 °C	0.07 µS/cm	9.94 mg/L	307.17 NTU	104.6 mV	
3/21/2023 3:13 PM	15:00	6.79 pH	12.40 °C	0.07 µS/cm	9.93 mg/L	257.23 NTU	-121.1 mV	
3/21/2023 3:16 PM	18:00	8.82 pH	12.34 °C	0.07 µS/cm	9.94 mg/L	211.14 NTU	116.8 mV	
3/21/2023 3:19 PM	21:00	3.30 pH	12.30 °C	0.07 µS/cm	9.94 mg/L	174.88 NTU	-402.5 mV	
3/21/2023 3:22 PM	24:00	8.60 pH	12.27 °C	0.07 µS/cm	9.93 mg/L	156.31 NTU	80.8 mV	
3/21/2023 3:25 PM	27:00	8.59 pH	12.23 °C	0.07 µS/cm	9.92 mg/L	139.35 NTU	124.7 mV	
3/21/2023 3:28 PM	30:00	4.93 pH	12.19 °C	0.07 µS/cm	9.91 mg/L	121.35 NTU	-246.6 mV	

Samples

Sample ID:	Description:
MW-103-220913	

Low-Flow Test Report:

Test Date / Time: 3/21/2023 9:31:06 AM

Project: RACER Flint

Operator Name: Caleb Slavik

Location Name: MW-104S-22913	Pump Type: Peristaltic Flow Cell Volume: 130 ml	Instrument Used: Aqua TROLL 500 Serial Number: 861862
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Test Notes:

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth to Water
		+/- 0.1	+/- 3 %	+/- 10 %	+/- 10 %	+/- 10 %	+/- 10 %	+/- 3
3/21/2023 9:31 AM	00:00	5.43 pH	18.60 °C	0.06 µS/cm	9.72 mg/L	0.00 NTU	132.8 mV	
3/21/2023 9:34 AM	03:00	8.79 pH	15.61 °C	0.07 µS/cm	10.32 mg/L	0.00 NTU	224.4 mV	
3/21/2023 9:37 AM	06:00	3.74 pH	14.37 °C	0.07 µS/cm	10.63 mg/L	0.00 NTU	200.7 mV	
3/21/2023 9:40 AM	09:00	3.37 pH	13.70 °C	0.07 µS/cm	10.77 mg/L	0.00 NTU	198.5 mV	
3/21/2023 9:43 AM	12:00	3.44 pH	13.26 °C	0.07 µS/cm	10.87 mg/L	0.00 NTU	219.3 mV	
3/21/2023 9:46 AM	15:00	4.27 pH	12.94 °C	0.07 µS/cm	10.91 mg/L	0.00 NTU	190.7 mV	
3/21/2023 9:49 AM	18:00	6.92 pH	12.71 °C	0.07 µS/cm	11.03 mg/L	0.00 NTU	173.8 mV	
3/21/2023 9:52 AM	21:00	7.04 pH	12.55 °C	0.07 µS/cm	10.99 mg/L	0.00 NTU	130.9 mV	
3/21/2023 9:55 AM	24:00	6.46 pH	12.44 °C	0.07 µS/cm	11.06 mg/L	0.00 NTU	118.2 mV	
3/21/2023 9:58 AM	27:00	6.43 pH	12.38 °C	0.07 µS/cm	11.09 mg/L	0.00 NTU	138.3 mV	
3/21/2023 10:01 AM	30:00	6.95 pH	12.35 °C	0.07 µS/cm	10.94 mg/L	0.00 NTU	113.2 mV	
3/21/2023 10:04 AM	33:00	6.63 pH	12.31 °C	0.07 µS/cm	10.80 mg/L	0.00 NTU	174.5 mV	
3/21/2023 10:07 AM	36:00	6.27 pH	12.39 °C	0.07 µS/cm	10.74 mg/L	0.00 NTU	158.9 mV	
3/21/2023 10:10 AM	39:00	6.40 pH	12.72 °C	0.07 µS/cm	10.75 mg/L	0.00 NTU	158.2 mV	

Samples

Sample ID:	Description:
Mw-104s220913	Stopped at 30 mins

Low-Flow Test Report:

Test Date / Time: 3/21/2023 1:30:30 PM

Project: Racer (4)

Operator Name: AE

Location Name: MW-108S-220913	Pump Type: Peristaltic Tubing Type: Poly Flow Cell Volume: 130 ml	Instrument Used: Aqua TROLL 500 Serial Number: 861862
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Test Notes:

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth to Water
		+/- 0.1	+/- 3	+/- 10 %	+/- 10	+/- 10 %	+/- 10 %	+/- 3
3/21/2023 1:30 PM	00:00	7.99 pH	15.24 °C	0.07 µS/cm	9.56 mg/L	0.00 NTU	-43.4 mV	
3/21/2023 1:33 PM	03:00	5.97 pH	13.71 °C	0.07 µS/cm	9.91 mg/L	0.00 NTU	114.6 mV	
3/21/2023 1:36 PM	06:00	7.70 pH	12.95 °C	0.07 µS/cm	10.06 mg/L	0.00 NTU	-10.1 mV	
3/21/2023 1:38 PM	08:08	6.26 pH	12.65 °C	0.07 µS/cm	10.13 mg/L	0.00 NTU	10.0 mV	
3/21/2023 1:41 PM	11:08	5.78 pH	12.39 °C	0.07 µS/cm	10.18 mg/L	0.00 NTU	158.1 mV	
3/21/2023 1:44 PM	14:08	7.37 pH	12.22 °C	0.07 µS/cm	10.21 mg/L	0.00 NTU	14.0 mV	
3/21/2023 1:47 PM	17:08	6.20 pH	12.11 °C	0.07 µS/cm	10.23 mg/L	0.00 NTU	163.9 mV	
3/21/2023 1:50 PM	19:45	5.92 pH	12.05 °C	0.07 µS/cm	10.25 mg/L	0.00 NTU	117.1 mV	
3/21/2023 1:53 PM	22:45	7.30 pH	11.97 °C	0.07 µS/cm	10.24 mg/L	0.00 NTU	60.9 mV	
3/21/2023 1:56 PM	25:45	7.35 pH	11.84 °C	0.07 µS/cm	10.26 mg/L	0.00 NTU	62.6 mV	
3/21/2023 1:59 PM	28:45	6.71 pH	11.76 °C	0.07 µS/cm	10.29 mg/L	0.00 NTU	126.7 mV	
3/21/2023 2:02 PM	31:45	6.95 pH	11.71 °C	0.07 µS/cm	10.29 mg/L	0.00 NTU	101.3 mV	
3/21/2023 2:14 PM	43:48	6.93 pH	14.23 °C	0.07 µS/cm	9.42 mg/L	4.57 NTU	89.6 mV	

Samples

Sample ID:	Description:
MW-108S-220193	

Low-Flow Test Report:

Test Date / Time: 3/21/2023 11:52:07 AM

Project: Racer (2)

Operator Name: AE

Location Name: MW-110S-220913	Pump Type: Peristaltic Tubing Type: Poly Flow Cell Volume: 130 ml	Instrument Used: Aqua TROLL 500 Serial Number: 861862
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Test Notes:

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth to Water
		+/- 0.1	+/- 3	+/- 10 %	+/- 10	+/- 10 %	+/- 10 %	+/- 3
3/21/2023 11:52 AM	00:00	6.96 pH	14.56 °C	0.07 µS/cm	9.92 mg/L	148.86 NTU	70.5 mV	
3/21/2023 11:55 AM	03:00	5.73 pH	12.90 °C	0.07 µS/cm	10.31 mg/L	144.38 NTU	53.6 mV	
3/21/2023 11:58 AM	06:00	6.68 pH	12.31 °C	0.07 µS/cm	10.41 mg/L	143.35 NTU	18.4 mV	
3/21/2023 12:01 PM	09:00	6.09 pH	11.91 °C	0.07 µS/cm	10.47 mg/L	142.15 NTU	8.6 mV	
3/21/2023 12:04 PM	12:00	6.02 pH	11.68 °C	0.07 µS/cm	10.49 mg/L	141.53 NTU	2.5 mV	
3/21/2023 12:07 PM	15:00	6.32 pH	11.55 °C	0.07 µS/cm	10.49 mg/L	140.93 NTU	-7.3 mV	
3/21/2023 12:10 PM	18:00	6.17 pH	11.47 °C	0.07 µS/cm	10.50 mg/L	140.40 NTU	-3.3 mV	
3/21/2023 12:13 PM	21:00	6.59 pH	11.42 °C	0.07 µS/cm	10.47 mg/L	139.94 NTU	-37.4 mV	
3/21/2023 12:16 PM	24:00	6.83 pH	11.43 °C	0.07 µS/cm	10.46 mg/L	139.95 NTU	-37.8 mV	
3/21/2023 12:19 PM	27:00	6.29 pH	11.45 °C	0.07 µS/cm	10.41 mg/L	139.23 NTU	-3.5 mV	
3/21/2023 12:22 PM	30:00	6.38 pH	11.40 °C	0.07 µS/cm	10.38 mg/L	138.48 NTU	-10.4 mV	

Samples

Sample ID:	Description:
MW-110S-220193	

Low-Flow Test Report:

Test Date / Time: 3/21/2023 10:38:53 AM

Project: Racer

Operator Name: AE

Location Name: Mw-112S-220913	Pump Type: Peristaltic Tubing Type: Poly Flow Cell Volume: 130 ml	Instrument Used: Aqua TROLL 500 Serial Number: 861862
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Test Notes:

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth to Water
		+/- 0.1	+/- 3	+/- 10 %	+/- 10	+/- 10 %	+/- 10 %	+/- 3
3/21/2023 10:38 AM	00:00	7.56 pH	13.90 °C	0.07 µS/cm		187.18 NTU	189.6 mV	
3/21/2023 10:41 AM	03:00	6.03 pH	13.00 °C	0.07 µS/cm	10.65 mg/L	158.45 NTU	130.3 mV	
3/21/2023 10:44 AM	06:00	7.00 pH	12.66 °C	0.07 µS/cm	10.74 mg/L	157.37 NTU	141.2 mV	
3/21/2023 10:47 AM	09:00	6.52 pH	12.52 °C	0.07 µS/cm	10.75 mg/L	156.26 NTU	111.0 mV	
3/21/2023 10:50 AM	12:00	6.07 pH	12.35 °C	0.07 µS/cm	10.79 mg/L	154.72 NTU	36.0 mV	
3/21/2023 10:53 AM	15:00	6.47 pH	12.23 °C	0.07 µS/cm	10.76 mg/L	154.89 NTU	66.9 mV	
3/21/2023 10:56 AM	18:00	6.23 pH	12.20 °C	0.07 µS/cm	10.76 mg/L	154.47 NTU	37.5 mV	
3/21/2023 10:59 AM	21:00	6.54 pH	12.19 °C	0.07 µS/cm	10.72 mg/L	154.80 NTU	48.7 mV	
3/21/2023 11:02 AM	24:00	6.13 pH	12.19 °C	0.07 µS/cm	10.69 mg/L	154.44 NTU	21.5 mV	
3/21/2023 11:05 AM	27:00	6.53 pH	12.22 °C	0.07 µS/cm	10.67 mg/L	154.18 NTU	18.8 mV	
3/21/2023 11:08 AM	30:00	6.32 pH	12.23 °C	0.07 µS/cm	10.64 mg/L	153.68 NTU	2.6 mV	

Samples

Sample ID:	Description:
MW-112s-220913	

Low-Flow Test Report:

Test Date / Time: 3/21/2023 12:34:42 PM

Project: Racer (3)

Operator Name: AE

Location Name: MW-114S-220193	Pump Type: Peristaltic Tubing Type: Poly Flow Cell Volume: 130 ml	Instrument Used: Aqua TROLL 500 Serial Number: 861862
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Test Notes:

