

Mr. Eric Brubaker

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

RE: ***Discharge Permit Submittal– July 2022 through September 2022***

Permit No.: 6-08-04-04-GML1

FILE: 1088190/1940102192/Docs

Dear **Mr. Brubaker:**

In accordance with requirements of the above referenced discharge permit, we are providing you with the following discharge information for the period July 1, 2022 to September 30, 2022 for the Coldwater Road Landfill facility, located at 6220 Horton Avenue, Mount Morris, Michigan. In addition, we are reporting 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.

October 25, 2022

- Periodic Report on Continued Compliance, certification
- Periodic Report on Continued Compliance Sample (Table 1)
- Daily Discharge Summary Table (Table 2)
- 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 17, 2022.
- Analytical Reports provided by Merit Laboratories, Inc. for samples from the on-Site, PFAS pretreatment system collected on September 8, 2022 and September 9, 2022 during the discharge of the liquids from the on-Site, above ground collection tank through the system.
- Copy of Chain-of-Custody forms.

Ramboll
2090 Commonwealth Blvd.
Ann Arbor, MI 48105
USA

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The laboratory analytical results indicate concentrations in the effluent were below the Sewer Use Permit limits for the required monitoring parameters during the discharge period.

In addition, the PFAS analytical results for the effluent sample were non-detect or below the Sewer Use Permit limits and therefore were reduced below the current EGLE Part 4, Water Quality Standards, Rule 57 Water Quality Values. Therefore, the PFAS pretreatment system is operating as designed.

Breakthrough samples were collected from GAC vessels on September 8, 2022 and September 9, 2022 during the accumulation tank discharge. The influent sample collected on September 8, 2022 had a detection of 7,100 ng/L for perfluorooctane sulfonic acid (PFOS).

The highest PFOS detection from the primary GAC drum samples was detected at 86 ng/L in the sample collected on September 9, 2022. PFOS was detected at a concentration of 2.5 ng/L in the secondary GAC drum, and at a concentration of 2.4 ng/L in the tertiary GAC drum on September 9, 2022.

The primary GAC drum will be removed from the system before the next discharge event. A new GAC drum will be placed in the quaternary (fourth) GAC drum position and the existing quaternary, tertiary (third) and secondary GAC drums will be moved up in position for the approved four-drum pretreatment system.

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

Yours sincerely,

RAMBOLL AMERICAS ENGINEERING SOLUTIONS, INC.



Clifford S. Yantz

Managing Hydrogeologist

1943864 - MIDWEST EAST Resources 056

M 313.333.0211

Clifford.yantz@ramboll.com

cc: Mr. Kevin Forbes – Beecher Metropolitan District, Flint, MI
Mr. Jacob Runge – EGLE (via email)
Mr. David Favero – RACER Trust
Mr. Kevin Schneider – Ramboll

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-GML1
Outfall Number: 001

Reporting Period: July 1, 2022 through September 30, 2022

Average Volume of Daily Discharge (during reporting period): 4,643 gallons
(One Day Event)

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: Managing Hydrogeologist, Ramboll Americas Engineering Solutions, Inc., As agent for the RACER Trust

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

Date Signed by Authorized Representative: 10/25/22

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 - 2022 - GSWVR Sample

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	4.0	<3	<2	7.40	0.03	10
Test Method	4500-NH3 D	10360	1664A	4500-H+ B	4500-PE	2540 D
Test Date	8/25/2022	8/23/2022	8/21/2022	8/17/2022	8/20/2022	8/18/2022
Sample Date	8/17/2022	8/17/2022	8/17/2022	8/17/2022	8/17/2022	8/17/2022
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 - 2022 - GSWVR Sample

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	0.006	0.025	0.338	<0.0002	0.106	0.021	<0.002
Test Method	E200.8	200.8	200.8	245.1	200.8	200.8	1677
Test Date	8/19/2022	8/19/2022	8/19/2022	8/24/2022	8/19/2022	8/19/2022	8/23/2022
Sample Date	8/17/2022	8/17/2022	8/17/2022	8/17/2022	8/17/2022	8/17/2022	8/17/2022
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
RACER Trust - Coldwater Road
Daily Discharge Summary Table
Third Quarter 2022
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		pH
							(C)	(F)	
9/8/2022- 9/9/2022	785,752	790,395	4,643	11:14 AM (9/8/22)	10:29 AM (9/9/22)	3.33	20.7	69.3	7.62

Total Discharge Volume: 4,643

NOTES :

TABLE 3
RACER Trust - Coldwater Road
Pre-and Polyfluoroalkyl Substances (PFAS) Sampling Results - October 2022

Coldwater Road - PFAS Pretreatment System Samples

Perfluorinated Compound	Well/Sample ID:	EGLE Part 201 Generic Groundwater Surface Water Interface Criteria / Rule 57 Surface Water Quality Values	03-PRCC-22-INF (Influent Sample)	03-PRCC-22-PRIM (Primary GAC Drum Sample)	03-PRCC-22-PRIM-103 (Primary GAC Drum Sample after 103 Bed Volumes)	03-PRCC-22-MID-1-103 (Secondary GAC Drum Sample after 103 Bed Volumes)	03-PRCC-22-MID-2-103 (Tertiary GAC Drum Sample after 103 Bed Volumes)	03-PRCC-22-EFF-103 (Effluent Sample after 103 Bed Volumes)
Sample Date:			9/8/2022	9/8/2022	9/9/2022	9/9/2022	9/9/2022	9/9/2022
Perfluorobutanoic Acid (PFBA)		--	<210 IX	<10	<12 X	<10	<9.9	<10
Perfluoropentanoic Acid (PFPeA)		--	<12 X	<4.1	<6.1 X	<4.1	<4.0	<4.1
4:2 Fluorotelomer Sulfonic Acid (4:2 FTSA)		--	<2.0 I	<2.0	4.1	<2.0	<2.0	<2.0
Perfluorohexanoic Acid (PFHxA)		--	120	<2.0	3.2	<2.0	<2.0	<2.0
Perfluorobutane Sulfonic Acid (PFBS)	670,000	--	55	<2.0	<2.0	<2.0	<2.0	<2.0
Perfluoroheptanoic Acid (PFHpA)		--	19	<2.0	3.4	<2.0	<2.0	<2.0
Perfluoropentane Sulfonic Acid (PFPeS)		--	110	<2.0	<2.0	<2.0	<2.0	<2.0
6:2 Fluorotelomer Sulfonic Acid (6:2 FTSA)		--	<2.0 I	<2.0	<2.0	<2.0	<2.0	<2.0
Perfluorooctanoic Acid (PFOA)	170	--	53	<2.0	8.4	<2.0	<2.0	<2.0
Perfluorohexane Sulfonic Acid (PFHxS)		--	310	<2.0	5.7	<2.0	<2.0	<2.0
Perfluorohexane Sulfonic Acid - LN (PFHxS-LN)		--	260	<2.0	2.8	<2.0	<2.0	<2.0
Perfluorohexane Sulfonic Acid - BR (PFHxS-BR)		--	48	<2.0	<2.0	<2.0	<2.0	<2.0
Perfluorononanoic Acid (PFNA)		--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
8:2 Fluorotelomer Sulfonic Acid (8:2 FTSA)		--	<2.0	<2.0	<2.0 I	<2.0 I	<2.0 I	<2.0
Perfluoroheptane Sulfonic Acid (PFHpS)		--	72	<2.0	<2.0	<2.0	<2.0	<2.0
Perfluorodecanoic Acid (PFDA)		--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
N-methyl Perfluorooctanesulfonamidoacetic Acid (N-MeFOSAA)		--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA)		--	<3.9	<4.1	<4.1	<4.1	<4.0	<4.1
Perfluorooctane Sulfonic Acid (PFOS)	12	--	7,100	10.0	86	2.5	2.4	<2.0
Perfluorooctane Sulfonic Acid (PFOS -LN)		--	4,900	7.2	39	<2.0	2.0	<2.0
Perfluorooctane Sulfonic Acid (PFOS -BR)		--	2,400	2.4	46	<2.0	<2.0	<2.0
Perfluoroundecanoic Acid (PFUnDA)		--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Perfluorononane Sulfonic Acid (PFNS)		--	3.9	<2.0	<2.0	<2.0	<2.0	<2.0
Perfluorododecanoic Acid (PFDoDA)		--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Perfluorodecane Sulfonic Acid (PFDS)		--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Perfluorotridecanoic Acid (PFTTrDA)		--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Perfluorooctane Sulfonamide (FOSA)		--	2.3	<2.0	<2.0	<2.0	<2.0	<2.0
Perfluorotetradecanoic Acid (PFTeDA)		--	<3.9	<4.1	<4.1	<4.1	<4.0	<4.1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11CI-PF3OUdS)		--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
9-chlorohexadecafluoro-3-oxanone1-sulfonic acid (9CI-PF3ONS)		--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
4,8-dioxa-3H-perfluorononanoic acid (ADONA)		--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Hexafluoropropylene oxide dimer (HFPO-DA)		--	<9.8	<10	<10	<10	<9.9	<10
Total Per-and Polyfluoroalkyl Substances		--	7,845.2	10.0	110.8	2.5	2.4	0.0

Notes

- 1) Detections in **bold**.
- 2) Concentrations in ng/L.
- 3) < = Not detected at specified reporting limit.
- 4) -- = Not analyzed/No criteria.
- 5) Dup = Duplicate sample.
- 6) EGLE Part 201 Groundwater Generic Cleanup Criteria and Screening Levels, December 21, 2020 and Rule 57 Surface Water Quality Values.
- 7) Concentration above the groundwater surface water interface (GSI) criteria are highlighted in yellow.
- 8) 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.
- 9) I - Matrix interference with internal standard.
- 10) J - Estimated value less than reporting limit, but greater than MDL.
- 11) X - Elevated reporting limit due to matrix interference.
- 12) QA/QC Samples were either not detected above the reporting limit or below the EGLE Part 201 Groundwater Generic Cleanup Criteria.



Analytical Laboratory Report

Report ID: S39325.01(01)
Generated on 08/26/2022

Report to
Attention: Clifford Yantz
Ramboll
2090 Commonwealth Blvd.
Ann Arbor, MI 48105

Phone: 313-333-0211 FAX:
Email: Clifford.Yantz@ramboll.com

Additional Contacts: Kevin Schneider

Report produced by
Merit Laboratories, Inc.
2680 East Lansing Drive
East Lansing, MI 48823

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

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

Report Summary
Lab Sample ID(s): S39325.01
Project: RACER Coldwater Rd.
Collected Date(s): 08/17/2022
Submitted Date/Time: 08/17/2022 14:10
Sampled by: Kalyssa Ramirez
P.O. #: 1940004462 TASK 1

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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

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
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 2015
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 / 4500 P B(5) 2011
SW3015A	SW 846 Method 3015A Revision 1 February 2007



Analytical Laboratory Report

Sample Summary (1 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S39325.01	03-PRCC-22	Wastewater	08/17/22 11:55



Analytical Laboratory Report

Lab Sample ID: S39325.01

Sample Tag: 03-PRCC-22

Collected Date/Time: 08/17/2022 11:55

Matrix: Wastewater

COC Reference: 156911

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	1L Plastic	None	Yes	2.7	IR
1	125ml Plastic	HNO3	Yes	2.7	IR
1	125ml Amber	PbCO3/NaOH	Yes	2.7	IR
1	32oz Glass	HCL	Yes	2.7	IR
1	250ml Plastic	H2SO4	Yes	2.7	IR
1	500ml Plastic	None	Yes	2.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Mercury Digestion	Completed	E245.1	08/24/22 12:13	CTV	
TBOD5 - Set*	Completed	HACH 10360	08/18/22 14:40	PJH	
Metal Digestion	Completed	SW3015A	08/19/22 13:10	CCM	

Inorganics

Method: E1664A, Run Date: 08/21/22 15:00, Analyst: PTW

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

Method: HACH 10360, Run Date: 08/23/22 14:34, Analyst: PJH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
TBOD5*	Not detected	3		mg/L	1.5		

Method: SM2540D, Run Date: 08/18/22 18:00, Analyst: PJH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Suspended Solids	10	3		mg/L	1.00		

Method: SM2550B, Run Date: 08/17/22 11:55, Analyst: KR

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Field Temperature*	69	1		oF	1		

Method: SM4500-H+ B, Run Date: 08/17/22 11:55, Analyst: KR

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Field pH*	7.40	0.01		STD Units	1		

Method: SM4500-NH3 D, Run Date: 08/25/22 14:07, Analyst: MJC

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Ammonia-N (Undistilled)	4.0	0.1	0.015	mg/L	5	7664-41-7	

Method: SM4500-PE, Run Date: 08/20/22 13:25, Analyst: MJC

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Phosphorus	0.03	0.01	0.009	mg/L	1	7723-14-0	

Metals

Method: E200.8, Run Date: 08/19/22 14:46, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	0.006	0.002		mg/L	5	7440-38-2	



Analytical Laboratory Report

Lab Sample ID: S39325.01 (continued)
Sample Tag: 03-PRCC-22

Method: E200.8, Run Date: 08/19/22 14:46, Analyst: CCM (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chromium	0.025	0.005		mg/L	5	7440-47-3	
Copper	0.338	0.005		mg/L	5	7440-50-8	
Nickel	0.106	0.005		mg/L	5	7440-02-0	
Zinc	0.021	0.005		mg/L	5	7440-66-6	

Method: E245.1, Run Date: 08/24/22 14:49, Analyst: CTV

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: 08/23/22 10:25, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Available Cyanide	Not detected	0.002	0.0015	mg/L	1	57-12-5	

Merit Laboratories Login Checklist

Lab Set ID:S39325

Client:OBG02 (Ramboll Americas)

Project: RACER Coldwater Rd.

Submitted:08/17/2022 14:10 Login User: MMC

Attention: Clifford Yantz

Address: Ramboll
2090 Commonwealth Blvd.
Ann Arbor, MI 48105

Phone: 313-333-0211 FAX:
Email: Clifford.Yantz@ramboll.com

Selection	Description	Note
Sample Receiving		
01.	☒ Yes ☐ No ☐ N/A	Samples are received at 4C +/- 2C Thermometer # IR 2.7
02.	☒ Yes ☐ No ☐ N/A	Received on ice/ cooling process begun
03.	☐ Yes ☒ No ☐ N/A	Samples shipped
04.	☐ Yes ☒ No ☐ N/A	Samples left in 24 hr. drop box
05.	☐ Yes ☐ No ☒ N/A	Are there custody seals/tape or is the drop box locked
Chain of Custody		
06.	☒ Yes ☐ No ☐ N/A	COC adequately filled out
07.	☒ Yes ☐ No ☐ N/A	COC signed and relinquished to the lab
08.	☒ Yes ☐ No ☐ N/A	Sample tag on bottles match COC
09.	☐ Yes ☒ No ☐ N/A	Subcontracting needed? Subcontacted to:
Preservation		
10.	☒ Yes ☐ No ☐ N/A	Do sample have correct chemical preservation
11.	☒ Yes ☐ No ☐ N/A	Completed pH checks on preserved samples? (no VOAs)
12.	☐ Yes ☒ No ☐ N/A	Did any samples need to be preserved in the lab?
Bottle Conditions		
13.	☒ Yes ☐ No ☐ N/A	All bottles intact
14.	☒ Yes ☐ No ☐ N/A	Appropriate analytical bottles are used
15.	☒ Yes ☐ No ☐ N/A	Merit bottles used
16.	☒ Yes ☐ No ☐ N/A	Sufficient sample volume received
17.	☐ Yes ☒ No ☐ N/A	Samples require laboratory filtration
18.	☒ Yes ☐ No ☐ N/A	Samples submitted within holding time
19.	☐ Yes ☐ No ☒ N/A	Do water VOC or TOX bottles contain headspace

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

Client Review By: _____ Date: _____

Merit Laboratories Bottle Preservation Check

Lab Set ID: S39325 Submitted: 08/17/2022 14:10

Client: OBG02 (Ramboll Americas)

Project: RACER Coldwater Rd.

