

Transmitted via email

Ms. Nicole Sanabria and Ms. Christina Hebert

Materials Management Division
Department of Environment, Great Lakes, and Energy
PO Box 30473
Lansing, MI 48909-7973

Mr. Kevin Forbes

Administrative Superintendent
Beecher Metropolitan District
G-1057 Louis Avenue
Flint, MI, 48505

Mr. Robert Ellis

Department of Public Works Manager
Genesee Township
7244 N. Genesee Road
Genesee, MI 48423

February 1, 2024

RE: **West of Site Sanitary Sewer Update**

RACER Trust – Coldwater Road Facility
FILE: 15388/1940103462/Corres

Ramboll
2090 Commonwealth Blvd.
Ann Arbor, MI 48105
USA

T 734-761-4000
F 734-761-2050
<https://ramboll.com>

Dear **Ms. Sanabria, Ms. Hebert, Mr. Forbes, & Mr. Ellis:**

Ramboll Americas Engineering Solutions, Inc. (Ramboll), on behalf of the Revitalizing Auto Communities Environmental Response Trust (RACER Trust) is providing this letter to summarize the per- and polyfluoroalkyl substances (PFAS) sample results collected from the Beecher Metropolitan District sanitary sewers west of the RACER Trust Coldwater Road Facility (Site) located in Flint, Michigan.

The samples were collected on December 19, 2023, at sample locations SAN-06, SAN-12, and SAN-14. See **Figure 1** for sample locations.

Sanitary sewer sampling was performed in accordance with the methods specified in EGLE’s Wastewater PFAS Sampling Guidance.

Analytical Results

The sewer samples were analyzed for PFAS by method ASTM D7979-19 (no preservative). The analytical results for the recent sewer samples and historical

samples are summarized in **Table 1**, and the analytical laboratory reports for the most recent sampling event are included in **Appendix A**.

- SAN-06 had a detection of 21 nanograms per liter (ng/l) for perfluorooctane sulfonic acid (PFOS) on December 19, 2023, which is near the middle of the range of previously detected concentrations and is an increase compared to the previous result of 11 ng/l (6/27/2023) for PFOS.
- SAN-12 had a detection of 33 ng/l for PFOS on December 19, 2023, which is near the low end of the range of previously detected concentrations and is a slight decrease compared to the previous result of 36 ng/l (6/27/2023) for PFOS.
- SAN-14 had a detection of 17 ng/l for PFOS on December 19, 2023, which is near the low end of the range of previously detected concentrations and is an increase compared to the previous result of 8.4 ng/l (6/27/2023) for PFOS.

The observed flow rates were similar to the reduced flow rates observed during previous post-lining (lining completed in February 2022) sampling events. PFOS concentrations appear to be variable at a given sampling location but generally lower than before repairs were implemented.

Based on these results and to allow for evaluation of concentration variability and trends, we propose to collect another round of samples in June 2024 from sample locations SAN-06, SAN-12, and SAN-14. An update similar to this one will be provided within approximately four weeks of receipt of the analytical results from the laboratory.

Please contact me at 313-333-0211 or clifford.yantz@ramboll.com or Brendan Mullen, who is replacing Dave Favero as the RACER contact for this work, at bmullen@racertrust.org or 201-247-4890, if you have any questions.

Very truly yours,

RAMBOLL AMERICAS ENGINEERING SOLUTIONS, INC.

Clifford S. Yantz

Project Manager

M 313.333.0211

Clifford.yantz@ramboll.com

ENCLOSURES:

Table 1 – Sanitary Sewer Analytical Results – West of Site

Figure 1 – Sanitary Sewer/Manhole Sample Locations

Attachment A – Laboratory Analytical Reports

cc: Mr. Daniel K Eashoo - Genesee Township Supervisor (via email)
Ms. Tiffany Minder – City of Flint (via email)
Ms. Carla Davidson – EGLE (via email)
Mr. Brian Zuber – EGLE (via email)
Mr. Brendan Mullen – RACER Trust (via email)
Mr. David Favero – RACER Trust (via email)
Mr. Kevin Schneider – Ramboll (via email)

TABLES

TABLE 1
RACER Trust - Coldwater Road
Per-and Polyfluoroalkyl Substances Sampling Results
Sanitary Sewer Samples - West of Site

Coldwater Rd - Sanitary Sewer Samples West of Site

Perfluorinated Compound	Well/Sample ID: EGLE Part 201 Generic Cleanup Criteria and Screening Levels GSI	SAN-3 (Sanitary Sewer)	SAN-3 (Sanitary Sewer)	SAN-3 (Sanitary Sewer)	SAN-3 (Sanitary Sewer)	SAN-4 (Sanitary Sewer)	SAN-5 (Sanitary Sewer)
		Sample Date: 11/5/2019	6/25/2020	12/18/2020	3/11/2021	11/5/2019	11/5/2019
Perfluorobutanoic Acid (PFBA)	--	<19	25 U	<9.8	<10	<20	<20
Perfluoropentanoic Acid (PFPeA)	--	<9.7	5.0	1.2 J	1.8 J	<10	<10
4:2 Fluorotelomer Sulfonic Acid (4:2 FTSA)	--	<9.7	<2.0	<2.0	<2.0	<10	<10
Perfluorohexanoic Acid (PFHxA)	--	<9.7	5.4	1.6 J	1.8 J	<10	<10
Perfluorobutane Sulfonic Acid (PFBS)	670,000	<9.7	9.3	8.6	8.3	<10	<10
Perfluoroheptanoic Acid (PFHpA)	--	<9.7	3.1	<2.0	<2.0	<10	<10
Perfluoropentane Sulfonic Acid (PFPeS)	--	<9.7	11	10	9.4	<10	<10
6:2 Fluorotelomer Sulfonic Acid (6:2 FTSA)	--	<9.7	<2.0	<2.0	<2.0	<10	<10
Perfluorooctanoic Acid (PFOA)	170	<9.7	9.8	3.3	3.5	<10	<10
Perfluorohexane Sulfonic Acid (PFHxS)	210	40	63	52	42	<10	20
Perfluorohexane Sulfonic Acid - LN (PFHxS-LN)	--	33	55	46	35	<10	16
Perfluorohexane Sulfonic Acid - BR (PFHxS-BR)	--	<9.7	7.9	6.5	6.5	<10	<10
Perfluorononanoic Acid (PFNA)	30	<9.7	<2.0	<2.0	<2.0	<10	<10
8:2 Fluorotelomer Sulfonic Acid (8:2 FTSA)	--	<9.7	<2.0	<2.0	<2.0	<10	<10
Perfluoroheptane Sulfonic Acid (PFHpS)	--	<9.7	9.9	9.4	4.4	<10	<10
Perfluorodecanoic Acid (PFDA)	--	<9.7	<2.0	<2.0	<2.0	<10	<10
N-methyl Perfluorooctanesulfonamidoacetic Acid (N-MeFOSAA)	--	<9.7	<2.0	<2.0	<2.0	<10	<10
N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA)	--	<9.7	<4.1	<3.9	<4.1	<10	<10
Perfluorooctane Sulfonic Acid (PFOS)	12	110	230	210	96	61	170
Perfluorooctane Sulfonic Acid (PFOS-LN)	--	21	55	38	17	17	69
Perfluorooctane Sulfonic Acid (PFOS-BR)	--	85	170	170	79	33	100
Perfluoroundecanoic Acid (PFUnDA)	--	<9.7	<2.0	<2.0	<2.0	<10	<10
Perfluorononane Sulfonic Acid (PFNS)	--	<9.7	<2.0	<2.0	<2.0	<10	<10
Perfluorododecanoic Acid (PFDoDA)	--	<9.7	<2.0	<2.0	<2.0	<10	<10
Perfluorodecane Sulfonic Acid (PFDS)	--	<9.7	<2.0	<2.0	<2.0	<10	<10
Perfluorotridecanoic Acid (PFTrDA)	--	<9.7	<2.0	<2.0	<2.0	<10	<10
Perfluorooctane Sulfonamide (FOSA)	--	<9.7	<2.0	<2.0	<2.0	<10	<10
Perfluorotetradecanoic Acid (PFTeDA)	--	<9.7	<4.1	<3.9	<4.1	<10	<10
11-chloroicosafuoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	--	<9.7	<2.0	<2.0	<2.0	<10	<10
9-chlorohexadecafluoro-3-oxanone1-sulfonic acid (9Cl-PF3ONS)	--	<9.7	<2.0	<2.0	<2.0	<10	<10
4,8-dioxo-3H-perfluorononanoic acid (ADONA)	--	<9.7	<2.0	<2.0	<2.0	<10	<10
Hexafluoropropylene oxide dimer (HFPO-DA)	--	<9.7	<2.0	<2.0	<2.0	<10	<10
3-Perfluoroheptyl propanoic acid (FHpPA (7:3 FTCA))	--	--	--	--	--	--	--
3-Perfluoropentyl propanoic acid (FPePA (5:3 FTCA))	--	--	--	--	--	--	--
3-Perfluoropropyl propanoic acid (FPrPA (3:3 FTCA))	--	--	--	--	--	--	--
Perfluorobutanesulfonamide (PFBSA)	--	--	--	--	--	--	--
Perfluoro-4-ethylcyclohexanesulfonate (PFECHS)	--	--	--	--	--	--	--
Perfluorohexanesulfonamide (PFHxSA)	--	--	--	--	--	--	--
Total Per-and Polyfluoroalkyl Substances	--	150.0	371.5	296.1	167.2	61.0	190.0

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.
- 7) Concentration above the groundwater surface water interface (GSI) criteria are highlighted in yellow.
- 8) The detection of PFBA in Field Blank-062520 was caused from the centrifuge tubes leaching out PFBA during the extraction process. The 5X Rule was applied to PFBA detections. If the sample value(s) is less than 5 times the blank concentration (5X Rule), then positive results are qualified "U,"undetected.
- 9) I - Biased high -- matrix interference
- 10) B - Compound also found in associated method blank.
- 11) I - Matrix interference with internal standard.
- 12) J - Estimated value less than reporting limit, but greater than MDL.
- 13) X - Elevated reporting limit due to matrix interference.
- 14) Light gray header is most recent sampling event result.
- 15) QA/QC Samples were either not detected above the reporting limit or below the EGLE Part 201 Groundwater Generic Cleanup Criteria.



TABLE 1
RACER Trust - Coldwater Road
Per-and Polyfluoroalkyl Substances Sampling Results
Sanitary Sewer Samples - West of Site