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth to Water
		+/- 0.1	+/- 3	+/- 10 %	+/- 10	+/- 10 %	+/- 10 %	+/- 3
3/21/2023 12:34 PM	00:00	6.32 pH	13.81 °C	0.07 µS/cm	9.77 mg/L	0.64 NTU	-55.9 mV	
3/21/2023 12:37 PM	03:00	7.65 pH	12.16 °C	0.07 µS/cm	10.19 mg/L	0.00 NTU	-210.9 mV	
3/21/2023 12:40 PM	06:00	6.36 pH	11.58 °C	0.07 µS/cm	10.34 mg/L	0.00 NTU	49.9 mV	
3/21/2023 12:43 PM	09:00	7.66 pH	11.34 °C	0.07 µS/cm	10.40 mg/L	0.00 NTU	-154.0 mV	
3/21/2023 12:46 PM	12:00	5.10 pH	11.20 °C	0.07 µS/cm	10.43 mg/L	0.00 NTU	108.2 mV	
3/21/2023 12:49 PM	15:00	7.40 pH	11.12 °C	0.07 µS/cm	10.46 mg/L	0.00 NTU	83.1 mV	
3/21/2023 12:52 PM	18:00	7.58 pH	11.07 °C	0.07 µS/cm	10.45 mg/L	0.00 NTU	-133.4 mV	
3/21/2023 12:55 PM	21:00	6.79 pH	11.06 °C	0.07 µS/cm	10.47 mg/L	0.00 NTU	-83.3 mV	
3/21/2023 12:59 PM	24:23	6.25 pH	11.01 °C	0.07 µS/cm	10.47 mg/L	0.00 NTU	-25.7 mV	
3/21/2023 1:02 PM	27:23	7.36 pH	10.99 °C	0.08 µS/cm	10.46 mg/L	0.00 NTU	72.2 mV	
3/21/2023 1:05 PM	30:23	7.28 pH	10.98 °C	0.08 µS/cm	10.48 mg/L	0.00 NTU	82.4 mV	

Samples

Sample ID:	Description:
MW-114S-220913	

Low-Flow Test Report:

Test Date / Time: 3/21/2023 2:16:40 PM

Project: Racer (5)

Operator Name: AE

Location Name: MW-117S-220913	Pump Type: Peristaltic Tubing Type: Poly Flow Cell Volume: 130 ml	Instrument Used: Aqua TROLL 500 Serial Number: 861862
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Test Notes:

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth to Water
		+/- 0.1	+/- 3	+/- 10 %	+/- 10	+/- 10 %	+/- 10 %	+/- 3
3/21/2023 2:16 PM	00:00	6.72 pH	14.90 °C	0.07 µS/cm	9.24 mg/L	3.70 NTU	94.6 mV	
3/21/2023 2:19 PM	03:00	5.35 pH	13.40 °C	0.07 µS/cm	9.78 mg/L	118.46 NTU	-58.1 mV	
3/21/2023 2:21 PM	04:44	7.17 pH	12.83 °C	0.07 µS/cm	9.93 mg/L	730.57 NTU	-38.7 mV	
3/21/2023 2:24 PM	07:44	6.69 pH	12.35 °C	0.07 µS/cm	10.04 mg/L	312.98 NTU	45.8 mV	
3/21/2023 2:27 PM	10:44	7.41 pH	12.16 °C	0.07 µS/cm	10.08 mg/L	293.89 NTU	23.7 mV	
3/21/2023 2:30 PM	13:44	9.98 pH	11.99 °C	0.07 µS/cm	10.14 mg/L	230.70 NTU	-84.9 mV	
3/21/2023 2:33 PM	16:44	9.51 pH	11.85 °C	0.07 µS/cm	10.18 mg/L	231.04 NTU	-169.5 mV	
3/21/2023 2:36 PM	19:44	7.16 pH	11.77 °C	0.07 µS/cm	10.20 mg/L	199.67 NTU	48.4 mV	
3/21/2023 2:39 PM	22:44	2.45 pH	11.73 °C	0.07 µS/cm	10.23 mg/L	195.26 NTU	358.9 mV	
3/21/2023 2:42 PM	25:44	7.69 pH	11.65 °C	0.07 µS/cm	10.24 mg/L	162.79 NTU	8.8 mV	
3/21/2023 2:45 PM	28:44	9.04 pH	11.57 °C	0.07 µS/cm	10.25 mg/L	152.03 NTU	-16.4 mV	
3/21/2023 2:48 PM	31:44	6.58 pH	11.54 °C	0.07 µS/cm	10.28 mg/L	221.34 NTU	60.6 mV	

Samples

Sample ID:	Description:
MW-117S-220193	



**LABORATORY DATA VALIDATION
MARCH 2023 BIENNIAL GROUNDWATER
SAMPLING EVENT**

**RACER Trust
Flint West Industrial Land (#12990)
Glenwood Avenue and Stevenson Street
Flint, Michigan**

June 29, 2023
Project # 11-4317-102

Applied EcoSystems, Inc.
G-4300 South Saginaw Street, Burton, Michigan 48529
Phone: (810) 715-2525 Fax: (810) 715-2526
www.AppliedEcoSystems.com

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Appendix A..... **Figures**

- Figure 1: Site Location Map
- Figure 2: Site Map with Sample Locations

Appendix B..... **Tables**

- Table 1: Sample Collection and Analysis Summary
- Table 2: Sample Analytical Results
- Table 3: Analytical Methods and Holding Time Criteria
- Table 4: Qualified Sample Results Due to Outlying MS/MSD Results
- Table 5: Field Sample Duplicate Results and Relative Percent Differences (RPD)

Appendix C..... **Laboratory Reports**

- Laboratory Analytical Reports
- Laboratory Quality Control Reports

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Acronyms and Abbreviations

Æ	Applied EcoSystems, Inc.
ASTM International (ASTM)	
AAI	All Appropriate Inquiry
BER	Business Environmental Risk
CREC	Controlled Recognized Environmental Condition
DMC	De Minimis Condition(s)
ESA	Environmental Site Assessment
HREC	Historical Recognized Environmental Condition
PEC	Potential Environmental Concern
REC	Recognized Environmental Condition
VEC	Vapor Encroachment Condition
Buildings, Structures, and Materials	
ACBM	Asbestos Containing Building Material
ACM	Asbestos Containing Materials
AST	Aboveground Storage Tank
HVAC	Heating, Ventilation, and Air Conditioning Systems
LUST	Leaking Underground Storage Tank
ROW	Right-of-Way
UST	Underground Storage Tank
Federal Agencies	
EPA	Environmental Protection Agency
FEMA	Federal Emergency Management Agency
NRCS	Natural Resources Conservation Service
OSHA	Occupational Health and Safety Administration
SBA	Small Business Administration
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
Federal Environmental Regulations, Programs, and Databases	
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CERCLIS	CERCLA Information System
CESQG	Conditionally Exempt Small Quantity Generator
CFR	Code of Federal Regulations
CORRACTS	Resource Conservation and Recovery Act Corrective Action
CWA	Clean Water Act
ERNS	Emergency Response Notification System
FOIA	Freedom of Information Act
LQG	Large Quantity Generator
NESHAP	National Emission Standards for Hazardous Air Pollutants
NFRAP	No Further Remedial Action Planned
NPL	National Priority List
NRCS	Natural Resources Conservation Service
RCRA	Resource Conservation and Recovery Act
SARA	Superfund Amendments and Reauthorization Act
SEMS	Superfund Enterprise Management System
SQG	Small Quantity Generator
TSCA	Toxic Substances Control Act
TSD	Treatment, Storage and Disposal Facility

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Hazardous Substances and Petroleum Products	
BTEX	Benzene, Toluene, Ethyl Benzene, Xylenes
CVOCs	Chlorinated Volatile Organic Compounds
MTBE	Methyl Tertiary Butyl Ether
PCBs	Polychlorinated Biphenyls
PCE	Tetrachloroethene, Tetrachloroethylene, Perchloroethene, Perchloroethylene, PERC
PFAS	Per- and Polyfluoroalkyl Substances, including PFOS, PFOA, and GenX
PNAs	Polynuclear Aromatics - also known as Polycyclic Aromatic Hydrocarbons (PAHs)
SVOCs	Semi-Volatile Organic Compounds
TCE	Trichloroethene, Trichloroethylene
TMBs	Trimethylbenzenes
VOCs	Volatile Organic Compounds
Mapping, Instruments and Units of Measurement	
bgs	Below Ground Surface
GIS	Geographic Information System
msl	Mean Sea Level
PID	Photoionization Detector
ppb	Parts Per Billion
ppb(v)	Parts Per Billion by Volume
ppm	Parts Per Million
ppm(v)	Parts Per Million by Volume
T/R/S	Township, Range, Section
µg/Kg	Micrograms per Kilogram
µg/L	Micrograms per Liter
ng/Kg	Nanograms per Kilogram
ng/L	Nanograms per Liter
Michigan-Specific	
BEA	Baseline Environmental Assessment
NREPA	Natural Resources and Environmental Protection Act
EGLE	Michigan Department of Environment, Great Lakes and Energy and its predecessors below:
MDEQ	Michigan Department of Environmental Quality
MDNRE	Michigan Department of Natural Resources and Environment
MDNR	Michigan Department of Natural Resources
LARA	Michigan Department of Licensing and Regulatory Affairs
GRCC	Generic Residential Cleanup Criteria (or Criterion)
DW/DWP	Drinking Water/Drinking Water Protection
DC	Direct Contact
F/E	Flammability/Explosivity Limit
GSI/GSIP	Groundwater to Surface Water Interface/Groundwater to Surface Water Interface Protection
PI	Particulate Inhalation
VIA	Volatilization to Indoor Air
VOA	Volatilization to Outdoor Air
MI 10 Metals	Arsenic, Barium, Cadmium, Chromium, Copper, Lead, Mercury, Selenium, Silver, and Zinc
LGP	Leaded Gasoline Indicator Parameters (includes BTEX, TMBs and other compounds)
ULGP	Unleaded Gasoline Indicator Parameters (includes BTEX, MTBE, TMBs and other compounds)

1. INTRODUCTION

Applied EcoSystems, Inc. (Æ) was retained to conduct a validation review of the laboratory analytical data collected in support of the 2023 March bi-annual groundwater sampling event at the RACER Flint West #12990 Site. The sampling was performed in accordance with the requirements of the September 29, 2011 RCRA Administrative Order on Consent between the U.S. Environmental Protection Agency (USEPA) and RACER for the Flint West Site; and the Laboratory Data Validation was performed as part of the requirements of the April 1, 2021 project Quality Assurance Project Plan (QAPP).


Groundwater samples were submitted to Merit Laboratories, Inc. of East Lansing, Michigan. A sample collection and analysis summary are presented in Table 1. The validated analytical results are summarized in Table 2. Samples were prepared at the laboratory in accordance with their standard operating procedures for groundwater processing. A summary of the analytical methodology is presented in Table 3.

Standard report deliverables were submitted by the laboratory to Æ. The final results and supporting quality assurance/quality control (QA/QC) data were assessed by Æ, as documented herein. Data evaluation was based on information obtained from the chain of custody forms, field notes, finished report forms, method blank data, duplicate data, and recovery data from surrogate spikes and laboratory control spikes (LCS) and matrix spikes (MS)/matrix spike duplicates (MSD).

The QA/QC criteria by which these data have been assessed are outlined in the analytical methods reference in Table 3, in the April 1, 2021 project QAPP, and in applicable guidance documents (hereafter identified as “Guidelines”), including:

- Michigan Department of Environment, Great Lakes, and Energy (EGLE) Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS) Minimum Laboratory Analyte List, updated March 8, 2021;
- Michigan Department of Environmental Quality (MDEQ), now EGLE, Application of Target Detection Limits and Designated Analytical Methods, dated March 2016;
- MDEQ, General PFAS Sampling Guidance, revised October 16, 2018;
- USEPA, Superfund Contract Laboratory Program, National Functional Guidelines for Organic Superfund Methods Data Review (SOM02.4), EPA-540-R-2017-002, dated January 2017;
- USEPA, Superfund Contract Laboratory Program, National Functional Guidelines for Inorganic Superfund Methods Data Review (ISM02.4), EPA-540-R-2017-001, January 2017;
- USEPA, PFAS Methods and Guidance for Sampling and Analyzing Water and Other Environmental Media-Technical Brief, EPA/600/F-17-022h; and
- USEPA, Region 9, Laboratory Data Review for the Non-Chemist, dated October 2014.

