

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

ANALYTICAL REPORT

PREPARED FOR

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

Generated 3/7/2023 7:05:38 AM

JOB DESCRIPTION

Union County Water NC0190413 UCMR5

JOB NUMBER

810-50777-1

Eurofins Eaton South Bend

Job Notes

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



Generated
3/7/2023 7:05:38 AM

Authorized for release by
Joe Mattheis, Project Manager I
Joe.Mattheis@et.eurofinsus.com
(574)233-4777



Table of Contents

Cover Page	1
Table of Contents	3
Definitions/Glossary	4
Case Narrative	5
Detection Summary	6
Client Sample Results	7
Surrogate Summary	10
Isotope Dilution Summary	11
QC Sample Results	12
QC Association Summary	16
Lab Chronicle	17
Certification Summary	18
Method Summary	19
Sample Summary	20
Chain of Custody	21
Receipt Checklists	22

Definitions/Glossary

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

Job ID: 810-50777-1

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: 810-50777-1

Job ID: 810-50777-1

Laboratory: Eurofins Eaton South Bend

Narrative

Job Narrative
810-50777-1

Comments

No additional comments.

Receipt

The samples were received on 1/19/2023 9:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice.

Metals

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

LCMS

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

Organic Prep

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

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

Detection Summary

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

Job ID: 810-50777-1

Client Sample ID: Anson County Water Intertie
PWSID Number: NC0190413

Lab Sample ID: 810-50777-1

Analyte	Result	Qualifier	RL	Unit	Dil Fac	D	Method	Prep Type
Perfluoropentanoic acid (PFPeA)	0.0033		0.0030	ug/L	1		533	Total/NA
Perfluorohexanoic acid (PFHxA)	0.0030		0.0030	ug/L	1		533	Total/NA

Client Sample ID: Anson County Water Intertie
PWSID Number: NC0190413

Lab Sample ID: 810-50777-1FRB

Sample Analysis Not Complete.

This Detection Summary does not include radiochemical test results.