Attention: Clifford Yantz

Address: Ramboll

2090 Commonwealth Blvd.
Ann Arbor, MI 48105

Initial Preservation Check: 08/17/2022 15:34 MMC

Preservation Recheck (E200.8): N/A

Phone: 313-333-0211

FAX:

Email: Clifford.Yantz@ramboll.com

Sample ID	Bottle / Preservation	pH (Orig)	Add ml	pH (New)	Notes
S39325.01	125ml Amber PbCO3/NaOH	>12			
S39325.01	125ml Plastic HNO3	<2			
S39325.01	250ml Plastic H2SO4	<2			
S39325.01	32oz Glass HCL	4	1.0	<2	Lot# 2020080697



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 156911

REPORT TO

CHAIN OF CUSTODY RECORD

INVOICE TO

CONTACT NAME Clifford Yantz / Kevin Schneider			
COMPANY Ramboll			
ADDRESS 2090 Commonwealth Blvd.			
CITY Ann Arbor		STATE MI	ZIP CODE 48105
PHONE NO. 313-333-0211	CELL NO.	P.O. NO. 190000	QUOTE NO. 1940004462
E-MAIL ADDRESS Clifford.Yantz@ramboll.com Kevin.Schneider@ramboll.com			

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

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

PROJECT NO./NAME RACER Cobwater Rd.	SAMPLER(S) - PLEASE PRINT/SIGN NAME Kalyssa Ramirez
TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☒ STANDARD ☐ OTHER	
DELIVERABLES REQUIRED ☐ STD ☒ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☐ EDD ☐ OTHER	

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

Containers & Preservatives

MERIT LAB NO. FOR LAB USE ONLY	COLLECTION		SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	NONE	HCl	HNO ₃	H ₂ SO ₄	NaOH	MeOH	OTHER	Total Metals	Available Cyanide	BOD	TSS	Total Phosphorus	FOG			☐ Other _____ Special Instructions	
	DATE	TIME																				
39325.01	8/11/22	11:55	O3-PRCL-22	WW	7	3	1	1					1	X	X	X	X	X	X		Metals are: AS, CU, Cr, Hg, Ni, Zn Analysis per City of Flint including QC report Field pH - 7.40 Field Temp - 20.7°C	
VRR																						

RELINQUISHED BY: SIGNATURE/ORGANIZATION Kalyssa Ramirez	☒ Sampler	DATE 8/11/22	TIME 13:05
RECEIVED BY: SIGNATURE/ORGANIZATION [Signature]		DATE 8/15/22	TIME 13:05
RELINQUISHED BY: SIGNATURE/ORGANIZATION [Signature]		DATE 8/17/22	TIME 14:10
RECEIVED BY: SIGNATURE/ORGANIZATION M Chilcote		DATE 8/17/22	TIME 14:10

RELINQUISHED BY: SIGNATURE/ORGANIZATION	DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION	DATE	TIME
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS
NOTES:		TEMP. ON ARRIVAL 2.7

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



Quality Control Report

Report ID: QC-S39325-01
Generated on 08/26/2022

Report to

Attention: Clifford Yantz
Ramboll
2090 Commonwealth Blvd.
Ann Arbor, MI 48105

Phone: 313-333-0211 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): S39325.01
Project: RACER Coldwater Rd.
Submitted Date/Time: 08/17/2022 14:10
Sampled by: Kalyssa Ramirez
P.O. #: 1940004462 TASK 1

QC Report Sections

Cover Page (Page 1)
Analysis Summary (Page 2)
Prep Batch Summary (Page 3)
Batch QC Results (Pages 4-13)

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: S39325.01

Sample Tag: 03-PRCC-22

Collected Date/Time: 08/17/2022 11:55

Matrix: Wastewater

COC Reference: 156911

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Inorganics						
Ammonia-N (Undistilled)	SM4500-NH3 D	08/25/22 14:07	AMN220825QC	AMN220825QC	No	BLK/LCS/MS/DUP
Oil & Grease n-Hexane Extract.	E1664A	08/21/22 15:00	OGHEX220821W1	OGHEX220821W1	No	BLK/LCS
TBOD5	HACH 10360	08/23/22 14:34	BOD220818	BOD220818	No	BLK/LCS/DUP
Total Phosphorus	SM4500-PE	08/20/22 13:25	PHS220820QC	PHS220820QC	No	BLK/LCS/MS/DUP
Total Suspended Solids	SM2540D	08/18/22 18:00	TSS220818A	TSS220818A	No	BLK/LCS/DUP
Metals						
Arsenic	E200.8	08/19/22 14:46	MT4-22-0819C	MTD-081922-4	No	BLK/LCS/MS/MSD
Chromium	E200.8	08/19/22 14:46	MT4-22-0819C	MTD-081922-4	No	BLK/LCS/MS/MSD
Copper	E200.8	08/19/22 14:46	MT4-22-0819C	MTD-081922-4	No	BLK/LCS/MS/MSD
Mercury	E245.1	08/24/22 14:49	HG-22-0824A	HGD-082422-2	No	BLK/LCS/MS/MSD
Nickel	E200.8	08/19/22 14:46	MT4-22-0819C	MTD-081922-4	No	BLK/LCS/MS/MSD
Zinc	E200.8	08/19/22 14:46	MT4-22-0819C	MTD-081922-4	No	BLK/LCS/MS/MSD
Other / Misc.						
Available Cyanide	OIA-1677	08/23/22 10:25	ACN220823-W1	ACN220823-W1	No	BLK/LCS/MS/MSD/DU

QC Report - Prep Batch Summary

Inorganics, Prep Batch ID: AMN220825QC

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

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S39325.01	Ammonia-N (Undistilled)	SM4500-NH3 D	08/25/22 14:07	AMN220825QC

Inorganics, Prep Batch ID: BOD220818

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

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S39325.01	TBOD5	HACH 10360	08/23/22 14:34	BOD220818

Inorganics, Prep Batch ID: OGHEX220821W1

Surrogates: No, QC Types: BLK/LCS

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S39325.01	Oil & Grease n-Hexane Extract.	E1664A	08/21/22 15:00	OGHEX220821W1

Inorganics, Prep Batch ID: PHS220820QC

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

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S39325.01	Total Phosphorus	SM4500-PE	08/20/22 13:25	PHS220820QC

Inorganics, Prep Batch ID: TSS220818A

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

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S39325.01	Total Suspended Solids	SM2540D	08/18/22 18:00	TSS220818A

Metals, Prep Batch ID: HGD-082422-2

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

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S39325.01	Mercury	E245.1	08/24/22 14:49	HG-22-0824A

Metals, Prep Batch ID: MTD-081922-4

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

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S39325.01	Arsenic	E200.8	08/19/22 14:46	MT4-22-0819C
S39325.01	Chromium	E200.8	08/19/22 14:46	MT4-22-0819C
S39325.01	Copper	E200.8	08/19/22 14:46	MT4-22-0819C
S39325.01	Nickel	E200.8	08/19/22 14:46	MT4-22-0819C
S39325.01	Zinc	E200.8	08/19/22 14:46	MT4-22-0819C

Other / Misc., Prep Batch ID: ACN220823-W1

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

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S39325.01	Available Cyanide	OIA-1677	08/23/22 10:25	ACN220823-W1

QC Report - Batch QC Results

Inorganics, Prep Batch ID: AMN220825QC

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

Blank (BLK)

Lab Sample ID: AMN220825QC.LRB1

Run in Batch: AMN220825QC, Run Date: 08/25/2022 09:25, Prep Date: 08/25/2022, Matrix: Liquid, Dilution: 1

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

Laboratory Control Sample (LCS)

Lab Sample ID: AMN220825QC.LCS1

Run in Batch: AMN220825QC, Run Date: 08/25/2022 10:57, Prep Date: 08/25/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Ammonia-N (Undistilled)		97	90	110

Matrix Spike (MS)

Lab Sample ID: AMN220825QC.MS1, Parent Sample ID: S39583.02

Run in Batch: AMN220825QC, Run Date: 08/25/2022 12:02, Prep Date: 08/25/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Ammonia-N (Undistilled)		98	80	120

Duplicate (DUP)

Lab Sample ID: AMN220825QC.DP1, Parent Sample ID: S39583.01

Run in Batch: AMN220825QC, Run Date: 08/25/2022 11:40, Prep Date: 08/25/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	RPD	RPD CL
Ammonia-N (Undistilled)		2.5	20

QC Report - Batch QC Results

Inorganics, Prep Batch ID: BOD220818

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

Blank (BLK)

Lab Sample ID: BOD220818.LRB1

Run in Batch: BOD220818, Run Date: 08/23/2022 14:34, Prep Date: 08/23/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	Conc	RDL	Units
TBOD5		ND	3	mg/L

Blank (BLK)

Lab Sample ID: BOD220818.LRB2

Run in Batch: BOD220818, Run Date: 08/23/2022 14:34, Prep Date: 08/23/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	Conc	RDL	Units
TBOD5		ND	3	mg/L

Blank (BLK)

Lab Sample ID: BOD220818.LRB3

Run in Batch: BOD220818, Run Date: 08/23/2022 14:34, Prep Date: 08/23/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	Conc	RDL	Units
TBOD5		ND	3	mg/L

Laboratory Control Sample (LCS)

Lab Sample ID: BOD220818.LCS1

Run in Batch: BOD220818, Run Date: 08/23/2022 14:34, Prep Date: 08/23/2022, Matrix: Liquid, Dilution: 20

Analyte	Flags	% Rec	LCL	UCL
TBOD5		98.2	50.7	167

Laboratory Control Sample (LCS)

Lab Sample ID: BOD220818.LCS2

Run in Batch: BOD220818, Run Date: 08/23/2022 14:34, Prep Date: 08/23/2022, Matrix: Liquid, Dilution: 20

Analyte	Flags	% Rec	LCL	UCL
TBOD5		95.8	50.7	167

Laboratory Control Sample (LCS)

Lab Sample ID: BOD220818.LCS3

Run in Batch: BOD220818, Run Date: 08/23/2022 14:34, Prep Date: 08/23/2022, Matrix: Liquid, Dilution: 20

Analyte	Flags	% Rec	LCL	UCL
TBOD5		96.9	50.7	167

Duplicate (DUP)

Lab Sample ID: BOD220818.DP1, Parent Sample ID: S39327.01

Run in Batch: BOD220818, Run Date: 08/23/2022 14:34, Prep Date: 08/23/2022, Matrix: Liquid, Dilution: 60

Analyte	Flags	RPD	RPD CL
TBOD5		11.1	20

Duplicate (DUP)

Lab Sample ID: BOD220818.DP2, Parent Sample ID: S39329.01

Run in Batch: BOD220818, Run Date: 08/23/2022 14:34, Prep Date: 08/23/2022, Matrix: Liquid, Dilution: 60

Analyte	Flags	RPD	RPD CL
TBOD5		8.0	20

QC Report - Batch QC Results

Inorganics, Prep Batch ID: BOD220818 (continued)

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

Duplicate (DUP)

Lab Sample ID: BOD220818.DP3, Parent Sample ID: S39330.01

Run in Batch: BOD220818, Run Date: 08/23/2022 14:34, Prep Date: 08/23/2022, Matrix: Liquid, Dilution: 15

Analyte	Flags	RPD	RPD CL
TBOD5		8.4	20

QC Report - Batch QC Results

Inorganics, Prep Batch ID: OGHEx220821W1

Surrogates: No, QC Types: BLK/LCS

Blank (BLK)

Lab Sample ID: OGHEx220821W1.LRB3

Run in Batch: OGHEx220821W1, Run Date: 08/21/2022 13:00, Prep Date: 08/21/2022, 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: OGHEx220821W1.LCS1

Run in Batch: OGHEx220821W1, Run Date: 08/21/2022 13:00, Prep Date: 08/21/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Oil & Grease n-Hexane Extract.		104	78	114

Laboratory Control Sample (LCS)

Lab Sample ID: OGHEx220821W1.LCS2

Run in Batch: OGHEx220821W1, Run Date: 08/21/2022 13:00, Prep Date: 08/21/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Oil & Grease n-Hexane Extract.		85	78	114

QC Report - Batch QC Results

Inorganics, Prep Batch ID: PHS220820QC

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

Blank (BLK)

Lab Sample ID: PHS220820QC.LRB1

Run in Batch: PHS220820QC, Run Date: 08/20/2022 12:27, Prep Date: 08/20/2022, Matrix: Liquid, Dilution: 1

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

Blank (BLK)

Lab Sample ID: PHS220820QC.LRB2

Run in Batch: PHS220820QC, Run Date: 08/20/2022 12:35, Prep Date: 08/20/2022, Matrix: Liquid, Dilution: 1

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

Laboratory Control Sample (LCS)

Lab Sample ID: PHS220820QC.LCS1

Run in Batch: PHS220820QC, Run Date: 08/20/2022 12:42, Prep Date: 08/20/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Total Phosphorus		90	90	110

Matrix Spike (MS)

Lab Sample ID: PHS220820QC.MS1, Parent Sample ID: S39325.01

Run in Batch: PHS220820QC, Run Date: 08/20/2022 18:27, Prep Date: 08/20/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Total Phosphorus		94	80	120

Duplicate (DUP)

Lab Sample ID: PHS220820QC.DP1, Parent Sample ID: S39257.01

Run in Batch: PHS220820QC, Run Date: 08/20/2022 18:24, Prep Date: 08/20/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	RPD	RPD CL
Total Phosphorus		4.7	20

QC Report - Batch QC Results

Inorganics, Prep Batch ID: TSS220818A

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

Blank (BLK)

Lab Sample ID: TSS220818A.LRB1

Run in Batch: TSS220818A, Run Date: 08/18/2022 18:00, Prep Date: 08/18/2022, Matrix: Liquid, Dilution: 1

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

Laboratory Control Sample (LCS)

Lab Sample ID: TSS220818A.LCS1

Run in Batch: TSS220818A, Run Date: 08/18/2022 18:00, Prep Date: 08/18/2022, Matrix: Liquid, Dilution: 10.0