Coldwater Rd - Sanitary Sewer Samples West of Site

Perfluorinated Compound	Well/Sample ID: EGLE Part 201 Generic Cleanup Criteria and Screening Levels GSI	SAN-06 (Sanitary Sewer)	SAN-06 (Sanitary Sewer)	SAN-06 (Sanitary Sewer)	SAN-06 (Sanitary Sewer)	SAN-06 (Sanitary Sewer)	SAN-06 (Sanitary Sewer)	SAN-06 (Sanitary Sewer)	SAN-06 (Sanitary Sewer)	SAN-06 (Sanitary Sewer)	SAN-06 (Sanitary Sewer)
	Sample Date:	3/17/2020	6/25/2020	12/18/2020	3/11/2021	3/31/2022	9/7/2022	12/13/2022	4/6/2023	6/27/2023	12/19/2023
Perfluorobutanoic Acid (PFBA)	--	<21	13 U	<10	<11	<10	<10	<9.6	2.8 J	<11 x	<9.9
Perfluoropentanoic Acid (PFPeA)	--	<10	1.3 J	<4.0	1.9 J	3.2 J	<4.0	<3.8	3.1 J	1.2 J	1.5 J
4:2 Fluorotelomer Sulfonic Acid (4:2 FTSA)	--	<10	<2.0 I	<2.0 I	<2.1	<2.1	<2.0 I	<1.9	<2.0	<1.9 I	<2.0
Perfluorohexanoic Acid (PFHxA)	--	<10	<2.0	<2.0	1.9 J	3.1	3.4	2.1	3.2	2.2	1.6 J
Perfluorobutane Sulfonic Acid (PFBS)	670,000	<10	3.1	3.7	4.5	11	<2.0	<1.9	5.8	<1.9	5.2
Perfluoroheptanoic Acid (PFHpA)	--	<10	<2.0	<2.0	<2.1	<2.1	<2.0	<1.9	1.9 J	<1.9	1.3 J
Perfluoropentane Sulfonic Acid (PFPeS)	--	<10	<2.0	<2.0	2.3	6.7	<2.0	<1.9	3.3	<1.9	2.8
6:2 Fluorotelomer Sulfonic Acid (6:2 FTSA)	--	<10	<2.0 I	<2.0 I	<2.1	<2.1	<2.0 I	<1.9	<2.0	<1.9 I	<2.0
Perfluorooctanoic Acid (PFOA)	170	<10	<2.0	<2.0	<2.1	2.7	<2.0	<1.9	3.0	<1.9	1.8 J
Perfluorohexane Sulfonic Acid (PFHxS)	210	<10	11	6.3	10	18	5.6	<1.9	10	1.7 J	8.4
Perfluorohexane Sulfonic Acid - LN (PFHxS-LN)	--	<10	9.0	5.0	8.1	14	2.5	<1.9	8.2	1.7 J	6.8
Perfluorohexane Sulfonic Acid - BR (PFHxS-BR)	--	<10	<2.0	<2.0	<2.1	3.7	2.7	<1.9	2.6	<1.9	1.2 J
Perfluorononanoic Acid (PFNA)	30	<10	<2.0	<2.0	<2.1	<2.1	<2.0	<1.9	1.1 J	<1.9	<2.0
8:2 Fluorotelomer Sulfonic Acid (8:2 FTSA)	--	<10	<2.0	<2.0 I	<2.1	<2.1	<2.0 I	<1.9	<2.0	<1.9	<2.0
Perfluoroheptane Sulfonic Acid (PFHpS)	--	<10	<2.0	<2.0	<2.1	<2.1	<2.0	<1.9	1.4 J	<1.9	0.97 J
Perfluorodecanoic Acid (PFDA)	--	<10	<2.0	<2.0	<2.1	<2.1	<2.0	<1.9	0.76 J	<1.9	<2.0
N-methyl Perfluorooctanesulfonamidoacetic Acid (N-MeFOSAA)	--	<10	<2.0	<2.0	<2.1	<2.1	<2.0	<1.9	2.7	<1.9	<2.0
N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA)	--	<10	<3.9 I	<4.0 I	<4.2	<4.1	<4.0	<3.8	<4.0	<3.9 I	<3.9
Perfluorooctane Sulfonic Acid (PFOS)	12	14	21	26	34	38	13	4.5	32	11	21
Perfluorooctane Sulfonic Acid (PFOS-LN)	--	<10	5.7	5.0	5.7	5.7	3.6	2.0	7.0	3.1	4.3
Perfluorooctane Sulfonic Acid (PFOS-BR)	--	<10	16	19	27	31	9.1	2.4	25	8.0	17
Perfluoroundecanoic Acid (PFUnDA)	--	<10	<2.0	<2.0	<2.1	<2.1	<2.0	<1.9	<2.0	<1.9	<2.0
Perfluorononane Sulfonic Acid (PFNS)	--	<10	<2.0	<2.0	<2.1	<2.1	<2.0	<1.9	<2.0	<1.9	<2.0
Perfluorododecanoic Acid (PFDoDA)	--	<10	<2.0 I	<2.0	<2.1	<2.1	<2.0	<1.9	1.2 J	<1.9	<2.0
Perfluorodecane Sulfonic Acid (PFDS)	--	<10	<2.0	<2.0	<2.1	<2.1	<2.0	<1.9	<2.0	<1.9	<2.0
Perfluorotridecanoic Acid (PFTrDA)	--	<10	<2.0 I	<2.0	<2.1	<2.1	<2.0	<1.9	<2.0	<1.9	<2.0
Perfluorooctane Sulfonamide (FOSA)	--	<10	<2.0	<2.0 I	<2.1	<2.1	<2.0	<1.9	<2.0	<1.9	<2.0
Perfluorotetradecanoic Acid (PFTeDA)	--	<10	<3.9	<4.0	<4.2	<4.1	<4.0	<3.8	<4.0	<3.9	<3.9
11-chloroicosaffluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF30UdS)	--	<10	<2.0	<2.0	<2.1	<2.1	<2.0	<1.9	<2.0	<1.9	<2.0
9-chlorohexadecafluoro-3-oxanone1-sulfonic acid (9Cl-PF30NS)	--	<10	<2.0	<2.0	<2.1	<2.1	<2.0	<1.9	<2.0	<1.9	<2.0
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	--	<10	<2.0	<2.0	<2.1	<2.1	<2.0	<1.9	<2.0	<1.9	<2.0
Hexafluoropropylene oxide dimer (HFPO-DA)	--	<10	<2.0	<2.0	<2.1	<4.1	<10	<9.6	<2.0	<1.9	<9.9
3-Perfluoroheptyl propanoic acid (FHpPA (7:3 FTCA))	--	--	--	--	--	--	--	--	--	--	<3.9
3-Perfluoropentyl propanoic acid (FPePA (5:3 FTCA))	--	--	--	--	--	--	--	--	--	--	<3.9
3-Perfluoropropyl propanoic acid (FPrPA (3:3 FTCA))	--	--	--	--	--	--	--	--	--	--	<3.9
Perfluorobutanesulfonamide (PFBSA)	--	--	--	--	--	--	--	--	--	--	<1.9
Perfluoro-4-ethylcyclohexanesulfonate (PFECHS)	--	--	--	--	--	--	--	--	--	--	64
Perfluorohexanesulfonamide (PFHxSA)	--	--	--	--	--	--	--	--	--	<1.9	120
Total Per-and Polyfluoroalkyl Substances	--	14.0	49.4	36.0	54.6	82.7	22.0	6.6	72.3	85.1	164.6

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.
- 7) Concentration above the groundwater surface water interface (GSI) criteria are highlighted in yellow.
- 8) The detection of PFBA in Field Blank-062520 was caused from the centrifuge tubes leaching out PFBA during the extraction process. The 5X Rule was applied to PFBA detections. If the sample value(s) is less than 5 times the blank concentration (5X Rule), then positive results are qualified "U," undetected.
- 9) I - Biased high -- matrix interference.
- 10) B - Compound also found in associated method blank.
- 11) I - Matrix interference with internal standard.
- 12) J - Estimated value less than reporting limit, but greater than MDL.
- 13) X - Elevated reporting limit due to matrix interference.
- 14) Light gray header is most recent sampling event result.
- 15) QA/QC Samples were either not detected above the reporting limit or below the EGLE Part 201 Groundwater Generic Cleanup Criteria.

TABLE 1
RACER Trust - Coldwater Road
Per-and Polyfluoroalkyl Substances Sampling Results
Sanitary Sewer Samples - West of Site

Coldwater Rd - Sanitary Sewer Samples West of Site

Perfluorinated Compound	Well/Sample ID: EGLE Part 201 Generic Cleanup Criteria and Screening Levels GSI	SAN-07 (Sanitary Sewer)	SAN-10 (Sanitary Sewer)	SAN-10 (Sanitary Sewer)	SAN-10 (Sanitary Sewer)	SAN-DUP-121820 (SAN-10) Sanitary Sewer	SAN-10 (Sanitary Sewer)	SAN-DUP-031121 (SAN-10) Sanitary Sewer	SAN-11 (Sanitary Sewer)
	Sample Date:	3/18/2020	3/18/2020	6/25/2020	12/18/2020	12/18/2020	3/11/2021	3/11/2021	3/18/2020
Perfluorobutanoic Acid (PFBA)	--	<21	<20	10 U	<9.9	<10	<11	<10	<19
Perfluoropentanoic Acid (PFPeA)	--	<11	<10	<3.9	<4.0	<4.1	2.2 J	1.8 J	<9.7
4:2 Fluorotelomer Sulfonic Acid (4:2 FTSA)	--	<11	<10	<2.0 I	<2.0 I	<2.0 I	<2.1	<2.0	<9.7
Perfluorohexanoic Acid (PFHxA)	--	<11	<10	<2.0	<2.0	<2.0	1.6 J	1.7 J	<9.7
Perfluorobutane Sulfonic Acid (PFBS)	670,000	<11	<10	5.2	5.0	4.0	6.2	6.9	9.9
Perfluoroheptanoic Acid (PFHpA)	--	<11	<10	<2.0	<2.0	<2.0	<2.1	<2.0	<9.7
Perfluoropentane Sulfonic Acid (PFPeS)	--	<11	<10	<2.0	2.2	2.1	4.1	5.0	<9.7
6:2 Fluorotelomer Sulfonic Acid (6:2 FTSA)	--	<11	<10	<2.0 I	<2.0	<2.0	<2.1	<2.0	<9.7
Perfluorooctanoic Acid (PFOA)	170	<11	<10	<2.0	<2.0	<2.0	<2.1	<2.0	<9.7
Perfluorohexane Sulfonic Acid (PFHxS)	210	<11	<10	9.5	9.4	9.1	13	15	25
Perfluorohexane Sulfonic Acid - LN (PFHxS-LN)	--	<11	<10	7.7	7.7	7.2	11	11	21
Perfluorohexane Sulfonic Acid - BR (PFHxS-BR)	--	<11	<10	<2.0	<2.0	<2.0	2.4	3.2	<9.7
Perfluorononanoic Acid (PFNA)	30	<11	<10	<2.0	<2.0	<2.0	<2.1	<2.0	<9.7
8:2 Fluorotelomer Sulfonic Acid (8:2 FTSA)	--	<11	<10	<2.0 I	<2.0 I	<2.0	<2.1	<2.0	<9.7
Perfluoroheptane Sulfonic Acid (PFHpS)	--	<11	<10	<2.0	<2.0	<2.0	<2.1	2.3	<9.7
Perfluorodecanoic Acid (PFDA)	--	<11	<10	<2.0	<2.0	<2.0	<2.1	<2.0	<9.7
N-methyl Perfluorooctanesulfonamidoacetic Acid (N-MeFOSAA)	--	<11	<10	<2.0 I	<2.0	<2.0	<2.1	<2.0	<9.7
N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA)	--	<11	<10	<3.9 I	<4.0 I	<4.0 I	<4.3	<4.1	<9.7
Perfluorooctane Sulfonic Acid (PFOS)	12	<11	29	26	31	33	43	45	160
Perfluorooctane Sulfonic Acid (PFOS-LN)	--	<11	<10	6.2	4.7	4.9	7.2	8.2	62
Perfluorooctane Sulfonic Acid (PFOS-BR)	--	<11	24	19	25	26	34	36	100
Perfluoroundecanoic Acid (PFUnDA)	--	<11	<10	<2.0	<2.0	<2.0	<2.1	<2.0	<9.7
Perfluorononane Sulfonic Acid (PFNS)	--	<11	<10	<2.0	<2.0	<2.0	<2.1	<2.0	<9.7
Perfluorododecanoic Acid (PFDoDA)	--	<11	<10	<2.0 I	<2.0	<2.0	<2.1	<2.0	<9.7
Perfluorodecane Sulfonic Acid (PFDS)	--	<11	<10	<2.0	<2.0	<2.0	<2.1	<2.0	<9.7
Perfluorotridecanoic Acid (PFTDA)	--	<11	<10	<2.0 I	<2.0	<2.0	<2.1	<2.0	<9.7
Perfluorooctane Sulfonamide (FOSA)	--	<11	<10	<2.0 I	<2.0 I	<2.0	<2.1	<2.0	<9.7
Perfluorotetradecanoic Acid (PFTeDA)	--	<11	<10	<3.9	<4.0	<4.1	<4.3	<4.1	<9.7
11-chloroicosafauro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	--	<11	<10	<2.0	<2.0	<2.0	<2.1	<2.0	<9.7
9-chlorohexadecafluoro-3-oxanone1-sulfonic acid (9Cl-PF3ONS)	--	<11	<10	<2.0	<2.0	<2.0	<2.1	<2.0	<9.7
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	--	<11	<10	<2.0	<2.0	<2.0	<2.1	<2.0	<9.7
Hexafluoropropylene oxide dimer (HFPO-DA)	--	<11	<10	<2.0	<2.0	<2.0	<2.1	<2.0	<9.7
3-Perfluoroheptyl propanoic acid (FHpPA (7:3 FTCA))	--	--	--	--	--	--	--	--	--
3-Perfluoropentyl propanoic acid (FPePA (5:3 FTCA))	--	--	--	--	--	--	--	--	--
3-Perfluoropropyl propanoic acid (FPrPA (3:3 FTCA))	--	--	--	--	--	--	--	--	--
Perfluorobutanesulfonamide (PFBSA)	--	--	--	--	--	--	--	--	--
Perfluoro-4-ethylcyclohexanesulfonate (PFECHS)	--	--	--	--	--	--	--	--	--
Perfluorohexanesulfonamide (PFHxSA)	--	--	--	--	--	--	--	--	--
Total Per-and Polyfluoroalkyl Substances	--	0.0	29.0	50.7	47.6	48.2	70.1	77.7	194.9

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.
- 7) Concentration above the groundwater surface water interface (GSI) criteria are highlighted in yellow.
- 8) The detection of PFBA in Field Blank-062520 was caused from the centrifuge tubes leaching out PFBA during the extraction process. The 5X Rule was applied to PFBA detections. If the sample value(s) is less than 5 times the blank concentration (5X Rule), then positive results are qualified "U,"undetected.
- 9) I - Biased high - matrix interference
- 10) B - Compound also found in associated method blank.
- 11) I - Matrix interference with internal standard.
- 12) J - Estimated value less than reporting limit, but greater than MDL.
- 13) X - Elevated reporting limit due to matrix interference.
- 14) Light gray header is most recent sampling event result.
- 15) QA/QC Samples were either not detected above the reporting limit or below the EGLE Part 201 Groundwater Generic Cleanup Criteria.



