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ANALYTICAL REPORT

PREPARED FOR

Attn: Justin Huntley
Union County Water
500 N Main St.
Monroe, North Carolina 28112

Generated 6/18/2023 10:28:40 PM

JOB DESCRIPTION

PFAS - 533

JOB NUMBER

810-62098-1

Eurofins Eaton Analytical South Bend
110 S Hill Street
South Bend IN 46617

See page two for job notes and contact information.

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Eaton Analytical, LLC Project Manager.

Authorization

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Table of Contents

Definitions/Glossary

Client: Union County Water
Project/Site: PFAS - 533

Job ID: 810-62098-1

Qualifiers

LCMS

Qualifier	Qualifier Description
*5-	Isotope dilution analyte is outside acceptance limits, low biased.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 810-62098-1

Laboratory: Eurofins Eaton Analytical South Bend

Narrative

Job Narrative
810-62098-1

Receipt

The samples were received on 5/5/2023 9:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 3.0°C

PFAS

Method 533: The Isotope Dilution Analyte (IDA) recovery associated with the following sample is below the method recommended limit: J18-Rehobeth ARV (810-62098-1). 13C2 PFDoA recovery was 49%. Limit 50-200%. Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the sample. Results should not be affected.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Detection Summary

Client: Union County Water
Project/Site: PFAS - 533

Job ID: 810-62098-1

Client Sample ID: J18-Rehobeth ARV — Lab Sample ID: 810-62098-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluoropentanoic acid (PFPeA)	6.4		2.0		ng/L	1		533	Total/NA
Perfluorohexanoic acid (PFHxA)	6.6		2.0		ng/L	1		533	Total/NA
Perfluoroheptanoic acid (PFHpA)	2.5		2.0		ng/L	1		533	Total/NA
Perfluorooctanoic acid (PFOA)	3.7		2.0		ng/L	1		533	Total/NA
Perfluorobutanesulfonic acid (PFBS)	2.3		2.0		ng/L	1		533	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	2.1		2.0		ng/L	1		533	Total/NA
Perfluorooctanesulfonic acid (PFOS)	3.1		2.0		ng/L	1		533	Total/NA

Client Sample ID: T07-Hwy 74 E BPS — Lab Sample ID: 810-62098-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	19		2.0		ng/L	1		533	Total/NA
Perfluoropentanoic acid (PFPeA)	2.5		2.0		ng/L	1		533	Total/NA
Perfluorohexanoic acid (PFHxA)	3.0		2.0		ng/L	1		533	Total/NA
Perfluorooctanoic acid (PFOA)	2.8		2.0		ng/L	1		533	Total/NA
Perfluorobutanesulfonic acid (PFBS)	2.0		2.0		ng/L	1		533	Total/NA
Perfluorooctanesulfonic acid (PFOS)	4.3		2.0		ng/L	1		533	Total/NA

Client Sample ID: NOR-Norwood WTP — Lab Sample ID: 810-62098-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	6.6		2.0		ng/L	1		533	Total/NA
Perfluoropentanoic acid (PFPeA)	2.9		2.0		ng/L	1		533	Total/NA
Perfluorohexanoic acid (PFHxA)	3.1		2.0		ng/L	1		533	Total/NA
Perfluorooctanoic acid (PFOA)	2.6		2.0		ng/L	1		533	Total/NA
Perfluorobutanesulfonic acid (PFBS)	2.1		2.0		ng/L	1		533	Total/NA
Perfluorooctanesulfonic acid (PFOS)	3.8		2.0		ng/L	1		533	Total/NA

This Detection Summary does not include radiochemical test results.

Client: Union County Water
Project/Site: PFAS - 533

Job ID: 810-62098-1

Client Sample ID: J18-Rehobeth ARV
Date Collected: 05/04/23 09:21
Date Received: 05/05/23 09:00

Lab Sample ID: 810-62098-1
Matrix: Drinking Water

Method: EPA 533 - Perfluorinated and Polyfluorinated Alkyl Substances in Drinking Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<2.0		2.0		ng/L		05/26/23 06:50	05/28/23 00:52	1
Perfluoropentanoic acid (PFPeA)	**6.4**		2.0		ng/L		05/26/23 06:50	05/28/23 00:52	1
Perfluorohexanoic acid (PFHxA)	**6.6**		2.0		ng/L		05/26/23 06:50	05/28/23 00:52	1
Perfluoroheptanoic acid (PFHpA)	**2.5**		2.0		ng/L		05/26/23 06:50	05/28/23 00:52	1
Perfluorooctanoic acid (PFOA)	**3.7**		2.0		ng/L		05/26/23 06:50	05/28/23 00:52	1
Perfluorononanoic acid (PFNA)	<2.0		2.0		ng/L		05/26/23 06:50	05/28/23 00:52	1
Perfluorodecanoic acid (PFDA)	<2.0		2.0		ng/L		05/26/23 06:50	05/28/23 00:52	1
Perfluoroundecanoic acid (PFUnA)	<2.0		2.0		ng/L		05/26/23 06:50	05/28/23 00:52	1
Perfluorododecanoic acid (PFDoA)	<2.0		2.0		ng/L		05/26/23 06:50	05/28/23 00:52	1
Perfluorobutanesulfonic acid (PFBS)	**2.3**		2.0		ng/L		05/26/23 06:50	05/28/23 00:52	1
Perfluoropentanesulfonic acid (PFPeS)	<2.0		2.0		ng/L		05/26/23 06:50	05/28/23 00:52	1
Perfluorohexanesulfonic acid (PFHxS)	**2.1**		2.0		ng/L		05/26/23 06:50	05/28/23 00:52	1
Perfluoroheptanesulfonic acid (PFHpS)	<2.0		2.0		ng/L		05/26/23 06:50	05/28/23 00:52	1
Perfluorooctanesulfonic acid (PFOS)	**3.1**		2.0		ng/L		05/26/23 06:50	05/28/23 00:52	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	<2.0		2.0		ng/L		05/26/23 06:50	05/28/23 00:52	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<2.0		2.0		ng/L		05/26/23 06:50	05/28/23 00:52	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	<2.0		2.0		ng/L		05/26/23 06:50	05/28/23 00:52	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<2.0		2.0		ng/L		05/26/23 06:50	05/28/23 00:52	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<2.0		2.0		ng/L		05/26/23 06:50	05/28/23 00:52	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		2.0		ng/L		05/26/23 06:50	05/28/23 00:52	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	<2.0		2.0		ng/L		05/26/23 06:50	05/28/23 00:52	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	<2.0		2.0		ng/L		05/26/23 06:50	05/28/23 00:52	1
Perfluoro(4-methoxybutanoic acid)	<2.0		2.0		ng/L		05/26/23 06:50	05/28/23 00:52	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<2.0		2.0		ng/L		05/26/23 06:50	05/28/23 00:52	1
Perfluoro-3,6-dioxaheptanoic acid	<2.0		2.0		ng/L		05/26/23 06:50	05/28/23 00:52	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*88*		*50 - 200*	*05/26/23 06:50*	*05/28/23 00:52*	*1*
13C5 PFPeA	*96*		*50 - 200*	*05/26/23 06:50*	*05/28/23 00:52*	*1*
13C5 PFHxA	*82*		*50 - 200*	*05/26/23 06:50*	*05/28/23 00:52*	*1*
13C4 PFHpA	*80*		*50 - 200*	*05/26/23 06:50*	*05/28/23 00:52*	*1*
13C8 PFOA	*75*		*50 - 200*	*05/26/23 06:50*	*05/28/23 00:52*	*1*
13C9 PFNA	*73*		*50 - 200*	*05/26/23 06:50*	*05/28/23 00:52*	*1*
13C6 PFDA	*65*		*50 - 200*	*05/26/23 06:50*	*05/28/23 00:52*	*1*
13C7 PFUnA	*56*		*50 - 200*	*05/26/23 06:50*	*05/28/23 00:52*	*1*
13C2 PFDoA	*49*	**5-*	*50 - 200*	*05/26/23 06:50*	*05/28/23 00:52*	*1*
13C3 HFPO-DA	*78*		*50 - 200*	*05/26/23 06:50*	*05/28/23 00:52*	*1*
13C3 PFBS	*86*		*50 - 200*	*05/26/23 06:50*	*05/28/23 00:52*	*1*
13C8 PFOS	*90*		*50 - 200*	*05/26/23 06:50*	*05/28/23 00:52*	*1*
13C2-4:2-FTS	*110*		*50 - 200*	*05/26/23 06:50*	*05/28/23 00:52*	*1*