Analyte	Flags	% Rec	LCL	UCL
Total Suspended Solids		96.3	78.8	124

Duplicate (DUP)

Lab Sample ID: TSS220818A.DP1, Parent Sample ID: S39253.01

Run in Batch: TSS220818A, Run Date: 08/18/2022 18:00, Prep Date: 08/18/2022, Matrix: Liquid, Dilution: 10.0

Analyte	Flags	RPD	RPD CL
Total Suspended Solids		1.2	10

QC Report - Batch QC Results

Metals, Prep Batch ID: HGD-082422-2

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

Blank (BLK)

Lab Sample ID: HG-22-0824A.041.LRB

Run in Batch: HG-22-0824A, Run Date: 08/24/2022 14:26, Prep Date: 08/24/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Mercury		ND	0.05	ug/L

Laboratory Control Sample (LCS)

Lab Sample ID: HG-22-0824A.040.LCS

Run in Batch: HG-22-0824A, Run Date: 08/24/2022 14:22, Prep Date: 08/24/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Mercury		91	85	115

Matrix Spike (MS)

Lab Sample ID: HG-22-0824A.051.MS, Parent Sample ID: S39327.03

Run in Batch: HG-22-0824A, Run Date: 08/24/2022 14:59, Prep Date: 08/24/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Mercury		88	80	120

Matrix Spike (MS)

Lab Sample ID: HG-22-0824A.064.MS, Parent Sample ID: S39368.01

Run in Batch: HG-22-0824A, Run Date: 08/24/2022 15:41, Prep Date: 08/24/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Mercury		93	80	120

Matrix Spike Duplicate (MSD)

Lab Sample ID: HG-22-0824A.052.MSD, Parent Sample ID: HG-22-0824A.051.MS

Run in Batch: HG-22-0824A, Run Date: 08/24/2022 15:02, Prep Date: 08/24/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Mercury		90	80	120	2	20

Matrix Spike Duplicate (MSD)

Lab Sample ID: HG-22-0824A.065.MSD, Parent Sample ID: HG-22-0824A.064.MS

Run in Batch: HG-22-0824A, Run Date: 08/24/2022 15:45, Prep Date: 08/24/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Mercury		91	80	120	3	20

QC Report - Batch QC Results

Metals, Prep Batch ID: MTD-081922-4

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

Blank (BLK)

Lab Sample ID: MT4-22-0819C.021.LRB

Run in Batch: MT4-22-0819C, Run Date: 08/19/2022 14:31, Prep Date: 08/19/2022, 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

Laboratory Control Sample (LCS)

Lab Sample ID: MT4-22-0819C.019.LCS

Run in Batch: MT4-22-0819C, Run Date: 08/19/2022 14:29, Prep Date: 08/19/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Arsenic		102	85	115
Chromium		101	85	115
Copper		103	85	115
Nickel		101	85	115
Zinc		101	85	115

Matrix Spike (MS)

Lab Sample ID: MT4-22-0819C.034.MS, Parent Sample ID: S39330.01

Run in Batch: MT4-22-0819C, Run Date: 08/19/2022 15:07, Prep Date: 08/19/2022, Matrix: Liquid, Dilution: 5

Analyte	Flags	% Rec	LCL	UCL
Arsenic		108	75	125
Chromium		104	75	125
Copper		102	75	125
Nickel		103	75	125
Zinc		106	75	125

Matrix Spike (MS)

Lab Sample ID: MT4-22-0819C.049.MS, Parent Sample ID: S39404.01

Run in Batch: MT4-22-0819C, Run Date: 08/19/2022 15:26, Prep Date: 08/19/2022, Matrix: Liquid, Dilution: 5

Analyte	Flags	% Rec	LCL	UCL
Arsenic		105	75	125
Chromium		102	75	125
Copper		97	75	125
Nickel		98	75	125
Zinc		104	75	125

Matrix Spike Duplicate (MSD)

Lab Sample ID: MT4-22-0819C.035.MSD, Parent Sample ID: MT4-22-0819C.034.MS

Run in Batch: MT4-22-0819C, Run Date: 08/19/2022 15:08, Prep Date: 08/19/2022, Matrix: Liquid, Dilution: 5

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Arsenic		109	75	125	1	20
Chromium		106	75	125	3	20
Copper		103	75	125	1	20
Nickel		102	75	125	1	20
Zinc		108	75	125	2	20

QC Report - Batch QC Results

Metals, Prep Batch ID: MTD-081922-4 (continued)

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

Matrix Spike Duplicate (MSD)

Lab Sample ID: MT4-22-0819C.050.MSD, Parent Sample ID: MT4-22-0819C.049.MS

Run in Batch: MT4-22-0819C, Run Date: 08/19/2022 15:27, Prep Date: 08/19/2022, 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		100	75	125	3	20
Nickel		100	75	125	1	20
Zinc		106	75	125	2	20

QC Report - Batch QC Results

Other / Misc., Prep Batch ID: ACN220823-W1

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

Blank (BLK)

Lab Sample ID: ACN220823-W1.LRB1

Run in Batch: ACN220823-W1, Run Date: 08/23/2022 09:51, Prep Date: 08/23/2022, Matrix: Liquid, Dilution: 1

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

Blank (BLK)

Lab Sample ID: ACN220823-W1.LRB2

Run in Batch: ACN220823-W1, Run Date: 08/23/2022 10:35, Prep Date: 08/23/2022, Matrix: Liquid, Dilution: 1

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

Laboratory Control Sample (LCS)

Lab Sample ID: ACN220823-W1.LCS1

Run in Batch: ACN220823-W1, Run Date: 08/23/2022 09:55, Prep Date: 08/23/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Available Cyanide		96	88	109

Matrix Spike (MS)

Lab Sample ID: ACN220823-W1.MS1, Parent Sample ID: S39414.01

Run in Batch: ACN220823-W1, Run Date: 08/23/2022 10:09, Prep Date: 08/23/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Available Cyanide		89	82	130

Matrix Spike Duplicate (MSD)

Lab Sample ID: ACN220823-W1.MSD1, Parent Sample ID: ACN220823-W1.MS1

Run in Batch: ACN220823-W1, Run Date: 08/23/2022 10:11, Prep Date: 08/23/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Available Cyanide		91	82	130	3	15

Duplicate (DUP)

Lab Sample ID: ACN220823-W1.DP1, Parent Sample ID: S39414.01

Run in Batch: ACN220823-W1, Run Date: 08/23/2022 10:05, Prep Date: 08/23/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	RPD	RPD CL
Available Cyanide		<1	15

REPORT TO

CHAIN OF CUSTODY RECORD

INVOICE TO

CONTACT NAME Clifford Yantz / Kevin Schneider				CONTACT NAME SAME			
COMPANY ramboll				COMPANY			
ADDRESS 2090 Commonwealth Blvd.				ADDRESS			
CITY Ann Arbor			STATE MI	ZIP CODE 48105			
PHONE NO. 313-333-0211		CELL NO.	P.O. NO. 190	1940004462		Task 1	
E-MAIL ADDRESS Clifford.Yantz@ramboll.com Kevin.Schneider@ramboll.com			QUOTE NO.				

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)						
--	--	--	--	--	--	--

PROJECT NO./NAME RACER Coldwater Rd.						SAMPLER(S) - PLEASE PRINT/SIGN NAME <i>Kalyssa Ramirez</i>															Certifications ☐ OHIO VAP ☐ Drinking Water ☐ DoD ☐ NPDES Project Locations ☐ Detroit ☐ New York ☐ Other _____ Special Instructions								
TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☒ STANDARD ☐ OTHER _____																													
DELIVERABLES REQUIRED ☐ STD ☒ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☐ EDD ☐ OTHER _____																													
MATRIX W=WATER GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID CODE: SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIFE A=AIR WS=WASTE						# Containers & Preservatives						Total metals	Available Cyanide	Bod / TSS	Ammonia-Nitrogen	Total Phosphorus	FOLG (Hex-Gel)												
MATRIX LAB NO. FOR LAB USE ONLY	COLLECTION DATE		TIME	SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	NONE	HCl	HNO ₃	H ₂ SO ₄	NaOH	MeOH	OTHER	X	X	X	X	X	X										
39325.01	8/1/12	11:55	OZ-PRCL-22	WW	7	3	1	1	1				1	x	x	x	x	x	x										
UPP																													
																				Metals are: As, Cu, Cr, Hg, Ni, Zn									
																				Analysis per City of Flint including QC report									
																				Field pH - 7.40 Field Temp - 20.7°									

RELINQUISHED BY:	☒ Sampler	DATE	TIME	RELINQUISHED BY:	DATE	TIME	
SIGNATURE/ORGANIZATION		8/17/22	13:05	SIGNATURE/ORGANIZATION			
RECEIVED BY:		DATE	TIME	RECEIVED BY:			
SIGNATURE/ORGANIZATION		8/17/22	13:05	SIGNATURE/ORGANIZATION			
RELINQUISHED BY:		DATE	TIME	SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS	NOTES: TEMP. ON ARRIVAL <u>2.7</u>
SIGNATURE/ORGANIZATION		8/17/22	14:10	SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS	
RECEIVED BY:		DATE	TIME				
SIGNATURE/ORGANIZATION		8/17/22	14:10				

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



Analytical Laboratory Report

Report ID: S40128.01(01)
Generated on 09/30/2022

Report to
Attention: Clifford Yantz
Ramboll Americas
2090 Commonwealth Blvd
Ann Arbor, MI 48105

Phone: 313-333-0211 FAX:
Email: Clifford.Yantz@ramboll.com

Additional Contacts: Kevin Schneider

Report produced by
Merit Laboratories, Inc.
2680 East Lansing Drive
East Lansing, MI 48823

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

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

Report Summary
Lab Sample ID(s): S40128.01-S40128.02
Project: RACER Coldwater Rd
Collected Date(s): 09/08/2022
Submitted Date/Time: 09/09/2022 12:45
Sampled by: Kalyssa Ramirez
P.O. #: 1940004462 TASK 37

Table of Contents

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- General Report Notes (Page 2)
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- Method Summary (Page 4)
- Sample Summary (Page 5)


Maya Murshak
Technical Director



Analytical Laboratory Report

General Report Notes

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

Methods may be modified for improved performance.

Results reported on a dry weight basis where applicable.

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

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

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-chloroeicosafluoro-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 (2 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S40128.01	03-PRCC-22-INF	Wastewater	09/08/22 11:15
S40128.02	03-PRCC-22-PRIM	Wastewater	09/08/22 11:24



Analytical Laboratory Report

Lab Sample ID: S40128.01

Sample Tag: 03-PRCC-22-INF

Collected Date/Time: 09/08/2022 11:15

Matrix: Wastewater

COC Reference: 144829

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)*	13.06/6.90/12	ASTMD7979-19M	09/26/22 13:15	WTS	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 09/27/22 10:47, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	210	9.8	ng/L	1.95	375-22-4	IX
PFPa*	Not detected	12	0.98	ng/L	1.95	2706-90-3	X
4:2 FTSA*	Not detected	2.0	1.6	ng/L	1.95	757124-72-4	I
PFHxA*	120	2.0	1.4	ng/L	1.95	307-24-4	
PFBS*	55	2.0	1.4	ng/L	1.95	375-73-5	
PFHpA*	19	2.0	1.4	ng/L	1.95	375-85-9	
PFPeS*	110	2.0	1.8	ng/L	1.95	2706-91-4	
6:2 FTSA*	Not detected	2.0	2.0	ng/L	1.95	27619-97-2	I
PFOA*	53	2.0	1.6	ng/L	1.95	335-67-1	
PFHxS*	310	2.0	1.6	ng/L	1.95	355-46-4	
PFHxS-LN*	260	2.0	1.6	ng/L	1.95	355-46-4-LN	
PFHxS-BR*	48	2.0	1.6	ng/L	1.95	355-46-4-BR	
PFNA*	Not detected	2.0	1.8	ng/L	1.95	375-95-1	
8:2 FTSA*	Not detected	2.0	0.98	ng/L	1.95	39108-34-4	
PFHpS*	72	2.0	2.0	ng/L	1.95	375-92-8	
PFDA*	Not detected	2.0	2.0	ng/L	1.95	335-76-2	
N-MeFOSAA*	Not detected	2.0	2.0	ng/L	1.95	2355-31-9	
EtFOSAA*	Not detected	3.9	2.0	ng/L	1.95	2991-50-6	
PFOS*	7,100	2.0	1.9	ng/L	1.95	1763-23-1	
PFOS-LN*	4,900	2.0	1.9	ng/L	1.95	1763-23-1-LN	
PFOS-BR*	2,400	2.0	1.9	ng/L	1.95	1763-23-1-BR	
PFUnDA*	Not detected	2.0	1.4	ng/L	1.95	2058-94-8	
PFNS*	3.9	2.0	1.4	ng/L	1.95	68259-12-1	
PFDaDA*	Not detected	2.0	1.6	ng/L	1.95	307-55-1	
PFDS*	Not detected	2.0	1.4	ng/L	1.95	335-77-3	
PFTDA*	Not detected	2.0	1.2	ng/L	1.95	72629-94-8	
FOSA*	2.3	2.0	1.8	ng/L	1.95	754-91-6	
PFTeDA*	Not detected	3.9	1.8	ng/L	1.95	376-06-7	
11Cl-PF3OUdS*	Not detected	2.0	1.8	ng/L	1.95	763051-92-9	
9Cl-PF3ONS*	Not detected	2.0	1.4	ng/L	1.95	756426-58-1	
ADONA*	Not detected	2.0	2.0	ng/L	1.95	919005-14-4	
HFPO-DA*	Not detected	9.8	2.0	ng/L	1.95	13252-13-6	

I-Matrix interference with internal standard X-Elevated reporting limit due to matrix interference