1.1 Property Location and Description

Property Address:	Glenwood Avenue and Stephenson Street	
Municipality:	City of Flint, Michigan	
County:	Genesee	
T/R/S	T7N, R6E, S12	
Parcel ID:	40-13-177-002	
Land Area:	3.17 acres, per tax records.	

2. LABORATORY DELIVERABLES

Four (4) laboratory reports were received from Merit Laboratories for chains-of-custody prepared for groundwater samples collected by Æ on March 21, 2023 – two for analysis of VOCs and dissolved and total metals (arsenic, chromium, chromium-hexavalent, copper, lead, selenium, and zinc). All laboratory reports were identified as Merit Laboratories' Level II deliverables, appropriate under USEPA guidelines for desktop review. Raw laboratory data, including GC/MS scans, instrument calibration data, etc., were not included in the deliverables.

Deliverables included the Merit Laboratories Analytical Laboratory Reports and Quality Control Reports IDs listed following and included in Appendix B:

S46506.01,
S46507.01
S46527.01, and
S46528.01.

3. DESKTOP LABORATORY DATA REVIEW

Deliverables were reviewed to verify that the following reporting information was documented fully. Where problems were identified, limitations on data validity were evaluated based on the identified concerns.

All Analytical Laboratory Report cover sheets were signed by Maya Murshak, Technical Director of Merit Laboratories, Inc.

All Quality Control Report cover sheets were signed by Barbara Ball, Quality Assurance Manager of Merit Laboratories, Inc.

3.1 Case Narratives

The case narrative typically is a short summary statement about the analyses that commonly documents any significant concerns with the condition of received samples, analytical problems, or QA/QC concerns. All deliverables identified no conditions warranting narrative beyond general laboratory reporting information.

3.2 Laboratory Accreditation/Certification Information

The following laboratory certifications were identified on each Analytical Laboratory Report:

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

Details of laboratory certifications and accreditations are appended to the Project QAPP.

3.3 Laboratory Contact Information

Each Analytical Laboratory Report identifies the following laboratory contact information:

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)

3.4 Time Samples Collected, Received, Prepared, and Analyzed

Sample collection dates and times were tabulated in the Sample Summary of each Analytical Laboratory Report, identified in the header of each sample data report, and on the chain of custody appended to each Report.

Times and dates of sample receipt were documented on the chain of custody appended to each Report but were not documented in the Sample Container/Preservation/Temperature summary for each sample data report.

Times and dates of sample extraction and preparation were documented in the Extraction/Prep. Summary for each sample data report.

Dates and times of sample analyses for each analytical method were documented in each sample data report.

No deviations from Guidelines were identified.

3.5 Laboratory Analytical Methods

Laboratory analytical methods were summarized in the Method Summary of each Analytical Laboratory Report and for each analyte group documented in each sample data report. Analytical methods used for this project were as follows:

Method	Version	Analytes
E200.8	EPA Method 200.8 Revision 5.4	Arsenic, chromium, copper, lead, selenium, zinc
SM3500-Cr B	Standard Method 3500 Cr B 2011	Chromium VI
SW3015A	SW 846 Method 3015A Revision 1 February 2007	Metals digestion
SW5030C/8260C	SW 846 8260C Revision 3 August 2006 5030C Revision 3 May 2003	VOCs
ASTMD7979-19M	ASTM Method D7979-19 Modified (Isotopic Dilution)	PFAs, EGLE 28 Parameters

3.6 Analyte Reporting

Analytes were reported to significant figures established by Method Detection Limits (MDLs).

Results not detected at or above the laboratory's MDL and Reporting Limit (RL) were identified as "Not Detected."

The laboratory reported detected results down to the laboratory's MDL for each analyte adjusted for specific sample dilutions, weights, and volumes. For metals, positive analyte detections less than the RL but greater than the MDL were indicated by "b" in Merit Analytical Laboratory Reports. For organic analytes, positive analyte detections less than the RL but greater than the MDL were qualified as estimates, indicated by "J" in Merit Analytical Laboratory Reports unless qualified otherwise in this report.

3.7 Holding Times and Sample Preservation

The sample holding time criteria for the analyses are summarized in Table 3. Sample chain of custody documents and analytical reports were used to determine sample holding times. All samples were prepared and analyzed within the required holding times.

The samples were properly preserved, delivered on ice, and received and stored at the laboratory at the required temperature (0-6° Celsius). Acid-preserved samples for total metals analysis were received at pH levels less than 2. Samples for dissolved metals analysis (including chromium VI) were filtered and preserved in the laboratory immediately upon receipt at the laboratory to limit potential for metals to be deposited to or leached from suspended solids in the samples; Laboratory filtration was documented on Analytical Laboratory Reports.

3.8 Units of Measurement

Units of measurement are identified on each sample report of the Analytical Laboratory Reports. Units for each analyte group are as follow:

Analyte Group	Units
Metals (including Cr VI)	milligrams per liter (mg/L)
VOCs	micrograms per liter (µg/L)
PFAS	nanograms per liter (ng/L)

Individual tables in project reports may identify concentrations equivalently in different units of measurement. Table 2 of this report identifies metals concentrations (including Cr VI) in micrograms per liter (µg/L), except PFAS compounds that are identified in nanograms per liter (ng/L).

3.9 Detection/Reporting Limits

Each sample report of the Analytical Laboratory Reports individually tabulates the sample analytical result, Reporting Limit (RL), Method Detection Limit (MDL), and dilution factor. On Table 2, analytical results less than MDLs are identified as less than (<) the specified RL. Concentrations detected less than the RL but greater than the MDL are identified as the detected concentration qualified with a “b” flag, and estimated concentrations less than RL but greater than MDEL are qualified with a “J” flag in the Merit Laboratory Analytical Reports.

3.10 Data Qualifiers

The Analytical Laboratory Reports tabulate the following qualifying flags:

Qualifier/Flag	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range

Qualifier/Flag	Description
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 MDLL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory, with separately 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
c	Filtered in lab.
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

Of these qualifiers, the following were determined to be applicable to one or more sample laboratory results in Table 2:

Qualifier/Flag	Applicable Samples
b	MW-103S – Total Cr, Cu, Zn; dissolved Cr, Zn MW-104S – Total As, Cu, Se, Zn; dissolved As, Cr, Cu, Zn MW-108S – Total As, Cr, Cu, Pb; dissolved As, Cr, Cu, Se, Zn MW-110S – Total Cr, Cu, Pb; dissolved As, Cr, Cu, MW-112S – Total Cr, Zn; dissolved Cr, Zn MW-114S – Total Cr, Cu, Pb; dissolved Cr, Cu, Zn MW-117S – Total As, Cu, Zn; dissolved As, Cr, Cu, Zn Dupe1 – Total Cr, Cu, Pb; dissolved Cr, Cu FB-1 – Total Cr, Zn; dissolved Cu, Zn EB-1 - Total Cr, Zn; dissolved Cu, Zn
c	MW-103S - dissolved Cr MW-104S – dissolved Cr MW-108S – dissolved Cr MW-110S – dissolved Cr MW-112S – dissolved Cr MW-114S – dissolved Cr MW-117S – dissolved Cr Dupe1 – dissolved Cr EB-1 – dissolved Cr
f	MW-103S - dissolved As, Cr, Cu, Pb, Se, Zn MW-104S – Total Se; dissolved As, Cr, Cu, Pb, Zn

Qualifier/Flag	Applicable Samples
	MW-108S – dissolved As, Cr, Cu, Pb, Se, Zn MW-110S – Dissolved As, Cr, Cu, Pb MW-112S – Dissolved As, Cr, Cu, Pb, Se, Zn MW-114S – Dissolved As, Cr, Cu, Pb, Se, Zn MW-117S – Dissolved As, Cr, Cu, Pb, Se, Zn Dupe1 – Dissolved As, Cr, Cu, Pb, Se, Zn FB-1 – dissolved As, Cr, Cu, Pb, Se, Zn EB-1 – dissolved As, Cr, Cu, Pb, Se, Zn MSMW-103S – dissolved As, Cr, Cu, Pb, Se, Zn MSDMW-103S – dissolved As, Cr, Cu, Pb, Se, Zn
B	MW-103S – 1,2-Dichlorobenzene, p-Isopropyltoluene, 2-Methylnaphthalene, Naphthalene, 1,2,3-Trichlorobenzene, 1,2,4-Trichlorobenzene, Tetrahydrofuran, PFBS MW-112S – carbon disulfide, MW-114S – n-Butylbenzene, 2-Methylnaphthalene, Naphthalene, 1,2,3-Trichlorobenzene, Tetrahydrofuran EB-1 – tetrahydrofuran Trip Blank - Carbon disulfide, Tetrahydrofuran
J	MW-103S – Benzene, Carbon disulfide, 1,2-Dichlorobenzene, Ethylbenzene, p-Isopropyltoluene, 2-Methylnaphthalene, Naphthalene, 1,2,3-Trichlorobenzene, 1,2,4-Trichlorobenzene, Tetrahydrofuran, Toluene, Trichloroethene, o-Xylene, p,m-Xylene MW-104S – Chloroform, PFPeA, PFHxA, PFPeS, PFHxS-LN, MW-108S – PFBS, PFHpA, PFHxS, PFHxS-LN, PFNA MW-110S – PFHxA, PFPeS, MW-112S – Acetone, Carbon disulfide, 1,1-Dichloroethane, cis-1,2-Dichloroethene, 4-Methyl-2-pentanone (MIBK), Vinyl chloride, PFHpA, PFHxS, PFHxS-LN MW-114S – n-Butylbenzene, 1,1-Dichloroethane, 1,1-Dichloroethene, cis-1,2-Dichloroethene, 1,1,1-Trichloroethane, trans-1,2-Dichloroethene, 2-Methylnaphthalene, Naphthalene, 1,1,1-Trichloroethane, 1,2,3-Trichlorobenzene, Tetrahydrofuran, Trichloroethene, Vinyl chloride, PFPeA, PFHpA, PFHxS, PFHxS-LN, PFNA MW-117S – Tetrachloroethene, PFBA, PFPeA, PFHxA, PFBS, PFHpA, PFHxS, PFOS, PFOS-BR Dupe1 – trans-1,2-Dichloroethene, 1,1,1-Trichloroethane, PFPeA, PFHpA, PFHxS, PFHxS-LN, PFNA FB-1 – Acetone, EB-1 – Acetone, Chloroform, Methylene chloride, Tetrahydrofuran Trip Blank - Carbon disulfide, Tetrahydrofuran MSMW-103S – Tetrahydrofuran MSDMW-103S – Tetrahydrofuran
X	MW-103S – PFBA
Y	MW-114S – all VOCs

The qualifiers should be used by all data users to understand and appropriately apply the data.

3.11 Surrogate Recoveries

Surrogates are chemicals similar to the target analyte(s) in chemical composition and behavior that are not expected to be present in the sample(s). Surrogates are added to all environmental samples, blanks, and other QC samples in an analytical batch during the preparation stage for some organic analyses (including VOCs and PFAS in the subject laboratory analytical reports). Surrogates monitor analytical performance, especially extraction efficiency, purging efficiency (for volatiles), and possible matrix effects that MS/MSD spikes, which are added only to one sample per batch.

All surrogate recoveries identified in the laboratory analytical reports were within the percent recovery and allowable range listed for each surrogate compound, except the following:

Sample / Batch	Analyte	Recovery of Internal Standard
Blank / BLKW28A	Carbon disulfide, Tetrahydrofuran, 1,2-Dichloroethane, sec-Butylbenzene, p-Isopropyltoluene, n-Butylbenzene, 1,2,4-Trichlorobenzene, 1,2,3-Trichlorobenzene, Naphthalene, 2-Methylnaphthalene	Elevated
Laboratory Control Sample (LCS) / LCSW28A	Diethyl ether	Elevated
Matrix Spike (MS) / CHR230322-W1.MS1	Chromium VI	Elevated
Matrix Spike Duplicate (MSD) / CHR230322-W1.MSD2	Chromium VI	Elevated
LCS / LCS230330	FPePA (5:3 FTCA)	Elevated
MSD / 4652804N	PFTTrDA	Elevated

3.12 Blank Analyses

Blanks are designated to measure cross-contamination in different parts of the sampling and analytical process.

