October 26, 2018

Mr. Tom Hutchings
City of Flint Water Pollution
Water Pollution Control Facilities
G4652 Beecher Rd.
Flint, MI, 48532

RE: ***Discharge Permit Submittal– July 2018 through September 2018***
Permit No.: 6-08-04-04-GML1

FILE: 15388/68545/Docs

Dear **Mr. Hutchings:**

In accordance with requirements of the above referenced discharge permit, we are providing you with the following discharge information for the period July 1, 2018 to September 30, 2018 for the Coldwater Road Landfill facility, located at 6220 Horton Avenue, Flint, Michigan. In addition, we have reported the performance of the per- and polyfluoroalkyl substances (PFAS) pretreatment system in this letter, and will continue to do so as long as the pretreatment system is in operation.

- Periodic Report on Continued Compliance, certification
- Periodic Report on Continued Compliance (Table 1)
- Daily Discharge Summary Table (Table 2)
- The PFAS pretreatment system was installed in August 2018 in accordance with our Certified Pretreatment Plan submitted to the City of Flint on June 27, 2018 as approved by the City of Flint in a letter dated July 2, 2018 concerning Changes to the Pretreatment System (Permit Number 6-08-04-04-GML1).
- The City of Flint conducted their annual Discharge Monitoring sampling and inspection on August 29, 2018 and were also able to inspect the PFAS pretreatment system that was fully operational in accordance with the 60-day time table for installation of the system specified in the July 2, 2018 letter.
- The first discharge through the PFAS pretreatment system occurred on October 13 and 14, 2018, and a discussion on the performance of the system is provided below.
- PFAS Sampling Results Table (Table 3)
- Analytical Reports provided by Merit Laboratories, Inc. for samples from the on-Site, above ground collection tank collected on August 29, 2018.
- Analytical Reports provided by Eurofins Lancaster Laboratories Environmental for the sample from the on-Site, PFAS pretreatment system after passing City of Flint water through the system on August 29, 2018 (*i.e.*, system blank sample).

- Analytical Reports provided by Merit Laboratories, Inc. for samples from the on-Site, PFAS pretreatment system collected on September 13 and 14, 2018 during the discharge of the liquids from the on-Site, above ground collection tank through the system.
- Copy of Chain-of-Custody forms.

The laboratory analytical results indicate concentrations were below the Sewer Use Permit limits for the parameters analyzed for the water discharged to the POTW during the discharge period.

In addition, the PFAS analytical results indicate that the PFAS pretreatment system reduced PFAS concentrations to non-detectable concentrations, which are below the current MDEQ Part 4, Water Quality Standards, Rule 57 Water Quality Values. Therefore, the PFAS pretreatment system is operating as designed. We would also like to point out that the system blank collected from the PFAS pretreatment system indicated non-detectable concentrations indicating that the system did not contribute PFAS to the effluent. In addition, the concentrations in the influent sample (03-PRCC-18-Inf) contained perfluorooctane sulfonic acid (PFOS) at 9,410 ng/l, which was more than double the concentration of the previous tank sample results from February 2017.

The breakthrough analysis samples collected from the primary granular activated carbon (GAC) drum indicate some breakthrough after just a short period of time, which increased over time, except between the 40th bed volume (approximately 1820 gallons) and the end of the discharge at 47.4 bed volumes (2,131 gallons), which is due to stopping the discharge on August 13, 2018 and resuming the discharge on August 14, 2018 allowing the GAC to better adsorb the PFAS already discharged. However, the breakthrough analysis on the mid-fluent or after the secondary GAC drum and the effluent sample (after the tertiary GAC drum) did not indicate any such breakthrough.

Given that the primary GAC drum was able to remove concentrations of PFOS of 9,410 ng/l with a high of only 160 ng/l breakthrough (a 98 percent removal efficiency), and appeared to have even more absorptive capacity after setting overnight we would like to modify our original proposal of replacing the primary GAC drum after breakthrough has occurred and instead do the following:

1. Leave the primary GAC drum in place as the first GAC drum to allow it to adsorb as much of the incoming PFAS as possible so that the current secondary drum does not have to adsorb the bulk of the next quarterly discharge of PFAS
2. Add the new drum of GAC (the fourth drum) already on-Site to the end of the PFAS pretreatment system already in place to form a four-drum system instead of a three-drum system
3. Dispose of the primary GAC drum after each second discharge through the system
4. After the removal of the primary GAC drum, advance each of the other drums in the PFAS pretreatment system, such that the secondary drum becomes the new primary drum, the tertiary drum becomes the new secondary drum and the quaternary (fourth) drum becomes the new tertiary drum, and a new quaternary drum will be added to the system prior to the next discharge.

This new process will hopefully reduce operation and maintenance (O&M) costs by allowing the primary drum to be utilized for two discharges instead of replacing it each quarter. Each quarter we will monitoring the influent concentrations into the system, and the effluent after the quaternary drum instead of the tertiary drum, and will also collect a sample after the primary and secondary drums to monitor breakthrough.

Lastly, from time to time we would like to get the quarterly discharges to line up more closely to the calendar quarter, by doing a discharge at the beginning of the first quarter 2019. The next discharge must be completed by December 13, 2018 in accordance with the RCRA 90-day rule. Due to the minimal volume that would be collected within the three weeks between the discharges, we would like to do this discharge without sampling, and would like to be able to do similar discharges approximately annually to keep the RCRA 90-day schedule

generally aligned with the calendar quarters. We have been following this procedure for years before adding the PFAS pretreatment system, and would simply like to continue to do this without the additional PFAS sampling we will do during the more formal quarterly discharges.

Please call me at 313-333-0211 if you have any questions.

Very truly yours,

O'BRIEN & GERE ENGINEERS, INC.

Clifford S. Yantz
Senior Hydrogeologist

cc: Mr. Kevin Forbes – Beecher Metropolitan District, Flint, MI
Mr. Grant Trigger – RACER Trust
Mr. David Favero – RACER Trust
Mr. Kevin Schneider – O'Brien & Gere

City of Flint
Industrial Pretreatment Program

Periodic Report on Continued Compliance

Company Name: RACER Trust, Coldwater Road
Street Address: 6220 Horton Avenue, Flint, Michigan
Permit Number: 6-08-04-04-GML1
Outfall Number: 001

Reporting Period: July 1, 2018 through September 30, 2018

Average Volume of Daily Discharge (during reporting period): 1,066 gallons
(Two One Day Events)

Complete the following:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Name of Authorized Representative: Clifford Yantz

Title of Authorized Representative: Senior Hydrogeologist, O'Brien & Gere Engineers, Inc.
As agent for the RACER Trust

Signature of Authorized Representative: Clifford Scott Yantz as agent for RACER Trust

Date Signed by Authorized Representative: Oct. 26, 2018

If required to implement a Toxic Organics Management Plan (TOMP), complete the following:

"Based on my inquiry of the person or persons directly responsible for managing compliance with the pretreatment standard for total toxic organics (TTO), I certify that, to the best of my knowledge and belief, no dumping of concentrated toxic organics into the wastewaters has occurred since filing of the last Periodic Report on Continued Compliance. I further certify that, this facility is implementing the toxic organic management plan submitted to the control authority."

Name of Authorized Representative: N/A

Title of Authorized Representative: N/A

Signature of Authorized Representative: N/A

Date Signed by Authorized Representative: N/A

Table 1
Periodic Report on Continued Compliance
City of Flint Sewer User Self-Monitoring Report
Third Quarter - 2018

RACER Trust - Coldwater Road Landfill Facility
Permit Number 6-08-04-04-GML1
6220 Horton Avenue

Analytical Parameter	Ammonia-N	BOD5	HEM	pH @ 25°C	Phosphorus	TSS
Units	**mg/L**	**mg/L**	**mg/L**	**SU**	**mg/L**	**mg/L**
Sampling Frequency	**Per Batch**	**Per Batch**	**Per Batch**	**Per Batch**	**Per Batch**	**Per Batch**
Sampling Procedure	**Grab sample**	**Grab sample**	**Grab sample**	**Grab sample**	**Grab sample**	**Grab sample**
Daily Maximum Limit	**110**	**1196**	**100**	NA	**14**	**570**
Maximum Limit	NA	NA	NA	**10.5**	NA	NA
Minimum Limit	NA	NA	NA	**6**	NA	NA
Test Result	**2.7**	**9.1**	**<2**	**7.7**	**0.08**	**70**
Test Method	4500-NH3 D	10360	1664A	4500-H+ B	4500-PE	2540 D
Test Date	8/30/2018	9/4/2018	9/5/2018	8/29/2018	8/30/2018	8/31/2018
Sample Date	8/29/2018	8/29/2018	8/29/2018	8/29/2018	8/29/2018	8/29/2018
Sample Type	wastewater	wastewater	wastewater	wastewater	wastewater	wastewater
Test Result						
Test Method						
Test Date						
Sample Date						
Sample Type						
Test Result						
Test Method						
Test Date						
Sample Date						
Sample Type						
Average Daily Conc.						
No. of Samples						
Number of Limit Exceedances						

Table 1
Periodic Report on Continued Compliance
City of Flint Sewer User Self-Monitoring Report
Third Quarter - 2018

RACER Trust - Coldwater Road Landfill Facility Permit Number 6-08-04-04-GML1 6220 Horton Avenue							
Analytical Parameter	**Arsenic**	**Chromium**	**Copper**	**Mercury**	**Nickel**	**Zinc**	**Cyanide, available**
Units	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**
Sampling Frequency	**Per Batch**	**Per Batch**	**Per Batch**	**Per Batch**	**Per Batch**	**Per Batch**	**Per Batch**
Sampling Procedure	**Grab sample**	**Grab sample**	**Grab sample**	**Grab sample**	**Grab sample**	**Grab sample**	**Grab sample**
Daily Maximum Limit	**0.051**	**1.273**	**1.797**	**0.000012**	**0.543**	**2.626**	**0.165**
Maximum Limit	NA	NA	NA	NA	NA	NA	NA
Minimum Limit	NA	NA	NA	NA	NA	NA	NA
Test Result	**0.009**	**0.060**	**0.532**	**0.0000**	**0.139**	**0.019**	**0.000**
Test Method	200.8	200.8	200.8	245.1	200.8	200.8	1677
Test Date	9/7/2018	9/7/2018	9/7/2018	9/5/2018	9/7/2018	9/7/2018	9/5/2018
Sample Date	8/29/2018	8/29/2018	8/29/2018	8/29/2018	8/29/2018	8/29/2018	8/29/2018
Sample Type	wastewater	wastewater	wastewater	wastewater	wastewater	wastewater	wastewater
Test Result							
Test Method							
Test Date							
Sample Date							
Sample Type							
Test Result							
Test Method							
Test Date							
Sample Date							
Sample Type							
Average Daily Conc.							
No. of Samples							
Number of Limit Exceedances							

Table 2
Coldwater Road Landfill
Daily Discharge Summary Table
Third Quarter - 2018
6-08-04-04-GML1

Date	Beginning Flow Meter Reading	End Flow Meter Reading	Gallons Discharged	Begin Time of Discharge	End Time of Discharge	Average Flow (gal/min)	Temperature at Discharge (C)	(F)	pH
9/13/2018	557,637	559,457	**1,820**	9:35	18:40	3.3	24.0	75.2	8.20
9/14/2018	559,457	559,768	**311**	8:20	10:45	2.1	24.0	75.2	8.20