Analytical Laboratory Report

Lab Sample ID: S40128.02

Sample Tag: 03-PRCC-22-PRIM

Collected Date/Time: 09/08/2022 11:24

Matrix: Wastewater

COC Reference: 144829

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)*	12.34/6.95/11	ASTMD7979-19M	09/26/22 13:15	WTS	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 09/27/22 11:07, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	10	10	ng/L	2.04	375-22-4	
PFPeA*	Not detected	4.1	1.0	ng/L	2.04	2706-90-3	
4:2 FTSA*	Not detected	2.0	1.6	ng/L	2.04	757124-72-4	
PFHxA*	Not detected	2.0	1.4	ng/L	2.04	307-24-4	
PFBS*	Not detected	2.0	1.4	ng/L	2.04	375-73-5	
PFHpA*	Not detected	2.0	1.4	ng/L	2.04	375-85-9	
PFPeS*	Not detected	2.0	1.8	ng/L	2.04	2706-91-4	
6:2 FTSA*	Not detected	2.0	2.0	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	1.6	ng/L	2.04	355-46-4	
PFHxS-LN*	Not detected	2.0	1.6	ng/L	2.04	355-46-4-LN	
PFHxS-BR*	Not detected	2.0	1.6	ng/L	2.04	355-46-4-BR	
PFNA*	Not detected	2.0	1.8	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	2.0	ng/L	2.04	375-92-8	
PFDA*	Not detected	2.0	2.0	ng/L	2.04	335-76-2	
N-MeFOSAA*	Not detected	2.0	2.0	ng/L	2.04	2355-31-9	
EtFOSAA*	Not detected	4.1	2.0	ng/L	2.04	2991-50-6	
PFOS*	10.0	2.0	2.0	ng/L	2.04	1763-23-1	
PFOS-LN*	7.2	2.0	2.0	ng/L	2.04	1763-23-1-LN	
PFOS-BR*	2.4	2.0	2.0	ng/L	2.04	1763-23-1-BR	
PFUnDA*	Not detected	2.0	1.4	ng/L	2.04	2058-94-8	
PFNS*	Not detected	2.0	1.4	ng/L	2.04	68259-12-1	
PFDODA*	Not detected	2.0	1.6	ng/L	2.04	307-55-1	
PFDS*	Not detected	2.0	1.4	ng/L	2.04	335-77-3	
PFTDA*	Not detected	2.0	1.2	ng/L	2.04	72629-94-8	
FOSA*	Not detected	2.0	1.8	ng/L	2.04	754-91-6	
PFTeDA*	Not detected	4.1	1.8	ng/L	2.04	376-06-7	
11CI-PF3OUdS*	Not detected	2.0	1.8	ng/L	2.04	763051-92-9	
9CI-PF3ONS*	Not detected	2.0	1.4	ng/L	2.04	756426-58-1	
ADONA*	Not detected	2.0	2.0	ng/L	2.04	919005-14-4	
HFPO-DA*	Not detected	10	2.0	ng/L	2.04	13252-13-6	

Merit Laboratories Login Checklist

Lab Set ID:S40128

Client:OBG02 (Ramboll Americas)

Project: RACER Coldwater Rd

Submitted:09/09/2022 12:45 Login User: BJB

Attention: Clifford Yantz

Address: Ramboll Americas
2090 Commonwealth Blvd
Ann Arbor, MI 48105

Phone: 313-333-0211

FAX:

Email: Clifford.Yantz@ramboll.com

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

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

Client Review By: _____ Date: _____



Quality Control Report

Report ID: QC-S40128-01
Generated on 10/03/2022

Report to

Attention: Clifford Yantz
Ramboll Americas
2090 Commonwealth Blvd
Ann Arbor, MI 48105

Phone: 313-333-0211 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): S40128.01-S40128.02
Project: RACER Coldwater Rd
Submitted Date/Time: 09/09/2022 12:45
Sampled by: Kalyssa Ramirez
P.O. #: 1940004462 TASK 37

QC Report Sections

Cover Page (Page 1)
Analysis Summary (Pages 2-3)
Prep Batch Summary (Page 4)
Internal Standards per Lab Sample (Pages 5-6)
Internal Standards per QC Sample (Pages 7-11)
Batch QC Results (Pages 12-16)

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: S40128.01

Sample Tag: 03-PRCC-22-INF

Collected Date/Time: 09/08/2022 11:15

Matrix: Wastewater

COC Reference: 144829

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
28 PFAs	ASTMD7979-19M	09/27/22 10:47	AK220926	PF220926W2	Yes	BLK/LCS/LCSD/MS/DU

QC Report - Analysis Summary

Lab Sample ID: S40128.02

Sample Tag: 03-PRCC-22-PRIM

Collected Date/Time: 09/08/2022 11:24

Matrix: Wastewater

COC Reference: 144829

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
28 PFAs	ASTMD7979-19M	09/27/22 11:07	AK220926	PF220926W2	Yes	BLK/LCS/LCSD/MS/DU

QC Report - Prep Batch Summary

Organics - Volatiles, Prep Batch ID: PF220926W2

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

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S40128.01	28 PFAs	ASTMD7979-19M	09/27/22 10:47	AK220926
S40128.02	28 PFAs	ASTMD7979-19M	09/27/22 11:07	AK220926

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S40128.01

Sample Tag: 03-PRCC-22-INF

Collected Date/Time: 09/08/2022 11:15

Matrix: Wastewater

COC Reference: 144829

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK220926, Run Date: 09/27/2022 10:47, Matrix: WW, Dilution: 1.95

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA	*	379.2	50.0	150.0
M2-6:2FTSA	*	175.7	50.0	150.0
M2-8:2FTSA		66.0	50.0	150.0
M2PFTeDA		130.8	12.0	218.0
M3PFBS		106.7	50.0	150.0
M3PFHxS		112.8	50.0	150.0
M4PFHpA		106.7	50.0	150.0
M5PFHxA		84.8	50.0	150.0
M5PFPeA		59.4	50.0	150.0
M6PFDA		110.8	50.0	150.0
M7PFUnDA		98.7	50.0	150.0
M8FOSA		106.8	50.0	150.0
M8PFOA		113.2	50.0	150.0
M8PFOS		88.0	50.0	150.0
M9-PFNA		110.6	50.0	150.0
MPFBA	*	35.8	50.0	150.0
MPFDoDA		113.6	50.0	150.0
d3N-MeFOSAA		124.0	50.0	150.0
d5EtFOSAA		108.4	50.0	150.0
MHFPO-DA		95.5	50.0	150.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S40128.02

Sample Tag: 03-PRCC-22-PRIM

Collected Date/Time: 09/08/2022 11:24

Matrix: Wastewater

COC Reference: 144829

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK220926, Run Date: 09/27/2022 11:07, Matrix: WW, Dilution: 2.04

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		95.2	50.0	150.0
M2-6:2FTSA		81.0	50.0	150.0
M2-8:2FTSA		137.6	50.0	150.0
M2PFTeDA		124.4	12.0	218.0
M3PFBS		99.7	50.0	150.0
M3PFHxS		113.4	50.0	150.0
M4PFHpA		108.7	50.0	150.0
M5PFHxA		99.7	50.0	150.0
M5PFPeA		107.4	50.0	150.0
M6PFDA		103.5	50.0	150.0
M7PFUnDA		88.9	50.0	150.0
M8FOSA		104.8	50.0	150.0
M8PFOA		102.4	50.0	150.0
M8PFOS		85.8	50.0	150.0
M9-PFNA		88.6	50.0	150.0
MPFBA		104.6	50.0	150.0
MPFDoDA		98.1	50.0	150.0
d3N-MeFOSAA		98.6	50.0	150.0
d5EtFOSAA		82.0	50.0	150.0
MHFPO-DA		131.4	50.0	150.0

QC Report - Internal Standards per QC Sample

Organics - Volatiles, Prep Batch ID: PF220926W2

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

Blank (BLK)

Lab Sample ID: AK220926.BLK220926B

Run in Batch: AK220926, Run Date: 09/27/2022 03:15, Prep Date: 09/26/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		96.4	50.0	150.0
M2-6:2FTSA		93.7	50.0	150.0
M2-8:2FTSA		109.7	50.0	150.0
M2PFTeDA		133.5	12.0	218.0
M3PFBS		95.5	50.0	150.0
M3PFHxS		98.2	50.0	150.0
M4PFHpA		105.7	50.0	150.0
M5PFHxA		107.7	50.0	150.0
M5PFPeA		108.1	50.0	150.0
M6PFDA		101.1	50.0	150.0
M7PFUnDA		100.7	50.0	150.0
M8FOSA		106.2	50.0	150.0
M8PFOA		94.3	50.0	150.0
M8PFOS		88.1	50.0	150.0
M9-PFNA		92.3	50.0	150.0
MPFBA		102.4	50.0	150.0
MPFDoDA		114.5	50.0	150.0
d3N-MeFOSAA		106.7	50.0	150.0
d5EtFOSAA		89.6	50.0	150.0
MHFPO-DA		122.3	50.0	150.0

QC Report - Internal Standards per QC Sample

Laboratory Control Sample (LCS)

Lab Sample ID: AK220926.LCS220926B

Run in Batch: AK220926, Run Date: 09/27/2022 02:36, Prep Date: 09/26/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		95.9	50.0	150.0
M2-6:2FTSA		105.4	50.0	150.0
M2-8:2FTSA		122.2	50.0	150.0
M2PFTeDA		110.1	12.0	218.0
M3PFBS		98.3	50.0	150.0
M3PFHxS		106.3	50.0	150.0
M4PFHpA		103.9	50.0	150.0
M5PFHxA		101.8	50.0	150.0
M5PFPeA		105.1	50.0	150.0
M6PFDA		100.3	50.0	150.0
M7PFUnDA		91.6	50.0	150.0
M8FOSA		108.9	50.0	150.0
M8PFOA		97.3	50.0	150.0
M8PFOS		85.5	50.0	150.0
M9-PFNA		91.6	50.0	150.0
MPFBA		102.9	50.0	150.0
MPFDoDA		101.0	50.0	150.0
d3N-MeFOSAA		105.4	50.0	150.0
d5EtFOSAA		87.8	50.0	150.0
MHFPO-DA		124.6	50.0	150.0

QC Report - Internal Standards per QC Sample

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: AK220926.LCSD220926B, Parent Sample ID: AK220926.LCS220926B

Run in Batch: AK220926, Run Date: 09/27/2022 02:56, Prep Date: 09/26/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		88.4	50.0	150.0
M2-6:2FTSA		93.4	50.0	150.0
M2-8:2FTSA		99.4	50.0	150.0
M2PFTeDA		123.2	12.0	218.0
M3PFBS		91.8	50.0	150.0
M3PFHxS		101.0	50.0	150.0
M4PFHpA		108.0	50.0	150.0
M5PFHxA		101.7	50.0	150.0
M5PFPeA		99.5	50.0	150.0
M6PFDA		102.9	50.0	150.0
M7PFUnDA		89.3	50.0	150.0
M8FOSA		101.3	50.0	150.0
M8PFOA		98.2	50.0	150.0
M8PFOS		90.6	50.0	150.0
M9-PFNA		96.7	50.0	150.0
MPFBA		100.9	50.0	150.0
MPFDoDA		104.2	50.0	150.0
d3N-MeFOSAA		96.1	50.0	150.0
d5EtFOSAA		85.7	50.0	150.0
MHFPO-DA		112.0	50.0	150.0

QC Report - Internal Standards per QC Sample

Matrix Spike (MS)

Lab Sample ID: AK220926.4003101M, Parent Sample ID: S40031.01

Run in Batch: AK220926, Run Date: 09/27/2022 03:54, Prep Date: 09/26/2022, Matrix: WW, Dilution: 2.03

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		80.0	50.0	150.0
M2-6:2FTSA		83.5	50.0	150.0
M2-8:2FTSA		75.9	50.0	150.0
M2PFTeDA		101.8	12.0	218.0
M3PFBS		99.4	50.0	150.0
M3PFHxS		101.8	50.0	150.0
M4PFHpA		101.0	50.0	150.0
M5PFHxA		101.5	50.0	150.0
M5PFPeA		107.1	50.0	150.0
M6PFDA		90.4	50.0	150.0
M7PFUnDA		94.9	50.0	150.0
M8FOSA		108.9	50.0	150.0
M8PFOA		103.8	50.0	150.0
M8PFOS		104.4	50.0	150.0
M9-PFNA		97.3	50.0	150.0
MPFBA		108.7	50.0	150.0
MPFDoDA		102.7	50.0	150.0
d3N-MeFOSAA		103.4	50.0	150.0
d5EtFOSAA		90.7	50.0	150.0
MHFPO-DA		114.8	50.0	150.0

QC Report - Internal Standards per QC Sample

Duplicate (DUP)

Lab Sample ID: AK220926.4004201D, Parent Sample ID: S40042.01

Run in Batch: AK220926, Run Date: 09/27/2022 04:33, Prep Date: 09/26/2022, Matrix: WW, Dilution: 2.02

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		140.4	50.0	150.0
M2-6:2FTSA		104.0	50.0	150.0
M2-8:2FTSA		77.9	50.0	150.0
M2PFTeDA		108.5	12.0	218.0
M3PFBS		97.9	50.0	150.0
M3PFHxS		108.0	50.0	150.0
M4PFHpA		114.8	50.0	150.0
M5PFHxA		107.5	50.0	150.0
M5PFPeA		107.2	50.0	150.0
M6PFDA		112.4	50.0	150.0
M7PFUnDA		94.9	50.0	150.0
M8FOSA		111.8	50.0	150.0
M8PFOA		111.4	50.0	150.0
M8PFOS		67.7	50.0	150.0
M9-PFNA		100.3	50.0	150.0
MPFBA		110.5	50.0	150.0
MPFDoDA		104.7	50.0	150.0
d3N-MeFOSAA		111.8	50.0	150.0
d5EtFOSAA		82.2	50.0	150.0
MHFPO-DA		126.3	50.0	150.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF220926W2

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

Blank (BLK)

Lab Sample ID: AK220926.BLK220926B

Run in Batch: AK220926, Run Date: 09/27/2022 03:15, Prep Date: 09/26/2022, Matrix: WW, Dilution: 1

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

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF220926W2 (continued)

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

Laboratory Control Sample (LCS)

Lab Sample ID: AK220926.LCS220926B

Run in Batch: AK220926, Run Date: 09/27/2022 02:36, Prep Date: 09/26/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
PFBA		102.4	70.0	130.0
PFMPA		116.6	70.0	130.0
FPrPA (3:3 FTCA)		93.6	70.0	130.0
PFPPrS		93.4	70.0	130.0
PFPeA		94.4	70.0	130.0
PFMBA		111.4	70.0	130.0
4:2 FTSA		105.4	70.0	130.0
NFDHA		107.8	70.0	130.0
PFHxA		95.8	70.0	130.0
PFBS		96.0	70.0	130.0
HFPO-DA		108.2	70.0	130.0
FPePA (5:3 FTCA)		99.6	70.0	130.0
PFEESA		106.6	70.0	130.0
PFHpA		108.2	70.0	130.0
PFPeS		99.6	70.0	130.0
ADONA		111.6	70.0	130.0
PFBSA		81.0	70.0	130.0
6:2 FTSA		93.2	70.0	130.0
PFOA		111.8	70.0	130.0
PFHxS		96.0	70.0	130.0
FHpPA (7:3 FTCA)		104.4	70.0	130.0
PFNA		105.4	70.0	130.0
8:2 FTSA		108.0	70.0	130.0
PFECHS		117.0	70.0	130.0
PFHpS		98.4	70.0	130.0
N-MeFOSAA		106.2	70.0	130.0
PFDA		113.0	70.0	130.0
EtFOSAA		101.8	70.0	130.0
PFOS		119.2	70.0	130.0
PFHxSA		86.4	70.0	130.0
PFUnDA		89.8	70.0	130.0
9CL-PF3ONS		109.6	70.0	130.0
PFNS		110.0	70.0	130.0
PFDoDA		103.2	70.0	130.0
PFDS		125.6	70.0	130.0
FOSA		87.2	70.0	130.0
PFTTrDA		94.4	70.0	130.0
11CL-PF3OUdS		103.4	70.0	130.0
PFTeDA		103.0	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: AK220926.LCSD220926B, Parent Sample ID: AK220926.LCS220926B