3.12.1 Method Blank Analyses

Method blanks are prepared from a purified matrix and analyzed with investigative samples to determine the existence and magnitude of sample contamination introduced during the analytical procedures.

For this study, laboratory method blanks were analyzed at a minimum frequency of 1 per 20 investigative samples and/or 1 per analytical batch.

All method blank results were non-detect.

3.12.2 Equipment Blank Analyses

Equipment blanks are designed to monitor the cleanliness of field equipment and the effectiveness of decontamination procedures if equipment is used for multiple sample collections.

For this study, laboratory equipment blanks were analyzed at a minimum frequency of 1 per 20 investigative samples and/or 1 per batch.

All equipment blank analyses were non-detect, except as noted in Table 2 and summarized following:

Laboratory Report	Equipment Blank	Detected Analytes
S46527.05	Equip Blank (03/21/2023 15:55)	Cr, Total <RL but >MDL Zn, Total <RL but >MDL Cu, dissolved <RL but >MDL Zn, dissolved <RL but >MDL Acetone <RL but >MDL Methylene chloride <RL but >MDL Tetrahydrofuran <RL but >MDL Chloroform <RL but >MDL
S46528.05	Equip Blank (EB) (03/21/2023 15:55)	PFAS not detected

Based on the equipment blanks, equipment was not considered to result in significant contributions to contaminants of concern at the RACER site. Detectable concentrations greater than MDLs and not likely to affect sample result comparisons to cleanup criteria.

3.12.3 Trip/Field Blank Analyses

Trip/Field Blanks are designated to measure cross-contamination that may occur during sample handling and transport, such as from a broken bottle in the sample ice chest.

All trip/field blank analyses were non-detect, except as noted following:

Laboratory Report	Trip/Field Blank	Detected Analytes
S46506.01	Field Blank (03/21/2023 09:35)	Cr & Zn, total <RL but >MDL Cu & Zn, dissolved <RL but >MDL Acetone <RL but >MDL
S46507.01	Field Blank (03/21/2023 09:35)	PFAS not detected
S46527.06	Trip Blank (03/21/2023)	Carbon disulfide <RL but >MDL Tetrahydrofuran <RL but >MDL
S46528.06	Trip Blank (03/21/2023)	PFAS not detected

Based on the trip/field blanks, sample handling was not considered to result in detectable concentrations greater than RLs and not likely to affect sample result comparisons to cleanup criteria.

3.13 Laboratory Control Sample Spike Analyses

Laboratory Control Samples (LCS) are prepared and analyzed as samples to assess the analytical efficiencies of the methods employed, independent of sample matrix effects.

For this study, LCS were analyzed at a minimum frequency of 1 per 20 investigative samples and/or 1 per analytical batch.

The LCS contained all analytes of interest. LCS recoveries were assessed per the “Guidelines.” All LCS recoveries were within the control limits demonstrating acceptable analytical accuracy, except as discussed following:

LCS in Batch 230328A9.LCSW28A in Merit Report QC-S46506.01 identified diethyl ether elevated relative to acceptable recovery limits, indicating a potential for reported concentrations for this VOC to be reported high. LCSD in that batch did not identify diethyl ether elevated relative to acceptable recovery limits. Diethyl ether was not detected in groundwater samples collected or QA/QC samples.

The LCS and LCSD in Batch 230324B3 in Merit Report QC-S46527-01 identified no VOC determinations outside acceptable recovery limits.

The LCS and LCSD in Batch SE230328 in Merit Report QC-S46507-01 identified no PFAS constituents determinations outside acceptable recovery limits

The LCS in Batch SE230330 in Merit Report identified PFAS constituent FPePA (5:3 FTCA) reduced relative to acceptable recovery limits, indicating a potential for FPePA (5:3 FTCA) concentrations to be reported low. The LCSD in Batch SE230330 identified no FPePA (5:3 FTCA) in any sample.

Additionally, because FPePA (5:3 FTCA) was detected in the LCS but not in the LCSD, this LCS exceedances is not considered to have affected report results significantly. FPePA (5:3 FTCA) was not reported in the analysis of the groundwater samples.

3.14 Matrix Spike and Matrix Spike Duplicate Analyses

To evaluate the effects of sample matrices on the preparation process, measurement procedures, and accuracy of a particular analysis, selected field samples are spiked with a known concentration of the analyte of concern and analyzed as Matrix Spike (MS)/Matrix Spike Duplicate (MSD) samples. The Relative Percent Difference (RPD) between the MS and MSD is used to assess analytical precision.

If the original sample concentration is significantly greater than the spike concentration, or if sample is diluted five times or greater, the recovery is not assessed.

If only the MS or MSD recovery was outside of control limits, no qualification of the data was performed based on the acceptable recovery of the companion spike and the acceptable RPD.

MS/MSD analyses were performed as specified in Table 1.

The MS/MSD samples were spiked with analytes of interest, and the results were evaluated using the “Guidelines.” Table 4 presents the outlying matrix spike results. The associated sample data were qualified as estimated in the Merit Laboratory Analytical Reports. The remaining percent recoveries and RPD values were within the control limits criteria.

All of the matrix spikes and matrix spike duplicates were identified as falling within Control Limits except for Chromium VI, and PFAS compounds PFTrDA. Chromium VI was identified only in the MS and MSD for MW-103S and was not identified in the unadulterated groundwater sample for MW-103S. All PFAS identified PFAS compounds were detected only in the MS and MSD samples, except PFOS. The inferred associated matrix interferences were not considered to affect report conclusions.

3.15 Interferences

Interference is bias that is introduced because something in the sample interferes with the analytical system’s ability to provide an accurate measurement. The interference may be physical (such as turbidity that could block light transmission in an analysis based on UV absorbance), chemical (a chemical similar to the analyte of interest may react with that analyte affect instrument response), or spectroscopic (with the detector receiving an enhanced or suppressed signal due to an emission or absorbance by some other chemical or material in the matrix). Interferences can be possible or negative. Significant analytical interferences and their effects on the data are identified in the laboratory’s case narrative.

No significant interferences were reported in the laboratory’s case narratives. Additionally, no sample was reported as altered due to matrix interference.

Additionally, high target concentrations necessitating 10-times dilutions were identified associated with MW-114 and its duplicate (Dupe).

3.16 Field Duplicate Sample Analyses

One field duplicate sample, one of each day of groundwater sampling, was collected for purposes of evaluating field QA/QC. The field duplicate sample was submitted “blind” to the laboratory, as specified in Table 1 and chains of custody. The RPDs associated with the duplicate sample must be less than 50 percent for water samples. If the reported concentration in either the investigative sample or its duplicate is less than five times the reporting limit (RL), the evaluation criteria is one times the RL value for water samples.

The field duplicate results shown in Table 5 were within acceptable agreement less than 50%, demonstrating acceptable sampling and analytical precision, except as discussed following:

RPDs for the determined concentrations of total arsenic, total lead, dissolved copper, and dissolved zinc identified in the duplicate set evaluated exceeded the 50% RPD Control Limit. Such variability is typical for total metals due to variations in suspended sediment contribution.

3.18 Chain-of-Custody Forms

Each Merit Analytical Laboratory Report and Quality Control Report was accompanied by a copy of the appropriately executed chain of custody.

3.19 Laboratory Sample Receipt Checklist

Each Merit Analytical Laboratory Report is accompanied by a Merit Laboratories Login Checklist that documented sample conditions on receipt, chain of custody, preservation, and bottle conditions.

All samples were identified as received via courier pickup on ice at temperatures within 2-6 degrees Celsius and transferred to appropriate refrigeration.

All chains of custody were reported to be adequately filled out, signed, and matched sample labels provided, except in the S46527.01 and S46528 .01 report, Trip Blank was not on COC.

No requirement for subcontract laboratory analyses was identified.

All bottles were identified as appropriate and supplied by Merit, intact, filled appropriately, and submitted within holding times.

All samples were received with appropriate preservation, except:

Samples submitted for dissolved metals (including chromium VI) analyses on chains of custody for Merit Analytical Laboratory Reports S46506.01 and S46527.01 required laboratory filtration and preservation; however, the Login Checklists for those analytical reports failed to note those requirements.

4. FINDINGS, CONCLUSIONS, AND DATA LIMITATIONS

On March 21, 2023, Æ collected groundwater samples from seven monitoring wells at the RACER Flint West Industrial Land site using USEPA low-stress sampling protocols. One duplicate sample, one field blank, and one matrix spike and duplicate were collected. Samples were collected in appropriate laboratory-provided bottles with laboratory-provided preservatives and were maintained on ice until delivery under complete chain-of-custody protocols to Merit Laboratories within appropriate holding times. No sample conditions issues were identified in the field or upon laboratory receipt. Samples were analyzed by specified standard methods for VOCs, EGLE 28 PFAS, six total and dissolved metals, and total and dissolved chromium VI. Filtration and preservation for dissolved metals and for total and dissolved chromium VI reportedly were performed immediately upon laboratory receipt instead of during field collection.

Laboratory deliverables include four laboratory reports, quality control reports, and chains-of-custody, two each for PFAS and for VOCs and metals. Each laboratory report contained a case narrative, laboratory accreditation/certification information, laboratory contact information, analytical methods, and analyte reporting relative to method detection limits (MDLs) and reporting limits (RLs). Data qualifiers were identified and evaluated in this Laboratory Data Validation report. No samples were analyzed beyond their holding times.

All surrogate recoveries were within their allowable ranges for each surrogate compound, except Carbon disulfide, Tetrahydrofuran, 1,2-Dichloroethane, sec-Butylbenzene, p-Isopropyltoluene, n-Butylbenzene, 1,2,4-Trichlorobenzene, 1,2,3-Trichlorobenzene, Naphthalene, 2-Methylnaphthalene, diethyl ether, chromium VI, FPePA (5:3 FTCA), and PFTTrDA none of which were commonly present in groundwater at the site – indicating satisfactory laboratory performance overall. Analysis of blank samples identified no indications of significant cross-contamination. The equipment blank identified only a low concentration of total chromium and zinc, dissolved copper and zinc, acetone, chloroform, and tetrahydrofuran exceeding its reporting limit. The field blank was determined to contain detectable concentrations exceeding RLs, and no detectable concentrations of total chromium and zinc, dissolved copper and zinc, and acetone. Carbon tetrachloride and tetrahydrofuran were identified in the trip blank. Accordingly, no significant indications of cross-contamination were identified. Laboratory Control Spike (LCS) and LCS Duplicate analyses indicated potential for PFAS analyte FPePA (5:3 FTCA), and for VOC diethyl ether to be reported high. Matrix spikes and their duplicates indicate potential for PFAS analyte PFTTrDA and chromium VI to be reported high. Of these potentially elevated analytes, none were detected in groundwater samples analyzed. No significant data qualifiers were identified in relation to the detected analyte concentrations.

Based on the assessment detailed in the foregoing QA/QC summary, the laboratory data summarized in Table 2 are considered acceptable with the specific qualifications noted herein.

5. SIGNATURES

This report was prepared under the supervision of the following Environmental Professionals as defined in §312.10 of 40 CFR 312.



Michael D. Smith, Environmental Professional
Senior Technical Manager of Æ.

June 29, 2023

Date



Sandra K. Clark, Environmental Professional
President of Æ.

