RAMBOLL

ENVIRONMENT
& HEALTH

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Emerging Pollutants Section, WRD
Department of Environment, Great Lakes, and Energy
PO Box 30473
Lansing, MI 48909-7974

Mr. Jacob Runge
Environmental Engineer
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Department of Environment, Great Lakes, and Energy
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RE: Corrective Action Plan – South of Site Evaluation
Coldwater Road Site
6220 Horton Street, Mount Morris, MI
MID 005 356 860
FILE: 1088190/1940102192/Reports

Date July 15, 2022

Dear **Mr. Zuber and Mr. Runge**:

On behalf of Revitalizing Auto Communities Environmental Response (RACER) Trust, Ramboll Americas Engineering Solutions, Inc. (Ramboll) is providing the following summary letter to share the evaluation of the currently available information related to the storm sewer system south of Coldwater Road at the RACER Coldwater Road Facility located at 6220 Horton Street, Mount Morris, Genesee County, Michigan (Site).

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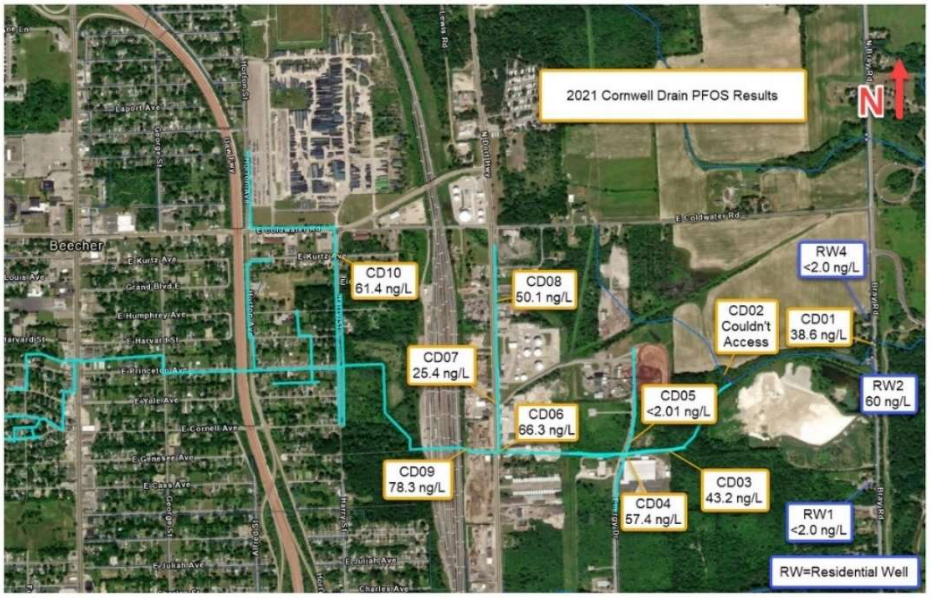
The evaluation activities were conducted as a follow up to the June 3, 2022, Corrective Action Plan (CAP) submitted to the Michigan Department of Environmental, Great Lakes, and Energy (EGLE) Water Resources Division, via MIWaters to address Violation Notice (No. VN-012757) dated May 4, 2022. The evaluation was completed to address to Task 1 of the Corrective Action Plan, as well as the analytical results from per- and polyfluoroalkyl substances (PFAS), specifically perfluorooctanesulfonic acid (PFOS), from samples collected on September 22, 2021 by EGLE along the Cornwell Drain. See below figure provided by EGLE for sample locations.



The purpose of this letter is to summarize the evaluation of the currently available information related to the storm sewer system along the southern Site boundary east of the middle entry drive and south of Coldwater Road, provide context for the results/information, and provide recommendations for additional investigation/evaluation or other activities and timelines.

The storm sewer system west of the middle entry has previously been evaluated and addressed and is discussed in more detail in the CAP.

Sewer Evaluation

Additional inspection of the storm sewer system was performed on April 14, 2022 to further evaluate the configuration and flow of the storm sewers south of the Site along Coldwater Road as it relates to the Cornwell Drain. **Figure 1** shows what is currently known about the configuration and flow of the storm sewers south of the Site.

Based on available information, the municipal storm water flows from the west to the east along the north side of Coldwater Road to Manhole SS-02/SS-14 (at the middle entry drive to the Site), where it then flows south along Harry Street. The discharge points from the Site to the municipal storm sewer system along the northside of Coldwater Road west of the middle entry drive to the Site have been identified and plugged. These plugs were last monitored on June 30, 2022 and no flow was observed.

East of the middle entry drive to the Site there is a manhole/catch basin north of Coldwater Road, east of the drive within the grassy area north of the road that flows to a road drain (catch basin) and then to the manhole at the intersection of Coldwater Road and Harry Street, where sample SS-13 was collected (**Figure 1**). SS-13 was collected from the line entering the manhole from the east-northeast, which is the storm sewer line coming from the catch basin discussed above. Within the same manhole that SS-13 was collected there is another storm sewer line entering the manhole from the east-southeast from a road drain on the southern side of Coldwater Road. Flow from both of these storm sewers combine at the manhole and lead to manhole SS-02/SS-14. At the time of sample collection, SS-13 was flowing at less than a half-gallon per minute. No other outlets have been observed leaving the Site east of the middle entry drive. The remaining storm water inlets are in the roadway along Coldwater Road and flow to open storm water ditches that drain to a storm water ditch that runs north and south on the west side of the railroad tracks (**Figure 1**). No flow was observed from the storm water inlets in the roadway or open storm water ditches along Coldwater Road during the inspection.

No flow has been observed coming from the north end of the Site along the storm water ditch adjacent to the railroad tracks since the stormwater runoff from a significant portion of the former Peregrine site (former operational portion of the larger facility) is directed to the Middle Pond to prevent off-site discharge of run-off from that area.

Closed Circuit Television (CCTV) Review

A closed-circuit television (CCTV) inspection of the storm sewer along Coldwater Road was conducted on June 1, 2022 to evaluate where PFOS might be entering the municipal storm sewer south of the Site. The storm sewers inspected were the lines from manhole SS-02/SS-14 west to manhole MH-10E, from manhole SS-02/SS-14 south to manhole SS-12, and from manhole SS-02/SS-14 east to manhole SS-13.

- The two manholes and "U" shaped line in the grassy area east of the middle entry drive, appear to no longer be in use. After attempting to video inspect the lines from the southern manhole it was observed that the lines had been broken off 1 to 2 feet from the manhole. These lines appear to be remnants of when Coldwater Road was located further to the south.
- Calcium deposits were observed at the outlet within manhole SS-13 heading to SS-02/SS-14.

- Roots were observed at four locations within the pipe leaving manhole SS-02/SS-14 heading south toward manhole SS-12.
- No other issues were observed during the inspection of the storm sewers.

Historical Groundwater and Soil Results

Nine groundwater samples (one duplicate) have been collected from two monitoring wells within the perched zone and two monitoring wells within drift (deep) unit south of the Site during previous evaluations. From the previous sampling events, PFOS was not detected above the laboratory reporting limit in the drift unit monitoring wells. In the samples collected from the perched zone monitoring wells, PFOS was detected at a concentration of 27 ng/l at monitoring well MW-18-13 and was detected at a concentration of 3.5 ng/l at monitoring well MW-4-02. The perched zone monitoring wells have since been abandoned with EGLE approval at that time. At the time the wells were abandoned the detections were below the applicable screening criterion at the time of 70 ng/l for combined perfluorooctanoic Acid (PFOA) and PFOS.

Four shallow soil boring samples were collected in the south portion of the Site during previous evaluations. The depths of the borings ranged from 7 to 8 feet below grade. At three of the four locations PFAS was not detected above the laboratory reporting limit. At SBP-26 PFOS was detected at a concentration of 100 ng/kg, which is below the EGLE Part 201 Generic Residential Groundwater Surface Water Interface Protection Criteria for soils of 240 ng/kg. SBP-26 is located north of SBP-28 and SBP-27, which are closer to the property boundary and municipal sewers and were non-detect for PFAS. The historical groundwater and soil results are provided on **Table 1**.

Historical Property Information

A request was submitted to Environmental Data Resources Inc. (EDR) to receive the historical property information for the properties on Coldwater Road (**Appendix A** and **Figure 2**). Eight commercial properties were identified during the record search along Coldwater Road between Horton Street and Dort Highway and one property was identified from observation of the area. The past and current property uses include:

- Plumbing Supply Sales (1240 E. Coldwater Road)
- Plumbing Supply Warehouse (1329 E. Coldwater Road) Not included in city directories but observed
- United Automobile Works (UAW) office / Titling office (1272 E. Coldwater Road)
- Retail store (1292 E. Coldwater Road)
- Banking (1314 E. Coldwater Road)
- Metal supplier (1400 E. Coldwater Road)
- Roofing and siding (1400 E. Coldwater Road)
- Construction services / Truck repair (1415 E. Coldwater Road)
- Restaurant (5469 N. Dort Hwy)
- Petroleum oil terminal (6065 N. Dort Hwy)

It is unknown at this time if during their times of operation the current or former occupants used or stored products which may have contained PFAS.

Recent Corrective Measures
Additional measures were completed on May 31, 2022 to stop a trickle observed from the plug of the pipe entering manhole SS-02 from the north (from the Site). An excavation was made approximately 75 feet north of SS-02 to expose the pipe, then the pipe was breached, the southern part (downstream) was filled with a cement mixture to seal it, and the excavation was filled with a cement mixture to above both ends of the breached pipe. Further detail regarding previous plugging activities along Coldwater Road are summarized in the CAP.

Sample Collection

On April 14, 2022, two samples were collected from the storm water sewers south of the Site along Coldwater. Sample SS-11 was collected from the drainage ditch that runs along the north side of East Kurtz Street and a second sample SS-12 was collected just north of CD-10 (previous EGLE sample location, see the figure on page one of this letter), on Harry Street from the water flowing from the north to the south.

On May 16, 2022, a sample was collected from the storm water sewer at manhole SS-02 at the entrance to the former Peregrine Site on the north side of Coldwater Road and a sample was collected from the manhole to the east of manhole SS-02, labeled SS-13. SS-13 was collected from flow from the northeast pipe coming into the manhole from the Site. A third sampled named SS-14 was collected from the city storm sewer pipe that flows into manhole SS-02 from the west to the east.

On June 22, 2022, a sample was collected from manhole SS-12 and a sample was collected from SS-14 (i.e., the city storm sewer pipe entering manhole SS-02 from the west). The samples were collected under fairly dry conditions as only 0.1 inches and 0.03 inches of rainfall were recorded on June 20 and 21, 2022, respectively. There was no flow observed coming into manhole SS-02/SS-14 from the plug of pipe entering the manhole from the Site (from SS-02).

The samples were collected with a peristaltic pump and polyethylene tubing that was weighted down with a stainless-steel weight and lowered into the manhole.

The samples were labeled, packed on ice, and shipped via courier under routine chain-of-custody protocols to Merit Laboratories, Inc. (Merit) of East Lansing, Michigan.

Analytical Results

The storm water samples were analyzed for PFAS by method ASTMD7979-19 (no preservative). The analytical results for the four recent storm water samples and 11 historical storm water samples collected south of the Site are summarized in **Table 2**, and the analytical laboratory reports are included in **Appendix B**.

The maximum concentration exceeding the Rule 57 Water Quality Value was 140 ng/l of PFOS in sample SS-12 collected just north of CD-10 along Harry Street on April 14, 2022. The result from sample SS-12 collected on June 22, 2022 had a PFOS concentration of 91 ng/l. The upstream samples (SS-13 & SS-14) collected closer to the Site on May 16, 2022 had lower PFOS concentrations of 20 ng/l at SS-13 and 30 ng/l at SS-14. The result from sample SS-14 collected on June 22, 2022 had a PFOS concentration of 39 ng/l.

Conclusions and Recommendations

With the additional work to prevent the leak from the plug in the pipe entering SS-02 from the Site it is our understanding that we have eliminated storm water from the Site entering the municipal system; except for a minor amount that flows from the manhole located east of the middle drive to the street inlet along the north side of Coldwater Road, and then to the manhole SS-13.

Sampling locations were selected to evaluate locations near the property boundary most likely to receive storm water from the Site. Based on the data collected the concentrations of PFOS in the upstream samples collected near the property boundary (SS-13 & SS-14) were below that of SS-12 which was located further downstream.

When comparing the detections of PFAS compounds in the samples collected by EGLE along the Cornwell Drain with the detections of PFAS compounds in sample SS-12 collected along Harry Street, there appears to be a different signature to the EGLE samples collected east of the railroad (CD-1, CD-3, CD-4, CD-6, CD-7). In these samples, there were detections of perfluorobutanoic acid (PFBA), perfluorononanoic acid (PFNA), perfluorodecanoic acid (PFDA), 6:2 fluorotelomer sulfonate (6:2 FTSA), and 8:2 fluorotelomer sulfonate (8:2 FTSA). These compounds were not detected in the sample from SS-12. This could suggest that these detections are separate PFAS impacts that are from off-site sources not specific to the Site.

Based on the results of this recent evaluation we propose to collect an additional round of samples to obtain additional data to begin to establish a database for further evaluation of how PFOS concentrations in the storm sewers south of the Site change over time and under varying conditions. The sampling would be conducted in August 2022 within 24 hours of a rain event. The proposed sample locations are:

- SS-11 though SS-14,
- MH-10E-W (municipal flow west of SS-02),
- New location (SS-15) which will be collected from the open storm water ditch along the westside of Harry Street at the intersection of East Grand Boulevard (See **Figure 1**).

In addition to sample collection, we also propose to extend the city directory search south along Harry Street to East Carpenter Road and east along East Carpenter Road from Harry Street to Dort Highway. After which, we will evaluate the data and prepare and distribute an updated summary letter which will contain a summary of the data, context for the results, and further recommendations. The target submittal date for the report is the beginning of October, but could vary some depending on when conditions are right for sampling.

If you have any questions, feel free to contact me at (313) 333-0211.
Yours sincerely,

RAMBOLL AMERICAS ENGINEERING SOLUTIONS, INC.

Clifford Yantz
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cc: Nicole Sanabria (EGLE)
John McCabe (EGLE)
David Favero (RACER Trust)
Kevin Schneider (Ramboll)

Enclosures:

Table 1 – Historical Groundwater and Soil Sample Results
Table 2 **-** Storm Water PFAS Sample Results
Figure 1 – Storm Water Sewers – Horton Street to Dort Highway
Figure 2 – City Directory Property Locations
Appendix A – City Directory
Appendix B – Analytical Laboratory Report

TABLES

TABLE 1
RACER Trust - Coldwater Road
Per-and Polyfluoroalkyl Substances Sampling Results - Monitoring Well Sampling - South Portion of Site

Coldwater Road - Monitoring Wells - South Portion of Site

Perfluorinated Compound	Well/Sample ID: / Sample Date:	EGLE Part 201 Generic Groundwater Surface Water Interface Criteria / Rule 57 Surface Water Quality Values	PERCHED ZONE		DRIFT UNIT							
			MW-4-02*	MW-18-13*	MW-15-10	MW-15-10	MW-16-10	MW-16-10 (Duplicate)	MW-16-10	MW-16-10	PFW-1	PFW-1
			11/30/2016	*11/29/2016*	*9/21/2018*	*6/19/2020*	*11/29/2016*	*11/29/2016*	*6/13/2018*	*6/19/2020*	*9/21/2018*	*6/23/2020*
Perfluorobutanoic Acid (PFBA)		--	**4.7**	**5.0**	<20	21 U	<0.45 U	**0.87 J**	**0.40 J/B**	<9.7	<20	18 U
Perfluoropentanoic Acid (PFPeA)		--	<0.94 U	<0.93 U	<10	<4.0	<0.98 U	<0.97 U	<0.46	<3.9	<10	<4.0
4:2 Fluorotelomer Sulfonic Acid (4:2 FTSA)		--	**--**	**--**	<10	<2.0	--	--	--	<1.9	<10	<2.0
Perfluorohexanoic Acid (PFHxA)		--	<0.75 U	<0.74 U	<10	<2.0	<0.78 U	<0.77 U	<0.55	<1.9	<10	<2.0
Perfluorobutane Sulfonic Acid (PFBS)		--	**0.92 J**	**2.8**	<10	<2.0	<0.91 U	<0.90 U	<0.19	<1.9	<10	<2.0
Perfluoroheptanoic Acid (PFHpA)		--	<0.76 U	<0.76 U	<10	<2.0	<0.79 U	<0.79 U	<0.24	<1.9	<10	<2.0
Perfluoropentane Sulfonic Acid (PFPeS)		--	--	--	<10	<2.0	--	--	--	<1.9	<10	<2.0
6:2 Fluorotelomer Sulfonic Acid (6:2 FTSA)		--	<3.5	<3.6	<10	<2.0	<3.8	<3.7	--	<1.9	<10	<2.0
Perfluorooctanoic Acid (**PFOA**)		**12,000**	<0.71 U	**3.9**	<10	<2.0	<0.74 U	<0.73 U	<0.80	<1.9	<10	<2.0
Perfluorohexane Sulfonic Acid (PFHxS)		--	<0.83 U	**4.3**	<10	<2.0	<0.86 U	<0.85 U	**0.30 J/B**	<1.9	<10	<2.0
Perfluorohexane Sulfonic Acid - LN (PFHxS-LN)		--	**--**	**--**	<10	<2.0	--	--	--	<1.9	<10	<2.0
Perfluorohexane Sulfonic Acid - BR (PFHxS-BR)		--	**--**	**--**	<10	<2.0	--	--	--	<1.9	<10	<2.0
Perfluorononanoic Acid (PFNA)		--	<0.62 U	<0.62 U	<10	<2.0	<0.65 U	<0.64 U	<0.26	<1.9	<10	<2.0
8:2 Fluorotelomer Sulfonic Acid (8:2 FTSA)		--	**--**	**--**	<10	<2.0	--	--	--	<1.9	<10	<2.0
Perfluoroheptane Sulfonic Acid (PFHpS)		--	<0.68 U	**0.78** J	<10	<2.0	<0.71 U	<0.70 U	<0.18	<1.9	<10	<2.0
Perfluorodecanoic Acid (PFDA)		--	<0.42	<0.42	<10	<2.0	<0.44	<0.43	<0.29	<1.9	<10	<2.0
N-methyl Perfluorooctanesulfonamidoacetic Acid (N-MeFOSAA)		--	**--**	**--**	<10	<2.0	--	--	--	<1.9	<10	<2.0
N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA)		--	**--**	**--**	<10	<4.0	--	--	--	<3.9	<10	<4.0
Perfluorooctane Sulfonic Acid (**PFOS**)		**12**	**3.5**	**27**	<10	<2.0	<1.3 U	<1.3 U	<0.51	<1.9	<10	<2.0
Perfluorooctane Sulfonic Acid (**PFOS**-LN)		--	**--**	**--**	<10	<2.0	--	--	--	<1.9	<10	<2.0
Perfluorooctane Sulfonic Acid (**PFOS**-BR)		--	**--**	**--**	<10	<2.0	--	--	--	<1.9	<10	<2.0
Perfluoroundecanoic Acid (PFUnDA)		--	<0.71	<0.71	<10	<2.0	<0.74	<0.73	<1.0	<1.9	<10	<2.0
Perfluorononane Sulfonic Acid (PFNS)		--	**--**	**--**	<10	<2.0	--	--	--	<1.9	<10	<2.0
Perfluorododecanoic Acid (PFDoDA)		--	<0.56	<0.55	<10	<2.0	<0.58	<0.57	<0.52	<1.9	<10	<2.0
Perfluorodecane Sulfonic Acid (PFDS)		--	<1.9	<1.9	<10	<2.0	<2.0 U	<2.0 U	<1.9	<1.9	<10	<2.0
Perfluorotridecanoic Acid (PFTrDA)		--	<1.9	<1.9	<10	<2.0	<2.0	<2.0	<1.9	<1.9	<10	<2.0
Perfluorooctane Sulfonamide (FOSA)		--	<1.9	<1.9	<10	<2.0	<2.0	<2.0	<1.9	<1.9	<10	<2.0
Perfluorotetradecanoic Acid (PFTeDA)		--	**0.65 J F1 B**	**0.60 J B**	<10	<4.0	**0.42 J B**	**0.50 J B**	<0.27	<3.9	<10	<4.0
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)		--	--	--	--	<2.0	--	--	--	<1.9	--	<2.0
9-chlorohexadecafluoro-3-oxanone1-sulfonic acid (9Cl-PF3ONS)		--	--	--	--	<2.0	--	--	--	<1.9	--	<2.0
4,8-dioxa-3H-perfluorononanoic acid (ADONA)		--	--	--	--	<2.0	--	--	--	<1.9	--	<2.0
Hexafluoropropylene oxide dimer (HFPO-DA)		--	--	--	--	<2.0	--	--	--	<1.9	--	<2.0
Total Per-and Polyfluoroalkyl Substances		--	**9.8**	**44.4**	**0.0**	**0.0**	**0.4**	**1.4**	**0.7**	**0.0**	**0.0**	**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) * = Monitoring well has been abandoned.
7) EGLE Part 201 Groundwater Generic Cleanup Criteria and Screening Levels, December 21, 2020 and Rule 57 Surface Water Quality Values.
8) Concentration above the groundwater surface water interface (GSI) criteria are highlighted in yellow.
9) B - Compound also found in associated method blank.
10) I - Matrix interference with internal standard.
11) J - Estimated value less than reporting limit, but greater than MDL.
12) X - Elevated reporting limit due to matrix interference.
13) 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 Peregrine Facilities
Per-and Polyfluoroalkyl Substances Sampling Results - Soil Samples South Portion of Site