Eurofins Eaton South Bend



Client Sample Results

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

Job ID: 810-50777-1

Client Sample ID: Anson County Water Intertie

Lab Sample ID: 810-50777-1

Date Collected: 01/18/23 00:00

Matrix: Drinking Water

Date Received: 01/19/23 15:23

PWSID Number: NC0190413

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		02/15/23 07:25	02/16/23 10:37	1
Perfluoropentanoic acid (PFPeA)	0.0033		0.0030	ug/L		02/15/23 07:25	02/16/23 10:37	1
Perfluorohexanoic acid (PFHxA)	0.0030		0.0030	ug/L		02/15/23 07:25	02/16/23 10:37	1
Perfluoroheptanoic acid (PFHpA)	<0.0030		0.0030	ug/L		02/15/23 07:25	02/16/23 10:37	1
Perfluorooctanoic acid (PFOA)	<0.0040		0.0040	ug/L		02/15/23 07:25	02/16/23 10:37	1
Perfluorononanoic acid (PFNA)	<0.0040		0.0040	ug/L		02/15/23 07:25	02/16/23 10:37	1
Perfluorodecanoic acid (PFDA)	<0.0030		0.0030	ug/L		02/15/23 07:25	02/16/23 10:37	1
Perfluoroundecanoic acid (PFUnA)	<0.0020		0.0020	ug/L		02/15/23 07:25	02/16/23 10:37	1
Perfluorododecanoic acid (PFDoA)	<0.0030		0.0030	ug/L		02/15/23 07:25	02/16/23 10:37	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.0030		0.0030	ug/L		02/15/23 07:25	02/16/23 10:37	1
Perfluorobutanesulfonic acid (PFBS)	<0.0030		0.0030	ug/L		02/15/23 07:25	02/16/23 10:37	1
Perfluorohexanesulfonic acid (PFHxS)	<0.0030		0.0030	ug/L		02/15/23 07:25	02/16/23 10:37	1
Perfluoroheptanesulfonic acid (PFHpS)	<0.0030		0.0030	ug/L		02/15/23 07:25	02/16/23 10:37	1
Perfluorooctanesulfonic acid (PFOS)	<0.0040		0.0040	ug/L		02/15/23 07:25	02/16/23 10:37	1
Perfluoropentanesulfonic acid (PFPeS)	<0.0040		0.0040	ug/L		02/15/23 07:25	02/16/23 10:37	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<0.0050		0.0050	ug/L		02/15/23 07:25	02/16/23 10:37	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	<0.0020		0.0020	ug/L		02/15/23 07:25	02/16/23 10:37	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	<0.0050		0.0050	ug/L		02/15/23 07:25	02/16/23 10:37	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<0.0030		0.0030	ug/L		02/15/23 07:25	02/16/23 10:37	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	<0.0050		0.0050	ug/L		02/15/23 07:25	02/16/23 10:37	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<0.0050		0.0050	ug/L		02/15/23 07:25	02/16/23 10:37	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<0.0200		0.0200	ug/L		02/15/23 07:25	02/16/23 10:37	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<0.0040		0.0040	ug/L		02/15/23 07:25	02/16/23 10:37	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	<0.0030		0.0030	ug/L		02/15/23 07:25	02/16/23 10:37	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	<0.0030		0.0030	ug/L		02/15/23 07:25	02/16/23 10:37	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	84		50 - 200	02/15/23 07:25	02/16/23 10:37	1
13C4 PFBA	95		50 - 200	02/15/23 07:25	02/16/23 10:37	1
13C3 PFBS	100		50 - 200	02/15/23 07:25	02/16/23 10:37	1
13C5 PFPeA	111		50 - 200	02/15/23 07:25	02/16/23 10:37	1
13C5 PFHxA	96		50 - 200	02/15/23 07:25	02/16/23 10:37	1
13C4 PFHpA	94		50 - 200	02/15/23 07:25	02/16/23 10:37	1
13C8 PFOA	88		50 - 200	02/15/23 07:25	02/16/23 10:37	1
13C9 PFNA	82		50 - 200	02/15/23 07:25	02/16/23 10:37	1
13C6 PFDA	77		50 - 200	02/15/23 07:25	02/16/23 10:37	1
13C7 PFUnA	76		50 - 200	02/15/23 07:25	02/16/23 10:37	1
13C2 PFDoA	78		50 - 200	02/15/23 07:25	02/16/23 10:37	1
13C8 PFOS	92		50 - 200	02/15/23 07:25	02/16/23 10:37	1
13C3 PFHxS	93		50 - 200	02/15/23 07:25	02/16/23 10:37	1

Eurofins Eaton South Bend

Client Sample Results

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

Job ID: 810-50777-1

Client Sample ID: Anson County Water Intertie

Lab Sample ID: 810-50777-1

Date Collected: 01/18/23 00:00

Matrix: Drinking Water

Date Received: 01/19/23 15:23

PWSID Number: NC0190413

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	100		50 - 200	02/15/23 07:25	02/16/23 10:37	1
13C2-6:2-FTS	100		50 - 200	02/15/23 07:25	02/16/23 10:37	1
13C2-8:2-FTS	95		50 - 200	02/15/23 07:25	02/16/23 10:37	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		01/31/23 07:42	02/01/23 00:16	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<0.0060		0.0060	ug/L		01/31/23 07:42	02/01/23 00:16	1
Perfluorotetradecanoic acid (PFTA)	<0.0080		0.0080	ug/L		01/31/23 07:42	02/01/23 00:16	1
Perfluorotridecanoic acid (PFTrDA)	<0.0070		0.0070	ug/L		01/31/23 07:42	02/01/23 00:16	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
d5-NETFOSAA	86		70 - 130	01/31/23 07:42	02/01/23 00:16	1
13C2 PFHxA	97		70 - 130	01/31/23 07:42	02/01/23 00:16	1
13C2 PFDA	90		70 - 130	01/31/23 07:42	02/01/23 00:16	1
13C3 HFPO-DA	91		70 - 130	01/31/23 07:42	02/01/23 00:16	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		01/27/23 12:55	01/30/23 15:32	1