Total Discharge Volume (2 Days): **2,131**
Average Discharge Volume (2 Days): **1,066**

NOTES :

TABLE 3
RACER Trust - Coldwater Road Landfill
Per- and Polyfluoroalkyl Substances (PFAS) Sampling Results

Coldwater Road Landfill - PFAS Pretreatment System Samples

Perfluorinated Compound	Well/Sample ID:	03-EFF-18-01 (System Blank)	03-PRCC-18-Inf (Influent Sample)	03-PRCC-18-Prim-10 (Primary GAC Drum Sample after 10 Bed Volumes [450 gallons])	03-PRCC-18-Prim-20 (Primary GAC Drum Sample after 20 Bed Volumes)	03-PRCC-18-Prim-20 (Replicate 01) (Laboratory Replicate)	03-PRCC-18-Prim-40 (Primary GAC Drum Sample after 40 Bed Volumes)	03-PRCC-18-Mid-40 (Secondary GAC Drum Sample after 40 Bed Volumes)	03-PRCC-18-Prim-47.4 (Primary GAC Drum Sample after 47.4 Bed Volumes)	03-PRCC-18-Mid-47.4 (Secondary GAC Drum Sample after 47.4 Bed Volumes)	03-PRCC-18-Eff-47.4 (Effluent Sample after Tertiary GAC Drum Sample after 47.4 Bed Volumes)	FB-08 (Field Blank)
	Sample Date:	*8/29/2018*	*9/13/2018*	*9/13/2018*	*9/13/2018*	*9/13/2018*	*9/13/2018*	*9/13/2018*	*9/14/2018*	*9/14/2018*	*9/14/2018*	*9/13/2018*
Perfluorobutanoic Acid (PFBA)		<1.7	<320	<20	<20	<20	<20	<20	<20	<20	<20	<20
Perfluoropentanoic Acid (PFPeA)		<1.7	<160	<10	<10	<10	<10	<10	<10	<10	<10	<10
4:2 Fluorotelomer Sulfonic Acid (4:2 FTSA)		<0.84	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Perfluorohexanoic Acid (PFHxA)		<0.34	<200	<10	<10	<10	**40**	<10	<10	<10	<10	<10
Perfluorobutane Sulfonic Acid (PFBS)		<0.25	**130**	<10	<10	<10	<10	<10	<10	<10	<10	<10
Perfluoroheptanoic Acid (PFHpA)		<0.34	**40**	<10	<10	<10	<10	<10	<10	<10	<10	<10
Perfluoropentane Sulfonic Acid (PFPeS)		<0.34	**230**	<10	<10	<10	<10	<10	<10	<10	<10	<10
6:2 Fluorotelomer Sulfonic Acid (6:2 FTSA)		<0.84	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Perfluorooctanoic Acid (**PFOA**)		<0.25	**60**	<10	<10	<10	<10	<10	<10	<10	<10	<10
Perfluorohexane Sulfonic Acid (PFHxS)		<0.34	**580**	<10	<10	<10	**10**	<10	<10	<10	<10	<10
Perfluorohexane Sulfonic Acid - LN (PFHxS-LN)		<10	**480**	<10	<10	<10	<10	<10	<10	<10	<10	<10
Perfluorohexane Sulfonic Acid - BR (PFHxS-BR)		<10	**70**	<10	<10	<10	<10	<10	<10	<10	<10	<10
Perfluorononanoic Acid (PFNA)		<0.34	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
8:2 Fluorotelomer Sulfonic Acid (8:2 FTSA)		<1.7	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Perfluoroheptane Sulfonic Acid (PFHpS)		<0.34	120	<10	<10	<10	<10	<10	<10	<10	<10	<10
Perfluorodecanoic Acid (PFDA)		<0.76	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
N-methyl Perfluorooctanesulfonamidoacetic Acid (N-MeFO		<0.84	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA)		<0.84	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Perfluorooctane Sulfonic Acid (**PFOS**)		<0.34	**9,410**	**20**	**80**	**70**	**160**	<10	**20**	<10	<10	<10
Perfluorooctane Sulfonic Acid (**PFOS**-LN)		--	**6,210**	<10	**40**	**40**	**70**	<10	<10	<10	<10	<10
Perfluorooctane Sulfonic Acid (**PFOS**-BR)		--	**3,490**	<10	**40**	**30**	**90**	<10	<10	<10	<10	<10
Perfluoroundecanoic Acid (PFUnDA)		<0.34	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Perfluorononane Sulfonic Acid (PFNS)		<0.50	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Perfluorododecanoic Acid (PFDoDA)		<0.42	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Perfluorodecane Sulfonic Acid (PFDS)		<0.50	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Perfluorotridecanoic Acid (PFTrDA)		<0.34	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Perfluorooctane Sulfonamide (FOSA)		<0.42	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Perfluorotetradecanoic Acid (PFTeDA)		<0.25	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10

Notes

1) Concentrations in ng/L.
2) < = Not detected at specified reporting limit.
3) -- = Not analyzed.
4) Concentrations above the MDEQ Part 4, Water Quality Standards, Rule 57 Water Quality Value for PFOS of 11 ng/L for drinking water are highlighted in yellow.
5) Number after Prim (Primary GAC drum), Mid (Secondary GAC drum), and Eff (Effluent sample after tertiary GAC drum) samples equals number of GAC Bed volumes discharged through the pretreatment system at the time of sample collection. One bed volume equals 45 gallons.

Analytical Laboratory Report

Report ID: S93715.01(01)+QC01
Generated on 09/10/2018

Report to

Attention: Clifford Yantz
O'Brien & Gere Engineers, Inc.
2260 E Saginaw St
East Lansing, MI 48823

Phone: 248-477-5701 FAX:
Email: Clifford.Yantz@obg.com

Report produced by

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

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

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

Report Summary

Lab Sample ID(s): S93715.01
Project: RACER Coldwater Rd LF - PRCC
Collected Date: 08/29/2018
Submitted Date/Time: 08/29/2018 13:05
Sampled by: Kevin Schneider
P.O. #: 11800350

Table of Contents

Maya Murshak
Technical Director

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.
Methods may be modified for improved performance.
Results reported on a dry weight basis where applicable.
'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).
40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.
QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.
Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.
Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.

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

Report Narrative

There is no additional narrative for this analytical report

Laboratory Certifications

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

Qualifier Descriptions

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

Glossary of Abbreviations

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

Method Summary

Method	Version
E1664A	EPA Method 1664 Revision A February 1999
E200.8	EPA Method 200.8 Revision 5.4
E245.1	EPA Method 245.1 Revision 3.0
HACH 10360	HACH 10360
OIA-1677	EPA Method OIA-1677-09
SM2540D	Standard Method 2540 D 2011
SM2550B	Standard Method 2550 B 2011
SM4500-H+ B	Standard Method 4500 H + B 2011
SM4500-NH3 D	Standard Method 4500 NH3 D 2011
SM4500-PE	Standard Method 4500 P E 2011
SW3015A	SW 846 Method 3015A Revision 1 February 2007

Sample Summary (1 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S93715.01	03-PRCC-18	Wastewater	08/29/18 10:40

Analytical Laboratory Report

Lab Sample ID: S93715.01
Sample Tag: 03-PRCC-18
Collected Date/Time: 08/29/2018 10:40
Matrix: Wastewater
COC Reference: 106859

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125ml Plastic	HNO3	Yes	4.2	IR
1	250ml Plastic	H2SO4	Yes	4.2	IR
1	125ml Amber	PbCO3/NaOH	Yes	4.2	IR
1	1L Plastic	None	Yes	4.2	IR
1	32oz Glass	HCL	Yes	4.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Mercury Digestion	Completed	E245.1	09/05/18 11:00	JRH	
TBOD5 - Set*	Completed	HACH 10360	09/05/18 11:00	ASB	
Metal Digestion	Completed	SW3015A	09/05/18 11:00	CCM	

Inorganics

Method: E1664A, Run Date: 09/05/18 15:20, Analyst: PLB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Oil & Grease n-Hexane Extract.	Not detected	2	1.4	mg/L	1		

Method: HACH 10360, Run Date: 09/04/18 13:05, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
TBOD5*	9.1	3		mg/L	3		

Method: SM2540D, Run Date: 08/31/18 15:30, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Suspended Solids	70	3		mg/L	1		

Method: SM2550B, Run Date: 08/29/18 10:40, Analyst: KS

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Field Temperature*	77	1		oF	1		

Method: SM4500-H+ B, Run Date: 08/29/18 10:40, Analyst: KS

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Field pH*	7.7	0.1		STD Units	1		

Method: SM4500-NH3 D, Run Date: 08/30/18 15:49, Analyst: MJC

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Ammonia-N (Undistilled)	2.7	0.1	0.03	mg/L	5	7664-41-7	

Method: SM4500-PE, Run Date: 08/30/18 21:54, Analyst: MJC

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Phosphorus	0.08	0.01	0.004	mg/L	1	7723-14-0	

Metals

Method: E200.8, Run Date: 09/07/18 15:02, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	0.009	0.002		mg/L	5	7440-38-2	
Chromium	0.060	0.005		mg/L	5	7440-47-3	

Lab Sample ID: S93715.01 (continued)
Sample Tag: 03-PRCC-18

Method: E200.8, Run Date: 09/07/18 15:02, Analyst: CCM (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Copper	0.532	0.005		mg/L	5	7440-50-8	
Nickel	0.139	0.005		mg/L	5	7440-02-0	
Zinc	0.019	0.005		mg/L	5	7440-66-6	

Method: E245.1, Run Date: 09/05/18 13:42, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury	Not detected	0.0002		mg/L	1	7439-97-6	

Other / Misc.

