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ANALYTICAL REPORT

PREPARED FOR

Attn: Junior Honeycutt
Union County Water
500 N Main St.
Monroe, North Carolina 28112

Generated 7/30/2023 9:30:28 PM

JOB DESCRIPTION

Union County Water NC0190413 UCMR5

JOB NUMBER

810-68253-1

Eurofins Eaton Analytical South Bend

Job Notes

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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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Definitions/Glossary

Client: Union County Water
Project/Site: Union County Water NC0190413 UCMR5

Job ID: 810-68253-1

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

Case Narrative

Client: Union County Water
Project/Site: Union County Water NC0190413 UCMR5

Job ID: 810-68253-1

Job ID: 810-68253-1

Laboratory: Eurofins Eaton Analytical South Bend

Narrative

Job Narrative
810-68253-1

Receipt

The sample was received on 7/5/2023 9:00 AM. Unless otherwise noted below, the sample arrived in good condition, and, where required, properly preserved and on ice.

PFAS

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

Metals

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

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Detection Summary

Client: Union County Water
Project/Site: Union County Water NC0190413 UCMR5

Job ID: 810-68253-1

Client Sample ID: Anson County Water Intertie

Lab Sample ID: 810-68253-1

Analyte	Result	Qualifier	RL	Unit	Dil Fac	D	Method	Prep Type
Perfluoropentanoic acid (PFPeA)	0.0036		0.0030	ug/L	1		533	Total/NA
Perfluorohexanoic acid (PFHxA)	0.0035		0.0030	ug/L	1		533	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.0049		0.0040	ug/L	1		533	Total/NA

Client Sample ID: Anson County Water Intertie

Lab Sample ID: 810-68253-1FRB

No Detections.

This Detection Summary does not include radiochemical test results.

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Client Sample Results

Client: Union County Water
 Project/Site: Union County Water NC0190413 UCMR5

Job ID: 810-68253-1

Client Sample ID: Anson County Water Intertie

Lab Sample ID: 810-68253-1

Date Collected: 07/03/23 10:29

Matrix: Drinking Water

Date Received: 07/05/23 09:00

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

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<0.0050		0.0050	ug/L		07/18/23 06:17	07/21/23 23:55	1
Perfluoropentanoic acid (PFPeA)	0.0036		0.0030	ug/L		07/18/23 06:17	07/21/23 23:55	1
Perfluorohexanoic acid (PFHxA)	0.0035		0.0030	ug/L		07/18/23 06:17	07/21/23 23:55	1
Perfluoroheptanoic acid (PFHpA)	<0.0030		0.0030	ug/L		07/18/23 06:17	07/21/23 23:55	1
Perfluorooctanoic acid (PFOA)	<0.0040		0.0040	ug/L		07/18/23 06:17	07/21/23 23:55	1
Perfluorononanoic acid (PFNA)	<0.0040		0.0040	ug/L		07/18/23 06:17	07/21/23 23:55	1
Perfluorodecanoic acid (PFDA)	<0.0030		0.0030	ug/L		07/18/23 06:17	07/21/23 23:55	1
Perfluoroundecanoic acid (PFUnA)	<0.0020		0.0020	ug/L		07/18/23 06:17	07/21/23 23:55	1
Perfluorododecanoic acid (PFDoA)	<0.0030		0.0030	ug/L		07/18/23 06:17	07/21/23 23:55	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.0030		0.0030	ug/L		07/18/23 06:17	07/21/23 23:55	1
Perfluorobutanesulfonic acid (PFBS)	<0.0030		0.0030	ug/L		07/18/23 06:17	07/21/23 23:55	1
Perfluorohexanesulfonic acid (PFHxS)	<0.0030		0.0030	ug/L		07/18/23 06:17	07/21/23 23:55	1
Perfluoroheptanesulfonic acid (PFHpS)	<0.0030		0.0030	ug/L		07/18/23 06:17	07/21/23 23:55	1
Perfluorooctanesulfonic acid (PFOS)	0.0049		0.0040	ug/L		07/18/23 06:17	07/21/23 23:55	1
Perfluoropentanesulfonic acid (PFPeS)	<0.0040		0.0040	ug/L		07/18/23 06:17	07/21/23 23:55	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<0.0050		0.0050	ug/L		07/18/23 06:17	07/21/23 23:55	1
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid	<0.0020		0.0020	ug/L		07/18/23 06:17	07/21/23 23:55	1
11-Chloroeicosafluoro-3-oxaundecan e-1-sulfonic acid	<0.0050		0.0050	ug/L		07/18/23 06:17	07/21/23 23:55	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<0.0030		0.0030	ug/L		07/18/23 06:17	07/21/23 23:55	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	<0.0050		0.0050	ug/L		07/18/23 06:17	07/21/23 23:55	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<0.0050		0.0050	ug/L		07/18/23 06:17	07/21/23 23:55	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<0.0200		0.0200	ug/L		07/18/23 06:17	07/21/23 23:55	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<0.0040		0.0040	ug/L		07/18/23 06:17	07/21/23 23:55	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	<0.0030		0.0030	ug/L		07/18/23 06:17	07/21/23 23:55	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	<0.0030		0.0030	ug/L		07/18/23 06:17	07/21/23 23:55	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	78		50 - 200	07/18/23 06:17	07/21/23 23:55	1
13C4 PFBA	85		50 - 200	07/18/23 06:17	07/21/23 23:55	1
13C3 PFBS	84		50 - 200	07/18/23 06:17	07/21/23 23:55	1
13C5 PFPeA	77		50 - 200	07/18/23 06:17	07/21/23 23:55	1
13C5 PFHxA	79		50 - 200	07/18/23 06:17	07/21/23 23:55	1
13C4 PFHpA	78		50 - 200	07/18/23 06:17	07/21/23 23:55	1
13C8 PFOA	81		50 - 200	07/18/23 06:17	07/21/23 23:55	1
13C9 PFNA	84		50 - 200	07/18/23 06:17	07/21/23 23:55	1
13C6 PFDA	74		50 - 200	07/18/23 06:17	07/21/23 23:55	1
13C7 PFUnA	72		50 - 200	07/18/23 06:17	07/21/23 23:55	1
13C2 PFDoA	73		50 - 200	07/18/23 06:17	07/21/23 23:55	1
13C8 PFOS	86		50 - 200	07/18/23 06:17	07/21/23 23:55	1
13C3 PFHxS	87		50 - 200	07/18/23 06:17	07/21/23 23:55	1