Client Sample ID: Anson County Water Intertie

Lab Sample ID: 810-50777-1FRB

Date Collected: 01/18/23 00:00

Matrix: Drinking Water

Date Received: 01/19/23 15:23

PWSID Number: NC0190413

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		02/15/23 07:25	02/16/23 06:08	1
Perfluoropentanoic acid (PFPeA)	<0.0004		0.0030	ug/L		02/15/23 07:25	02/16/23 06:08	1
Perfluorohexanoic acid (PFHxA)	<0.0004		0.0030	ug/L		02/15/23 07:25	02/16/23 06:08	1
Perfluoroheptanoic acid (PFHpA)	<0.0004		0.0030	ug/L		02/15/23 07:25	02/16/23 06:08	1
Perfluorooctanoic acid (PFOA)	<0.0004		0.0040	ug/L		02/15/23 07:25	02/16/23 06:08	1
Perfluorononanoic acid (PFNA)	<0.0004		0.0040	ug/L		02/15/23 07:25	02/16/23 06:08	1
Perfluorodecanoic acid (PFDA)	<0.0004		0.0030	ug/L		02/15/23 07:25	02/16/23 06:08	1
Perfluoroundecanoic acid (PFUnA)	<0.0004		0.0020	ug/L		02/15/23 07:25	02/16/23 06:08	1
Perfluorododecanoic acid (PFDoA)	<0.0004		0.0030	ug/L		02/15/23 07:25	02/16/23 06:08	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.0004		0.0030	ug/L		02/15/23 07:25	02/16/23 06:08	1
Perfluorobutanesulfonic acid (PFBS)	<0.0004		0.0030	ug/L		02/15/23 07:25	02/16/23 06:08	1
Perfluorohexanesulfonic acid (PFHxS)	<0.0004		0.0030	ug/L		02/15/23 07:25	02/16/23 06:08	1
Perfluoroheptanesulfonic acid (PFHpS)	<0.0004		0.0030	ug/L		02/15/23 07:25	02/16/23 06:08	1
Perfluorooctanesulfonic acid (PFOS)	<0.0004		0.0040	ug/L		02/15/23 07:25	02/16/23 06:08	1
Perfluoropentanesulfonic acid (PFPeS)	<0.0004		0.0040	ug/L		02/15/23 07:25	02/16/23 06:08	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<0.0005		0.0050	ug/L		02/15/23 07:25	02/16/23 06:08	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	<0.0005		0.0020	ug/L		02/15/23 07:25	02/16/23 06:08	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	<0.0005		0.0050	ug/L		02/15/23 07:25	02/16/23 06:08	1

Eurofins Eaton South Bend

Client Sample Results

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

Job ID: 810-50777-1

Client Sample ID: Anson County Water Intertie

Lab Sample ID: 810-50777-1FRB

Date Collected: 01/18/23 00:00

Matrix: Drinking Water

Date Received: 01/19/23 15:23

PWSID Number: NC0190413

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		02/15/23 07:25	02/16/23 06:08	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	<0.0007		0.0050	ug/L		02/15/23 07:25	02/16/23 06:08	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<0.0006		0.0050	ug/L		02/15/23 07:25	02/16/23 06:08	1
Nonafluoro-3,6-dioxahexanoic acid (NFDHA)	<0.0009		0.0200	ug/L		02/15/23 07:25	02/16/23 06:08	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<0.0003		0.0040	ug/L		02/15/23 07:25	02/16/23 06:08	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	<0.0004		0.0030	ug/L		02/15/23 07:25	02/16/23 06:08	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	<0.0005		0.0030	ug/L		02/15/23 07:25	02/16/23 06:08	1
Isotope Dilution	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	95		50 - 200			02/15/23 07:25	02/16/23 06:08	1
13C4 PFBA	92		50 - 200			02/15/23 07:25	02/16/23 06:08	1
13C3 PFBS	87		50 - 200			02/15/23 07:25	02/16/23 06:08	1
13C5 PFPeA	90		50 - 200			02/15/23 07:25	02/16/23 06:08	1
13C5 PFHxA	93		50 - 200			02/15/23 07:25	02/16/23 06:08	1
13C4 PFHpA	95		50 - 200			02/15/23 07:25	02/16/23 06:08	1
13C8 PFOA	95		50 - 200			02/15/23 07:25	02/16/23 06:08	1
13C9 PFNA	96		50 - 200			02/15/23 07:25	02/16/23 06:08	1
13C6 PFDA	94		50 - 200			02/15/23 07:25	02/16/23 06:08	1
13C7 PFUnA	93		50 - 200			02/15/23 07:25	02/16/23 06:08	1
13C2 PFDoA	91		50 - 200			02/15/23 07:25	02/16/23 06:08	1
13C8 PFOS	92		50 - 200			02/15/23 07:25	02/16/23 06:08	1
13C3 PFHxS	92		50 - 200			02/15/23 07:25	02/16/23 06:08	1
13C2-4:2-FTS	82		50 - 200			02/15/23 07:25	02/16/23 06:08	1
13C2-6:2-FTS	88		50 - 200			02/15/23 07:25	02/16/23 06:08	1
13C2-8:2-FTS	88		50 - 200			02/15/23 07:25	02/16/23 06:08	1

