

# Brunswick County Public Utilities - NC

PO Box 249  
Bolivia, NC 28422-0249

## LELAND, N.C.

Client Project# 211 Water Plant  
Samples Received: 8/1/2024

### Analytical Report 0824-705

#### PFAS by Isotope Dilution (non-potable water)

Report Issue Date: 9/9/2024

I certify that to the best of my knowledge all analytical data presented in this report have been checked for completeness, accuracy, errors and legibility in addition to having been conducted in accordance with approved protocol, and that all deviations and analytical problems are summarized in the appropriate narrative(s). This analytical report was prepared in Portable Document Format (.PDF) and contains 29 pages. This report shall not be reproduced except in full without approval of the laboratory. This will provide assurance that parts of the report are not taken out of context.

Amendment(s):

Signature:



Laura Boivin, QA Associate II



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# Summary of Results

# Enthalpy Analytical

Job No.: 0824-705-1 PFAS by Isotope Dilution (non-potable water)  
 Brunswick County Public Utilities - NC 211 Water Plant LELAND, N.C.

## Summary

	Compound	CAS	080124S02 ng/L	080124E02 ng/L
Acids	PFBA	375-22-4	ND U	5.79
	PFPeA	2706-90-3	ND U	ND U
	PFHxA	307-24-4	ND U	ND U
	PFHpA	375-85-9	ND U	ND U
	PFOA	335-67-1	ND U	0.00938 L
	PFNA	375-95-1	ND U	ND U
	PFDA	335-76-2	ND U	ND U
	PFUnDA	2058-94-8	ND U	ND U
	PFDoDA	307-55-1	ND U	ND U
	PFTTrDA	72629-94-8	ND U	ND U
	PFTeDA	376-06-7	ND U	ND U
	PFHxDA	67905-19-5	ND U	ND U
	Sulfonates	PFBS	375-73-5	ND U
PFPeS		2706-91-4	ND U	ND U
PFHxS		355-46-4	ND U	ND U
PFHpS		375-92-8	ND U	ND U
PFOS		1763-23-1	0.132 L	0.214 L
PFNS		68259-12-1	ND U	ND U
PFDS		335-77-3	ND U	ND U
4:2 FTS		757124-72-4	ND U	ND U
6:2 FTS		27619-97-2	ND U	ND U
8:2 FTS		39108-34-4	ND U	ND U
10:2 FTS		120226-60-0	ND U	ND U
Sulfonamidos	FBSA	30334-69-1	ND U	ND U
	N-EtFOSA	4151-50-2	ND U	ND U
	N-EtFOSAA	2991-50-6	ND U	ND U
	N-EtFOSE	1691-99-2	ND U	ND U
	N-MeFOSA	31506-32-8	ND U	ND U
	N-MeFOSAA	2355-31-9	ND U	ND U
	N-MeFOSE	24448-09-7	ND U	ND U
	PFOSA	754-91-6	ND U	ND U
PFECAs	ADONA	919005-14-4	ND U	ND U
	EVE Acid	69087-46-3	ND U	ND U
	HFPO-DA	13252-13-6	0.00116 L	ND U
	Hydro-EVE Acid	773804-62-9	ND U	ND U
	NFDHA	151772-58-6	ND U	ND U
	PEPA	267239-61-2	ND U	ND U
	PFECA-G	801212-59-9	ND U	ND U
	PFMOAA	674-13-5	4.01	3.41
	PFMOBA	863090-89-5	ND U	ND U
	PFMOPrA	377-73-1	ND U	ND U
	PFO2HxA	39492-88-1	ND U	ND U
	PFO3OA	39492-89-2	ND U	ND U
	PFO4DA	39492-90-5	ND U	ND U
	PFO5DA	39492-91-6	ND U	ND U
	PMPA	13140-29-9	ND U	ND U
	R-EVE	2416366-22-6	ND U	ND U
	PFESAs	11Cl-PF3OUds	763051-92-9	ND U
9Cl-PF3ONS		756426-58-1	ND U	ND U
Hydrolyzed PSDA		2416366-19-1	ND U	ND U
Nafion Byproduct 1 (PS Acid)		29311-67-9	ND U	ND U
Nafion Byproduct 2 (Hydro-PS Acid)		749836-20-2	ND U	ND U
NVHOS		1132933-86-8	ND U	ND U
PFEESA		113507-82-7	ND U	ND U
R-PSDA		2416366-18-0	ND U	ND U
R-PSDCA	2416366-21-5	ND U	0.00962 L	