Method: OIA-1677, Run Date: 09/05/18 14:50, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Available Cyanide	Not detected	0.002	0.0007	mg/L	1	57-12-5	

Quality Control Report

Report ID: S93715.01(01)+QC01
Generated on 09/07/2018

Report to

Attention: Clifford Yantz
O'Brien & Gere Engineers, Inc.
2260 E Saginaw St
East Lansing, MI 48823

Phone: 248-477-5701 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): S93715.01
Project: RACER Coldwater Rd LF - PRCC
Submitted Date/Time: 08/29/2018 13:05
Sampled by: Kevin Schneider
P.O. #: 11800350

QC Report Sections

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: S93715.01
Sample Tag: 03-PRCC-18
Collected Date/Time: 08/29/2018 10:40
Matrix: Wastewater
COC Reference: 106859

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Inorganics						
Ammonia-N (Undistilled)	SM4500-NH3 D	08/30/18 15:49	AMN180830QC	AMN180830QC	No	BLK/LCS/MS/DUP
Oil & Grease n-Hexane Extract.	E1664A	09/05/18 15:20	OGHEX180905W01	OGHEX180905W01	No	BLK/LCS
Total Phosphorus	SM4500-PE	08/30/18 21:54	PHS180830QC	PHS180830QC	No	BLK/LCS/MS/DUP
Total Suspended Solids	SM2540D	08/31/18 15:30	TSS180831	TSS180831	No	BLK/LCS/DUP
Metals						
Arsenic	E200.8	09/07/18 15:02	MT4-18-0907B	MTD-090718-7	No	LCS/BLK/MS/MSD
Chromium	E200.8	09/07/18 15:02	MT4-18-0907B	MTD-090718-7	No	LCS/BLK/MS/MSD
Copper	E200.8	09/07/18 15:02	MT4-18-0907B	MTD-090718-7	No	LCS/BLK/MS/MSD
Mercury	E245.1	09/05/18 13:42	HG2-18-0905A	HGD-090518-1	No	LCS/BLK/MS/DUP
Nickel	E200.8	09/07/18 15:02	MT4-18-0907B	MTD-090718-7	No	LCS/BLK/MS/MSD
Zinc	E200.8	09/07/18 15:02	MT4-18-0907B	MTD-090718-7	No	LCS/BLK/MS/MSD
Other / Misc.						
Available Cyanide	OIA-1677	09/05/18 14:50	ACN180905-W1	ACN180905-W1	No	BLK/LCS/MS/MSD/DU

QC Report - Prep Batch Summary

Inorganics, Prep Batch ID: AMN180830QC

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

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S93715.01	Ammonia-N (Undistilled)	SM4500-NH3 D	08/30/18 15:49	AMN180830QC

Inorganics, Prep Batch ID: OGHEX180905W01

Surrogates: No, QC Types: BLK/LCS

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S93715.01	Oil & Grease n-Hexane Extract.	E1664A	09/05/18 15:20	OGHEX180905W01

Inorganics, Prep Batch ID: PHS180830QC

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

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S93715.01	Total Phosphorus	SM4500-PE	08/30/18 21:54	PHS180830QC

Inorganics, Prep Batch ID: TSS180831

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

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S93715.01	Total Suspended Solids	SM2540D	08/31/18 15:30	TSS180831

Metals, Prep Batch ID: HGD-090518-1

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

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S93715.01	Mercury	E245.1	09/05/18 13:42	HG2-18-0905A

Metals, Prep Batch ID: MTD-090718-7

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

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S93715.01	Arsenic	E200.8	09/07/18 15:02	MT4-18-0907B
S93715.01	Chromium	E200.8	09/07/18 15:02	MT4-18-0907B
S93715.01	Copper	E200.8	09/07/18 15:02	MT4-18-0907B
S93715.01	Nickel	E200.8	09/07/18 15:02	MT4-18-0907B
S93715.01	Zinc	E200.8	09/07/18 15:02	MT4-18-0907B

Other / Misc., Prep Batch ID: ACN180905-W1

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

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S93715.01	Available Cyanide	OIA-1677	09/05/18 14:50	ACN180905-W1

Inorganics, Prep Batch ID: AMN180830QC

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

Blank (BLK)

Lab Sample ID: AMN180830QC.LRB1

Run in Batch: AMN180830QC, Run Date: 08/30/2018 11:38, Prep Date: 08/30/2018, Matrix: Liquid, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Ammonia-N (Undistilled)		ND	0.02	mg/L

Laboratory Control Sample (LCS)

Lab Sample ID: AMN180830QC.LCS1

Run in Batch: AMN180830QC, Run Date: 08/30/2018 12:51, Prep Date: 08/30/2018, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Ammonia-N (Undistilled)		99	90	110

Matrix Spike (MS)

Lab Sample ID: AMN180830QC.MS1, Parent Sample ID: S93717.01

Run in Batch: AMN180830QC, Run Date: 08/30/2018 16:13, Prep Date: 08/30/2018, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Ammonia-N (Undistilled)		105	80	120

Duplicate (DUP)

Lab Sample ID: AMN180830QC.DP1, Parent Sample ID: S93593.01

Run in Batch: AMN180830QC, Run Date: 08/30/2018 13:24, Prep Date: 08/30/2018, Matrix: Liquid, Dilution: 1

Analyte	Flags	RPD	RPD CL
Ammonia-N (Undistilled)		0.5	20

Inorganics, Prep Batch ID: OGHEX180905W01

Surrogates: No, QC Types: BLK/LCS

Blank (BLK)

Lab Sample ID: OGHEX180905W01.LRB1

Run in Batch: OGHEX180905W01, Run Date: 09/05/2018 15:20, Prep Date: 09/05/2018, Matrix: Liquid, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Oil & Grease n-Hexane Extract.		ND	1	mg/L

Laboratory Control Sample (LCS)

Lab Sample ID: OGHEX180905W01.LCS1

Run in Batch: OGHEX180905W01, Run Date: 09/05/2018 15:20, Prep Date: 09/05/2018, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Oil & Grease n-Hexane Extract.		96	78	114

Laboratory Control Sample (LCS)

Lab Sample ID: OGHEX180905W01.LCS2

Run in Batch: OGHEX180905W01, Run Date: 09/05/2018 15:20, Prep Date: 09/05/2018, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Oil & Grease n-Hexane Extract.		98	78	114

Inorganics, Prep Batch ID: PHS180830QC

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

Blank (BLK)

Lab Sample ID: PHS180830QC.LRB1

Run in Batch: PHS180830QC, Run Date: 08/30/2018 20:05, Prep Date: 08/30/2018, Matrix: Liquid, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Total Phosphorus		ND	0.01	mg/L

Blank (BLK)

Lab Sample ID: PHS180830QC.LRB2

Run in Batch: PHS180830QC, Run Date: 08/30/2018 20:11, Prep Date: 08/30/2018, Matrix: Liquid, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Total Phosphorus		ND	0.01	mg/L

Laboratory Control Sample (LCS)

Lab Sample ID: PHS180830QC.LCS1

Run in Batch: PHS180830QC, Run Date: 08/30/2018 20:20, Prep Date: 08/30/2018, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Total Phosphorus		95	90	110

Matrix Spike (MS)

Lab Sample ID: PHS180830QC.MS1, Parent Sample ID: S93684.01

Run in Batch: PHS180830QC, Run Date: 08/30/2018 22:25, Prep Date: 08/30/2018, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Total Phosphorus		97	80	120

Duplicate (DUP)

Lab Sample ID: PHS180830QC.DP1, Parent Sample ID: S93662.01

Run in Batch: PHS180830QC, Run Date: 08/30/2018 22:22, Prep Date: 08/30/2018, Matrix: Liquid, Dilution: 1

Analyte	Flags	RPD	RPD CL
Total Phosphorus		6.0	20

Inorganics, Prep Batch ID: TSS180831

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

Blank (BLK)

Lab Sample ID: TSS180831.LRB1

Run in Batch: TSS180831, Run Date: 08/31/2018 15:30, Prep Date: 08/31/2018, Matrix: Liquid, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Total Suspended Solids		ND	3	mg/L

Laboratory Control Sample (LCS)

Lab Sample ID: TSS180831.LCS1

Run in Batch: TSS180831, Run Date: 08/31/2018 15:30, Prep Date: 08/31/2018, Matrix: Liquid, Dilution: 2

Analyte	Flags	% Rec	LCL	UCL
Total Suspended Solids		106.2	64.6	125

Duplicate (DUP)

Lab Sample ID: TSS180831.DP1, Parent Sample ID: S93765.01

Run in Batch: TSS180831, Run Date: 08/31/2018 15:30, Prep Date: 08/31/2018, Matrix: Liquid, Dilution: 2

Analyte	Flags	RPD	RPD CL
Total Suspended Solids		1.9	5

Metals, Prep Batch ID: HGD-090518-1

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

Laboratory Control Sample (LCS)

Lab Sample ID: HG2-18-0905A.016.LCS

Run in Batch: HG2-18-0905A, Run Date: 09/05/2018 13:25, Prep Date: 09/05/2018, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Mercury		96	85	115

Blank (BLK)

Lab Sample ID: HG2-18-0905A.017.LRB

Run in Batch: HG2-18-0905A, Run Date: 09/05/2018 13:27, Prep Date: 09/05/2018, Matrix: Liquid, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Mercury		ND	0.03	ug/L

Matrix Spike (MS)

Lab Sample ID: HG2-18-0905A.029.MS, Parent Sample ID: S93708.01

Run in Batch: HG2-18-0905A, Run Date: 09/05/2018 13:49, Prep Date: 09/05/2018, Matrix: Liquid, Dilution: 2

Analyte	Flags	% Rec	LCL	UCL
Mercury		103	75	125

Duplicate (DUP)

Lab Sample ID: HG2-18-0905A.028.DP, Parent Sample ID: S93708.01

Run in Batch: HG2-18-0905A, Run Date: 09/05/2018 13:47, Prep Date: 09/05/2018, Matrix: Liquid, Dilution: 2

Analyte	Flags	RPD	RPD CL
Mercury		0	20

Metals, Prep Batch ID: MTD-090718-7

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

Laboratory Control Sample (LCS)

Lab Sample ID: MT4-18-0907B.021.LCS

Run in Batch: MT4-18-0907B, Run Date: 09/07/2018 14:56, Prep Date: 09/07/2018, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Arsenic		101	85	115
Chromium		101	85	115
Copper		100	85	115
Nickel		101	85	115
Zinc		100	85	115

Blank (BLK)

Lab Sample ID: MT4-18-0907B.023.LRB

Run in Batch: MT4-18-0907B, Run Date: 09/07/2018 15:00, Prep Date: 09/07/2018, 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
Nickel		ND	0.001	mg/L
Zinc		ND	0.001	mg/L

Matrix Spike (MS)

Lab Sample ID: MT4-18-0907B.044.MS, Parent Sample ID: S93770.01

Run in Batch: MT4-18-0907B, Run Date: 09/07/2018 15:26, Prep Date: 09/07/2018, Matrix: Liquid, Dilution: 5

Analyte	Flags	% Rec	LCL	UCL
Arsenic		108	75	125
Chromium		106	75	125
Copper		102	75	125
Nickel		104	75	125
Zinc		106	75	125

Matrix Spike (MS)

Lab Sample ID: MT4-18-0907B.070.MS, Parent Sample ID: S93996.10

Run in Batch: MT4-18-0907B, Run Date: 09/07/2018 15:54, Prep Date: 09/07/2018, Matrix: Liquid, Dilution: 5

Analyte	Flags	% Rec	LCL	UCL
Arsenic		110	75	125
Chromium		108	75	125
Copper		102	75	125
Nickel		103	75	125
Zinc		100	75	125

Matrix Spike Duplicate (MSD)

Lab Sample ID: MT4-18-0907B.045.MSD, Parent Sample ID: MT4-18-0907B.044.MS

Run in Batch: MT4-18-0907B, Run Date: 09/07/2018 15:27, Prep Date: 09/07/2018, Matrix: Liquid, Dilution: 5

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Arsenic		108	75	125	1	20
Chromium		107	75	125	0	20
Copper		102	75	125	0	20
Nickel		106	75	125	2	20
Zinc		105	75	125	0	20

Metals, Prep Batch ID: MTD-090718-7 (continued)

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

Matrix Spike Duplicate (MSD)

Lab Sample ID: MT4-18-0907B.071.MSD, Parent Sample ID: MT4-18-0907B.070.MS

Run in Batch: MT4-18-0907B, Run Date: 09/07/2018 15:54, Prep Date: 09/07/2018, Matrix: Liquid, Dilution: 5