TABLE 1
RACER Trust - Coldwater Road
Per-and Polyfluoroalkyl Substances Sampling Results
Sanitary Sewer Samples - West of Site

Coldwater Rd - Sanitary Sewer Samples West of Site

Perfluorinated Compound	Well/Sample ID: EGLE Part 201 Generic Cleanup Criteria and Screening Levels GSI	SAN-12	SAN-12	SAN-12	SAN-12	SAN-12	SAN-12	SAN-12	SAN-12	SAN-12	SAN-12
		(Sanitary Sewer)	(Sanitary Sewer)	(Sanitary Sewer)	(Sanitary Sewer)	(Sanitary Sewer)	(Sanitary Sewer)	(Sanitary Sewer)	(Sanitary Sewer)	(Sanitary Sewer)	(Sanitary Sewer)
Sample Date:		3/18/2020	6/25/2020	12/18/2020	3/11/2021	3/31/2022	9/7/2022	12/13/2022	4/6/2023	6/27/2023	12/19/2023
Perfluorobutanoic Acid (PFBA)	--	<20	15 U	<9.8	<10	<10	<10	<9.8	2.6 J	<10	6.7 J
Perfluoropentanoic Acid (PFPeA)	--	<10	<4.1	<3.9	7.3	7.1	<4.1	14	4.1	<4.1	9.9
4:2 Fluorotelomer Sulfonic Acid (4:2 FTSA)	--	<10	<2.0 I	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0 I	<2.0
Perfluorohexanoic Acid (PFHxA)	--	<10	<2.0	<2.0	5.6	6.0	1.6 J	12	4.1	2.3	4.5
Perfluorobutane Sulfonic Acid (PFBS)	670,000	<10	<2.0	2.3	5.6	8.4	<2.0	2.0	5.4	<2.0	7.5
Perfluoroheptanoic Acid (PFHpA)	--	<10	<2.0	<2.0	1.9 J	2.0 J	<2.0	<2.0	2.4	<2.0	2.0
Perfluoropentane Sulfonic Acid (PFPeS)	--	<10	<2.0	<2.0	<2.0	5.0	<2.0	<2.0	2.2	<2.0	2.0 J
6:2 Fluorotelomer Sulfonic Acid (6:2 FTSA)	--	<10	<2.0 I	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	2.2 I	<2.0
Perfluorooctanoic Acid (PFOA)	170	<10	<2.0	<2.0	5.0	7.0	<2.0	2.6	4.3	<2.0	4.3
Perfluorohexane Sulfonic Acid (PFHxS)	210	16	2.1	3.8	5.6	22	<2.0	2.3	15	3.4	7.6
Perfluorohexane Sulfonic Acid - LN (PFHxS-LN)	--	12	<2.0	2.8	3.6	18	<2.0	1.7 J	12	3.4	5.9
Perfluorohexane Sulfonic Acid - BR (PFHxS-BR)	--	<10	<2.0	<2.0	<2.0	3.5	<2.0	3.2	<2.0	3.2	1.4 J
Perfluorononanoic Acid (PFNA)	30	<10	<2.0	<2.0	<2.0	<2.1	<2.0	<2.0	0.89 J	<2.0	<2.0
8:2 Fluorotelomer Sulfonic Acid (8:2 FTSA)	--	<10	<2.0	<2.0	<2.0	<2.1	<2.0 I	<2.0	<2.0	<2.0 I	<2.0
Perfluoroheptane Sulfonic Acid (PFHpS)	--	<10	<2.0	<2.0	<2.0	4.8	<2.0	<2.0	1.3 J	<2.0	1.2 J
Perfluorodecanoic Acid (PFDA)	--	<10	<2.0	<2.0	<2.0	<2.1	<2.0	<2.0	<2.0	<2.0	<2.0
N-methyl Perfluorooctanesulfonamidoacetic Acid (N-MeFOSAA)	--	<10	<2.0	<2.0	<2.0	<2.1	<2.0	<2.0	<2.0	<2.0	<2.0
N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA)	--	<10	<4.1 I	<3.9	<4.1	<4.1	<4.1	<3.9	<3.9	<4.1	<4.0
Perfluorooctane Sulfonic Acid (PFOS)	12	110	55	55	48	120	19	18	31	36 1	33
Perfluorooctane Sulfonic Acid (PFOS-LN)	--	48	32	33	24	50	12	7.2	12	5.8	13
Perfluorooctane Sulfonic Acid (PFOS-BR)	--	66	21	21	22	69	4.8	10	19	29 1	20
Perfluoroundecanoic Acid (PFUnDA)	--	<10	<2.0	<2.0	<2.0	<2.1	<2.0	<2.0	<2.0	<2.0	<2.0
Perfluorononane Sulfonic Acid (PFNS)	--	<10	<2.0	<2.0	<2.0	<2.1	<2.0	<2.0	<2.0	<2.0	<2.0
Perfluorododecanoic Acid (PFDoDA)	--	<10	<2.0 I	<2.0	<2.0	<2.1	<2.0	<2.0	<2.0	<2.0	<2.0
Perfluorodecane Sulfonic Acid (PFDS)	--	<10	<2.0	<2.0	<2.0	<2.1	<2.0	<2.0	<2.0	<2.0	<2.0
Perfluorotridecanoic Acid (PFTrDA)	--	<10	<2.0 I	<2.0	<2.0	<2.1	<2.0	<2.0	<2.0	<2.0	<2.0
Perfluorooctane Sulfonamide (FOSA)	--	<10	<2.0	<2.0	<2.0	<2.1	<2.0	<2.0	<2.0	<2.0	<2.0
Perfluorotetradecanoic Acid (PFTeDA)	--	<10	<4.1	<3.9	<4.1	<4.1	<4.1	<3.9	<3.9	<4.1	<4.0
11-chloroicosaffluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF30UdS)	--	<10	<2.0	<2.0	<2.0	<2.1	<2.0	<2.0	<2.0	<2.0	<2.0
9-chlorohexadecafluoro-3-oxanone1-sulfonic acid (9Cl-PF30NS)	--	<10	<2.0	<2.0	<2.0	<2.1	<2.0	<2.0	<2.0	<2.0	<2.0
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	--	<10	<2.0	<2.0	<2.0	<2.1	<2.0	<2.0	<2.0	<2.0	<2.0
Hexafluoropropylene oxide dimer (HFPO-DA)	--	<10	<2.0	<2.0	<2.0	<4.1	<10	<9.8	<2.0	<2.0	<10
3-Perfluoroheptyl propanoic acid (FHpPA (7:3 FTCA))	--	--	--	--	--	--	--	--	--	<4.1	<10
3-Perfluoropentyl propanoic acid (FPePA (5:3 FTCA))	--	--	--	--	--	--	--	--	--	<4.1	<10
3-Perfluoropropyl propanoic acid (FPpPA (3:3 FTCA))	--	--	--	--	--	--	--	--	--	<4.1	<10
Perfluorobutanesulfonamide (PFBSA)	--	--	--	--	--	--	--	--	--	<2.0	0.75 J
Perfluoro-4-ethylcyclohexanesulfonate (PFECHS)	--	--	--	--	--	--	--	--	--	18	85
Perfluorohexanesulfonamide (PFHxSA)	--	--	--	--	--	--	--	--	--	<2.0	<2.0
Total Per-and Polyfluoroalkyl Substances	--	126.0	72.1	61.1	79.0	182.3	20.6	50.9	73.3	61.9	164.5

- 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.
 - 7) Concentration above the groundwater surface water interface (GSI) criteria are highlighted in yellow.
 - 8) The detection of PFBA in Field Blank-062520 was caused from the centrifuge tubes leaching out PFBA during the extraction process. The 5X Rule was applied to PFBA detections. If the sample value(s) is less than 5 times the blank concentration (5X Rule), then positive results are qualified "U," undetected.
 - 9) I - Biased high -- matrix interference.
 - 10) B - Compound also found in associated method blank.
 - 11) I - Matrix interference with internal standard.
 - 12) J - Estimated value less than reporting limit, but greater than MDL.
 - 13) X - Elevated reporting limit due to matrix interference.
 - 14) Light gray header is most recent sampling event result.
 - 15) QA/QC Samples were either not detected above the reporting limit or below the EGLE Part 201 Groundwater Generic Cleanup Criteria.

TABLE 1
RACER Trust - Coldwater Road
Per- and Polyfluoroalkyl Substances Sampling Results
Sanitary Sewer Samples - West of Site

Coldwater Rd - Sanitary Sewer Samples West of Site

Perfluorinated Compound	Well/Sample ID: EGLE Part 201 Generic Cleanup Criteria and Screening Levels GSI	SAN-13 (Sanitary Sewer)	SAN-14 (Sanitary Sewer)	SAN-14 (Sanitary Sewer)	SAN-14 (Sanitary Sewer)	SAN-14 (Sanitary Sewer)	SAN-14 (Sanitary Sewer)	SAN-14 (Sanitary Sewer)	SAN-14 (Sanitary Sewer)	SAN-14 (Sanitary Sewer)	SAN-14 (Sanitary Sewer)	SAN-14 (Sanitary Sewer)
		3/19/2020	3/19/2020	6/25/2020	12/18/2020	3/11/2021	3/31/2022	9/7/2022	12/13/2022	4/6/2023	6/27/2023	12/19/2023
Perfluorobutanoic Acid (PFBA)	--	<100	<100	12 U	<10.0	<11	<11	<11	<9.9	4.1 J	<10.0	<10
Perfluoropentanoic Acid (PFPeA)	--	<10	<10	2.1 J	3.6 J	11	3.2 J	<4.3	<3.9	5.9	<4.0	<4.1
4:2 Fluorotelomer Sulfonic Acid (4:2 FTSA)	--	<10	<10	<2.0	<2.0 I	<2.1	<2.1	<2.0	<2.0	<2.0	<2.0 I	<2.0
Perfluorohexanoic Acid (PFHxA)	--	<10	<10	1.8 J	3.8	8.0	2.8	2.5	1.5 J	7.4	<2.0	2.5
Perfluorobutane Sulfonic Acid (PFBS)	670,000	<10	<10	2.5	11	10.0	7.6	2.5	3.0	5.9	<2.0	6.8
Perfluoroheptanoic Acid (PFHpA)	--	<10	<10	1.6 J	2.8	5.5	1.6 J	<2.1	<2.0	4.3	<2.0	2.2
Perfluoropentane Sulfonic Acid (PFPeS)	--	<10	<10	<2.0	<2.0	<2.1	<2.1	<2.1	<2.0	1.5 J	<2.0	<2.0
6:2 Fluorotelomer Sulfonic Acid (6:2 FTSA)	--	<10	<10	<2.0	<2.0 I	<2.1	<2.1	<2.1	<2.0	<2.0	<2.0	<2.0
Perfluorooctanoic Acid (PFOA)	170	<10	<10	4.4	9.4	12	4.7	3.2	<2.0	12	<2.0	5.0
Perfluorohexane Sulfonic Acid (PFHxS)	210	19	<10	2.9	6.2	4.6	3.0	3.3	4.0	4.3	<2.0	3.1
Perfluorohexane Sulfonic Acid - LN (PFHxS-LN)	--	16	<10	2.0	4.3	3.4	2.1	2.4	2.6	3.5	<2.0	3.1
Perfluorohexane Sulfonic Acid - BR (PFHxS-BR)	--	<10	<10	<2.0	<2.0	<2.1	<2.1	<2.1	<2.0	1.3 J	<2.0	<2.0
Perfluorononanoic Acid (PFNA)	30	<10	<10	<2.0	<2.0	<2.1	<2.1	<2.1	<2.0	1.3 J	<2.0	<2.0
8:2 Fluorotelomer Sulfonic Acid (8:2 FTSA)	--	<10	<10	<2.0	<2.0	<2.1	<2.1	<2.1 I	<2.0	<2.0	<2.0	<2.0
Perfluoroheptane Sulfonic Acid (PFHpS)	--	<10	<10	<2.0	<2.0	<2.1	<2.1	<2.1	<2.0	<2.0	<2.0	<2.0
Perfluorodecanoic Acid (PFDA)	--	<10	<10	<2.0	<2.0	<2.1	<2.1	<2.1	<2.0	0.65 J	<2.0	<2.0
N-methyl Perfluorooctanesulfonamidoacetic Acid (N-MeFOSAA)	--	<10	<10	<2.0	<2.0	<2.1	<2.1	<2.1	<2.0	<2.0	<2.0 I	<2.0
N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA)	--	<10	<10	<4.0	<4.0 I	<4.2	<4.2	<4.3	<3.9	<4.0	<4.0	<4.1
Perfluorooctane Sulfonic Acid (PFOS)	12	150	29	23	52	40	15	14	6.3	28	8.4	17
Perfluorooctane Sulfonic Acid (PFOS-LN)	--	75	<10	9	21	17	3.7	6.6	2.4	9.9	3.4	6.3
Perfluorooctane Sulfonic Acid (PFOS-BR)	--	75	20	13	30	23	11	8.1	3.8	18	5.0	11
Perfluoroundecanoic Acid (PFUnDA)	--	<10	<10	<2.0	<2.0	<2.1	<2.1	<2.1	<2.0	<2.0	<2.0	<2.0
Perfluorononane Sulfonic Acid (PFNS)	--	<10	<10	<2.0	<2.0	<2.1	<2.1	<2.1	<2.0	<2.0	<2.0	<2.0
Perfluorododecanoic Acid (PFDoDA)	--	<10	<10	<2.0	<2.0	<2.1	<2.1	<2.1	<2.0	<2.0	<2.0	<2.0
Perfluorodecane Sulfonic Acid (PFDS)	--	<10	<10	<2.0	<2.0	<2.1	<2.1	<2.1	<2.0	<2.0	<2.0	1.1 J
Perfluorotridecanoic Acid (PFTrDA)	--	<10	<10	<2.0	<2.0	<2.1	<2.1	<2.1	<2.0	<2.0	<2.0	<2.0
Perfluorooctane Sulfonamide (FOSA)	--	<10	<10	<2.0	<2.0	<2.1	<2.1	<2.1	<2.0	<2.0	<2.0	<2.0
Perfluorotetradecanoic Acid (PFTEDA)	--	<10	<10	<4.0	<4.0	<4.2	<4.2	<4.3	<3.9	<4.0	<4.0	<4.1
11-chloroicosafuoro-3-oxaundecane-1-sulfonic acid (11CI-PF3OUdS)	--	<10	<10	<2.0	<2.0	<2.1	<2.1	<2.1	<2.0	<2.0	<2.0	<2.0
9-chlorohexadecafluoro-3-oxanone1-sulfonic acid (9CI-PF3ONS)	--	<10	<10	<2.0	<2.0	<2.1	<2.1	<2.1	<2.0	<2.0	<2.0	<2.0
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	--	<10	<10	<2.0	<2.0	<2.1	<2.1	<2.1	<2.0	<2.0	<2.0	<2.0
Hexafluoropropylene oxide dimer (HFPO-DA)	--	<10	<10	<2.0	<2.0	<2.1	<4.2	<11	<9.9	<2.0	<2.0	<10
3-Perfluoroheptyl propanoic acid (FHpPA (7:3 FTCA))	--	--	--	--	--	--	--	--	--	--	--	<4.0
3-Perfluoropentyl propanoic acid (FPePA (5:3 FTCA))	--	--	--	--	--	--	--	--	--	--	--	<4.0
3-Perfluoropropyl propanoic acid (FPrPA (3:3 FTCA))	--	--	--	--	--	--	--	--	--	--	--	<4.0
Perfluorobutanesulfonamide (PFBSA)	--	--	--	--	--	--	--	--	--	--	--	<2.0
Perfluoro-4-ethylcyclohexanesulfonate (PFECHS)	--	--	--	--	--	--	--	--	--	--	--	8.9
Perfluorohexanesulfonamide (PFHxSA)	--	--	--	--	--	--	--	--	--	--	--	18
Total Per- and Polyfluoroalkyl Substances	--	169.0	29.0	50.3	88.8	91.1	37.9	25.5	14.8	75.4	17.3	56.5