## Enthalpy Analytical

Job No.: 0824-705-3 PFAS by Isotope Dilution (non-potable water)  
Brunswick County Public Utilities - NC 211 Water Plant LELAND, N.C.

### Summary

	Compound	CAS	080124S02 ng/L	080124E02 ng/L
Acids	PFPrA	422-64-0	ND U	ND U

# Detailed Results

# Enthalpy Analytical

Job No.: 0824-705-1 PFAS by Isotope Dilution (non-potable water)  
 Brunswick County Public Utilities - NC 211 Water Plant LELAND, N.C.

## Details

Sample Name	080124S02	Prep Batch	EU17911
Sampling Site		Analyst	alexandramejia
Enthalpy ID	0824-705-001-2	Instrument	Pippin
Matrix	aqueous	Sample Vol mL	285.41
Sampling Date	2024-08-01 07:52	Extract Vol mL	0.4
Received Date	2024-08-01	Split Factor	N/A
Prep Date	2024-08-05 12:30	Method Code	EU-047-NPW
AnalysisDate	2024-08-09 09:34		
SampleType	Sample		
Bottle ID	A		

	Compound	CAS	Injection File Name	Sample Concentration ng/L	LOD ng/L	LOQ ng/L	Recovery Limits	Recovery	Flags	
Acids	PFBA	375-22-4	P080824061	ND	0.561	0.561			U	
	PFPeA	2706-90-3	P080824061	ND	0.561	0.561			U	
	PFHxA	307-24-4	P080824061	ND	0.561	0.561			U	
	PFFHpA	375-85-9	P080824061	ND	0.561	0.561			U	
	PFOA	335-67-1	P080824061	ND	0.561	0.561			U	
	PFNA	375-95-1	P080824061	ND	0.561	0.561			U	
	PFDA	335-76-2	P080824061	ND	0.561	0.561			U	
	PFUnDA	2058-94-8	P080824061	ND	0.561	0.561			U	
	PFDODA	307-55-1	P080824061	ND	0.561	0.561			U	
	PFTrDA	72629-94-8	P080824061	ND	0.561	0.561			U	
	PFTeDA	376-06-7	P080824061	ND	0.561	0.561			U	
	PFFhxDA	67905-19-5	P080824061	ND	0.561	0.561			U	
	Sulfonates	PFBS	375-73-5	P080824061	ND	0.561	0.561			U
		PFPeS	2706-91-4	P080824061	ND	0.528	0.528			U
		PFFhXS	355-46-4	P080824061	ND	0.513	0.513			U
PFFHpS		375-92-8	P080824061	ND	0.534	0.534			U	
PFOS		1763-23-1	P080824061	0.132	0.519	0.519			L	
PFNS		68259-12-1	P080824061	ND	0.540	0.540			U	
PFDS		335-77-3	P080824061	ND	0.540	0.540			U	
4:2 FTS		757124-72-4	P080824061	ND	0.525	0.525			U	
6:2 FTS		27619-97-2	P080824061	ND	0.534	0.534			U	
8:2 FTS		39108-34-4	P080824061	ND	0.537	0.537			U	
10:2 FTS	120226-60-0	P080824061	ND	0.561	0.561			U		
Sulfonamidos	FBSA	30334-69-1	P080824061	ND	0.561	0.561			U	
	N-EiFOSA	4151-50-2	P080824061	ND	0.561	0.561			U	