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Client Sample Results

Client: Union County Water
 Project/Site: Union County Water NC0190413 UCMR5

Job ID: 810-68253-1

Client Sample ID: Anson County Water Intertie

Lab Sample ID: 810-68253-1

Date Collected: 07/03/23 10:29

Matrix: Drinking Water

Date Received: 07/05/23 09:00

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2-4:2-FTS	89		50 - 200	07/18/23 06:17	07/21/23 23:55	1
13C2-6:2-FTS	86		50 - 200	07/18/23 06:17	07/21/23 23:55	1
13C2-8:2-FTS	90		50 - 200	07/18/23 06:17	07/21/23 23:55	1

Method: EPA 537.1 UCMR5 - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctanesulfonamidoacetic acid (NETFOSAA)	<0.0050		0.0050	ug/L		07/06/23 07:54	07/07/23 20:24	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<0.0060		0.0060	ug/L		07/06/23 07:54	07/07/23 20:24	1
Perfluorotetradecanoic acid (PFTA)	<0.0080		0.0080	ug/L		07/06/23 07:54	07/07/23 20:24	1
Perfluorotridecanoic acid (PFTrDA)	<0.0070		0.0070	ug/L		07/06/23 07:54	07/07/23 20:24	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
d5-NEtFOSAA	95		70 - 130	07/06/23 07:54	07/07/23 20:24	1
13C2 PFHxA	90		70 - 130	07/06/23 07:54	07/07/23 20:24	1
13C2 PFDA	99		70 - 130	07/06/23 07:54	07/07/23 20:24	1
13C3 HFPO-DA	92		70 - 130	07/06/23 07:54	07/07/23 20:24	1

Method: EPA 200.7 UCMR5 - Metals (ICP)

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Lithium	<9.00		9.00	ug/L		07/17/23 12:45	07/18/23 12:23	1

Client Sample ID: Anson County Water Intertie

Lab Sample ID: 810-68253-1FRB

Date Collected: 07/03/23 10:29

Matrix: Drinking Water

Date Received: 07/05/23 09:00

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

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<0.0005		0.0050	ug/L		07/24/23 07:13	07/27/23 03:06	1
Perfluoropentanoic acid (PFPeA)	<0.0004		0.0030	ug/L		07/24/23 07:13	07/27/23 03:06	1
Perfluorohexanoic acid (PFHxA)	<0.0004		0.0030	ug/L		07/24/23 07:13	07/27/23 03:06	1
Perfluoroheptanoic acid (PFHpA)	<0.0004		0.0030	ug/L		07/24/23 07:13	07/27/23 03:06	1
Perfluorooctanoic acid (PFOA)	<0.0004		0.0040	ug/L		07/24/23 07:13	07/27/23 03:06	1
Perfluorononanoic acid (PFNA)	<0.0004		0.0040	ug/L		07/24/23 07:13	07/27/23 03:06	1
Perfluorodecanoic acid (PFDA)	<0.0004		0.0030	ug/L		07/24/23 07:13	07/27/23 03:06	1
Perfluoroundecanoic acid (PFUnA)	<0.0004		0.0020	ug/L		07/24/23 07:13	07/27/23 03:06	1
Perfluorododecanoic acid (PFDoA)	<0.0004		0.0030	ug/L		07/24/23 07:13	07/27/23 03:06	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.0004		0.0030	ug/L		07/24/23 07:13	07/27/23 03:06	1
Perfluorobutanesulfonic acid (PFBS)	<0.0004		0.0030	ug/L		07/24/23 07:13	07/27/23 03:06	1
Perfluorohexanesulfonic acid (PFHxS)	<0.0004		0.0030	ug/L		07/24/23 07:13	07/27/23 03:06	1
Perfluoroheptanesulfonic acid (PFHpS)	<0.0004		0.0030	ug/L		07/24/23 07:13	07/27/23 03:06	1
Perfluorooctanesulfonic acid (PFOS)	<0.0004		0.0040	ug/L		07/24/23 07:13	07/27/23 03:06	1
Perfluoropentanesulfonic acid (PFPeS)	<0.0004		0.0040	ug/L		07/24/23 07:13	07/27/23 03:06	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<0.0005		0.0050	ug/L		07/24/23 07:13	07/27/23 03:06	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	<0.0005		0.0020	ug/L		07/24/23 07:13	07/27/23 03:06	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	<0.0005		0.0050	ug/L		07/24/23 07:13	07/27/23 03:06	1

Eurofins Eaton Analytical South Bend

Client Sample Results

Client: Union County Water
 Project/Site: Union County Water NC0190413 UCMR5

Job ID: 810-68253-1

Client Sample ID: Anson County Water Intertie

Lab Sample ID: 810-68253-1FRB

Date Collected: 07/03/23 10:29

Matrix: Drinking Water

Date Received: 07/05/23 09:00

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

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<0.0006		0.0030	ug/L		07/24/23 07:13	07/27/23 03:06	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	<0.0007		0.0050	ug/L		07/24/23 07:13	07/27/23 03:06	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<0.0006		0.0050	ug/L		07/24/23 07:13	07/27/23 03:06	1
Nonafluoro-3,6-dioxahexanoic acid (NFDHA)	<0.0009		0.0200	ug/L		07/24/23 07:13	07/27/23 03:06	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<0.0003		0.0040	ug/L		07/24/23 07:13	07/27/23 03:06	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	<0.0004		0.0030	ug/L		07/24/23 07:13	07/27/23 03:06	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	<0.0005		0.0030	ug/L		07/24/23 07:13	07/27/23 03:06	1
Isotope Dilution	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	99		50 - 200			07/24/23 07:13	07/27/23 03:06	1
13C4 PFBA	99		50 - 200			07/24/23 07:13	07/27/23 03:06	1
13C3 PFBS	97		50 - 200			07/24/23 07:13	07/27/23 03:06	1
13C5 PFPeA	104		50 - 200			07/24/23 07:13	07/27/23 03:06	1
13C5 PFHxA	102		50 - 200			07/24/23 07:13	07/27/23 03:06	1
13C4 PFHpA	103		50 - 200			07/24/23 07:13	07/27/23 03:06	1
13C8 PFOA	100		50 - 200			07/24/23 07:13	07/27/23 03:06	1
13C9 PFNA	111		50 - 200			07/24/23 07:13	07/27/23 03:06	1
13C6 PFDA	106		50 - 200			07/24/23 07:13	07/27/23 03:06	1
13C7 PFUnA	104		50 - 200			07/24/23 07:13	07/27/23 03:06	1
13C2 PFDoA	102		50 - 200			07/24/23 07:13	07/27/23 03:06	1
13C8 PFOS	99		50 - 200			07/24/23 07:13	07/27/23 03:06	1
13C3 PFHxS	96		50 - 200			07/24/23 07:13	07/27/23 03:06	1
13C2-4:2-FTS	99		50 - 200			07/24/23 07:13	07/27/23 03:06	1
13C2-6:2-FTS	98		50 - 200			07/24/23 07:13	07/27/23 03:06	1
13C2-8:2-FTS	104		50 - 200			07/24/23 07:13	07/27/23 03:06	1