Coldwater Road - Soil Samples - South Portion of Site

Perfluorinated Compound / Well/Sample ID: / Sample Date:	EGLE Part 201 Generic Residential Groundwater Surface Water Interface Protection Criteria (for soils) (GSIPC)	SBP-25 (8') 4/30/2019	SBP-26 (7') 4/30/2019	SBP-27 (7.7') 4/30/2019	SBP-28 (7') 4/30/2019
Perfluorobutanoic Acid (PFBA)	--	<77	<57	<95	<82
Perfluoropentanoic Acid (PFPeA)	--	<38	<29	<47	<41
4:2 Fluorotelomer Sulfonic Acid (4:2 FTSA)	--	<38	<29	<47	<41
Perfluorohexanoic Acid (PFHxA)	--	<38	<29	<47	<41
Perfluorobutane Sulfonic Acid (PFBS)	--	<38	<29	<47	<41
Perfluoroheptanoic Acid (PFHpA)	--	<38	<29	<47	<41
Perfluoropentane Sulfonic Acid (PFPeS)	--	<38	<29	<47	<41
6:2 Fluorotelomer Sulfonic Acid (6:2 FTSA)	--	<38	<29	<47	<41
Perfluorooctanoic Acid (**PFOA**)	**10,000,000**	<38	<29	<47	<41
Perfluorohexane Sulfonic Acid (PFHxS)	--	<38	<29	<47	<41
Perfluorohexane Sulfonic Acid - LN (PFHxS-LN)	--	<38	<29	<47	<41
Perfluorohexane Sulfonic Acid - BR (PFHxS-BR)	--	<38	<29	<47	<41
Perfluorononanoic Acid (PFNA)	--	<38	<29	<47	<41
8:2 Fluorotelomer Sulfonic Acid (8:2 FTSA)	--	<38	<29	<47	<41
Perfluoroheptane Sulfonic Acid (PFHpS)	--	<38	<29	<47	<41
Perfluorodecanoic Acid (PFDA)	--	<38	<29	<47	<41
N-methyl Perfluorooctanesulfonamidoacetic Acid (N-MeFOSAA)	--	<38	<29	<47	<41
N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA)	--	<38	<29	<47	<41
Perfluorooctane Sulfonic Acid (**PFOS**)	**240**	<38	**100**	<47	<41
Perfluorooctane Sulfonic Acid (**PFOS**-LN)	--	<38	**83**	<47	<41
Perfluorooctane Sulfonic Acid (**PFOS**-BR)	--	<38	<29	<47	<41
Perfluoroundecanoic Acid (PFUnDA)	--	<38	<29	<47	<41
Perfluorononane Sulfonic Acid (PFNS)	--	<38	<29	<47	<41
Perfluorododecanoic Acid (PFDoDA)	--	<38	<29	<47	<41
Perfluorodecane Sulfonic Acid (PFDS)	--	<38	<29	<47	<41
Perfluorotridecanoic Acid (PFTrDA)	--	<38	<29	<47	<41
Perfluorooctane Sulfonamide (FOSA)	--	<38	<29	<47	<41
Perfluorotetradecanoic Acid (PFTeDA)	--	<38	<29	<47	<41
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	--	--	--	--	--
9-chlorohexadecafluoro-3-oxanone1-sulfonic acid (9Cl-PF3ONS)	--	--	--	--	--
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	--	--	--	--	--
Hexafluoropropylene oxide dimer (HFPO-DA)	--	--	--	--	--
Total Per-and Polyfluoroalkyl Substances	--	**0.0**	**100.0**	**0.0**	**0.0**

Notes
1) Detections in **bold**.
2) Concentrations in ng/kg.
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) B - Compound also found in associated method blank.
8) I - Matrix interference with internal standard.
9) J - Estimated value less than reporting limit, but greater than MDL.
10) X - Elevated reporting limit due to matrix interference.
11) QA/QC Samples were either not detected above the reporting limit or below the EGLE Part 201 Groundwater Generic Cleanup Criteria.

TABLE 2
RACER Trust - Coldwater Road Peregrine Facilities
Per-and Polyfluoroalkyl Substances Sampling Results - Storm Water Samples South Portion of Site

Coldwater Road - Storm Water Samples - South Portion of Site

Perfluorinated Compound / Well/Sample ID: / Sample Date:	EGLE Part 201 Generic Groundwater Surface Water Interface Criteria / Rule 57 Surface Water Quality Values	SS-02 (Storm Sewer) 11/12/2018	SS-02 (DUP-1) (Storm Sewer) 11/12/2018	SS-02 (Storm Sewer) 12/21/2021	SS-04 (Storm Sewer) 3/19/2020	SS-DUP-2/SS-04 (Storm Sewer) 3/19/2020	SS-08 (Storm Sewer) 8/28/2020
Perfluorobutanoic Acid (PFBA)	--	**20**	**20**	**13**	<100	<100	<10
Perfluoropentanoic Acid (PFPeA)	--	<10	<10	**6.1**	<10	<10	<4.1
4:2 Fluorotelomer Sulfonic Acid (4:2 FTSA)	--	<10	<10	<2.1	<10	<10	<2.1
Perfluorohexanoic Acid (PFHxA)	--	**10**	**10**	**4.5**	<10	<10	<2.1
Perfluorobutane Sulfonic Acid (PFBS)	--	<10	<10	**3.1**	<10	<10	<2.1
Perfluoroheptanoic Acid (PFHpA)	--	<10	<10	**2.2**	<10	<10	<2.1
Perfluoropentane Sulfonic Acid (PFPeS)	--	<10	<10	<2.1	<10	<10	<2.1
6:2 Fluorotelomer Sulfonic Acid (6:2 FTSA)	--	<10	<10	<4.2	<10	<10	<2.1
Perfluorooctanoic Acid (**PFOA**)	**12,000**	**20**	**20**	**4.8**	<10	<10	**1.9 J**
Perfluorohexane Sulfonic Acid (PFHxS)	--	**20**	**20**	**3.7**	<10	<10	<2.1
Perfluorohexane Sulfonic Acid - LN (PFHxS-LN)	--	**20**	**20**	**2.8**	<10	<10	<2.1
Perfluorohexane Sulfonic Acid - BR (PFHxS-BR)	--	<10	<10	<2.1	<10	<10	<2.1
Perfluorononanoic Acid (PFNA)	--	<10	<10	<2.1	<10	<10	<2.1
8:2 Fluorotelomer Sulfonic Acid (8:2 FTSA)	--	<10	<10	<4.2	<10	<10	<2.1
Perfluoroheptane Sulfonic Acid (PFHpS)	--	**10**	<10	<2.1	<10	<10	<2.1
Perfluorodecanoic Acid (PFDA)	--	<10	<10	<2.1	<10	<10	<2.1
N-methyl Perfluorooctanesulfonamidoacetic Acid (N-MeFOSAA)	--	<10	<10	<2.1	<10	<10	<2.1
N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA)	--	<10	<10	<4.2	<10	<10	<4.1
Perfluorooctane Sulfonic Acid (**PFOS**)	**12**	**1520**	**1250**	**86**	<10	<10	**7.3**
Perfluorooctane Sulfonic Acid (**PFOS**-LN)	--	**1160**	**950**	**62**	<10	<10	**4.1**
Perfluorooctane Sulfonic Acid (**PFOS**-BR)	--	**380**	**280**	**24**	<10	<10	**2.8**
Perfluoroundecanoic Acid (PFUnDA)	--	<10	<10	<2.1	<10	<10	<2.1
Perfluorononane Sulfonic Acid (PFNS)	--	<10	<10	<2.1	<10	<10	<2.1
Perfluorododecanoic Acid (PFDoDA)	--	<10	<10	<2.1	<10	<10	<2.1
Perfluorodecane Sulfonic Acid (PFDS)	--	<10	<10	<2.1	<10	<10	<2.1
Perfluorotridecanoic Acid (PFTrDA)	--	<10	<10	<2.1	<10	<10	<2.1
Perfluorooctane Sulfonamide (FOSA)	--	<10	<10	<2.1	<10	<10	<2.1
Perfluorotetradecanoic Acid (PFTeDA)	--	<10	<10	<4.2	<10	<10	<4.1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	--	--	--	<2.1	<10	<10	<2.1
9-chlorohexadecafluoro-3-oxanone1-sulfonic acid (9Cl-PF3ONS)	--	--	--	<2.1	<10	<10	<2.1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	--	--	--	<2.1	<10	<10	<2.1
Hexafluoropropylene oxide dimer (HFPO-DA)	--	--	--	<10	<10	<10	<2.1
Total Per-and Polyfluoroalkyl Substances	--	**1600.0**	**1320.0**	**123.4**	**0.0**	**0.0**	**9.2**

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) B - Compound also found in associated method blank.
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) Light gray header is most recent sampling event result.
13) QA/QC Samples were either not detected above the reporting limit or below the EGLE Part 201 Groundwater Generic Cleanup Criteria.

TABLE 2
RACER Trust - Coldwater Road Peregrine Facilities
Per-and Polyfluoroalkyl Substances Sampling Results - Storm Water Samples South Portion of Site

Coldwater Road - Storm Water Samples - South Portion of Site

Perfluorinated Compound / Well/Sample ID: / Sample Date:	EGLE Part 201 Generic Groundwater Surface Water Interface Criteria / Rule 57 Surface Water Quality Values	SS-11 (Storm Water) 4/14/2022	SS-12 (Storm Sewer) 4/14/2022	SS-12 (Storm Sewer) 6/22/2022	SS-13 (Storm Sewer) 5/16/2022	SS-14 (Storm Sewer) 5/16/2022	SS-14 (Storm Sewer) 6/22/2022
Perfluorobutanoic Acid (PFBA)	--	<9.8	<9.8	<11	<39	**14**	**12**
Perfluoropentanoic Acid (PFPeA)	--	<3.9	**2.1 J**	**4.0 J**	<3.9	**2.1 J**	**5.2**
4:2 Fluorotelomer Sulfonic Acid (4:2 FTSA)	--	<2.0	<2.0	<2.1	<2.0	<2.1	<2.1
Perfluorohexanoic Acid (PFHxA)	--	<2.0	**3.3**	**5.2**	**2.5**	**4.3**	**7.0**
Perfluorobutane Sulfonic Acid (PFBS)	--	**82**	**2.0**	**5.6**	<2.0	**2.8**	**6.7**
Perfluoroheptanoic Acid (PFHpA)	--	<2.0	**2.1**	**2.7**	<2.0	**2.3**	**5.0**
Perfluoropentane Sulfonic Acid (PFPeS)	--	<2.0	<2.0	<2.1	<2.0	<2.1	<2.1
6:2 Fluorotelomer Sulfonic Acid (6:2 FTSA)	--	<2.0	<2.0	<2.1	<2.0	<2.1	<2.1
Perfluorooctanoic Acid (**PFOA**)	**12,000**	<2.0	**5.8**	**11**	<2.0	**8.4**	**15**
Perfluorohexane Sulfonic Acid (PFHxS)	--	<2.0	**2.8**	**3.5**	<2.0	**1.8 J**	**4.5**
Perfluorohexane Sulfonic Acid - LN (PFHxS-LN)	--	<2.0	**1.7 J**	**2.8**	<2.0	<2.1	**3.7**
Perfluorohexane Sulfonic Acid - BR (PFHxS-BR)	--	<2.0	<2.0	<2.1	<2.0	<2.1	<2.1
Perfluorononanoic Acid (PFNA)	--	<2.0	<2.0	<2.1	<2.0	<2.1	<2.1
8:2 Fluorotelomer Sulfonic Acid (8:2 FTSA)	--	<2.0	<2.0	<2.1	<2.0	<2.1	<2.1
Perfluoroheptane Sulfonic Acid (PFHpS)	--	<2.0	<2.0	<2.1	<2.0	<2.1	<2.1
Perfluorodecanoic Acid (PFDA)	--	<2.0	<2.0	<2.1	<2.0	<2.1	<2.1
N-methyl Perfluorooctanesulfonamidoacetic Acid (N-MeFOSAA)	--	<2.0	<2.0	<2.1	<2.0	<2.1	<2.1
N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA)	--	<3.9	<3.9	<4.2	<3.9	<4.1	<4.1
Perfluorooctane Sulfonic Acid (**PFOS**)	**12**	**4.8**	**140**	**91**	**20**	**30**	**39**
Perfluorooctane Sulfonic Acid (**PFOS**-LN)	--	<2.0	**100**	**63**	**16**	**20**	**24**
Perfluorooctane Sulfonic Acid (**PFOS**-BR)	--	**4.1**	**34**	**28**	**4.0**	**9.1**	**14**
Perfluoroundecanoic Acid (PFUnDA)	--	<2.0	<2.0	<2.1	<2.0	<2.1	<2.1
Perfluorononane Sulfonic Acid (PFNS)	--	<2.0	<2.0	<2.1	<2.0	<2.1	<2.1
Perfluorododecanoic Acid (PFDoDA)	--	<2.0	<2.0	<2.1	<2.0	<2.1	<2.1
Perfluorodecane Sulfonic Acid (PFDS)	--	<2.0	<2.0	<2.1	<2.0	<2.1	<2.1
Perfluorotridecanoic Acid (PFTrDA)	--	<2.0	<2.0	<2.1	<2.0	<2.1	<2.1
Perfluorooctane Sulfonamide (FOSA)	--	<2.0	<2.0	<2.1	<2.0	<2.1	<2.1
Perfluorotetradecanoic Acid (PFTeDA)	--	<3.9	<3.9	<4.2	<3.9	<4.1	<4.1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	--	<2.0	<2.0	<2.1	<2.0	<2.1	<2.1
9-chlorohexadecafluoro-3-oxanone1-sulfonic acid (9Cl-PF3ONS)	--	<2.0	<2.0	<2.1	<2.0	<2.1	<2.1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	--	<2.0	<2.0	<2.1	<2.0	<2.1	<2.1
Hexafluoropropylene oxide dimer (HFPO-DA)	--	<3.9	<3.9	<11	<3.9	<4.1	<10
Total Per-and Polyfluoroalkyl Substances	--	**86.8**	**158.1**	**123.0**	**22.5**	**65.7**	**94.4**

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) B - Compound also found in associated method blank.
9) I - Matrix interference with internal standard.
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12) Light gray header is most recent sampling event result.
13) QA/QC Samples were either not detected above the reporting limit or below the EGLE Part 201 Groundwater Generic Cleanup Criteria.

TABLE 2
RACER Trust - Coldwater Road Peregrine Facilities
Per-and Polyfluoroalkyl Substances Sampling Results - Storm Water Samples South Portion of Site

Coldwater Road - Storm Water Samples - South Portion of Site

Perfluorinated Compound / Well/Sample ID: / Sample Date:	EGLE Part 201 Generic Groundwater Surface Water Interface Criteria / Rule 57 Surface Water Quality Values	MH-10E (Storm Sewer) 3/19/2020	MH-10E (Storm Sewer) 8/3/2020	MH-10E-W (Storm Sewer) 8/3/2020	MH-10E-W (Storm Sewer) 12/18/2020	MH-10E-W (Storm Sewer) 3/11/2021
Perfluorobutanoic Acid (PFBA)	--	<98	<9.9	<9.8	<10	<10
Perfluoropentanoic Acid (PFPeA)	--	<9.8	**1.4 J**	**1.3 J**	<4.2	<4.1
4:2 Fluorotelomer Sulfonic Acid (4:2 FTSA)	--	<9.8	<2.0	<2.0	<2.1	<2.1
Perfluorohexanoic Acid (PFHxA)	--	<9.8	**2.9**	**2.2**	<2.1	<2.1
Perfluorobutane Sulfonic Acid (PFBS)	--	<9.8	**1.9 J**	**4.0**	**4.7**	<2.1
Perfluoroheptanoic Acid (PFHpA)	--	<9.8	**2.0**	**1.6 J**	<2.1	<2.1
Perfluoropentane Sulfonic Acid (PFPeS)	--	<9.8	<2.0	<2.0	<2.1	<2.1
6:2 Fluorotelomer Sulfonic Acid (6:2 FTSA)	--	<9.8	<2.0	<2.0	<2.1	<2.1
Perfluorooctanoic Acid (**PFOA**)	**12,000**	<9.8	**4.8**	**5.8**	<2.1	<2.1
Perfluorohexane Sulfonic Acid (PFHxS)	--	<9.8	<2.0	**2.2**	<2.1	<2.1
Perfluorohexane Sulfonic Acid - LN (PFHxS-LN)	--	<9.8	<2.0	**1.7 J**	<2.1	<2.1
Perfluorohexane Sulfonic Acid - BR (PFHxS-BR)	--	<9.8	<2.0	<2.0	<2.1	<2.1
Perfluorononanoic Acid (PFNA)	--	<9.8	<2.0	<2.0	<2.1	<2.1
8:2 Fluorotelomer Sulfonic Acid (8:2 FTSA)	--	<9.8	<2.0	<2.0	<2.1	<2.1
Perfluoroheptane Sulfonic Acid (PFHpS)	--	<9.8	<2.0	<2.0	<2.1	<2.1
Perfluorodecanoic Acid (PFDA)	--	<9.8	<2.0	<2.0	<2.1	<2.1
N-methyl Perfluorooctanesulfonamidoacetic Acid (N-MeFOSAA)	--	<9.8	<2.0	<2.0	<2.1	<2.1
N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA)	--	<9.8	<3.9	<3.9	<4.2	<4.1
Perfluorooctane Sulfonic Acid (**PFOS**)	**12**	**70**	**61**	**39**	**10**	**3.2**
Perfluorooctane Sulfonic Acid (**PFOS**-LN)	--	**49**	**44**	**24**	**3.5**	<2.1
Perfluorooctane Sulfonic Acid (**PFOS**-BR)	--	**19**	**14**	**12**	**5.9**	<2.1
Perfluoroundecanoic Acid (PFUnDA)	--	<9.8	<2.0	<2.0	<2.1	<2.1
Perfluorononane Sulfonic Acid (PFNS)	--	<9.8	<2.0	<2.0	<2.1	<2.1
Perfluorododecanoic Acid (PFDoDA)	--	<9.8	<2.0	<2.0	<2.1	<2.1
Perfluorodecane Sulfonic Acid (PFDS)	--	<9.8	<2.0	<2.0	<2.1	<2.1
Perfluorotridecanoic Acid (PFTrDA)	--	<9.8	<2.0	<2.0	<2.1	<2.1
Perfluorooctane Sulfonamide (FOSA)	--	<9.8	<2.0	<2.0	<2.1	<2.1
Perfluorotetradecanoic Acid (PFTeDA)	--	<9.8	<3.9	<3.9	<4.2	<4.1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	--	<9.8	<2.0	<2.0	<2.1	<2.1
9-chlorohexadecafluoro-3-oxanone1-sulfonic acid (9Cl-PF3ONS)	--	<9.8	<2.0	<2.0	<2.1	<2.1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	--	<9.8	<2.0	<2.0	<2.1	<2.1
Hexafluoropropylene oxide dimer (HFPO-DA)	--	<9.8	<2.0	<2.0	<2.0	<2.1
Total Per-and Polyfluoroalkyl Substances	--	**70.0**	**74.0**	**56.1**	**14.7**	**3.2**

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.
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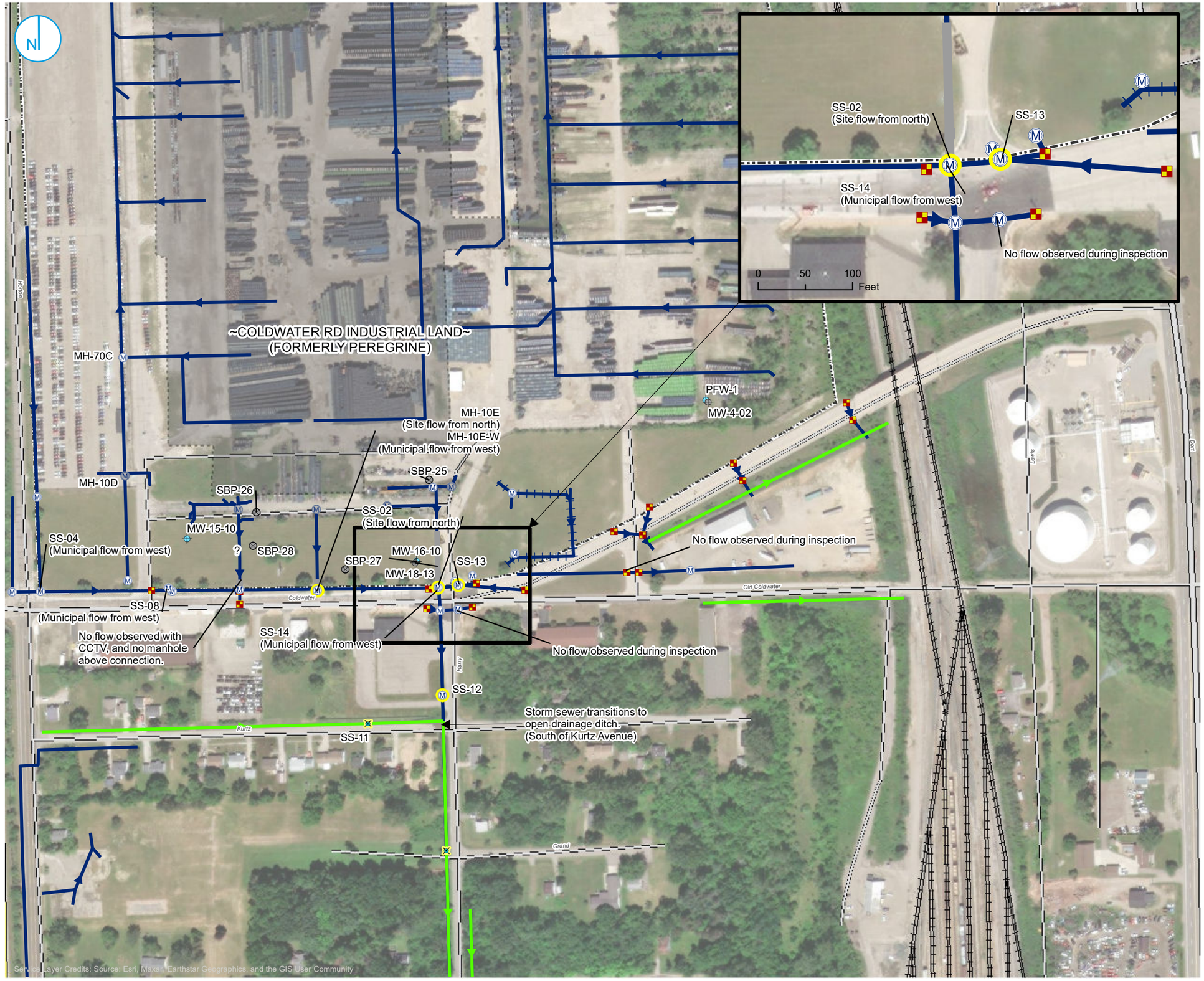
12) Light gray header is most recent sampling event result.
13) QA/QC Samples were either not detected above the reporting limit or below the EGLE Part 201 Groundwater Generic Cleanup Criteria.