June 29, 2023

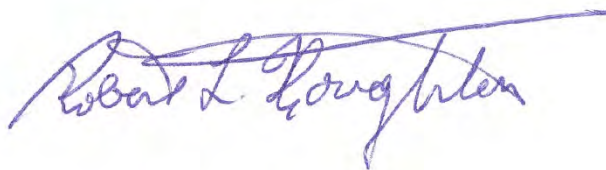
Date



Rodney Abke, CPG, LPG, Environmental Professional,
Æ Senior Geologist

June 29, 2023

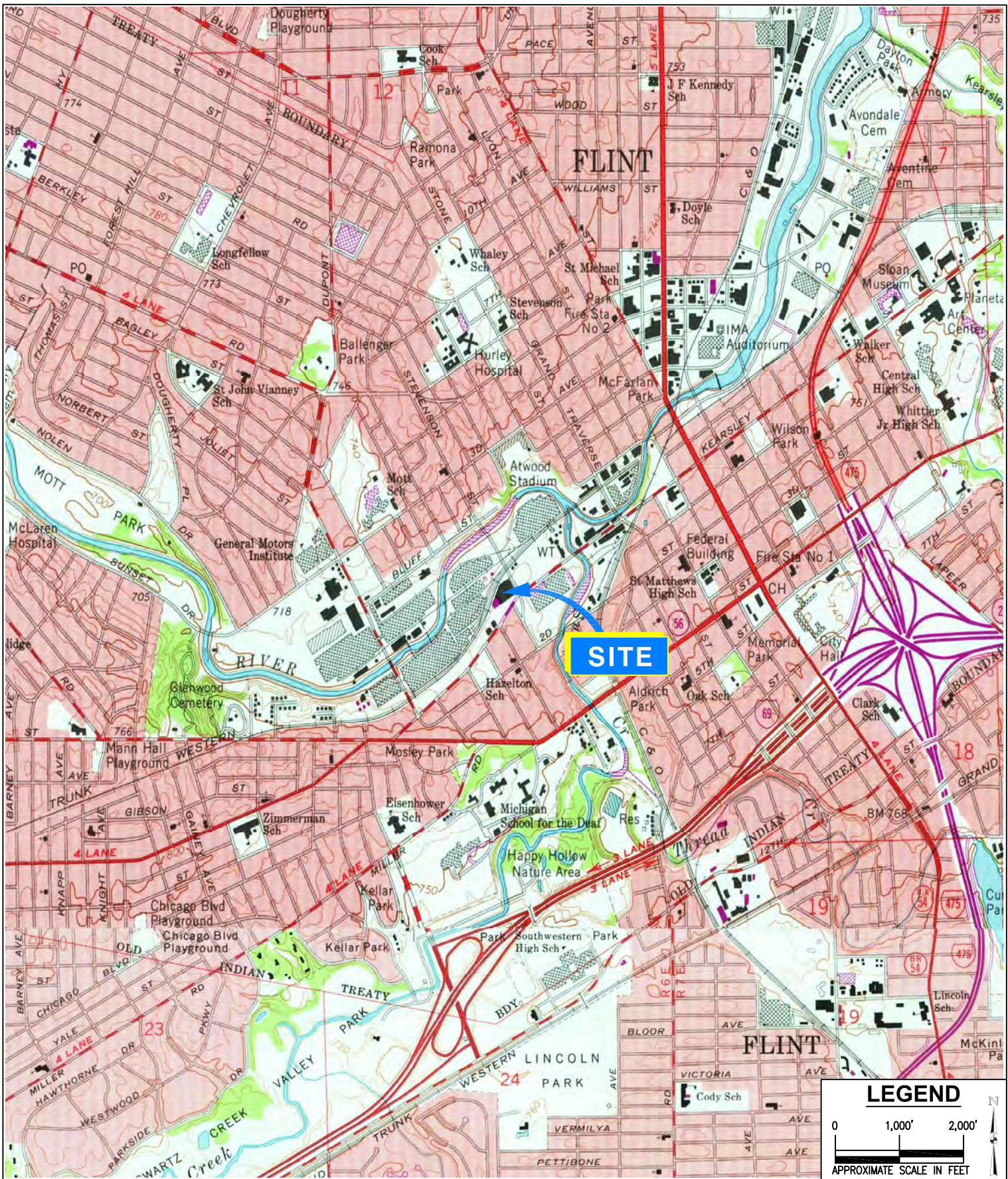
Date



Robert L. Houghton, Environmental Professional,
Æ Senior Technical Advisor,
Æ Quality Assurance Officer

June 29, 2023

Date



Applied EcoSystems, Inc.

Environmental Management, Consulting & Field Services
 G-4300 South Saginaw Street, Burton, Michigan 48529
 Phone: 810.715.2525; Fax: 810.715.2526

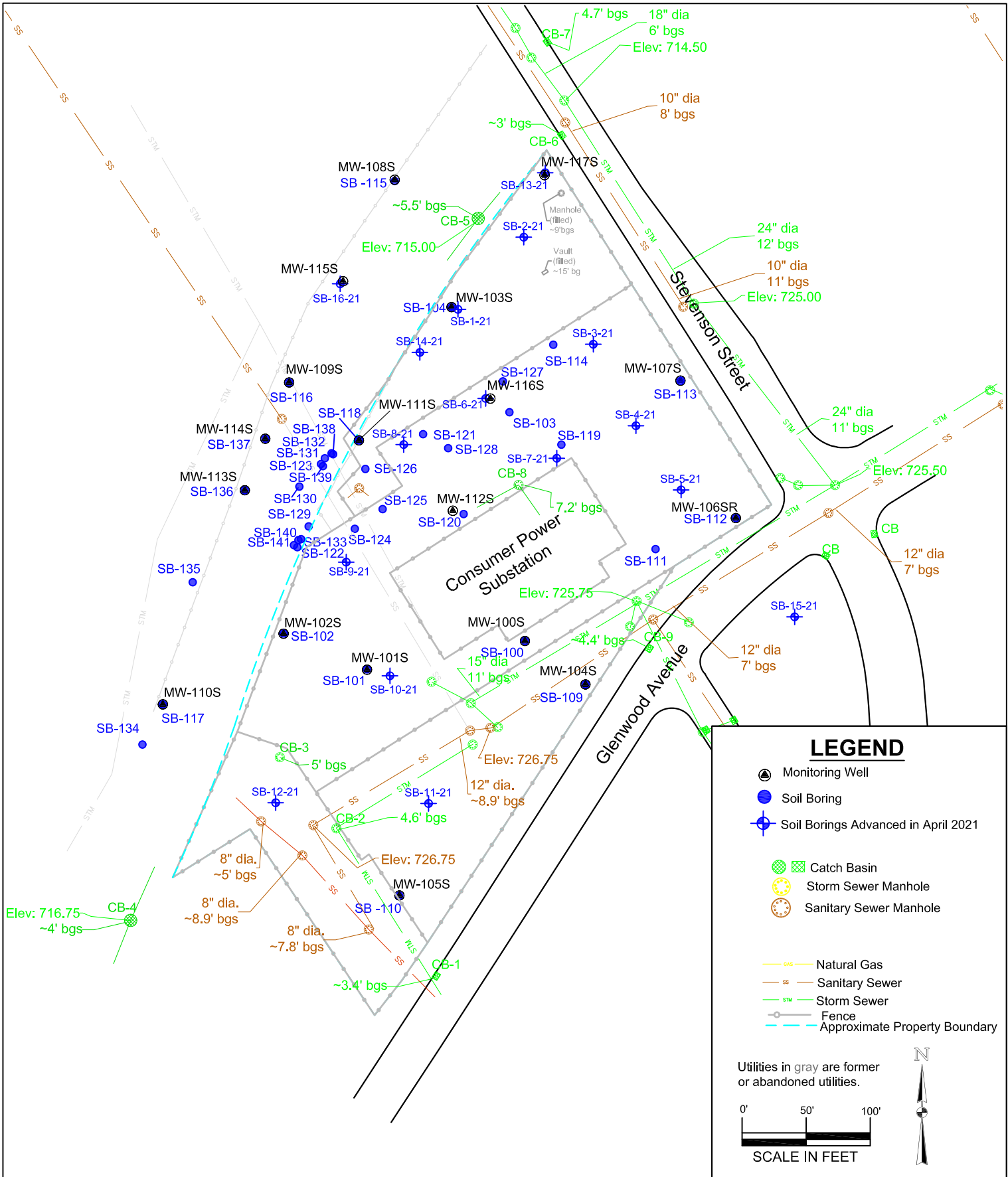
Site Location Map

RACER Flint West #12990

**Glenwood Avenue & Stevenson Street
 Flint, Michigan**

**SOURCE: USGS FLINT SOUTH QUADRANGLE
 (PROVISIONAL EDITION 1975)**

DRAWING DATE:	CHECKED BY:
04/06/2020	MDS
PROJECT:	FIGURE:
11-4317-102	1



AE Applied *Eco*Systems, Inc.
 Environmental Management, Consulting & Field Services
 G-4300 South Saginaw Street, Burton, Michigan 48529
 Phone: 810.715.2525; Fax: 810.715.2526

Site Map
 Racer Flint West -1290
 Flint West Industrial Land, Flint, Michigan

DATE: 01/20/2022	CHECKED BY: MDS
PROJECT: 11-4317-102	FIGURE: 2

Table 1
Sample Collection and Analysis Summary
March 2023 Biannual Groundwater Sampling Event

Lab Sample ID	Field Sample ID (Location)	Matrix	Collection		Analytical Parameters			
			Date (mm/dd/yyyy)	Time (hr:min)	PFAS	VOCs	Total Metals	Dissolved Metals
S46506.01	Field Blank	Groundwater	03/21/2023	09:35		X	X	X
S46506.02	MW-104S	Groundwater	03/21/2023	10:05		X	X	X
S46506.03	MW-112S	Groundwater	03/21/2023	11:20		X	X	X
S46506.04	MW-110S	Groundwater	03/21/2023	12:23		X	X	X
S46506.05	MW-114S	Groundwater	03/21/2023	13:18		X	X	X
S46506.06	MW-108S	Groundwater	03/21/2023	14:03		X	X	X
S46506.07	Dupe	Groundwater	03/21/2023	00:01		X	X	X
S46527.01	MW-117S	Groundwater	03/21/2023	14:30		X	X	X
S46527.02	MW-103S	Groundwater	03/21/2023	15:41		X	X	X
S46527.03	MSMW-103S	Groundwater	03/21/2023	15:41		X	X	X
S46527.04	MSDMW-103S	Groundwater	03/21/2023	15:41		X	X	X
S46527.05	Equip Blank	Groundwater	03/21/2023	15:55		X	X	X
S46527.06	Trip Blank	Groundwater	03/21/2023	00:01		X	X	X
S46507.01	Field Blank	Groundwater	03/21/2023	09:35	X			
S46507.02	MW-104S	Groundwater	10:05	09:42	X			
S46507.03	MW-112S	Groundwater	03/21/2023	11:20	X			
S46507.04	MW-110S	Groundwater	03/21/2023	12:23	X			
S46507.05	MW-114S	Groundwater	03/21/2023	13:18	X			
S46507.06	MW-1018S	Groundwater	03/21/2023	14:03	X			
S46507.07	Dupe	Groundwater	03/21/2023	00:01	X			
S46528.01	MW-117S	Groundwater	03/21/2023	14:38	X			
S46528.02	MW-103S	Groundwater	03/21/2023	15:41	X			
S46528.03	MSMW-103S	Groundwater	03/21/2023	15:41	X			
S46528.04	MSDMW-103S	Groundwater	03/21/2023	15:41	X			
S46528.05	Equip Blank	Groundwater	03/21/2023	15:55	X			
S46528.06	Trip Blank	Groundwater	03/21/2023	00:01	X			