Surrogate Summary

Client: Union County Water
Project/Site: Union County Water NC0190413 UCMR5

Job ID: 810-68253-1

Method: 537.1 UCMR5 - Perfluorinated Alkyl Acids (LC/MS)

Matrix: Drinking Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)			
		d5NEFOS (70-130)	PFHxA (70-130)	PFDA (70-130)	HFPODA (70-130)
810-68253-1	Anson County Water Intertie	95	90	99	92
LLCS 810-64695/2-A	Lab Control Sample	94	92	100	93
MBL 810-64695/1-A	Method Blank	96	86	97	87

Surrogate Legend

d5NEFOS = d5-NEtFOSAA

PFHxA = 13C2 PFHxA

PFDA = 13C2 PFDA

HFPODA = 13C3 HFPO-DA

Isotope Dilution Summary

Client: Union County Water
 Project/Site: Union County Water NC0190413 UCMR5

Job ID: 810-68253-1

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

Matrix: Drinking Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HFPODA (50-200)	PFBA (50-200)	C3PFBS (50-200)	PFPeA (50-200)	13C5PHA (50-200)	C4PFHA (50-200)	C8PFOA (50-200)	C9PFNA (50-200)
810-68253-1	Anson County Water Intertie	78	85	84	77	79	78	81	84
810-68253-1 LMS	Anson County Water Intertie	76	83	82	76	78	78	80	81
810-68253-1 LMSD	Anson County Water Intertie	74	79	78	71	75	76	77	81
810-68253-1FRB	FRB	99	99	97	104	102	103	100	111
LLCS 810-65918/2-A	Lab Control Sample	84	84	84	90	88	87	86	94
LLCS 810-66602/2-A	Lab Control Sample	98	104	102	107	103	101	101	106
MBL 810-65918/1-A	Method Blank	76	80	80	88	84	83	81	87
MBL 810-66602/1-A	Method Blank	96	101	100	106	97	99	100	107

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	C6PFDA (50-200)	13C7PUA (50-200)	PFD _o A (50-200)	C8PFOS (50-200)	C3PFHS (50-200)	42FTS (50-200)	62FTS (50-200)	82FTS (50-200)
810-68253-1	Anson County Water Intertie	74	72	73	86	87	89	86	90
810-68253-1 LMS	Anson County Water Intertie	79	78	75	84	85	103	92	92
810-68253-1 LMSD	Anson County Water Intertie	78	78	75	82	80	95	88	92
810-68253-1FRB	FRB	106	104	102	99	96	99	98	104
LLCS 810-65918/2-A	Lab Control Sample	87	86	84	85	84	117	102	96
LLCS 810-66602/2-A	Lab Control Sample	99	93	92	101	99	104	103	100
MBL 810-65918/1-A	Method Blank	83	83	80	79	79	107	92	89
MBL 810-66602/1-A	Method Blank	100	98	97	100	100	97	102	104

Surrogate Legend

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

QC Sample Results

Client: Union County Water
 Project/Site: Union County Water NC0190413 UCMR5

Job ID: 810-68253-1

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

Lab Sample ID: MBL 810-65918/1-A
Matrix: Drinking Water
Analysis Batch: 66380

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 65918

Analyte	MBL Result	MBL Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<0.0005		0.0050	ug/L		07/18/23 06:17	07/21/23 23:00	1
Perfluoropentanoic acid (PFPeA)	<0.0004		0.0030	ug/L		07/18/23 06:17	07/21/23 23:00	1
Perfluorohexanoic acid (PFHxA)	<0.0004		0.0030	ug/L		07/18/23 06:17	07/21/23 23:00	1
Perfluoroheptanoic acid (PFHpA)	<0.0004		0.0030	ug/L		07/18/23 06:17	07/21/23 23:00	1
Perfluorooctanoic acid (PFOA)	<0.0004		0.0040	ug/L		07/18/23 06:17	07/21/23 23:00	1
Perfluorononanoic acid (PFNA)	<0.0004		0.0040	ug/L		07/18/23 06:17	07/21/23 23:00	1
Perfluorodecanoic acid (PFDA)	<0.0004		0.0030	ug/L		07/18/23 06:17	07/21/23 23:00	1
Perfluoroundecanoic acid (PFUnA)	<0.0004		0.0020	ug/L		07/18/23 06:17	07/21/23 23:00	1
Perfluorododecanoic acid (PFDoA)	<0.0004		0.0030	ug/L		07/18/23 06:17	07/21/23 23:00	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.0004		0.0030	ug/L		07/18/23 06:17	07/21/23 23:00	1
Perfluorobutanesulfonic acid (PFBS)	<0.0004		0.0030	ug/L		07/18/23 06:17	07/21/23 23:00	1
Perfluorohexanesulfonic acid (PFHxS)	<0.0004		0.0030	ug/L		07/18/23 06:17	07/21/23 23:00	1
Perfluoroheptanesulfonic acid (PFHpS)	<0.0004		0.0030	ug/L		07/18/23 06:17	07/21/23 23:00	1
Perfluorooctanesulfonic acid (PFOS)	<0.0004		0.0040	ug/L		07/18/23 06:17	07/21/23 23:00	1
Perfluoropentanesulfonic acid (PFPeS)	<0.0004		0.0040	ug/L		07/18/23 06:17	07/21/23 23:00	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<0.0005		0.0050	ug/L		07/18/23 06:17	07/21/23 23:00	1
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid	<0.0005		0.0020	ug/L		07/18/23 06:17	07/21/23 23:00	1
11-Chloroeicosafuoro-3-oxaundecan e-1-sulfonic acid	<0.0005		0.0050	ug/L		07/18/23 06:17	07/21/23 23:00	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<0.0006		0.0030	ug/L		07/18/23 06:17	07/21/23 23:00	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	<0.0007		0.0050	ug/L		07/18/23 06:17	07/21/23 23:00	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<0.0006		0.0050	ug/L		07/18/23 06:17	07/21/23 23:00	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<0.0009		0.0200	ug/L		07/18/23 06:17	07/21/23 23:00	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<0.0003		0.0040	ug/L		07/18/23 06:17	07/21/23 23:00	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	<0.0004		0.0030	ug/L		07/18/23 06:17	07/21/23 23:00	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	<0.0005		0.0030	ug/L		07/18/23 06:17	07/21/23 23:00	1