FIGURES

I:\Racer-Trust.1088190\GIS\Coldwater_Road\MXD\2022_PFAS_OMM\Figure 1 - Genesee Storm Sewers Horton to N Dort Hwy_rev07132022.mxd



- MONITORING WELL / PIEZOMETER
- ABANDONED WELL
- BORING
- PROPOSED STORM SEWER SAMPLE
- PROPOSED SURFACE WATER SAMPLE
- ABANDONED MANHOLE
- STORM SEWER DRAIN
- STORM SEWER MANHOLE
- PIPE PLUG
- SURFACE WATER
- DRAINAGE DITCH
- STORM SEWER
- STORM SEWER NO LONGER IN USE
- FORMER BUILDING
- PROPERTY BOUNDARY

0 125 250 Feet

GENESEE STORM SEWERS (HORTON ST TO N DORT HWY)

RACER TRUST
COLDWATER ROAD
FLINT, MICHIGAN

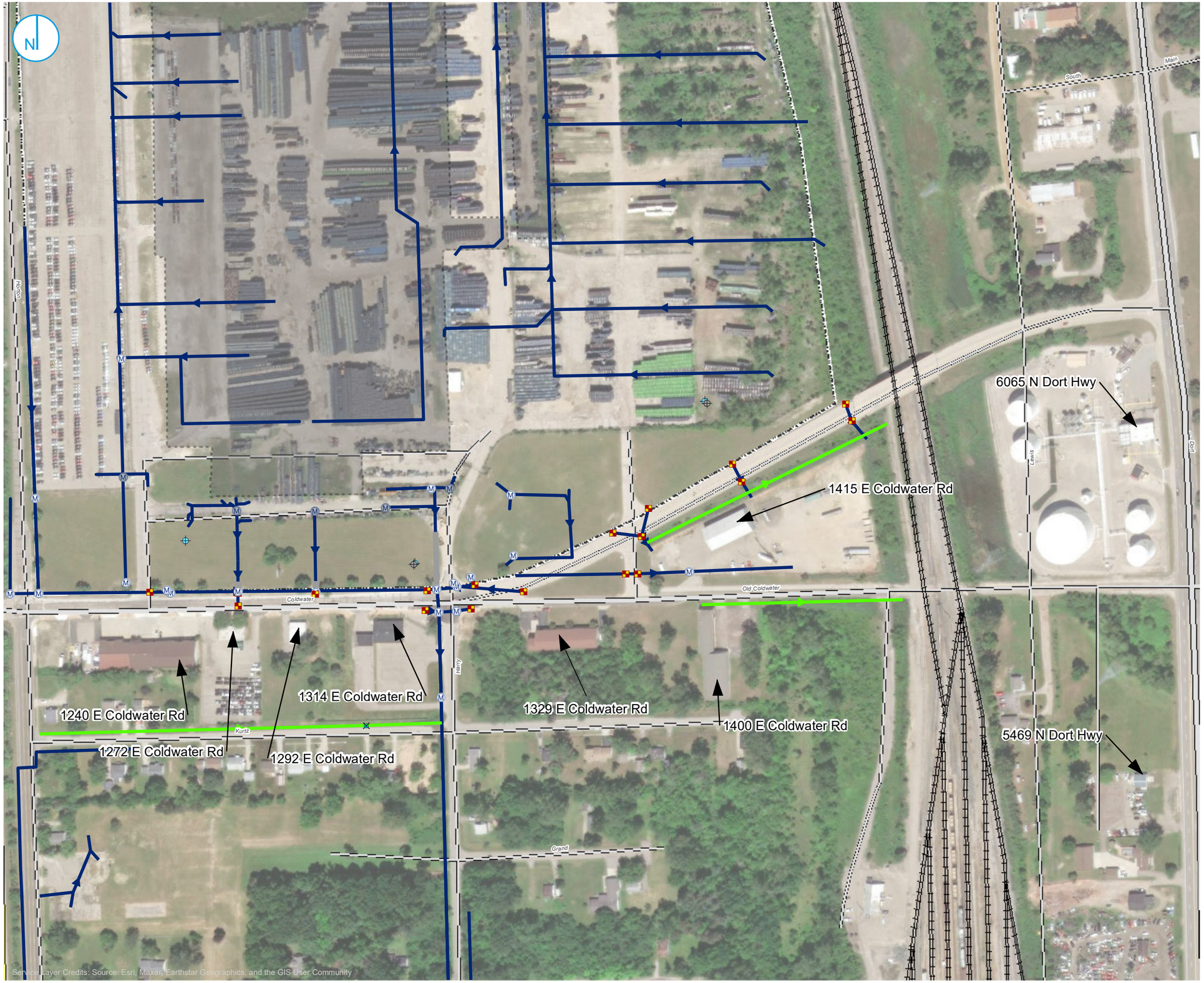
FIGURE 01

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.
A RAMBOLL COMPANY

RAMBOLL

PROJECT: 75178 | DATED: 7/13/2022 | DESIGNER: MONETANT

I:\Racer-Trust.1088190\GIS\Coldwater_Road\MXD\2022_PFAS_OMMFigure 1 - Genesee Storm Sewers Addresses from Horton to N Dort Hwy.mxd



- MONITORING WELL / PIEZOMETER
- ABANDONED WELL
- ABANDONED MANHOLE
- STORM SEWER DRAIN
- STORM SEWER MANHOLE
- PIPE PLUG
- SURFACE WATER
- DRAINAGE DITCH
- STORM SEWER
- FORMER BUILDING
- PROPERTY BOUNDARY

0 125 250 Feet

CITY DIRECTORY PROPERTY LOCATIONS (HORTON ST TO N DORT HWY)

RACER TRUST
COLDWATER ROAD
FLINT, MICHIGAN

FIGURE 02

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.
A RAMBOLL COMPANY

RAMBOLL

PROJECT: 75178 | DATED: 7/13/2022 | DESIGNER: MONETANT

APPENDIX A
CITY DIRECTORY

Appendix A
RACER Trust - Coldwater Road
City Directory Along Coldwater Road
Horton Street to Dort Highway

Coldwater Road Address Between Horton Street and Dort Hwy								
Year of City Directories	6065 N Dort Hwy	1415 E Coldwater Rd	1240 E Coldwater Rd	1272 E Coldwater Rd	1292 E Coldwater Rd	1314 E Coldwater Rd	1400 E Coldwater Rd	5469 N Dort Hwy
1960	--	--	--	UAW- CIO Tern-stedt Local No 326	--	--	Hayes Roofing & Siding	Western Chuck Wagon Resturant
1965	Marathon Oil Co	--	--	--	--	--	--	The Stables Tavern
1970	Marathon Oil Co	--	--	Fisher Body Coldwater Rd Local No 326 (UAW)	--	--	--	The Stables Tavern
1975	--	--	--	--	Fire-Lighter Studio Mantel & Fireplace Fixtures	--	--	The Stables Tavern
1980	Marathon Oil Co	--	--	--	--	Auto Hardware Federal Credit Union	--	The Stables Resturant
1985	Marathon Petroleum Co (Flint Terminal)	--	Vic Bond Sales Elec & Plmb Sup	Fisher Body Coldwater Rd Local No 326 (UAW)	Fire-Lighter Studio Mantel & Fireplace Fixtures	Auto Hardware Federal Credit Union	Taylor Steel Corp Steel Distr Whse	The Stables Resturant
1992	Marathon Petroleum Co	--	Vic Bond Sales	United Automobile Workers	Fire Lighter Studio	Michigan Federal Credit Union	Taylor Steel Co	--
1995	--	--	Vic Bond Sales	United Automobile Workers America	Fire Lighter Studio	Michigan Federal Credit Union	Taylor Steel Co	--
2000	Marathon Oil Co	--	Bond Vic Sales; Vic Bond Sales Plumbing Electrical Heating Cabinetry	--	Fire Lighter Studio	Michigan Federal Credit Union	Taylor Steel Co	--
2005	Marathon Ashland Petroleum	--	Vic Bond Sales	--	Fire Lighter Studio	Michigan Federal Credit Union	Mighty Lock	--
2010	Marathon Oil Co	Infra Source Underground SVC	Vic Bond Sales Inc	--	--	Michigan Federal Credit Union	Taylor Steel Co	--
2014	--	Best Choice Tire & Service LLC	Vic Bond Sales Inc	--	--	Tripointe Community Credit Union	Taylor Steel Company	--
2017	Marathon Oil Company	--	--	DMH Titling LLC	--	Tripointe Community Credit Union	Taylor Steel Company	--

APPENDIX B
ANALYTICAL LABORATORY REPORT

Analytical Laboratory Report

Report ID: S34919.01(01)
Generated on 05/06/2022

Report to

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

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

Addtional 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 Laverty (johnlaverty@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S34919.01-S34919.05
Project: RACER Cold Water Road
Collected Date(s): 04/14/2022
Submitted Date/Time: 04/14/2022 13:05
Sampled by: Kevin Schneider
P.O. #: 1940002628 (TASK 31)

Table of Contents

Maya Murshak
Technical Director

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.
Methods may be modified for improved performance.
Results reported on a dry weight basis where applicable.
'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).
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, acrylonitrile, and 2-chlorovinylethyl 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.

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
PFTrDA	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 (5 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S34919.01	Field Blank - 041422	Liquid	04/14/22 09:25
S34919.02	SS-11	Liquid	04/14/22 09:30
S34919.03	SS-12	Liquid	04/14/22 09:52

Analytical Laboratory Report

Lab Sample ID: S34919.01
Sample Tag: Field Blank - 041422
Collected Date/Time: 04/14/2022 09:25
Matrix: Liquid
COC Reference: 107578

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	4.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	11.69/6.90/10	ASTMD7979-19M	04/21/22 12:00	KCV	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 04/22/22 09:43, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	10	10	ng/L	2.09	375-22-4	
PFPeA*	Not detected	4.2	1.0	ng/L	2.09	2706-90-3	
4:2 FTSA*	Not detected	2.1	1.7	ng/L	2.09	757124-72-4	
PFHxA*	Not detected	2.1	1.5	ng/L	2.09	307-24-4	
PFBS*	Not detected	2.1	1.5	ng/L	2.09	375-73-5	
PFHpA*	Not detected	2.1	1.5	ng/L	2.09	375-85-9	
PFPeS*	Not detected	2.1	1.9	ng/L	2.09	2706-91-4	
6:2 FTSA*	Not detected	2.1	2.1	ng/L	2.09	27619-97-2	
PFOA*	Not detected	2.1	1.7	ng/L	2.09	335-67-1	
PFHxS*	Not detected	2.1	1.7	ng/L	2.09	355-46-4	
PFHxS-LN*	Not detected	2.1	1.7	ng/L	2.09	355-46-4-LN	
PFHxS-BR*	Not detected	2.1	1.7	ng/L	2.09	355-46-4-BR	
PFNA*	Not detected	2.1	1.9	ng/L	2.09	375-95-1	
8:2 FTSA*	Not detected	2.1	1.0	ng/L	2.09	39108-34-4	
PFHpS*	Not detected	2.1	2.1	ng/L	2.09	375-92-8	
PFDA*	Not detected	2.1	2.1	ng/L	2.09	335-76-2	
N-MeFOSAA*	Not detected	2.1	2.1	ng/L	2.09	2355-31-9	
EtFOSAA*	Not detected	4.2	2.1	ng/L	2.09	2991-50-6	
PFOS*	Not detected	2.1	2.0	ng/L	2.09	1763-23-1	
PFOS-LN*	Not detected	2.1	2.0	ng/L	2.09	1763-23-1-LN	
PFOS-BR*	Not detected	2.1	2.0	ng/L	2.09	1763-23-1-BR	
PFUnDA*	Not detected	2.1	1.5	ng/L	2.09	2058-94-8	
PFNS*	Not detected	2.1	1.5	ng/L	2.09	68259-12-1	
PFDoDA*	Not detected	2.1	1.7	ng/L	2.09	307-55-1	
PFDS*	Not detected	2.1	1.5	ng/L	2.09	335-77-3	
PFTrDA*	Not detected	2.1	1.3	ng/L	2.09	72629-94-8	
FOSA*	Not detected	2.1	1.9	ng/L	2.09	754-91-6	
PFTeDA*	Not detected	4.2	1.9	ng/L	2.09	376-06-7	
11Cl-PF3OUdS*	Not detected	2.1	1.9	ng/L	2.09	763051-92-9	
9Cl-PF3ONS*	Not detected	2.1	1.5	ng/L	2.09	756426-58-1	
ADONA*	Not detected	2.1	2.1	ng/L	2.09	919005-14-4	
HFPO-DA*	Not detected	4.2	2.1	ng/L	2.09	13252-13-6	

Analytical Laboratory Report

Lab Sample ID: S34919.02
Sample Tag: SS-11
Collected Date/Time: 04/14/2022 09:30
Matrix: Liquid
COC Reference: 107578

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	4.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	12.76/7.11/11	ASTMD7979-19M	04/21/22 12:00	KCV	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 04/22/22 00:16, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	9.8	9.8	ng/L	1.95	375-22-4	
PFPeA*	Not detected	3.9	0.98	ng/L	1.95	2706-90-3	
4:2 FTSA*	Not detected	2.0	1.6	ng/L	1.95	757124-72-4	
PFHxA*	Not detected	2.0	1.4	ng/L	1.95	307-24-4	
PFBS*	82	2.0	1.4	ng/L	1.95	375-73-5	
PFHpA*	Not detected	2.0	1.4	ng/L	1.95	375-85-9	
PFPeS*	Not detected	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	
PFOA*	Not detected	2.0	1.6	ng/L	1.95	335-67-1	
PFHxS*	Not detected	2.0	1.6	ng/L	1.95	355-46-4	
PFHxS-LN*	Not detected	2.0	1.6	ng/L	1.95	355-46-4-LN	
PFHxS-BR*	Not detected	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*	Not detected	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*	4.8	2.0	1.9	ng/L	1.95	1763-23-1	
PFOS-LN*	Not detected	2.0	1.9	ng/L	1.95	1763-23-1-LN	
PFOS-BR*	4.1	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*	Not detected	2.0	1.4	ng/L	1.95	68259-12-1	
PFDoDA*	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	
PFTrDA*	Not detected	2.0	1.2	ng/L	1.95	72629-94-8	
FOSA*	Not detected	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	3.9	2.0	ng/L	1.95	13252-13-6	

Analytical Laboratory Report

Lab Sample ID: S34919.03
Sample Tag: SS-12
Collected Date/Time: 04/14/2022 09:52
Matrix: Liquid
COC Reference: 107578

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	4.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	12.67/7.04/11	ASTMD7979-19M	04/21/22 12:00	KCV	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 04/22/22 00:36, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	9.8	9.8	ng/L	1.95	375-22-4	
PFPeA*	2.1	3.9	0.98	ng/L	1.95	2706-90-3	J
4:2 FTSA*	Not detected	2.0	1.6	ng/L	1.95	757124-72-4	
PFHxA*	3.3	2.0	1.4	ng/L	1.95	307-24-4	
PFBS*	2.0	2.0	1.4	ng/L	1.95	375-73-5	
PFHpA*	2.1	2.0	1.4	ng/L	1.95	375-85-9	
PFPeS*	Not detected	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	
PFOA*	5.8	2.0	1.6	ng/L	1.95	335-67-1	
PFHxS*	2.8	2.0	1.6	ng/L	1.95	355-46-4	
PFHxS-LN*	1.7	2.0	1.6	ng/L	1.95	355-46-4-LN	J
PFHxS-BR*	Not detected	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*	Not detected	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*	140	2.0	1.9	ng/L	1.95	1763-23-1	
PFOS-LN*	100	2.0	1.9	ng/L	1.95	1763-23-1-LN	
PFOS-BR*	34	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*	Not detected	2.0	1.4	ng/L	1.95	68259-12-1	
PFDoDA*	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	
PFTrDA*	Not detected	2.0	1.2	ng/L	1.95	72629-94-8	
FOSA*	Not detected	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	3.9	2.0	ng/L	1.95	13252-13-6	

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

Merit Laboratories Login Checklist

Lab Set ID: S34919
Client: OBG02 (Ramboll Americas)
Project: RACER Cold Water Road
Submitted: 04/14/2022 13:05 Login User: JRM

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.	[X] Yes	[ ] No	[ ] N/A	Samples are received at 4C +/- 2C Thermometer #	IR 4.7
02.	[X] Yes	[ ] No	[ ] N/A	Received on ice/ cooling process begun	
03.	[ ] Yes	[X] No	[ ] N/A	Samples shipped	
04.	[ ] Yes	[X] No	[ ] N/A	Samples left in 24 hr. drop box	
05.	[ ] Yes	[ ] No	[X] N/A	Are there custody seals/tape or is the drop box locked	
Chain of Custody					
06.	[X] Yes	[ ] No	[ ] N/A	COC adequately filled out	
07.	[X] Yes	[ ] No	[ ] N/A	COC signed and relinquished to the lab	
08.	[X] Yes	[ ] No	[ ] N/A	Sample tag on bottles match COC	
09.	[ ] Yes	[X] No	[ ] N/A	Subcontracting needed? Subcontacted to:	
Preservation					
10.	[X] Yes	[ ] No	[ ] N/A	Do sample have correct chemical preservation	
11.	[ ] Yes	[ ] No	[X] N/A	Completed pH checks on preserved samples? (no VOAs)	
12.	[ ] Yes	[X] No	[ ] N/A	Did any samples need to be preserved in the lab?	
Bottle Conditions					
13.	[X] Yes	[ ] No	[ ] N/A	All bottles intact	
14.	[X] Yes	[ ] No	[ ] N/A	Appropriate analytical bottles are used	
15.	[X] Yes	[ ] No	[ ] N/A	Merit bottles used	
16.	[X] Yes	[ ] No	[ ] N/A	Sufficient sample volume received	
17.	[ ] Yes	[X] No	[ ] N/A	Samples require laboratory filtration	
18.	[X] Yes	[ ] No	[ ] N/A	Samples submitted within holding time	
19.	[ ] Yes	[ ] No	[X] N/A	Do water VOC or TOX bottles contain headspace	

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

Client Review By: _____ Date: _____

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

C.O.C. PAGE # 1 OF 1

107578

CHAIN OF CUSTODY RECORD

REPORT 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 FAX NO.: P.O. NO.: 1940002628 Task 31
E-MAIL ADDRESS: Clifford.Yantz@Ramboll.com; Kevin.Schneider@Ramboll.com QUOTE NO.:

INVOICE TO

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

PROJECT NO./NAME: RACER Coldwater Road
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Kevin Schneider