Table 2
Sample Analytical Results
RACER - Flint West # 12990

Sample ID			MW-103S	MW-104S	MW-108S	MW-110S	MW-112S	MW-114S	MW-117S	Dupe1	FB-1	EB-1	Trip Blank	MW-103S MS	MW-103S MSD	
Date Collected			03/21/2023	03/21/2023	03/21/2023	03/21/2023	03/21/2023	03/21/2023	03/21/2023	03/21/2023	03/21/2023	03/21/2023	03/21/2023	03/21/2023	03/21/2023	
METALS ANALYTE (ug/L)	DW	GSI								MW-114S						
Arsenic, Dissolved	10	10		8 f	1.4 bf	0.381 bf	1.18 bf	15 f	18 f	0.941 bf	15 f	<2 f	<2 f	NA	256 f	263
Arsenic	10	10		14	1.38 b	0.465 b	2	40	34	1.06 b	27	<2	<2	NA	271	277
Chromium VI, Dissolved	100	11		<10 c	<10 c	<10 c	<10 c	<10 c	<10 c	<10 c	<10 c	<10 c	<10 c	NA	<10 c	<10 c
Chromium VI	100	11		<0.25	<10	<10	<10	<10	<10	<10	<10	<10	<10	NA	3600	3380
Chromium, Dissolved	100	160	G	0.204 bf	0.502 bf	0.27 bf	0.39 bf	0.401 bf	0.182 bf	1.27 bf	0.139 bf	<5 f	<5 f	NA	245 f	254 f
Chromium	100	160	G	0.406 b	70	0.559 b	1.33 b	0.42 b	0.514 b	49	0.496 b	0.107 b	0.096 b	NA	249	247
Copper, Dissolved	1000	20	G	<0.005 f	1.46 bf	0.856 bf	1.81 bf	<5 f	0.379 bf	1.13 bf	2.29 bf	0.16 bf	0.558 bf	NA	238 f	247 f
Copper	1000	20	G	0.469 b	3.59 b	2.42 b	4.11 b	<5	1.56 b	2.16 b	1 b	<5	<5	NA	245	237
Lead, Dissolved	4	44	G	<3 f	<3 f	<3 f	<3 f	<3 f	<3 f	<3 f	<3 f	<3 f	<3 f	NA	242 f	246 f
Lead	4	44	G	<3	<3	0.508 b	0.743 b	<3	0.213 b	<3	0.38 b	<3	<3	NA	235	243
Selenium, Dissolved	50	5		<5 f	<5 f	4.27 bf	<5 f	<5 f	<5 f	<5 f	<5 f	<5 f	<5 f	NA	256 f	260 f
Selenium	50	5		<5	2.45 b	6	<5	<5	<5	<5	<5	<5	<5	NA	269	283
Zinc, Dissolved	2400	260	G	1.17 bf	1.87 bf	2.38 bf	26 f	1.36 bf	4.82 bf	1.24 bf	12 f	0.671 bf	0.666 bf	NA	246 f	256 f
Zinc	2400	260	G	1.68 b	2.37 b	6	28	1.82 b	8	1.65 b	8	0.757 b	0.371 b	NA	260	261
VOC ANALYTE (ug/L)	DW	GSI								MW-114S						
Acetone	730	1700		<50	<50	<50	<50	5.4 J	<250 Y	<50	<50	11.4 J	5.5 J	<50	56	49.3
Acrylonitrile	2.6	2.0 (M); 1.2		<2	<2	<2	<2	<2	<10 Y	<2	<2	<2	<2	<2	54	57
2-Butanone (MEK)	13000	2,200		<25	<25	<25	<25	<25	<130 Y	<25	<25	<25	<25	<25	49	55
Benzene	5	200		0.22 J	<1	<1	<1	<1	<5 Y	<1	<1	<1	<1	<1	58	55
n-Butylbenzene	NC	NC		0.2	<1	<1	<1	<1	0.55 JBY	<1	<1	<1	<1	<1	53	54
Bromobenzene	18	NA		<1	<1	<1	<1	<1	<5 Y	<1	<1	<1	<1	<1	48	56
Bromochloromethane	NC	NC		<1	<1	<1	<1	<1	<5 Y	<1	<1	<1	<1	<1	58	58
Bromodichloromethane	80	NC		<1	<1	<1	<1	<1	<5 Y	<1	<1	<1	<1	<1	57	57
Bromoform	80 (A,W)	ID		<1	<1	<1	<1	<1	<5 Y	<1	<1	<1	<1	<1	50	51
Bromomethane	10	4.2; [5(M)]		<5	<5	<5	<5	<5	<30 Y	<5	<5	<5	<5	<5	65	52
sec-Butylbenzene	230	ID		<1	<1	<1	<1	<1	<5 Y	<1	<1	<1	<1	<1	53	55
tert-Butylbenzene	80	ID		<1	<1	<1	<1	<1	<5 Y	<1	<1	<1	<1	<1	48	54
Carbon disulfide	800	NC		0.24 J	<5	<5	<5	0.23 JB	<30 Y	<5	<5	<5	<5	0.16 JB	60	49
Carbon tetrachloride	5	38	X	<1	<1	2	<1	<1	<5 Y	<1	<1	<1	<1	<1	57	58
Chlorobenzene	100	25		3	<1	<1	<1	<1	<5 Y	<1	<1	<1	<1	<1	55	56
Chloroethane	430	1,100		<5	<5	<5	<5	<5	<30 Y	<5	<5	<5	<5	<5	66	55
Chloroform	80	350		<1	0.59 J	2	<1	<1	<5 Y	<1	<1	<1	0.4 J	<1	57	56
Chloromethane	260	NC		<5	<5	<5	<5	<5	<30 Y	<5	<5	<5	<5	<5	71	37.98
1,1-Dichloroethane	880	740		<1	<1	<1	<1	0.35 J	1.3 JY	<1	1	<1	<1	<1	57	55
1,1-Dichloroethene	7	130		<1	<1	<1	<1	<1	0.9 JY	<1	1	<1	<1	<1	59	55
1,2-Dibromo-3-chloropropane	NC	NC		<5	<5	<5	<5	<5	<30 Y	<5	<5	<5	<5	<5	60	56
1,2-Dibromoethane	NC	NC		<1	<1	<1	<1	<1	<5 Y	<1	<1	<1	<1	<1	54	53
1,2-Dichlorobenzene	600	13		0.27 JB	<1	<1	<1	<1	<5 Y	<1	<1	<1	<1	<1	55	58
1,2-Dichloroethane	5.0 (A)	360 (X)		<1	<1	<1	<1	<1	<5 Y	<1	<1	<1	<1	<1	59	57
1,2-Dichloropropane	5.0 (A)	230 (X)		<1	<1	<1	<1	<1	<5 Y	<1	<1	<1	<1	<1	57	71
1,3-Dichlorobenzene	6.6	28		<1	<1	<1	<1	<1	<5 Y	<1	<1	<1	<1	<1	55	83
1,4-Dichlorobenzene	75	17		<1	<1	<1	<1	<1	<5 Y	<1	<1	<1	<1	<1	55	55
VOC ANALYTE (ug/L)	DW	GSI								MW-114S						
cis-1,2-Dichloroethene	70	620		<1	<1	<1	<1	0.78 J	59 JY	<1	70	<1	<1	<1	54	55
cis-1,3-Dichloropropene	NC	NC		<1	<1	<1	<1	<1	<5 Y	<1	<1	<1	<1	<1	59	56

Table 2
Sample Analytical Results
RACER - Flint West # 12990

Sample ID			MW-103S	MW-104S	MW-108S	MW-110S	MW-112S	MW-114S	MW-117S	Dupe1	FB-1	EB-1	Trip Blank	MW-103S MS	MW-103S MSD
Date Collected			03/21/2023	03/21/2023	03/21/2023	03/21/2023	03/21/2023	03/21/2023	03/21/2023	03/21/2023	03/21/2023	03/21/2023	03/21/2023	03/21/2023	03/21/2023
Dibromochloromethane	80 (A,W)	ID	<5	<5	<5	<5	<5	<30 Y	<5	<5	<5	<5	<5	54	72
Dibromomethane	230	NA	<5	<5	<5	<5	<5	<30 Y	<5	<5	<5	<5	<5	59	78
Dichlorodifluoromethane	1700	ID	<5	<5	<5	<5	<5	<30 Y	<5	<5	<5	<5	<5	71	56
Diethyl ether	10 (E)	ID	<10	<10	<10	<10	<10	<50 Y	<10	<10	<10	<10	<10	61	55
trans-1,2-Dichloroethene	100	1500	<1	<1	<1	<1	<1	0.55 JY	<1	0.57 J	<1	<1	<1	53	50
trans-1,3-Dichloropropene	NC	NC	<1	<1	<1	<1	<1	<5 Y	<1	<1	<1	<1	<1	56	57
trans-1,4-Dichloro-2-butene	NC	NC	<1	<1	<1	<1	<1	<5 Y	<1	<1	<1	<1	<1	45	111
Ethylbenzene	74	18	0.12 J	<1	<1	<1	<1	<5 Y	<1	<1	<1	<1	<1	52	53
2-Hexanone	1000	ID	<50	<50	<50	<50	<50	<250 Y	<50	<50	<50	<50	<50	57	70 J
Hexachloroethane	21	6.7	<5	<5	<5	<5	<5	<30 Y	<5	<5	<5	<5	<5	58	53
p-Isopropyltoluene	NC	NC	0.11 JB	<5	<5	<5	<5	<30 Y	<5	<5	<5	<5	<5	54	59
Isopropylbenzene	800	28	<5	<5	<5	<5	<5	<30 Y	<5	<5	<5	<5	<5	48	54
VOC ANALYTE (ug/L) {cont}	DW	GSI	MW-114S												
2-Methylnaphthalene	260	19	0.45 JB	<5	<5	<5	<5	1.6 JBY	<5	<5	<5	<5	<5	58	59
4-Methyl-2-pentanone (MIBK)	1800	ID	<50	<50	<50	<50	0.55 J	<250 Y	<50	<50	<50	<50	<50	55	56
tert-Methyl butyl ether (MTBE)	40 (E)	7,100 (X)	<5	<5	<5	<5	<5	<30 Y	<5	<5	<5	<5	<5	56	52
Methyl iodide	NC	NC	<1	<1	<1	<1	<1	<5 Y	<1	<1	<1	<1	<1	58	51
Methylene chloride	5	1500	<5	<5	<5	<5	<5	<30 Y	<5	<5	<5	0.47 J	<5	55	58
Naphthalene	520	11	0.21 JB	<5	<5	<5	<5	0.65 JBY	<5	<5	<5	<5	<5	63	55
n-Propylbenzene	80	ID	<1	<1	<1	<1	<1	<5 Y	<1	<1	<1	<1	<1	48	53
Styrene	100	80	<1	<1	<1	<1	<1	<5 Y	<1	<1	<1	<1	<1	49	53
1,1,1,2-Tetrachloroethane	77	ID	<1	<1	<1	<1	<1	<5 Y	<1	<1	<1	<1	<1	53	51
1,1,1-Trichloroethane	200	89	<1	<1	<1	<1	<1	1.2 JY	<1	0.93 J	<1	<1	<1	56	51
1,1,2,2-Tetrachloroethane	8.5	78 (X)	<1	<1	<1	<1	<1	<5 Y	<1	<1	<1	<1	<1	47	45
1,1,2-Trichloroethane	5.0 (A)	330 (X)	<1	<1	<1	<1	<1	<5 Y	<1	<1	<1	<1	<1	60	54
1,2,3-Trichlorobenzene	NC	NC	0.15 JB	<5	<5	<5	<5	0.5 JBY	<5	<5	<5	<5	<5	60	51
1,2,3-Trichloropropane	42	NA	<1	<1	<1	<1	<1	<5 Y	<1	<1	<1	<1	<1	49	54
1,2,3-Trimethylbenzene	NC	NC	<1	<1	<1	<1	<1	<5 Y	<1	<1	<1	<1	<1	54	55
1,2,4-Trichlorobenzene	NC	NC	0.15 JB	<5	<5	<5	<5	<30 Y	<5	<5	<5	<5	<5	59	70
1,2,4-Trimethylbenzene	63 (E)	17	<1	<1	<1	<1	<1	<5 Y	<1	<1	<1	<1	<1	49	54
1,3,5-Trimethylbenzene	72 (E)	45	<1	<1	<1	<1	<1	<5 Y	<1	<1	<1	<1	<1	49	51
Tetrachloroethene	5	60	<1	<1	<1	<1	<1	<5 Y	0.14 J	<1	<1	<1	<1	56	57
Tetrahydrofuran	95	11000	1.28 JB	<90	<90	<90	<90	15.5 JBY	<90	<90	<90	5.8 JB	1.9 JB	47.49 J	54 J
Toluene	790	270	0.18 J	<1	<1	<1	<1	<5 Y	<1	<1	<1	<1	<1	57	55
Trichloroethene	5	200	0.1 J	<1	<1	<1	1	173 JY	<1	199	<1	<1	<1	58	52
Trichlorofluoromethane	2600	NA	<1	<1	<1	<1	<1	<5 Y	<1	<1	<1	<1	<1	66	53
Vinyl chloride	2	13	<1	<1	<1	<1	0.83 J	3.95 JY	<1	6	<1	<1	<1	70	49
o-Xylene	NC	NC	0.11 J	<1	<1	<1	<1	<5 Y	<1	<1	<1	<1	<1	49	59
p,m-Xylene	NC	NC	0.22 J	<2	<2	<2	<2	<10 Y	<2	<2	<2	<2	<2	104	55
Xylenes, Total	280	49	0.33	<3	<3	<3	<3	<15 Y	<3	<3	<3	<3	<3	153	114
PFA ANALYTE (ng/L)	DW	GSI	MW-114S												
Perfluorobutanoic acid (PFBA)	NC	NC	<19 X	<9.8	<9.8	<10	<9.6	<10	3 J	<9.8	<10	<9.5	<9.7	99	100
Perfluoropentanoic acid (PFPeA)	NC	NC	<3.8	0.88 J	<3.9	<4.1	<3.8	3.4 J	0.98 J	3.5 J	<4.1	<3.8	<3.9	80	89