- 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.
 - 7) Concentration above the groundwater surface water interface (GSI) criteria are highlighted in yellow.
 - 8) The detection of PFBA in Field Blank-062520 was caused from the centrifuge tubes leaching out PFBA during the extraction process. The 5X Rule was applied to PFBA detections. If the sample value(s) is less than 5 times the blank concentration (5X Rule), then positive results are qualified "U,"undetected.
 - 9) I - Biased high -- matrix interference
 - 10) B - Compound also found in associated method blank.
 - 11) I - Matrix interference with internal standard.
 - 12) J - Estimated value less than reporting limit, but greater than MDL.
 - 13) X - Elevated reporting limit due to matrix interference.
 - 14) Light gray header is most recent sampling event result.
 - 15) QA/QC Samples were either not detected above the reporting limit or below the EGLE Part 201 Groundwater Generic Cleanup Criteria.

TABLE 1
RACER Trust - Coldwater Road
Per-and Polyfluoroalkyl Substances Sampling Results
Sanitary Sewer Samples - West of Site

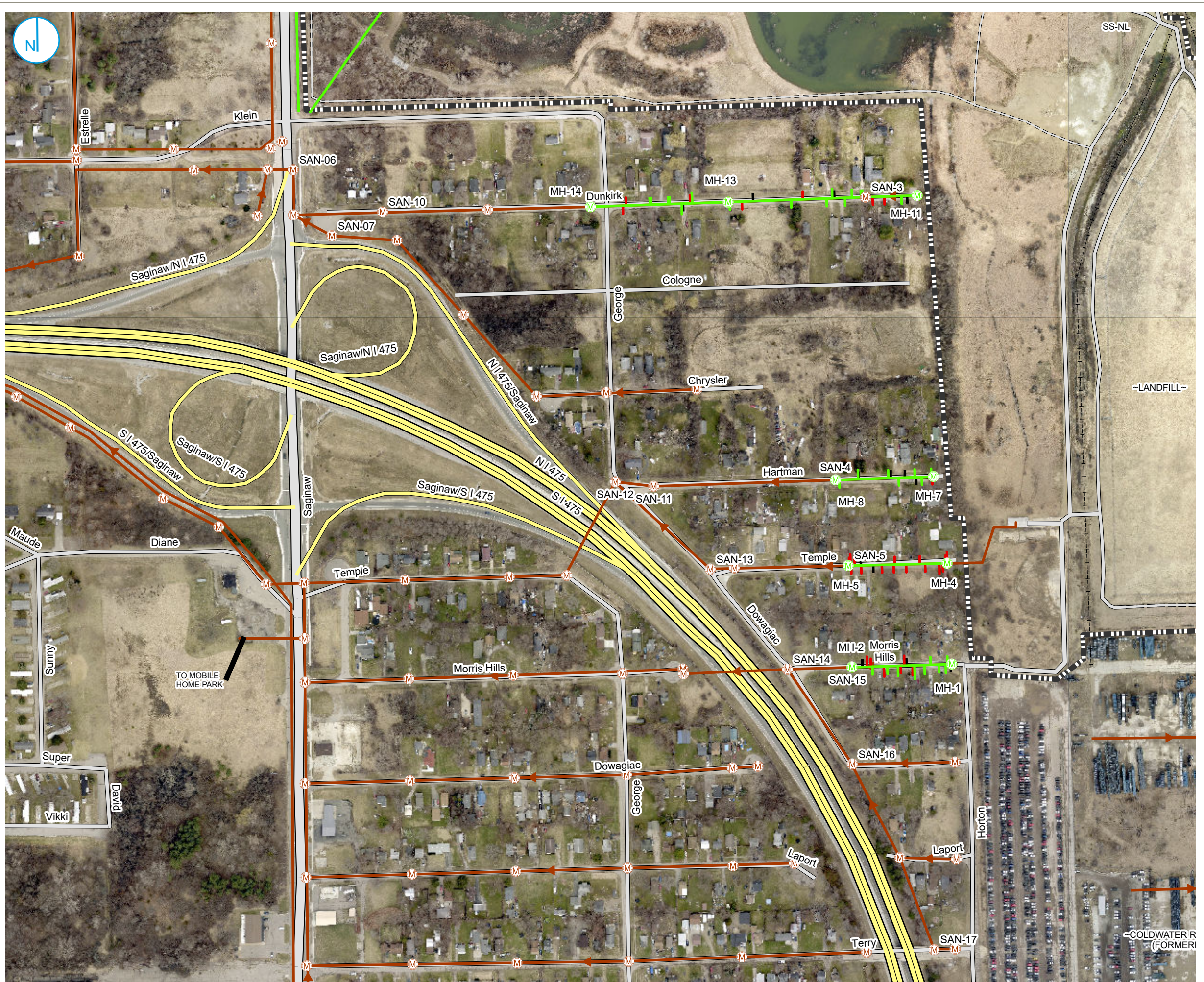
Coldwater Rd - Sanitary Sewer Samples West of Site

Perfluorinated Compound	Well/Sample ID: EGLE Part 201 Generic Cleanup Criteria and Screening Levels GSI	SAN-15 (Sanitary Sewer)	SAN-16 (Sanitary Sewer)	SAN-17 (Sanitary Sewer)	SAN-DUP-1/ SAN-17 (Sanitary Sewer)	SAN-19 (Sanitary Sewer)	SAN-20 (Sanitary Sewer)
	Sample Date:	3/19/2020	3/19/2020	3/19/2020	3/19/2020	3/19/2020	3/19/2020
Perfluorobutanoic Acid (PFBA)	--	<9.8	<100	<9.6	<9.9	<100	<100
Perfluoropentanoic Acid (PFPeA)	--	<9.8	<10	<9.6	<9.9	<10	<10
4:2 Fluorotelomer Sulfonic Acid (4:2 FTSA)	--	<9.8	<10	<9.6	<9.9	<10	<10
Perfluorohexanoic Acid (PFHxA)	--	<9.8	<10	<9.6	<9.9	<10	10
Perfluorobutane Sulfonic Acid (PFBS)	670,000	<9.8	12	<9.6	<9.9	<10	<10
Perfluoroheptanoic Acid (PFHpA)	--	<9.8	<10	<9.6	<9.9	<10	<10
Perfluoropentane Sulfonic Acid (PFPeS)	--	<9.8	<10	<9.6	<9.9	<10	<10
6:2 Fluorotelomer Sulfonic Acid (6:2 FTSA)	--	<9.8	<10	<9.6	<9.9	<10	<10
Perfluorooctanoic Acid (PFOA)	170	<9.8	<10	<9.6	<9.9	<10	<10
Perfluorohexane Sulfonic Acid (PFHxS)	210	<9.8	<10	<9.6	<9.9	<10	<10
Perfluorohexane Sulfonic Acid - LN (PFHxS-LN)	--	<9.8	<10	<9.6	<9.9	<10	<10
Perfluorohexane Sulfonic Acid - BR (PFHxS-BR)	--	<9.8	<10	<9.6	<9.9	<10	<10
Perfluorononanoic Acid (PFNA)	30	<9.8	<10	<9.6	<9.9	<10	<10
8:2 Fluorotelomer Sulfonic Acid (8:2 FTSA)	--	<9.8	<10	<9.6	<9.9	<10	<10
Perfluoroheptane Sulfonic Acid (PFHpS)	--	<9.8	<10	<9.6	<9.9	<10	<10
Perfluorodecanoic Acid (PFDA)	--	<9.8	<10	<9.6	<9.9	<10	<10
N-methyl Perfluorooctanesulfonamidoacetic Acid (N-MeFOSAA)	--	<9.8	<10	<9.6	<9.9	<10	<10
N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA)	--	<9.8	<10	<9.6	<9.9	<10	<10
Perfluorooctane Sulfonic Acid (PFOS)	12	35	13	<9.6	<9.9	<10	11
Perfluorooctane Sulfonic Acid (PFOS-LN)	--	12	<10	<9.6	<9.9	<10	<10
Perfluorooctane Sulfonic Acid (PFOS-BR)	--	20	<10	<9.6	<9.9	<10	<10
Perfluoroundecanoic Acid (PFUnDA)	--	<9.8	<10	<9.6	<9.9	<10	<10
Perfluorononane Sulfonic Acid (PFNS)	--	<9.8	<10	<9.6	<9.9	<10	<10
Perfluorododecanoic Acid (PFDoDA)	--	<9.8	<10	<9.6	<9.9	<10	<10
Perfluorodecane Sulfonic Acid (PFDS)	--	<9.8	<10	<9.6	<9.9	<10	<10
Perfluorotridecanoic Acid (PFTrDA)	--	<9.8	<10	<9.6	<9.9	<10	<10
Perfluorooctane Sulfonamide (FOSA)	--	<9.8	<10	<9.6	<9.9	<10	<10
Perfluorotetradecanoic Acid (PFTeDA)	--	<9.8	<10	<9.6	<9.9	<10	<10
11-chloroicosaffluoro-3-oxaundecane-1-sulfonic acid (11CI-PF3OUdS)	--	<9.8	<10	<9.6	<9.9	<10	<10
9-chlorohexadecafluoro-3-oxanone1-sulfonic acid (9CI-PF3ONS)	--	<9.8	<10	<9.6	<9.9	<10	<10
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	--	<9.8	<10	<9.6	<9.9	<10	<10
Hexafluoropropylene oxide dimer (HFPO-DA)	--	<9.8	<10	<9.6	<9.9	<10	<10
3-Perfluoroheptyl propanoic acid (FHpPA (7:3 FTCA))	--	--	--	--	--	--	--
3-Perfluoropentyl propanoic acid (FPePA (5:3 FTCA))	--	--	--	--	--	--	--
3-Perfluoropropyl propanoic acid (FPpPA (3:3 FTCA))	--	--	--	--	--	--	--
Perfluorobutanesulfonamide (PFBSA)	--	--	--	--	--	--	--
Perfluoro-4-ethylcyclohexanesulfonate (PFECHS)	--	--	--	--	--	--	--
Perfluorohexanesulfonamide (PFHxSA)	--	--	--	--	--	--	--
Total Per-and Polyfluoroalkyl Substances	--	35.0	25.0	0.0	0.0	0.0	21.0

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.
- 7) Concentration above the groundwater surface water interface (GSI) criteria are highlighted in yellow.
- 8) The detection of PFBA in Field Blank-062520 was caused from the centrifuge tubes leaching out PFBA during the extraction process. The 5X Rule was applied to PFBA detections. If the sample value(s) is less than 5 times the blank concentration (5X Rule), then positive results are qualified "U," undetected.
- 9) I - Biased high -- matrix interference
- 10) B - Compound also found in associated method blank.
- 11) I - Matrix interference with internal standard.
- 12) J - Estimated value less than reporting limit, but greater than MDL.
- 13) X - Elevated reporting limit due to matrix interference.
- 14) Light gray header is most recent sampling event result.
- 15) QA/QC Samples were either not detected above the reporting limit or below the EGLE Part 201 Groundwater Generic Cleanup Criteria.