	N-EiFOSAA	2991-50-6	P080824061	ND	0.561	0.561			U	
	N-EiFOSE	1691-99-2	P080824061	ND	2.52	2.52			U	
	N-MeFOSA	31506-32-8	P080824061	ND	0.561	0.561			U	
	N-MeFOSAA	2355-31-9	P080824061	ND	0.561	0.561			U	
	N-MeFOSE	24448-09-7	P080824061	ND	2.52	2.52			U	
	PFOSA	754-91-6	P080824061	ND	0.561	0.561			U	
	PFECAs	ADONA	919005-14-4	P080824061	ND	0.531	0.531			U
		EVE Acid	69087-46-3	P080824061	ND	1.26	1.26			U
HFPO-DA		13252-13-6	P080824061	0.00116	0.561	0.561			L	
Hydro-EVE Acid		773804-62-9	P080824061	ND	0.561	0.561			U	
NFDHA		151772-58-6	P080824061	ND	0.561	0.561			U	
PEPA		267239-61-2	P080824061	ND	0.561	0.561			U	
PFECA-G		801212-59-9	P080824061	ND	0.561	0.561			U	
PFMOAA		674-13-5	P080824061	4.01	0.561	0.561			U	
PFMOBA		863090-89-5	P080824061	ND	1.26	1.26			U	
PFMOPrA		377-73-1	P080824061	ND	0.561	0.561			U	
PFO2HxA		39492-88-1	P080824061	ND	0.561	0.561			U	
PFO3OA		39492-89-2	P080824061	ND	0.561	0.561			U	
PFO4DA		39492-90-5	P080824061	ND	2.80	2.80			U	
PFO5DA		39492-91-6	P080824061	ND	2.80	2.80			U	
PMPA		13140-29-9	P080824061	ND	0.561	0.561			U	
R-EVE	2416366-22-6	P080824061	ND	1.26	1.26			U		
PFESAs	11Cl-PF3OUdS	763051-92-9	P080824061	ND	0.528	0.528			U	
	9Cl-PF3ONS	756426-58-1	P080824061	ND	0.522	0.522			U	
	Hydrolyzed PSDA	2416366-19-1	P080824061	ND	0.561	0.561			U	
	Nafion Byproduct 1 (PS Acid)	29311-67-9	P080824061	ND	0.561	0.561			U	
	Nafion Byproduct 2 (Hydro-PS Acid)	749836-20-2	P080824061	ND	0.561	0.561			U	
	NVHOS	1132933-86-8	P080824061	ND	0.561	0.561			U	
	PFEESA	113507-82-7	P080824061	ND	0.561	0.561			U	
	R-PSDA	2416366-18-0	P080824061	ND	2.47	2.47			U	
	R-PSDCA	2416366-21-5	P080824061	ND	0.561	0.561			U	
	ES	MPFBA		P080824061				20-150%	88.1%	
M5PFPeA			P080824061				20-150%	189%	Q	
M3PFBS			P080824061				20-150%	306%	Q	
M2-4:2 FTS			P080824061				20-150%	110%		
M5PFFhxA			P080824061				20-150%	80.2%		
M3HFPO-DA			P080824061				20-150%	93.1%		
M4PFFHpA			P080824061				20-150%	92.4%		

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Job No.: 0824-705-1 PFAS by Isotope Dilution (non-potable water)  
 Brunswick County Public Utilities - NC 211 Water Plant LELAND, N.C.