Client Sample ID: J18-Rehobeth ARV

Lab Sample ID: 810-62098-1

Date Collected: 05/04/23 09:21

Matrix: Drinking Water

Date Received: 05/05/23 09:00

Method: EPA 533 - Perfluorinated and Polyfluorinated Alkyl Substances in Drinking Water (Continued)

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2-6:2-FTS	*100*		*50 - 200*	*05/26/23 06:50*	*05/28/23 00:52*	*1*
13C2-8:2-FTS	*98*		*50 - 200*	*05/26/23 06:50*	*05/28/23 00:52*	*1*
13C3 PFHxS	*91*		*50 - 200*	*05/26/23 06:50*	*05/28/23 00:52*	*1*

Client Sample ID: T07-Hwy 74 E BPS

Lab Sample ID: 810-62098-2

Date Collected: 05/04/23 10:16

Matrix: Drinking Water

Date Received: 05/05/23 09:00

Method: EPA 533 - Perfluorinated and Polyfluorinated Alkyl Substances in Drinking Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**19**		2.0		ng/L		05/26/23 06:50	05/28/23 01:05	1
Perfluoropentanoic acid (PFPeA)	**2.5**		2.0		ng/L		05/26/23 06:50	05/28/23 01:05	1
Perfluorohexanoic acid (PFHxA)	**3.0**		2.0		ng/L		05/26/23 06:50	05/28/23 01:05	1
Perfluoroheptanoic acid (PFHpA)	<2.0		2.0		ng/L		05/26/23 06:50	05/28/23 01:05	1
Perfluorooctanoic acid (PFOA)	**2.8**		2.0		ng/L		05/26/23 06:50	05/28/23 01:05	1
Perfluorononanoic acid (PFNA)	<2.0		2.0		ng/L		05/26/23 06:50	05/28/23 01:05	1
Perfluorodecanoic acid (PFDA)	<2.0		2.0		ng/L		05/26/23 06:50	05/28/23 01:05	1
Perfluoroundecanoic acid (PFUnA)	<2.0		2.0		ng/L		05/26/23 06:50	05/28/23 01:05	1
Perfluorododecanoic acid (PFDoA)	<2.0		2.0		ng/L		05/26/23 06:50	05/28/23 01:05	1
Perfluorobutanesulfonic acid (PFBS)	**2.0**		2.0		ng/L		05/26/23 06:50	05/28/23 01:05	1
Perfluoropentanesulfonic acid (PFPeS)	<2.0		2.0		ng/L		05/26/23 06:50	05/28/23 01:05	1
Perfluorohexanesulfonic acid (PFHxS)	<2.0		2.0		ng/L		05/26/23 06:50	05/28/23 01:05	1
Perfluoroheptanesulfonic acid (PFHpS)	<2.0		2.0		ng/L		05/26/23 06:50	05/28/23 01:05	1
Perfluorooctanesulfonic acid (PFOS)	**4.3**		2.0		ng/L		05/26/23 06:50	05/28/23 01:05	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	<2.0		2.0		ng/L		05/26/23 06:50	05/28/23 01:05	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<2.0		2.0		ng/L		05/26/23 06:50	05/28/23 01:05	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	<2.0		2.0		ng/L		05/26/23 06:50	05/28/23 01:05	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<2.0		2.0		ng/L		05/26/23 06:50	05/28/23 01:05	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<2.0		2.0		ng/L		05/26/23 06:50	05/28/23 01:05	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		2.0		ng/L		05/26/23 06:50	05/28/23 01:05	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	<2.0		2.0		ng/L		05/26/23 06:50	05/28/23 01:05	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	<2.0		2.0		ng/L		05/26/23 06:50	05/28/23 01:05	1
Perfluoro(4-methoxybutanoic acid)	<2.0		2.0		ng/L		05/26/23 06:50	05/28/23 01:05	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<2.0		2.0		ng/L		05/26/23 06:50	05/28/23 01:05	1
Perfluoro-3,6-dioxaheptanoic acid	<2.0		2.0		ng/L		05/26/23 06:50	05/28/23 01:05	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*88*		*50 - 200*	*05/26/23 06:50*	*05/28/23 01:05*	*1*
13C5 PFPeA	*92*		*50 - 200*	*05/26/23 06:50*	*05/28/23 01:05*	*1*
13C5 PFHxA	*81*		*50 - 200*	*05/26/23 06:50*	*05/28/23 01:05*	*1*
13C4 PFHpA	*80*		*50 - 200*	*05/26/23 06:50*	*05/28/23 01:05*	*1*

Client Sample ID: T07-Hwy 74 E BPS

Lab Sample ID: 810-62098-2

Date Collected: 05/04/23 10:16

Matrix: Drinking Water

Date Received: 05/05/23 09:00

Method: EPA 533 - Perfluorinated and Polyfluorinated Alkyl Substances in Drinking Water (Continued)

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA	*75*		*50 - 200*	*05/26/23 06:50*	*05/28/23 01:05*	*1*
13C9 PFNA	*71*		*50 - 200*	*05/26/23 06:50*	*05/28/23 01:05*	*1*
13C6 PFDA	*65*		*50 - 200*	*05/26/23 06:50*	*05/28/23 01:05*	*1*
13C7 PFUnA	*61*		*50 - 200*	*05/26/23 06:50*	*05/28/23 01:05*	*1*
13C2 PFDoA	*59*		*50 - 200*	*05/26/23 06:50*	*05/28/23 01:05*	*1*
13C3 HFPO-DA	*83*		*50 - 200*	*05/26/23 06:50*	*05/28/23 01:05*	*1*
13C3 PFBS	*85*		*50 - 200*	*05/26/23 06:50*	*05/28/23 01:05*	*1*
13C8 PFOS	*88*		*50 - 200*	*05/26/23 06:50*	*05/28/23 01:05*	*1*
13C2-4:2-FTS	*109*		*50 - 200*	*05/26/23 06:50*	*05/28/23 01:05*	*1*
13C2-6:2-FTS	*101*		*50 - 200*	*05/26/23 06:50*	*05/28/23 01:05*	*1*
13C2-8:2-FTS	*98*		*50 - 200*	*05/26/23 06:50*	*05/28/23 01:05*	*1*
13C3 PFHxS	*90*		*50 - 200*	*05/26/23 06:50*	*05/28/23 01:05*	*1*