FIGURES



- M SANITARY SEWER MANHOLE
- M SANITARY SEWER MANHOLE LINED
- NO LINER VIDEO
- LINED
- CONTRACTOR INDICATES LINED; NO VIDEO TO CONFIRM
- - CAPPED LATERAL



**SANITARY SEWER / MANHOLE
SAMPLE LOCATIONS**

RACER TRUST
COLDWATER ROAD
FLINT, MICHIGAN

FIGURE 01

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.
A RAMBOLL COMPANY





**ATTACHMENT A
LABORATORY ANALYTICAL REPORTS**



Analytical Laboratory Report

Report ID: S57017.01(01)
Generated on 01/16/2024

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): S57017.01-S57017.04
Project: RACER Coldwater Road
Collected Date(s): 12/19/2023
Submitted Date/Time: 12/19/2023 14:30
Sampled by: Kevin Schneider
P.O. #: 1940006516 TASK 37

Table of Contents

- Cover Page (Page 1)
- General Report Notes (Page 2)
- Report Narrative (Page 2)
- Laboratory Accreditations (Page 3)
- Qualifier Descriptions (Page 3)
- Glossary of Abbreviations (Page 3)
- Method Summary (Page 4)
- Parameter Summary (Page 5)
- Sample Summary (Page 6)

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.

Starred (*) analytes are not NY 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.

All accreditations/certifications held by this laboratory are listed on page 3. Not all accreditations/certifications are applicable to this report.

For a specific list of accredited analytes, please feel free to contact the laboratory or visit <https://www.meritlabs.com/certifications>.

Report Narrative

There is no additional narrative for this analytical report



Analytical Laboratory Report

Laboratory Accreditations (For Reference Only)

Authority	Accreditation ID
Michigan DEQ	#9956
DOD ELAP & ISO/IEC 17025:2017	#69699 PJLA Testing
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Pennsylvania DEP	#68-05884
Wisconsin DNR	FID# 399147320

Qualifier Descriptions

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

Glossary of Abbreviations

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



Analytical Laboratory Report

Method Summary

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

Parameter Summary

Parameter	Synonym	Cas #
PFBA	Perfluorobutanoic Acid	375-22-4
PFPeA	Perfluoropentanoic Acid	2706-90-3
4:2 FTSA	4:2 Fluorotelomer Sulfonic Acid	757124-72-4
PFHxA	Perfluorohexanoic Acid	307-24-4
PFBS	Perfluorobutane sulfonic Acid	375-73-5
PFHpA	Perfluoroheptanoic Acid	375-85-9
PFPeS	Perfluoropentane Sulfonic Acid	2706-91-4
6:2 FTSA	6:2 Fluorotelomer Sulfonic Acid	27619-97-2
PFOA	Perfluorooctanoic Acid	335-67-1
PFHxS	Perfluorohexane Sulfonic Acid	355-46-4
PFHxS-LN	Perfluorohexane Sulfonic Acid - LN	355-46-4-LN
PFHxS-BR	Perfluorohexane Sulfonic Acid - BR	355-46-4-BR
PFNA	Perfluorononanoic Acid	375-95-1
8:2 FTSA	8:2 Fluorotelomer Sulfonic Acid	39108-34-4
PFHpS	Perfluoroheptane Sulfonic Acid	375-92-8
PFDA	Perfluorodecanoic Acid	335-76-2
N-MeFOSAA	N-methyl perfluorooctanesulfonamidoacetic acid	2355-31-9
EtFOSAA	N-Ethyl Perfluorooctane Sulfonamidoacetic Acid	2991-50-6
PFOS	Perfluorooctane Sulfonic Acid	1763-23-1
PFOS-LN	Perfluorooctane Sulfonic Acid - LN	1763-23-1-LN
PFOS-BR	Perfluorooctane Sulfonic Acid - BR	1763-23-1-BR
PFUnDA	Perfluoroundecanoic Acid	2058-94-8
PFNS	Perfluorononane Sulfonic Acid	68259-12-1
PFDoDA	Perfluorododecanoic Acid	307-55-1
PFDS	Perfluorodecane Sulfonic Acid	335-77-3
PFTTrDA	Perfluorotridecanoic Acid	72629-94-8
FOSA	Perfluorooctane Sulfonamide	754-91-6
PFTeDA	Perfluorotetradecanoic Acid	376-06-7
11Cl-PF3OUdS	11-chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	763051-92-9
9Cl-PF3ONS	9-chlorohexadecafluoro-3-oxanone1-sulfonic acid	756426-58-1
ADONA	4,8-dioxa-3H-perfluorononanoic acid	919005-14-4
HFPO-DA	Hexafluoropropylene oxide dimer	13252-13-6
FHpPA (7:3 FTCA)	3-Perfluoroheptyl propanoic acid	812-70-4
FPePA (5:3 FTCA)	3-Perfluoropentyl propanoic acid	914637-49-3
FPrPA (3:3 FTCA)	3-Perfluoropropyl propanoic acid	356-02-5
PFBSA	Perfluorobutanesulfonamide	30334-69-1
PFECHS	Perfluoro-4-ethylcyclohexanesulfonate	67584-42-3
PFHxSA	Perfluorohexanesulfonamide	41997-13-1



Analytical Laboratory Report

Sample Summary (4 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S57017.01	SAN-06	Wastewater	12/19/23 12:40
S57017.02	SAN-12	Wastewater	12/19/23 12:55
S57017.03	SAN-14	Wastewater	12/19/23 13:00
S57017.04	Field blank-121923	Wastewater	12/19/23 13:10



Analytical Laboratory Report

Lab Sample ID: S57017.01

Sample Tag: SAN-06

Collected Date/Time: 12/19/2023 12:40

Matrix: Wastewater

COC Reference: 165450

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	4.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	12.12/6.55/11	ASTMD7979-19M	12/29/23 13:30	NJH	

Organics

34 PFAs, Method: ASTMD7979-19M, Run Date: 12/29/23 22:55, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	9.9	2.0	ng/L	1.97	375-22-4	
PFPeA*	1.5	3.9	1.2	ng/L	1.97	2706-90-3	J
4:2 FTSA*	Not detected	2.0	0.20	ng/L	1.97	757124-72-4	
PFHxA*	1.6	2.0	1.2	ng/L	1.97	307-24-4	J
PFBS*	5.2	2.0	0.59	ng/L	1.97	375-73-5	
PFHpA*	1.3	2.0	0.79	ng/L	1.97	375-85-9	J
PFPeS*	2.8	2.0	1.8	ng/L	1.97	2706-91-4	
6:2 FTSA*	Not detected	2.0	0.99	ng/L	1.97	27619-97-2	
PFOA*	1.8	2.0	0.79	ng/L	1.97	335-67-1	J
PFHxS*	8.4	2.0	0.99	ng/L	1.97	355-46-4	
PFHxS-LN*	6.8	2.0	0.99	ng/L	1.97	355-46-4-LN	
PFHxS-BR*	1.2	2.0	0.99	ng/L	1.97	355-46-4-BR	J
PFNA*	Not detected	2.0	0.99	ng/L	1.97	375-95-1	
8:2 FTSA*	Not detected	2.0	1.2	ng/L	1.97	39108-34-4	
PFHpS*	0.97	2.0	0.79	ng/L	1.97	375-92-8	J
PFDA*	Not detected	2.0	1.2	ng/L	1.97	335-76-2	
N-MeFOSAA*	Not detected	2.0	0.99	ng/L	1.97	2355-31-9	
EtFOSAA*	Not detected	3.9	0.99	ng/L	1.97	2991-50-6	
PFOS*	21	2.0	0.79	ng/L	1.97	1763-23-1	
PFOS-LN*	4.3	2.0	0.79	ng/L	1.97	1763-23-1-LN	
PFOS-BR*	17	2.0	0.79	ng/L	1.97	1763-23-1-BR	
PFUnDA*	Not detected	2.0	0.79	ng/L	1.97	2058-94-8	
PFNS*	Not detected	2.0	0.99	ng/L	1.97	68259-12-1	
PFDODA*	Not detected	2.0	0.59	ng/L	1.97	307-55-1	
PFDS*	Not detected	2.0	0.99	ng/L	1.97	335-77-3	
PFTTrDA*	Not detected	2.0	0.79	ng/L	1.97	72629-94-8	
FOSA*	Not detected	2.0	0.79	ng/L	1.97	754-91-6	
PFTeDA*	Not detected	3.9	0.59	ng/L	1.97	376-06-7	
11Cl-PF3OUdS*	Not detected	2.0	0.99	ng/L	1.97	763051-92-9	
9Cl-PF3ONS*	Not detected	2.0	0.99	ng/L	1.97	756426-58-1	
ADONA*	Not detected	2.0	0.59	ng/L	1.97	919005-14-4	
HFPO-DA*	Not detected	9.9	2.0	ng/L	1.97	13252-13-6	
FHpPA (7:3 FTCA)*	Not detected	9.9	7.9	ng/L	1.97	812-70-4	
FPePA (5:3 FTCA)*	Not detected	9.9	3.9	ng/L	1.97	914637-49-3	
FPrPA (3:3 FTCA)*	Not detected	9.9	3.9	ng/L	1.97	356-02-5	
PFBSA*	Not detected	2.0	0.59	ng/L	1.97	30334-69-1	

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



Analytical Laboratory Report

Lab Sample ID: S57017.01 (continued)

Sample Tag: SAN-06

34 PFAs, Method: ASTMD7979-19M, Run Date: 12/29/23 22:55, Analyst: KCV (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFECHS*	120	2.0	0.79	ng/L	1.97	67584-42-3	
PFHxSA*	Not detected	2.0	0.59	ng/L	1.97	41997-13-1	



Analytical Laboratory Report

Lab Sample ID: S57017.02

Sample Tag: SAN-12

Collected Date/Time: 12/19/2023 12:55

Matrix: Wastewater

COC Reference: 165450

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	4.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	12.47/6.53/12	ASTMD7979-19M	12/29/23 13:30	NJH	