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

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

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

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

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

MERIT LAB NO. (FOR LAB USE ONLY)	YEAR DATE	YEAR TIME	SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives: NONE	HCl	HNO_3	H_2SO_4	NaOH	MeOH	OTHER	PFAS (1977)	PFAS TOP	Special Instructions
34919.01	4/14/22	925	Field Blank - 041422	L	1	1							X		Low Level
.02		930	SS-11	L	3	3							X		Reporting limit
.03		952	SS-12	L	3	3							X		with estimated
.04		1140	SW-12	L	6	3								X	values
.05		1150	SW-14	L	6	3								X	

KGS

RELINQUISHED BY: SIGNATURE/ORGANIZATION	X Sampler	DATE 4/14/22	TIME 1155
RECEIVED BY: SIGNATURE/ORGANIZATION		DATE 4/14/22	TIME 11:55
RELINQUISHED BY: SIGNATURE/ORGANIZATION		DATE 4/14/22	TIME 13:05
RECEIVED BY: SIGNATURE/ORGANIZATION	Johanna Murray	DATE 4/14/22	TIME 1305

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

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

NOTES: TEMP. ON ARRIVAL 4.7

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

Rev. 5.18.12

Quality Control Report

Report ID: QC-S34919-01
Generated on 05/06/2022

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): S34919.01-S34919.05
Project: RACER Cold Water Road
Submitted Date/Time: 04/14/2022 13:05
Sampled by: Kevin Schneider
P.O. #: 1940002628 (TASK 31)

QC Report Sections

Report Flag Descriptions

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

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

Barbara Ball

Barbara Ball
Quality Assurance Manager

QC Report - Analysis Summary

Lab Sample ID: S34919.01
Sample Tag: Field Blank - 041422
Collected Date/Time: 04/14/2022 09:25
Matrix: Liquid
COC Reference: 107578

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
28 PFAs	ASTMD7979-19M	04/22/22 09:43	DQ220421B	PF220421W1	Yes	BLK/LCS/LCSD/MS/DU

QC Report - Analysis Summary

Lab Sample ID: S34919.02
Sample Tag: SS-11
Collected Date/Time: 04/14/2022 09:30
Matrix: Liquid
COC Reference: 107578

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
28 PFAs	ASTMD7979-19M	04/22/22 00:16	DQ220421B	PF220421W1	Yes	BLK/LCS/LCSD/MS/DU

QC Report - Analysis Summary

Lab Sample ID: S34919.03
Sample Tag: SS-12
Collected Date/Time: 04/14/2022 09:52
Matrix: Liquid
COC Reference: 107578

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
28 PFAs	ASTMD7979-19M	04/22/22 00:36	DQ220421B	PF220421W1	Yes	BLK/LCS/LCSD/MS/DU

Lab Sample ID: S34919.04

Sample Tag: SW-12

Collected Date/Time: 04/14/2022 11:40

Matrix: Liquid

COC Reference: 107578

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
28 PFAs TOP ASSAY	ASTMD7979-19M	05/05/22 10:49	AK220505TOP	PT220503W1	Yes	BLK
28 PFAs	ASTMD7979-19M	04/22/22 00:55	DQ220421B	PF220421W1	Yes	BLK/LCS/LCSD/MS/DU

Lab Sample ID: S34919.05

Sample Tag: SW-14

Collected Date/Time: 04/14/2022 11:50

Matrix: Liquid

COC Reference: 107578

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
28 PFAs TOP ASSAY	ASTMD7979-19M	05/05/22 11:09	AK220505TOP	PT220503W1	Yes	BLK
28 PFAs	ASTMD7979-19M	04/22/22 01:15	DQ220421B	PF220421W1	Yes	BLK/LCS/LCSD/MS/DU

QC Report - Prep Batch Summary

Organics - Volatiles, Prep Batch ID: PF220421W1

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

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S34919.01	28 PFAs	ASTMD7979-19M	04/22/22 09:43	DQ220421B
S34919.02	28 PFAs	ASTMD7979-19M	04/22/22 00:16	DQ220421B
S34919.03	28 PFAs	ASTMD7979-19M	04/22/22 00:36	DQ220421B
S34919.04	28 PFAs	ASTMD7979-19M	04/22/22 00:55	DQ220421B
S34919.05	28 PFAs	ASTMD7979-19M	04/22/22 01:15	DQ220421B

Organics - Volatiles, Prep Batch ID: PT220503W1

Surrogates: Yes, QC Types: BLK

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S34919.04	28 PFAs TOP ASSAY	ASTMD7979-19M	05/05/22 10:49	AK220505TOP
S34919.05	28 PFAs TOP ASSAY	ASTMD7979-19M	05/05/22 11:09	AK220505TOP

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S34919.01

Sample Tag: Field Blank - 041422

Collected Date/Time: 04/14/2022 09:25

Matrix: Liquid

COC Reference: 107578

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: DQ220421B, Run Date: 04/22/2022 09:43, Matrix: WW, Dilution: 2.09

Internal Standard	Flags	**%Rec**	LCL	UCL
M2-4:2FTSA		**89.1**	50.0	150.0
M2-6:2FTSA		**93.0**	50.0	150.0
M2-8:2FTSA		**84.2**	50.0	150.0
M2PFTeDA		**154.9**	12.0	218.0
M3PFBS		**107.4**	50.0	150.0
M3PFHxS		**100.6**	50.0	150.0
M4PFHpA		**117.1**	50.0	150.0
M5PFHxA		**108.1**	50.0	150.0
M5PFPeA		**107.7**	50.0	150.0
M6PFDA		**119.4**	50.0	150.0
M7PFUnDA		**117.8**	50.0	150.0
M8FOSA		**101.7**	50.0	150.0
M8PFOA		**102.5**	50.0	150.0
M8PFOS		**107.6**	50.0	150.0
M9-PFNA		**114.2**	50.0	150.0
MPFBA		**111.9**	50.0	150.0
MPFDoDA		**120.9**	50.0	150.0
d3N-MeFOSAA		**87.7**	50.0	150.0
d5EtFOSAA		**113.9**	50.0	150.0
MHFPO-DA		**122.8**	50.0	150.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S34919.02

Sample Tag: SS-11

Collected Date/Time: 04/14/2022 09:30

Matrix: Liquid

COC Reference: 107578

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: DQ220421B, Run Date: 04/22/2022 00:16, Matrix: WW, Dilution: 1.95

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		**130.8**	50.0	150.0
M2-6:2FTSA		**127.5**	50.0	150.0
M2-8:2FTSA		**112.8**	50.0	150.0
M2PFTeDA		**134.4**	12.0	218.0
M3PFBS		**130.3**	50.0	150.0
M3PFHxS		**124.2**	50.0	150.0
M4PFHpA		**138.1**	50.0	150.0
M5PFHxA		**133.8**	50.0	150.0
M5PFPeA		**131.6**	50.0	150.0
M6PFDA		**126.2**	50.0	150.0
M7PFUnDA		**139.1**	50.0	150.0
M8FOSA		**115.3**	50.0	150.0
M8PFOA		**147.9**	50.0	150.0
M8PFOS		**122.9**	50.0	150.0
M9-PFNA		**128.7**	50.0	150.0
MPFBA		**129.9**	50.0	150.0
MPFDoDA		**141.6**	50.0	150.0
d3N-MeFOSAA		**122.0**	50.0	150.0
d5EtFOSAA		**118.1**	50.0	150.0
MHFPO-DA		**124.1**	50.0	150.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S34919.03

Sample Tag: SS-12

Collected Date/Time: 04/14/2022 09:52

Matrix: Liquid

COC Reference: 107578

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: DQ220421B, Run Date: 04/22/2022 00:36, Matrix: WW, Dilution: 1.95

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		**142.8**	50.0	150.0
M2-6:2FTSA		**137.1**	50.0	150.0
M2-8:2FTSA		**110.8**	50.0	150.0
M2PFTeDA		**179.8**	12.0	218.0
M3PFBS		**131.2**	50.0	150.0
M3PFHxS		**114.2**	50.0	150.0
M4PFHpA		**140.7**	50.0	150.0
M5PFHxA		**139.4**	50.0	150.0
M5PFPeA		**129.0**	50.0	150.0
M6PFDA		**122.9**	50.0	150.0
M7PFUnDA		**130.0**	50.0	150.0
M8FOSA		**116.0**	50.0	150.0
M8PFOA		**148.0**	50.0	150.0
M8PFOS		**128.2**	50.0	150.0
M9-PFNA		**125.9**	50.0	150.0
MPFBA		**130.1**	50.0	150.0
MPFDoDA		**140.3**	50.0	150.0
d3N-MeFOSAA		**123.5**	50.0	150.0
d5EtFOSAA		**113.8**	50.0	150.0
MHFPO-DA		**131.7**	50.0	150.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S34919.04

Sample Tag: SW-12

Collected Date/Time: 04/14/2022 11:40

Matrix: Liquid

COC Reference: 107578

Organics - Volatiles, Analysis: 28 PFAs TOP ASSAY

Run in Batch: AK220505TOP, Run Date: 05/05/2022 10:49, Matrix: WW, Dilution: 6

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		**71.6**	50.0	150.0
M2-6:2FTSA		**80.0**	50.0	150.0
M2-8:2FTSA		**90.2**	50.0	150.0
M2PFTeDA		**116.5**	12.0	218.0
M3PFBS		**84.5**	50.0	150.0
M3PFHxS		**81.2**	50.0	150.0
M4PFHpA		**97.1**	50.0	150.0
M5PFHxA		**90.2**	50.0	150.0
M5PFPeA		**85.7**	50.0	150.0
M6PFDA		**85.6**	50.0	150.0
M7PFUnDA		**77.9**	50.0	150.0
M8FOSA		**81.9**	50.0	150.0
M8PFOA		**82.3**	50.0	150.0
M8PFOS		**76.5**	50.0	150.0
M9-PFNA		**85.2**	50.0	150.0
MPFBA		**86.4**	50.0	150.0
MPFDoDA		**87.4**	50.0	150.0
d3N-MeFOSAA		**77.1**	50.0	150.0
d5EtFOSAA		**90.8**	50.0	150.0
MHFPO-DA		**86.8**	50.0	150.0

QC Report - Internal Standards per Lab Sample

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: DQ220421B, Run Date: 04/22/2022 00:55, Matrix: WW, Dilution: 2.04

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		**128.0**	50.0	150.0
M2-6:2FTSA		**139.1**	50.0	150.0
M2-8:2FTSA		**119.4**	50.0	150.0
M2PFTeDA		**149.5**	12.0	218.0
M3PFBS		**120.3**	50.0	150.0
M3PFHxS		**123.4**	50.0	150.0
M4PFHpA		**134.2**	50.0	150.0
M5PFHxA		**120.6**	50.0	150.0
M5PFPeA		**130.5**	50.0	150.0
M6PFDA		**120.4**	50.0	150.0
M7PFUnDA		**130.6**	50.0	150.0
M8FOSA		**119.0**	50.0	150.0
M8PFOA		**143.9**	50.0	150.0
M8PFOS		**127.8**	50.0	150.0
M9-PFNA		**139.0**	50.0	150.0
MPFBA		**117.3**	50.0	150.0
MPFDoDA		**136.7**	50.0	150.0
d3N-MeFOSAA		**142.0**	50.0	150.0
d5EtFOSAA		**123.3**	50.0	150.0
MHFPO-DA		**120.3**	50.0	150.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S34919.05

Sample Tag: SW-14

Collected Date/Time: 04/14/2022 11:50

Matrix: Liquid

COC Reference: 107578

Organics - Volatiles, Analysis: 28 PFAs TOP ASSAY

Run in Batch: AK220505TOP, Run Date: 05/05/2022 11:09, Matrix: WW, Dilution: 6

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		**82.1**	50.0	150.0
M2-6:2FTSA		**88.5**	50.0	150.0
M2-8:2FTSA		**101.9**	50.0	150.0
M2PFTeDA		**110.6**	12.0	218.0
M3PFBS		**88.8**	50.0	150.0
M3PFHxS		**85.6**	50.0	150.0
M4PFHpA		**96.4**	50.0	150.0
M5PFHxA		**84.1**	50.0	150.0
M5PFPeA		**83.5**	50.0	150.0
M6PFDA		**80.7**	50.0	150.0
M7PFUnDA		**79.5**	50.0	150.0
M8FOSA		**88.3**	50.0	150.0
M8PFOA		**85.6**	50.0	150.0
M8PFOS		**67.4**	50.0	150.0
M9-PFNA		**86.4**	50.0	150.0
MPFBA		**88.3**	50.0	150.0
MPFDoDA		**91.9**	50.0	150.0
d3N-MeFOSAA		**72.8**	50.0	150.0
d5EtFOSAA		**101.8**	50.0	150.0
MHFPO-DA		**91.9**	50.0	150.0

QC Report - Internal Standards per Lab Sample

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: DQ220421B, Run Date: 04/22/2022 01:15, Matrix: WW, Dilution: 1.96

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		**135.0**	50.0	150.0
M2-6:2FTSA		**121.2**	50.0	150.0
M2-8:2FTSA		**110.0**	50.0	150.0
M2PFTeDA		**124.7**	12.0	218.0
M3PFBS		**126.2**	50.0	150.0
M3PFHxS		**122.7**	50.0	150.0
M4PFHpA		**127.7**	50.0	150.0
M5PFHxA		**131.1**	50.0	150.0
M5PFPeA		**126.5**	50.0	150.0
M6PFDA		**131.0**	50.0	150.0
M7PFUnDA		**128.4**	50.0	150.0
M8FOSA		**122.3**	50.0	150.0
M8PFOA		**140.2**	50.0	150.0
M8PFOS		**133.9**	50.0	150.0
M9-PFNA		**130.7**	50.0	150.0
MPFBA		**119.6**	50.0	150.0
MPFDoDA		**134.3**	50.0	150.0
d3N-MeFOSAA		**117.6**	50.0	150.0
d5EtFOSAA		**104.4**	50.0	150.0
MHFPO-DA		**111.9**	50.0	150.0

Organics - Volatiles, Prep Batch ID: PF220421W1

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

Blank (BLK)

Lab Sample ID: DQ220421.BLK220421A

Run in Batch: DQ220421, Run Date: 04/21/2022 15:27, Prep Date: 04/21/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		**101.9**	50.0	150.0
M2-6:2FTSA		**105.0**	50.0	150.0
M2-8:2FTSA		**96.8**	50.0	150.0
M2PFTeDA		**96.2**	12.0	218.0
M3PFBS		**108.6**	50.0	150.0
M3PFHxS		**104.2**	50.0	150.0
M4PFHpA		**117.0**	50.0	150.0
M5PFHxA		**101.4**	50.0	150.0
M5PFPeA		**104.6**	50.0	150.0
M6PFDA		**91.7**	50.0	150.0
M7PFUnDA		**110.7**	50.0	150.0
M8FOSA		**105.4**	50.0	150.0
M8PFOA		**114.8**	50.0	150.0
M8PFOS		**113.8**	50.0	150.0
M9-PFNA		**91.9**	50.0	150.0
MPFBA		**84.8**	50.0	150.0
MPFDoDA		**105.8**	50.0	150.0
d3N-MeFOSAA		**105.0**	50.0	150.0
d5EtFOSAA		**94.8**	50.0	150.0
MHFPO-DA		**110.1**	50.0	150.0

QC Report - Internal Standards per QC Sample

Laboratory Control Sample (LCS)

Lab Sample ID: DQ220421.LCS220421A

Run in Batch: DQ220421, Run Date: 04/21/2022 14:48, Prep Date: 04/21/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
M2-4:2FTSA		**99.9**	50.0	150.0
M2-6:2FTSA		**98.7**	50.0	150.0
M2-8:2FTSA		**96.3**	50.0	150.0
M2PFTeDA		**103.6**	12.0	218.0
M3PFBS		**100.8**	50.0	150.0
M3PFHxS		**99.9**	50.0	150.0
M4PFHpA		**108.2**	50.0	150.0
M5PFHxA		**98.4**	50.0	150.0
M5PFPeA		**102.3**	50.0	150.0
M6PFDA		**101.5**	50.0	150.0
M7PFUnDA		**101.6**	50.0	150.0
M8FOSA		**93.0**	50.0	150.0
M8PFOA		**112.1**	50.0	150.0
M8PFOS		**104.9**	50.0	150.0
M9-PFNA		**96.6**	50.0	150.0
MPFBA		**79.3**	50.0	150.0
MPFDoDA		**100.8**	50.0	150.0
d3N-MeFOSAA		**102.9**	50.0	150.0
d5EtFOSAA		**87.0**	50.0	150.0
MHFPO-DA		**103.2**	50.0	150.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: DQ220421.LCSD220421A, Parent Sample ID: DQ220421.LCS220421A

Run in Batch: DQ220421, Run Date: 04/21/2022 15:08, Prep Date: 04/21/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		**103.4**	50.0	150.0
M2-6:2FTSA		**119.6**	50.0	150.0
M2-8:2FTSA		**100.1**	50.0	150.0
M2PFTeDA		**97.7**	12.0	218.0
M3PFBS		**100.4**	50.0	150.0
M3PFHxS		**97.4**	50.0	150.0
M4PFHpA		**113.3**	50.0	150.0
M5PFHxA		**99.5**	50.0	150.0
M5PFPeA		**103.8**	50.0	150.0
M6PFDA		**95.2**	50.0	150.0
M7PFUnDA		**102.5**	50.0	150.0
M8FOSA		**98.4**	50.0	150.0
M8PFOA		**111.7**	50.0	150.0
M8PFOS		**109.0**	50.0	150.0
M9-PFNA		**99.0**	50.0	150.0
MPFBA		**104.0**	50.0	150.0
MPFDoDA		**105.6**	50.0	150.0
d3N-MeFOSAA		**102.2**	50.0	150.0
d5EtFOSAA		**94.4**	50.0	150.0
MHFPO-DA		**102.3**	50.0	150.0

Matrix Spike (MS)

Lab Sample ID: DQ220421.3505001M, Parent Sample ID: S35050.01

Run in Batch: DQ220421, Run Date: 04/21/2022 17:27, Prep Date: 04/21/2022, Matrix: WW, Dilution: 2.05

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		**112.4**	50.0	150.0
M2-6:2FTSA		**112.4**	50.0	150.0
M2-8:2FTSA		**102.8**	50.0	150.0
M2PFTeDA		**93.8**	12.0	218.0
M3PFBS		**113.6**	50.0	150.0
M3PFHxS		**110.5**	50.0	150.0
M4PFHpA		**125.4**	50.0	150.0
M5PFHxA		**110.4**	50.0	150.0
M5PFPeA		**117.7**	50.0	150.0
M6PFDA		**108.0**	50.0	150.0
M7PFUnDA		**109.1**	50.0	150.0
M8FOSA		**96.7**	50.0	150.0
M8PFOA		**121.9**	50.0	150.0
M8PFOS		**120.9**	50.0	150.0
M9-PFNA		**115.8**	50.0	150.0
MPFBA		**116.9**	50.0	150.0
MPFDoDA		**108.7**	50.0	150.0
d3N-MeFOSAA		**99.8**	50.0	150.0
d5EtFOSAA		**99.3**	50.0	150.0
MHFPO-DA		**104.8**	50.0	150.0

Duplicate (DUP)

Lab Sample ID: DQ220421.3505002D, Parent Sample ID: S35050.02

Run in Batch: DQ220421, Run Date: 04/21/2022 18:06, Prep Date: 04/21/2022, Matrix: WW, Dilution: 2.05

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		**111.0**	50.0	150.0
M2-6:2FTSA		**109.7**	50.0	150.0
M2-8:2FTSA		**93.1**	50.0	150.0
M2PFTeDA		**117.8**	12.0	218.0
M3PFBS		**114.8**	50.0	150.0
M3PFHxS		**109.0**	50.0	150.0
M4PFHpA		**124.0**	50.0	150.0
M5PFHxA		**116.9**	50.0	150.0
M5PFPeA		**113.9**	50.0	150.0
M6PFDA		**107.7**	50.0	150.0
M7PFUnDA		**109.4**	50.0	150.0
M8FOSA		**103.4**	50.0	150.0
M8PFOA		**124.6**	50.0	150.0
M8PFOS		**114.6**	50.0	150.0
M9-PFNA		**112.1**	50.0	150.0
MPFBA		**116.9**	50.0	150.0
MPFDoDA		**113.2**	50.0	150.0
d3N-MeFOSAA		**113.7**	50.0	150.0
d5EtFOSAA		**111.3**	50.0	150.0
MHFPO-DA		**105.3**	50.0	150.0

QC Report - Internal Standards per QC Sample

Organics - Volatiles, Prep Batch ID: PT220503W1

QC Types: BLK

Blank (BLK)

Lab Sample ID: AK220505TOP.BLK220503

Run in Batch: AK220505TOP, Run Date: 05/05/2022 10:30, Prep Date: 05/03/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		**79.6**	50.0	150.0
M2-6:2FTSA		**90.8**	50.0	150.0
M2-8:2FTSA		**96.7**	50.0	150.0
M2PFTeDA		**115.6**	12.0	218.0
M3PFBS		**88.2**	50.0	150.0
M3PFHxS		**92.1**	50.0	150.0
M4PFHpA		**103.6**	50.0	150.0
M5PFHxA		**84.4**	50.0	150.0
M5PFPeA		**88.0**	50.0	150.0
M6PFDA		**93.1**	50.0	150.0
M7PFUnDA		**77.8**	50.0	150.0
M8FOSA		**89.8**	50.0	150.0
M8PFOA		**91.4**	50.0	150.0
M8PFOS		**79.2**	50.0	150.0
M9-PFNA		**89.6**	50.0	150.0
MPFBA		**89.8**	50.0	150.0
MPFDoDA		**84.3**	50.0	150.0
d3N-MeFOSAA		**78.7**	50.0	150.0
d5EtFOSAA		**66.0**	50.0	150.0
MHFPO-DA		**101.2**	50.0	150.0