Surrogate Summary

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

Job ID: 810-50777-1

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)
810-50777-1	Anson County Water Intertie	86	97	90	91
LLCS 810-46174/19-A	Lab Control Sample	88	92	94	87
MBL 810-46174/20-A	Method Blank	85	98	86	93

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: 810-50777-1

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)
810-50777-1	Anson County Water Intertie	84	95	100	111	96	94	88	82
810-50777-1FRB	FRB	95	92	87	90	93	95	95	96
LLCS 810-47881/2-A	Lab Control Sample	94	97	93	97	94	98	96	97
MBL 810-47881/1-A	Method Blank	97	98	96	97	101	96	99	97

		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)
810-50777-1	Anson County Water Intertie	77	76	78	92	93	100	100	95
810-50777-1FRB	FRB	94	93	91	92	92	82	88	88
LLCS 810-47881/2-A	Lab Control Sample	93	91	89	91	97	84	90	92
MBL 810-47881/1-A	Method Blank	91	88	85	91	94	86	93	90

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: 810-50777-1

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

Lab Sample ID: MBL 810-47881/1-A
Matrix: Drinking Water
Analysis Batch: 48042

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 47881

Analyte	MBL Result	MBL Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<0.0005		0.0050	ug/L		02/15/23 07:25	02/16/23 02:33	1
Perfluoropentanoic acid (PFPeA)	<0.0004		0.0030	ug/L		02/15/23 07:25	02/16/23 02:33	1
Perfluorohexanoic acid (PFHxA)	<0.0004		0.0030	ug/L		02/15/23 07:25	02/16/23 02:33	1
Perfluoroheptanoic acid (PFHpA)	<0.0004		0.0030	ug/L		02/15/23 07:25	02/16/23 02:33	1
Perfluorooctanoic acid (PFOA)	<0.0004		0.0040	ug/L		02/15/23 07:25	02/16/23 02:33	1
Perfluorononanoic acid (PFNA)	<0.0004		0.0040	ug/L		02/15/23 07:25	02/16/23 02:33	1
Perfluorodecanoic acid (PFDA)	<0.0004		0.0030	ug/L		02/15/23 07:25	02/16/23 02:33	1
Perfluoroundecanoic acid (PFUnA)	<0.0004		0.0020	ug/L		02/15/23 07:25	02/16/23 02:33	1
Perfluorododecanoic acid (PFDoA)	<0.0004		0.0030	ug/L		02/15/23 07:25	02/16/23 02:33	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.0004		0.0030	ug/L		02/15/23 07:25	02/16/23 02:33	1
Perfluorobutanesulfonic acid (PFBS)	<0.0004		0.0030	ug/L		02/15/23 07:25	02/16/23 02:33	1
Perfluorohexanesulfonic acid (PFHxS)	<0.0004		0.0030	ug/L		02/15/23 07:25	02/16/23 02:33	1
Perfluoroheptanesulfonic acid (PFHpS)	<0.0004		0.0030	ug/L		02/15/23 07:25	02/16/23 02:33	1
Perfluorooctanesulfonic acid (PFOS)	<0.0004		0.0040	ug/L		02/15/23 07:25	02/16/23 02:33	1
Perfluoropentanesulfonic acid (PFPeS)	<0.0004		0.0040	ug/L		02/15/23 07:25	02/16/23 02:33	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<0.0005		0.0050	ug/L		02/15/23 07:25	02/16/23 02:33	1
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid	<0.0005		0.0020	ug/L		02/15/23 07:25	02/16/23 02:33	1
11-Chloroeicosafluoro-3-oxaundecan e-1-sulfonic acid	<0.0005		0.0050	ug/L		02/15/23 07:25	02/16/23 02:33	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<0.0006		0.0030	ug/L		02/15/23 07:25	02/16/23 02:33	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	<0.0007		0.0050	ug/L		02/15/23 07:25	02/16/23 02:33	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<0.0006		0.0050	ug/L		02/15/23 07:25	02/16/23 02:33	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<0.0009		0.0200	ug/L		02/15/23 07:25	02/16/23 02:33	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<0.0003		0.0040	ug/L		02/15/23 07:25	02/16/23 02:33	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	<0.0004		0.0030	ug/L		02/15/23 07:25	02/16/23 02:33	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	<0.0005		0.0030	ug/L		02/15/23 07:25	02/16/23 02:33	1