Organics

34 PFAs, Method: ASTMD7979-19M, Run Date: 12/29/23 23:15, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	6.7	10	2.0	ng/L	2.02	375-22-4	J
PFPeA*	9.9	4.0	1.2	ng/L	2.02	2706-90-3	
4:2 FTSA*	Not detected	2.0	0.20	ng/L	2.02	757124-72-4	
PFHxA*	4.5	2.0	1.2	ng/L	2.02	307-24-4	
PFBS*	7.5	2.0	0.61	ng/L	2.02	375-73-5	
PFHpA*	2.0	2.0	0.81	ng/L	2.02	375-85-9	
PFPeS*	2.0	2.0	1.8	ng/L	2.02	2706-91-4	J
6:2 FTSA*	Not detected	2.0	1.0	ng/L	2.02	27619-97-2	
PFOA*	4.3	2.0	0.81	ng/L	2.02	335-67-1	
PFHxS*	7.6	2.0	1.0	ng/L	2.02	355-46-4	
PFHxS-LN*	5.9	2.0	1.0	ng/L	2.02	355-46-4-LN	
PFHxS-BR*	1.4	2.0	1.0	ng/L	2.02	355-46-4-BR	J
PFNA*	Not detected	2.0	1.0	ng/L	2.02	375-95-1	
8:2 FTSA*	Not detected	2.0	1.2	ng/L	2.02	39108-34-4	
PFHpS*	1.2	2.0	0.81	ng/L	2.02	375-92-8	J
PFDA*	Not detected	2.0	1.2	ng/L	2.02	335-76-2	
N-MeFOSAA*	Not detected	2.0	1.0	ng/L	2.02	2355-31-9	
EtFOSAA*	Not detected	4.0	1.0	ng/L	2.02	2991-50-6	
PFOS*	33	2.0	0.81	ng/L	2.02	1763-23-1	
PFOS-LN*	13	2.0	0.81	ng/L	2.02	1763-23-1-LN	
PFOS-BR*	20	2.0	0.81	ng/L	2.02	1763-23-1-BR	
PFUnDA*	Not detected	2.0	0.81	ng/L	2.02	2058-94-8	
PFNS*	Not detected	2.0	1.0	ng/L	2.02	68259-12-1	
PFDODA*	Not detected	2.0	0.61	ng/L	2.02	307-55-1	
PFDS*	Not detected	2.0	1.0	ng/L	2.02	335-77-3	
PFTTrDA*	Not detected	2.0	0.81	ng/L	2.02	72629-94-8	
FOSA*	Not detected	2.0	0.81	ng/L	2.02	754-91-6	
PFTeDA*	Not detected	4.0	0.61	ng/L	2.02	376-06-7	
11Cl-PF3OUdS*	Not detected	2.0	1.0	ng/L	2.02	763051-92-9	
9Cl-PF3ONS*	Not detected	2.0	1.0	ng/L	2.02	756426-58-1	
ADONA*	Not detected	2.0	0.61	ng/L	2.02	919005-14-4	
HFPO-DA*	Not detected	10	2.0	ng/L	2.02	13252-13-6	
FHpPA (7:3 FTCA)*	Not detected	10	8.1	ng/L	2.02	812-70-4	
FPePA (5:3 FTCA)*	Not detected	10	4.0	ng/L	2.02	914637-49-3	
FPrPA (3:3 FTCA)*	Not detected	10	4.0	ng/L	2.02	356-02-5	
PFBSA*	0.75	2.0	0.61	ng/L	2.02	30334-69-1	J

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



Analytical Laboratory Report

Lab Sample ID: S57017.02 (continued)

Sample Tag: SAN-12

34 PFAs, Method: ASTMD7979-19M, Run Date: 12/29/23 23:15, Analyst: KCV (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFECHS*	85	2.0	0.81	ng/L	2.02	67584-42-3	
PFHxSA*	Not detected	2.0	0.61	ng/L	2.02	41997-13-1	



Analytical Laboratory Report

Lab Sample ID: S57017.03

Sample Tag: SAN-14

Collected Date/Time: 12/19/2023 13:00

Matrix: Wastewater

COC Reference: 165450

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	4.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	12.45/6.54/12	ASTMD7979-19M	12/29/23 13:30	NJH	

Organics

34 PFAs, Method: ASTMD7979-19M, Run Date: 12/29/23 23:35, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	10	2.0	ng/L	2.03	375-22-4	
PFPeA*	Not detected	4.1	1.2	ng/L	2.03	2706-90-3	
4:2 FTSA*	Not detected	2.0	0.20	ng/L	2.03	757124-72-4	
PFHxA*	2.5	2.0	1.2	ng/L	2.03	307-24-4	
PFBS*	6.8	2.0	0.61	ng/L	2.03	375-73-5	
PFHpA*	2.2	2.0	0.81	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	1.0	ng/L	2.03	27619-97-2	
PFOA*	5.0	2.0	0.81	ng/L	2.03	335-67-1	
PFHxS*	3.1	2.0	1.0	ng/L	2.03	355-46-4	
PFHxS-LN*	3.1	2.0	1.0	ng/L	2.03	355-46-4-LN	
PFHxS-BR*	Not detected	2.0	1.0	ng/L	2.03	355-46-4-BR	
PFNA*	Not detected	2.0	1.0	ng/L	2.03	375-95-1	
8:2 FTSA*	Not detected	2.0	1.2	ng/L	2.03	39108-34-4	
PFHpS*	Not detected	2.0	0.81	ng/L	2.03	375-92-8	
PFDA*	Not detected	2.0	1.2	ng/L	2.03	335-76-2	
N-MeFOSAA*	Not detected	2.0	1.0	ng/L	2.03	2355-31-9	
EtFOSAA*	Not detected	4.1	1.0	ng/L	2.03	2991-50-6	
PFOS*	17	2.0	0.81	ng/L	2.03	1763-23-1	
PFOS-LN*	6.3	2.0	0.81	ng/L	2.03	1763-23-1-LN	
PFOS-BR*	11	2.0	0.81	ng/L	2.03	1763-23-1-BR	
PFUnDA*	Not detected	2.0	0.81	ng/L	2.03	2058-94-8	
PFNS*	Not detected	2.0	1.0	ng/L	2.03	68259-12-1	
PFDODA*	Not detected	2.0	0.61	ng/L	2.03	307-55-1	
PFDS*	1.1	2.0	1.0	ng/L	2.03	335-77-3	J
PFTTrDA*	Not detected	2.0	0.81	ng/L	2.03	72629-94-8	
FOSA*	Not detected	2.0	0.81	ng/L	2.03	754-91-6	
PFTeDA*	Not detected	4.1	0.61	ng/L	2.03	376-06-7	
11Cl-PF3OUdS*	Not detected	2.0	1.0	ng/L	2.03	763051-92-9	
9Cl-PF3ONS*	Not detected	2.0	1.0	ng/L	2.03	756426-58-1	
ADONA*	Not detected	2.0	0.61	ng/L	2.03	919005-14-4	
HFPO-DA*	Not detected	10	2.0	ng/L	2.03	13252-13-6	
FHpPA (7:3 FTCA)*	Not detected	10	8.1	ng/L	2.03	812-70-4	
FPePA (5:3 FTCA)*	Not detected	10	4.1	ng/L	2.03	914637-49-3	
FPrPA (3:3 FTCA)*	Not detected	10	4.1	ng/L	2.03	356-02-5	
PFBSA*	0.77	2.0	0.61	ng/L	2.03	30334-69-1	J

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



Analytical Laboratory Report

Lab Sample ID: S57017.03 (continued)

Sample Tag: SAN-14

34 PFAs, Method: ASTMD7979-19M, Run Date: 12/29/23 23:35, Analyst: KCV (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFECHS*	18	2.0	0.81	ng/L	2.03	67584-42-3	
PFHxSA*	Not detected	2.0	0.61	ng/L	2.03	41997-13-1	



Analytical Laboratory Report

Lab Sample ID: S57017.04

Sample Tag: Field blank-121923

Collected Date/Time: 12/19/2023 13:10

Matrix: Wastewater

COC Reference: 165450

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	4.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	12.43/6.55/12	ASTMD7979-19M	12/29/23 13:30	NJH	

Organics

34 PFAs, Method: ASTMD7979-19M, Run Date: 12/29/23 23:55, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	10	2.0	ng/L	2.04	375-22-4	
PFPeA*	Not detected	4.1	1.2	ng/L	2.04	2706-90-3	
4:2 FTSA*	Not detected	2.0	0.20	ng/L	2.04	757124-72-4	
PFHxA*	Not detected	2.0	1.2	ng/L	2.04	307-24-4	
PFBS*	Not detected	2.0	0.61	ng/L	2.04	375-73-5	
PFHpA*	Not detected	2.0	0.82	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	1.0	ng/L	2.04	27619-97-2	
PFOA*	Not detected	2.0	0.82	ng/L	2.04	335-67-1	
PFHxS*	Not detected	2.0	1.0	ng/L	2.04	355-46-4	
PFHxS-LN*	Not detected	2.0	1.0	ng/L	2.04	355-46-4-LN	
PFHxS-BR*	Not detected	2.0	1.0	ng/L	2.04	355-46-4-BR	
PFNA*	Not detected	2.0	1.0	ng/L	2.04	375-95-1	
8:2 FTSA*	Not detected	2.0	1.2	ng/L	2.04	39108-34-4	
PFHpS*	Not detected	2.0	0.82	ng/L	2.04	375-92-8	
PFDA*	Not detected	2.0	1.2	ng/L	2.04	335-76-2	
N-MeFOSAA*	Not detected	2.0	1.0	ng/L	2.04	2355-31-9	
EtFOSAA*	Not detected	4.1	1.0	ng/L	2.04	2991-50-6	
PFOS*	Not detected	2.0	0.82	ng/L	2.04	1763-23-1	
PFOS-LN*	Not detected	2.0	0.82	ng/L	2.04	1763-23-1-LN	
PFOS-BR*	Not detected	2.0	0.82	ng/L	2.04	1763-23-1-BR	
PFUnDA*	Not detected	2.0	0.82	ng/L	2.04	2058-94-8	
PFNS*	Not detected	2.0	1.0	ng/L	2.04	68259-12-1	
PFDODA*	Not detected	2.0	0.61	ng/L	2.04	307-55-1	
PFDS*	Not detected	2.0	1.0	ng/L	2.04	335-77-3	
PFTTrDA*	Not detected	2.0	0.82	ng/L	2.04	72629-94-8	
FOSA*	Not detected	2.0	0.82	ng/L	2.04	754-91-6	
PFTeDA*	Not detected	4.1	0.61	ng/L	2.04	376-06-7	
11Cl-PF3OUdS*	Not detected	2.0	1.0	ng/L	2.04	763051-92-9	
9Cl-PF3ONS*	Not detected	2.0	1.0	ng/L	2.04	756426-58-1	
ADONA*	Not detected	2.0	0.61	ng/L	2.04	919005-14-4	
HFPO-DA*	Not detected	10	2.0	ng/L	2.04	13252-13-6	
FHpPA (7:3 FTCA)*	Not detected	10	8.2	ng/L	2.04	812-70-4	
FPePA (5:3 FTCA)*	Not detected	10	4.1	ng/L	2.04	914637-49-3	
FPrPA (3:3 FTCA)*	Not detected	10	4.1	ng/L	2.04	356-02-5	
PFBSA*	Not detected	2.0	0.61	ng/L	2.04	30334-69-1	
PFCHS*	Not detected	2.0	0.82	ng/L	2.04	67584-42-3	



Analytical Laboratory Report

Lab Sample ID: S57017.04 (continued)

Sample Tag: Field blank-121923

34 PFAs, Method: ASTMD7979-19M, Run Date: 12/29/23 23:55, Analyst: KCV (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFHxSA*	Not detected	2.0	0.61	ng/L	2.04	41997-13-1	

Merit Laboratories Login Checklist

Lab Set ID:S57017

Client:RAMBOLL (Ramboll Americas)

Project: RACER Coldwater Road

Submitted: 12/19/2023 14:30 Login User: PFD

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. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Samples are received at 4C +/- 2C Thermometer # IR 4.0 |
| 02. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Received on ice/ cooling process begun |
| 03. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Samples shipped |
| 04. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Samples left in 24 hr. drop box |
| 05. | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A | Are there custody seals/tape or is the drop box locked |

Chain of Custody

- | | | |
|-----|--|--|
| 06. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | COC adequately filled out |
| 07. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | COC signed and relinquished to the lab |
| 08. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Sample tag on bottles match COC |
| 09. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Subcontracting needed? Subcontracted to: |

Preservation

- | | | |
|-----|--|---|
| 10. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Do sample have correct chemical preservation |
| 11. | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A | Completed pH checks on preserved samples? (no VOAs) |
| 12. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Did any samples need to be preserved in the lab? |

Bottle Conditions

- | | | |
|-----|--|---|
| 13. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | All bottles intact |
| 14. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Appropriate analytical bottles are used |
| 15. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Merit bottles used |
| 16. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Sufficient sample volume received |
| 17. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Samples require laboratory filtration |
| 18. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Samples submitted within holding time |
| 19. | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A | Do water VOC or TOX bottles contain headspace |

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

Client Review By: _____ Date: _____



Quality Control Report

Report ID: QC-S57017-01
Generated on 01/16/2024

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): S57017.01-S57017.04
Project: RACER Coldwater Road
Submitted Date/Time: 12/19/2023 14:30
Sampled by: Kevin Schneider
P.O. #: 1940006516 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 11-15)
- Batch QC Results (Pages 16-20)

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: S57017.01

Sample Tag: SAN-06

Collected Date/Time: 12/19/2023 12:40

Matrix: Wastewater

COC Reference: 165450

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
34 PFAs	ASTMD7979-19M	12/29/23 22:55	AK231229	PF231229W1	Yes	BLK/LCS/LCSD/MS/DU

QC Report - Analysis Summary

Lab Sample ID: S57017.02

Sample Tag: SAN-12

Collected Date/Time: 12/19/2023 12:55

Matrix: Wastewater

COC Reference: 165450

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
34 PFAs	ASTMD7979-19M	12/29/23 23:15	AK231229	PF231229W1	Yes	BLK/LCS/LCSD/MS/DU