Organics - Volatiles, Prep Batch ID: PF220421W1

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

Blank (BLK)

Lab Sample ID: DQ220421.BLK220421A

Run in Batch: DQ220421, Run Date: 04/21/2022 15:27, Prep Date: 04/21/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
PFBA		ND	3	ng/l
PFMPA		ND	1	ng/l
FPrPA (3:3 FTCA)		ND	2.5	ng/l
PFPrS		ND	1	ng/l
PFPeA		ND	2	ng/l
PFMBA		ND	1	ng/l
4:2 FTSA		ND	1	ng/l
NFDHA		ND	1	ng/l
PFHxA		ND	1	ng/l
PFBS		ND	1	ng/l
HFPO-DA		ND	1	ng/l
FPePA (5:3 FTCA)		ND	2.5	ng/l
PFEESA		ND	1	ng/l
PFHpA		ND	1	ng/l
PFPeS		ND	1	ng/l
ADONA		ND	1	ng/l
6:2 FTSA		ND	1	ng/l
PFBSA		ND	1	ng/l
PFOA		ND	1	ng/l
PFHxS-BR		ND	1	ng/l
PFHxS		ND	1	ng/l
PFHxS-LN		ND	1	ng/l
FHpPA (7:3 FTCA)		ND	2.5	ng/l
PFNA		ND	1	ng/l
PFECHS		ND	1	ng/l
8:2 FTSA		ND	1	ng/l
PFHpS		ND	1	ng/l
N-MeFOSAA		ND	1	ng/l
PFDA		ND	1	ng/l
PFOS-BR		ND	1	ng/l
EtFOSAA		ND	1	ng/l
PFOS		ND	1	ng/l
PFOS-LN		ND	1	ng/l
PFHxSA		ND	1	ng/l
PFUnDA		ND	1	ng/l
9CL-PF3ONS		ND	1	ng/l
PFNS		ND	1	ng/l
PFDoDA		ND	1	ng/l
PFDS		ND	1	ng/l
PFTrDA		ND	1	ng/l
11CL-PF3OUdS		ND	1	ng/l
FOSA		ND	1	ng/l
PFTeDA		ND	1	ng/l

Organics - Volatiles, Prep Batch ID: PF220421W1 (continued)

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

Laboratory Control Sample (LCS)

Lab Sample ID: DQ220421.LCS220421A

Run in Batch: DQ220421, Run Date: 04/21/2022 14:48, Prep Date: 04/21/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
PFBA		103.8	70.0	130.0
PFMPA		98.6	70.0	130.0
FPrPA (3:3 FTCA)		95.8	70.0	130.0
PFPrS		99.0	70.0	130.0
PFPeA		96.6	70.0	130.0
PFMBA		92.8	70.0	130.0
4:2 FTSA		91.2	70.0	130.0
NFDHA		104.6	70.0	130.0
PFHxA		98.6	70.0	130.0
PFBS		100.6	70.0	130.0
HFPO-DA		82.8	70.0	130.0
FPePA (5:3 FTCA)		104.6	70.0	130.0
PFEESA		105.8	70.0	130.0
PFHpA		91.6	70.0	130.0
PFPeS		98.0	70.0	130.0
ADONA		101.0	70.0	130.0
6:2 FTSA		103.8	70.0	130.0
PFBSA		97.8	70.0	130.0
PFOA		100.4	70.0	130.0
PFHxS		99.2	70.0	130.0
FHpPA (7:3 FTCA)		97.6	70.0	130.0
PFNA		103.4	70.0	130.0
PFECHS		88.2	70.0	130.0
8:2 FTSA		90.0	70.0	130.0
PFHpS		87.8	70.0	130.0
N-MeFOSAA		94.2	70.0	130.0
PFDA		83.2	70.0	130.0
EtFOSAA		101.8	70.0	130.0
PFOS		101.4	70.0	130.0
PFHxSA		94.4	70.0	130.0
PFUnDA		84.2	70.0	130.0
9CL-PF3ONS		99.8	70.0	130.0
PFNS		106.6	70.0	130.0
PFDoDA		107.2	70.0	130.0
PFDS		100.8	70.0	130.0
PFTrDA		116.0	70.0	130.0
11CL-PF3OUdS		103.2	70.0	130.0
FOSA		109.0	70.0	130.0
PFTeDA		96.2	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: DQ220421.LCSD220421A, Parent Sample ID: DQ220421.LCS220421A

Run in Batch: DQ220421, Run Date: 04/21/2022 15:08, Prep Date: 04/21/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
PFBA		99.0	70.0	130.0	4.7	30.0
PFMPA		90.2	70.0	130.0	8.9	30.0

Organics - Volatiles, Prep Batch ID: PF220421W1 (continued)

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

Laboratory Control Sample Duplicate (LCSD) (continued)

Lab Sample ID: DQ220421.LCSD220421A, Parent Sample ID: DQ220421.LCS220421A

Run in Batch: DQ220421, Run Date: 04/21/2022 15:08, Prep Date: 04/21/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
FPrPA (3:3 FTCA)		90.8	70.0	130.0	5.4	30.0
PFPrS		94.6	70.0	130.0	4.5	30.0
PFPeA		94.4	70.0	130.0	2.3	30.0
PFMBA		87.2	70.0	130.0	6.2	30.0
4:2 FTSA		87.8	70.0	130.0	3.8	30.0
NFDHA		93.6	70.0	130.0	11.1	30.0
PFHxA		100.6	70.0	130.0	2.0	30.0
PFBS		96.6	70.0	130.0	4.1	30.0
HFPO-DA		81.2	70.0	130.0	2.0	30.0
FPePA (5:3 FTCA)		114.0	70.0	130.0	8.6	30.0
PFEESA		102.6	70.0	130.0	3.1	30.0
PFHpA		82.8	70.0	130.0	10.1	30.0
PFPeS		95.6	70.0	130.0	2.5	30.0
ADONA		103.6	70.0	130.0	2.5	30.0
6:2 FTSA		82.6	70.0	130.0	22.7	30.0
PFBSA		95.6	70.0	130.0	2.3	30.0
PFOA		105.2	70.0	130.0	4.7	30.0
PFHxS		101.8	70.0	130.0	2.6	30.0
FHpPA (7:3 FTCA)		86.6	70.0	130.0	11.9	30.0
PFNA		99.8	70.0	130.0	3.5	30.0
PFECHS		81.8	70.0	130.0	7.5	30.0
8:2 FTSA		89.4	70.0	130.0	0.7	30.0
PFHpS		85.6	70.0	130.0	2.5	30.0
N-MeFOSAA		85.6	70.0	130.0	9.6	30.0
PFDA		87.6	70.0	130.0	5.2	30.0
EtFOSAA		88.0	70.0	130.0	14.5	30.0
PFOS		95.4	70.0	130.0	6.1	30.0
PFHxSA		95.8	70.0	130.0	1.5	30.0
PFUnDA		86.4	70.0	130.0	2.6	30.0
9CL-PF3ONS		89.2	70.0	130.0	11.2	30.0
PFNS		87.0	70.0	130.0	20.2	30.0
PFDoDA		91.0	70.0	130.0	16.3	30.0
PFDS		96.4	70.0	130.0	4.5	30.0
PFTrDA		99.4	70.0	130.0	15.4	30.0
11CL-PF3OUdS		95.4	70.0	130.0	7.9	30.0
FOSA		96.6	70.0	130.0	12.1	30.0
PFTeDA		93.6	70.0	130.0	2.7	30.0

Matrix Spike (MS)

Lab Sample ID: DQ220421.3505001M, Parent Sample ID: S35050.01

Run in Batch: DQ220421, Run Date: 04/21/2022 17:27, Prep Date: 04/21/2022, Matrix: WW, Dilution: 2.05

Analyte	Flags	% Rec	LCL	UCL
PFBA		97.1	70.0	130.0
PFPeA		97.1	70.0	130.0
4:2 FTSA		91.3	70.0	130.0
PFHxA		106.8	70.0	130.0

Organics - Volatiles, Prep Batch ID: PF220421W1 (continued)

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

Matrix Spike (MS) (continued)

Lab Sample ID: DQ220421.3505001M, Parent Sample ID: S35050.01

Run in Batch: DQ220421, Run Date: 04/21/2022 17:27, Prep Date: 04/21/2022, Matrix: WW, Dilution: 2.05

Analyte	Flags	% Rec	LCL	UCL
PFBS		97.1	70.0	130.0
PFHpA		87.4	70.0	130.0
PFPeS		97.1	70.0	130.0
6:2 FTSA		95.1	70.0	130.0
PFOA		106.8	70.0	130.0
PFHxS		93.2	70.0	130.0
PFNA		97.1	70.0	130.0
8:2 FTSA		97.1	70.0	130.0
PFHpS		88.3	70.0	130.0
PFDA		88.3	70.0	130.0
N-MeFOSAA		106.8	70.0	130.0
EtFOSAA		106.8	70.0	130.0
PFOS		97.1	70.0	130.0
PFUnDA		96.1	70.0	130.0
PFNS		95.1	70.0	130.0
PFDoDA		97.1	70.0	130.0
PFDS		94.2	70.0	130.0
PFTrDA		89.3	70.0	130.0
FOSA		106.8	70.0	130.0
PFTeDA		97.1	70.0	130.0
11CL-PF3OUdS		96.1	70.0	130.0
9CL-PF3ONS		97.1	70.0	130.0
ADONA		116.5	70.0	130.0
HFPO-DA		97.1	70.0	130.0
FHpPA (7:3 FTCA)		97.1	70.0	130.0
FPePA (5:3 FTCA)		97.1	70.0	130.0
FPrPA (3:3 FTCA)		97.1	70.0	130.0
NFDHA		97.1	70.0	130.0
PFBSA		97.1	70.0	130.0
PFECHS		89.3	70.0	130.0
PFEESA		97.1	70.0	130.0
PFHxSA		106.8	70.0	130.0
PFMBA		88.3	70.0	130.0
PFMPA		94.2	70.0	130.0
PFPrS		96.1	70.0	130.0

Duplicate (DUP)

Lab Sample ID: DQ220421.3505002D, Parent Sample ID: S35050.02

Run in Batch: DQ220421, Run Date: 04/21/2022 18:06, Prep Date: 04/21/2022, Matrix: WW, Dilution: 2.05

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

Organics - Volatiles, Prep Batch ID: PF220421W1 (continued)

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

Duplicate (DUP) (continued)

Lab Sample ID: DQ220421.3505002D, Parent Sample ID: S35050.02

Run in Batch: DQ220421, Run Date: 04/21/2022 18:06, Prep Date: 04/21/2022, Matrix: WW, Dilution: 2.05

Analyte	Flags	RPD	RPD CL
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
PFTrDA		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
NFDHA		NC	30.0
PFBSA		NC	30.0
PFECHS		NC	30.0
PFEESA		NC	30.0
PFHxSA		NC	30.0
PFMBA		NC	30.0
PFMPA		NC	30.0
PFPrS		NC	30.0

Organics - Volatiles, Prep Batch ID: PT220503W1

Surrogates: Yes, QC Types: BLK

Blank (BLK)

Lab Sample ID: AK220505TOP.BLK220503

Run in Batch: AK220505TOP, Run Date: 05/05/2022 10:30, Prep Date: 05/03/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
PFBA		ND	5	ng/l
PFPeA	*	6.64	2	ng/l
4:2 FTSA		ND	1	ng/l
PFHxA	*	3.84	1	ng/l
PFBS		ND	1	ng/l
PFHpA		ND	1	ng/l
PFPeS		ND	1	ng/l
6:2 FTSA		ND	1	ng/l
PFOA		ND	1	ng/l
PFHxS		ND	1	ng/l
PFHxS-LN		ND	1	ng/l
PFHxS-BR		ND	1	ng/l
PFNA		ND	1	ng/l
8:2 FTSA		ND	1	ng/l
PFHpS		ND	1	ng/l
PFDA		ND	1	ng/l
N-MeFOSAA		ND	1	ng/l
EtFOSAA		ND	2	ng/l
PFOS		ND	1	ng/l
PFOS-LN		ND	1	ng/l
PFOS-BR		ND	1	ng/l
PFUnDA		ND	1	ng/l
PFNS		ND	1	ng/l
PFDoDA		ND	1	ng/l
PFDS		ND	1	ng/l
PFTrDA		ND	1	ng/l
FOSA		ND	1	ng/l
PFTeDA		ND	2	ng/l
11CL-PF3OUdS		ND	1	ng/l
9CL-PF3ONS		ND	1	ng/l
ADONA		ND	1	ng/l
HFPO-DA		ND	1	ng/l

Merit Laboratories, Inc.
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C.O.C. PAGE # 1 OF 1

107578

CHAIN OF CUSTODY RECORD

REPORT 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 FAX NO.: P.O. NO.: 1940002628 Task 31
E-MAIL ADDRESS: Clifford.Yantz@Ramboll.com; Kevin.Schneider@Ramboll.com QUOTE NO.:

INVOICE TO

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

PROJECT NO./NAME: RACER Coldwater Road
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Kevin Schneider

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

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

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

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

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

MERIT LAB NO. (FOR LAB USE ONLY)	YEAR DATE	YEAR TIME	SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives: NONE	HCl	HNO_3	H_2SO_4	NaOH	MeOH	OTHER	PFAS (1977)	PFAS TOP	Special Instructions
34919.01	4/14/22	925	Field Blank - 041422	L	1	1							X		Low Level
.02		930	SS-11	L	3	3							X		Reporting limit
.03		952	SS-12	L	3	3							X		with estimated
.04		1140	SW-12	L	6	3								X	values
.05		1150	SW-14	L	6	3								X	

KGS

RELINQUISHED BY: SIGNATURE/ORGANIZATION	X Sampler	DATE 4/14/22	TIME 1155
RECEIVED BY: SIGNATURE/ORGANIZATION		DATE 4/14/22	TIME 11:55
RELINQUISHED BY: SIGNATURE/ORGANIZATION		DATE 4/14/22	TIME 13:05
RECEIVED BY: SIGNATURE/ORGANIZATION	Johanna Murray	DATE 4/14/22	TIME 1305

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

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

NOTES: TEMP. ON ARRIVAL 4.7

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

Rev. 5.18.12

Analytical Laboratory Report

Report ID: S36017.01(01)
Generated on 06/07/2022

Report to

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

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

Addtional 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 Laverty (johnlaverty@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S36017.01-S36017.02
Project: RACER Coldwater Rd
Collected Date(s): 05/16/2022
Submitted Date/Time: 05/16/2022 14:30
Sampled by: Clifford Yantz
P.O. #: 194602628 TASK 37

Table of Contents

Maya Murshak
Technical Director

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.
Methods may be modified for improved performance.
Results reported on a dry weight basis where applicable.
'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).
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.

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
PFTrDA	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
S36017.01	SS-14	Liquid	05/16/22 12:50
S36017.02	SS-13	Liquid	05/16/22 12:25

Analytical Laboratory Report

Lab Sample ID: S36017.01
Sample Tag: SS-14
Collected Date/Time: 05/16/2022 12:50
Matrix: Liquid
COC Reference: 107576

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	3.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	12.23/6.87/11	ASTMD7979-19M	05/25/22 11:45	KCV	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 05/25/22 22:28, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	14	10	10	ng/L	2.05	375-22-4	
PFPeA*	2.1	4.1	1.0	ng/L	2.05	2706-90-3	J
4:2 FTSA*	Not detected	2.1	1.6	ng/L	2.05	757124-72-4	
PFHxA*	4.3	2.1	1.4	ng/L	2.05	307-24-4	
PFBS*	2.8	2.1	1.4	ng/L	2.05	375-73-5	
PFHpA*	2.3	2.1	1.4	ng/L	2.05	375-85-9	
PFPeS*	Not detected	2.1	1.8	ng/L	2.05	2706-91-4	
6:2 FTSA*	Not detected	2.1	2.1	ng/L	2.05	27619-97-2	
PFOA*	8.4	2.1	1.6	ng/L	2.05	335-67-1	
PFHxS*	1.8	2.1	1.6	ng/L	2.05	355-46-4	J
PFHxS-LN*	Not detected	2.1	1.6	ng/L	2.05	355-46-4-LN	
PFHxS-BR*	Not detected	2.1	1.6	ng/L	2.05	355-46-4-BR	
PFNA*	Not detected	2.1	1.8	ng/L	2.05	375-95-1	
8:2 FTSA*	Not detected	2.1	1.0	ng/L	2.05	39108-34-4	
PFHpS*	Not detected	2.1	2.1	ng/L	2.05	375-92-8	
PFDA*	Not detected	2.1	2.1	ng/L	2.05	335-76-2	
N-MeFOSAA*	Not detected	2.1	2.1	ng/L	2.05	2355-31-9	
EtFOSAA*	Not detected	4.1	2.1	ng/L	2.05	2991-50-6	
PFOS*	30	2.1	2.0	ng/L	2.05	1763-23-1	
PFOS-LN*	20	2.1	2.0	ng/L	2.05	1763-23-1-LN	
PFOS-BR*	9.1	2.1	2.0	ng/L	2.05	1763-23-1-BR	
PFUnDA*	Not detected	2.1	1.4	ng/L	2.05	2058-94-8	
PFNS*	Not detected	2.1	1.4	ng/L	2.05	68259-12-1	
PFDoDA*	Not detected	2.1	1.6	ng/L	2.05	307-55-1	
PFDS*	Not detected	2.1	1.4	ng/L	2.05	335-77-3	
PFTrDA*	Not detected	2.1	1.2	ng/L	2.05	72629-94-8	
FOSA*	Not detected	2.1	1.8	ng/L	2.05	754-91-6	
PFTeDA*	Not detected	4.1	1.8	ng/L	2.05	376-06-7	
11Cl-PF3OUdS*	Not detected	2.1	1.8	ng/L	2.05	763051-92-9	
9Cl-PF3ONS*	Not detected	2.1	1.4	ng/L	2.05	756426-58-1	
ADONA*	Not detected	2.1	2.1	ng/L	2.05	919005-14-4	
HFPO-DA*	Not detected	4.1	2.1	ng/L	2.05	13252-13-6	

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

Analytical Laboratory Report

Lab Sample ID: S36017.02
Sample Tag: SS-13
Collected Date/Time: 05/16/2022 12:25
Matrix: Liquid
COC Reference: 107576

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	3.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	12.68/7.06/11	ASTMD7979-19M	05/25/22 11:45	KCV	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 05/25/22 22:47, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	39	9.8	ng/L	1.96	375-22-4	X
PFPeA*	Not detected	3.9	0.98	ng/L	1.96	2706-90-3	
4:2 FTSA*	Not detected	2.0	1.6	ng/L	1.96	757124-72-4	
PFHxA*	2.5	2.0	1.4	ng/L	1.96	307-24-4	
PFBS*	Not detected	2.0	1.4	ng/L	1.96	375-73-5	
PFHpA*	Not detected	2.0	1.4	ng/L	1.96	375-85-9	
PFPeS*	Not detected	2.0	1.8	ng/L	1.96	2706-91-4	
6:2 FTSA*	Not detected	2.0	2.0	ng/L	1.96	27619-97-2	
PFOA*	Not detected	2.0	1.6	ng/L	1.96	335-67-1	
PFHxS*	Not detected	2.0	1.6	ng/L	1.96	355-46-4	
PFHxS-LN*	Not detected	2.0	1.6	ng/L	1.96	355-46-4-LN	
PFHxS-BR*	Not detected	2.0	1.6	ng/L	1.96	355-46-4-BR	
PFNA*	Not detected	2.0	1.8	ng/L	1.96	375-95-1	
8:2 FTSA*	Not detected	2.0	0.98	ng/L	1.96	39108-34-4	
PFHpS*	Not detected	2.0	2.0	ng/L	1.96	375-92-8	
PFDA*	Not detected	2.0	2.0	ng/L	1.96	335-76-2	
N-MeFOSAA*	Not detected	2.0	2.0	ng/L	1.96	2355-31-9	
EtFOSAA*	Not detected	3.9	2.0	ng/L	1.96	2991-50-6	
PFOS*	20	2.0	1.9	ng/L	1.96	1763-23-1	
PFOS-LN*	16	2.0	1.9	ng/L	1.96	1763-23-1-LN	
PFOS-BR*	4.0	2.0	1.9	ng/L	1.96	1763-23-1-BR	
PFUnDA*	Not detected	2.0	1.4	ng/L	1.96	2058-94-8	
PFNS*	Not detected	2.0	1.4	ng/L	1.96	68259-12-1	
PFDoDA*	Not detected	2.0	1.6	ng/L	1.96	307-55-1	
PFDS*	Not detected	2.0	1.4	ng/L	1.96	335-77-3	
PFTrDA*	Not detected	2.0	1.2	ng/L	1.96	72629-94-8	
FOSA*	Not detected	2.0	1.8	ng/L	1.96	754-91-6	
PFTeDA*	Not detected	3.9	1.8	ng/L	1.96	376-06-7	
11Cl-PF3OUdS*	Not detected	2.0	1.8	ng/L	1.96	763051-92-9	
9Cl-PF3ONS*	Not detected	2.0	1.4	ng/L	1.96	756426-58-1	
ADONA*	Not detected	2.0	2.0	ng/L	1.96	919005-14-4	
HFPO-DA*	Not detected	3.9	2.0	ng/L	1.96	13252-13-6	