Client Sample ID: NOR-Norwood WTP

Lab Sample ID: 810-62098-3

Date Collected: 05/04/23 10:54

Matrix: Drinking Water

Date Received: 05/05/23 09:00

Method: EPA 533 - Perfluorinated and Polyfluorinated Alkyl Substances in Drinking Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**6.6**		2.0		ng/L		05/30/23 07:28	05/30/23 22:46	1
Perfluoropentanoic acid (PFPeA)	**2.9**		2.0		ng/L		05/30/23 07:28	05/30/23 22:46	1
Perfluorohexanoic acid (PFHxA)	**3.1**		2.0		ng/L		05/30/23 07:28	05/30/23 22:46	1
Perfluoroheptanoic acid (PFHpA)	<2.0		2.0		ng/L		05/30/23 07:28	05/30/23 22:46	1
Perfluorooctanoic acid (PFOA)	**2.6**		2.0		ng/L		05/30/23 07:28	05/30/23 22:46	1
Perfluorononanoic acid (PFNA)	<2.0		2.0		ng/L		05/30/23 07:28	05/30/23 22:46	1
Perfluorodecanoic acid (PFDA)	<2.0		2.0		ng/L		05/30/23 07:28	05/30/23 22:46	1
Perfluoroundecanoic acid (PFUnA)	<2.0		2.0		ng/L		05/30/23 07:28	05/30/23 22:46	1
Perfluorododecanoic acid (PFDoA)	<2.0		2.0		ng/L		05/30/23 07:28	05/30/23 22:46	1
Perfluorobutanesulfonic acid (PFBS)	**2.1**		2.0		ng/L		05/30/23 07:28	05/30/23 22:46	1
Perfluoropentanesulfonic acid (PFPeS)	<2.0		2.0		ng/L		05/30/23 07:28	05/30/23 22:46	1
Perfluorohexanesulfonic acid (PFHxS)	<2.0		2.0		ng/L		05/30/23 07:28	05/30/23 22:46	1
Perfluoroheptanesulfonic acid (PFHpS)	<2.0		2.0		ng/L		05/30/23 07:28	05/30/23 22:46	1
Perfluorooctanesulfonic acid (PFOS)	**3.8**		2.0		ng/L		05/30/23 07:28	05/30/23 22:46	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	<2.0		2.0		ng/L		05/30/23 07:28	05/30/23 22:46	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<2.0		2.0		ng/L		05/30/23 07:28	05/30/23 22:46	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	<2.0		2.0		ng/L		05/30/23 07:28	05/30/23 22:46	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<2.0		2.0		ng/L		05/30/23 07:28	05/30/23 22:46	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<2.0		2.0		ng/L		05/30/23 07:28	05/30/23 22:46	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		2.0		ng/L		05/30/23 07:28	05/30/23 22:46	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	<2.0		2.0		ng/L		05/30/23 07:28	05/30/23 22:46	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	<2.0		2.0		ng/L		05/30/23 07:28	05/30/23 22:46	1

Client: Union County Water
Project/Site: PFAS - 533

Job ID: 810-62098-1

Client Sample ID: NOR-Norwood WTP
Date Collected: 05/04/23 10:54
Date Received: 05/05/23 09:00

Lab Sample ID: 810-62098-3
Matrix: Drinking Water

Method: EPA 533 - Perfluorinated and Polyfluorinated Alkyl Substances in Drinking Water (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoro(4-methoxybutanoic acid)	<2.0		2.0		ng/L		05/30/23 07:28	05/30/23 22:46	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<2.0		2.0		ng/L		05/30/23 07:28	05/30/23 22:46	1
Perfluoro-3,6-dioxaheptanoic acid	<2.0		2.0		ng/L		05/30/23 07:28	05/30/23 22:46	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*85*		*50 - 200*	*05/30/23 07:28*	*05/30/23 22:46*	*1*
13C5 PFPeA	*119*		*50 - 200*	*05/30/23 07:28*	*05/30/23 22:46*	*1*
13C5 PFHxA	*92*		*50 - 200*	*05/30/23 07:28*	*05/30/23 22:46*	*1*
13C4 PFHpA	*84*		*50 - 200*	*05/30/23 07:28*	*05/30/23 22:46*	*1*
13C8 PFOA	*78*		*50 - 200*	*05/30/23 07:28*	*05/30/23 22:46*	*1*
13C9 PFNA	*72*		*50 - 200*	*05/30/23 07:28*	*05/30/23 22:46*	*1*
13C6 PFDA	*64*		*50 - 200*	*05/30/23 07:28*	*05/30/23 22:46*	*1*
13C7 PFUnA	*63*		*50 - 200*	*05/30/23 07:28*	*05/30/23 22:46*	*1*
13C2 PFDoA	*64*		*50 - 200*	*05/30/23 07:28*	*05/30/23 22:46*	*1*
13C3 HFPO-DA	*89*		*50 - 200*	*05/30/23 07:28*	*05/30/23 22:46*	*1*
13C3 PFBS	*91*		*50 - 200*	*05/30/23 07:28*	*05/30/23 22:46*	*1*
13C8 PFOS	*85*		*50 - 200*	*05/30/23 07:28*	*05/30/23 22:46*	*1*
13C2-4:2-FTS	*118*		*50 - 200*	*05/30/23 07:28*	*05/30/23 22:46*	*1*
13C2-6:2-FTS	*92*		*50 - 200*	*05/30/23 07:28*	*05/30/23 22:46*	*1*
13C2-8:2-FTS	*87*		*50 - 200*	*05/30/23 07:28*	*05/30/23 22:46*	*1*
13C3 PFHxS	*87*		*50 - 200*	*05/30/23 07:28*	*05/30/23 22:46*	*1*

Isotope Dilution Summary

Client: Union County Water
Project/Site: PFAS - 533

Job ID: 810-62098-1

Method: 533 - Perfluorinated and Polyfluorinated Alkyl Substances in Drinking Water