QC Report - Analysis Summary

Lab Sample ID: S57017.03

Sample Tag: SAN-14

Collected Date/Time: 12/19/2023 13:00

Matrix: Wastewater

COC Reference: 165450

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
34 PFAs	ASTMD7979-19M	12/29/23 23:35	AK231229	PF231229W1	Yes	BLK/LCS/LCSD/MS/DU

QC Report - Analysis Summary

Lab Sample ID: S57017.04

Sample Tag: Field blank-121923

Collected Date/Time: 12/19/2023 13:10

Matrix: Wastewater

COC Reference: 165450

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
34 PFAs	ASTMD7979-19M	12/29/23 23:55	AK231229	PF231229W1	Yes	BLK/LCS/LCSD/MS/DU

QC Report - Prep Batch Summary

Organics - Volatiles, Prep Batch ID: PF231229W1

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

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S57017.01	34 PFAs	ASTMD7979-19M	12/29/23 22:55	AK231229
S57017.02	34 PFAs	ASTMD7979-19M	12/29/23 23:15	AK231229
S57017.03	34 PFAs	ASTMD7979-19M	12/29/23 23:35	AK231229
S57017.04	34 PFAs	ASTMD7979-19M	12/29/23 23:55	AK231229

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S57017.01

Sample Tag: SAN-06

Collected Date/Time: 12/19/2023 12:40

Matrix: Wastewater

COC Reference: 165450

Organics - Volatiles, Analysis: 34 PFAs

Run in Batch: AK231229, Run Date: 12/29/2023 22:55, Matrix: WW, Dilution: 1.97

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		85.5	50.0	150.0
M2-6:2FTSA		86.0	50.0	150.0
M2-8:2FTSA		90.7	50.0	150.0
M2PFTeDA		104.7	12.0	218.0
M3PFBS		91.4	50.0	150.0
M3PFHxS		109.1	50.0	150.0
M4PFHpA		99.6	50.0	150.0
M5PFHxA		102.9	50.0	150.0
M5PFPeA		101.9	50.0	150.0
M6PFDA		109.6	50.0	150.0
M7PFUnDA		98.8	50.0	150.0
M8FOSA		113.6	50.0	150.0
M8PFOA		100.8	50.0	150.0
M8PFOS		104.4	50.0	150.0
M9-PFNA		97.6	50.0	150.0
MPFBA		108.2	50.0	150.0
MPFDoDA		107.4	50.0	150.0
d3N-MeFOSAA		99.1	50.0	150.0
d5EtFOSAA		94.6	50.0	150.0
MHFPO-DA		109.6	50.0	150.0
d-N-EtFOSA-M		92.2	50.0	150.0
d-N-MeFOSA-M		91.7	50.0	150.0
d7-N-MeFOSE-M		97.9	50.0	150.0
d9-N-EtFOSE-M		103.9	50.0	150.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S57017.02

Sample Tag: SAN-12

Collected Date/Time: 12/19/2023 12:55

Matrix: Wastewater

COC Reference: 165450

Organics - Volatiles, Analysis: 34 PFAs

Run in Batch: AK231229, Run Date: 12/29/2023 23:15, Matrix: WW, Dilution: 2.02

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		89.3	50.0	150.0
M2-6:2FTSA		91.4	50.0	150.0
M2-8:2FTSA		83.8	50.0	150.0
M2PFTeDA		121.5	12.0	218.0
M3PFBS		91.8	50.0	150.0
M3PFHxS		96.9	50.0	150.0
M4PFHpA		106.1	50.0	150.0
M5PFHxA		107.7	50.0	150.0
M5PFPeA		101.4	50.0	150.0
M6PFDA		101.2	50.0	150.0
M7PFUnDA		98.5	50.0	150.0
M8FOSA		105.4	50.0	150.0
M8PFOA		88.5	50.0	150.0
M8PFOS		105.2	50.0	150.0
M9-PFNA		87.2	50.0	150.0
MPFBA		105.2	50.0	150.0
MPFDoDA		105.6	50.0	150.0
d3N-MeFOSAA		107.8	50.0	150.0
d5EtFOSAA		87.1	50.0	150.0
MHFPO-DA		103.4	50.0	150.0
d-N-EtFOSA-M		92.7	50.0	150.0
d-N-MeFOSA-M		100.8	50.0	150.0
d7-N-MeFOSE-M		100.8	50.0	150.0
d9-N-EtFOSE-M		100.8	50.0	150.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S57017.03

Sample Tag: SAN-14

Collected Date/Time: 12/19/2023 13:00

Matrix: Wastewater

COC Reference: 165450

Organics - Volatiles, Analysis: 34 PFAs

Run in Batch: AK231229, Run Date: 12/29/2023 23:35, Matrix: WW, Dilution: 2.03

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		77.2	50.0	150.0
M2-6:2FTSA		96.1	50.0	150.0
M2-8:2FTSA		88.9	50.0	150.0
M2PFTeDA		119.5	12.0	218.0
M3PFBS		98.4	50.0	150.0
M3PFHxS		107.1	50.0	150.0
M4PFHpA		101.8	50.0	150.0
M5PFHxA		104.0	50.0	150.0
M5PFPeA		110.9	50.0	150.0
M6PFDA		107.1	50.0	150.0
M7PFUnDA		100.2	50.0	150.0
M8FOSA		117.9	50.0	150.0
M8PFOA		99.7	50.0	150.0
M8PFOS		100.8	50.0	150.0
M9-PFNA		91.6	50.0	150.0
MPFBA		113.2	50.0	150.0
MPFDoDA		111.1	50.0	150.0
d3N-MeFOSAA		114.1	50.0	150.0
d5EtFOSAA		100.6	50.0	150.0
MHFPO-DA		103.4	50.0	150.0
d-N-EtFOSA-M		103.8	50.0	150.0
d-N-MeFOSA-M		99.9	50.0	150.0
d7-N-MeFOSE-M		103.3	50.0	150.0
d9-N-EtFOSE-M		108.5	50.0	150.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S57017.04

Sample Tag: Field blank-121923

Collected Date/Time: 12/19/2023 13:10

Matrix: Wastewater

COC Reference: 165450

Organics - Volatiles, Analysis: 34 PFAs

Run in Batch: AK231229, Run Date: 12/29/2023 23:55, Matrix: WW, Dilution: 2.04

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		87.3	50.0	150.0
M2-6:2FTSA		83.5	50.0	150.0
M2-8:2FTSA		104.3	50.0	150.0
M2PFTeDA		94.0	12.0	218.0
M3PFBS		88.7	50.0	150.0
M3PFHxS		91.4	50.0	150.0
M4PFHpA		93.7	50.0	150.0
M5PFHxA		99.0	50.0	150.0
M5PFPeA		92.5	50.0	150.0
M6PFDA		91.3	50.0	150.0
M7PFUnDA		93.4	50.0	150.0
M8FOSA		95.9	50.0	150.0
M8PFOA		92.0	50.0	150.0
M8PFOS		98.7	50.0	150.0
M9-PFNA		83.2	50.0	150.0
MPFBA		97.1	50.0	150.0
MPFDoDA		94.4	50.0	150.0
d3N-MeFOSAA		98.2	50.0	150.0
d5EtFOSAA		96.5	50.0	150.0
MHFPO-DA		98.8	50.0	150.0
d-N-EtFOSA-M		86.0	50.0	150.0
d-N-MeFOSA-M		88.5	50.0	150.0
d7-N-MeFOSE-M		89.0	50.0	150.0
d9-N-EtFOSE-M		87.8	50.0	150.0

QC Report - Internal Standards per QC Sample

Organics - Volatiles, Prep Batch ID: PF231229W1

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

Blank (BLK)

Lab Sample ID: AK231229.BLK231229

Run in Batch: AK231229, Run Date: 12/29/2023 12:56, Prep Date: 12/29/2023, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		110.3	50.0	150.0
M2-6:2FTSA		88.3	50.0	150.0
M2-8:2FTSA		90.1	50.0	150.0
M2PFTeDA		114.0	12.0	218.0
M3PFBS		90.2	50.0	150.0
M3PFHxS		96.0	50.0	150.0
M4PFHpA		89.1	50.0	150.0
M5PFHxA		91.9	50.0	150.0
M5PFPeA		93.7	50.0	150.0
M6PFDA		99.2	50.0	150.0
M7PFUnDA		99.0	50.0	150.0
M8FOSA		104.5	50.0	150.0
M8PFOA		94.3	50.0	150.0
M8PFOS		89.7	50.0	150.0
M9-PFNA		95.0	50.0	150.0
MPFBA		95.7	50.0	150.0
MPFDoDA		92.8	50.0	150.0
d3N-MeFOSAA		95.8	50.0	150.0
d5EtFOSAA		102.4	50.0	150.0
MHFPO-DA		100.1	50.0	150.0
d-N-EtFOSA-M		110.9	50.0	150.0
d-N-MeFOSA-M		107.4	50.0	150.0
d7-N-MeFOSE-M		106.4	50.0	150.0
d9-N-EtFOSE-M		96.7	50.0	150.0

QC Report - Internal Standards per QC Sample

Laboratory Control Sample (LCS)

Lab Sample ID: AK231229.LCS231229

Run in Batch: AK231229, Run Date: 12/29/2023 12:16, Prep Date: 12/29/2023, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		100.8	50.0	150.0
M2-6:2FTSA		86.2	50.0	150.0
M2-8:2FTSA		103.4	50.0	150.0
M2PFTeDA		127.4	12.0	218.0
M3PFBS		85.8	50.0	150.0
M3PFHxS		93.4	50.0	150.0
M4PFHpA		87.2	50.0	150.0
M5PFHxA		90.1	50.0	150.0
M5PFPeA		93.6	50.0	150.0
M6PFDA		96.4	50.0	150.0
M7PFUnDA		97.1	50.0	150.0
M8FOSA		93.8	50.0	150.0
M8PFOA		92.0	50.0	150.0
M8PFOS		87.2	50.0	150.0
M9-PFNA		92.9	50.0	150.0
MPFBA		92.0	50.0	150.0
MPFDoDA		89.3	50.0	150.0
d3N-MeFOSAA		91.2	50.0	150.0
d5EtFOSAA		100.3	50.0	150.0
MHFPO-DA		96.8	50.0	150.0
d-N-EtFOSA-M		106.5	50.0	150.0
d-N-MeFOSA-M		105.2	50.0	150.0
d7-N-MeFOSE-M		102.0	50.0	150.0
d9-N-EtFOSE-M		103.1	50.0	150.0

QC Report - Internal Standards per QC Sample

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: AK231229.LCSD231229, Parent Sample ID: AK231229.LCS231229

Run in Batch: AK231229, Run Date: 12/29/2023 12:36, Prep Date: 12/29/2023, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		99.5	50.0	150.0
M2-6:2FTSA		89.8	50.0	150.0
M2-8:2FTSA		92.0	50.0	150.0
M2PFTeDA		116.8	12.0	218.0
M3PFBS		90.9	50.0	150.0
M3PFHxS		97.7	50.0	150.0
M4PFHpA		84.0	50.0	150.0
M5PFHxA		95.4	50.0	150.0
M5PFPeA		93.5	50.0	150.0
M6PFDA		91.4	50.0	150.0
M7PFUnDA		97.6	50.0	150.0
M8FOSA		96.6	50.0	150.0
M8PFOA		88.0	50.0	150.0
M8PFOS		84.1	50.0	150.0
M9-PFNA		88.3	50.0	150.0
MPFBA		92.1	50.0	150.0
MPFDoDA		95.5	50.0	150.0
d3N-MeFOSAA		102.3	50.0	150.0
d5EtFOSAA		99.6	50.0	150.0
MHFPO-DA		97.2	50.0	150.0
d-N-EtFOSA-M		112.7	50.0	150.0
d-N-MeFOSA-M		111.1	50.0	150.0
d7-N-MeFOSE-M		99.2	50.0	150.0
d9-N-EtFOSE-M		98.1	50.0	150.0

QC Report - Internal Standards per QC Sample

Matrix Spike (MS)

Lab Sample ID: AK240103W.5690001RM, Parent Sample ID: S56900.01

Run in Batch: AK240103W, Run Date: 01/03/2024 19:57, Prep Date: 12/29/2023, Matrix: WW, Dilution: 2.1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		79.6	50.0	150.0
M2-6:2FTSA		87.5	50.0	150.0
M2-8:2FTSA		81.2	50.0	150.0
M2PFTeDA		87.2	12.0	218.0
M3PFBS		105.0	50.0	150.0
M3PFHxS		106.9	50.0	150.0
M4PFHpA		105.0	50.0	150.0
M5PFHxA		102.6	50.0	150.0
M5PFPeA		105.1	50.0	150.0
M6PFDA		105.9	50.0	150.0
M7PFUnDA		100.9	50.0	150.0
M8FOSA		101.2	50.0	150.0
M8PFOA		108.5	50.0	150.0
M8PFOS		117.2	50.0	150.0
M9-PFNA		95.4	50.0	150.0
MPFBA		102.4	50.0	150.0
MPFDoDA		101.3	50.0	150.0
d3N-MeFOSAA		97.6	50.0	150.0
d5EtFOSAA		85.0	50.0	150.0
MHFPO-DA		109.6	50.0	150.0
d-N-EtFOSA-M		93.6	50.0	150.0
d-N-MeFOSA-M		91.4	50.0	150.0
d7-N-MeFOSE-M		78.1	50.0	150.0
d9-N-EtFOSE-M		79.6	50.0	150.0