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Arsenic		108	75	125	3	20
Chromium		105	75	125	3	20
Copper		99	75	125	3	20
Nickel		100	75	125	3	20
Zinc		98	75	125	1	20

Other / Misc., Prep Batch ID: ACN180905-W1

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

Blank (BLK)

Lab Sample ID: ACN180905-W1.LRB1

Run in Batch: ACN180905-W1, Run Date: 09/05/2018 14:42, Prep Date: 09/05/2018, Matrix: Liquid, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Available Cyanide		ND	0.002	mg/L

Blank (BLK)

Lab Sample ID: ACN180905-W1.LRB2

Run in Batch: ACN180905-W1, Run Date: 09/05/2018 14:58, Prep Date: 09/05/2018, Matrix: Liquid, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Available Cyanide		ND	0.002	mg/L

Laboratory Control Sample (LCS)

Lab Sample ID: ACN180905-W1.LCS1

Run in Batch: ACN180905-W1, Run Date: 09/05/2018 14:46, Prep Date: 09/05/2018, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Available Cyanide		91	88	109

Matrix Spike (MS)

Lab Sample ID: ACN180905-W1.MS1, Parent Sample ID: S93715.01

Run in Batch: ACN180905-W1, Run Date: 09/05/2018 14:54, Prep Date: 09/05/2018, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Available Cyanide		90	82	130

Matrix Spike Duplicate (MSD)

Lab Sample ID: ACN180905-W1.MSD1, Parent Sample ID: ACN180905-W1.MS1

Run in Batch: ACN180905-W1, Run Date: 09/05/2018 14:56, Prep Date: 09/05/2018, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Available Cyanide		90	82	130	0	15

Duplicate (DUP)

Lab Sample ID: ACN180905-W1.DP1, Parent Sample ID: S93715.01

Run in Batch: ACN180905-W1, Run Date: 09/05/2018 14:52, Prep Date: 09/05/2018, Matrix: Liquid, Dilution: 1

Analyte	Flags	RPD	RPD CL
Available Cyanide		<1	15

Merit Laboratories Login Checklist

Lab Set ID: S93715
Client: OBG02 (O'Brien & Gere Engineers, Inc.)
Project: RACER Coldwater Rd LF - PRCC
Submitted: 08/29/2018 13:05 Login User: MMC

Attention: Clifford Yantz
Address: O'Brien & Gere Engineers, Inc.
2260 E Saginaw St
East Lansing, MI 48823

Phone: 248-477-5701 FAX:
Email: Clifford.Yantz@obg.com

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

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

Client Review By: _____ Date: _____

Merit Laboratories Bottle Preservation Check

Lab Set ID: S93715 Initials: MMC

Client: OBG02 (O'Brien & Gere Engineers, Inc.)

Project: RACER Coldwater Rd LF - PRCC

Submitted: 08/29/2018 13:05 Login User:

Attention: Clifford Yantz
Address: O'Brien & Gere Engineers, Inc.
2260 E Saginaw St
East Lansing, MI 48823

Phone: 248-477-5701 FAX:
Email: Clifford.Yantz@obg.com

Lab ID	125 ml Plastic HNO_3	250 ml Plastic HNO_3	1 L Plastic HNO_3	250 ml Plastic H_2SO_4	125 ml Amber H_2SO_4	32 oz Glass HCl	125 ml Plastic NaOH	125 ml Amber $PbCO_3$ NaOH	pH					Notes
									<2	>12	other	ml add	new pH	
S93715.01	X								X					
S93715.01				X					X					
S93715.01						X					8	2.0	<2	Lot# 53221
S93715.01								X		X				

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

C.O.C. PAGE # 1 OF 1

106859

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME: Clifford Yantz
COMPANY: O'Brien & Gere
ADDRESS: 2260 E Saginaw St
CITY: East Lansing STATE: MI ZIP CODE: 48823
PHONE NO.: 313-333-0211 FAX NO.: P.O. NO.: 11800350
E-MAIL ADDRESS: clifford.yantz@obg.com QUOTE NO.:

INVOICE TO

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

PROJECT NO./NAME: RACER Coldwater Rd LF-PRCC
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Kevin Schneider X

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

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

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

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

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

MERIT LAB NO. (FOR LAB USE ONLY)	YEAR DATE	YEAR TIME	SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives: NONE	HCl	HNO_3	H_2SO_4	NaOH	MeOH	OTHER	Total Metals	Available Cyanide	BOD / TSS	Ammonia - Nitrogen	Total phosphorus	FOG (Hex-Ext)
937150.01	8/29/18	1040	03-PRCC-18	WW	5	1	1	1	1			1	X	X	X	X	X	X

Special Instructions:
Metals Are:
As, Cr, Cu, Hg, Ni, Zn

Analysis Per City of Flint - Including QC Report

Field pH: 7.7
Field Temp: 77 °F

RELINQUISHED BY: SIGNATURE/ORGANIZATION	K SLL OBG X Sampler	DATE 8/29/18	TIME 11:45
RECEIVED BY: SIGNATURE/ORGANIZATION		DATE 8/29/18	TIME 11:48
RELINQUISHED BY: SIGNATURE/ORGANIZATION		DATE 8/29/18	TIME 13:05
RECEIVED BY: SIGNATURE/ORGANIZATION		DATE 8/29/18	TIME 1305

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

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

NOTES: TEMP. ON ARRIVAL 4.2

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

Rev. 5.18.12

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ANALYSIS REPORT

Prepared by:

Eurofins Lancaster Laboratories Environmental
2425 New Holland Pike
Lancaster, PA 17601

Prepared for:

O'Brien & Gere Engineers, Inc.
PO Box 4873
Syracuse NY 13221-4873

Report Date: September 28, 2018 14:32

Project: RACER Coldwater Rd LF

Account #: 09429
Group Number: 1982037
SDG: RCW01
PO Number: 11801247
State of Sample Origin: MI

1 Copy To Data Package Group

Respectfully Submitted,

Megan A. Moeller
Senior Specialist

(717) 556-7261

To view our laboratory's current scopes of accreditation please go to http://www.eurofinsus.com/environment-testing/laboratories/eurofins-lancaster-laboratories-environmental/resources/certifications/ . Historical copies may be requested through your project manager.

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-6766 • www.EurofinsUS.com/LancLabsEnv

SAMPLE INFORMATION

Client Sample Description	Sample Collection Date/Time	ELLE#
03-EFF-18-01 Grab Water	08/29/2018 15:20	9779784

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-6766 • www.EurofinsUS.com/LancLabsEnv

Project Name: RACER Coldwater Rd LF
ELLE Group #: 1982037

General Comments:

See the Laboratory Sample Analysis Record section of the Analysis Report for the method references.

All QC met criteria unless otherwise noted in an Analysis Specific Comment below.

Refer to the QC Summary for specific values and acceptance criteria.

Project specific QC samples are not included in this data set.

Matrix QC may not be reported if site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

Surrogate recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in an Analysis Specific Comment below.

The samples were received at the appropriate temperature and in accordance with the chain of custody unless otherwise noted.

Analysis Specific Comments:

No additional comments are necessary.

Sample Description: **03-EFF-18-01 Grab Water**
RACER Coldwater Rd LF

Project Name: **RACER Coldwater Rd LF**

Submittal Date/Time: 08/30/2018 10:15
Collection Date/Time: 08/29/2018 15:20
SDG#: RCW01-01

O'Brien & Gere Engineers, Inc.
ELLE Sample #: WW 9779784
ELLE Group #: 1982037
Matrix: Water

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
LC/MS/MS Miscellaneous	**EPA 537 Version 1.1 Modified**		**ng/l**	**ng/l**	**ng/l**	
14473	4:2 fluorotelomersulfonate	757124-72-4	N.D.	0.84	2.5	1
14473	6:2 fluorotelomersulfonate	27619-97-2	N.D.	0.84	1.7	1
14473	8:2 fluorotelomersulfonate	39108-34-4	N.D.	1.7	5.0	1
14473	NEtFOSAA	2991-50-6	N.D.	0.84	2.5	1
	NEtFOSAA is the acronym for N-ethyl perfluorooctanesulfonamidoacetic Acid.					
14473	NMeFOSAA	2355-31-9	N.D.	0.84	2.5	1
	NMeFOSAA is the acronym for N-methyl perfluorooctanesulfonamidoacetic Acid.					
14473	Perfluorobutanesulfonate	375-73-5	N.D.	0.25	0.84	1
14473	Perfluorobutanoic acid	375-22-4	N.D.	1.7	5.0	1
14473	Perfluorodecanesulfonate	335-77-3	N.D.	0.50	1.7	1
14473	Perfluorodecanoic acid	335-76-2	N.D.	0.76	1.7	1
14473	Perfluorododecanoic acid	307-55-1	N.D.	0.42	1.7	1
14473	Perfluoroheptanesulfonate	375-92-8	N.D.	0.34	1.7	1
14473	Perfluoroheptanoic acid	375-85-9	N.D.	0.34	0.84	1
14473	Perfluorohexanesulfonate	355-46-4	N.D.	0.34	1.7	1
14473	Perfluorohexanoic acid	307-24-4	N.D.	0.34	1.7	1
14473	Perfluorononanesulfonate	68259-12-1	N.D.	0.50	1.7	1
14473	Perfluorononanoic acid	375-95-1	N.D.	0.34	1.7	1
14473	Perfluorooctanesulfonamide	754-91-6	N.D.	0.42	2.5	1
14473	Perfluoro-octanesulfonate	1763-23-1	N.D.	0.34	1.7	1
14473	Perfluorooctanoic acid	335-67-1	N.D.	0.25	0.84	1
14473	Perfluoropentanesulfonate	2706-91-4	N.D.	0.34	1.7	1
14473	Perfluoropentanoic acid	2706-90-3	N.D.	1.7	5.0	1
14473	Perfluorotetradecanoic acid	376-06-7	N.D.	0.25	0.84	1
14473	Perfluorotridecanoic acid	72629-94-8	N.D.	0.34	0.84	1
14473	Perfluoroundecanoic acid	2058-94-8	N.D.	0.34	1.7	1

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
14473	PFAS in Water by LC/MS/MS	EPA 537 Version 1.1 Modified	1	18245005	09/05/2018 23:12	Devon M Whooley	1
14091	PFAS Water Prep	EPA 537 Version 1.1 Modified	1	18245005	09/02/2018 09:20	Pamela Rothharpt	1

*=This limit was used in the evaluation of the final result

Quality Control Summary

Client Name: O'Brien & Gere Engineers, Inc. Group Number: 1982037
Reported: 09/28/2018 14:32