Isotope Dilution	MBL %Recovery	MBL Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	97		50 - 200	02/15/23 07:25	02/16/23 02:33	1
13C4 PFBA	98		50 - 200	02/15/23 07:25	02/16/23 02:33	1
13C3 PFBS	96		50 - 200	02/15/23 07:25	02/16/23 02:33	1
13C5 PFPeA	97		50 - 200	02/15/23 07:25	02/16/23 02:33	1
13C5 PFHxA	101		50 - 200	02/15/23 07:25	02/16/23 02:33	1
13C4 PFHpA	96		50 - 200	02/15/23 07:25	02/16/23 02:33	1
13C8 PFOA	99		50 - 200	02/15/23 07:25	02/16/23 02:33	1
13C9 PFNA	97		50 - 200	02/15/23 07:25	02/16/23 02:33	1
13C6 PFDA	91		50 - 200	02/15/23 07:25	02/16/23 02:33	1
13C7 PFUnA	88		50 - 200	02/15/23 07:25	02/16/23 02:33	1
13C2 PFDoA	85		50 - 200	02/15/23 07:25	02/16/23 02:33	1
13C8 PFOS	91		50 - 200	02/15/23 07:25	02/16/23 02:33	1

Eurofins Eaton South Bend

QC Sample Results

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

Job ID: 810-50777-1

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

Lab Sample ID: MBL 810-47881/1-A
Matrix: Drinking Water
Analysis Batch: 48042

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 47881

Isotope Dilution	MBL MBL		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C3 PFHxS	94		50 - 200	02/15/23 07:25	02/16/23 02:33	1
13C2-4:2-FTS	86		50 - 200	02/15/23 07:25	02/16/23 02:33	1
13C2-6:2-FTS	93		50 - 200	02/15/23 07:25	02/16/23 02:33	1
13C2-8:2-FTS	90		50 - 200	02/15/23 07:25	02/16/23 02:33	1

Lab Sample ID: LLCS 810-47881/2-A
Matrix: Drinking Water
Analysis Batch: 48042

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 47881

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluoropentanoic acid (PFPeA)	0.00200	0.0018		ug/L		89	50 - 150
Perfluorohexanoic acid (PFHxA)	0.00200	0.0017		ug/L		85	50 - 150
Perfluoroheptanoic acid (PFHpA)	0.00200	0.0017		ug/L		87	50 - 150
Perfluorooctanoic acid (PFOA)	0.00200	0.0018		ug/L		89	50 - 150
Perfluorononanoic acid (PFNA)	0.00200	0.0018		ug/L		88	50 - 150
Perfluorodecanoic acid (PFDA)	0.00200	0.0017		ug/L		85	50 - 150
Perfluoroundecanoic acid (PFUnA)	0.00200	0.0018		ug/L		88	50 - 150
Perfluorododecanoic acid (PFDoA)	0.00200	0.0018		ug/L		92	50 - 150
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	0.00189	0.0016		ug/L		86	50 - 150
Perfluorobutanesulfonic acid (PFBS)	0.00178	0.0015		ug/L		83	50 - 150
Perfluorohexanesulfonic acid (PFHxS)	0.00183	0.0015		ug/L		83	50 - 150
Perfluoroheptanesulfonic acid (PFHpS)	0.00191	0.0017		ug/L		88	50 - 150
Perfluorooctanesulfonic acid (PFOS)	0.00186	0.0016		ug/L		87	50 - 150
Perfluoropentanesulfonic acid (PFPeS)	0.00188	0.0016		ug/L		85	50 - 150
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	0.00200	0.0017		ug/L		85	50 - 150
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	0.00187	0.0016		ug/L		86	50 - 150
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	0.00189	0.0015		ug/L		81	50 - 150
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	0.00188	0.0019		ug/L		100	50 - 150
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	0.00190	0.0019		ug/L		99	50 - 150
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	0.00192	0.0020		ug/L		102	50 - 150
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	0.00200	0.0018		ug/L		89	50 - 150
Perfluoro-3-methoxypropanoic acid (PFMPA)	0.00200	0.0017		ug/L		85	50 - 150
Perfluoro-4-methoxybutanoic acid (PFMBA)	0.00200	0.0017		ug/L		85	50 - 150
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	0.00178	0.0015		ug/L		82	50 - 150