Table 2
Sample Analytical Results
RACER - Flint West # 12990

Sample ID			MW-103S	MW-104S	MW-108S	MW-110S	MW-112S	MW-114S	MW-117S	Dupe1	FB-1	EB-1	Trip Blank	MW-103S MS	MW-103S MSD
Date Collected			03/21/2023	03/21/2023	03/21/2023	03/21/2023	03/21/2023	03/21/2023	03/21/2023	03/21/2023	03/21/2023	03/21/2023	03/21/2023	03/21/2023	03/21/2023
Fluorotelomer sulfonic acid (4:2 FTS)	NC	NC	<1.9	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.0	<1.9	<1.9	99	110
Perfluorohexanoic acid (PFHxA)	400,000	NC	<1.9	0.61 J	<2.0	0.63 J	<1.9	2	1.3 J	2	<2.0	<1.9	<1.9	82	93
Perfluorobutane sulfonic acid (PFBS)	420	NC	1.7 J	2	1.1 J	2.4	2	2.2	1.3 J	2	<2.0	<1.9	<1.9	81	85
Perfluoroheptanoic acid (PFHpA)	NC	NC	2	<2.0	0.98 J	<2.0	1.3 J	1.3 J	1.4 J	1.6 J	<2.0	<1.9	<1.9	75	80
Perfluoropentane sulfonic acid (PFPeS)	NC	NC	<1.9	0.98 J	<2.0	1.0 J	<1.9	<2.0	<2.0	<2.0	<2.0	<1.9	<1.9	77	82
Fluorotelomer sulfonic acid (6:2 FTS)	NC	NC	<1.9	<3.9	<3.9	<4.1	<3.8	<4.0	<2.0	<3.9	<4.1	<1.9	<1.9	100	110
Perfluorooctanoic acid (PFOA)	8	12,000	<1.9	<2.0	<2.0	<2.0	2.3	2.3	3.2	2.4	<2.0	<1.9	<1.9	79	80
Perfluorohexane sulfonic acid (PFHxS)	51	NC	2.6	2.2	1.6 J	<2.0	1.3 J	1.5 J	1.4 J	1.3 J	<2.0	<1.9	<1.9	80	86
Perfluorohexane Sulfonic Acid - LN (PFHxS-LN)	NC	NC	2	1.9 J	1.6 J	<2.0	1.3 J	1.5 J	<2.0	1.3 J	<2.0	<1.9	<1.9	68	74
Perfluorohexane Sulfonic Acid - BR (PFHxS-BR)	NC	NC	<1.9	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.0	<1.9	<1.9	9.4	12
Perfluorononanoic acid (PFNA)	6	NC	<1.9	<2.0	0.84 J	<2.0	0.96	0.95 J	<2.0	0.99 J	<2.0	<1.9	<1.9	80	83
Fluorotelomer sulfonic acid (8:2 FTS)	NC	NC	<1.9	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.0	<1.9	<1.9	82	97
Perfluoroheptane sulfonic acid (PFHpS)	NC	NC	<1.9	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.0	<1.9	<1.9	82	79
Perfluorodecanoic acid (PFDA)	NC	NC	<1.9	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.0	<1.9	<1.9	76	80
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	NC	NC	<1.9	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.0	<1.9	<1.9	73	71
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	NC	NC	<3.8	<3.9	<3.9	<4.1	<3.8	<4.0	<4.1	<3.9	<4.1	<3.8	<3.9	79	89
Perfluorooctane sulfonic acid (PFOS)	16	12	9.9	<2.0	5.5	<2.0	13	17	1.9 J	15	<2.0	<1.9	<1.9	91	94
Perfluorooctane Sulfonic Acid - LN (PFOS-LN)	NC	NC	5.8	<2.0	2	<2.0	6.4	9	<2.0	8.1	<2.0	<1.9	<1.9	63	64
Perfluorooctane Sulfonic Acid - BR (PFOS-BR)	NC	NC	4.1	<2.0	4	<2.0	6.9	7.8	1.3 J	7.5	<2.0	<1.9	<1.9	26	29
PFA ANALYTE (ng/L)	DW	GSI								MW-114S					
Perfluoroundecanoic acid (PFUnDA)	NC	NC	<1.9	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.0	<1.9	<1.9	79	91
Perfluorononane sulfonic acid (PFNS)	NC	NC	<1.9	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.0	<1.9	<1.9	77	78

Table 2
Sample Analytical Results
RACER - Flint West # 12990

Sample ID			MW-103S	MW-104S	MW-108S	MW-110S	MW-112S	MW-114S	MW-117S	Dupe1	FB-1	EB-1	Trip Blank	MW-103S MS	MW-103S MSD
Date Collected			03/21/2023	03/21/2023	03/21/2023	03/21/2023	03/21/2023	03/21/2023	03/21/2023	03/21/2023	03/21/2023	03/21/2023	03/21/2023	03/21/2023	03/21/2023
Perfluorododecanoic acid (PFDoDA)	NC	NC	<1.9	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.0	<1.9	<1.9	76	79
Perfluorodecane sulfonic acid (PFDS)	NC	NC	<1.9	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.0	<1.9	<1.9	77	78
Perfluorotridecanoic acid (PFTrDA)	NC	NC	<1.9	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.0	<1.9	<1.9	67	74
Perfluorooctane sulfonamide (FOSA)	NC	NC	<1.9	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.0	<1.9	<1.9	84	86
Perfluorotetradecanoic acid (PFTeDA)	NC	NC	<3.8	<3.9	<3.9	<4.1	<3.8	<4.0	<4.1	<3.9	<4.1	<3.8	<3.9	72	82
11-chloroeicosafuoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NC	NC	<1.9	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.0	<1.9	<1.9	91	91
9-chlorohexadecafluoro-3-oxanone1-sulfonic acid (9Cl-PF3ONS)	NC	NC	<1.9	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.0	<1.9	<1.9	83	91
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NC	NC	<1.9	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.0	<1.9	<1.9	76	83
Hexafluoropropylene oxide dimer (HFPO-DA)	NC	NC	<1.9	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.0	<1.9	<1.9	69	76

Table 2
 Groundwater Analytical Results
 RACER - Flint West # 12990

NOTES:

DW - Drinking Water Residential Generic Criteria.

GSI - Groundwater Surface Water Interface Generic Criteria per MDEQ Surface Water Division Rule 57.

Blank cells indicate no detectable concentrations	
Exceeds DW criteria	X
Exceeds GSI criteria	X
Exceeds both DW and GSI criteria	X
Compound also found in associated method blank, suggesting a laboratory artifact.	X
Insufficient data to develop criterion/no criterion	NC
Groundwater to Surface Water Interface Criteria - calculated based on 257ppm total hardness in the Flint River	G
Not Sampled	NS
Filtered in lab	1
Filtered and preserved in lab	2
Not analyzed	NA

PFAS criteria based on EGLE proposed drinking water criteria for selected PFAS compounds.

Table 3
Analytical Methods and Holding Time Criteria
March 2023 Biannual Groundwater Sampling Event
RACER Flint West #12990, Flint, Michigan

Parameter	Analytical Method	Matrix	Sample ID	Holding Time (days)				Approved Holding Time
				Collection Date/Time	Extraction Date/Time	Latest Analytical Date/Time	Actual Holding Time (days)	
VOCs	SW5030C /8260C	Groundwater	Field Blank	03/21/23 09:35	NA	03/24/23 15:13	3.23	14 Days
		Groundwater	MW-104S	03/21/23 10:05		03/24/23 20:19	3.43	
		Groundwater	MW-112S	03/21/23 11:20		03/24/23 20:42	3.39	
		Groundwater	MW-110S	03/21/23 12:23		03/24/23 21:05	3.36	
		Groundwater	MW-114S	03/21/23 13:18		03/28/23 15:53	7.11	
		Groundwater	MW-108S	03/21/23 14:03		03/24/23 21:29	3.31	
		Groundwater	Dupe	03/21/23 00:01		03/24/23 21:52	3.91	
		Groundwater	MW-117S	03/21/23 14:30		03/25/23 02:11	3.49	
		Groundwater	MW-103S	03/21/23 15:41		03/27/23 23:23	6.32	
		Groundwater	MSMW-103S	03/21/23 15:41		03/28/23 05:12	6.56	
		Groundwater	MSDMW-103S	03/21/23 15:41		03/28/23 05:32	6.58	
		Water	Equip Blank	03/21/23 15:55		03/25/23 02:58	3.46	
		Water	Trip Blank	03/21/23 00:01		03/25/23 01:47	4.07	
Metals, Total	E200.8	Groundwater	Field Blank	03/21/23 09:35	03/24/23 10:15	03/24/23 11:44	3.09	180 Days
		Groundwater	MW-104S	03/21/23 10:05	03/24/23 10:15	03/24/23 11:50	3.07	
		Groundwater	MW-112S	03/21/23 11:20	03/24/23 10:15	03/24/23 12:00	3.03	
		Groundwater	MW-110S	03/21/23 12:23	03/24/23 10:15	03/24/23 12:05	2.99	
		Groundwater	MW-114S	03/21/23 13:18	03/24/23 10:15	03/24/23 12:18	2.96	
		Groundwater	MW-108S	03/21/23 14:03	03/24/23 10:15	03/24/23 12:25	2.93	
		Groundwater	Dupe	03/21/23 00:01	03/24/23 10:15	03/24/23 12:26	3.52	
		Groundwater	MW-117S	03/21/23 14:30	03/24/23 10:15	03/24/23 12:32	2.92	
		Groundwater	MW-103S	03/21/23 15:41	03/24/23 10:15	03/24/23 12:07	2.85	
		Groundwater	MSMW-103S	03/21/23 15:41	03/24/23 10:15	03/24/23 12:07	2.85	
		Groundwater	MSDMW-103S	03/21/23 15:41	03/24/23 10:15	03/24/23 12:08	2.85	