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Method Blank

Analysis Name	Result	MDL**	LOQ
	ng/l	ng/l	ng/l
Batch number: 18245005	Sample number(s): 9779784		
4:2 fluorotelomersulfonate	N.D.	1.0	3.0
6:2 fluorotelomersulfonate	N.D.	1.0	2.0
8:2 fluorotelomersulfonate	N.D.	2.0	6.0
NEtFOSAA	N.D.	1.0	3.0
NMeFOSAA	N.D.	1.0	3.0
Perfluorobutanesulfonate	N.D.	0.30	1.0
Perfluorobutanoic acid	N.D.	2.0	6.0
Perfluorodecanesulfonate	N.D.	0.60	2.0
Perfluorodecanoic acid	N.D.	0.90	2.0
Perfluorododecanoic acid	N.D.	0.50	2.0
Perfluoroheptanesulfonate	N.D.	0.40	2.0
Perfluoroheptanoic acid	N.D.	0.40	1.0
Perfluorohexanesulfonate	N.D.	0.40	2.0
Perfluorohexanoic acid	N.D.	0.40	2.0
Perfluorononanesulfonate	N.D.	0.60	2.0
Perfluorononanoic acid	N.D.	0.40	2.0
Perfluorooctanesulfonamide	N.D.	0.50	3.0
Perfluoro-octanesulfonate	N.D.	0.40	2.0
Perfluorooctanoic acid	N.D.	0.30	1.0
Perfluoropentanesulfonate	N.D.	0.40	2.0
Perfluoropentanoic acid	N.D.	2.0	6.0
Perfluorotetradecanoic acid	N.D.	0.30	1.0
Perfluorotridecanoic acid	N.D.	0.40	1.0
Perfluoroundecanoic acid	N.D.	0.40	2.0

LCS/LCSD

Analysis Name	LCS Spike Added ng/l	LCS Conc ng/l	LCSD Spike Added ng/l	LCSD Conc ng/l	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 18245005	Sample number(s): 9779784								
4:2 fluorotelomersulfonate	14.94	15.15	14.94	14.19	101	95	82-152	7	30
6:2 fluorotelomersulfonate	15.17	16.42	15.17	16.13	108	106	66-155	2	30
8:2 fluorotelomersulfonate	15.33	16.85	15.33	14.14	110	92	66-148	17	30
NEtFOSAA	5.44	4.49	5.44	5.10	83	94	55-169	13	30
NMeFOSAA	5.44	4.94	5.44	5.19	91	95	62-167	5	30

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

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Quality Control Summary

Client Name: O'Brien & Gere Engineers, Inc. Group Number: 1982037
Reported: 09/28/2018 14:32

LCS/LCSD (continued)

Analysis Name	LCS Spike Added ng/l	LCS Conc ng/l	LCSD Spike Added ng/l	LCSD Conc ng/l	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Perfluorobutanesulfonate	4.81	4.81	4.81	4.72	100	98	73-128	2	30
Perfluorobutanoic acid	5.44	5.29	5.44	5.25	97	97	74-142	1	30
Perfluorodecanesulfonate	5.24	4.81	5.24	4.97	92	95	60-135	3	30
Perfluorodecanoic acid	5.44	5.51	5.44	5.46	101	100	69-148	1	30
Perfluorododecanoic acid	5.44	5.92	5.44	5.84	109	107	75-136	1	30
Perfluoroheptanesulfonate	5.18	5.43	5.18	5.15	105	100	64-135	5	30
Perfluoroheptanoic acid	5.44	5.66	5.44	5.78	104	106	76-140	2	30
Perfluorohexanesulfonate	5.14	5.48	5.14	4.96	107	97	71-131	10	30
Perfluorohexanoic acid	5.44	5.48	5.44	5.20	101	96	75-135	5	30
Perfluorononanesulfonate	5.22	5.62	5.22	5.23	108	100	66-133	7	30
Perfluorononanoic acid	5.44	5.71	5.44	5.32	105	98	72-148	7	30
Perfluorooctanesulfonamide	5.44	4.85	5.44	5.35	89	98	65-164	10	30
Perfluoro-octanesulfonate	5.20	5.28	5.20	5.47	102	105	67-138	4	30
Perfluorooctanoic acid	5.44	5.24	5.44	5.20	96	96	72-138	1	30
Perfluoropentanesulfonate	5.10	5.27	5.10	5.06	103	99	76-127	4	30
Perfluoropentanoic acid	5.44	5.40	5.44	5.40	99	99	74-134	0	30
Perfluorotetradecanoic acid	5.44	5.81	5.44	5.71	107	105	74-135	2	30
Perfluorotridecanoic acid	5.44	5.81	5.44	5.68	107	104	61-145	2	30
Perfluoroundecanoic acid	5.44	5.43	5.44	5.55	100	102	75-146	2	30

Labeled Isotope Quality Control

Labeled isotope recoveries which are outside of the QC window are confirmed unless otherwise noted on the analysis report.

Analysis Name: PFAS in Water by LC/MS/MS
Batch number: 18245005

	13C4-PFBA	13C5-PFPeA	13C3-PFBS	13C2-4:2-FTS	13C5-PFHxA	13C3-PFHxS
9779784	82	84	82	88	83	82
Blank	81	84	77	93	81	79
LCS	83	84	80	85	77	77
LCSD	89	86	88	98	90	91
Limits:	33-123	31-157	26-148	21-182	35-138	34-126

	13C4-PFHpA	13C2-6:2-FTS	13C8-PFOA	13C8-PFOS	13C9-PFNA	13C6-PFDA
9779784	83	91	79	82	81	85
Blank	81	96	86	82	87	91
LCS	80	92	86	82	85	89
LCSD	88	106	92	89	93	96

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

Quality Control Summary

Client Name: O'Brien & Gere Engineers, Inc. Group Number: 1982037
Reported: 09/28/2018 14:32

Labeled Isotope Quality Control (continued)

Labeled isotope recoveries which are outside of the QC window are confirmed unless otherwise noted on the analysis report.

Analysis Name: PFAS in Water by LC/MS/MS
Batch number: 18245005

Limits:	35-126	32-170	48-122	50-121	41-144	47-125
	13C2-8:2-FTS	d3-NMeFOSAA	13C7-PFUnDA	d5-NEtFOSAA	13C2-PFDoDA	13C2-PFTeDA
9779784	91	81	83	83	82	79
Blank	92	84	89	92	89	86
LCS	87	86	86	93	81	80
LCSD	105	92	94	95	88	88
Limits:	27-164	30-127	30-128	30-142	39-130	26-119

	13C8-PFOSA
9779784	78
Blank	85
LCS	81
LCSD	88
Limits:	11-127

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

Environmental Analysis Request/Chain of Custody

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Acct. # 9429 Group # 1982037 Sample # 9779784

COC # 561390

Client Information		Matrix	Analysis Requested	For Lab Use Only
Client: O'Brien & Gere	Acct. #:	Tissue ☐ Sediment ☐ Soil ☐	Preservation and Filtration Codes	FSC:
Project Name/#: RACER Coldwater Rd LF	PWSID #:	Ground ☐ Potable ☒ Water	PFAS by LC/MS/MS	SCR#:
Project Manager: Clifford Yantz	P.O. #:	Surface ☐ NPDES ☐		
Sampler: Kevin Schneider	Quote #:	Other:		
State where samples were collected: Michigan	For Compliance: Yes ☐ No ☐			

Preservation Codes

H=HCl	T=Thiosulfate
N=HNO_3	B=NaOH
S=H_2SO_4	P=H_3PO_4
F=Field Filtered	O=Other

Sample Identification	Collected Date	Collected Time	Grab	Composite	Soil	Water	Other	Total # of Containers	PFAS by LC/MS/MS	Remarks
03-EFF-18-01	8/29/18	1520	X			X		2	X	

KBS

Turnaround Time (TAT) Requested (please circle)

Standard (circled) 2 week Rush

(Rush TAT is subject to laboratory approval and surcharge.)

Date results are needed: ____________

E-mail address: clifford.yantz@obg.com

Relinquished by	Date	Time	Received by	Date	Time
K SK OBG	8/29/18	1745	FEDEX 7825 4071 1460	8/29/18	1745
Relinquished by	Date	Time	Received by	Date	Time
Relinquished by	Date	Time	Received by	Date	Time
Relinquished by	Date	Time	Received by	Date	Time
Relinquished by	Date	Time	Received by [signature]	8.30.18	10:15

Data Package Options (circle if required)

Type I (EPA Level 3 Equivalent/non-CLP) — Type VI (Raw Data Only)

Type III (Reduced non-CLP) — NJ DKQP — TX TRRP-13

NYSDEC Category A or B — MA MCP — CT RCP

EDD Required? Yes No (circled)

If yes, format: ____________

Site-Specific QC (MS/MSD/Dup)? Yes No (circled)

(If yes, indicate QC sample and submit triplicate sample volume.)

Relinquished by Commercial Carrier: 7825 4071 1460

UPS ______ FedEx X Other ______

Temperature upon receipt 3.4 °C

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Sample Administration Receipt Documentation Log

Doc Log ID: 225641

Group Number(s): 1982037

Client: O'Brien & Gere

Delivery and Receipt Information

Delivery Method:	Fed Ex	Arrival Timestamp:	08/30/2018 10:15
Number of Packages:	1	Number of Projects:	1
State/Province of Origin:	MI		

Arrival Condition Summary

Shipping Container Sealed:	Yes	Sample IDs on COC match Containers:	Yes
Custody Seal Present:	Yes	Sample Date/Times match COC:	Yes
Custody Seal Intact:	Yes	VOA Vial Headspace ≥ 6mm:	N/A
Samples Chilled:	Yes	Total Trip Blank Qty:	0
Paperwork Enclosed:	Yes	Air Quality Samples Present:	No
Samples Intact:	Yes		
Missing Samples:	No		
Extra Samples:	No		
Discrepancy in Container Qty on COC:	No		

Unpacked by Wanita Curry (14057) at 15:02 on 08/30/2018

Samples Chilled Details

Thermometer Types: DT = Digital (Temp. Bottle) IR = Infrared (Surface Temp) All Temperatures in °C.

Cooler #	Thermometer ID	Corrected Temp	Therm. Type	Ice Type	Ice Present?	Ice Container	Elevated Temp?
1	32170023	3.5	IR	Wet	Y	Bagged	N

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Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

BMQL	Below Minimum Quantitation Level	**mL**	milliliter(s)
C	degrees Celsius	**MPN**	Most Probable Number
cfu	colony forming units	**N.D.**	non-detect
CP Units	cobalt-chloroplatinate units	**ng**	nanogram(s)
F	degrees Fahrenheit	**NTU**	nephelometric turbidity units
g	gram(s)	**pg/L**	picogram/liter
IU	International Units	**RL**	Reporting Limit
kg	kilogram(s)	**TNTC**	Too Numerous To Count
L	liter(s)	**µg**	microgram(s)
lb.	pound(s)	**µL**	microliter(s)
m3	cubic meter(s)	**umhos/cm**	micromhos/cm
meq	milliequivalents	**MCL**	Maximum Contamination Limit
mg	milligram(s)		

<	less than
>	greater than
ppm	parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg) or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.
ppb	parts per billion
Dry weight basis	Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as “analyze immediately” are not performed within 15 minutes.