Isotope Dilution	MBL %Recovery	MBL Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	76		50 - 200	07/18/23 06:17	07/21/23 23:00	1
13C4 PFBA	80		50 - 200	07/18/23 06:17	07/21/23 23:00	1
13C3 PFBS	80		50 - 200	07/18/23 06:17	07/21/23 23:00	1
13C5 PFPeA	88		50 - 200	07/18/23 06:17	07/21/23 23:00	1
13C5 PFHxA	84		50 - 200	07/18/23 06:17	07/21/23 23:00	1
13C4 PFHpA	83		50 - 200	07/18/23 06:17	07/21/23 23:00	1
13C8 PFOA	81		50 - 200	07/18/23 06:17	07/21/23 23:00	1
13C9 PFNA	87		50 - 200	07/18/23 06:17	07/21/23 23:00	1
13C6 PFDA	83		50 - 200	07/18/23 06:17	07/21/23 23:00	1
13C7 PFUnA	83		50 - 200	07/18/23 06:17	07/21/23 23:00	1
13C2 PFDoA	80		50 - 200	07/18/23 06:17	07/21/23 23:00	1
13C8 PFOS	79		50 - 200	07/18/23 06:17	07/21/23 23:00	1

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QC Sample Results

Client: Union County Water
 Project/Site: Union County Water NC0190413 UCMR5

Job ID: 810-68253-1

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

Lab Sample ID: MBL 810-65918/1-A
Matrix: Drinking Water
Analysis Batch: 66380

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 65918

Isotope Dilution	MBL MBL		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C3 PFHxS	79		50 - 200	07/18/23 06:17	07/21/23 23:00	1
13C2-4:2-FTS	107		50 - 200	07/18/23 06:17	07/21/23 23:00	1
13C2-6:2-FTS	92		50 - 200	07/18/23 06:17	07/21/23 23:00	1
13C2-8:2-FTS	89		50 - 200	07/18/23 06:17	07/21/23 23:00	1

Lab Sample ID: LLCS 810-65918/2-A
Matrix: Drinking Water
Analysis Batch: 66380

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 65918

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluoropentanoic acid (PFPeA)	0.00200	0.0022		ug/L		109	50 - 150
Perfluorohexanoic acid (PFHxA)	0.00200	0.0023		ug/L		113	50 - 150
Perfluoroheptanoic acid (PFHpA)	0.00200	0.0022		ug/L		110	50 - 150
Perfluorooctanoic acid (PFOA)	0.00200	0.0022		ug/L		112	50 - 150
Perfluorononanoic acid (PFNA)	0.00200	0.0022		ug/L		110	50 - 150
Perfluorodecanoic acid (PFDA)	0.00200	0.0022		ug/L		110	50 - 150
Perfluoroundecanoic acid (PFUnA)	0.00200	0.0022		ug/L		110	50 - 150
Perfluorododecanoic acid (PFDoA)	0.00200	0.0022		ug/L		109	50 - 150
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	0.00189	0.0021		ug/L		111	50 - 150
Perfluorobutanesulfonic acid (PFBS)	0.00178	0.0019		ug/L		109	50 - 150
Perfluorohexanesulfonic acid (PFHxS)	0.00183	0.0019		ug/L		107	50 - 150
Perfluoroheptanesulfonic acid (PFHpS)	0.00191	0.0019		ug/L		99	50 - 150
Perfluorooctanesulfonic acid (PFOS)	0.00186	0.0020		ug/L		106	50 - 150
Perfluoropentanesulfonic acid (PFPeS)	0.00188	0.0019		ug/L		104	50 - 150
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	0.00200	0.0022		ug/L		109	50 - 150
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	0.00187	0.0018		ug/L		97	50 - 150
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	0.00189	0.0019		ug/L		102	50 - 150
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	0.00188	0.0023		ug/L		122	50 - 150
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	0.00190	0.0026		ug/L		136	50 - 150
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	0.00192	0.0023		ug/L		120	50 - 150
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	0.00200	0.0022		ug/L		108	50 - 150
Perfluoro-3-methoxypropanoic acid (PFMPA)	0.00200	0.0024		ug/L		118	50 - 150
Perfluoro-4-methoxybutanoic acid (PFMBA)	0.00200	0.0021		ug/L		107	50 - 150
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	0.00178	0.0019		ug/L		107	50 - 150

QC Sample Results

Client: Union County Water
 Project/Site: Union County Water NC0190413 UCMR5

Job ID: 810-68253-1

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

Isotope Dilution	LLCS		Limits
	%Recovery	Qualifier	
13C3 HFPO-DA	84		50 - 200
13C4 PFBA	84		50 - 200
13C3 PFBS	84		50 - 200
13C5 PFPeA	90		50 - 200
13C5 PFHxA	88		50 - 200
13C4 PFHpA	87		50 - 200
13C8 PFOA	86		50 - 200
13C9 PFNA	94		50 - 200
13C6 PFDA	87		50 - 200
13C7 PFUnA	86		50 - 200
13C2 PFDoA	84		50 - 200
13C8 PFOS	85		50 - 200
13C3 PFHxS	84		50 - 200
13C2-4:2-FTS	117		50 - 200
13C2-6:2-FTS	102		50 - 200
13C2-8:2-FTS	96		50 - 200

Lab Sample ID: 810-68253-1 LMS

Matrix: Drinking Water

Analysis Batch: 66380

Client Sample ID: Anson County Water Intertie

Prep Type: Total/NA

Prep Batch: 65918

Analyte	Sample	Sample	Spike	LMS	LMS	Unit	D	%Rec	%Rec Limits
	Result	Qualifier	Added	Result	Qualifier				
Perfluorobutanoic acid (PFBA)	<0.0050		0.00200	0.0057		ug/L		148	
Perfluoropentanoic acid (PFPeA)	0.0036		0.00200	0.0058		ug/L		112	
Perfluorohexanoic acid (PFHxA)	0.0035		0.00200	0.0058		ug/L		115	
Perfluoroheptanoic acid (PFHpA)	<0.0030		0.00200	0.0037		ug/L		107	
Perfluorooctanoic acid (PFOA)	<0.0040		0.00200	0.0058		ug/L		119	
Perfluorononanoic acid (PFNA)	<0.0040		0.00200	0.0029		ug/L		115	
Perfluorodecanoic acid (PFDA)	<0.0030		0.00200	0.0026		ug/L		132	
Perfluoroundecanoic acid (PFUnA)	<0.0020		0.00200	0.0024		ug/L		119	
Perfluorododecanoic acid (PFDoA)	<0.0030		0.00200	0.0023		ug/L		115	
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.0030		0.00189	0.0021		ug/L		113	
Perfluorobutanesulfonic acid (PFBS)	<0.0030		0.00178	0.0041		ug/L		112	
Perfluorohexanesulfonic acid (PFHxS)	<0.0030		0.00183	0.0034		ug/L		114	
Perfluoroheptanesulfonic acid (PFHpS)	<0.0030		0.00191	0.0022		ug/L		116	
Perfluorooctanesulfonic acid (PFOS)	0.0049		0.00186	0.0070		ug/L		115	
Perfluoropentanesulfonic acid (PFPeS)	<0.0040		0.00188	0.0024		ug/L		126	
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<0.0050		0.00200	0.0024		ug/L		118	
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	<0.0020		0.00187	0.0022		ug/L		115	
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	<0.0050		0.00189	0.0022		ug/L		114	
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<0.0030		0.00188	0.0022		ug/L		120	
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	<0.0050		0.00190	0.0026		ug/L		137	