Run in Batch: AK220926, Run Date: 09/27/2022 02:56, Prep Date: 09/26/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
PFBA		102.8	70.0	130.0	0.4	30.0
PFMPA		106.6	70.0	130.0	9.0	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF220926W2 (continued)

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

Laboratory Control Sample Duplicate (LCSD) (continued)

Lab Sample ID: AK220926.LCSD220926B, Parent Sample ID: AK220926.LCS220926B

Run in Batch: AK220926, Run Date: 09/27/2022 02:56, Prep Date: 09/26/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
FPrPA (3:3 FTCA)		103.0	70.0	130.0	9.6	30.0
PFPPrS		103.4	70.0	130.0	10.2	30.0
PFPeA		108.6	70.0	130.0	14.0	30.0
PFMBA		109.0	70.0	130.0	2.2	30.0
4:2 FTSA		107.6	70.0	130.0	2.1	30.0
NFDHA		106.8	70.0	130.0	0.9	30.0
PFHxA		96.6	70.0	130.0	0.8	30.0
PFBS		110.4	70.0	130.0	14.0	30.0
HFPO-DA		117.0	70.0	130.0	7.8	30.0
FPePA (5:3 FTCA)		101.0	70.0	130.0	1.4	30.0
PFEESA		94.8	70.0	130.0	11.7	30.0
PFHpA		97.0	70.0	130.0	10.9	30.0
PFPeS		106.0	70.0	130.0	6.2	30.0
ADONA		109.0	70.0	130.0	2.4	30.0
PFBSA		93.4	70.0	130.0	14.2	30.0
6:2 FTSA		115.0	70.0	130.0	20.9	30.0
PFOA		100.0	70.0	130.0	11.1	30.0
PFHxS		112.0	70.0	130.0	15.4	30.0
FHpPA (7:3 FTCA)		102.6	70.0	130.0	1.7	30.0
PFNA		96.0	70.0	130.0	9.3	30.0
8:2 FTSA		113.2	70.0	130.0	4.7	30.0
PFECHS		99.2	70.0	130.0	16.5	30.0
PFHpS		113.8	70.0	130.0	14.5	30.0
N-MeFOSAA		108.0	70.0	130.0	1.7	30.0
PFDA		98.0	70.0	130.0	14.2	30.0
EtFOSAA		115.0	70.0	130.0	12.2	30.0
PFOS		107.8	70.0	130.0	10.0	30.0
PFHxSA		98.8	70.0	130.0	13.4	30.0
PFUnDA		92.8	70.0	130.0	3.3	30.0
9CL-PF3ONS		104.4	70.0	130.0	4.9	30.0
PFNS		109.4	70.0	130.0	0.5	30.0
PFDODA		104.8	70.0	130.0	1.5	30.0
PFDS		106.4	70.0	130.0	16.6	30.0
FOSA		101.2	70.0	130.0	14.9	30.0
PFTTrDA		98.8	70.0	130.0	4.6	30.0
11CL-PF3OUdS		96.6	70.0	130.0	6.8	30.0
PFTeDA		104.0	70.0	130.0	1.0	30.0

Matrix Spike (MS)

Lab Sample ID: AK220926.4003101M, Parent Sample ID: S40031.01

Run in Batch: AK220926, Run Date: 09/27/2022 03:54, Prep Date: 09/26/2022, Matrix: WW, Dilution: 2.03

Analyte	Flags	% Rec	LCL	UCL
PFBA		97.1	70.0	130.0
PFPeA		92.2	70.0	130.0
4:2 FTSA		107.8	70.0	130.0
PFHxA		98.0	70.0	130.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF220926W2 (continued)

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

Matrix Spike (MS) (continued)

Lab Sample ID: AK220926.4003101M, Parent Sample ID: S40031.01

Run in Batch: AK220926, Run Date: 09/27/2022 03:54, Prep Date: 09/26/2022, Matrix: WW, Dilution: 2.03

Analyte	Flags	% Rec	LCL	UCL
PFBS		98.0	70.0	130.0
PFHpA		117.6	70.0	130.0
PFPeS		98.0	70.0	130.0
6:2 FTSA		99.8	70.0	130.0
PFOA		98.0	70.0	130.0
PFHxS		107.8	70.0	130.0
PFNA		98.0	70.0	130.0
8:2 FTSA		107.8	70.0	130.0
PFHpS		107.8	70.0	130.0
PFDA		117.6	70.0	130.0
N-MeFOSAA		97.1	70.0	130.0
EtFOSAA		117.6	70.0	130.0
PFOS		83.3	70.0	130.0
PFUnDA		88.2	70.0	130.0
PFNS		107.8	70.0	130.0
PFDODA		96.1	70.0	130.0
PFDS		98.0	70.0	130.0
PFTTrDA		82.4	70.0	130.0
FOSA		96.1	70.0	130.0
PFTeDA		107.8	70.0	130.0
11CL-PF3OUdS		88.2	70.0	130.0
9CL-PF3ONS		98.0	70.0	130.0
ADONA		107.8	70.0	130.0
HFPO-DA		117.6	70.0	130.0
FHpPA (7:3 FTCA)		107.8	70.0	130.0
FPePA (5:3 FTCA)		107.8	70.0	130.0
FPrPA (3:3 FTCA)		98.0	70.0	130.0
NFDHA		91.2	70.0	130.0
PFBSA		88.2	70.0	130.0
PFECHS		92.9	70.0	130.0
PFEESA		88.2	70.0	130.0
PFHxSA		87.3	70.0	130.0
PFMBA		97.1	70.0	130.0
PFMPA		97.1	70.0	130.0
PFPPrS		98.0	70.0	130.0

Duplicate (DUP)

Lab Sample ID: AK220926.4004201D, Parent Sample ID: S40042.01

Run in Batch: AK220926, Run Date: 09/27/2022 04:33, Prep Date: 09/26/2022, Matrix: WW, Dilution: 2.02

Analyte	Flags	RPD	RPD CL
PFBA		0.0	30.0
PFPeA		8.7	30.0
4:2 FTSA		NC	30.0
PFHxA		2.8	30.0
PFBS		0.0	30.0
PFHpA		0.0	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF220926W2 (continued)

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

Duplicate (DUP) (continued)

Lab Sample ID: AK220926.4004201D, Parent Sample ID: S40042.01

Run in Batch: AK220926, Run Date: 09/27/2022 04:33, Prep Date: 09/26/2022, Matrix: WW, Dilution: 2.02

Analyte	Flags	RPD	RPD CL
PFPeS		4.1	30.0
6:2 FTSA		7.1	30.0
PFOA		6.1	30.0
PFHxS		2.8	30.0
PFHxS-LN		3.3	30.0
PFHxS-BR		1.8	30.0
PFNA		0.0	30.0
8:2 FTSA	*	41.4	30.0
PFHpS		11.8	30.0
PFDA		8.0	30.0
N-MeFOSAA		NC	30.0
EtFOSAA	*	50.0	30.0
PFOS		11.1	30.0
PFOS-LN		8.7	30.0
PFOS-BR		7.3	30.0
PFUnDA		NC	30.0
PFNS		16.9	30.0
PFDoDA		NC	30.0
PFDS		23.0	30.0
PFTTrDA		NC	30.0
FOSA		0.0	30.0
PFTeDA		NC	30.0
11CL-PF3OUdS		NC	30.0
9CL-PF3ONS		NC	30.0
ADONA		NC	30.0
HFPO-DA		NC	30.0
FHpPA (7:3 FTCA)		NC	30.0
FPePA (5:3 FTCA)		NC	30.0
FPrPA (3:3 FTCA)		NC	30.0
NFDHA		NC	30.0
PFBSA		2.0	30.0
PFECHS	*	200.0	30.0
PFEESA		NC	30.0
PFHxSA		8.0	30.0
PFMBA		NC	30.0
PFMPA		NC	30.0
PFPrS		0.0	30.0



144829

INVOICE TO

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CITY		STATE	ZIP CODE
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Certifications

☐ OHIO VAP ☐ Drinking Water

☐ DoD ☐ NPDES

Project Locations

☐ Detroit ☐ New York

☐ Other _____

Special Instructions

Containers & Preservatives

[illegible]

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

Rev. 5.18.12



Analytical Laboratory Report

Report ID: S40127.01(01)
Generated on 10/04/2022

Report to

Attention: Clifford Yantz
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Ann Arbor, MI 48105

Phone: 313-333-0211 FAX:
Email: Clifford.Yantz@ramboll.com

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Report produced by

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John Lavery (johnlavery@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S40127.01-S40127.04
Project: RACER Coldwater Rd
Collected Date(s): 09/09/2022
Submitted Date/Time: 09/09/2022 12:45
Sampled by: Kalyssa Ramirez
P.O. #: 1940004462 TASK 37

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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

Laboratory Certifications

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

Qualifier Descriptions

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

Glossary of Abbreviations

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

Method Summary

Method	Version
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-chloroeicosafluoro-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 (4 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S40127.01	03-PRCC-22-EFF-103	Wastewater	09/09/22 09:55
S40127.02	03-PRCC-22-MID-2-103	Wastewater	09/09/22 09:57
S40127.03	03-PRCC-22-MID-1-103	Wastewater	09/09/22 09:59
S40127.04	03-PRCC-22-PRIM-103	Wastewater	09/09/22 10:01



Analytical Laboratory Report

Lab Sample ID: S40127.01

Sample Tag: 03-PRCC-22-EFF-103

Collected Date/Time: 09/09/2022 09:55

Matrix: Wastewater

COC Reference: 144822

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)*	12.35/6.43/12	ASTMD7979-19M	09/28/22 15:00	PTW	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 09/30/22 15:24, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	10	10	ng/L	2.03	375-22-4	
PFPeA*	Not detected	4.1	1.0	ng/L	2.03	2706-90-3	
4:2 FTSA*	Not detected	2.0	1.6	ng/L	2.03	757124-72-4	
PFHxA*	Not detected	2.0	1.4	ng/L	2.03	307-24-4	
PFBS*	Not detected	2.0	1.4	ng/L	2.03	375-73-5	
PFHpA*	Not detected	2.0	1.4	ng/L	2.03	375-85-9	
PFPeS*	Not detected	2.0	1.8	ng/L	2.03	2706-91-4	
6:2 FTSA*	Not detected	2.0	2.0	ng/L	2.03	27619-97-2	
PFOA*	Not detected	2.0	1.6	ng/L	2.03	335-67-1	
PFHxS*	Not detected	2.0	1.6	ng/L	2.03	355-46-4	
PFHxS-LN*	Not detected	2.0	1.6	ng/L	2.03	355-46-4-LN	
PFHxS-BR*	Not detected	2.0	1.6	ng/L	2.03	355-46-4-BR	
PFNA*	Not detected	2.0	1.8	ng/L	2.03	375-95-1	
8:2 FTSA*	Not detected	2.0	1.0	ng/L	2.03	39108-34-4	
PFHpS*	Not detected	2.0	2.0	ng/L	2.03	375-92-8	
PFDA*	Not detected	2.0	2.0	ng/L	2.03	335-76-2	
N-MeFOSAA*	Not detected	2.0	2.0	ng/L	2.03	2355-31-9	
EtFOSAA*	Not detected	4.1	2.0	ng/L	2.03	2991-50-6	
PFOS*	Not detected	2.0	2.0	ng/L	2.03	1763-23-1	
PFOS-LN*	Not detected	2.0	2.0	ng/L	2.03	1763-23-1-LN	
PFOS-BR*	Not detected	2.0	2.0	ng/L	2.03	1763-23-1-BR	
PFUnDA*	Not detected	2.0	1.4	ng/L	2.03	2058-94-8	
PFNS*	Not detected	2.0	1.4	ng/L	2.03	68259-12-1	
PFDODA*	Not detected	2.0	1.6	ng/L	2.03	307-55-1	
PFDS*	Not detected	2.0	1.4	ng/L	2.03	335-77-3	
PFTTrDA*	Not detected	2.0	1.2	ng/L	2.03	72629-94-8	
FOSA*	Not detected	2.0	1.8	ng/L	2.03	754-91-6	
PFTeDA*	Not detected	4.1	1.8	ng/L	2.03	376-06-7	
11Cl-PF3OUdS*	Not detected	2.0	1.8	ng/L	2.03	763051-92-9	
9Cl-PF3ONS*	Not detected	2.0	1.4	ng/L	2.03	756426-58-1	
ADONA*	Not detected	2.0	2.0	ng/L	2.03	919005-14-4	
HFPO-DA*	Not detected	10	2.0	ng/L	2.03	13252-13-6	



Analytical Laboratory Report

Lab Sample ID: S40127.02

Sample Tag: 03-PRCC-22-MID-2-103

Collected Date/Time: 09/09/2022 09:57

Matrix: Wastewater

COC Reference: 144822

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)*	12.58/7.02/11	ASTMD7979-19M	09/28/22 15:00	PTW	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 09/29/22 20:07, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	9.9	9.9	ng/L	1.98	375-22-4	
PFPeA*	Not detected	4.0	0.99	ng/L	1.98	2706-90-3	
4:2 FTSA*	Not detected	2.0	1.6	ng/L	1.98	757124-72-4	
PFHxA*	Not detected	2.0	1.4	ng/L	1.98	307-24-4	
PFBS*	Not detected	2.0	1.4	ng/L	1.98	375-73-5	
PFHpA*	Not detected	2.0	1.4	ng/L	1.98	375-85-9	
PFPeS*	Not detected	2.0	1.8	ng/L	1.98	2706-91-4	
6:2 FTSA*	Not detected	2.0	2.0	ng/L	1.98	27619-97-2	
PFOA*	Not detected	2.0	1.6	ng/L	1.98	335-67-1	
PFHxS*	Not detected	2.0	1.6	ng/L	1.98	355-46-4	
PFHxS-LN*	Not detected	2.0	1.6	ng/L	1.98	355-46-4-LN	
PFHxS-BR*	Not detected	2.0	1.6	ng/L	1.98	355-46-4-BR	
PFNA*	Not detected	2.0	1.8	ng/L	1.98	375-95-1	
8:2 FTSA*	Not detected	2.0	0.99	ng/L	1.98	39108-34-4	I
PFHpS*	Not detected	2.0	2.0	ng/L	1.98	375-92-8	
PFDA*	Not detected	2.0	2.0	ng/L	1.98	335-76-2	
N-MeFOSAA*	Not detected	2.0	2.0	ng/L	1.98	2355-31-9	
EtFOSAA*	Not detected	4.0	2.0	ng/L	1.98	2991-50-6	
PFOS*	2.4	2.0	1.9	ng/L	1.98	1763-23-1	
PFOS-LN*	2.0	2.0	1.9	ng/L	1.98	1763-23-1-LN	
PFOS-BR*	Not detected	2.0	1.9	ng/L	1.98	1763-23-1-BR	
PFUnDA*	Not detected	2.0	1.4	ng/L	1.98	2058-94-8	
PFNS*	Not detected	2.0	1.4	ng/L	1.98	68259-12-1	
PFDODA*	Not detected	2.0	1.6	ng/L	1.98	307-55-1	
PFDS*	Not detected	2.0	1.4	ng/L	1.98	335-77-3	
PFTTrDA*	Not detected	2.0	1.2	ng/L	1.98	72629-94-8	
FOSA*	Not detected	2.0	1.8	ng/L	1.98	754-91-6	
PFTeDA*	Not detected	4.0	1.8	ng/L	1.98	376-06-7	
11Cl-PF3OUdS*	Not detected	2.0	1.8	ng/L	1.98	763051-92-9	
9Cl-PF3ONS*	Not detected	2.0	1.4	ng/L	1.98	756426-58-1	
ADONA*	Not detected	2.0	2.0	ng/L	1.98	919005-14-4	
HFPO-DA*	Not detected	9.9	2.0	ng/L	1.98	13252-13-6	