## Details

Sample Name	080124S02		
Sampling Site			
Enthalpy ID	0824-705-001-2	Prep Batch	EU17911
Matrix	aqueous	Analyst	alexandramejia
Sampling Date	2024-08-01 07:52	Instrument	Pippin
Received Date	2024-08-01	Sample Vol mL	285.41
Prep Date	2024-08-05 12:30	Extract Vol mL	0.4
AnalysisDate	2024-08-09 09:34	Split Factor	N/A
SampleType	Sample	Method Code	EU-047-NPW
Bottle ID	A		

Compound	CAS	Injection File Name	Sample Concentration ng/L	LOD ng/L	LOQ ng/L	Recovery Limits	Recovery	Flags
M3PFHxS		P080824061				20-150%	110%	
M2-6:2 FTS		P080824061				20-150%	111%	
M8PFOA		P080824061				20-150%	92.1%	
M9PFNA		P080824061				20-150%	79.7%	
M8PFOS		P080824061				20-150%	91.6%	
M2-8:2 FTS		P080824061				20-150%	74.5%	
M8FOSA-I		P080824061				20-150%	58.7%	
M6PFDA		P080824061				20-150%	91.9%	
d3-N-MeFOSAA		P080824061				20-150%	75.8%	
d5-N-EtFOSAA		P080824061				20-150%	68.7%	
M7PFUdA		P080824061				20-150%	62.5%	
MPFDoA		P080824061				20-150%	30.8%	
M2PFTeDA		P080824061				20-150%	4.46%	Q
d3-N-MeFOSA		P080824061				10-200%	2.92%	Q
d5-N-EtFOSA		P080824061				10-200%	1.81%	Q
d7-N-MeFOSE		P080824061				10-200%	23.6%	
d9-N-EtFOSE		P080824061				10-200%	17.9%	

# Enthalpy Analytical

Job No.: 0824-705-1 PFAS by Isotope Dilution (non-potable water)  
 Brunswick County Public Utilities - NC 211 Water Plant LELAND, N.C.

## Details

Sample Name	080124E02	Prep Batch	EU17911
Sampling Site		Analyst	alexandraneja
Enthalpy ID	0824-705-002-2	Instrument	Pippin
Matrix	aqueous	Sample Vol mL	294.19
Sampling Date	2024-08-01 07:53	Extract Vol mL	0.4
Received Date	2024-08-01	Split Factor	N/A
Prep Date	2024-08-05 12:30	Method Code	EU-047-NPW
AnalysisDate	2024-08-09 09:57		
SampleType	Sample		
Bottle ID	A		