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QC Sample Results

Client: Union County Water
 Project/Site: Union County Water NC0190413 UCMR5

Job ID: 810-68253-1

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

Lab Sample ID: 810-68253-1 LMS
Matrix: Drinking Water
Analysis Batch: 66380

Client Sample ID: Anson County Water Intertie
Prep Type: Total/NA
Prep Batch: 65918

Analyte	Sample Result	Sample Qualifier	Spike Added	LMS Result	LMS Qualifier	Unit	D	%Rec	%Rec Limits
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<0.0050		0.00192	0.0026		ug/L		134	
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<0.0200		0.00200	0.0023		ug/L		113	
Perfluoro-3-methoxypropanoic acid (PFMPA)	<0.0040		0.00200	0.0018		ug/L		88	
Perfluoro-4-methoxybutanoic acid (PFMBA)	<0.0030		0.00200	0.0022		ug/L		111	
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	<0.0030		0.00178	0.0017		ug/L		94	

Isotope Dilution	LMS LMS		Limits
	%Recovery	Qualifier	
13C3 HFPO-DA	76		50 - 200
13C4 PFBA	83		50 - 200
13C3 PFBS	82		50 - 200
13C5 PFPeA	76		50 - 200
13C5 PFHxA	78		50 - 200
13C4 PFHpA	78		50 - 200
13C8 PFOA	80		50 - 200
13C9 PFNA	81		50 - 200
13C6 PFDA	79		50 - 200
13C7 PFUnA	78		50 - 200
13C2 PFDoA	75		50 - 200
13C8 PFOS	84		50 - 200
13C3 PFHxS	85		50 - 200
13C2-4:2-FTS	103		50 - 200
13C2-6:2-FTS	92		50 - 200
13C2-8:2-FTS	92		50 - 200

Lab Sample ID: 810-68253-1 LMSD
Matrix: Drinking Water
Analysis Batch: 66380

Client Sample ID: Anson County Water Intertie
Prep Type: Total/NA
Prep Batch: 65918

Analyte	Sample Result	Sample Qualifier	Spike Added	LMSD Result	LMSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)	<0.0050		0.00200	0.0052		ug/L		125		9	
Perfluoropentanoic acid (PFPeA)	0.0036		0.00200	0.0059		ug/L		113		0	
Perfluorohexanoic acid (PFHxA)	0.0035		0.00200	0.0059		ug/L		119		1	
Perfluoroheptanoic acid (PFHpA)	<0.0030		0.00200	0.0037		ug/L		108		0	
Perfluorooctanoic acid (PFOA)	<0.0040		0.00200	0.0056		ug/L		107		4	
Perfluorononanoic acid (PFNA)	<0.0040		0.00200	0.0027		ug/L		109		4	
Perfluorodecanoic acid (PFDA)	<0.0030		0.00200	0.0025		ug/L		127		4	
Perfluoroundecanoic acid (PFUnA)	<0.0020		0.00200	0.0023		ug/L		116		3	
Perfluorododecanoic acid (PFDoA)	<0.0030		0.00200	0.0023		ug/L		114		1	
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.0030		0.00189	0.0021		ug/L		113		0	
Perfluorobutanesulfonic acid (PFBS)	<0.0030		0.00178	0.0041		ug/L		113		0	
Perfluorohexanesulfonic acid (PFHxS)	<0.0030		0.00183	0.0035		ug/L		115		1	

QC Sample Results

Client: Union County Water
 Project/Site: Union County Water NC0190413 UCMR5

Job ID: 810-68253-1

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

Lab Sample ID: 810-68253-1 LMSD
Matrix: Drinking Water
Analysis Batch: 66380

Client Sample ID: Anson County Water Intertie
Prep Type: Total/NA
Prep Batch: 65918

Analyte	Sample	Sample	Spike	LMSD	LMSD	Unit	D	%Rec	%Rec	RPD	RPD
	Result	Qualifier	Added	Result	Qualifier				Limits		
Perfluoroheptanesulfonic acid (PFHpS)	<0.0030		0.00191	0.0021		ug/L		109		6	
Perfluorooctanesulfonic acid (PFOS)	0.0049		0.00186	0.0067		ug/L		98		5	
Perfluoropentanesulfonic acid (PFPeS)	<0.0040		0.00188	0.0024		ug/L		127		0	
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<0.0050		0.00200	0.0024		ug/L		118		0	
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	<0.0020		0.00187	0.0021		ug/L		114		2	
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	<0.0050		0.00189	0.0020		ug/L		108		6	
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<0.0030		0.00188	0.0023		ug/L		125		5	
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	<0.0050		0.00190	0.0028		ug/L		145		6	
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<0.0050		0.00192	0.0023		ug/L		118		13	
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<0.0200		0.00200	0.0023		ug/L		116		2	
Perfluoro-3-methoxypropanoic acid (PFMPA)	<0.0040		0.00200	0.0017		ug/L		87		1	
Perfluoro-4-methoxybutanoic acid (PFMBA)	<0.0030		0.00200	0.0023		ug/L		115		3	
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	<0.0030		0.00178	0.0017		ug/L		97		3	

Isotope Dilution	LMSD	LMSD	Limits
	%Recovery	Qualifier	
13C3 HFPO-DA	74		50 - 200
13C4 PFBA	79		50 - 200
13C3 PFBS	78		50 - 200
13C5 PFPeA	71		50 - 200
13C5 PFHxA	75		50 - 200
13C4 PFHpA	76		50 - 200
13C8 PFOA	77		50 - 200
13C9 PFNA	81		50 - 200
13C6 PFDA	78		50 - 200
13C7 PFUnA	78		50 - 200
13C2 PFDoA	75		50 - 200
13C8 PFOS	82		50 - 200
13C3 PFHxS	80		50 - 200
13C2-4:2-FTS	95		50 - 200
13C2-6:2-FTS	88		50 - 200
13C2-8:2-FTS	92		50 - 200

Lab Sample ID: MBL 810-66602/1-A
Matrix: Drinking Water
Analysis Batch: 67117

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 66602

Analyte	MBL	MBL	RL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier						
Perfluorobutanoic acid (PFBA)	<0.0005		0.0050	ug/L		07/24/23 07:13	07/26/23 20:03	1
Perfluoropentanoic acid (PFPeA)	<0.0004		0.0030	ug/L		07/24/23 07:13	07/26/23 20:03	1