X-Elevated reporting limit due to matrix interference

Merit Laboratories Login Checklist

Lab Set ID: S36017
Client: OBG02 (Ramboll Americas)
Project: RACER Coldwater Rd
Submitted: 05/16/2022 14:30 Login User: JRM

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.	[X] Yes	[ ] No	[ ] N/A	Samples are received at 4C +/- 2C Thermometer #	IR 3.6
02.	[X] Yes	[ ] No	[ ] N/A	Received on ice/ cooling process begun	
03.	[ ] Yes	[X] No	[ ] N/A	Samples shipped	
04.	[ ] Yes	[X] No	[ ] N/A	Samples left in 24 hr. drop box	
05.	[ ] Yes	[ ] No	[X] N/A	Are there custody seals/tape or is the drop box locked	
Chain of Custody					
06.	[X] Yes	[ ] No	[ ] N/A	COC adequately filled out	
07.	[X] Yes	[ ] No	[ ] N/A	COC signed and relinquished to the lab	
08.	[X] Yes	[ ] No	[ ] N/A	Sample tag on bottles match COC	
09.	[ ] Yes	[X] No	[ ] N/A	Subcontracting needed? Subcontacted to:	
Preservation					
10.	[X] Yes	[ ] No	[ ] N/A	Do sample have correct chemical preservation	
11.	[ ] Yes	[ ] No	[X] N/A	Completed pH checks on preserved samples? (no VOAs)	
12.	[ ] Yes	[X] No	[ ] N/A	Did any samples need to be preserved in the lab?	
Bottle Conditions					
13.	[X] Yes	[ ] No	[ ] N/A	All bottles intact	
14.	[X] Yes	[ ] No	[ ] N/A	Appropriate analytical bottles are used	
15.	[X] Yes	[ ] No	[ ] N/A	Merit bottles used	
16.	[X] Yes	[ ] No	[ ] N/A	Sufficient sample volume received	
17.	[ ] Yes	[X] No	[ ] N/A	Samples require laboratory filtration	
18.	[X] Yes	[ ] No	[ ] N/A	Samples submitted within holding time	
19.	[ ] Yes	[ ] No	[X] N/A	Do water VOC or TOX bottles contain headspace	

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

Client Review By: _____ Date: _____

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

C.O.C. PAGE # 1 OF 1

107576

CHAIN OF CUSTODY RECORD

REPORT 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 FAX NO.:
P.O. NO.: 1946026628 task 31
E-MAIL ADDRESS: Clifford.Yantz@ramboll.com kevin.schneider@ramboll.com
QUOTE NO.:

INVOICE TO

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

PROJECT NO./NAME: Racer Coldwater Rd
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Clifford Yantz

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

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

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

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

Certifications
☐ OHIO VAP ☐ Drinking Water
☐ DoD ☐ NPDES

Project Locations
☐ Detroit ☐ New York
☐ Other

Special Instructions

MERIT LAB NO. (FOR LAB USE ONLY)	YEAR DATE	YEAR TIME	SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives: NONE	HCl	HNO_3	H_2SO_4	NaOH	MeOH	OTHER	PFAS 1671	Special Instructions
36017.01	5/16/22	12:50	SS-14	L	3	X							X	low level reporting with estimated values
.02	5/16/22	12:25	SS-13	L	3	X							X	

RELINQUISHED BY: SIGNATURE/ORGANIZATION	☐ Sampler	DATE	TIME
		5/16/22	13:43
RECEIVED BY: SIGNATURE/ORGANIZATION		DATE	TIME
		5/16/22	13:43
RELINQUISHED BY: SIGNATURE/ORGANIZATION		DATE	TIME
		5/16/22	1430
RECEIVED BY: SIGNATURE/ORGANIZATION		DATE	TIME
Johanna Murray		5/16/22	1430

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

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

NOTES: TEMP. ON ARRIVAL 3.6

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

Rev. 5.18.12

Quality Control Report

Report ID: QC-S36017-01
Generated on 06/07/2022

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): S36017.01-S36017.02
Project: RACER Coldwater Rd
Submitted Date/Time: 05/16/2022 14:30
Sampled by: Clifford Yantz
P.O. #: 194602628 TASK 37

QC Report Sections

Report Flag Descriptions

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

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

Barbara Ball
Quality Assurance Manager

QC Report - Analysis Summary

Lab Sample ID: S36017.01
Sample Tag: SS-14
Collected Date/Time: 05/16/2022 12:50
Matrix: Liquid
COC Reference: 107576

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
28 PFAs	ASTMD7979-19M	05/25/22 22:28	AK220525	PF220525W1	Yes	BLK/LCS/LCSD/MS/MS

QC Report - Analysis Summary

Lab Sample ID: S36017.02
Sample Tag: SS-13
Collected Date/Time: 05/16/2022 12:25
Matrix: Liquid
COC Reference: 107576

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
28 PFAs	ASTMD7979-19M	05/25/22 22:47	AK220525	PF220525W1	Yes	BLK/LCS/LCSD/MS/MS

QC Report - Prep Batch Summary

Organics - Volatiles, Prep Batch ID: PF220525W1

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

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S36017.01	28 PFAs	ASTMD7979-19M	05/25/22 22:28	AK220525
S36017.02	28 PFAs	ASTMD7979-19M	05/25/22 22:47	AK220525

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36017.01

Sample Tag: SS-14

Collected Date/Time: 05/16/2022 12:50

Matrix: Liquid

COC Reference: 107576

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK220525, Run Date: 05/25/2022 22:28, Matrix: WW, Dilution: 2.05

Internal Standard	Flags	**%Rec**	LCL	UCL
M2-4:2FTSA		**94.9**	50.0	150.0
M2-6:2FTSA		**124.4**	50.0	150.0
M2-8:2FTSA		**109.4**	50.0	150.0
M2PFTeDA		**99.4**	12.0	218.0
M3PFBS		**112.7**	50.0	150.0
M3PFHxS		**103.0**	50.0	150.0
M4PFHpA		**112.1**	50.0	150.0
M5PFHxA		**105.3**	50.0	150.0
M5PFPeA		**109.7**	50.0	150.0
M6PFDA		**102.6**	50.0	150.0
M7PFUnDA		**109.0**	50.0	150.0
M8FOSA		**109.7**	50.0	150.0
M8PFOA		**108.0**	50.0	150.0
M8PFOS		**115.3**	50.0	150.0
M9-PFNA		**121.9**	50.0	150.0
MPFBA		**117.4**	50.0	150.0
MPFDoDA		**92.8**	50.0	150.0
d3N-MeFOSAA		**100.4**	50.0	150.0
d5EtFOSAA		**92.5**	50.0	150.0
MHFPO-DA		**108.6**	50.0	150.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36017.02

Sample Tag: SS-13

Collected Date/Time: 05/16/2022 12:25

Matrix: Liquid

COC Reference: 107576

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK220525, Run Date: 05/25/2022 22:47, Matrix: WW, Dilution: 1.96

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		**104.2**	50.0	150.0
M2-6:2FTSA		**113.7**	50.0	150.0
M2-8:2FTSA		**101.0**	50.0	150.0
M2PFTeDA		**76.9**	12.0	218.0
M3PFBS		**111.2**	50.0	150.0
M3PFHxS		**96.3**	50.0	150.0
M4PFHpA		**95.7**	50.0	150.0
M5PFHxA		**106.7**	50.0	150.0
M5PFPeA		**111.0**	50.0	150.0
M6PFDA		**94.3**	50.0	150.0
M7PFUnDA		**110.4**	50.0	150.0
M8FOSA		**102.8**	50.0	150.0
M8PFOA		**102.0**	50.0	150.0
M8PFOS		**92.7**	50.0	150.0
M9-PFNA		**121.4**	50.0	150.0
MPFBA		**110.1**	50.0	150.0
MPFDoDA		**92.0**	50.0	150.0
d3N-MeFOSAA		**86.7**	50.0	150.0
d5EtFOSAA		**96.0**	50.0	150.0
MHFPO-DA		**94.8**	50.0	150.0

Organics - Volatiles, Prep Batch ID: PF220525W1

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

Blank (BLK)

Lab Sample ID: AK220525.BLK220525

Run in Batch: AK220525, Run Date: 05/25/2022 20:50, Prep Date: 05/25/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		**105.4**	50.0	150.0
M2-6:2FTSA		**109.9**	50.0	150.0
M2-8:2FTSA		**121.7**	50.0	150.0
M2PFTeDA		**98.5**	12.0	218.0
M3PFBS		**107.1**	50.0	150.0
M3PFHxS		**95.5**	50.0	150.0
M4PFHpA		**106.5**	50.0	150.0
M5PFHxA		**100.7**	50.0	150.0
M5PFPeA		**104.3**	50.0	150.0
M6PFDA		**85.4**	50.0	150.0
M7PFUnDA		**111.0**	50.0	150.0
M8FOSA		**99.3**	50.0	150.0
M8PFOA		**106.1**	50.0	150.0
M8PFOS		**102.2**	50.0	150.0
M9-PFNA		**100.8**	50.0	150.0
MPFBA		**100.3**	50.0	150.0
MPFDoDA		**85.9**	50.0	150.0
d3N-MeFOSAA		**105.3**	50.0	150.0
d5EtFOSAA		**89.0**	50.0	150.0
MHFPO-DA		**98.8**	50.0	150.0

QC Report - Internal Standards per QC Sample

Laboratory Control Sample (LCS)

Lab Sample ID: AK220525.LCS220525

Run in Batch: AK220525, Run Date: 05/25/2022 20:11, Prep Date: 05/25/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		**103.7**	50.0	150.0
M2-6:2FTSA		**113.8**	50.0	150.0
M2-8:2FTSA		**117.5**	50.0	150.0
M2PFTeDA		**100.5**	12.0	218.0
M3PFBS		**108.7**	50.0	150.0
M3PFHxS		**97.5**	50.0	150.0
M4PFHpA		**90.6**	50.0	150.0
M5PFHxA		**94.7**	50.0	150.0
M5PFPeA		**102.7**	50.0	150.0
M6PFDA		**89.5**	50.0	150.0
M7PFUnDA		**110.1**	50.0	150.0
M8FOSA		**101.1**	50.0	150.0
M8PFOA		**101.8**	50.0	150.0
M8PFOS		**105.5**	50.0	150.0
M9-PFNA		**111.2**	50.0	150.0
MPFBA		**97.6**	50.0	150.0
MPFDoDA		**94.3**	50.0	150.0
d3N-MeFOSAA		**105.4**	50.0	150.0
d5EtFOSAA		**92.9**	50.0	150.0
MHFPO-DA		**91.7**	50.0	150.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: AK220525.LCSD220525, Parent Sample ID: AK220525.LCS220525

Run in Batch: AK220525, Run Date: 05/25/2022 20:31, Prep Date: 05/25/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		**108.1**	50.0	150.0
M2-6:2FTSA		**111.1**	50.0	150.0
M2-8:2FTSA		**105.3**	50.0	150.0
M2PFTeDA		**76.3**	12.0	218.0
M3PFBS		**99.1**	50.0	150.0
M3PFHxS		**107.4**	50.0	150.0
M4PFHpA		**98.5**	50.0	150.0
M5PFHxA		**95.2**	50.0	150.0
M5PFPeA		**57.2**	50.0	150.0
M6PFDA		**94.1**	50.0	150.0
M7PFUnDA		**106.5**	50.0	150.0
M8FOSA		**98.2**	50.0	150.0
M8PFOA		**105.5**	50.0	150.0
M8PFOS		**102.3**	50.0	150.0
M9-PFNA		**108.0**	50.0	150.0
MPFBA		**98.6**	50.0	150.0
MPFDoDA		**104.5**	50.0	150.0
d3N-MeFOSAA		**99.1**	50.0	150.0
d5EtFOSAA		**93.9**	50.0	150.0
MHFPO-DA		**88.6**	50.0	150.0

Matrix Spike (MS)

Lab Sample ID: AK220525.3609504M, Parent Sample ID: S36095.03

Run in Batch: AK220525, Run Date: 05/26/2022 00:05, Prep Date: 05/25/2022, Matrix: WW, Dilution: 2.03

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		**107.8**	50.0	150.0
M2-6:2FTSA		**102.5**	50.0	150.0
M2-8:2FTSA		**113.3**	50.0	150.0
M2PFTeDA		**88.8**	12.0	218.0
M3PFBS		**118.1**	50.0	150.0
M3PFHxS		**108.5**	50.0	150.0
M4PFHpA		**102.9**	50.0	150.0
M5PFHxA		**103.1**	50.0	150.0
M5PFPeA		**108.4**	50.0	150.0
M6PFDA		**95.9**	50.0	150.0
M7PFUnDA		**108.1**	50.0	150.0
M8FOSA		**107.9**	50.0	150.0
M8PFOA		**104.7**	50.0	150.0
M8PFOS		**104.2**	50.0	150.0
M9-PFNA		**118.2**	50.0	150.0
MPFBA		**110.9**	50.0	150.0
MPFDoDA		**91.6**	50.0	150.0
d3N-MeFOSAA		**105.7**	50.0	150.0
d5EtFOSAA		**86.9**	50.0	150.0
MHFPO-DA		**118.0**	50.0	150.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: AK220525.3609505N, Parent Sample ID: AK220525.3609504M

Run in Batch: AK220525, Run Date: 05/26/2022 00:25, Prep Date: 05/25/2022, Matrix: WW, Dilution: 2.06

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		**113.3**	50.0	150.0
M2-6:2FTSA		**111.8**	50.0	150.0
M2-8:2FTSA		**88.8**	50.0	150.0
M2PFTeDA		**92.7**	12.0	218.0
M3PFBS		**111.0**	50.0	150.0
M3PFHxS		**115.0**	50.0	150.0
M4PFHpA		**118.2**	50.0	150.0
M5PFHxA		**107.1**	50.0	150.0
M5PFPeA		**112.7**	50.0	150.0
M6PFDA		**97.4**	50.0	150.0
M7PFUnDA		**114.5**	50.0	150.0
M8FOSA		**103.6**	50.0	150.0
M8PFOA		**109.0**	50.0	150.0
M8PFOS		**126.9**	50.0	150.0
M9-PFNA		**117.1**	50.0	150.0
MPFBA		**112.1**	50.0	150.0
MPFDoDA		**93.5**	50.0	150.0
d3N-MeFOSAA		**104.3**	50.0	150.0
d5EtFOSAA		**101.2**	50.0	150.0
MHFPO-DA		**99.9**	50.0	150.0

Organics - Volatiles, Prep Batch ID: PF220525W1

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

Blank (BLK)

Lab Sample ID: AK220525.BLK220525

Run in Batch: AK220525, Run Date: 05/25/2022 20:50, Prep Date: 05/25/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
PFBA		ND	5	ng/l
PFPeA		ND	2	ng/l
4:2 FTSA		ND	1	ng/l
PFHxA		ND	1	ng/l
PFBS		ND	1	ng/l
PFHpA		ND	1	ng/l
PFPeS		ND	1	ng/l
6:2 FTSA		ND	1	ng/l
PFOA		ND	1	ng/l
PFHxS		ND	1	ng/l
PFHxS-LN		ND	1	ng/l
PFHxS-BR		ND	1	ng/l
PFNA		ND	1	ng/l
8:2 FTSA		ND	1	ng/l
PFHpS		ND	1	ng/l
PFDA		ND	1	ng/l
N-MeFOSAA		ND	1	ng/l
EtFOSAA		ND	2	ng/l
PFOS		ND	1	ng/l
PFOS-LN		ND	1	ng/l
PFOS-BR		ND	1	ng/l
PFUnDA		ND	1	ng/l
PFNS		ND	1	ng/l
PFDoDA		ND	1	ng/l
PFDS		ND	1	ng/l
PFTrDA		ND	1	ng/l
FOSA		ND	1	ng/l
PFTeDA		ND	2	ng/l
11CL-PF3OUdS		ND	1	ng/l
9CL-PF3ONS		ND	1	ng/l
ADONA		ND	1	ng/l
HFPO-DA		ND	1	ng/l

Laboratory Control Sample (LCS)

Lab Sample ID: AK220525.LCS220525

Run in Batch: AK220525, Run Date: 05/25/2022 20:11, Prep Date: 05/25/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
PFBA		98.2	70.0	130.0
PFPeA		100.8	70.0	130.0
4:2 FTSA		100.8	70.0	130.0
PFHxA		102.2	70.0	130.0
PFBS		93.0	70.0	130.0
HFPO-DA		94.4	70.0	130.0
PFHpA		118.8	70.0	130.0
PFPeS		97.0	70.0	130.0
ADONA		94.6	70.0	130.0

Organics - Volatiles, Prep Batch ID: PF220525W1 (continued)

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

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: AK220525.LCS220525

Run in Batch: AK220525, Run Date: 05/25/2022 20:11, Prep Date: 05/25/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
6:2 FTSA		87.4	70.0	130.0
PFOA		92.2	70.0	130.0
PFHxS		108.6	70.0	130.0
PFNA		89.0	70.0	130.0
PFHpS		116.4	70.0	130.0
8:2 FTSA		70.4	70.0	130.0
PFOS		100.6	70.0	130.0
PFDA		97.8	70.0	130.0
N-MeFOSAA		81.4	70.0	130.0
EtFOSAA		98.6	70.0	130.0
PFUnDA		95.8	70.0	130.0
9CL-PF3ONS		83.2	70.0	130.0
PFNS		104.8	70.0	130.0
PFDoDA		99.8	70.0	130.0
PFDS		89.6	70.0	130.0
PFTrDA		114.0	70.0	130.0
11CL-PF3OUdS		78.8	70.0	130.0
PFTeDA		105.2	70.0	130.0
FOSA		114.6	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: AK220525.LCSD220525, Parent Sample ID: AK220525.LCS220525

Run in Batch: AK220525, Run Date: 05/25/2022 20:31, Prep Date: 05/25/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
PFBA		96.8	70.0	130.0	1.4	30.0
PFPeA		105.2	70.0	130.0	4.3	30.0
4:2 FTSA		96.6	70.0	130.0	4.3	30.0
PFHxA		105.4	70.0	130.0	3.1	30.0
PFBS		104.0	70.0	130.0	11.2	30.0
HFPO-DA		106.8	70.0	130.0	12.3	30.0
PFHpA	*	87.2	70.0	130.0	30.7	30.0
PFPeS		100.8	70.0	130.0	3.8	30.0
ADONA		98.0	70.0	130.0	3.5	30.0
6:2 FTSA		84.2	70.0	130.0	3.7	30.0
PFOA		81.6	70.0	130.0	12.2	30.0
PFHxS		103.2	70.0	130.0	5.1	30.0
PFNA		97.0	70.0	130.0	8.6	30.0
PFHpS		109.4	70.0	130.0	6.2	30.0
8:2 FTSA		93.2	70.0	130.0	27.9	30.0
PFOS		109.6	70.0	130.0	8.6	30.0
PFDA		101.6	70.0	130.0	3.8	30.0
N-MeFOSAA		89.0	70.0	130.0	8.9	30.0
EtFOSAA		93.2	70.0	130.0	5.6	30.0
PFUnDA		93.0	70.0	130.0	3.0	30.0
9CL-PF3ONS		94.0	70.0	130.0	12.2	30.0
PFNS		101.2	70.0	130.0	3.5	30.0

Organics - Volatiles, Prep Batch ID: PF220525W1 (continued)

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

Laboratory Control Sample Duplicate (LCSD) (continued)

Lab Sample ID: AK220525.LCSD220525, Parent Sample ID: AK220525.LCS220525

Run in Batch: AK220525, Run Date: 05/25/2022 20:31, Prep Date: 05/25/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
PFDoDA		78.8	70.0	130.0	23.5	30.0
PFDS		93.6	70.0	130.0	4.4	30.0
PFTrDA		103.2	70.0	130.0	9.9	30.0
11CL-PF3OUdS		86.0	70.0	130.0	8.7	30.0
PFTeDA		127.8	70.0	130.0	19.4	30.0
FOSA		118.0	70.0	130.0	2.9	30.0

Matrix Spike (MS)

Lab Sample ID: AK220525.3609504M, Parent Sample ID: S36095.03

Run in Batch: AK220525, Run Date: 05/26/2022 00:05, Prep Date: 05/25/2022, Matrix: WW, Dilution: 2.03