Matrix: Drinking Water **Prep Type: Total/NA**

		Percent Isotope Dilution Recovery (Acceptance Limits)							
		PFBA	PFPeA	13C5PHA	C4PFHA	C8PFOA	C9PFNA	C6PFDA	13C7PUA
Lab Sample ID	Client Sample ID	(50-200)	(50-200)	(50-200)	(50-200)	(50-200)	(50-200)	(50-200)	(50-200)
810-62098-1	J18-Rehobeth ARV	88	96	82	80	75	73	65	56
810-62098-2	T07-Hwy 74 E BPS	88	92	81	80	75	71	65	61
810-62098-3	NOR-Norwood WTP	85	119	92	84	78	72	64	63
LCS 810-60430/3-A	Lab Control Sample	75	73	77	79	80	80	80	77
LCS 810-60609/3-A	Lab Control Sample	85	87	87	86	86	86	87	86
LLCS 810-60430/2-A	Lab Control Sample	75	72	77	76	75	72	64	58
LLCS 810-60609/2-A	Lab Control Sample	86	83	84	86	86	86	84	82
MBL 810-60430/1-A	Method Blank	79	75	80	79	79	79	75	72
MBL 810-60609/1-A	Method Blank	90	88	88	88	89	90	87	85

		Percent Isotope Dilution Recovery (Acceptance Limits)							
		PFDoA	HFPODA	C3PFBS	C8PFOS	42FTS	62FTS	82FTS	C3PFHS
Lab Sample ID	Client Sample ID	(50-200)	(50-200)	(50-200)	(50-200)	(50-200)	(50-200)	(50-200)	(50-200)
810-62098-1	J18-Rehobeth ARV	49 *5-	78	86	90	110	100	98	91
810-62098-2	T07-Hwy 74 E BPS	59	83	85	88	109	101	98	90
810-62098-3	NOR-Norwood WTP	64	89	91	85	118	92	87	87
LCS 810-60430/3-A	Lab Control Sample	76	73	90	90	98	94	96	91
LCS 810-60609/3-A	Lab Control Sample	85	85	87	87	92	94	88	88
LLCS 810-60430/2-A	Lab Control Sample	58	73	93	92	95	93	96	93
LLCS 810-60609/2-A	Lab Control Sample	81	82	93	88	88	90	87	89
MBL 810-60430/1-A	Method Blank	69	72	93	92	95	95	96	91
MBL 810-60609/1-A	Method Blank	85	87	93	89	88	89	89	91

Surrogate Legend

PFBA = 13C4 PFBA
PFPeA = 13C5 PFPeA
13C5PHA = 13C5 PFHxA
C4PFHA = 13C4 PFHpA
C8PFOA = 13C8 PFOA
C9PFNA = 13C9 PFNA
C6PFDA = 13C6 PFDA
13C7PUA = 13C7 PFUnA
PFDoA = 13C2 PFDoA
HFPODA = 13C3 HFPO-DA
C3PFBS = 13C3 PFBS
C8PFOS = 13C8 PFOS
42FTS = 13C2-4:2-FTS
62FTS = 13C2-6:2-FTS
82FTS = 13C2-8:2-FTS
C3PFHS = 13C3 PFHxS

Method: 533 - Perfluorinated and Polyfluorinated Alkyl Substances in Drinking Water

Lab Sample ID: MBL 810-60430/1-A
Matrix: Drinking Water
Analysis Batch: 60556

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 60430

Analyte	MBL Result	MBL Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<0.52		2.0		ng/L		05/26/23 06:50	05/27/23 20:49	1
Perfluoropentanoic acid (PFPeA)	<0.38		2.0		ng/L		05/26/23 06:50	05/27/23 20:49	1
Perfluorohexanoic acid (PFHxA)	<0.42		2.0		ng/L		05/26/23 06:50	05/27/23 20:49	1
Perfluoroheptanoic acid (PFHpA)	<0.40		2.0		ng/L		05/26/23 06:50	05/27/23 20:49	1
Perfluorooctanoic acid (PFOA)	<0.38		2.0		ng/L		05/26/23 06:50	05/27/23 20:49	1
Perfluorononanoic acid (PFNA)	<0.38		2.0		ng/L		05/26/23 06:50	05/27/23 20:49	1
Perfluorodecanoic acid (PFDA)	<0.36		2.0		ng/L		05/26/23 06:50	05/27/23 20:49	1
Perfluoroundecanoic acid (PFUnA)	<0.38		2.0		ng/L		05/26/23 06:50	05/27/23 20:49	1
Perfluorododecanoic acid (PFDoA)	<0.35		2.0		ng/L		05/26/23 06:50	05/27/23 20:49	1
Perfluorobutanesulfonic acid (PFBS)	<0.42		2.0		ng/L		05/26/23 06:50	05/27/23 20:49	1
Perfluoropentanesulfonic acid (PFPeS)	<0.37		2.0		ng/L		05/26/23 06:50	05/27/23 20:49	1
Perfluorohexanesulfonic acid (PFHxS)	<0.39		2.0		ng/L		05/26/23 06:50	05/27/23 20:49	1
Perfluoroheptanesulfonic acid (PFHpS)	<0.44		2.0		ng/L		05/26/23 06:50	05/27/23 20:49	1
Perfluorooctanesulfonic acid (PFOS)	<0.39		2.0		ng/L		05/26/23 06:50	05/27/23 20:49	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	<0.45		2.0		ng/L		05/26/23 06:50	05/27/23 20:49	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<0.56		2.0		ng/L		05/26/23 06:50	05/27/23 20:49	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	<0.68		2.0		ng/L		05/26/23 06:50	05/27/23 20:49	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<0.57		2.0		ng/L		05/26/23 06:50	05/27/23 20:49	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<0.53		2.0		ng/L		05/26/23 06:50	05/27/23 20:49	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.40		2.0		ng/L		05/26/23 06:50	05/27/23 20:49	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	<0.45		2.0		ng/L		05/26/23 06:50	05/27/23 20:49	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	<0.51		2.0		ng/L		05/26/23 06:50	05/27/23 20:49	1
Perfluoro(4-methoxybutanoic acid)	<0.35		2.0		ng/L		05/26/23 06:50	05/27/23 20:49	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<0.32		2.0		ng/L		05/26/23 06:50	05/27/23 20:49	1
Perfluoro-3,6-dioxaheptanoic acid	<0.93		2.0		ng/L		05/26/23 06:50	05/27/23 20:49	1

Isotope Dilution	*MBL %Recovery*	*MBL Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*79*		*50 - 200*	*05/26/23 06:50*	*05/27/23 20:49*	*1*
13C5 PFPeA	*75*		*50 - 200*	*05/26/23 06:50*	*05/27/23 20:49*	*1*
13C5 PFHxA	*80*		*50 - 200*	*05/26/23 06:50*	*05/27/23 20:49*	*1*
13C4 PFHpA	*79*		*50 - 200*	*05/26/23 06:50*	*05/27/23 20:49*	*1*
13C8 PFOA	*79*		*50 - 200*	*05/26/23 06:50*	*05/27/23 20:49*	*1*
13C9 PFNA	*79*		*50 - 200*	*05/26/23 06:50*	*05/27/23 20:49*	*1*
13C6 PFDA	*75*		*50 - 200*	*05/26/23 06:50*	*05/27/23 20:49*	*1*
13C7 PFUnA	*72*		*50 - 200*	*05/26/23 06:50*	*05/27/23 20:49*	*1*
13C2 PFDoA	*69*		*50 - 200*	*05/26/23 06:50*	*05/27/23 20:49*	*1*
13C3 HFPO-DA	*72*		*50 - 200*	*05/26/23 06:50*	*05/27/23 20:49*	*1*
13C3 PFBS	*93*		*50 - 200*	*05/26/23 06:50*	*05/27/23 20:49*	*1*
13C8 PFOS	*92*		*50 - 200*	*05/26/23 06:50*	*05/27/23 20:49*	*1*
13C2-4:2-FTS	*95*		*50 - 200*	*05/26/23 06:50*	*05/27/23 20:49*	*1*