I-Matrix interference with internal standard



Analytical Laboratory Report

Lab Sample ID: S40127.03

Sample Tag: 03-PRCC-22-MID-1-103

Collected Date/Time: 09/09/2022 09:59

Matrix: Wastewater

COC Reference: 144822

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)*	12.40/6.97/11	ASTMD7979-19M	09/28/22 15:00	PTW	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 09/29/22 20:46, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	10	10	ng/L	2.03	375-22-4	
PFPeA*	Not detected	4.1	1.0	ng/L	2.03	2706-90-3	
4:2 FTSA*	Not detected	2.0	1.6	ng/L	2.03	757124-72-4	
PFHxA*	Not detected	2.0	1.4	ng/L	2.03	307-24-4	
PFBS*	Not detected	2.0	1.4	ng/L	2.03	375-73-5	
PFHpA*	Not detected	2.0	1.4	ng/L	2.03	375-85-9	
PFPeS*	Not detected	2.0	1.8	ng/L	2.03	2706-91-4	
6:2 FTSA*	Not detected	2.0	2.0	ng/L	2.03	27619-97-2	
PFOA*	Not detected	2.0	1.6	ng/L	2.03	335-67-1	
PFHxS*	Not detected	2.0	1.6	ng/L	2.03	355-46-4	
PFHxS-LN*	Not detected	2.0	1.6	ng/L	2.03	355-46-4-LN	
PFHxS-BR*	Not detected	2.0	1.6	ng/L	2.03	355-46-4-BR	
PFNA*	Not detected	2.0	1.8	ng/L	2.03	375-95-1	
8:2 FTSA*	Not detected	2.0	1.0	ng/L	2.03	39108-34-4	I
PFHpS*	Not detected	2.0	2.0	ng/L	2.03	375-92-8	
PFDA*	Not detected	2.0	2.0	ng/L	2.03	335-76-2	
N-MeFOSAA*	Not detected	2.0	2.0	ng/L	2.03	2355-31-9	
EtFOSAA*	Not detected	4.1	2.0	ng/L	2.03	2991-50-6	
PFOS*	2.5	2.0	2.0	ng/L	2.03	1763-23-1	
PFOS-LN*	Not detected	2.0	2.0	ng/L	2.03	1763-23-1-LN	
PFOS-BR*	Not detected	2.0	2.0	ng/L	2.03	1763-23-1-BR	
PFUnDA*	Not detected	2.0	1.4	ng/L	2.03	2058-94-8	
PFNS*	Not detected	2.0	1.4	ng/L	2.03	68259-12-1	
PFDODA*	Not detected	2.0	1.6	ng/L	2.03	307-55-1	
PFDS*	Not detected	2.0	1.4	ng/L	2.03	335-77-3	
PFTTrDA*	Not detected	2.0	1.2	ng/L	2.03	72629-94-8	
FOSA*	Not detected	2.0	1.8	ng/L	2.03	754-91-6	
PFTeDA*	Not detected	4.1	1.8	ng/L	2.03	376-06-7	
11Cl-PF3OUdS*	Not detected	2.0	1.8	ng/L	2.03	763051-92-9	
9Cl-PF3ONS*	Not detected	2.0	1.4	ng/L	2.03	756426-58-1	
ADONA*	Not detected	2.0	2.0	ng/L	2.03	919005-14-4	
HFPO-DA*	Not detected	10	2.0	ng/L	2.03	13252-13-6	

I-Matrix interference with internal standard



Analytical Laboratory Report

Lab Sample ID: S40127.04

Sample Tag: 03-PRCC-22-PRIM-103

Collected Date/Time: 09/09/2022 10:01

Matrix: Wastewater

COC Reference: 144822

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)*	12.34/6.94/11	ASTMD7979-19M	09/28/22 15:00	PTW	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 09/29/22 21:06, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	12	10	ng/L	2.04	375-22-4	X
PFPeA*	Not detected	6.1	1.0	ng/L	2.04	2706-90-3	X
4:2 FTSA*	Not detected	2.0	1.6	ng/L	2.04	757124-72-4	
PFHxA*	4.1	2.0	1.4	ng/L	2.04	307-24-4	
PFBS*	3.2	2.0	1.4	ng/L	2.04	375-73-5	
PFHpA*	Not detected	2.0	1.4	ng/L	2.04	375-85-9	
PFPeS*	3.4	2.0	1.8	ng/L	2.04	2706-91-4	
6:2 FTSA*	Not detected	2.0	2.0	ng/L	2.04	27619-97-2	
PFOA*	Not detected	2.0	1.6	ng/L	2.04	335-67-1	
PFHxS*	8.4	2.0	1.6	ng/L	2.04	355-46-4	
PFHxS-LN*	5.7	2.0	1.6	ng/L	2.04	355-46-4-LN	
PFHxS-BR*	2.8	2.0	1.6	ng/L	2.04	355-46-4-BR	
PFNA*	Not detected	2.0	1.8	ng/L	2.04	375-95-1	
8:2 FTSA*	Not detected	2.0	1.0	ng/L	2.04	39108-34-4	I
PFHpS*	Not detected	2.0	2.0	ng/L	2.04	375-92-8	
PFDA*	Not detected	2.0	2.0	ng/L	2.04	335-76-2	
N-MeFOSAA*	Not detected	2.0	2.0	ng/L	2.04	2355-31-9	
EtFOSAA*	Not detected	4.1	2.0	ng/L	2.04	2991-50-6	
PFOS*	86	2.0	2.0	ng/L	2.04	1763-23-1	
PFOS-LN*	39	2.0	2.0	ng/L	2.04	1763-23-1-LN	
PFOS-BR*	46	2.0	2.0	ng/L	2.04	1763-23-1-BR	
PFUnDA*	Not detected	2.0	1.4	ng/L	2.04	2058-94-8	
PFNS*	Not detected	2.0	1.4	ng/L	2.04	68259-12-1	
PFDODA*	Not detected	2.0	1.6	ng/L	2.04	307-55-1	
PFDS*	Not detected	2.0	1.4	ng/L	2.04	335-77-3	
PFTTrDA*	Not detected	2.0	1.2	ng/L	2.04	72629-94-8	
FOSA*	Not detected	2.0	1.8	ng/L	2.04	754-91-6	
PFTeDA*	Not detected	4.1	1.8	ng/L	2.04	376-06-7	
11Cl-PF3OUdS*	Not detected	2.0	1.8	ng/L	2.04	763051-92-9	
9Cl-PF3ONS*	Not detected	2.0	1.4	ng/L	2.04	756426-58-1	
ADONA*	Not detected	2.0	2.0	ng/L	2.04	919005-14-4	
HFPO-DA*	Not detected	10	2.0	ng/L	2.04	13252-13-6	

X-Elevated reporting limit due to matrix interference

I-Matrix interference with internal standard

Merit Laboratories Login Checklist

Lab Set ID:S40127

Client:OBG02 (Ramboll Americas)

Project: RACER Coldwater Rd

Submitted:09/09/2022 12:45 Login User: BJB

Attention: Clifford Yantz

Address: Ramboll Americas
2090 Commonwealth Blvd
Ann Arbor, MI 48105

Phone: 313-333-0211

FAX:

Email: Clifford.Yantz@ramboll.com

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

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

Client Review By: _____ Date: _____



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 144822

REPORT TO

CHAIN OF CUSTODY RECORD

INVOICE TO

CONTACT NAME Clifford Yantz / Kevin Schneider		
COMPANY Rambell		
ADDRESS 2090 Commonwealth Blvd.		
CITY Ann Arbor	STATE MI	ZIP CODE 48105
PHONE NO. 313-333-0211	FAX NO.	P.O. NO. 1940004462 Task 37
E-MAIL ADDRESS Clifford.Yantz@rambell.com		QUOTE NO. Kevin.Schneider@rambell.com

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

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

PROJECT NO./NAME RACER Cidwater Rd	SAMPLER(S) - PLEASE PRINT/SIGN NAME Kalyssa Remyer Kalyssa Remyer
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=WIFE	A=AIR
				W=WASTE	

Containers & Preservatives

MERIT LAB NO. FOR LAB USE ONLY	YEAR		SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives								OTHER	Certifications																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
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40127.01	9/9/22	9:55	03-PRCC-22-EFF-103	WW	3	X							X																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										

RELINQUISHED BY: SIGNATURE/ORGANIZATION RECEIVED BY: SIGNATURE/ORGANIZATION	DATE 9/9/22 TIME 10:30	DATE 9/9/22 TIME 10:31
RELINQUISHED BY: SIGNATURE/ORGANIZATION RECEIVED BY: SIGNATURE/ORGANIZATION	DATE 9/9/22 TIME 10:45	DATE 9/9/22 TIME 10:45

RELINQUISHED BY: SIGNATURE/ORGANIZATION RECEIVED BY: SIGNATURE/ORGANIZATION	DATE 9/9/22 TIME 12:45	
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS
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-S40127-01
Generated on 10/04/2022

Report to

Attention: Clifford Yantz
Ramboll Americas
2090 Commonwealth Blvd
Ann Arbor, MI 48105

Phone: 313-333-0211 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): S40127.01-S40127.04
Project: RACER Coldwater Rd
Submitted Date/Time: 09/09/2022 12:45
Sampled by: Kalyssa Ramirez
P.O. #: 1940004462 TASK 37

QC Report Sections

Cover Page (Page 1)
Analysis Summary (Pages 2-5)
Prep Batch Summary (Page 6)
Internal Standards per Lab Sample (Pages 7-10)
Internal Standards per QC Sample (Pages 11-18)
Batch QC Results (Pages 19-26)

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: S40127.01

Sample Tag: 03-PRCC-22-EFF-103

Collected Date/Time: 09/09/2022 09:55

Matrix: Wastewater

COC Reference: 144822

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Organics - Volatiles</i>						
28 PFAs	ASTMD7979-19M	09/30/22 15:24	AK220930R	PF220928W1	Yes	BLK/LCS/LCSD/MS/DU

QC Report - Analysis Summary

Lab Sample ID: S40127.02

Sample Tag: 03-PRCC-22-MID-2-103

Collected Date/Time: 09/09/2022 09:57

Matrix: Wastewater

COC Reference: 144822

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
28 PFAs	ASTMD7979-19M	09/29/22 20:07	AK220929	PF220928W1	Yes	BLK/LCS/LCSD/MS/DU

QC Report - Analysis Summary

Lab Sample ID: S40127.03

Sample Tag: 03-PRCC-22-MID-1-103

Collected Date/Time: 09/09/2022 09:59

Matrix: Wastewater

COC Reference: 144822

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
28 PFAs	ASTMD7979-19M	09/29/22 20:46	AK220929	PF220928W1	Yes	BLK/LCS/LCSD/MS/DU

QC Report - Analysis Summary

Lab Sample ID: S40127.04

Sample Tag: 03-PRCC-22-PRIM-103

Collected Date/Time: 09/09/2022 10:01

Matrix: Wastewater

COC Reference: 144822

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
28 PFAs	ASTMD7979-19M	09/29/22 21:06	AK220929	PF220928W1	Yes	BLK/LCS/LCSD/MS/DU

QC Report - Prep Batch Summary

Organics - Volatiles, Prep Batch ID: PF220928W1

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

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S40127.01	28 PFAs	ASTMD7979-19M	09/30/22 15:24	AK220930R
S40127.02	28 PFAs	ASTMD7979-19M	09/29/22 20:07	AK220929
S40127.03	28 PFAs	ASTMD7979-19M	09/29/22 20:46	AK220929
S40127.04	28 PFAs	ASTMD7979-19M	09/29/22 21:06	AK220929

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S40127.01

Sample Tag: 03-PRCC-22-EFF-103

Collected Date/Time: 09/09/2022 09:55

Matrix: Wastewater

COC Reference: 144822

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK220930R, Run Date: 09/30/2022 15:24, Matrix: WW, Dilution: 2.03

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		92.7	50.0	150.0
M2-6:2FTSA		91.8	50.0	150.0
M2-8:2FTSA		53.5	50.0	150.0
M2PFTeDA		150.1	12.0	218.0
M3PFBS		98.2	50.0	150.0
M3PFHxS		92.7	50.0	150.0
M4PFHpA		106.1	50.0	150.0
M5PFHxA		98.0	50.0	150.0
M5PFPeA		105.4	50.0	150.0
M6PFDA		95.9	50.0	150.0
M7PFUnDA		109.9	50.0	150.0
M8FOSA		95.0	50.0	150.0
M8PFOA		104.5	50.0	150.0
M8PFOS		109.4	50.0	150.0
M9-PFNA		109.6	50.0	150.0
MPFBA		106.0	50.0	150.0
MPFDoDA		99.7	50.0	150.0
d3N-MeFOSAA		98.6	50.0	150.0
d5EtFOSAA		103.6	50.0	150.0
MHFPO-DA		97.8	50.0	150.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S40127.02

Sample Tag: 03-PRCC-22-MID-2-103

Collected Date/Time: 09/09/2022 09:57

Matrix: Wastewater

COC Reference: 144822

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK220929, Run Date: 09/29/2022 20:07, Matrix: WW, Dilution: 1.98

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		109.2	50.0	150.0
M2-6:2FTSA		94.3	50.0	150.0
M2-8:2FTSA	*	236.4	50.0	150.0
M2PFTeDA		126.8	12.0	218.0
M3PFBS		113.0	50.0	150.0
M3PFHxS		119.3	50.0	150.0
M4PFHpA		120.0	50.0	150.0
M5PFHxA		117.8	50.0	150.0
M5PFPeA		119.5	50.0	150.0
M6PFDA		104.2	50.0	150.0
M7PFUnDA		138.2	50.0	150.0
M8FOSA		120.6	50.0	150.0
M8PFOA		107.5	50.0	150.0
M8PFOS		109.8	50.0	150.0
M9-PFNA		115.9	50.0	150.0
MPFBA		114.1	50.0	150.0
MPFDoDA		117.4	50.0	150.0
d3N-MeFOSAA		125.4	50.0	150.0
d5EtFOSAA		138.8	50.0	150.0
MHFPO-DA		127.0	50.0	150.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S40127.03

Sample Tag: 03-PRCC-22-MID-1-103

Collected Date/Time: 09/09/2022 09:59

Matrix: Wastewater

COC Reference: 144822

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK220929, Run Date: 09/29/2022 20:46, Matrix: WW, Dilution: 2.03