QC Report - Internal Standards per QC Sample

Duplicate (DUP)

Lab Sample ID: AK231229.5690002D, Parent Sample ID: S56900.02

Run in Batch: AK231229, Run Date: 12/29/2023 19:55, Prep Date: 12/29/2023, Matrix: WW, Dilution: 2.01

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		88.0	50.0	150.0
M2-6:2FTSA		78.6	50.0	150.0
M2-8:2FTSA		94.8	50.0	150.0
M2PFTeDA		95.1	12.0	218.0
M3PFBS		92.5	50.0	150.0
M3PFHxS		92.5	50.0	150.0
M4PFHpA		97.8	50.0	150.0
M5PFHxA		106.1	50.0	150.0
M5PFPeA		98.8	50.0	150.0
M6PFDA		101.0	50.0	150.0
M7PFUnDA		89.6	50.0	150.0
M8FOSA		107.0	50.0	150.0
M8PFOA		97.5	50.0	150.0
M8PFOS		105.2	50.0	150.0
M9-PFNA		93.6	50.0	150.0
MPFBA		98.8	50.0	150.0
MPFDoDA		100.9	50.0	150.0
d3N-MeFOSAA		87.1	50.0	150.0
d5EtFOSAA		93.7	50.0	150.0
MHFPO-DA		100.6	50.0	150.0
d-N-EtFOSA-M		95.3	50.0	150.0
d-N-MeFOSA-M		89.6	50.0	150.0
d7-N-MeFOSE-M		99.9	50.0	150.0
d9-N-EtFOSE-M		101.2	50.0	150.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF231229W1

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

Blank (BLK)

Lab Sample ID: AK231229.BLK231229

Run in Batch: AK231229, Run Date: 12/29/2023 12:56, Prep Date: 12/29/2023, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
PFBA		ND	10	ng/l
PFMPA		ND	2	ng/l
FPrPA (3:3 FTCA)		ND	10	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	10	ng/l
PFEESA		ND	2	ng/l
PFHpA		ND	2	ng/l
PFPeS		ND	2	ng/l
ADONA		ND	2	ng/l
6:2 FTSA		ND	2	ng/l
PFBSA		ND	2	ng/l
PFOA		ND	2	ng/l
PFHxS-BR		ND	2	ng/l
PFHxS		ND	2	ng/l
PFHxS-LN		ND	2	ng/l
FHpPA (7:3 FTCA)		ND	10	ng/l
PFNA		ND	2	ng/l
PFECHS		ND	2	ng/l
8:2 FTSA		ND	2	ng/l
PFHpS		ND	2	ng/l
N-MeFOSAA		ND	2	ng/l
PFDA		ND	2	ng/l
PFOS-BR		ND	2	ng/l
EtFOSAA		ND	4	ng/l
PFOS		ND	2	ng/l
PFOS-LN		ND	2	ng/l
PFHxSA		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
PFTTrDA		ND	2	ng/l
11CL-PF3OUdS		ND	2	ng/l
FOSA		ND	2	ng/l
PFTeDA		ND	4	ng/l
PFDOS		ND	6	ng/l
NMeFOSE		ND	4	ng/l
NMeFOSAM		ND	2	ng/l

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF231229W1 (continued)

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

Blank (BLK) (continued)

Lab Sample ID: AK231229.BLK231229

Run in Batch: AK231229, Run Date: 12/29/2023 12:56, Prep Date: 12/29/2023, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
NEtFOSE		ND	4	ng/l
NEtFOSAM		ND	2	ng/l

Laboratory Control Sample (LCS)

Lab Sample ID: AK231229.LCS231229

Run in Batch: AK231229, Run Date: 12/29/2023 12:16, Prep Date: 12/29/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
PFBA		100.0	70.0	130.0
PFMPA		100.4	70.0	130.0
FPrPA (3:3 FTCA)		96.8	70.0	130.0
PFPPrS		108.2	70.0	130.0
PFPeA		100.0	70.0	130.0
PFMBA		86.8	70.0	130.0
4:2 FTSA		95.6	70.0	130.0
NFDHA		83.0	70.0	130.0
PFHxA		104.2	70.0	130.0
PFBS		102.4	70.0	130.0
HFPO-DA		92.4	70.0	130.0
FPePA (5:3 FTCA)		106.8	70.0	130.0
PFEESA		83.0	70.0	130.0
PFHpA		78.4	70.0	130.0
PFPeS		100.8	70.0	130.0
ADONA		102.6	70.0	130.0
6:2 FTSA		99.2	70.0	130.0
PFBSA		84.2	70.0	130.0
PFOA		100.6	70.0	130.0
PFHxS		98.8	70.0	130.0
FHpPA (7:3 FTCA)		120.0	70.0	130.0
PFNA		109.0	70.0	130.0
PFECHS		91.2	70.0	130.0
8:2 FTSA		97.0	70.0	130.0
PFHpS		107.8	70.0	130.0
N-MeFOSAA		112.2	70.0	130.0
PFDA		101.4	70.0	130.0
EtFOSAA		97.8	70.0	130.0
PFOS		101.8	70.0	130.0
PFHxSA		89.6	70.0	130.0
PFUnDA		107.0	70.0	130.0
9CL-PF3ONS		107.0	70.0	130.0
PFNS		101.8	70.0	130.0
PFDoDA		104.8	70.0	130.0
PFDS		108.0	70.0	130.0
PFTTrDA		113.0	70.0	130.0
11CL-PF3OUdS		103.4	70.0	130.0
FOSA		103.2	70.0	130.0
PFTeDA		94.2	70.0	130.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF231229W1 (continued)

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

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: AK231229.LCS231229

Run in Batch: AK231229, Run Date: 12/29/2023 12:16, Prep Date: 12/29/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
PFDOS		122.4	70.0	130.0
NMeFOSE		90.6	70.0	130.0
NMeFOSAM		98.2	70.0	130.0
NEtFOSE		98.6	70.0	130.0
NEtFOSAM		99.2	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: AK231229.LCSD231229, Parent Sample ID: AK231229.LCS231229

Run in Batch: AK231229, Run Date: 12/29/2023 12:36, Prep Date: 12/29/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
PFBA		110.2	70.0	130.0	9.7	30.0
PFMPA		109.6	70.0	130.0	8.8	30.0
FPrPA (3:3 FTCA)		106.6	70.0	130.0	9.6	30.0
PFPPrS		107.4	70.0	130.0	0.7	30.0
PFPeA		104.2	70.0	130.0	4.1	30.0
PFMBA		90.0	70.0	130.0	3.6	30.0
4:2 FTSA		103.2	70.0	130.0	7.6	30.0
NFDHA		101.4	70.0	130.0	20.0	30.0
PFHxA		101.6	70.0	130.0	2.5	30.0
PFBS		100.4	70.0	130.0	2.0	30.0
HFPO-DA		96.0	70.0	130.0	3.8	30.0
FPePA (5:3 FTCA)		105.2	70.0	130.0	1.5	30.0
PFEESA		88.6	70.0	130.0	6.5	30.0
PFHpA		94.6	70.0	130.0	18.7	30.0
PFPeS		91.2	70.0	130.0	10.0	30.0
ADONA		104.6	70.0	130.0	1.9	30.0
6:2 FTSA		95.0	70.0	130.0	4.3	30.0
PFBSA		84.8	70.0	130.0	0.7	30.0
PFOA		118.6	70.0	130.0	16.4	30.0
PFHxS		97.8	70.0	130.0	1.0	30.0
FHpPA (7:3 FTCA)		125.0	70.0	130.0	4.1	30.0
PFNA		104.6	70.0	130.0	4.1	30.0
PFECHS		100.0	70.0	130.0	9.2	30.0
8:2 FTSA		113.4	70.0	130.0	15.6	30.0
PFHpS		105.0	70.0	130.0	2.6	30.0
N-MeFOSAA		105.8	70.0	130.0	5.9	30.0
PFDA		107.2	70.0	130.0	5.6	30.0
EtFOSAA		103.0	70.0	130.0	5.2	30.0
PFOS		115.4	70.0	130.0	12.5	30.0
PFHxSA		85.4	70.0	130.0	4.8	30.0
PFUnDA		109.4	70.0	130.0	2.2	30.0
9CL-PF3ONS		110.0	70.0	130.0	2.8	30.0
PFNS		119.8	70.0	130.0	16.2	30.0
PFDODA		94.6	70.0	130.0	10.2	30.0
PFDS		113.6	70.0	130.0	5.1	30.0
PFTTrDA		116.0	70.0	130.0	2.6	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF231229W1 (continued)

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

Laboratory Control Sample Duplicate (LCSD) (continued)

Lab Sample ID: AK231229.LCSD231229, Parent Sample ID: AK231229.LCS231229

Run in Batch: AK231229, Run Date: 12/29/2023 12:36, Prep Date: 12/29/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
11CL-PF3OUdS		110.4	70.0	130.0	6.5	30.0
FOSA		104.8	70.0	130.0	1.5	30.0
PFTeDA		107.2	70.0	130.0	12.9	30.0
PFDOS		121.2	70.0	130.0	1.0	30.0
NMeFOSE		98.0	70.0	130.0	7.8	30.0
NMeFOSAM		99.6	70.0	130.0	1.4	30.0
NEtFOSE		100.0	70.0	130.0	1.4	30.0
NEtFOSAM		96.6	70.0	130.0	2.7	30.0

Matrix Spike (MS)

Lab Sample ID: AK240103W.5690001RM, Parent Sample ID: S56900.01

Run in Batch: AK240103W, Run Date: 01/03/2024 19:57, Prep Date: 12/29/2023, Matrix: WW, Dilution: 2.1

Analyte	Flags	% Rec	LCL	UCL
PFBA		114.3	70.0	130.0
PFPeA		104.8	70.0	130.0
4:2 FTSA		104.8	70.0	130.0
PFHxA		100.3	70.0	130.0
PFBS		111.9	70.0	130.0
PFHpA		91.8	70.0	130.0
PFPeS		114.3	70.0	130.0
6:2 FTSA		104.8	70.0	130.0
PFOA		98.1	70.0	130.0
PFHxS		104.8	70.0	130.0
PFNA		123.8	70.0	130.0
8:2 FTSA		114.3	70.0	130.0
PFHpS		104.8	70.0	130.0
PFDA		114.3	70.0	130.0
N-MeFOSAA		123.8	70.0	130.0
EtFOSAA		104.8	70.0	130.0
PFOS		92.4	70.0	130.0
PFUnDA		104.8	70.0	130.0
PFNS		104.8	70.0	130.0
PFDoDA		104.8	70.0	130.0
PFDS		95.2	70.0	130.0
PFTrDA		114.3	70.0	130.0
FOSA		104.8	70.0	130.0
PFTeDA		104.8	70.0	130.0
11CL-PF3OUdS		95.2	70.0	130.0
9CL-PF3ONS		104.8	70.0	130.0
ADONA		94.3	70.0	130.0
HFPO-DA		104.8	70.0	130.0
FHpPA (7:3 FTCA)	*	133.3	70.0	130.0
FPePA (5:3 FTCA)		104.8	70.0	130.0
FPrPA (3:3 FTCA)		104.8	70.0	130.0
PFBSA		88.6	70.0	130.0
PFECHS		88.9	70.0	130.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF231229W1 (continued)

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

Matrix Spike (MS) (continued)

Lab Sample ID: AK240103W.5690001RM, Parent Sample ID: S56900.01

Run in Batch: AK240103W, Run Date: 01/03/2024 19:57, Prep Date: 12/29/2023, Matrix: WW, Dilution: 2.1

Analyte	Flags	% Rec	LCL	UCL
PFHxSA		104.8	70.0	130.0

Duplicate (DUP)

Lab Sample ID: AK231229.5690002D, Parent Sample ID: S56900.02

Run in Batch: AK231229, Run Date: 12/29/2023 19:55, Prep Date: 12/29/2023, Matrix: WW, Dilution: 2.01

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
PFOS		NC	30.0
PFOS-LN		NC	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
FHpPA (7:3 FTCA)		NC	30.0
FPePA (5:3 FTCA)		NC	30.0
FPrPA (3:3 FTCA)		NC	30.0
PFBSA		NC	30.0
PFECHS		NC	30.0
PFHxSA		NC	30.0