Method: 533 - Perfluorinated and Polyfluorinated Alkyl Substances in Drinking Water (Continued)

Lab Sample ID: MBL 810-60430/1-A
Matrix: Drinking Water
Analysis Batch: 60556

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 60430

Isotope Dilution	MBL %Recovery	MBL Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2-6:2-FTS	95		50 - 200	05/26/23 06:50	05/27/23 20:49	1
13C2-8:2-FTS	96		50 - 200	05/26/23 06:50	05/27/23 20:49	1
13C3 PFHxS	91		50 - 200	05/26/23 06:50	05/27/23 20:49	1

Lab Sample ID: LCS 810-60430/3-A
Matrix: Drinking Water
Analysis Batch: 60556

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 60430

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorobutanoic acid (PFBA)	200	205		ng/L		102	70 - 130
Perfluoropentanoic acid (PFPeA)	200	204		ng/L		102	70 - 130
Perfluorohexanoic acid (PFHxA)	200	202		ng/L		101	70 - 130
Perfluoroheptanoic acid (PFHpA)	200	203		ng/L		101	70 - 130
Perfluorooctanoic acid (PFOA)	200	202		ng/L		101	70 - 130
Perfluorononanoic acid (PFNA)	200	202		ng/L		101	70 - 130
Perfluorodecanoic acid (PFDA)	200	202		ng/L		101	70 - 130
Perfluoroundecanoic acid (PFUnA)	200	204		ng/L		102	70 - 130
Perfluorododecanoic acid (PFDoA)	200	206		ng/L		103	70 - 130
Perfluorobutanesulfonic acid (PFBS)	178	181		ng/L		102	70 - 130
Perfluoropentanesulfonic acid (PFPeS)	188	192		ng/L		102	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	183	186		ng/L		102	70 - 130
Perfluoroheptanesulfonic acid (PFHpS)	191	192		ng/L		101	70 - 130
Perfluorooctanesulfonic acid (PFOS)	186	188		ng/L		101	70 - 130
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	178	185		ng/L		104	70 - 130
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	188	195		ng/L		104	70 - 130
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	190	202		ng/L		106	70 - 130
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	192	202		ng/L		105	70 - 130
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	200	200		ng/L		100	70 - 130
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	189	180		ng/L		95	70 - 130
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	187	189		ng/L		101	70 - 130
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	189	189		ng/L		100	70 - 130
Perfluoro(4-methoxybutanoic acid)	200	199		ng/L		100	70 - 130
Perfluoro-3-methoxypropanoic acid (PFMPA)	200	191		ng/L		96	70 - 130
Perfluoro-3,6-dioxaheptanoic acid	200	177		ng/L		88	70 - 130

Method: 533 - Perfluorinated and Polyfluorinated Alkyl Substances in Drinking Water (Continued)

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C4 PFBA	75		50 - 200
13C5 PFPeA	73		50 - 200
13C5 PFHxA	77		50 - 200
13C4 PFHpA	79		50 - 200
13C8 PFOA	80		50 - 200
13C9 PFNA	80		50 - 200
13C6 PFDA	80		50 - 200
13C7 PFUnA	77		50 - 200
13C2 PFDoA	76		50 - 200
13C3 HFPO-DA	73		50 - 200
13C3 PFBS	90		50 - 200
13C8 PFOS	90		50 - 200
13C2-4:2-FTS	98		50 - 200
13C2-6:2-FTS	94		50 - 200
13C2-8:2-FTS	96		50 - 200
13C3 PFHxS	91		50 - 200

Lab Sample ID: LLCS 810-60430/2-A
Matrix: Drinking Water
Analysis Batch: 60556

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 60430

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorobutanoic acid (PFBA)	2.00	2.11		ng/L		106	50 - 150
Perfluoropentanoic acid (PFPeA)	2.00	2.03		ng/L		102	50 - 150
Perfluorohexanoic acid (PFHxA)	2.00	2.08		ng/L		104	50 - 150
Perfluoroheptanoic acid (PFHpA)	2.00	2.06		ng/L		103	50 - 150
Perfluorooctanoic acid (PFOA)	2.00	2.03		ng/L		101	50 - 150
Perfluorononanoic acid (PFNA)	2.00	2.04		ng/L		102	50 - 150
Perfluorodecanoic acid (PFDA)	2.00	2.01		ng/L		101	50 - 150
Perfluoroundecanoic acid (PFUnA)	2.00	2.22		ng/L		111	50 - 150
Perfluorododecanoic acid (PFDoA)	2.00	2.29		ng/L		114	50 - 150
Perfluorobutanesulfonic acid (PFBS)	1.78	1.84	J	ng/L		104	50 - 150
Perfluoropentanesulfonic acid (PFPeS)	1.88	1.90	J	ng/L		101	50 - 150
Perfluorohexanesulfonic acid (PFHxS)	1.83	1.83	J	ng/L		100	50 - 150
Perfluoroheptanesulfonic acid (PFHpS)	1.91	1.89	J	ng/L		99	50 - 150
Perfluorooctanesulfonic acid (PFOS)	1.86	1.90	J	ng/L		102	50 - 150
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	1.78	1.78	J	ng/L		100	50 - 150
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	1.88	2.10		ng/L		112	50 - 150
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	1.90	2.15		ng/L		113	50 - 150
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	1.92	2.16		ng/L		112	50 - 150
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	2.00	2.28		ng/L		114	50 - 150
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.89	1.85	J	ng/L		98	50 - 150

Method: 533 - Perfluorinated and Polyfluorinated Alkyl Substances in Drinking Water (Continued)

Lab Sample ID: LLCS 810-60430/2-A
Matrix: Drinking Water
Analysis Batch: 60556

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 60430

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	1.87	1.88	J	ng/L		101	50 - 150
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	1.89	2.03		ng/L		107	50 - 150
Perfluoro(4-methoxybutanoic acid)	2.00	1.95	J	ng/L		97	50 - 150
Perfluoro-3-methoxypropanoic acid (PFMPA)	2.00	1.91	J	ng/L		95	50 - 150
Perfluoro-3,6-dioxaheptanoic acid	2.00	1.37	J	ng/L		69	50 - 150

Isotope Dilution	*LLCS %Recovery*	*LLCS Qualifier*	*Limits*
13C4 PFBA	*75*		*50 - 200*
13C5 PFPeA	*72*		*50 - 200*
13C5 PFHxA	*77*		*50 - 200*
13C4 PFHpA	*76*		*50 - 200*
13C8 PFOA	*75*		*50 - 200*
13C9 PFNA	*72*		*50 - 200*
13C6 PFDA	*64*		*50 - 200*
13C7 PFUnA	*58*		*50 - 200*
13C2 PFDoA	*58*		*50 - 200*
13C3 HFPO-DA	*73*		*50 - 200*
13C3 PFBS	*93*		*50 - 200*
13C8 PFOS	*92*		*50 - 200*
13C2-4:2-FTS	*95*		*50 - 200*
13C2-6:2-FTS	*93*		*50 - 200*
13C2-8:2-FTS	*96*		*50 - 200*
13C3 PFHxS	*93*		*50 - 200*