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		103.4	50.0	150.0
M2-6:2FTSA		112.3	50.0	150.0
M2-8:2FTSA	*	222.0	50.0	150.0
M2PFTeDA		114.9	12.0	218.0
M3PFBS		112.7	50.0	150.0
M3PFHxS		114.4	50.0	150.0
M4PFHpA		105.4	50.0	150.0
M5PFHxA		107.0	50.0	150.0
M5PFPeA		126.8	50.0	150.0
M6PFDA		106.5	50.0	150.0
M7PFUnDA		135.3	50.0	150.0
M8FOSA		124.0	50.0	150.0
M8PFOA		96.0	50.0	150.0
M8PFOS		118.8	50.0	150.0
M9-PFNA		125.4	50.0	150.0
MPFBA		110.8	50.0	150.0
MPFDoDA		127.9	50.0	150.0
d3N-MeFOSAA		132.0	50.0	150.0
d5EtFOSAA		123.4	50.0	150.0
MHFPO-DA		118.7	50.0	150.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S40127.04

Sample Tag: 03-PRCC-22-PRIM-103

Collected Date/Time: 09/09/2022 10:01

Matrix: Wastewater

COC Reference: 144822

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK220929, Run Date: 09/29/2022 21:06, Matrix: WW, Dilution: 2.04

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		102.7	50.0	150.0
M2-6:2FTSA		94.7	50.0	150.0
M2-8:2FTSA	*	274.6	50.0	150.0
M2PFTeDA		120.7	12.0	218.0
M3PFBS		113.4	50.0	150.0
M3PFHxS		124.6	50.0	150.0
M4PFHpA		108.7	50.0	150.0
M5PFHxA		125.0	50.0	150.0
M5PFPeA		121.4	50.0	150.0
M6PFDA		108.2	50.0	150.0
M7PFUnDA		134.0	50.0	150.0
M8FOSA		119.6	50.0	150.0
M8PFOA		108.9	50.0	150.0
M8PFOS		100.9	50.0	150.0
M9-PFNA		112.5	50.0	150.0
MPFBA		114.7	50.0	150.0
MPFDoDA		125.8	50.0	150.0
d3N-MeFOSAA		112.3	50.0	150.0
d5EtFOSAA		129.0	50.0	150.0
MHFPO-DA		110.7	50.0	150.0

QC Report - Internal Standards per QC Sample

Organics - Volatiles, Prep Batch ID: PF220928W1

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

Blank (BLK)

Lab Sample ID: AK220929.BLK220928

Run in Batch: AK220929, Run Date: 09/29/2022 14:04, Prep Date: 09/28/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		93.6	50.0	150.0
M2-6:2FTSA		89.0	50.0	150.0
M2-8:2FTSA		108.7	50.0	150.0
M2PFTeDA		108.7	12.0	218.0
M3PFBS		101.6	50.0	150.0
M3PFHxS		107.6	50.0	150.0
M4PFHpA		98.6	50.0	150.0
M5PFHxA		96.4	50.0	150.0
M5PFPeA		107.4	50.0	150.0
M6PFDA		98.7	50.0	150.0
M7PFUnDA		108.0	50.0	150.0
M8FOSA		111.5	50.0	150.0
M8PFOA		86.5	50.0	150.0
M8PFOS		116.5	50.0	150.0
M9-PFNA		110.6	50.0	150.0
MPFBA		101.1	50.0	150.0
MPFDoDA		115.2	50.0	150.0
d3N-MeFOSAA		108.7	50.0	150.0
d5EtFOSAA		103.9	50.0	150.0
MHFPO-DA		105.3	50.0	150.0

QC Report - Internal Standards per QC Sample

Blank (BLK)

Lab Sample ID: DQ220929.BLK220912B

Run in Batch: DQ220929, Run Date: 09/29/2022 13:34, Prep Date: 09/28/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		106.2	50.0	150.0
M2-6:2FTSA		112.9	50.0	150.0
M2-8:2FTSA		103.1	50.0	150.0
M2PFTeDA		94.1	12.0	218.0
M3PFBS		110.6	50.0	150.0
M3PFHxS		96.3	50.0	150.0
M4PFHpA		101.9	50.0	150.0
M5PFHxA		103.0	50.0	150.0
M5PFPeA		104.7	50.0	150.0
M6PFDA		104.7	50.0	150.0
M7PFUnDA		97.4	50.0	150.0
M8FOSA		103.0	50.0	150.0
M8PFOA		112.3	50.0	150.0
M8PFOS		109.2	50.0	150.0
M9-PFNA		105.3	50.0	150.0
MPFBA		109.6	50.0	150.0
MPFDoDA		99.3	50.0	150.0
d3N-MeFOSAA		96.7	50.0	150.0
d5EtFOSAA		106.5	50.0	150.0
MHFPO-DA		107.3	50.0	150.0

QC Report - Internal Standards per QC Sample

Laboratory Control Sample (LCS)

Lab Sample ID: AK220929.LCSD220928

Run in Batch: AK220929, Run Date: 09/29/2022 13:45, Prep Date: 09/28/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		105.9	50.0	150.0
M2-6:2FTSA		94.2	50.0	150.0
M2-8:2FTSA		109.5	50.0	150.0
M2PFTeDA		140.0	12.0	218.0
M3PFBS		111.9	50.0	150.0
M3PFHxS		121.1	50.0	150.0
M4PFHpA		99.6	50.0	150.0
M5PFHxA		102.6	50.0	150.0
M5PFPeA		118.1	50.0	150.0
M6PFDA		113.5	50.0	150.0
M7PFUnDA		118.1	50.0	150.0
M8FOSA		121.7	50.0	150.0
M8PFOA		96.6	50.0	150.0
M8PFOS		113.0	50.0	150.0
M9-PFNA		108.0	50.0	150.0
MPFBA		110.2	50.0	150.0
MPFDoDA		120.9	50.0	150.0
d3N-MeFOSAA		121.5	50.0	150.0
d5EtFOSAA		115.2	50.0	150.0
MHFPO-DA		124.5	50.0	150.0

QC Report - Internal Standards per QC Sample

Laboratory Control Sample (LCS)

Lab Sample ID: DQ220929.LCSD220928

Run in Batch: DQ220929, Run Date: 09/29/2022 12:55, Prep Date: 09/28/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		116.9	50.0	150.0
M2-6:2FTSA		126.6	50.0	150.0
M2-8:2FTSA		137.3	50.0	150.0
M2PFTeDA		110.4	12.0	218.0
M3PFBS		124.6	50.0	150.0
M3PFHxS		100.1	50.0	150.0
M4PFHpA		116.4	50.0	150.0
M5PFHxA		112.5	50.0	150.0
M5PFPeA		114.6	50.0	150.0
M6PFDA		106.5	50.0	150.0
M7PFUnDA		114.6	50.0	150.0
M8FOSA		116.5	50.0	150.0
M8PFOA		114.3	50.0	150.0
M8PFOS		117.9	50.0	150.0
M9-PFNA		109.6	50.0	150.0
MPFBA		116.4	50.0	150.0
MPFDoDA		120.2	50.0	150.0
d3N-MeFOSAA		112.0	50.0	150.0
d5EtFOSAA		114.2	50.0	150.0
MHFPO-DA		121.0	50.0	150.0

QC Report - Internal Standards per QC Sample

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: AK220929.LCSX220928, Parent Sample ID: AK220929.LCSD220928

Run in Batch: AK220929, Run Date: 09/29/2022 15:42, Prep Date: 09/28/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		97.8	50.0	150.0
M2-6:2FTSA		88.2	50.0	150.0
M2-8:2FTSA		80.2	50.0	150.0
M2PFTeDA		88.6	12.0	218.0
M3PFBS		99.5	50.0	150.0
M3PFHxS		112.1	50.0	150.0
M4PFHpA		88.0	50.0	150.0
M5PFHxA		97.1	50.0	150.0
M5PFPeA		104.4	50.0	150.0
M6PFDA		94.6	50.0	150.0
M7PFUnDA		113.5	50.0	150.0
M8FOSA		106.1	50.0	150.0
M8PFOA		97.3	50.0	150.0
M8PFOS		96.1	50.0	150.0
M9-PFNA		103.2	50.0	150.0
MPFBA		98.8	50.0	150.0
MPFDoDA		93.7	50.0	150.0
d3N-MeFOSAA		103.7	50.0	150.0
d5EtFOSAA		102.0	50.0	150.0
MHFPO-DA		100.5	50.0	150.0

QC Report - Internal Standards per QC Sample

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: DQ220929.LCSX220928, Parent Sample ID: DQ220929.LCSD220928

Run in Batch: DQ220929, Run Date: 09/29/2022 13:15, Prep Date: 09/28/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		105.3	50.0	150.0
M2-6:2FTSA		110.9	50.0	150.0
M2-8:2FTSA		97.2	50.0	150.0
M2PFTeDA		116.5	12.0	218.0
M3PFBS		102.0	50.0	150.0
M3PFHxS		94.0	50.0	150.0
M4PFHpA		97.4	50.0	150.0
M5PFHxA		101.9	50.0	150.0
M5PFPeA		102.9	50.0	150.0
M6PFDA		98.1	50.0	150.0
M7PFUnDA		97.3	50.0	150.0
M8FOSA		102.3	50.0	150.0
M8PFOA		100.6	50.0	150.0
M8PFOS		105.5	50.0	150.0
M9-PFNA		97.9	50.0	150.0
MPFBA		105.9	50.0	150.0
MPFDoDA		106.3	50.0	150.0
d3N-MeFOSAA		91.4	50.0	150.0
d5EtFOSAA		106.5	50.0	150.0
MHFPO-DA		107.3	50.0	150.0

QC Report - Internal Standards per QC Sample

Matrix Spike (MS)

Lab Sample ID: AK220930R.4012701M, Parent Sample ID: S40127.01

Run in Batch: AK220930R, Run Date: 09/30/2022 09:42, Prep Date: 09/28/2022, Matrix: WW, Dilution: 2.03

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		59.3	50.0	150.0
M2-6:2FTSA		53.6	50.0	150.0
M2-8:2FTSA	*	49.4	50.0	150.0
M2PFTeDA		113.7	12.0	218.0
M3PFBS		80.5	50.0	150.0
M3PFHxS		92.3	50.0	150.0
M4PFHpA		84.4	50.0	150.0
M5PFHxA		91.2	50.0	150.0
M5PFPeA		83.6	50.0	150.0
M6PFDA		79.7	50.0	150.0
M7PFUnDA		89.8	50.0	150.0
M8FOSA		92.1	50.0	150.0
M8PFOA		90.8	50.0	150.0
M8PFOS		82.3	50.0	150.0
M9-PFNA		76.6	50.0	150.0
MPFBA		87.7	50.0	150.0
MPFDoDA		78.6	50.0	150.0
d3N-MeFOSAA		90.2	50.0	150.0
d5EtFOSAA		92.7	50.0	150.0
MHFPO-DA		87.8	50.0	150.0

QC Report - Internal Standards per QC Sample

Duplicate (DUP)

Lab Sample ID: AK220929.4012702D, Parent Sample ID: S40127.02

Run in Batch: AK220929, Run Date: 09/29/2022 20:27, Prep Date: 09/28/2022, Matrix: WW, Dilution: 1.98

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		115.4	50.0	150.0
M2-6:2FTSA		104.0	50.0	150.0
M2-8:2FTSA	*	207.1	50.0	150.0
M2PFTeDA		105.9	12.0	218.0
M3PFBS		115.2	50.0	150.0
M3PFHxS		128.2	50.0	150.0
M4PFHpA		109.6	50.0	150.0
M5PFHxA		116.8	50.0	150.0
M5PFPeA		122.8	50.0	150.0
M6PFDA		110.0	50.0	150.0
M7PFUnDA		130.0	50.0	150.0
M8FOSA		125.3	50.0	150.0
M8PFOA		105.0	50.0	150.0
M8PFOS		110.0	50.0	150.0
M9-PFNA		112.6	50.0	150.0
MPFBA		114.7	50.0	150.0
MPFDoDA		115.0	50.0	150.0
d3N-MeFOSAA		122.4	50.0	150.0
d5EtFOSAA		129.5	50.0	150.0
MHFPO-DA		119.4	50.0	150.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF220928W1

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

Blank (BLK)

Lab Sample ID: AK220929.BLK220928

Run in Batch: AK220929, Run Date: 09/29/2022 14:04, Prep Date: 09/28/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
PFBA		ND	10	ng/l
PFMPA		ND	2	ng/l
FPrPA (3:3 FTCA)		ND	5.0	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	10	ng/l
FPePA (5:3 FTCA)		ND	5.0	ng/l
PFEESA		ND	2	ng/l
PFFHpA		ND	2	ng/l
PFPeS		ND	2	ng/l
ADONA		ND	2	ng/l
PFBSA		ND	2	ng/l
6:2 FTSA		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	5.0	ng/l
PFNA		ND	2	ng/l
PFECHS		ND	2	ng/l
8:2 FTSA		ND	2	ng/l
PFFHpS		ND	2	ng/l
N-MeFOSAA		ND	2	ng/l
PFDA		ND	2	ng/l
EtFOSAA		ND	4	ng/l
PFOS-BR		ND	2	ng/l
PFOS		ND	2	ng/l
PFHxSA		ND	2	ng/l
PFOS-LN		ND	2	ng/l
PFUnDA		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
FOSA		ND	2	ng/l
PFTTrDA		ND	2	ng/l
11CL-PF3OUdS		ND	2	ng/l
PFTeDA		ND	4	ng/l

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF220928W1 (continued)

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

Blank (BLK)

Lab Sample ID: DQ220929.BLK220912B

Run in Batch: DQ220929, Run Date: 09/29/2022 13:34, Prep Date: 09/28/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
PFMPA		ND	2	ng/l
FPrPA (3:3 FTCA)		ND	5.0	ng/l
PFPPrS		ND	2	ng/l
PFMBA		ND	2	ng/l
4:2 FTSA		ND	2	ng/l
NFDHA		ND	2	ng/l
FPePA (5:3 FTCA)		ND	5.0	ng/l
PFEESA		ND	2	ng/l
PFBSA		ND	2	ng/l
6:2 FTSA		ND	2	ng/l
FHpPA (7:3 FTCA)		ND	5.0	ng/l
8:2 FTSA		ND	2	ng/l
PFECHS		ND	2	ng/l
PFHxSA		ND	2	ng/l
PFNS		ND	2	ng/l
PFDS		ND	2	ng/l
FOSA		ND	2	ng/l
PFBA		ND	10	ng/l
PFPeA		ND	4	ng/l
PFHxA		ND	2	ng/l
PFBS		ND	2	ng/l
PFHpA		ND	2	ng/l
PFPeS		ND	2	ng/l
PFOA		ND	2	ng/l
PFHxS		ND	2	ng/l
PFHxS-LN		ND	2	ng/l
PFHxS-BR		ND	2	ng/l
PFNA		ND	2	ng/l
PFHpS		ND	2	ng/l
PFDA		ND	2	ng/l
N-MeFOSAA		ND	2	ng/l
EtFOSAA		ND	4	ng/l
PFOS		ND	2	ng/l
PFOS-LN		ND	2	ng/l
PFOS-BR		ND	2	ng/l
PFUnDA		ND	2	ng/l
PFDoDA		ND	2	ng/l
PFTTrDA		ND	2	ng/l
PFTTeDA		ND	4	ng/l
11CL-PF3OUdS		ND	2	ng/l
9CL-PF3ONS		ND	2	ng/l
ADONA		ND	2	ng/l
HFPO-DA		ND	2	ng/l