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QC Sample Results

Client: Union County Water
 Project/Site: Union County Water NC0190413 UCMR5

Job ID: 810-68253-1

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

Lab Sample ID: MBL 810-66602/1-A
Matrix: Drinking Water
Analysis Batch: 67117

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 66602

Analyte	MBL	MBL	RL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier						
Perfluorohexanoic acid (PFHxA)	<0.0004		0.0030	ug/L		07/24/23 07:13	07/26/23 20:03	1
Perfluoroheptanoic acid (PFHpA)	<0.0004		0.0030	ug/L		07/24/23 07:13	07/26/23 20:03	1
Perfluorooctanoic acid (PFOA)	<0.0004		0.0040	ug/L		07/24/23 07:13	07/26/23 20:03	1
Perfluorononanoic acid (PFNA)	<0.0004		0.0040	ug/L		07/24/23 07:13	07/26/23 20:03	1
Perfluorodecanoic acid (PFDA)	<0.0004		0.0030	ug/L		07/24/23 07:13	07/26/23 20:03	1
Perfluoroundecanoic acid (PFUnA)	<0.0004		0.0020	ug/L		07/24/23 07:13	07/26/23 20:03	1
Perfluorododecanoic acid (PFDoA)	<0.0004		0.0030	ug/L		07/24/23 07:13	07/26/23 20:03	1
4,8-Dioxo-3H-perfluorononanoic acid (ADONA)	<0.0004		0.0030	ug/L		07/24/23 07:13	07/26/23 20:03	1
Perfluorobutanesulfonic acid (PFBS)	<0.0004		0.0030	ug/L		07/24/23 07:13	07/26/23 20:03	1
Perfluorohexanesulfonic acid (PFHxS)	<0.0004		0.0030	ug/L		07/24/23 07:13	07/26/23 20:03	1
Perfluoroheptanesulfonic acid (PFHpS)	<0.0004		0.0030	ug/L		07/24/23 07:13	07/26/23 20:03	1
Perfluorooctanesulfonic acid (PFOS)	<0.0004		0.0040	ug/L		07/24/23 07:13	07/26/23 20:03	1
Perfluoropentanesulfonic acid (PFPeS)	<0.0004		0.0040	ug/L		07/24/23 07:13	07/26/23 20:03	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<0.0005		0.0050	ug/L		07/24/23 07:13	07/26/23 20:03	1
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid	<0.0005		0.0020	ug/L		07/24/23 07:13	07/26/23 20:03	1
11-Chloroeicosafluoro-3-oxaundecan e-1-sulfonic acid	<0.0005		0.0050	ug/L		07/24/23 07:13	07/26/23 20:03	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<0.0006		0.0030	ug/L		07/24/23 07:13	07/26/23 20:03	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	<0.0007		0.0050	ug/L		07/24/23 07:13	07/26/23 20:03	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<0.0006		0.0050	ug/L		07/24/23 07:13	07/26/23 20:03	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<0.0009		0.0200	ug/L		07/24/23 07:13	07/26/23 20:03	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<0.0003		0.0040	ug/L		07/24/23 07:13	07/26/23 20:03	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	<0.0004		0.0030	ug/L		07/24/23 07:13	07/26/23 20:03	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	<0.0005		0.0030	ug/L		07/24/23 07:13	07/26/23 20:03	1

Isotope Dilution	MBL	MBL	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C3 HFPO-DA	96		50 - 200	07/24/23 07:13	07/26/23 20:03	1
13C4 PFBA	101		50 - 200	07/24/23 07:13	07/26/23 20:03	1
13C3 PFBS	100		50 - 200	07/24/23 07:13	07/26/23 20:03	1
13C5 PFPeA	106		50 - 200	07/24/23 07:13	07/26/23 20:03	1
13C5 PFHxA	97		50 - 200	07/24/23 07:13	07/26/23 20:03	1
13C4 PFHpA	99		50 - 200	07/24/23 07:13	07/26/23 20:03	1
13C8 PFOA	100		50 - 200	07/24/23 07:13	07/26/23 20:03	1
13C9 PFNA	107		50 - 200	07/24/23 07:13	07/26/23 20:03	1
13C6 PFDA	100		50 - 200	07/24/23 07:13	07/26/23 20:03	1
13C7 PFUnA	98		50 - 200	07/24/23 07:13	07/26/23 20:03	1
13C2 PFDoA	97		50 - 200	07/24/23 07:13	07/26/23 20:03	1
13C8 PFOS	100		50 - 200	07/24/23 07:13	07/26/23 20:03	1
13C3 PFHxS	100		50 - 200	07/24/23 07:13	07/26/23 20:03	1
13C2-4:2-FTS	97		50 - 200	07/24/23 07:13	07/26/23 20:03	1

Eurofins Eaton Analytical South Bend

QC Sample Results

Client: Union County Water
 Project/Site: Union County Water NC0190413 UCMR5

Job ID: 810-68253-1

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

Lab Sample ID: MBL 810-66602/1-A
Matrix: Drinking Water
Analysis Batch: 67117

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 66602

Isotope Dilution	MBL MBL		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C2-6:2-FTS	102		50 - 200	07/24/23 07:13	07/26/23 20:03	1
13C2-8:2-FTS	104		50 - 200	07/24/23 07:13	07/26/23 20:03	1

Lab Sample ID: LLCS 810-66602/2-A
Matrix: Drinking Water
Analysis Batch: 67117

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 66602

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluoropentanoic acid (PFPeA)	0.00200	0.0027		ug/L		134 50 - 150	
Perfluorohexanoic acid (PFHxA)	0.00200	0.0026		ug/L		131 50 - 150	
Perfluoroheptanoic acid (PFHpA)	0.00200	0.0026		ug/L		132 50 - 150	
Perfluorooctanoic acid (PFOA)	0.00200	0.0026		ug/L		129 50 - 150	
Perfluorononanoic acid (PFNA)	0.00200	0.0027		ug/L		135 50 - 150	
Perfluorodecanoic acid (PFDA)	0.00200	0.0026		ug/L		131 50 - 150	
Perfluoroundecanoic acid (PFUnA)	0.00200	0.0025		ug/L		126 50 - 150	
Perfluorododecanoic acid (PFDoA)	0.00200	0.0026		ug/L		129 50 - 150	
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	0.00189	0.0025		ug/L		133 50 - 150	
Perfluorobutanesulfonic acid (PFBS)	0.00178	0.0022		ug/L		125 50 - 150	
Perfluorohexanesulfonic acid (PFHxS)	0.00183	0.0023		ug/L		125 50 - 150	
Perfluoroheptanesulfonic acid (PFHpS)	0.00191	0.0022		ug/L		117 50 - 150	
Perfluorooctanesulfonic acid (PFOS)	0.00186	0.0023		ug/L		125 50 - 150	
Perfluoropentanesulfonic acid (PFPeS)	0.00188	0.0024		ug/L		125 50 - 150	
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	0.00200	0.0026		ug/L		129 50 - 150	
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	0.00187	0.0022		ug/L		118 50 - 150	
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	0.00189	0.0022		ug/L		117 50 - 150	
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	0.00188	0.0026		ug/L		140 50 - 150	
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	0.00190	0.0025		ug/L		132 50 - 150	
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	0.00192	0.0027		ug/L		142 50 - 150	
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	0.00200	0.0027		ug/L		134 50 - 150	
Perfluoro-3-methoxypropanoic acid (PFMPA)	0.00200	0.0028		ug/L		138 50 - 150	
Perfluoro-4-methoxybutanoic acid (PFMBA)	0.00200	0.0026		ug/L		128 50 - 150	
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	0.00178	0.0025		ug/L		139 50 - 150	