QC Sample Results

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

Job ID: 810-50777-1

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

Isotope Dilution	LLCS LLCS		Limits
	%Recovery	Qualifier	
13C3 HFPO-DA	94		50 - 200
13C4 PFBA	97		50 - 200
13C3 PFBS	93		50 - 200
13C5 PFPeA	97		50 - 200
13C5 PFHxA	94		50 - 200
13C4 PFHpA	98		50 - 200
13C8 PFOA	96		50 - 200
13C9 PFNA	97		50 - 200
13C6 PFDA	93		50 - 200
13C7 PFUnA	91		50 - 200
13C2 PFDoA	89		50 - 200
13C8 PFOS	91		50 - 200
13C3 PFHxS	97		50 - 200
13C2-4:2-FTS	84		50 - 200
13C2-6:2-FTS	90		50 - 200
13C2-8:2-FTS	92		50 - 200

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

Lab Sample ID: MBL 810-46174/20-A
 Matrix: Drinking Water
 Analysis Batch: 46248

Client Sample ID: Method Blank
 Prep Type: Total/NA
 Prep Batch: 46174

Analyte	MBL Result	MBL Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<0.0005		0.0050	ug/L		01/31/23 07:42	01/31/23 23:02	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<0.0006		0.0060	ug/L		01/31/23 07:42	01/31/23 23:02	1
Perfluorotetradecanoic acid (PFTA)	<0.0007		0.0080	ug/L		01/31/23 07:42	01/31/23 23:02	1
Perfluorotridecanoic acid (PFTrDA)	<0.0006		0.0070	ug/L		01/31/23 07:42	01/31/23 23:02	1

Surrogate	MBL MBL		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
d5-NEtFOSAA	85		70 - 130	01/31/23 07:42	01/31/23 23:02	1
13C2 PFHxA	98		70 - 130	01/31/23 07:42	01/31/23 23:02	1
13C2 PFDA	86		70 - 130	01/31/23 07:42	01/31/23 23:02	1
13C3 HFPO-DA	93		70 - 130	01/31/23 07:42	01/31/23 23:02	1

Lab Sample ID: LLCS 810-46174/19-A
 Matrix: Drinking Water
 Analysis Batch: 46248

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA
 Prep Batch: 46174

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0.00200	0.0014		ug/L		72	50 - 150
Perfluorotetradecanoic acid (PFTA)	0.00200	0.0017		ug/L		84	50 - 150
Perfluorotridecanoic acid (PFTrDA)	0.00200	0.0016		ug/L		82	50 - 150

Surrogate	LLCS LLCS		Limits
	%Recovery	Qualifier	
d5-NEtFOSAA	88		70 - 130

QC Sample Results

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

Job ID: 810-50777-1

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

Lab Sample ID: LLCS 810-46174/19-A
Matrix: Drinking Water
Analysis Batch: 46248

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 46174

Surrogate	LLCS LLCS		Limits
	%Recovery	Qualifier	
13C2 PFHxA	92		70 - 130
13C2 PFDA	94		70 - 130
13C3 HFPO-DA	87		70 - 130

Method: 200.7 UCMR5 - Metals (ICP)

Lab Sample ID: MBL 810-45986/1-A
Matrix: Drinking Water
Analysis Batch: 46113

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 45986

Analyte	MBL MBL		RL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier						
Lithium	<0.520		9.00	ug/L		01/27/23 12:55	01/30/23 15:08	1

Lab Sample ID: LLCS 810-45986/2-A
Matrix: Drinking Water
Analysis Batch: 46113

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 45986

Analyte	Spike Added	LLCS LLCS		Unit	D	%Rec	%Rec Limits
		Result	Qualifier				
Lithium	9.00	9.56		ug/L		106	50 - 150

QC Association Summary

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

Job ID: 810-50777-1

LCMS

Prep Batch: 46174

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-50777-1	Anson County Water Intertie	Total/NA	Drinking Water	537.1 DW	
MBL 810-46174/20-A	Method Blank	Total/NA	Drinking Water	537.1 DW	
LLCS 810-46174/19-A	Lab Control Sample	Total/NA	Drinking Water	537.1 DW	

Analysis Batch: 46248

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-50777-1	Anson County Water Intertie	Total/NA	Drinking Water	537.1 UCMR5	46174
MBL 810-46174/20-A	Method Blank	Total/NA	Drinking Water	537.1 UCMR5	46174
LLCS 810-46174/19-A	Lab Control Sample	Total/NA	Drinking Water	537.1 UCMR5	46174