	Compound	CAS	Injection File Name	Sample Concentration ng/L	LOD ng/L	LOQ ng/L	Recovery Limits	Recovery	Flags	
Acids	PFBA	375-22-4	P080824062	5.79	0.544	0.544				
	PFPeA	2706-90-3	P080824062	ND	0.544	0.544			U	
	PFHxA	307-24-4	P080824062	ND	0.544	0.544			U	
	PFFHpA	375-85-9	P080824062	ND	0.544	0.544			U	
	PFOA	335-67-1	P080824062	0.00938	0.544	0.544			L	
	PFNA	375-95-1	P080824062	ND	0.544	0.544			U	
	PFDA	335-76-2	P080824062	ND	0.544	0.544			U	
	PFUnDA	2058-94-8	P080824062	ND	0.544	0.544			U	
	PFDODA	307-55-1	P080824062	ND	0.544	0.544			U	
	PFTrDA	72629-94-8	P080824062	ND	0.544	0.544			U	
	PFTeDA	376-06-7	P080824062	ND	0.544	0.544			U	
	PFFHxDA	67905-19-5	P080824062	ND	0.544	0.544			U	
	Sulfonates	PFBS	375-73-5	P080824062	ND	0.544	0.544			U
		PFPeS	2706-91-4	P080824062	ND	0.512	0.512			U
PFFHxS		355-46-4	P080824062	ND	0.498	0.498			U	
PFFHpS		375-92-8	P080824062	ND	0.518	0.518			U	
PFOS		1763-23-1	P080824062	0.214	0.504	0.504			L	
PFNS		68259-12-1	P080824062	ND	0.524	0.524			U	
PFDS		335-77-3	P080824062	ND	0.524	0.524			U	
4:2 FTS		757124-72-4	P080824062	ND	0.510	0.510			U	
6:2 FTS		27619-97-2	P080824062	ND	0.518	0.518			U	
8:2 FTS		39108-34-4	P080824062	ND	0.521	0.521			U	
10:2 FTS	120226-60-0	P080824062	ND	0.544	0.544			U		
Sulfonamidos	FBSA	30334-69-1	P080824062	ND	0.544	0.544			U	
	N-EFOSA	4151-50-2	P080824062	ND	0.544	0.544			U	
	N-EFOSAA	2991-50-6	P080824062	ND	0.544	0.544			U	
	N-EFOSE	1691-99-2	P080824062	ND	2.45	2.45			U	
	N-MeFOSA	31506-32-8	P080824062	ND	0.544	0.544			U	
	N-MeFOSAA	2355-31-9	P080824062	ND	0.544	0.544			U	
	N-MeFOSE	24448-09-7	P080824062	ND	2.45	2.45			U	
	PFOSA	754-91-6	P080824062	ND	0.544	0.544			U	
	PFECAs	ADONA	919005-14-4	P080824062	ND	0.515	0.515			U
EVE Acid		69087-46-3	P080824062	ND	1.22	1.22			U	
HFPO-DA		13252-13-6	P080824062	ND	0.544	0.544			U	
Hydro-EVE Acid		773804-62-9	P080824062	ND	0.544	0.544			U	
NFDHA		151772-58-6	P080824062	ND	0.544	0.544			U	
PEPA		267239-61-2	P080824062	ND	0.544	0.544			U	
PFECA-G		801212-59-9	P080824062	ND	0.544	0.544			U	
PFMOAA		674-13-5	P080824062	3.41	0.544	0.544			U	
PFMOBA		863090-89-5	P080824062	ND	1.22	1.22			U	
PFMOPrA		377-73-1	P080824062	ND	0.544	0.544			U	
PFO2HxA		39492-88-1	P080824062	ND	0.544	0.544			U	
PFO3OA		39492-89-2	P080824062	ND	0.544	0.544			U	
PFO4DA		39492-90-5	P080824062	ND	2.72	2.72			U	
PFO5DA		39492-91-6	P080824062	ND	2.72	2.72			U	
PMPA		13140-29-9	P080824062	ND	0.544	0.544			U	
R-EVE		2416366-22-6	P080824062	ND	1.22	1.22			U	
PFESAs		11CI-PF3OUdS	763051-92-9	P080824062	ND	0.512	0.512			U
	9CI-PF3ONS	756426-58-1	P080824062	ND	0.507	0.507			U	
	Hydrolyzed PSDA	2416366-19-1	P080824062	ND	0.544	0.544			U	
	Nafion Byproduct 1 (PS Acid)	29311-67-9	P080824062	ND	0.544	0.544			U	
	Nafion Byproduct 2 (Hydro-PS Acid)	749836-20-2	P080824062	ND	0.544	0.544			U	
	NVHOS	1132933-86-8	P080824062	ND	0.544	0.544			U	
	PFEESA	113507-82-7	P080824062	ND	0.544	0.544			U	
	R-PSDA	2416366-18-0	P080824062	ND	2.40	2.40			U	
	R-PSDCA	2416366-21-5	P080824062	0.00962	0.544	0.544			L	
ES	MPFBA		P080824062				20-150%	97.1%		
	M5PFPeA		P080824062				20-150%	198%	Q	
	M3PFBS		P080824062				20-150%	329%	Q	
	M2-4:2 FTS		P080824062				20-150%	88.2%		
	M5PFFHxA		P080824062				20-150%	77.9%		
	M3HFPO-DA		P080824062				20-150%	93.1%		
	M4PFFHpA		P080824062				20-150%	91.4%		

# Enthalpy Analytical

Job No.: 0824-705-1 PFAS by Isotope Dilution (non-potable water)  
 Brunswick County Public Utilities - NC 211 Water Plant LELAND, N.C.