Lab Sample ID: MBL 810-60609/1-A
Matrix: Drinking Water
Analysis Batch: 60668

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 60609

Analyte	MBL Result	MBL Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<0.52		2.0		ng/L		05/30/23 07:28	05/30/23 20:59	1
Perfluoropentanoic acid (PFPeA)	<0.38		2.0		ng/L		05/30/23 07:28	05/30/23 20:59	1
Perfluorohexanoic acid (PFHxA)	<0.42		2.0		ng/L		05/30/23 07:28	05/30/23 20:59	1
Perfluoroheptanoic acid (PFHpA)	<0.40		2.0		ng/L		05/30/23 07:28	05/30/23 20:59	1
Perfluorooctanoic acid (PFOA)	<0.38		2.0		ng/L		05/30/23 07:28	05/30/23 20:59	1
Perfluorononanoic acid (PFNA)	<0.38		2.0		ng/L		05/30/23 07:28	05/30/23 20:59	1
Perfluorodecanoic acid (PFDA)	<0.36		2.0		ng/L		05/30/23 07:28	05/30/23 20:59	1
Perfluoroundecanoic acid (PFUnA)	<0.38		2.0		ng/L		05/30/23 07:28	05/30/23 20:59	1
Perfluorododecanoic acid (PFDoA)	<0.35		2.0		ng/L		05/30/23 07:28	05/30/23 20:59	1
Perfluorobutanesulfonic acid (PFBS)	<0.42		2.0		ng/L		05/30/23 07:28	05/30/23 20:59	1
Perfluoropentanesulfonic acid (PFPeS)	<0.37		2.0		ng/L		05/30/23 07:28	05/30/23 20:59	1
Perfluorohexanesulfonic acid (PFHxS)	<0.39		2.0		ng/L		05/30/23 07:28	05/30/23 20:59	1
Perfluoroheptanesulfonic acid (PFHpS)	<0.44		2.0		ng/L		05/30/23 07:28	05/30/23 20:59	1
Perfluorooctanesulfonic acid (PFOS)	<0.39		2.0		ng/L		05/30/23 07:28	05/30/23 20:59	1

Method: 533 - Perfluorinated and Polyfluorinated Alkyl Substances in Drinking Water (Continued)

Lab Sample ID: MBL 810-60609/1-A
Matrix: Drinking Water
Analysis Batch: 60668

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 60609

Analyte	MBL Result	MBL Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	<0.45		2.0		ng/L		05/30/23 07:28	05/30/23 20:59	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<0.56		2.0		ng/L		05/30/23 07:28	05/30/23 20:59	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	<0.68		2.0		ng/L		05/30/23 07:28	05/30/23 20:59	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<0.57		2.0		ng/L		05/30/23 07:28	05/30/23 20:59	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<0.53		2.0		ng/L		05/30/23 07:28	05/30/23 20:59	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.40		2.0		ng/L		05/30/23 07:28	05/30/23 20:59	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	<0.45		2.0		ng/L		05/30/23 07:28	05/30/23 20:59	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	<0.51		2.0		ng/L		05/30/23 07:28	05/30/23 20:59	1
Perfluoro(4-methoxybutanoic acid)	<0.35		2.0		ng/L		05/30/23 07:28	05/30/23 20:59	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<0.32		2.0		ng/L		05/30/23 07:28	05/30/23 20:59	1
Perfluoro-3,6-dioxaheptanoic acid	<0.93		2.0		ng/L		05/30/23 07:28	05/30/23 20:59	1

Isotope Dilution	*MBL %Recovery*	*MBL Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*90*		*50 - 200*	*05/30/23 07:28*	*05/30/23 20:59*	*1*
13C5 PFPeA	*88*		*50 - 200*	*05/30/23 07:28*	*05/30/23 20:59*	*1*
13C5 PFHxA	*88*		*50 - 200*	*05/30/23 07:28*	*05/30/23 20:59*	*1*
13C4 PFHpA	*88*		*50 - 200*	*05/30/23 07:28*	*05/30/23 20:59*	*1*
13C8 PFOA	*89*		*50 - 200*	*05/30/23 07:28*	*05/30/23 20:59*	*1*
13C9 PFNA	*90*		*50 - 200*	*05/30/23 07:28*	*05/30/23 20:59*	*1*
13C6 PFDA	*87*		*50 - 200*	*05/30/23 07:28*	*05/30/23 20:59*	*1*
13C7 PFUnA	*85*		*50 - 200*	*05/30/23 07:28*	*05/30/23 20:59*	*1*
13C2 PFDoA	*85*		*50 - 200*	*05/30/23 07:28*	*05/30/23 20:59*	*1*
13C3 HFPO-DA	*87*		*50 - 200*	*05/30/23 07:28*	*05/30/23 20:59*	*1*
13C3 PFBS	*93*		*50 - 200*	*05/30/23 07:28*	*05/30/23 20:59*	*1*
13C8 PFOS	*89*		*50 - 200*	*05/30/23 07:28*	*05/30/23 20:59*	*1*
13C2-4:2-FTS	*88*		*50 - 200*	*05/30/23 07:28*	*05/30/23 20:59*	*1*
13C2-6:2-FTS	*89*		*50 - 200*	*05/30/23 07:28*	*05/30/23 20:59*	*1*
13C2-8:2-FTS	*89*		*50 - 200*	*05/30/23 07:28*	*05/30/23 20:59*	*1*
13C3 PFHxS	*91*		*50 - 200*	*05/30/23 07:28*	*05/30/23 20:59*	*1*

Lab Sample ID: LCS 810-60609/3-A
Matrix: Drinking Water
Analysis Batch: 60668

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 60609

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorobutanoic acid (PFBA)	400	391		ng/L		98	70 - 130
Perfluoropentanoic acid (PFPeA)	400	392		ng/L		98	70 - 130
Perfluorohexanoic acid (PFHxA)	400	392		ng/L		98	70 - 130
Perfluoroheptanoic acid (PFHpA)	400	391		ng/L		98	70 - 130
Perfluorooctanoic acid (PFOA)	400	390		ng/L		98	70 - 130
Perfluorononanoic acid (PFNA)	400	393		ng/L		98	70 - 130
Perfluorodecanoic acid (PFDA)	400	394		ng/L		98	70 - 130

Method: 533 - Perfluorinated and Polyfluorinated Alkyl Substances in Drinking Water (Continued)