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Data Qualifiers

Qualifier	Definition
C	Result confirmed by reanalysis
D1	Indicates for dual column analyses that the result is reported from column 1
D2	Indicates for dual column analyses that the result is reported from column 2
E	Concentration exceeds the calibration range
K1	Initial Calibration Blank is above the QC limit and the sample result is ND
K2	Continuing Calibration Blank is above the QC limit and the sample result is ND
K3	Initial Calibration Verification is above the QC limit and the sample result is ND
K4	Continuing Calibration Verification is above the QC limit and the sample result is ND
J (or G, I, X)	Estimated value >= the Method Detection Limit (MDL or DL) and < the Limit of Quantitation (LOQ or RL)
P	Concentration difference between the primary and confirmation column >40%. The lower result is reported.
P^	Concentration difference between the primary and confirmation column > 40%. The higher result is reported.
U	Analyte was not detected at the value indicated
V	Concentration difference between the primary and confirmation column >100%. The reporting limit is raised due to this disparity and evident interference.
W	The dissolved oxygen uptake for the unseeded blank is greater than 0.20 mg/L.
Z	Laboratory Defined - see analysis report

Additional Organic and Inorganic CLP qualifiers may be used with Form 1 reports as defined by the CLP methods.
Qualifiers specific to Dioxin/Furans and PCB Congeners are detailed on the individual Analysis Report.

Analytical Laboratory Report

Report ID: S94337.01(01)
Generated on 10/05/2018

Report to

Attention: Clifford Yantz
O'Brien & Gere Engineers, Inc.
2260 E Saginaw St
East Lansing, MI 48823

Phone: 248-477-5701 FAX:
Email: Clifford.Yantz@obg.com

Report produced by

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

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

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

Report Summary

Lab Sample ID(s): S94337.01-S94337.09
Project: RACER Coldwater Road Landfill
Collected Date: 09/13/2018 - 09/14/2018
Submitted Date/Time: 09/14/2018 14:45
Sampled by: Clifford Yantz
P.O. #: PO

Table of Contents

Maya Murshak
Technical Director

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.
Methods may be modified for improved performance.
Results reported on a dry weight basis where applicable.
'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).
40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.
QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.
Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.
Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.

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

Report Narrative

There is no additional narrative for this analytical report

Laboratory Certifications

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

Qualifier Descriptions

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

Glossary of Abbreviations

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

Method Summary

Method	Version
ASTMD7979	
ASTMD7979-17M	ASTM Method D7979 - 17 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	474511-07-4
PFDoDA	Perfluorododecanoic Acid	307-55-1
PFDS	Perfluorodecane Sulfonic Acid	335-77-3
PFTrDA	Perfluorotridecanoic Acid	72629-94-8
FOSA	Perfluorooctane Sulfonamide	754-91-6
PFTeDA	Perfluorotetradecanoic Acid	376-06-7

Sample Summary (9 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S94337.01	03-PRCC-18-Inf.	Liquid	09/13/18 09:37
S94337.02	03-PRCC-18-Prim-10	Liquid	09/13/18 11:48
S94337.03	03-PRCC-18-Prim-20	Liquid	09/13/18 14:03
S94337.04	03-PRCC-18-Prim-40	Liquid	09/13/18 18:33
S94337.05	03-PRCC-18-Mid-40	Liquid	09/13/18 18:34
S94337.06	FB-08	Water	09/13/18 15:00
S94337.07	03-PRCC-18-Eff-47.4	Liquid	09/14/18 10:45
S94337.08	03-PRCC-18-Mid-47.4	Liquid	09/14/18 10:46
S94337.09	03-PRCC-18-Prim-47.4	Liquid	09/14/18 10:47

Analytical Laboratory Report

Lab Sample ID: S94337.01
Sample Tag: 03-PRCC-18-Inf.
Collected Date/Time: 09/13/2018 09:37
Matrix: Liquid
COC Reference: 114595

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	4.8	IR

Organics

24 PFAs, Method: ASTMD7979-17M, Run Date: 09/28/18 11:40, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	302		ng/L	1.9964	375-22-4	X
PFPeA*	Not detected	160		ng/L	1.9964	2706-90-3	X
4:2 FTSA*	Not detected	10		ng/L	1.9964	757124-72-4	
PFHxA*	Not detected	200		ng/L	1.9964	307-24-4	X
PFBS*	130	10		ng/L	1.9964	375-73-5	
PFHpA*	40	10		ng/L	1.9964	375-85-9	
PFPeS*	230	10		ng/L	1.9964	2706-91-4	
6:2 FTSA*	Not detected	10		ng/L	1.9964	27619-97-2	
PFOA*	60	10		ng/L	1.9964	335-67-1	
PFHxS*	580	10		ng/L	1.9964	355-46-4	
PFHxS-LN*	480	10		ng/L	1.9964	355-46-4-LN	
PFHxS-BR*	70	10		ng/L	1.9964	355-46-4-BR	
PFNA*	Not detected	10		ng/L	1.9964	375-95-1	
8:2 FTSA*	Not detected	10		ng/L	1.9964	39108-34-4	
PFHpS*	120	10		ng/L	1.9964	375-92-8	
PFDA*	Not detected	10		ng/L	1.9964	335-76-2	
N-MeFOSAA*	Not detected	10		ng/L	1.9964	2355-31-9	
EtFOSAA*	Not detected	10		ng/L	1.9964	2991-50-6	
PFOS*	9,410	10		ng/L	1.9964	1763-23-1	
PFOS-LN*	6,210	10		ng/L	1.9964	1763-23-1-LN	
PFOS-BR*	3,490	10		ng/L	1.9964	1763-23-1-BR	
PFUnDA*	Not detected	10		ng/L	1.9964	2058-94-8	
PFNS*	Not detected	10		ng/L	1.9964	474511-07-4	
PFDoDA*	Not detected	10		ng/L	1.9964	307-55-1	
PFDS*	Not detected	10		ng/L	1.9964	335-77-3	
PFTrDA*	Not detected	10		ng/L	1.9964	72629-94-8	
FOSA*	Not detected	10		ng/L	1.9964	754-91-6	
PFTeDA*	Not detected	10		ng/L	1.9964	376-06-7	

X-Elevated reporting limit due to matrix interference

Lab Sample ID: S94337.02
Sample Tag: 03-PRCC-18-Prim-10
Collected Date/Time: 09/13/2018 11:48
Matrix: Liquid
COC Reference: 114595

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	4.8	IR

Organics

24 PFAs, Method: ASTMD7979-17M, Run Date: 09/28/18 12:00, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	20		ng/L	2.011	375-22-4	
PFPeA*	Not detected	10		ng/L	2.011	2706-90-3	
4:2 FTSA*	Not detected	10		ng/L	2.011	757124-72-4	
PFHxA*	Not detected	10		ng/L	2.011	307-24-4	
PFBS*	Not detected	10		ng/L	2.011	375-73-5	
PFHpA*	Not detected	10		ng/L	2.011	375-85-9	
PFPeS*	Not detected	10		ng/L	2.011	2706-91-4	
6:2 FTSA*	Not detected	10		ng/L	2.011	27619-97-2	
PFOA*	Not detected	10		ng/L	2.011	335-67-1	
PFHxS*	Not detected	10		ng/L	2.011	355-46-4	
PFHxS-LN*	Not detected	10		ng/L	2.011	355-46-4-LN	
PFHxS-BR*	Not detected	10		ng/L	2.011	355-46-4-BR	
PFNA*	Not detected	10		ng/L	2.011	375-95-1	
8:2 FTSA*	Not detected	10		ng/L	2.011	39108-34-4	
PFHpS*	Not detected	10		ng/L	2.011	375-92-8	
PFDA*	Not detected	10		ng/L	2.011	335-76-2	
N-MeFOSAA*	Not detected	10		ng/L	2.011	2355-31-9	
EtFOSAA*	Not detected	10		ng/L	2.011	2991-50-6	
PFOS*	20	10		ng/L	2.011	1763-23-1	
PFOS-LN*	Not detected	10		ng/L	2.011	1763-23-1-LN	
PFOS-BR*	Not detected	10		ng/L	2.011	1763-23-1-BR	
PFUnDA*	Not detected	10		ng/L	2.011	2058-94-8	
PFNS*	Not detected	10		ng/L	2.011	474511-07-4	
PFDoDA*	Not detected	10		ng/L	2.011	307-55-1	
PFDS*	Not detected	10		ng/L	2.011	335-77-3	
PFTrDA*	Not detected	10		ng/L	2.011	72629-94-8	
FOSA*	Not detected	10		ng/L	2.011	754-91-6	
PFTeDA*	Not detected	10		ng/L	2.011	376-06-7	

Lab Sample ID: S94337.03
Sample Tag: 03-PRCC-18-Prim-20
Collected Date/Time: 09/13/2018 14:03
Matrix: Liquid
COC Reference: 114595

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	4.8	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml) (Rep1)	12.69/6.87/12	ASTMD7979	10/02/18 12:30	PL	

Organics

24 PFAs, Method: ASTMD7979-17M, Run Date: 09/28/18 12:19, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	20		ng/L	1.9749	375-22-4	
PFPeA*	Not detected	10		ng/L	1.9749	2706-90-3	
4:2 FTSA*	Not detected	10		ng/L	1.9749	757124-72-4	
PFHxA*	Not detected	10		ng/L	1.9749	307-24-4	
PFBS*	Not detected	10		ng/L	1.9749	375-73-5	
PFHpA*	Not detected	10		ng/L	1.9749	375-85-9	
PFPeS*	Not detected	10		ng/L	1.9749	2706-91-4	
6:2 FTSA*	Not detected	10		ng/L	1.9749	27619-97-2	
PFOA*	Not detected	10		ng/L	1.9749	335-67-1	
PFHxS*	Not detected	10		ng/L	1.9749	355-46-4	
PFHxS-LN*	Not detected	10		ng/L	1.9749	355-46-4-LN	
PFHxS-BR*	Not detected	10		ng/L	1.9749	355-46-4-BR	
PFNA*	Not detected	10		ng/L	1.9749	375-95-1	
8:2 FTSA*	Not detected	10		ng/L	1.9749	39108-34-4	
PFHpS*	Not detected	10		ng/L	1.9749	375-92-8	
PFDA*	Not detected	10		ng/L	1.9749	335-76-2	
N-MeFOSAA*	Not detected	10		ng/L	1.9749	2355-31-9	
EtFOSAA*	Not detected	10		ng/L	1.9749	2991-50-6	
PFOS*	80	10		ng/L	1.9749	1763-23-1	
PFOS-LN*	40	10		ng/L	1.9749	1763-23-1-LN	
PFOS-BR*	40	10		ng/L	1.9749	1763-23-1-BR	
PFUnDA*	Not detected	10		ng/L	1.9749	2058-94-8	
PFNS*	Not detected	10		ng/L	1.9749	474511-07-4	
PFDoDA*	Not detected	10		ng/L	1.9749	307-55-1	
PFDS*	Not detected	10		ng/L	1.9749	335-77-3	
PFTrDA*	Not detected	10		ng/L	1.9749	72629-94-8	
FOSA*	Not detected	10		ng/L	1.9749	754-91-6	
PFTeDA*	Not detected	10		ng/L	1.9749	376-06-7	I

24 PFAs (Replicate 01), Method: ASTMD7979-17M, Run Date: 10/03/18 18:30, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	20		ng/L	2.06	375-22-4	
PFPeA*	Not detected	10		ng/L	2.06	2706-90-3	
4:2 FTSA*	Not detected	10		ng/L	2.06	757124-72-4	
PFHxA*	Not detected	10		ng/L	2.06	307-24-4	
PFBS*	Not detected	10		ng/L	2.06	375-73-5	