## Details

Sample Name	080124E02		
Sampling Site			
Enthalpy ID	0824-705-002-2	Prep Batch	EU17911
Matrix	aqueous	Analyst	alexandramejia
Sampling Date	2024-08-01 07:53	Instrument	Pippin
Received Date	2024-08-01	Sample Vol mL	294.19
Prep Date	2024-08-05 12:30	Extract Vol mL	0.4
AnalysisDate	2024-08-09 09:57	Split Factor	N/A
SampleType	Sample	Method Code	EU-047-NPW
Bottle ID	A		

Compound	CAS	Injection File Name	Sample Concentration ng/L	LOD ng/L	LOQ ng/L	Recovery Limits	Recovery	Flags
M3PFHxS		P080824062				20-150%	94.8%	
M2-6:2 FTS		P080824062				20-150%	97.7%	
M8PFOA		P080824062				20-150%	96.2%	
M9PFNA		P080824062				20-150%	92.7%	
M8PFOS		P080824062				20-150%	87.6%	
M2-8:2 FTS		P080824062				20-150%	84.6%	
M8FOSA-I		P080824062				20-150%	40.1%	
M6PFDA		P080824062				20-150%	91.9%	
d3-N-MeFOSAA		P080824062				20-150%	85.9%	
d5-N-EtFOSAA		P080824062				20-150%	83.2%	
M7PFUdA		P080824062				20-150%	87.7%	
MPFDoA		P080824062				20-150%	69.9%	
M2PFTeDA		P080824062				20-150%	48.3%	
d3-N-MeFOSA		P080824062				10-200%	3.93%	Q
d5-N-EtFOSA		P080824062				10-200%	4.92%	Q
d7-N-MeFOSE		P080824062				10-200%	18.9%	
d9-N-EtFOSE		P080824062				10-200%	17.9%	

# Enthalpy Analytical

Job No.: 0824-705-3 PFAS by Isotope Dilution (non-potable water)  
 Brunswick County Public Utilities - NC 211 Water Plant LELAND, N.C.

## Details

Sample Name	080124S02		
Sampling Site			
Enthalpy ID	0824-705-001-1	Prep Batch	EU17910
Matrix	aqueous	Analyst	ext-magennaef
Sampling Date	2024-08-01 07:52	Instrument	Bumblebee
Received Date	2024-08-01	Sample Vol mL	0.1
Prep Date	2024-08-05 10:50	Extract Vol mL	0.2
AnalysisDate	2024-08-06 22:30	Split Factor	N/A
SampleType	Sample	Method Code	EU-047-NPW
Bottle ID	B		

	Compound	CAS	Injection File Name	Sample Concentration ng/L	LOD ng/L	LOQ ng/L	Recovery Limits	Recovery	Flags
Acids	PFPrA	422-64-0	B060824-08062230	ND	700	1530			U
ES	13C3-PFPrA		B060824-08062230				20-150%	159%	Q

# Enthalpy Analytical

Job No.: 0824-705-3 PFAS by Isotope Dilution (non-potable water)  
 Brunswick County Public Utilities - NC 211 Water Plant LELAND, N.C.