QC Sample Results

Client: Union County Water
 Project/Site: Union County Water NC0190413 UCMR5

Job ID: 810-68253-1

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

Isotope Dilution	LLCS LLCS		Limits
	%Recovery	Qualifier	
13C3 HFPO-DA	98		50 - 200
13C4 PFBA	104		50 - 200
13C3 PFBS	102		50 - 200
13C5 PFPeA	107		50 - 200
13C5 PFHxA	103		50 - 200
13C4 PFHpA	101		50 - 200
13C8 PFOA	101		50 - 200
13C9 PFNA	106		50 - 200
13C6 PFDA	99		50 - 200
13C7 PFUnA	93		50 - 200
13C2 PFDoA	92		50 - 200
13C8 PFOS	101		50 - 200
13C3 PFHxS	99		50 - 200
13C2-4:2-FTS	104		50 - 200
13C2-6:2-FTS	103		50 - 200
13C2-8:2-FTS	100		50 - 200

Method: 537.1 UCMR5 - Perfluorinated Alkyl Acids (LC/MS)

Lab Sample ID: MBL 810-64695/1-A
 Matrix: Drinking Water
 Analysis Batch: 64745

Client Sample ID: Method Blank
 Prep Type: Total/NA
 Prep Batch: 64695

Analyte	MBL	MBL	RL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier						
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<0.0005		0.0050	ug/L		07/06/23 07:54	07/07/23 18:27	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<0.0006		0.0060	ug/L		07/06/23 07:54	07/07/23 18:27	1
Perfluorotetradecanoic acid (PFTA)	<0.0007		0.0080	ug/L		07/06/23 07:54	07/07/23 18:27	1
Perfluorotridecanoic acid (PFTrDA)	<0.0006		0.0070	ug/L		07/06/23 07:54	07/07/23 18:27	1

Surrogate	MBL MBL		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
d5-NEtFOSAA	96		70 - 130	07/06/23 07:54	07/07/23 18:27	1
13C2 PFHxA	86		70 - 130	07/06/23 07:54	07/07/23 18:27	1
13C2 PFDA	97		70 - 130	07/06/23 07:54	07/07/23 18:27	1
13C3 HFPO-DA	87		70 - 130	07/06/23 07:54	07/07/23 18:27	1

Lab Sample ID: LLCS 810-64695/2-A
 Matrix: Drinking Water
 Analysis Batch: 64745

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA
 Prep Batch: 64695

Analyte	Spike Added	LLCS	LLCS	Unit	D	%Rec	%Rec Limits
		Result	Qualifier				
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0.00200	0.0024		ug/L		121	50 - 150
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0.00200	0.0025		ug/L		123	50 - 150
Perfluorotetradecanoic acid (PFTA)	0.00200	0.0019		ug/L		97	50 - 150
Perfluorotridecanoic acid (PFTrDA)	0.00200	0.0023		ug/L		115	50 - 150

Surrogate	LLCS LLCS		Limits
	%Recovery	Qualifier	
d5-NEtFOSAA	94		70 - 130

QC Sample Results

Client: Union County Water
 Project/Site: Union County Water NC0190413 UCMR5

Job ID: 810-68253-1

Method: 537.1 UCMR5 - Perfluorinated Alkyl Acids (LC/MS) (Continued)

Lab Sample ID: LLCS 810-64695/2-A
Matrix: Drinking Water
Analysis Batch: 64745

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 64695

Surrogate	LLCS LLCS		Limits
	%Recovery	Qualifier	
13C2 PFHxA	92		70 - 130
13C2 PFDA	100		70 - 130
13C3 HFPO-DA	93		70 - 130

Method: 200.7 UCMR5 - Metals (ICP)

Lab Sample ID: MBL 810-65870/1-A
Matrix: Drinking Water
Analysis Batch: 65996

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 65870

Analyte	MBL MBL		RL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier						
Lithium	<0.520		9.00	ug/L		07/17/23 12:45	07/18/23 11:49	1

Lab Sample ID: LLCS 810-65870/2-A
Matrix: Drinking Water
Analysis Batch: 65996

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 65870

Analyte	Spike Added	LLCS LLCS		Unit	D	%Rec	%Rec Limits
		Result	Qualifier				
Lithium	9.00	10.0		ug/L		112	50 - 150

QC Association Summary

Client: Union County Water
 Project/Site: Union County Water NC0190413 UCMR5

Job ID: 810-68253-1

LCMS

Prep Batch: 64695

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-68253-1	Anson County Water Intertie	Total/NA	Drinking Water	537.1 DW	
MBL 810-64695/1-A	Method Blank	Total/NA	Drinking Water	537.1 DW	
LLCS 810-64695/2-A	Lab Control Sample	Total/NA	Drinking Water	537.1 DW	

Analysis Batch: 64745

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-68253-1	Anson County Water Intertie	Total/NA	Drinking Water	537.1 UCMR5	64695
MBL 810-64695/1-A	Method Blank	Total/NA	Drinking Water	537.1 UCMR5	64695
LLCS 810-64695/2-A	Lab Control Sample	Total/NA	Drinking Water	537.1 UCMR5	64695

Prep Batch: 65918

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-68253-1	Anson County Water Intertie	Total/NA	Drinking Water	533	
MBL 810-65918/1-A	Method Blank	Total/NA	Drinking Water	533	
LLCS 810-65918/2-A	Lab Control Sample	Total/NA	Drinking Water	533	
810-68253-1 LMS	Anson County Water Intertie	Total/NA	Drinking Water	533	
810-68253-1 LMSD	Anson County Water Intertie	Total/NA	Drinking Water	533	