Lab Sample ID: LCS 810-60609/3-A
Matrix: Drinking Water
Analysis Batch: 60668

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 60609

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluoroundecanoic acid (PFUnA)	400	393		ng/L		98	70 - 130
Perfluorododecanoic acid (PFDoA)	400	392		ng/L		98	70 - 130
Perfluorobutanesulfonic acid (PFBS)	355	345		ng/L		97	70 - 130
Perfluoropentanesulfonic acid (PFPeS)	376	370		ng/L		98	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	365	356		ng/L		98	70 - 130
Perfluoroheptanesulfonic acid (PFHpS)	382	376		ng/L		98	70 - 130
Perfluorooctanesulfonic acid (PFOS)	371	364		ng/L		98	70 - 130
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	357	349		ng/L		98	70 - 130
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	375	368		ng/L		98	70 - 130
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	381	370		ng/L		97	70 - 130
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	384	373		ng/L		97	70 - 130
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	400	392		ng/L		98	70 - 130
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	378	367		ng/L		97	70 - 130
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	374	361		ng/L		97	70 - 130
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	378	346		ng/L		92	70 - 130
Perfluoro(4-methoxybutanoic acid)	400	370		ng/L		93	70 - 130
Perfluoro-3-methoxypropanoic acid (PFMPA)	400	388		ng/L		97	70 - 130
Perfluoro-3,6-dioxaheptanoic acid	400	416		ng/L		104	70 - 130

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*85*		*50 - 200*
13C5 PFPeA	*87*		*50 - 200*
13C5 PFHxA	*87*		*50 - 200*
13C4 PFHpA	*86*		*50 - 200*
13C8 PFOA	*86*		*50 - 200*
13C9 PFNA	*86*		*50 - 200*
13C6 PFDA	*87*		*50 - 200*
13C7 PFUnA	*86*		*50 - 200*
13C2 PFDoA	*85*		*50 - 200*
13C3 HFPO-DA	*85*		*50 - 200*
13C3 PFBS	*87*		*50 - 200*
13C8 PFOS	*87*		*50 - 200*
13C2-4:2-FTS	*92*		*50 - 200*
13C2-6:2-FTS	*94*		*50 - 200*
13C2-8:2-FTS	*88*		*50 - 200*

Method: 533 - Perfluorinated and Polyfluorinated Alkyl Substances in Drinking Water (Continued)

Lab Sample ID: LCS 810-60609/3-A
Matrix: Drinking Water
Analysis Batch: 60668

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 60609

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C3 PFHxS	88		50 - 200

Lab Sample ID: LLCS 810-60609/2-A
Matrix: Drinking Water
Analysis Batch: 60668

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 60609

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorobutanoic acid (PFBA)	2.00	2.19		ng/L		110	50 - 150
Perfluoropentanoic acid (PFPeA)	2.00	2.17		ng/L		108	50 - 150
Perfluorohexanoic acid (PFHxA)	2.00	2.19		ng/L		109	50 - 150
Perfluoroheptanoic acid (PFHpA)	2.00	2.16		ng/L		108	50 - 150
Perfluorooctanoic acid (PFOA)	2.00	2.16		ng/L		108	50 - 150
Perfluorononanoic acid (PFNA)	2.00	2.17		ng/L		109	50 - 150
Perfluorodecanoic acid (PFDA)	2.00	2.18		ng/L		109	50 - 150
Perfluoroundecanoic acid (PFUnA)	2.00	2.14		ng/L		107	50 - 150
Perfluorododecanoic acid (PFDoA)	2.00	2.16		ng/L		108	50 - 150
Perfluorobutanesulfonic acid (PFBS)	1.78	1.87	J	ng/L		105	50 - 150
Perfluoropentanesulfonic acid (PFPeS)	1.88	2.08		ng/L		110	50 - 150
Perfluorohexanesulfonic acid (PFHxS)	1.83	1.90	J	ng/L		104	50 - 150
Perfluoroheptanesulfonic acid (PFHpS)	1.91	2.04		ng/L		107	50 - 150
Perfluorooctanesulfonic acid (PFOS)	1.86	1.96	J	ng/L		106	50 - 150
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	1.78	1.82	J	ng/L		102	50 - 150
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	1.88	2.26		ng/L		121	50 - 150
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	1.90	2.30		ng/L		121	50 - 150
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	1.92	2.28		ng/L		119	50 - 150
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	2.00	2.12		ng/L		106	50 - 150
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.89	2.03		ng/L		107	50 - 150
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	1.87	1.91	J	ng/L		102	50 - 150
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	1.89	1.86	J	ng/L		99	50 - 150
Perfluoro(4-methoxybutanoic acid)	2.00	1.96	J	ng/L		98	50 - 150
Perfluoro-3-methoxypropanoic acid (PFMPA)	2.00	2.06		ng/L		103	50 - 150
Perfluoro-3,6-dioxaheptanoic acid	2.00	2.67		ng/L		133	50 - 150

Isotope Dilution	LLCS %Recovery	LLCS Qualifier	Limits
13C4 PFBA	86		50 - 200

Method: 533 - Perfluorinated and Polyfluorinated Alkyl Substances in Drinking Water (Continued)

Lab Sample ID: LLCS 810-60609/2-A
Matrix: Drinking Water
Analysis Batch: 60668

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 60609

Isotope Dilution	LLCS %Recovery	LLCS Qualifier	Limits
13C5 PFPeA	83		50 - 200
13C5 PFHxA	84		50 - 200
13C4 PFHpA	86		50 - 200
13C8 PFOA	86		50 - 200
13C9 PFNA	86		50 - 200
13C6 PFDA	84		50 - 200
13C7 PFUnA	82		50 - 200
13C2 PFDoA	81		50 - 200
13C3 HFPO-DA	82		50 - 200
13C3 PFBS	93		50 - 200
13C8 PFOS	88		50 - 200
13C2-4:2-FTS	88		50 - 200
13C2-6:2-FTS	90		50 - 200
13C2-8:2-FTS	87		50 - 200
13C3 PFHxS	89		50 - 200

LCMS

Prep Batch: 60430

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-62098-1	J18-Rehobeth ARV	Total/NA	Drinking Water	533	
810-62098-2	T07-Hwy 74 E BPS	Total/NA	Drinking Water	533	
MBL 810-60430/1-A	Method Blank	Total/NA	Drinking Water	533	
LCS 810-60430/3-A	Lab Control Sample	Total/NA	Drinking Water	533	
LLCS 810-60430/2-A	Lab Control Sample	Total/NA	Drinking Water	533	

Analysis Batch: 60556

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-62098-1	J18-Rehobeth ARV	Total/NA	Drinking Water	533	60430
810-62098-2	T07-Hwy 74 E BPS	Total/NA	Drinking Water	533	60430
MBL 810-60430/1-A	Method Blank	Total/NA	Drinking Water	533	60430
LCS 810-60430/3-A	Lab Control Sample	Total/NA	Drinking Water	533	60430
LLCS 810-60430/2-A	Lab Control Sample	Total/NA	Drinking Water	533	60430

Prep Batch: 60609

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-62098-3	NOR-Norwood WTP	Total/NA	Drinking Water	533	
MBL 810-60609/1-A	Method Blank	Total/NA	Drinking Water	533	
LCS 810-60609/3-A	Lab Control Sample	Total/NA	Drinking Water	533	
LLCS 810-60609/2-A	Lab Control Sample	Total/NA	Drinking Water	533	