Prep Batch: 47881

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-50777-1	Anson County Water Intertie	Total/NA	Drinking Water	533	
810-50777-1FRB	FRB	Total/NA	Drinking Water	533	
MBL 810-47881/1-A	Method Blank	Total/NA	Drinking Water	533	
LLCS 810-47881/2-A	Lab Control Sample	Total/NA	Drinking Water	533	

Analysis Batch: 48042

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-50777-1	Anson County Water Intertie	Total/NA	Drinking Water	533	47881
810-50777-1FRB	FRB	Total/NA	Drinking Water	533	47881
MBL 810-47881/1-A	Method Blank	Total/NA	Drinking Water	533	47881
LLCS 810-47881/2-A	Lab Control Sample	Total/NA	Drinking Water	533	47881

Metals

Prep Batch: 45986

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-50777-1	Anson County Water Intertie	Total/NA	Drinking Water	200.7 UCMR5	
MBL 810-45986/1-A	Method Blank	Total/NA	Drinking Water	200.7 UCMR5	
LLCS 810-45986/2-A	Lab Control Sample	Total/NA	Drinking Water	200.7 UCMR5	

Analysis Batch: 46113

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-50777-1	Anson County Water Intertie	Total/NA	Drinking Water	200.7 UCMR5	45986
MBL 810-45986/1-A	Method Blank	Total/NA	Drinking Water	200.7 UCMR5	45986
LLCS 810-45986/2-A	Lab Control Sample	Total/NA	Drinking Water	200.7 UCMR5	45986

Lab Chronicle

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

Job ID: 810-50777-1

Client Sample ID: Anson County Water Intertie

Lab Sample ID: 810-50777-1

Date Collected: 01/18/23 00:00

Matrix: Drinking Water

Date Received: 01/19/23 15:23

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	533			47881	MP	EA SB	02/15/23 07:25
Total/NA	Analysis	533		1	48042	CM	EA SB	02/16/23 10:37
Total/NA	Prep	537.1 DW			46174	SS	EA SB	01/31/23 07:42
Total/NA	Analysis	537.1 UCMR5		1	46248	MH	EA SB	02/01/23 00:16
Total/NA	Prep	200.7 UCMR5			45986	NB	EA SB	01/27/23 12:55
Total/NA	Analysis	200.7 UCMR5		1	46113	NB	EA SB	01/30/23 15:32

Laboratory References:

EA SB = Eurofins Eaton 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: 810-50777-1

Laboratory: Eurofins Eaton 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: 810-50777-1

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 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: 810-50777-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	PWSID Number
810-50777-1	Anson County Water Intertie	Drinking Water	01/18/23 00:00	01/19/23 15:23	NC0190413
810-50777-1FRB	Anson County Water Intertie	Drinking Water	01/18/23 00:00	01/19/23 15:23	NC0190413

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

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

South Bend, IN

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



810-50777 Chain of Custody



Environment Testing
 America

UCMR Sampling Form

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: _____

Lab PM: _____
 Email: _____
 EBA Project: _____

Water System Name: Union County Water System
 Collection Location: Union County Water Intertie
 Scheduled Collection Date: 1/17/23

Jordan Helms

Date Sampled: 1/18/23

AREA BELOW FOR LAB USE ONLY

PWSID: _____
 FacID: _____
 SPID: _____
 FacName: _____
 SPName: _____

Sampling Event _____

Mtd	Type	# Bot	Temp °C (10 w/in 2D; 6° after) Initial / Corrected	pH Acceptable (Y/N) *	Cl (P/A) **	Sample Comments
200.7	FS	2	-0.2 / 0.2	Y		
533	FS	3	-0.6 / -0.2	Y	A	
533	FRB	1	0.0 / 0.4	Y	A	
537.1	FS	3	-0.8 / -0.4	Y	A	
537.1	FRB	1	0.4 / 0.8	Y	A	

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

** Absent if Free Cl <0.1 mg/L

Received By: [Signature]

Date/Time: 1/19/23 0900

Login Sample Receipt Checklist

Client: Union County Water

Job Number: 810-50777-1

Login Number: 50777

List Source: Eurofins Eaton South Bend

List Number: 1

Creator: Wojcik, Mary

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	