Parameter	Analytical Method	Matrix	Sample ID	Holding Time (days)				Approved Holding Time
				Collection Date/Time	Extraction Date/Time	Latest Analytical Date/Time	Actual Holding Time (days)	
		Water	Equip Blank	03/21/23 15:55	03/24/23 10:15	03/24/23 12:09	2.84	
Chromium VI, Total	SM3500-Cr	Groundwater	Field Blank	03/21/23 09:35		03/21/23 16:20	0.28	24 Hours (1 Day)
		Groundwater	MW-104S	03/21/23 10:05		03/21/23 16:25	0.26	
		Groundwater	MW-112S	03/21/23 11:20		03/21/23 16:40	0.22	
		Groundwater	MW-110S	03/21/23 12:23		03/21/23 16:45	0.18	
		Groundwater	MW-114S	03/21/23 13:18		03/21/23 16:50	0.15	
		Groundwater	MW-108S	03/21/23 14:03		03/21/23 16:55	0.12	
		Groundwater	Dupe	03/21/23 00:01		03/21/23 17:00	0.71	
		Groundwater	MW-117S	03/21/23 14:30		03/22/23 13:20	0.95	
		Groundwater	MW-103S	03/21/23 15:41		03/22/23 13:30	0.91	
		Groundwater	MSMW-103S	03/21/23 15:41		03/22/23 13:35	0.91	
		Groundwater	MSDMW-103S	03/21/23 15:41		03/22/23 13:40	0.92	
		Water	Equip Blank	03/21/23 15:55		03/22/23 13:45	0.91	
		Metals, Dissolved (As, Cr, Cu, Pb, Se, Zn)	E200.8	Groundwater		Field Blank	03/21/23 09:35	
Groundwater	MW-104S			03/21/23 10:05	03/24/23 10:15	03/24/23 11:58	3.08	
Groundwater	MW-112S			03/21/23 11:20	03/24/23 10:15	03/24/23 12:02	3.03	
Groundwater	MW-110S			03/21/23 12:23	03/24/23 10:15	03/24/23 12:16	3.00	
Groundwater	MW-114S			03/21/23 13:18	03/24/23 10:15	03/24/23 12:19	2.96	
Groundwater	MW-108S			03/21/23 14:03	03/24/23 10:15	03/24/23 12:25	2.93	
Groundwater	Dupe			03/21/23 00:01	03/24/23 10:15	03/24/23 12:29	3.52	
Groundwater	MW-117S			03/21/23 14:30	03/24/23 10:15	03/24/23 12:35	2.92	
Groundwater	MW-103S			03/21/23 15:41	03/24/23 10:15	03/24/23 12:37	2.87	
Groundwater	MSMW-103S			03/21/23 15:41	03/24/23 10:15	03/24/23 12:38	2.87	
Groundwater	MSDMW-103S			03/21/23 15:41	03/24/23 10:15	03/24/23 12:39	2.87	
Water	Equip Blank			03/21/23 15:55	03/24/23 10:15	03/24/23 11:47	2.83	
Chromium VI, Dissolved	SM3500-Cr			Groundwater	Field Blank	03/21/23 09:35		03/21/23 17:05
		Groundwater	MW-104S	03/21/23 10:05	03/21/23 17:10	0.30		
		Groundwater	MW-112S	03/21/23 11:20	03/21/23 17:15	0.25		
		Groundwater	MW-110S	03/21/23 12:23	03/21/23 17:20	0.21		

Parameter	Analytical Method	Matrix	Sample ID	Holding Time (days)				Approved Holding Time
				Collection Date/Time	Extraction Date/Time	Latest Analytical Date/Time	Actual Holding Time (days)	
		Groundwater	MW-114S	03/21/23 13:18		03/21/23 17:25	0.17	
		Groundwater	MW-108S	03/21/23 14:03		03/21/23 17:30	0.14	
		Groundwater	Dupe	03/21/23 00:01		03/21/23 17:35	0.73	
		Groundwater	MW-117S	03/21/23 14:30		03/22/23 13:50	0.97	
		Groundwater	MW-103S	03/21/23 15:41		03/22/23 13:55	0.93	
		Groundwater	MSMW-103S	03/21/23 15:41		03/22/23 14:00	0.93	
		Groundwater	MSDMW-103S	03/21/23 15:41		03/22/23 14:05	0.93	
		Water	Equip Blank	03/21/23 15:55		03/22/23 14:10	0.93	
PFAS	ASTM D7979-19M	Groundwater	Field Blank	03/21/23 09:35	03/27/23 16:00	03/29/23 02:05	6.27/7.69	14 Days to Extract
		Groundwater	MW-104S	03/21/23 10:05	03/27/23 16:00	03/29/23 02:24	6.25/7.68	
		Groundwater	MW-112S	03/21/23 11:20	03/27/23 16:00	03/29/23 02:44	6.19/7.64	28 Days to Analyze
		Groundwater	MW-110S	03/21/23 12:23	03/27/23 16:00	03/29/23 03:04	6.15/7.61	
		Groundwater	MW-114S	03/21/23 13:18	03/27/23 16:00	03/29/23 03:23	6.11/7.59	
		Groundwater	MW-108S	03/21/23 14:03	03/27/23 16:00	03/29/23 03:43	6.08/7.57	
		Groundwater	Dupe	03/21/23 00:01	03/27/23 16:00	03/29/23 04:02	6.67/8.17	
		Groundwater	MW-117S	03/21/23 14:30	03/30/23 13:00	03/30/23 18:59	8.94/9.19	
		Groundwater	MW-103S	03/21/23 15:41	03/30/23 13:00	03/30/23 19:19	8.89/9.15	
		Groundwater	MSMW-103S	03/21/23 15:41	03/30/23 13:00	03/30/23 19:38	8.89/9.16	
		Groundwater	MSDMW-103S	03/21/23 15:41	03/30/23 13:00	03/30/23 19:58	8.89/9.18	
		Water	Equip Blank	03/21/23 15:55	03/30/23 13:00	03/30/23 20:17	8.88/9.18	
		Water	Trip Blank	03/21/23 00:01	03/30/23 13:00	03/30/23 20:37	9.54/9.86	

Table 5
Field Sample Duplicate Results and Relative Percent Differences (RPD)
March 2023 Biannual Groundwater Sampling Event
RACER Flint West #12990, Flint, Michigan

Analyte	MW-114S (Groundwater)		
	03/21/2023 13:18	Dupe	RPD (%)
Arsenic, total	0.127	0.027	130
Chromium, total	0.000514 b	0.000496 b	4
Copper, total	0.00156 b	0.00100 b	44
Chromium VI, total	<0.004	<0.004	---
Lead, total	0.000213 b	0.000380 b	56
Selenium, total	<0.00209	<0.00209	---
Zinc, total	0.008	0.008	0
Arsenic, dissolved	0.018 f	0.015 f	18
Chromium, dissolved	0.000182 b	0.000139 bf	27
Chromium VI, dissolved	<0.004 c	<0.004 c	---
Copper, dissolved	0.000379 bf	0.00229 bf	143
Lead, dissolved	<0.000190 f	<0.000190 f	---
Selenium, dissolved	<0.00209 f	<0.00209 f	---
Zinc, dissolved	0.00482 bf	0.012 f	85
Acetone	<43 Y	<4.0	---
Acrylonitrile	<0.50 Y	<0.38	---
2-Butanone	<24 Y	<3.3	---
Benzene	<0.50 Y	<0.11	---
n-Butylbenzene	0.55 Y	<0.17	---
Bromobenzene	<0.50 Y	<0.15	---
Bromochloromethane	<0.50 Y	<0.35	---
Bromodichloromethane	<0.50 Y	<0.19	---
Bromoform	<0.50 Y	<0.35	---
Bromomethane	<0.50 Y	<0.18	---
sec-Butylbenzene	<0.25 Y	<0.16	---
tert-Butylbenzene	<0.50 Y	<0.14	---
Carbon disulfide	<0.50 Y	<0.13	---
Carbon tetrachloride	<0.50 Y	<0.19	---
Chlorobenzene	<0.50 Y	<0.16	---
Chloroethane	<1.0 JBY	<0.21	---
Chloroform	<0.50 Y	<0.15	---
Chloromethane	<0.50 Y	<0.20	---
1,1-Dichloroethane	1.30 JY	1	26
1,1-Dichloroethene	0.90 JY	1	11
1,2-Dibromo-3-chloropropane	<0.50 Y	<0.48	---
1,2-Dibromomethane	<0.50 Y	<0.12	---
1,2-Dichlorobenzene	<0.50 Y	<0.13	---
1,2-Dichloroethane	<0.50 Y	<0.17	---
1,2-Dichloropropane	<0.50 Y	<0.18	---
1,3-Dichlorobenzene	<0.50 Y	<0.20	---
1,4-Dichlorobenzene	<0.50 Y	<0.18	---
cis-1,2-Dichloroethene	59	70	17
cis-1,3-Dichloropropene	<0.50 Y	<0.17	---
Dibromochloromethane	<0.10 Y	<0.20	---
Dibromomethane	<0.50 Y	<0.45	---
Dichlorodifluoromethane	<0.10 Y	<0.57	---
Diethyl ether	<0.50 Y	<0.27	---
trans-1,2-Dichloroethene	0.55 JY	0.57 J	---
trans-1,3-Dichloropropene	<0.50 Y	<0.20	---

Table 5
Field Sample Duplicate Results and Relative Percent Differences (RPD)
March 2023 Biannual Groundwater Sampling Event
RACER Flint West #12990, Flint, Michigan

Analyte	MW-114S (Groundwater)		
	03/21/2023 13:18	Dupe	RPD (%)
trans-1,4-Dichloro-2-butene	<0.50 Y	<0.26	---
Ethylbenzene	<0.50 Y	<0.10	---
2-Hexanone	<0.50 Y	<0.19	---
Hexachloroethane	<0.50 Y	<0.35	---
p-Isopropyltoluene	<0.20 Y	<0.19	---
Isopropylbenzene	<0.15 Y	<0.12	---
2-Methylnaphthalene	1.60 JBY	<0.21	---
4-Methyl-2-pentanone	<0.50 Y	<0.35	---
tert-Methyl butyl ether	<0.50 Y	<0.25	---
Methyl iodide	<0.15 Y	<0.24	---
Methylene chloride	<0.50 Y	<0.16	---
Naphthalene	0.65 JBY	<0.18	---
n-Propylbenzene	<0.50 Y	<0.12	---
Styrene	<0.50 Y	<0.13	---
1,1,1,2-Tetrachloroethane	<0.50 Y	<0.22	---
1,1,1-Trichloroethane	1.20 JY	0.93	25
1,1,2,2-Tetrachloroethane	<0.25 Y	<0.27	---
1,1,2-Trichloroethane	<0.25 Y	<0.34	---
1,2,3-Trichlorobenzene	0.50 JBY	<0.25	---
1,2,3-Trichloropropane	<0.50 Y	<0.54	---
1,2,3-Trimethylbenzene	<0.20 Y	<0.14	---
1,2,4-Trichlorobenzene	<0.50 Y	<0.24	---
1,3,5-Trimethylbenzene	<0.50 Y	<0.18	---
Tetrachloroethene	<1.0 Y	<0.13	---
Tetrahydrofuran	15.5 JBY	<1.2	---
Toluene	<0.50 Y	<0.17	---
Trichloroethene	173 Y	199	14
Trichlorofluoromethane	<2.0 Y	<0.28	---
Vinyl chloride	3.95 JY	6	41
o-Xylene	<5 Y	<0.16	---
p,m-Xylene	<5 Y	<0.42	---

Table 5
Field Sample Duplicate Results and Relative Percent Differences (RPD)
March 2023 Biannual Groundwater Sampling Event
RACER Flint West #12990, Flint, Michigan

Analyte	MW-114S (Groundwater)		
	03/21/2023 13:18	Dupe	RPD (%)
PFBA	<1.6	<1.6	---
PFPeA	3.4 J	3.5 J	---
4:2 FTSA	<0.81	<0.78	---
PFHxA	2.0	2.0	0
PFBS	2.2	2.0	10
PFHpA	1.3 J	1.6 J	---
PFPeS	<0.81	<0.78	---
6:2 FTSA	<1.2	<1.2	---
PFOA	2.3	2.4	4
PFHxS	1.5 J	1.3	---
PFHxS-LN	1.5 J	1.3	---
PFHxS-BR	<1.2	<1.2	---
PFNA	0.95 J	0.99 J	---
8:2 FTSA	<1.0	<0.98	---
PFHpS	<1.2	<1.2	---
PFDA	<0.61	<0.59	---
N-MeFOSAA	<1.4	<1.4	---
EtFOSAA	<2.0	<2.0	---
PFOS	17	15	13
PFOS-LN	9.0	8.1	11
PFOS-BR	7.8	7.5	4
PFUnDA	<1.0	<0.98	---
PFNS	<1.0	<0.98	---
PFDoDA	<2.0	<0.59	---
PFDS	<2.0	<1.2	---
PFTTrDA	<2.0	<0.98	---
FOSA	<2.0	<0.78	---
PFTeDA	<4.0	<0.39	---
11Cl-PF3OUdS	<2.0	<0.78	---
9Cl-PF3ONS	<2.0	<0.78	---
ADONA	<2.0	<0.98	---

NOTE: Since this validation report is included as an Appendix to the March 2023 Data Report, Copies of the laboratory reports are included in the MRCH 2023 Data Report as Appendix B, Attachment 3 and are not duplicated here.