Analysis Batch: 66380

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-68253-1	Anson County Water Intertie	Total/NA	Drinking Water	533	65918
MBL 810-65918/1-A	Method Blank	Total/NA	Drinking Water	533	65918
LLCS 810-65918/2-A	Lab Control Sample	Total/NA	Drinking Water	533	65918
810-68253-1 LMS	Anson County Water Intertie	Total/NA	Drinking Water	533	65918
810-68253-1 LMSD	Anson County Water Intertie	Total/NA	Drinking Water	533	65918

Prep Batch: 66602

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-68253-1FRB	FRB	Total/NA	Drinking Water	533	
MBL 810-66602/1-A	Method Blank	Total/NA	Drinking Water	533	
LLCS 810-66602/2-A	Lab Control Sample	Total/NA	Drinking Water	533	

Analysis Batch: 67117

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-68253-1FRB	FRB	Total/NA	Drinking Water	533	66602
MBL 810-66602/1-A	Method Blank	Total/NA	Drinking Water	533	66602
LLCS 810-66602/2-A	Lab Control Sample	Total/NA	Drinking Water	533	66602

Metals

Prep Batch: 65870

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-68253-1	Anson County Water Intertie	Total/NA	Drinking Water	200.7 UCMR5	
MBL 810-65870/1-A	Method Blank	Total/NA	Drinking Water	200.7 UCMR5	
LLCS 810-65870/2-A	Lab Control Sample	Total/NA	Drinking Water	200.7 UCMR5	

Analysis Batch: 65996

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-68253-1	Anson County Water Intertie	Total/NA	Drinking Water	200.7 UCMR5	65870
MBL 810-65870/1-A	Method Blank	Total/NA	Drinking Water	200.7 UCMR5	65870
LLCS 810-65870/2-A	Lab Control Sample	Total/NA	Drinking Water	200.7 UCMR5	65870

Lab Chronicle

Client: Union County Water
Project/Site: Union County Water NC0190413 UCMR5

Job ID: 810-68253-1

Client Sample ID: Anson County Water Intertie

Lab Sample ID: 810-68253-1

Date Collected: 07/03/23 10:29

Matrix: Drinking Water

Date Received: 07/05/23 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	533			65918	KL	EA SB	07/18/23 06:17
Total/NA	Analysis	533		1	66380	KB	EA SB	07/21/23 23:55
Total/NA	Prep	537.1 DW			64695	SS	EA SB	07/06/23 07:54
Total/NA	Analysis	537.1 UCMR5		1	64745	ST	EA SB	07/07/23 20:24
Total/NA	Prep	200.7 UCMR5			65870	NB	EA SB	07/17/23 12:45
Total/NA	Analysis	200.7 UCMR5		1	65996	NB	EA SB	07/18/23 12:23

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: Union County Water NC0190413 UCMR5

Job ID: 810-68253-1

Laboratory: Eurofins Eaton Analytical South Bend

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
USEPA UCMR 5	US Federal Programs	IN00035	12-31-25

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16

Method Summary

Client: Union County Water
Project/Site: Union County Water NC0190413 UCMR5

Job ID: 810-68253-1

Method	Method Description	Protocol	Laboratory
533	Perfluorinated and Polyfluorinated Alkyl Substances in Drinking Water	EPA	EA SB
537.1 UCMR5	Perfluorinated Alkyl Acids (LC/MS)	EPA	EA SB
200.7 UCMR5	Metals (ICP)	EPA	EA SB
200.7 UCMR5	Preparation, Total Recoverable Metals	EPA	EA SB
533	Extraction of Perfluorinated and Polyfluorinated Alkyl Acids	EPA	EA SB
537.1 DW	Extraction of Perfluorinated 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: Union County Water NC0190413 UCMR5

Job ID: 810-68253-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
810-68253-1	Anson County Water Intertie	Drinking Water	07/03/23 10:29	07/05/23 09:00
810-68253-1FRB	Anson County Water Intertie	Drinking Water	07/03/23 10:29	07/05/23 09:00

- 1
- 2
- 3
- 4
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- 10
- 11
- 12
- 13
- 14
- 15
- 16

South Bend, IN

110 S Hill Street
 South Bend, IN 46617
 Phone (574) 233-4777; Phone (574) 233-8207

"UCMR 5 Sampling Form for Single Collection Site"

(Separate form is needed for each collection site)



Environment Testing
 America

Company Contact: Donald Honeycutt
 Company Name: Union County Water
 Company Address: 500 N. Main St
Monroe NC 28112
 Phone: 704-289-7044
 Email: Junior.Honeycutt@unioncountync.gov
 Purchase Order: _____

Lat _____



810-68253 Chain of Custody

PWSID: Anson County Water
 FacID: Inter tie
 SPID: _____
 FacName: pj 582
 SPName: _____
 Sampling Event: _____

Water System Name: Union County Water System
 Collection Location: Anson County Water Intertie
 Scheduled Collection Date: 7/3/23

Sampler Name (Print): Jordan Helms

Date/Time Sampled: 7/3/23 10:29A

Client Storage temp, if > 2 days from collection: _____

AREA BELOW FOR LAB USE ONLY

For UCMR 5 specific criteria see: REC-WI55108 Guidance Document for UCMR 5 Sample Receiving Requirements and QA-SOP-SOP48964 UCMR 5 QAPP

Method	Type	# Bot	Temp °C (10°C within 2 days of collection, 6°C for > 2 days)		pH* value	✓if receipt pH acceptable	✓if pH needs adjustment	Cl (P/A)**	Sample Comments	✓if sample is invalid
			IR Gun#: <u>29</u>	Initial / Corrected						
200.7	FS	1								
200.7	FS	2								
533	FS	1	<u>1.6</u>	<u>2.4</u>		✓		<u>A</u>		
533	FS	2		/		✓		<u>A</u>		
533	FS	3		/		✓		<u>A</u>		
533	FRB	1	<u>1.4</u>	<u>2.2</u>		✓		<u>A</u>		
537.1	FS	1	<u>1.2</u>	<u>2.0</u>		✓		<u>A</u>		
537.1	FS	2		/		✓		<u>A</u>		
537.1	FS	3		/		✓		<u>A</u>		
537.1	FRB	1	<u>1.2</u>	<u>2.0</u>		✓		<u>A</u>		

* pH < 2 for 200.7. pH 6-8 for 533 & 537.1. Note: 200.7 & 533 pH may be adjusted upon receipt.

** A = Absent if Free Cl < 0.1 mg/L; P = Chlorine is present

Received By _____

[Signature]

Date/Time _____

07-05-23 0900

Login Sample Receipt Checklist

Client: Union County Water

Job Number: 810-68253-1

Login Number: 68253

List Source: Eurofins Eaton Analytical South Bend

List Number: 1

Creator: Moore, Gary

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	