I-Matrix interference with internal standard

Lab Sample ID: S94337.03 (continued)
Sample Tag: 03-PRCC-18-Prim-20

24 PFAs (Replicate 01), Method: ASTMD7979-17M, Run Date: 10/03/18 18:30, Analyst: PL (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFHpA*	Not detected	10		ng/L	2.06	375-85-9	
PFPeS*	Not detected	10		ng/L	2.06	2706-91-4	
6:2 FTSA*	Not detected	10		ng/L	2.06	27619-97-2	
PFOA*	Not detected	10		ng/L	2.06	335-67-1	
PFHxS*	Not detected	10		ng/L	2.06	355-46-4	
PFHxS-LN*	Not detected	10		ng/L	2.06	355-46-4-LN	
PFHxS-BR*	Not detected	10		ng/L	2.06	355-46-4-BR	
PFNA*	Not detected	10		ng/L	2.06	375-95-1	
8:2 FTSA*	Not detected	10		ng/L	2.06	39108-34-4	
PFHpS*	Not detected	10		ng/L	2.06	375-92-8	
PFDA*	Not detected	10		ng/L	2.06	335-76-2	
N-MeFOSAA*	Not detected	10		ng/L	2.06	2355-31-9	
EtFOSAA*	Not detected	10		ng/L	2.06	2991-50-6	
PFOS*	70	10		ng/L	2.06	1763-23-1	
PFOS-LN*	40	10		ng/L	2.06	1763-23-1-LN	
PFOS-BR*	30	10		ng/L	2.06	1763-23-1-BR	
PFUnDA*	Not detected	10		ng/L	2.06	2058-94-8	
PFNS*	Not detected	10		ng/L	2.06	474511-07-4	
PFDoDA*	Not detected	10		ng/L	2.06	307-55-1	
PFDS*	Not detected	10		ng/L	2.06	335-77-3	
PFTrDA*	Not detected	10		ng/L	2.06	72629-94-8	
FOSA*	Not detected	10		ng/L	2.06	754-91-6	
PFTeDA*	Not detected	10		ng/L	2.06	376-06-7	

Lab Sample ID: S94337.04
Sample Tag: 03-PRCC-18-Prim-40
Collected Date/Time: 09/13/2018 18:33
Matrix: Liquid
COC Reference: 114595

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	4.8	IR

Organics

24 PFAs, Method: ASTMD7979-17M, Run Date: 09/28/18 12:39, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	23		ng/L	2.0913	375-22-4	X
PFPeA*	Not detected	10		ng/L	2.0913	2706-90-3	
4:2 FTSA*	Not detected	10		ng/L	2.0913	757124-72-4	
PFHxA*	10	10		ng/L	2.0913	307-24-4	
PFBS*	Not detected	10		ng/L	2.0913	375-73-5	
PFHpA*	Not detected	10		ng/L	2.0913	375-85-9	
PFPeS*	Not detected	10		ng/L	2.0913	2706-91-4	
6:2 FTSA*	Not detected	10		ng/L	2.0913	27619-97-2	
PFOA*	Not detected	10		ng/L	2.0913	335-67-1	
PFHxS*	10	10		ng/L	2.0913	355-46-4	
PFHxS-LN*	Not detected	10		ng/L	2.0913	355-46-4-LN	
PFHxS-BR*	Not detected	10		ng/L	2.0913	355-46-4-BR	
PFNA*	Not detected	10		ng/L	2.0913	375-95-1	
8:2 FTSA*	Not detected	10		ng/L	2.0913	39108-34-4	
PFHpS*	Not detected	10		ng/L	2.0913	375-92-8	
PFDA*	Not detected	10		ng/L	2.0913	335-76-2	
N-MeFOSAA*	Not detected	10		ng/L	2.0913	2355-31-9	
EtFOSAA*	Not detected	10		ng/L	2.0913	2991-50-6	
PFOS*	160	10		ng/L	2.0913	1763-23-1	
PFOS-LN*	70	10		ng/L	2.0913	1763-23-1-LN	
PFOS-BR*	90	10		ng/L	2.0913	1763-23-1-BR	
PFUnDA*	Not detected	10		ng/L	2.0913	2058-94-8	
PFNS*	Not detected	10		ng/L	2.0913	474511-07-4	
PFDoDA*	Not detected	10		ng/L	2.0913	307-55-1	
PFDS*	Not detected	10		ng/L	2.0913	335-77-3	
PFTrDA*	Not detected	10		ng/L	2.0913	72629-94-8	
FOSA*	Not detected	10		ng/L	2.0913	754-91-6	
PFTeDA*	Not detected	10		ng/L	2.0913	376-06-7	

X-Elevated reporting limit due to matrix interference

Lab Sample ID: S94337.05
Sample Tag: 03-PRCC-18-Mid-40
Collected Date/Time: 09/13/2018 18:34
Matrix: Liquid
COC Reference: 114595

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	4.8	IR

Organics

24 PFAs, Method: ASTMD7979-17M, Run Date: 09/28/18 12:58, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	20		ng/L	2.3256	375-22-4	
PFPeA*	Not detected	10		ng/L	2.3256	2706-90-3	
4:2 FTSA*	Not detected	10		ng/L	2.3256	757124-72-4	
PFHxA*	Not detected	10		ng/L	2.3256	307-24-4	
PFBS*	Not detected	10		ng/L	2.3256	375-73-5	
PFHpA*	Not detected	10		ng/L	2.3256	375-85-9	
PFPeS*	Not detected	10		ng/L	2.3256	2706-91-4	
6:2 FTSA*	Not detected	10		ng/L	2.3256	27619-97-2	
PFOA*	Not detected	10		ng/L	2.3256	335-67-1	
PFHxS*	Not detected	10		ng/L	2.3256	355-46-4	
PFHxS-LN*	Not detected	10		ng/L	2.3256	355-46-4-LN	
PFHxS-BR*	Not detected	10		ng/L	2.3256	355-46-4-BR	
PFNA*	Not detected	10		ng/L	2.3256	375-95-1	
8:2 FTSA*	Not detected	10		ng/L	2.3256	39108-34-4	
PFHpS*	Not detected	10		ng/L	2.3256	375-92-8	
PFDA*	Not detected	10		ng/L	2.3256	335-76-2	
N-MeFOSAA*	Not detected	10		ng/L	2.3256	2355-31-9	
EtFOSAA*	Not detected	10		ng/L	2.3256	2991-50-6	
PFOS*	Not detected	10		ng/L	2.3256	1763-23-1	
PFOS-LN*	Not detected	10		ng/L	2.3256	1763-23-1-LN	
PFOS-BR*	Not detected	10		ng/L	2.3256	1763-23-1-BR	
PFUnDA*	Not detected	10		ng/L	2.3256	2058-94-8	
PFNS*	Not detected	10		ng/L	2.3256	474511-07-4	
PFDoDA*	Not detected	10		ng/L	2.3256	307-55-1	
PFDS*	Not detected	10		ng/L	2.3256	335-77-3	
PFTrDA*	Not detected	10		ng/L	2.3256	72629-94-8	
FOSA*	Not detected	10		ng/L	2.3256	754-91-6	
PFTeDA*	Not detected	10		ng/L	2.3256	376-06-7	

Lab Sample ID: S94337.06
Sample Tag: FB-08
Collected Date/Time: 09/13/2018 15:00
Matrix: Water
COC Reference: 114595

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	4.8	IR

Organics

24 PFAs, Method: ASTMD7979-17M, Run Date: 09/28/18 13:18, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	20		ng/L	2.0492	375-22-4	
PFPeA*	Not detected	10		ng/L	2.0492	2706-90-3	
4:2 FTSA*	Not detected	10		ng/L	2.0492	757124-72-4	
PFHxA*	Not detected	10		ng/L	2.0492	307-24-4	
PFBS*	Not detected	10		ng/L	2.0492	375-73-5	
PFHpA*	Not detected	10		ng/L	2.0492	375-85-9	
PFPeS*	Not detected	10		ng/L	2.0492	2706-91-4	
6:2 FTSA*	Not detected	10		ng/L	2.0492	27619-97-2	
PFOA*	Not detected	10		ng/L	2.0492	335-67-1	
PFHxS*	Not detected	10		ng/L	2.0492	355-46-4	
PFHxS-LN*	Not detected	10		ng/L	2.0492	355-46-4-LN	
PFHxS-BR*	Not detected	10		ng/L	2.0492	355-46-4-BR	
PFNA*	Not detected	10		ng/L	2.0492	375-95-1	
8:2 FTSA*	Not detected	10		ng/L	2.0492	39108-34-4	
PFHpS*	Not detected	10		ng/L	2.0492	375-92-8	
PFDA*	Not detected	10		ng/L	2.0492	335-76-2	
N-MeFOSAA*	Not detected	10		ng/L	2.0492	2355-31-9	
EtFOSAA*	Not detected	10		ng/L	2.0492	2991-50-6	
PFOS*	Not detected	10		ng/L	2.0492	1763-23-1	
PFOS-LN*	Not detected	10		ng/L	2.0492	1763-23-1-LN	
PFOS-BR*	Not detected	10		ng/L	2.0492	1763-23-1-BR	
PFUnDA*	Not detected	10		ng/L	2.0492	2058-94-8	
PFNS*	Not detected	10		ng/L	2.0492	474511-07-4	
PFDoDA*	Not detected	10		ng/L	2.0492	307-55-1	
PFDS*	Not detected	10		ng/L	2.0492	335-77-3	
PFTrDA*	Not detected	10		ng/L	2.0492	72629-94-8	
FOSA*	Not detected	10		ng/L	2.0492	754-91-6	
PFTeDA*	Not detected	10		ng/L	2.0492	376-06-7	

Lab Sample ID: S94337.07
Sample Tag: 03-PRCC-18-Eff-47.4
Collected Date/Time: 09/14/2018 10:45
Matrix: Liquid
COC Reference: 114595

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	4.8	IR

Organics

24 PFAs, Method: ASTMD7979-17M, Run Date: 09/28/18 13:37, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	20		ng/L	2.0561	375-22-4	
PFPeA*	Not detected	10		ng/L	2.0561	2706-90-3	
4:2 FTSA*	Not detected	10		ng/L	2.0561	757124-72-4	
PFHxA*	Not detected	10		ng/L	2.0561	307-24-4	
PFBS*	Not detected	10		ng/L	2.0561	375-73-5	
PFHpA*	Not detected	10		ng/L	2.0561	375-85-9	
PFPeS*	Not detected	10		ng/L	2.0561	2706-91-4	
6:2 FTSA*	Not detected	10		ng/L	2.0561	27619-97-2	
PFOA*	Not detected	10		ng/L	2.0561	335-67-1	
PFHxS*	Not detected	10		ng/L	2.0561	355-46-4	
PFHxS-LN*	Not detected	10		ng/L	2.0561	355-46-4-LN	
PFHxS-BR*	Not detected	10		ng/L	2.0561	355-46-4-BR	
PFNA*	Not detected	10		ng/L	2.0561	375-95-1	
8:2 FTSA*	Not detected	10		ng/L	2.0561	39108-34-4	
PFHpS*	Not detected	10		ng/L	2.0561	375-92-8	
PFDA*	Not detected	10		ng/L	2.0561	335-76-2	
N-MeFOSAA*	Not detected	10		ng/L	2.0561	2355-31-9	
EtFOSAA*	Not detected	10		ng/L	2.0561	2991-50-6	
PFOS*	Not detected	10		ng/L	2.0561	1763-23-1	
PFOS-LN*	Not detected	10		ng/L	2.0561	1763-23-1-LN	
PFOS-BR*	Not detected	10		ng/L	2.0561	1763-23-1-BR	
PFUnDA*	Not detected	10		ng/L	2.0561	2058-94-8	
PFNS*	Not detected	10		ng/L	2.0561	474511-07-4	
PFDoDA*	Not detected	10		ng/L	2.0561	307-55-1	
PFDS*	Not detected	10		ng/L	2.0561	335-77-3	
PFTrDA*	Not detected	10		ng/L	2.0561	72629-94-8	
FOSA*	Not detected	10		ng/L	2.0561	754-91-6	
PFTeDA*	Not detected	10		ng/L	2.0561	376-06-7	