Analyte	Flags	% Rec	LCL	UCL
PFBA		98.0	70.0	130.0
PFPeA		107.8	70.0	130.0
4:2 FTSA		92.2	70.0	130.0
PFHxA		107.8	70.0	130.0
PFBS		92.2	70.0	130.0
PFHpA		98.0	70.0	130.0
PFPeS		94.1	70.0	130.0
6:2 FTSA		98.0	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		87.3	70.0	130.0
PFHpS		107.8	70.0	130.0
PFDA		107.8	70.0	130.0
N-MeFOSAA		86.3	70.0	130.0
EtFOSAA		98.0	70.0	130.0
PFOS		98.0	70.0	130.0
PFUnDA		95.1	70.0	130.0
PFNS		107.8	70.0	130.0
PFDoDA		97.1	70.0	130.0
PFDS		89.2	70.0	130.0
PFTrDA		107.8	70.0	130.0
FOSA		117.6	70.0	130.0
PFTeDA		98.0	70.0	130.0
11CL-PF3OUdS		80.4	70.0	130.0
9CL-PF3ONS		98.0	70.0	130.0
ADONA		98.0	70.0	130.0
HFPO-DA		93.1	70.0	130.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: AK220525.3609505N, Parent Sample ID: AK220525.3609504M

Run in Batch: AK220525, Run Date: 05/26/2022 00:25, Prep Date: 05/25/2022, Matrix: WW, Dilution: 2.06

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
PFBA		97.1	70.0	130.0	0.0	30.0
PFPeA		97.1	70.0	130.0	9.5	30.0

Organics - Volatiles, Prep Batch ID: PF220525W1 (continued)

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

Matrix Spike Duplicate (MSD) (continued)

Lab Sample ID: AK220525.3609505N, Parent Sample ID: AK220525.3609504M

Run in Batch: AK220525, Run Date: 05/26/2022 00:25, Prep Date: 05/25/2022, Matrix: WW, Dilution: 2.06

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
4:2 FTSA		86.4	70.0	130.0	5.5	30.0
PFHxA		95.1	70.0	130.0	11.5	30.0
PFBS		94.2	70.0	130.0	3.1	30.0
PFHpA		93.2	70.0	130.0	4.1	30.0
PFPeS		106.8	70.0	130.0	13.6	30.0
6:2 FTSA		83.5	70.0	130.0	15.1	30.0
PFOA		90.3	70.0	130.0	7.3	30.0
PFHxS		106.8	70.0	130.0	0.0	30.0
PFNA		95.1	70.0	130.0	2.0	30.0
8:2 FTSA		106.8	70.0	130.0	21.1	30.0
PFHpS		106.8	70.0	130.0	0.0	30.0
PFDA		91.3	70.0	130.0	15.7	30.0
N-MeFOSAA		91.3	70.0	130.0	6.6	30.0
EtFOSAA		79.6	70.0	130.0	19.8	30.0
PFOS		78.6	70.0	130.0	21.0	30.0
PFUnDA		97.1	70.0	130.0	3.0	30.0
PFNS		94.2	70.0	130.0	12.6	30.0
PFDoDA		96.1	70.0	130.0	0.0	30.0
PFDS		71.8	70.0	130.0	20.6	30.0
PFTrDA		106.8	70.0	130.0	0.0	30.0
FOSA		116.5	70.0	130.0	0.0	30.0
PFTeDA		106.8	70.0	130.0	9.5	30.0
11CL-PF3OUdS	*	68.0	70.0	130.0	15.8	30.0
9CL-PF3ONS		84.5	70.0	130.0	13.9	30.0
ADONA		97.1	70.0	130.0	0.0	30.0
HFPO-DA		116.5	70.0	130.0	23.3	30.0

Merit Laboratories, Inc.
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C.O.C. PAGE # 1 OF 1

107576

CHAIN OF CUSTODY RECORD

REPORT 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 FAX NO.:
P.O. NO.: 1946026628 task 31
E-MAIL ADDRESS: Clifford.Yantz@ramboll.com kevin.schneider@ramboll.com
QUOTE NO.:

INVOICE TO

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

PROJECT NO./NAME: Racer Coldwater Rd
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Clifford Yantz

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

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

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

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

Certifications
☐ OHIO VAP ☐ Drinking Water
☐ DoD ☐ NPDES

Project Locations
☐ Detroit ☐ New York
☐ Other

Special Instructions

MERIT LAB NO. (FOR LAB USE ONLY)	YEAR DATE	YEAR TIME	SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives: NONE	HCl	HNO_3	H_2SO_4	NaOH	MeOH	OTHER	PFAS 1671	Special Instructions
36017.01	5/16/22	12:50	SS-14	L	3	X							X	low level reporting with estimated values
.02	5/16/22	12:25	SS-13	L	3	X							X	

RELINQUISHED BY: SIGNATURE/ORGANIZATION	☐ Sampler	DATE	TIME
		5/16/22	13:43
RECEIVED BY: SIGNATURE/ORGANIZATION		DATE	TIME
		5/16/22	13:43
RELINQUISHED BY: SIGNATURE/ORGANIZATION		DATE	TIME
		5/16/22	1430
RECEIVED BY: SIGNATURE/ORGANIZATION		DATE	TIME
Johanna Murray		5/16/22	1430

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

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

NOTES: TEMP. ON ARRIVAL 3.6

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

Rev. 5.18.12

Analytical Laboratory Report

Report ID: S37370.01(01)
Generated on 07/14/2022

Report to

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

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

Addtional Contacts: Kevin Schneider

Report produced by

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East Lansing, MI 48823

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

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

Report Summary

Lab Sample ID(s): S37370.01-S37370.03
Project: RACER Coldwater Road
Collected Date(s): 06/22/2022
Submitted Date/Time: 06/22/2022 15:00
Sampled by: Kalyssa Ramirez
P.O. #: 1940004462 TASK 37

Table of Contents

Maya Murshak
Technical Director

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.
Methods may be modified for improved performance.
Results reported on a dry weight basis where applicable.
'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).
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.

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
PFTrDA	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 (3 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S37370.01	SS-14	Liquid	06/22/22 12:27
S37370.02	SS-12	Liquid	06/22/22 11:40
S37370.03	Field blank-06222022	Liquid	06/22/22 12:30

Analytical Laboratory Report

Lab Sample ID: S37370.01
Sample Tag: SS-14
Collected Date/Time: 06/22/2022 12:27
Matrix: Liquid
COC Reference: 144812

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	5.8	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	12.73/6.92/12	ASTMD7979-19M	07/12/22 15:35	KCV	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 07/13/22 01:46, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	12	10	10	ng/L	2.07	375-22-4	
PFPeA*	5.2	4.1	1.0	ng/L	2.07	2706-90-3	
4:2 FTSA*	Not detected	2.1	1.7	ng/L	2.07	757124-72-4	
PFHxA*	7.0	2.1	1.4	ng/L	2.07	307-24-4	
PFBS*	6.7	2.1	1.4	ng/L	2.07	375-73-5	
PFHpA*	5.0	2.1	1.4	ng/L	2.07	375-85-9	
PFPeS*	Not detected	2.1	1.9	ng/L	2.07	2706-91-4	
6:2 FTSA*	Not detected	2.1	2.1	ng/L	2.07	27619-97-2	
PFOA*	15	2.1	1.7	ng/L	2.07	335-67-1	
PFHxS*	4.5	2.1	1.7	ng/L	2.07	355-46-4	
PFHxS-LN*	3.7	2.1	1.7	ng/L	2.07	355-46-4-LN	
PFHxS-BR*	Not detected	2.1	1.7	ng/L	2.07	355-46-4-BR	
PFNA*	Not detected	2.1	1.9	ng/L	2.07	375-95-1	
8:2 FTSA*	Not detected	2.1	1.0	ng/L	2.07	39108-34-4	
PFHpS*	Not detected	2.1	2.1	ng/L	2.07	375-92-8	
PFDA*	Not detected	2.1	2.1	ng/L	2.07	335-76-2	
N-MeFOSAA*	Not detected	2.1	2.1	ng/L	2.07	2355-31-9	
EtFOSAA*	Not detected	4.1	2.1	ng/L	2.07	2991-50-6	
PFOS*	39	2.1	2.0	ng/L	2.07	1763-23-1	
PFOS-LN*	24	2.1	2.0	ng/L	2.07	1763-23-1-LN	
PFOS-BR*	14	2.1	2.0	ng/L	2.07	1763-23-1-BR	
PFUnDA*	Not detected	2.1	1.4	ng/L	2.07	2058-94-8	
PFNS*	Not detected	2.1	1.4	ng/L	2.07	68259-12-1	
PFDoDA*	Not detected	2.1	1.7	ng/L	2.07	307-55-1	
PFDS*	Not detected	2.1	1.4	ng/L	2.07	335-77-3	
PFTrDA*	Not detected	2.1	1.2	ng/L	2.07	72629-94-8	
FOSA*	Not detected	2.1	1.9	ng/L	2.07	754-91-6	
PFTeDA*	Not detected	4.1	1.9	ng/L	2.07	376-06-7	
11Cl-PF3OUdS*	Not detected	2.1	1.9	ng/L	2.07	763051-92-9	
9Cl-PF3ONS*	Not detected	2.1	1.4	ng/L	2.07	756426-58-1	
ADONA*	Not detected	2.1	2.1	ng/L	2.07	919005-14-4	
HFPO-DA*	Not detected	10	2.1	ng/L	2.07	13252-13-6	

Analytical Laboratory Report

Lab Sample ID: S37370.02
Sample Tag: SS-12
Collected Date/Time: 06/22/2022 11:40
Matrix: Liquid
COC Reference: 144812

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	5.8	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	12.59/6.93/12	ASTMD7979-19M	07/12/22 15:35	KCV	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 07/13/22 02:06, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	11	11	ng/L	2.12	375-22-4	
PFPeA*	4.0	4.2	1.1	ng/L	2.12	2706-90-3	J
4:2 FTSA*	Not detected	2.1	1.7	ng/L	2.12	757124-72-4	
PFHxA*	5.2	2.1	1.5	ng/L	2.12	307-24-4	
PFBS*	5.6	2.1	1.5	ng/L	2.12	375-73-5	
PFHpA*	2.7	2.1	1.5	ng/L	2.12	375-85-9	
PFPeS*	Not detected	2.1	1.9	ng/L	2.12	2706-91-4	
6:2 FTSA*	Not detected	2.1	2.1	ng/L	2.12	27619-97-2	
PFOA*	11	2.1	1.7	ng/L	2.12	335-67-1	
PFHxS*	3.5	2.1	1.7	ng/L	2.12	355-46-4	
PFHxS-LN*	2.8	2.1	1.7	ng/L	2.12	355-46-4-LN	
PFHxS-BR*	Not detected	2.1	1.7	ng/L	2.12	355-46-4-BR	
PFNA*	Not detected	2.1	1.9	ng/L	2.12	375-95-1	
8:2 FTSA*	Not detected	2.1	1.1	ng/L	2.12	39108-34-4	
PFHpS*	Not detected	2.1	2.1	ng/L	2.12	375-92-8	
PFDA*	Not detected	2.1	2.1	ng/L	2.12	335-76-2	
N-MeFOSAA*	Not detected	2.1	2.1	ng/L	2.12	2355-31-9	
EtFOSAA*	Not detected	4.2	2.1	ng/L	2.12	2991-50-6	
PFOS*	91	2.1	2.1	ng/L	2.12	1763-23-1	
PFOS-LN*	63	2.1	2.1	ng/L	2.12	1763-23-1-LN	
PFOS-BR*	28	2.1	2.1	ng/L	2.12	1763-23-1-BR	
PFUnDA*	Not detected	2.1	1.5	ng/L	2.12	2058-94-8	
PFNS*	Not detected	2.1	1.5	ng/L	2.12	68259-12-1	
PFDoDA*	Not detected	2.1	1.7	ng/L	2.12	307-55-1	
PFDS*	Not detected	2.1	1.5	ng/L	2.12	335-77-3	
PFTrDA*	Not detected	2.1	1.3	ng/L	2.12	72629-94-8	
FOSA*	Not detected	2.1	1.9	ng/L	2.12	754-91-6	
PFTeDA*	Not detected	4.2	1.9	ng/L	2.12	376-06-7	
11Cl-PF3OUdS*	Not detected	2.1	1.9	ng/L	2.12	763051-92-9	
9Cl-PF3ONS*	Not detected	2.1	1.5	ng/L	2.12	756426-58-1	
ADONA*	Not detected	2.1	2.1	ng/L	2.12	919005-14-4	
HFPO-DA*	Not detected	11	2.1	ng/L	2.12	13252-13-6	

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

Analytical Laboratory Report

Lab Sample ID: S37370.03
Sample Tag: Field blank-06222022
Collected Date/Time: 06/22/2022 12:30
Matrix: Liquid
COC Reference: 144812

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	5.8	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	11.98/7.00/10	ASTMD7979-19M	07/12/22 15:35	KCV	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 07/13/22 02:25, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	10	10	ng/L	2.01	375-22-4	
PFPeA*	Not detected	4.0	1.0	ng/L	2.01	2706-90-3	
4:2 FTSA*	Not detected	2.0	1.6	ng/L	2.01	757124-72-4	
PFHxA*	Not detected	2.0	1.4	ng/L	2.01	307-24-4	
PFBS*	Not detected	2.0	1.4	ng/L	2.01	375-73-5	
PFHpA*	Not detected	2.0	1.4	ng/L	2.01	375-85-9	
PFPeS*	Not detected	2.0	1.8	ng/L	2.01	2706-91-4	
6:2 FTSA*	Not detected	2.0	2.0	ng/L	2.01	27619-97-2	
PFOA*	Not detected	2.0	1.6	ng/L	2.01	335-67-1	
PFHxS*	Not detected	2.0	1.6	ng/L	2.01	355-46-4	
PFHxS-LN*	Not detected	2.0	1.6	ng/L	2.01	355-46-4-LN	
PFHxS-BR*	Not detected	2.0	1.6	ng/L	2.01	355-46-4-BR	
PFNA*	Not detected	2.0	1.8	ng/L	2.01	375-95-1	
8:2 FTSA*	Not detected	2.0	1.0	ng/L	2.01	39108-34-4	
PFHpS*	Not detected	2.0	2.0	ng/L	2.01	375-92-8	
PFDA*	Not detected	2.0	2.0	ng/L	2.01	335-76-2	
N-MeFOSAA*	Not detected	2.0	2.0	ng/L	2.01	2355-31-9	
EtFOSAA*	Not detected	4.0	2.0	ng/L	2.01	2991-50-6	
PFOS*	Not detected	2.0	2.0	ng/L	2.01	1763-23-1	
PFOS-LN*	Not detected	2.0	2.0	ng/L	2.01	1763-23-1-LN	
PFOS-BR*	Not detected	2.0	2.0	ng/L	2.01	1763-23-1-BR	
PFUnDA*	Not detected	2.0	1.4	ng/L	2.01	2058-94-8	
PFNS*	Not detected	2.0	1.4	ng/L	2.01	68259-12-1	
PFDoDA*	Not detected	2.0	1.6	ng/L	2.01	307-55-1	
PFDS*	Not detected	2.0	1.4	ng/L	2.01	335-77-3	
PFTrDA*	Not detected	2.0	1.2	ng/L	2.01	72629-94-8	
FOSA*	Not detected	2.0	1.8	ng/L	2.01	754-91-6	
PFTeDA*	Not detected	4.0	1.8	ng/L	2.01	376-06-7	
11Cl-PF3OUdS*	Not detected	2.0	1.8	ng/L	2.01	763051-92-9	
9Cl-PF3ONS*	Not detected	2.0	1.4	ng/L	2.01	756426-58-1	
ADONA*	Not detected	2.0	2.0	ng/L	2.01	919005-14-4	
HFPO-DA*	Not detected	10	2.0	ng/L	2.01	13252-13-6	

Merit Laboratories Login Checklist

Lab Set ID: S37370
Client: OBG02 (Ramboll Americas)
Project: RACER Coldwater Road
Submitted: 06/22/2022 15:00 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.	[X] Yes	[ ] No	[ ] N/A	Samples are received at 4C +/- 2C Thermometer #	IR 5.8
02.	[X] Yes	[ ] No	[ ] N/A	Received on ice/ cooling process begun	
03.	[ ] Yes	[X] No	[ ] N/A	Samples shipped	
04.	[ ] Yes	[X] No	[ ] N/A	Samples left in 24 hr. drop box	
05.	[ ] Yes	[ ] No	[X] N/A	Are there custody seals/tape or is the drop box locked	
Chain of Custody					
06.	[X] Yes	[ ] No	[ ] N/A	COC adequately filled out	
07.	[X] Yes	[ ] No	[ ] N/A	COC signed and relinquished to the lab	
08.	[X] Yes	[ ] No	[ ] N/A	Sample tag on bottles match COC	
09.	[ ] Yes	[X] No	[ ] N/A	Subcontracting needed? Subcontacted to:	
Preservation					
10.	[X] Yes	[ ] No	[ ] N/A	Do sample have correct chemical preservation	
11.	[ ] Yes	[ ] No	[X] N/A	Completed pH checks on preserved samples? (no VOAs)	
12.	[ ] Yes	[X] No	[ ] N/A	Did any samples need to be preserved in the lab?	
Bottle Conditions					
13.	[X] Yes	[ ] No	[ ] N/A	All bottles intact	
14.	[X] Yes	[ ] No	[ ] N/A	Appropriate analytical bottles are used	
15.	[X] Yes	[ ] No	[ ] N/A	Merit bottles used	
16.	[X] Yes	[ ] No	[ ] N/A	Sufficient sample volume received	
17.	[ ] Yes	[X] No	[ ] N/A	Samples require laboratory filtration	
18.	[X] Yes	[ ] No	[ ] N/A	Samples submitted within holding time	
19.	[ ] Yes	[ ] No	[X] N/A	Do water VOC or TOX bottles contain headspace	

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

Client Review By: _____ Date: _____

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

C.O.C. PAGE # 1 OF 1

144812

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME: Clifford Yantz Kevin Schneider
COMPANY: Ramboll
ADDRESS: 2090 Commonwealth Blvd.
CITY: Ann Arbor STATE: MI ZIP CODE: 48105
PHONE NO.: 313-333-0241 FAX NO.: P.O. NO.: 1971602628 task 37
E-MAIL ADDRESS: Clifford.Yantz@ramboll.com Kevin.Schneider@ramboll.com QUOTE NO.:

INVOICE TO

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

PROJECT NO./NAME: AFFF Coldwater Rd
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Kalyssa Yantz

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

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

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

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

Certifications
☐ OHIO VAP ☐ Drinking Water
☐ DoD ☐ NPDES

Project Locations
☐ Detroit ☐ New York
☐ Other

Special Instructions

MERIT LAB NO. FOR LAB USE ONLY	YEAR DATE	YEAR TIME	SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives: NONE	HCl	HNO_3	H_2SO_4	NaOH	MeOH	OTHER	PFAS 1979	Special Instructions
37370.01	6/22/22	12:27	SS-14	L	3	X							X	low level reporting
.02	6/22/22	11:40	SS-12	L	3	X							X	
.03	6/22/22	12:30	Field blank-06222022	L	1	X							X	

KRP

RELINQUISHED BY: SIGNATURE/ORGANIZATION	☒ Sampler	DATE	TIME
Kalyssa Yantz		6/22/22	14:00
RECEIVED BY: SIGNATURE/ORGANIZATION		DATE	TIME
[illegible]		6/22/22	14:0
RELINQUISHED BY: SIGNATURE/ORGANIZATION		DATE	TIME
[illegible]		6/22/22	15:00
RECEIVED BY: SIGNATURE/ORGANIZATION		DATE	TIME
[illegible]		6/22/22	1500

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 5.8

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

Rev. 5.18.12

Quality Control Report

Report ID: QC-S37370-01
Generated on 07/14/2022

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): S37370.01-S37370.03
Project: RACER Coldwater Road
Submitted Date/Time: 06/22/2022 15:00
Sampled by: Kalyssa Ramirez
P.O. #: 1940004462 TASK 37

QC Report Sections

Report Flag Descriptions

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

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

Barbara Ball
Quality Assurance Manager

QC Report - Analysis Summary

Lab Sample ID: S37370.01
Sample Tag: SS-14
Collected Date/Time: 06/22/2022 12:27
Matrix: Liquid
COC Reference: 144812

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
28 PFAs	ASTMD7979-19M	07/13/22 01:46	AK220712	PF220712W1	Yes	BLK/LCS/LCSD/MS/DU

QC Report - Analysis Summary

Lab Sample ID: S37370.02
Sample Tag: SS-12
Collected Date/Time: 06/22/2022 11:40
Matrix: Liquid
COC Reference: 144812

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
28 PFAs	ASTMD7979-19M	07/13/22 02:06	AK220712	PF220712W1	Yes	BLK/LCS/LCSD/MS/DU

QC Report - Analysis Summary

Lab Sample ID: S37370.03
Sample Tag: Field blank-06222022
Collected Date/Time: 06/22/2022 12:30
Matrix: Liquid
COC Reference: 144812

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
28 PFAs	ASTMD7979-19M	07/13/22 02:25	AK220712	PF220712W1	Yes	BLK/LCS/LCSD/MS/DU