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF220928W1 (continued)

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

Laboratory Control Sample (LCS)

Lab Sample ID: AK220929.LCSD220928

Run in Batch: AK220929, Run Date: 09/29/2022 13:45, Prep Date: 09/28/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
PFBA		97.0	70.0	130.0
PFMPA		88.4	70.0	130.0
FPrPA (3:3 FTCA)		84.4	70.0	130.0
PFPPrS		93.0	70.0	130.0
PFPeA		92.6	70.0	130.0
PFMBA		89.2	70.0	130.0
4:2 FTSA		100.4	70.0	130.0
NFDHA		82.2	70.0	130.0
PFHxA		95.6	70.0	130.0
PFBS		94.6	70.0	130.0
HFPO-DA		97.4	70.0	130.0
FPePA (5:3 FTCA)		88.2	70.0	130.0
PFEESA		88.8	70.0	130.0
PFHpA		99.6	70.0	130.0
PFPeS		103.0	70.0	130.0
ADONA		118.8	70.0	130.0
PFBSA		80.6	70.0	130.0
6:2 FTSA		111.6	70.0	130.0
PFOA		103.6	70.0	130.0
PFHxS		96.8	70.0	130.0
FHpPA (7:3 FTCA)	*	132.8	70.0	130.0
PFNA		107.2	70.0	130.0
PFECHS		99.4	70.0	130.0
8:2 FTSA		105.6	70.0	130.0
PFHpS		100.8	70.0	130.0
N-MeFOSAA		98.0	70.0	130.0
PFDA		95.6	70.0	130.0
EtFOSAA		99.8	70.0	130.0
PFOS		98.4	70.0	130.0
PFHxSA		78.2	70.0	130.0
PFUnDA		97.6	70.0	130.0
9CL-PF3ONS		92.4	70.0	130.0
PFNS		102.6	70.0	130.0
PFDoDA		102.8	70.0	130.0
PFDS		95.6	70.0	130.0
FOSA		89.0	70.0	130.0
PFTTrDA		94.6	70.0	130.0
11CL-PF3OUdS		94.0	70.0	130.0
PFTeDA		94.0	70.0	130.0

Laboratory Control Sample (LCS)

Lab Sample ID: DQ220929.LCSD220928

Run in Batch: DQ220929, Run Date: 09/29/2022 12:55, Prep Date: 09/28/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
PFBA		88.6	70.0	130.0
PFMPA		78.8	70.0	130.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF220928W1 (continued)

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

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: DQ220929.LCSD220928

Run in Batch: DQ220929, Run Date: 09/29/2022 12:55, Prep Date: 09/28/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
FPrPA (3:3 FTCA)		79.4	70.0	130.0
PFPPrS		84.0	70.0	130.0
PFPeA		88.4	70.0	130.0
PFMBA		83.0	70.0	130.0
4:2 FTSA		94.2	70.0	130.0
NFDHA		85.0	70.0	130.0
PFHxA		86.8	70.0	130.0
PFBS		94.8	70.0	130.0
HFPO-DA		83.6	70.0	130.0
FPePA (5:3 FTCA)		80.2	70.0	130.0
PFEESA		88.2	70.0	130.0
PFHpA		95.4	70.0	130.0
PFPeS		76.8	70.0	130.0
ADONA		77.6	70.0	130.0
PFBSA		78.6	70.0	130.0
6:2 FTSA		84.6	70.0	130.0
PFOA		87.6	70.0	130.0
PFHxS		89.8	70.0	130.0
FHpPA (7:3 FTCA)		75.6	70.0	130.0
PFNA		88.6	70.0	130.0
8:2 FTSA		95.8	70.0	130.0
PFECHS		83.4	70.0	130.0
PFHpS		91.0	70.0	130.0
N-MeFOSAA		86.6	70.0	130.0
PFDA		97.4	70.0	130.0
EtFOSAA		88.6	70.0	130.0
PFOS		81.6	70.0	130.0
PFHxSA		80.2	70.0	130.0
PFUnDA		79.2	70.0	130.0
9CL-PF3ONS		88.8	70.0	130.0
PFNS		81.0	70.0	130.0
PFDODA		77.8	70.0	130.0
PFDS		82.6	70.0	130.0
PFTTrDA		85.2	70.0	130.0
FOSA		82.2	70.0	130.0
11CL-PF3OUdS		93.2	70.0	130.0
PFTeDA		76.0	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: AK220929.LCSX220928, Parent Sample ID: AK220929.LCSD220928

Run in Batch: AK220929, Run Date: 09/29/2022 15:42, Prep Date: 09/28/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
PFBA		98.8	70.0	130.0	1.8	30.0
PFMPA		91.6	70.0	130.0	3.6	30.0
FPrPA (3:3 FTCA)		90.0	70.0	130.0	6.4	30.0
PFPPrS		92.0	70.0	130.0	1.1	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF220928W1 (continued)

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

Laboratory Control Sample Duplicate (LCSD) (continued)

Lab Sample ID: AK220929.LCSX220928, Parent Sample ID: AK220929.LCSD220928

Run in Batch: AK220929, Run Date: 09/29/2022 15:42, Prep Date: 09/28/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
PFPeA		97.2	70.0	130.0	4.8	30.0
PFMBA		94.6	70.0	130.0	5.9	30.0
4:2 FTSA		109.8	70.0	130.0	8.9	30.0
NFDHA		91.2	70.0	130.0	10.4	30.0
PFHxA		92.2	70.0	130.0	3.6	30.0
PFBS		101.6	70.0	130.0	7.1	30.0
HFPO-DA		97.2	70.0	130.0	0.2	30.0
FPePA (5:3 FTCA)		97.2	70.0	130.0	9.7	30.0
PFEESA		100.6	70.0	130.0	12.5	30.0
PFHpA		108.2	70.0	130.0	8.3	30.0
PFPeS		100.8	70.0	130.0	2.2	30.0
ADONA		102.2	70.0	130.0	15.0	30.0
PFBSA		81.8	70.0	130.0	1.5	30.0
6:2 FTSA		103.6	70.0	130.0	7.4	30.0
PFOA		94.8	70.0	130.0	8.9	30.0
PFHxS		95.6	70.0	130.0	1.2	30.0
FHpPA (7:3 FTCA)	*	98.0	70.0	130.0	30.2	30.0
PFNA		98.2	70.0	130.0	8.8	30.0
PFECHS		95.8	70.0	130.0	3.7	30.0
8:2 FTSA		112.6	70.0	130.0	6.4	30.0
PFHpS		94.6	70.0	130.0	6.3	30.0
N-MeFOSAA		100.4	70.0	130.0	2.4	30.0
PFDA		108.8	70.0	130.0	12.9	30.0
EtFOSAA		101.2	70.0	130.0	1.4	30.0
PFOS		114.0	70.0	130.0	14.7	30.0
PFHxSA		88.2	70.0	130.0	12.0	30.0
PFUnDA		85.8	70.0	130.0	12.9	30.0
9CL-PF3ONS		106.2	70.0	130.0	13.9	30.0
PFNS		100.2	70.0	130.0	2.4	30.0
PFDODA		99.4	70.0	130.0	3.4	30.0
PFDS		100.0	70.0	130.0	4.5	30.0
FOSA		92.6	70.0	130.0	4.0	30.0
PFTTrDA		85.2	70.0	130.0	10.5	30.0
11CL-PF3OUdS		89.8	70.0	130.0	4.6	30.0
PFTeDA		95.4	70.0	130.0	1.5	30.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: DQ220929.LCSX220928, Parent Sample ID: DQ220929.LCSD220928

Run in Batch: DQ220929, Run Date: 09/29/2022 13:15, Prep Date: 09/28/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
PFBA		88.6	70.0	130.0	0.0	30.0
PFMPA		78.2	70.0	130.0	0.8	30.0
FPrPA (3:3 FTCA)		79.0	70.0	130.0	0.5	30.0
PFPPrS		94.0	70.0	130.0	11.2	30.0
PFPeA		89.2	70.0	130.0	0.9	30.0
PFMBA		80.2	70.0	130.0	3.4	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF220928W1 (continued)

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

Laboratory Control Sample Duplicate (LCSD) (continued)

Lab Sample ID: DQ220929.LCSX220928, Parent Sample ID: DQ220929.LCSD220928

Run in Batch: DQ220929, Run Date: 09/29/2022 13:15, Prep Date: 09/28/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
4:2 FTSA		94.8	70.0	130.0	0.6	30.0
NFDHA		83.8	70.0	130.0	1.4	30.0
PFHxA		82.6	70.0	130.0	5.0	30.0
PFBS		91.8	70.0	130.0	3.2	30.0
HFPO-DA		84.8	70.0	130.0	1.4	30.0
FPePA (5:3 FTCA)		72.0	70.0	130.0	10.8	30.0
PFEESA		88.2	70.0	130.0	0.0	30.0
PFHpA		98.2	70.0	130.0	2.9	30.0
PFPeS		100.0	70.0	130.0	26.2	30.0
ADONA		84.2	70.0	130.0	8.2	30.0
PFBSA		85.0	70.0	130.0	7.8	30.0
6:2 FTSA		94.0	70.0	130.0	10.5	30.0
PFOA		88.8	70.0	130.0	1.4	30.0
PFHxS		85.8	70.0	130.0	4.6	30.0
FHpPA (7:3 FTCA)		78.0	70.0	130.0	3.1	30.0
PFNA		94.6	70.0	130.0	6.6	30.0
8:2 FTSA		82.8	70.0	130.0	14.6	30.0
PFECHS		89.6	70.0	130.0	7.2	30.0
PFHpS		79.8	70.0	130.0	13.1	30.0
N-MeFOSAA		85.0	70.0	130.0	1.9	30.0
PFDA		94.2	70.0	130.0	3.3	30.0
EtFOSAA		86.6	70.0	130.0	2.3	30.0
PFOS		82.2	70.0	130.0	0.7	30.0
PFHxSA		78.2	70.0	130.0	2.5	30.0
PFUnDA		94.4	70.0	130.0	17.5	30.0
9CL-PF3ONS		85.6	70.0	130.0	3.7	30.0
PFNS		80.6	70.0	130.0	0.5	30.0
PFDoDA		80.4	70.0	130.0	3.3	30.0
PFDS		87.4	70.0	130.0	5.6	30.0
PFTTrDA		90.0	70.0	130.0	5.5	30.0
FOSA		96.0	70.0	130.0	15.5	30.0
11CL-PF3OUdS		89.2	70.0	130.0	4.4	30.0
PFTeDA	*	66.4	70.0	130.0	13.5	30.0

Matrix Spike (MS)

Lab Sample ID: AK220930R.4012701M, Parent Sample ID: S40127.01

Run in Batch: AK220930R, Run Date: 09/30/2022 09:42, Prep Date: 09/28/2022, Matrix: WW, Dilution: 2.03

Analyte	Flags	% Rec	LCL	UCL
PFBA		107.8	70.0	130.0
PFPeA		117.6	70.0	130.0
4:2 FTSA		107.8	70.0	130.0
PFHxA		107.8	70.0	130.0
PFBS		107.8	70.0	130.0
PFHpA		117.6	70.0	130.0
PFPeS		117.6	70.0	130.0
6:2 FTSA		117.6	70.0	130.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF220928W1 (continued)

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

Matrix Spike (MS) (continued)

Lab Sample ID: AK220930R.4012701M, Parent Sample ID: S40127.01

Run in Batch: AK220930R, Run Date: 09/30/2022 09:42, Prep Date: 09/28/2022, Matrix: WW, Dilution: 2.03

Analyte	Flags	% Rec	LCL	UCL
PFOA		107.8	70.0	130.0
PFHxS		107.8	70.0	130.0
PFNA		107.8	70.0	130.0
8:2 FTSA		127.5	70.0	130.0
PFHpS		107.8	70.0	130.0
PFDA		107.8	70.0	130.0
N-MeFOSAA		107.8	70.0	130.0
EtFOSAA		96.1	70.0	130.0
PFOS		117.6	70.0	130.0
PFUnDA		97.1	70.0	130.0
PFNS		117.6	70.0	130.0
PFDoDA		117.6	70.0	130.0
PFDS		127.5	70.0	130.0
PFTTrDA		117.6	70.0	130.0
FOSA		107.8	70.0	130.0
PFTeDA		117.6	70.0	130.0
11CL-PF3OUdS		107.8	70.0	130.0
9CL-PF3ONS		107.8	70.0	130.0
ADONA		117.6	70.0	130.0
HFPO-DA		107.8	70.0	130.0
PFECHS		107.8	70.0	130.0
PFBSA		98.0	70.0	130.0
PFHxSA		98.0	70.0	130.0

Duplicate (DUP)

Lab Sample ID: AK220929.4012702D, Parent Sample ID: S40127.02

Run in Batch: AK220929, Run Date: 09/29/2022 20:27, Prep Date: 09/28/2022, Matrix: WW, Dilution: 1.98

Analyte	Flags	RPD	RPD CL
PFBA		NC	30.0
PFPeA		NC	30.0
4:2 FTSA		NC	30.0
PFHxA		NC	30.0
PFBS		NC	30.0
PFHpA		NC	30.0
PFPeS		NC	30.0
6:2 FTSA		NC	30.0
PFOA		NC	30.0
PFHxS		NC	30.0
PFHxS-LN		NC	30.0
PFHxS-BR		NC	30.0
PFNA		NC	30.0
8:2 FTSA		NC	30.0
PFHpS		NC	30.0
PFDA		NC	30.0
N-MeFOSAA		NC	30.0
EtFOSAA		NC	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF220928W1 (continued)

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

Duplicate (DUP) (continued)

Lab Sample ID: AK220929.4012702D, Parent Sample ID: S40127.02

Run in Batch: AK220929, Run Date: 09/29/2022 20:27, Prep Date: 09/28/2022, Matrix: WW, Dilution: 1.98

Analyte	Flags	RPD	RPD CL
PFOS		13.3	30.0
PFOS-LN	*	200.0	30.0
PFOS-BR		NC	30.0
PFUnDA		NC	30.0
PFNS		NC	30.0
PFDODA		NC	30.0
PFDS		NC	30.0
PFTTrDA		NC	30.0
FOSA		NC	30.0
PFTeDA		NC	30.0
11CL-PF3OUdS		NC	30.0
9CL-PF3ONS		NC	30.0
ADONA		NC	30.0
HFPO-DA		NC	30.0