Analysis Batch: 60668

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-62098-3	NOR-Norwood WTP	Total/NA	Drinking Water	533	60609
MBL 810-60609/1-A	Method Blank	Total/NA	Drinking Water	533	60609
LCS 810-60609/3-A	Lab Control Sample	Total/NA	Drinking Water	533	60609
LLCS 810-60609/2-A	Lab Control Sample	Total/NA	Drinking Water	533	60609

Lab Chronicle

Client: Union County Water
Project/Site: PFAS - 533

Job ID: 810-62098-1

Client Sample ID: J18-Rehobeth ARV

Lab Sample ID: 810-62098-1

Date Collected: 05/04/23 09:21

Matrix: Drinking Water

Date Received: 05/05/23 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	533			60430	TK	EA SB	05/26/23 06:50
Total/NA	Analysis	533		1	60556	CM	EA SB	05/28/23 00:52

Client Sample ID: T07-Hwy 74 E BPS

Lab Sample ID: 810-62098-2

Date Collected: 05/04/23 10:16

Matrix: Drinking Water

Date Received: 05/05/23 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	533			60430	TK	EA SB	05/26/23 06:50
Total/NA	Analysis	533		1	60556	CM	EA SB	05/28/23 01:05

Client Sample ID: NOR-Norwood WTP

Lab Sample ID: 810-62098-3

Date Collected: 05/04/23 10:54

Matrix: Drinking Water

Date Received: 05/05/23 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	533			60609	TK	EA SB	05/30/23 07:28
Total/NA	Analysis	533		1	60668	MH	EA SB	05/30/23 22:46

Laboratory References:

EA SB = Eurofins Eaton Analytical South Bend, 110 S Hill Street, South Bend, IN 46617, TEL (574)233-4777

Accreditation/Certification Summary

Client: Union County Water
Project/Site: PFAS - 533

Job ID: 810-62098-1

Laboratory: Eurofins Eaton Analytical South Bend

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
North Carolina (DW)	State	18700	07-31-23

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
533	533	Drinking Water	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid
533	533	Drinking Water	1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)
533	533	Drinking Water	1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)
533	533	Drinking Water	1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)
533	533	Drinking Water	4,8-Dioxa-3H-perfluorononanoic acid (ADONA)
533	533	Drinking Water	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid
533	533	Drinking Water	Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)
533	533	Drinking Water	Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)
533	533	Drinking Water	Perfluoro(4-methoxybutanoic acid)
533	533	Drinking Water	Perfluoro-3,6-dioxaheptanoic acid
533	533	Drinking Water	Perfluoro-3-methoxypropanoic acid (PFMPA)
533	533	Drinking Water	Perfluorobutanesulfonic acid (PFBS)
533	533	Drinking Water	Perfluorobutanoic acid (PFBA)
533	533	Drinking Water	Perfluorodecanoic acid (PFDA)
533	533	Drinking Water	Perfluorododecanoic acid (PFDoA)
533	533	Drinking Water	Perfluoroheptanesulfonic acid (PFHpS)
533	533	Drinking Water	Perfluoroheptanoic acid (PFHpA)
533	533	Drinking Water	Perfluorohexanesulfonic acid (PFHxS)
533	533	Drinking Water	Perfluorohexanoic acid (PFHxA)
533	533	Drinking Water	Perfluorononanoic acid (PFNA)
533	533	Drinking Water	Perfluorooctanesulfonic acid (PFOS)
533	533	Drinking Water	Perfluorooctanoic acid (PFOA)
533	533	Drinking Water	Perfluoropentanesulfonic acid (PFPeS)
533	533	Drinking Water	Perfluoropentanoic acid (PFPeA)
533	533	Drinking Water	Perfluoroundecanoic acid (PFUnA)

Method Summary

Client: Union County Water
Project/Site: PFAS - 533

Job ID: 810-62098-1

Method	Method Description	Protocol	Laboratory
533	Perfluorinated and Polyfluorinated Alkyl Substances in Drinking Water	EPA	EA SB
533	Extraction of Perfluorinated and Polyfluorinated Alkyl Acids	EPA	EA SB

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

EA SB = Eurofins Eaton Analytical South Bend, 110 S Hill Street, South Bend, IN 46617, TEL (574)233-4777

Sample Summary

Client: Union County Water
Project/Site: PFAS - 533

Job ID: 810-62098-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
810-62098-1	J18-Rehobeth ARV	Drinking Water	05/04/23 09:21	05/05/23 09:00
810-62098-2	T07-Hwy 74 E BPS	Drinking Water	05/04/23 10:16	05/05/23 09:00
810-62098-3	NOR-Norwood WTP	Drinking Water	05/04/23 10:54	05/05/23 09:00

810-62098 Chain of Custody

Chain of Custody Record

eurofins
Environment Testing

6/18/2023

Sampler: Chris Tye	Lab PM: Mattheis, Joe	Carrier Tracking No(s):	COC No: 810-24923-6174.1
Phone: 980-417-9078	E-Mail: Joe.Mattheis@et.eurofinsus.com	State of Origin:	Page: Page 1 of 1
Justin Huntley			
Company: Union County Water	PWSID:	Analysis Requested	Job #:
Address: 500 N Main St.	Due Date Requested:		Preservation Codes: A - HCL; B - NaOH; C - Zn Acetate; D - Nitric Acid; E - NaHSO4; F - MeOH; G - Amchlor; H - Ascorbic Acid; I - Ice; J - DI Water; K - EDTA; L - EDA; M - Hexane; N - None; O - AsNaO2; P - Na2O4S; Q - Na2SO3; R - Na2S2O3; S - H2SO4; T - TSP Dodecahydrate; U - Acetone; V - MCAA; W - pH 4-5; Y - Trizma; Z - other (specify); Other:
City: Monroe	TAT Requested (days):		
State, Zip: NC, 28112	Compliance Project: Δ Yes Δ No		
Phone: 704-289-3307(Tel)	PO #: Purchase Order not required		
Email: Justin.Huntley@UnionCountyNC.gov	WO #		
Project Name: PFAS - 533	Project #: 81004979		
Site:	SSOW#:		

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	533 - (MOD) Local Method	Total Number of containers	Special Instructions/Note:
			Preservation Code:				N		
J18 - Rehobeth ARV	5/4/23	9:21 am	G	Drinking Wate			✓	3	
T07 - HWY 74 E BPS	5/4/23	10:16 AM	G	Drinking Wate			✓	3	
NOR - Norwood WTP	5/4/23	10:54 AM	G	Drinking Wate			✓	3	
									Initial Temp: 2.2
									Corrected Temp: 3.0
									IR Gun # 28uct
									IR Gun #
									Corrected Temp:
									Initial Temp:

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:		
Relinquished by: Chris Tye	Date/Time: 5/4/23 12:00 pm	Company	Received by: Penny Pehling Wright	Date/Time: 05/05/23 0900	Company: EEA
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks:		

Login Sample Receipt Checklist

Client: Union County Water

Job Number: 810-62098-1

Login Number: 62098

List Source: Eurofins Eaton Analytical South Bend

List Number: 1

Creator: Pehling-Wright, Penny

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Samples do not require splitting or compositing.	True	
Container provided by EEA	True	