QC Report - Prep Batch Summary

Organics - Volatiles, Prep Batch ID: PF220712W1

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

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S37370.01	28 PFAs	ASTMD7979-19M	07/13/22 01:46	AK220712
S37370.02	28 PFAs	ASTMD7979-19M	07/13/22 02:06	AK220712
S37370.03	28 PFAs	ASTMD7979-19M	07/13/22 02:25	AK220712

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S37370.01

Sample Tag: SS-14

Collected Date/Time: 06/22/2022 12:27

Matrix: Liquid

COC Reference: 144812

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK220712, Run Date: 07/13/2022 01:46, Matrix: WW, Dilution: 2.07

Internal Standard	Flags	**%Rec**	LCL	UCL
M2-4:2FTSA		**117.8**	50.0	150.0
M2-6:2FTSA		**107.1**	50.0	150.0
M2-8:2FTSA		**109.6**	50.0	150.0
M2PFTeDA		**137.8**	12.0	218.0
M3PFBS		**115.2**	50.0	150.0
M3PFHxS		**101.1**	50.0	150.0
M4PFHpA		**92.7**	50.0	150.0
M5PFHxA		**107.6**	50.0	150.0
M5PFPeA		**113.7**	50.0	150.0
M6PFDA		**111.7**	50.0	150.0
M7PFUnDA		**108.2**	50.0	150.0
M8FOSA		**107.3**	50.0	150.0
M8PFOA		**113.0**	50.0	150.0
M8PFOS		**105.5**	50.0	150.0
M9-PFNA		**116.4**	50.0	150.0
MPFBA		**110.7**	50.0	150.0
MPFDoDA		**110.5**	50.0	150.0
d3N-MeFOSAA		**115.1**	50.0	150.0
d5EtFOSAA		**121.2**	50.0	150.0
MHFPO-DA		**102.7**	50.0	150.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S37370.02

Sample Tag: SS-12

Collected Date/Time: 06/22/2022 11:40

Matrix: Liquid

COC Reference: 144812

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK220712, Run Date: 07/13/2022 02:06, Matrix: WW, Dilution: 2.12

Internal Standard	Flags	**%Rec**	LCL	UCL
M2-4:2FTSA		**140.1**	50.0	150.0
M2-6:2FTSA		**122.1**	50.0	150.0
M2-8:2FTSA		**111.1**	50.0	150.0
M2PFTeDA		**190.8**	12.0	218.0
M3PFBS		**109.8**	50.0	150.0
M3PFHxS		**95.6**	50.0	150.0
M4PFHpA		**104.5**	50.0	150.0
M5PFHxA		**100.7**	50.0	150.0
M5PFPeA		**106.0**	50.0	150.0
M6PFDA		**116.8**	50.0	150.0
M7PFUnDA		**116.7**	50.0	150.0
M8FOSA		**102.6**	50.0	150.0
M8PFOA		**114.4**	50.0	150.0
M8PFOS		**111.7**	50.0	150.0
M9-PFNA		**117.5**	50.0	150.0
MPFBA		**107.9**	50.0	150.0
MPFDoDA		**136.3**	50.0	150.0
d3N-MeFOSAA		**122.0**	50.0	150.0
d5EtFOSAA		**123.1**	50.0	150.0
MHFPO-DA		**110.7**	50.0	150.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S37370.03

Sample Tag: Field blank-06222022

Collected Date/Time: 06/22/2022 12:30

Matrix: Liquid

COC Reference: 144812

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK220712, Run Date: 07/13/2022 02:25, Matrix: WW, Dilution: 2.01

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		**123.1**	50.0	150.0
M2-6:2FTSA		**119.0**	50.0	150.0
M2-8:2FTSA		**103.7**	50.0	150.0
M2PFTeDA		**114.5**	12.0	218.0
M3PFBS		**108.0**	50.0	150.0
M3PFHxS		**99.0**	50.0	150.0
M4PFHpA		**94.8**	50.0	150.0
M5PFHxA		**102.6**	50.0	150.0
M5PFPeA		**104.4**	50.0	150.0
M6PFDA		**109.9**	50.0	150.0
M7PFUnDA		**108.2**	50.0	150.0
M8FOSA		**97.3**	50.0	150.0
M8PFOA		**118.6**	50.0	150.0
M8PFOS		**96.9**	50.0	150.0
M9-PFNA		**108.0**	50.0	150.0
MPFBA		**74.8**	50.0	150.0
MPFDoDA		**103.6**	50.0	150.0
d3N-MeFOSAA		**105.2**	50.0	150.0
d5EtFOSAA		**124.9**	50.0	150.0
MHFPO-DA		**100.3**	50.0	150.0

QC Report - Internal Standards per QC Sample

Organics - Volatiles, Prep Batch ID: PF220712W1

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

Blank (BLK)

Lab Sample ID: AK220712.BLK220712

Run in Batch: AK220712, Run Date: 07/12/2022 20:28, Prep Date: 07/12/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		**115.7**	50.0	150.0
M2-6:2FTSA		**117.3**	50.0	150.0
M2-8:2FTSA		**109.9**	50.0	150.0
M2PFTeDA		**108.2**	12.0	218.0
M3PFBS		**103.5**	50.0	150.0
M3PFHxS		**100.5**	50.0	150.0
M4PFHpA		**99.3**	50.0	150.0
M5PFHxA		**100.8**	50.0	150.0
M5PFPeA		**103.6**	50.0	150.0
M6PFDA		**102.1**	50.0	150.0
M7PFUnDA		**93.7**	50.0	150.0
M8FOSA		**95.7**	50.0	150.0
M8PFOA		**110.9**	50.0	150.0
M8PFOS		**97.7**	50.0	150.0
M9-PFNA		**98.2**	50.0	150.0
MPFBA		**101.8**	50.0	150.0
MPFDoDA		**100.6**	50.0	150.0
d3N-MeFOSAA		**105.3**	50.0	150.0
d5EtFOSAA		**123.5**	50.0	150.0
MHFPO-DA		**91.1**	50.0	150.0

Laboratory Control Sample (LCS)

Lab Sample ID: AK220712.LCS220712

Run in Batch: AK220712, Run Date: 07/12/2022 19:49, Prep Date: 07/12/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		**107.1**	50.0	150.0
M2-6:2FTSA		**112.9**	50.0	150.0
M2-8:2FTSA		**92.0**	50.0	150.0
M2PFTeDA		**52.7**	12.0	218.0
M3PFBS		**96.4**	50.0	150.0
M3PFHxS		**91.8**	50.0	150.0
M4PFHpA		**89.8**	50.0	150.0
M5PFHxA		**97.0**	50.0	150.0
M5PFPeA		**97.0**	50.0	150.0
M6PFDA		**93.7**	50.0	150.0
M7PFUnDA		**77.6**	50.0	150.0
M8FOSA		**98.5**	50.0	150.0
M8PFOA		**93.7**	50.0	150.0
M8PFOS		**86.5**	50.0	150.0
M9-PFNA		**96.3**	50.0	150.0
MPFBA		**96.7**	50.0	150.0
MPFDoDA		**87.8**	50.0	150.0
d3N-MeFOSAA		**100.4**	50.0	150.0
d5EtFOSAA		**108.0**	50.0	150.0
MHFPO-DA		**92.9**	50.0	150.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: AK220712.LCSD220712, Parent Sample ID: AK220712.LCS220712

Run in Batch: AK220712, Run Date: 07/12/2022 20:08, Prep Date: 07/12/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		**113.2**	50.0	150.0
M2-6:2FTSA		**107.6**	50.0	150.0
M2-8:2FTSA		**105.4**	50.0	150.0
M2PFTeDA		**108.5**	12.0	218.0
M3PFBS		**100.4**	50.0	150.0
M3PFHxS		**91.9**	50.0	150.0
M4PFHpA		**94.8**	50.0	150.0
M5PFHxA		**100.0**	50.0	150.0
M5PFPeA		**97.9**	50.0	150.0
M6PFDA		**98.6**	50.0	150.0
M7PFUnDA		**98.3**	50.0	150.0
M8FOSA		**95.1**	50.0	150.0
M8PFOA		**104.4**	50.0	150.0
M8PFOS		**81.2**	50.0	150.0
M9-PFNA		**97.8**	50.0	150.0
MPFBA		**97.8**	50.0	150.0
MPFDoDA		**107.4**	50.0	150.0
d3N-MeFOSAA		**97.2**	50.0	150.0
d5EtFOSAA		**111.8**	50.0	150.0
MHFPO-DA		**91.5**	50.0	150.0

Matrix Spike (MS)

Lab Sample ID: AK220712.3721428M, Parent Sample ID: S37214.28

Run in Batch: AK220712, Run Date: 07/12/2022 22:31, Prep Date: 07/12/2022, Matrix: WW, Dilution: 2.02

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		**123.0**	50.0	150.0
M2-6:2FTSA		**107.0**	50.0	150.0
M2-8:2FTSA		**114.6**	50.0	150.0
M2PFTeDA		**175.4**	12.0	218.0
M3PFBS		**108.8**	50.0	150.0
M3PFHxS		**103.8**	50.0	150.0
M4PFHpA		**95.3**	50.0	150.0
M5PFHxA		**101.8**	50.0	150.0
M5PFPeA		**108.5**	50.0	150.0
M6PFDA		**115.3**	50.0	150.0
M7PFUnDA		**117.2**	50.0	150.0
M8FOSA		**109.4**	50.0	150.0
M8PFOA		**113.9**	50.0	150.0
M8PFOS		**103.2**	50.0	150.0
M9-PFNA		**99.5**	50.0	150.0
MPFBA		**102.3**	50.0	150.0
MPFDoDA		**120.3**	50.0	150.0
d3N-MeFOSAA		**102.5**	50.0	150.0
d5EtFOSAA		**117.9**	50.0	150.0
MHFPO-DA		**101.9**	50.0	150.0

Duplicate (DUP)

Lab Sample ID: AK220712.3792301D, Parent Sample ID: S37923.01

Run in Batch: AK220712, Run Date: 07/12/2022 21:52, Prep Date: 07/12/2022, Matrix: WW, Dilution: 2.04

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		**145.1**	50.0	150.0
M2-6:2FTSA		**118.9**	50.0	150.0
M2-8:2FTSA		**120.9**	50.0	150.0
M2PFTeDA		**154.9**	12.0	218.0
M3PFBS		**99.6**	50.0	150.0
M3PFHxS		**91.9**	50.0	150.0
M4PFHpA		**89.6**	50.0	150.0
M5PFHxA		**100.3**	50.0	150.0
M5PFPeA		**108.4**	50.0	150.0
M6PFDA		**107.0**	50.0	150.0
M7PFUnDA		**107.5**	50.0	150.0
M8FOSA		**100.6**	50.0	150.0
M8PFOA		**112.0**	50.0	150.0
M8PFOS		**105.3**	50.0	150.0
M9-PFNA		**93.0**	50.0	150.0
MPFBA		**107.5**	50.0	150.0
MPFDoDA		**116.3**	50.0	150.0
d3N-MeFOSAA		**102.8**	50.0	150.0
d5EtFOSAA		**122.2**	50.0	150.0
MHFPO-DA		**100.3**	50.0	150.0

Organics - Volatiles, Prep Batch ID: PF220712W1

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

Blank (BLK)

Lab Sample ID: AK220712.BLK220712

Run in Batch: AK220712, Run Date: 07/12/2022 20:28, Prep Date: 07/12/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
PFBA		ND	5	ng/l
PFPeA		ND	2	ng/l
4:2 FTSA		ND	1	ng/l
PFHxA		ND	1	ng/l
PFBS		ND	1	ng/l
PFHpA		ND	1	ng/l
PFPeS		ND	1	ng/l
6:2 FTSA		ND	1	ng/l
PFOA		ND	1	ng/l
PFHxS		ND	1	ng/l
PFHxS-LN		ND	1	ng/l
PFHxS-BR		ND	1	ng/l
PFNA		ND	1	ng/l
8:2 FTSA		ND	1	ng/l
PFHpS		ND	1	ng/l
PFDA		ND	1	ng/l
N-MeFOSAA		ND	1	ng/l
EtFOSAA		ND	2	ng/l
PFOS		ND	1	ng/l
PFOS-LN		ND	1	ng/l
PFOS-BR		ND	1	ng/l
PFUnDA		ND	1	ng/l
PFNS		ND	1	ng/l
PFDoDA		ND	1	ng/l
PFDS		ND	1	ng/l
PFTrDA		ND	1	ng/l
FOSA		ND	1	ng/l
PFTeDA		ND	2	ng/l
11CL-PF3OUdS		ND	1	ng/l
9CL-PF3ONS		ND	1	ng/l
ADONA		ND	1	ng/l
HFPO-DA		ND	1	ng/l

Laboratory Control Sample (LCS)

Lab Sample ID: AK220712.LCS220712

Run in Batch: AK220712, Run Date: 07/12/2022 19:49, Prep Date: 07/12/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
PFBA		106.2	70.0	130.0
PFPeA		98.4	70.0	130.0
4:2 FTSA		109.8	70.0	130.0
PFHxA		107.8	70.0	130.0
PFBS		109.4	70.0	130.0
HFPO-DA		86.8	70.0	130.0
PFHpA		88.0	70.0	130.0
PFPeS		111.2	70.0	130.0
ADONA		114.0	70.0	130.0

Organics - Volatiles, Prep Batch ID: PF220712W1 (continued)

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

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: AK220712.LCS220712

Run in Batch: AK220712, Run Date: 07/12/2022 19:49, Prep Date: 07/12/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
6:2 FTSA		100.2	70.0	130.0
PFOA		111.0	70.0	130.0
PFHxS		108.8	70.0	130.0
PFNA		108.2	70.0	130.0
8:2 FTSA		100.0	70.0	130.0
PFHpS		81.0	70.0	130.0
N-MeFOSAA		94.6	70.0	130.0
PFDA		103.6	70.0	130.0
EtFOSAA		113.8	70.0	130.0
PFOS		109.0	70.0	130.0
PFUnDA		102.4	70.0	130.0
9CL-PF3ONS		113.6	70.0	130.0
PFNS		90.0	70.0	130.0
PFDoDA		96.2	70.0	130.0
PFDS		100.2	70.0	130.0
PFTrDA		75.6	70.0	130.0
11CL-PF3OUdS		98.2	70.0	130.0
FOSA		82.0	70.0	130.0
PFTeDA		96.2	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: AK220712.LCSD220712, Parent Sample ID: AK220712.LCS220712

Run in Batch: AK220712, Run Date: 07/12/2022 20:08, Prep Date: 07/12/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
PFBA		102.2	70.0	130.0	3.8	30.0
PFPeA		93.8	70.0	130.0	4.8	30.0
4:2 FTSA		100.0	70.0	130.0	9.3	30.0
PFHxA		96.6	70.0	130.0	11.0	30.0
PFBS		109.0	70.0	130.0	0.4	30.0
HFPO-DA		91.0	70.0	130.0	4.7	30.0
PFHpA		87.8	70.0	130.0	0.2	30.0
PFPeS		111.2	70.0	130.0	0.0	30.0
ADONA		97.4	70.0	130.0	15.7	30.0
6:2 FTSA		107.8	70.0	130.0	7.3	30.0
PFOA		105.0	70.0	130.0	5.6	30.0
PFHxS		104.0	70.0	130.0	4.5	30.0
PFNA		110.2	70.0	130.0	1.8	30.0
8:2 FTSA		88.8	70.0	130.0	11.9	30.0
PFHpS		84.8	70.0	130.0	4.6	30.0
N-MeFOSAA		90.2	70.0	130.0	4.8	30.0
PFDA		92.2	70.0	130.0	11.6	30.0
EtFOSAA		109.6	70.0	130.0	3.8	30.0
PFOS		119.2	70.0	130.0	8.9	30.0
PFUnDA		83.4	70.0	130.0	20.5	30.0
9CL-PF3ONS		120.8	70.0	130.0	6.1	30.0
PFNS		101.2	70.0	130.0	11.7	30.0

Organics - Volatiles, Prep Batch ID: PF220712W1 (continued)

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

Laboratory Control Sample Duplicate (LCSD) (continued)

Lab Sample ID: AK220712.LCSD220712, Parent Sample ID: AK220712.LCS220712

Run in Batch: AK220712, Run Date: 07/12/2022 20:08, Prep Date: 07/12/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
PFDoDA		91.6	70.0	130.0	4.9	30.0
PFDS		116.8	70.0	130.0	15.3	30.0
PFTrDA		88.0	70.0	130.0	15.2	30.0
11CL-PF3OUdS		120.0	70.0	130.0	20.0	30.0
FOSA		86.4	70.0	130.0	5.2	30.0
PFTeDA		97.0	70.0	130.0	0.8	30.0

Matrix Spike (MS)

Lab Sample ID: AK220712.3721428M, Parent Sample ID: S37214.28

Run in Batch: AK220712, Run Date: 07/12/2022 22:31, Prep Date: 07/12/2022, Matrix: WW, Dilution: 2.02

Analyte	Flags	% Rec	LCL	UCL
PFBA		108.9	70.0	130.0
PFPeA		89.1	70.0	130.0
4:2 FTSA		98.0	70.0	130.0
PFHxA		99.0	70.0	130.0
PFBS		96.2	70.0	130.0
PFHpA		81.2	70.0	130.0
PFPeS		99.0	70.0	130.0
6:2 FTSA		99.0	70.0	130.0
PFOA		95.0	70.0	130.0
PFHxS		91.1	70.0	130.0
PFNA		108.9	70.0	130.0
8:2 FTSA		80.2	70.0	130.0
PFHpS		72.3	70.0	130.0
PFDA		90.1	70.0	130.0
N-MeFOSAA		88.1	70.0	130.0
EtFOSAA		108.9	70.0	130.0
PFOS		97.0	70.0	130.0
PFUnDA		72.3	70.0	130.0
PFNS		78.2	70.0	130.0
PFDoDA		90.1	70.0	130.0
PFDS		98.0	70.0	130.0
PFTrDA		88.1	70.0	130.0
FOSA		77.2	70.0	130.0
PFTeDA		88.1	70.0	130.0
11CL-PF3OUdS		97.0	70.0	130.0
9CL-PF3ONS		88.1	70.0	130.0
ADONA		93.1	70.0	130.0
HFPO-DA		90.1	70.0	130.0

Duplicate (DUP)

Lab Sample ID: AK220712.3792301D, Parent Sample ID: S37923.01

Run in Batch: AK220712, Run Date: 07/12/2022 21:52, Prep Date: 07/12/2022, Matrix: WW, Dilution: 2.04

Analyte	Flags	RPD	RPD CL
PFBA		NC	30.0
PFPeA		NC	30.0

Organics - Volatiles, Prep Batch ID: PF220712W1 (continued)

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

Duplicate (DUP) (continued)

Lab Sample ID: AK220712.3792301D, Parent Sample ID: S37923.01

Run in Batch: AK220712, Run Date: 07/12/2022 21:52, Prep Date: 07/12/2022, Matrix: WW, Dilution: 2.04

Analyte	Flags	RPD	RPD CL
4:2 FTSA		NC	30.0
PFHxA	*	200.0	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	*	200.0	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		1.3	30.0
PFOS-LN		4.7	30.0
PFOS-BR		2.0	30.0
PFUnDA		NC	30.0
PFNS		NC	30.0
PFDoDA		NC	30.0
PFDS		NC	30.0
PFTrDA		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

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www.meritlabs.com

C.O.C. PAGE # 1 OF 1

144812

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME: Clifford Yantz Kevin Schneider
COMPANY: Ramboll
ADDRESS: 2090 Commonwealth Blvd.
CITY: Ann Arbor STATE: MI ZIP CODE: 48105
PHONE NO.: 313-333-0241 FAX NO.: P.O. NO.: 1971602628 task 37
E-MAIL ADDRESS: Clifford.Yantz@ramboll.com Kevin.Schneider@ramboll.com QUOTE NO.:

INVOICE TO

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

PROJECT NO./NAME: AFFF Coldwater Rd
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Kalyssa Yantz

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

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

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

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

Certifications
☐ OHIO VAP ☐ Drinking Water
☐ DoD ☐ NPDES

Project Locations
☐ Detroit ☐ New York
☐ Other

Special Instructions

MERIT LAB NO. FOR LAB USE ONLY	YEAR DATE	YEAR TIME	SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives: NONE	HCl	HNO_3	H_2SO_4	NaOH	MeOH	OTHER	PFAS 1979	Special Instructions
37370.01	6/22/22	12:27	SS-14	L	3	X							X	low level reporting
.02	6/22/22	11:40	SS-12	L	3	X							X	
.03	6/22/22	12:30	Field blank-06222022	L	1	X							X	

KRP

RELINQUISHED BY: SIGNATURE/ORGANIZATION	☒ Sampler	DATE	TIME
Kalyssa Yantz		6/22/22	14:00
RECEIVED BY: SIGNATURE/ORGANIZATION		DATE	TIME
[illegible]		6/22/22	14:0
RELINQUISHED BY: SIGNATURE/ORGANIZATION		DATE	TIME
[illegible]		6/22/22	15:00
RECEIVED BY: SIGNATURE/ORGANIZATION		DATE	TIME
[illegible]		6/22/22	1500

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 5.8

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

Rev. 5.18.12