Lab Sample ID: S94337.08
Sample Tag: 03-PRCC-18-Mid-47.4
Collected Date/Time: 09/14/2018 10:46
Matrix: Liquid
COC Reference: 114595

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	4.8	IR

Organics

24 PFAs, Method: ASTMD7979-17M, Run Date: 09/28/18 13:57, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	20		ng/L	1.9964	375-22-4	
PFPeA*	Not detected	10		ng/L	1.9964	2706-90-3	
4:2 FTSA*	Not detected	10		ng/L	1.9964	757124-72-4	
PFHxA*	Not detected	10		ng/L	1.9964	307-24-4	
PFBS*	Not detected	10		ng/L	1.9964	375-73-5	
PFHpA*	Not detected	10		ng/L	1.9964	375-85-9	
PFPeS*	Not detected	10		ng/L	1.9964	2706-91-4	
6:2 FTSA*	Not detected	10		ng/L	1.9964	27619-97-2	
PFOA*	Not detected	10		ng/L	1.9964	335-67-1	
PFHxS*	Not detected	10		ng/L	1.9964	355-46-4	
PFHxS-LN*	Not detected	10		ng/L	1.9964	355-46-4-LN	
PFHxS-BR*	Not detected	10		ng/L	1.9964	355-46-4-BR	
PFNA*	Not detected	10		ng/L	1.9964	375-95-1	
8:2 FTSA*	Not detected	10		ng/L	1.9964	39108-34-4	
PFHpS*	Not detected	10		ng/L	1.9964	375-92-8	
PFDA*	Not detected	10		ng/L	1.9964	335-76-2	
N-MeFOSAA*	Not detected	10		ng/L	1.9964	2355-31-9	
EtFOSAA*	Not detected	10		ng/L	1.9964	2991-50-6	
PFOS*	Not detected	10		ng/L	1.9964	1763-23-1	
PFOS-LN*	Not detected	10		ng/L	1.9964	1763-23-1-LN	
PFOS-BR*	Not detected	10		ng/L	1.9964	1763-23-1-BR	
PFUnDA*	Not detected	10		ng/L	1.9964	2058-94-8	
PFNS*	Not detected	10		ng/L	1.9964	474511-07-4	
PFDoDA*	Not detected	10		ng/L	1.9964	307-55-1	
PFDS*	Not detected	10		ng/L	1.9964	335-77-3	
PFTrDA*	Not detected	10		ng/L	1.9964	72629-94-8	
FOSA*	Not detected	10		ng/L	1.9964	754-91-6	
PFTeDA*	Not detected	10		ng/L	1.9964	376-06-7	

Lab Sample ID: S94337.09
Sample Tag: 03-PRCC-18-Prim-47.4
Collected Date/Time: 09/14/2018 10:47
Matrix: Liquid
COC Reference: 114595

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	4.8	IR

Organics

24 PFAs, Method: ASTMD7979-17M, Run Date: 09/28/18 14:16, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	20		ng/L	2.0484	375-22-4	
PFPeA*	Not detected	10		ng/L	2.0484	2706-90-3	
4:2 FTSA*	Not detected	10		ng/L	2.0484	757124-72-4	
PFHxA*	Not detected	10		ng/L	2.0484	307-24-4	
PFBS*	Not detected	10		ng/L	2.0484	375-73-5	
PFHpA*	Not detected	10		ng/L	2.0484	375-85-9	
PFPeS*	Not detected	10		ng/L	2.0484	2706-91-4	
6:2 FTSA*	Not detected	10		ng/L	2.0484	27619-97-2	
PFOA*	Not detected	10		ng/L	2.0484	335-67-1	
PFHxS*	Not detected	10		ng/L	2.0484	355-46-4	
PFHxS-LN*	Not detected	10		ng/L	2.0484	355-46-4-LN	
PFHxS-BR*	Not detected	10		ng/L	2.0484	355-46-4-BR	
PFNA*	Not detected	10		ng/L	2.0484	375-95-1	
8:2 FTSA*	Not detected	10		ng/L	2.0484	39108-34-4	
PFHpS*	Not detected	10		ng/L	2.0484	375-92-8	
PFDA*	Not detected	10		ng/L	2.0484	335-76-2	
N-MeFOSAA*	Not detected	10		ng/L	2.0484	2355-31-9	
EtFOSAA*	Not detected	10		ng/L	2.0484	2991-50-6	
PFOS*	20	10		ng/L	2.0484	1763-23-1	
PFOS-LN*	Not detected	10		ng/L	2.0484	1763-23-1-LN	
PFOS-BR*	Not detected	10		ng/L	2.0484	1763-23-1-BR	
PFUnDA*	Not detected	10		ng/L	2.0484	2058-94-8	
PFNS*	Not detected	10		ng/L	2.0484	474511-07-4	
PFDoDA*	Not detected	10		ng/L	2.0484	307-55-1	
PFDS*	Not detected	10		ng/L	2.0484	335-77-3	
PFTrDA*	Not detected	10		ng/L	2.0484	72629-94-8	
FOSA*	Not detected	10		ng/L	2.0484	754-91-6	
PFTeDA*	Not detected	10		ng/L	2.0484	376-06-7	

Merit Laboratories Login Checklist

Lab Set ID: S94337
Client: OBG02 (O'Brien & Gere Engineers, Inc.)
Project: RACER Coldwater Road Landfill
Submitted: 09/14/2018 14:45 Login User: MMC

Attention: Clifford Yantz
Address: O'Brien & Gere Engineers, Inc.
2260 E Saginaw St
East Lansing, MI 48823

Phone: 248-477-5701 FAX:
Email: Clifford.Yantz@obg.com

Selection				Description	Note
Sample Receiving					
01.	[X] Yes	[ ] No	[ ] N/A	Samples are received at 4C +/- 2C Thermometer #	IR 4.8
02.	[X] Yes	[ ] No	[ ] N/A	Received on ice/ cooling process begun	
03.	[ ] Yes	[X] No	[ ] N/A	Samples shipped	
04.	[ ] Yes	[X] No	[ ] N/A	Samples left in 24 hr. drop box	
05.	[ ] Yes	[ ] No	[X] N/A	Are there custody seals/tape or is the drop box locked	
Chain of Custody					
06.	[ ] Yes	[X] No	[ ] N/A	COC adequately filled out	Analysis not listed
07.	[X] Yes	[ ] No	[ ] N/A	COC signed and relinquished to the lab	
08.	[X] Yes	[ ] No	[ ] N/A	Sample tag on bottles match COC	
09.	[ ] Yes	[X] No	[ ] N/A	Subcontracting needed? Subcontacted to:	
Preservation					
10.	[X] Yes	[ ] No	[ ] N/A	Do sample have correct chemical preservation	
11.	[ ] Yes	[ ] No	[X] N/A	Completed pH checks on preserved samples? (no VOAs)	
12.	[ ] Yes	[X] No	[ ] N/A	Did any samples need to be preserved in the lab?	
Bottle Conditions					
13.	[X] Yes	[ ] No	[ ] N/A	All bottles intact	
14.	[X] Yes	[ ] No	[ ] N/A	Appropriate analytical bottles are used	
15.	[X] Yes	[ ] No	[ ] N/A	Merit bottles used	
16.	[X] Yes	[ ] No	[ ] N/A	Sufficient sample volume received	
17.	[ ] Yes	[X] No	[ ] N/A	Samples require laboratory filtration	
18.	[X] Yes	[ ] No	[ ] N/A	Samples submitted within holding time	
19.	[ ] Yes	[ ] No	[X] N/A	Do water VOC or TOX bottles contain headspace	

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

Client Review By: _____ Date: _____

Merit Laboratories, Inc.

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

C.O.C. PAGE # 1 OF 1

114595

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME: Clifford S. Yantz
COMPANY: O'Brien & Gere
ADDRESS: 2260 East Saginaw Street
CITY: East Lansing STATE: MI ZIP CODE: 48823
PHONE NO.: 3133330211 FAX NO.: — P.O. NO.:
E-MAIL ADDRESS: clifford.yantz@obg.com QUOTE NO.:

INVOICE TO

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

PROJECT NO./NAME: RACER Coldwater Road Landfill
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Clifford Yantz / Clifford Yantz
TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☒ STANDARD ☐ OTHER 10 and 3 weeks is fine
DELIVERABLES REQUIRED ☐ STD ☒ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☐ EDD ☐ OTHER

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

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

Certifications
☐ OHIO VAP ☐ Drinking Water
☐ DoD ☐ NPDES

Project Locations
☐ Detroit ☐ New York
☐ Other

Special Instructions

MERIT LAB NO. (FOR LAB USE ONLY)	YEAR DATE	YEAR TIME	SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives: NONE	HCl	HNO_3	H_2SO_4	NaOH	MeOH	OTHER	
943370.01	9/13/18	09:37	03-PRCC-18-Inf.	L	3	X							X
.02		11:48	03-PRCC-18-Prim-10	L	3	X							X
.03		14:03	03-PRCC-18-Prim-20	L	3	X							X
.04		18:33	03-PRCC-18-Prim-40	L	3	X							X
.05		18:34	03-PRCC-18-Mid-40	L	3	X							X
.06	↓	15:00	FB-08	L	3	X							X
.07	9/14/18	10:45	03-PRCC-18-Eff-47.4	L	3	X							X
.08	↓	10:46	03-PRCC-18-Mid-47.4	L	3	X							X
.09	↓	10:47	03-PRCC-18-Prim-47.4	L	3	X							X

RELINQUISHED BY: SIGNATURE/ORGANIZATION	Clifford Scott Yantz / Sampler	DATE 9/14/18	TIME 13:42
RECEIVED BY: SIGNATURE/ORGANIZATION		DATE 9/14/18	TIME 13:42
RELINQUISHED BY: SIGNATURE/ORGANIZATION		DATE 9/14/18	TIME 14:45
RECEIVED BY: SIGNATURE/ORGANIZATION		DATE 9/14/18	TIME 1445

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

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

NOTES: TEMP. ON ARRIVAL 4.8

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

Rev. 5.18.12