## Details

Sample Name	080124E02		
Sampling Site			
Enthalpy ID	0824-705-002-1	Prep Batch	EU17910
Matrix	aqueous	Analyst	ext-magennaef
Sampling Date	2024-08-01 07:53	Instrument	Bumblebee
Received Date	2024-08-01	Sample Vol mL	0.1
Prep Date	2024-08-05 10:50	Extract Vol mL	0.2
AnalysisDate	2024-08-06 22:42	Split Factor	N/A
SampleType	Sample	Method Code	EU-047-NPW
Bottle ID	B		

	Compound	CAS	Injection File Name	Sample Concentration ng/L	LOD ng/L	LOQ ng/L	Recovery Limits	Recovery	Flags
Acids	PFPrA	422-64-0	B060824-080622-42	ND	700	1530			U
ES	13C3-PFPrA		B060824-080622-42				20-150%	157%	Q

# QC Data

# Enthalpy Analytical

Job No.: 0824-705-1 PFAS by Isotope Dilution (non-potable water)  
 Brunswick County Public Utilities - NC 211 Water Plant LELAND, N.C.

## Details

Sample Name	MB_17911_PFAS	Prep Batch	EU17911
Sampling Site		Analyst	alexandramejia
Enthalpy ID	MB_17911_PFAS	Instrument	Pippin
Matrix	aqueous	Sample Vol mL	250
Sampling Date		Extract Vol mL	0.4
Received Date		Split Factor	N/A
Prep Date	2024-08-05 12:30	Method Code	EU-047-NPW
AnalysisDate	2024-08-09 03:09		
SampleType	Blank		
Bottle ID	-		

	Compound	CAS	Injection File Name	Sample Concentration ng/L	LOD ng/L	LOQ ng/L	Recovery Limits	Recovery	Flags	
Acids	PFBA	375-22-4	P080824044	ND	0.640	0.640			U	
	PFPeA	2706-90-3	P080824044	ND	0.640	0.640			U	
	PFFhxA	307-24-4	P080824044	ND	0.640	0.640			U	
	PFFHpA	375-85-9	P080824044	ND	0.640	0.640			U	
	PFOA	335-67-1	P080824044	ND	0.640	0.640			U	
	PFNA	375-95-1	P080824044	ND	0.640	0.640			U	
	PFDA	335-76-2	P080824044	ND	0.640	0.640			U	
	PFUnDA	2058-94-8	P080824044	ND	0.640	0.640			U	
	PFDoDA	307-55-1	P080824044	ND	0.640	0.640			U	
	PFTrDA	72629-94-8	P080824044	ND	0.640	0.640			U	
	PFTeDA	376-06-7	P080824044	ND	0.640	0.640			U	
	PFFhxDA	67905-19-5	P080824044	ND	0.640	0.640			U	
	Sulfonates	PFBS	375-73-5	P080824044	ND	0.640	0.640			U
		PFPeS	2706-91-4	P080824044	ND	0.603	0.603			U
PFFhXS		355-46-4	P080824044	ND	0.586	0.586			U	
PFFHpS		375-92-8	P080824044	ND	0.610	0.610			U	
PFOS		1763-23-1	P080824044	ND	0.593	0.593			U	
PFNS		68259-12-1	P080824044	ND	0.616	0.616			U	
PFDS		335-77-3	P080824044	ND	0.616	0.616			U	
4:2 FTS		757124-72-4	P080824044	ND	0.600	0.600			U	
6:2 FTS		27619-97-2	P080824044	ND	0.610	0.610			U	
8:2 FTS		39108-34-4	P080824044	ND	0.613	0.613			U	
10:2 FTS	120226-60-0	P080824044	ND	0.640	0.640			U		
Sulfonamidos	FBSA	30334-69-1	P080824044	ND	0.640	0.640			U	
	N-EiFOSA	4151-50-2	P080824044	ND	0.640	0.640			U	
	N-EiFOSAA	2991-50-6	P080824044	ND	0.640	0.640			U	
	N-EiFOSE	1691-99-2	P080824044	ND	2.88	2.88			U	
	N-MeFOSA	31506-32-8	P080824044	ND	0.640	0.640			U	
	N-MeFOSAA	2355-31-9	P080824044	0.0744	0.640	0.640			L	
	N-MeFOSE	24448-09-7	P080824044	ND	2.88	2.88			U	
	PFOSA	754-91-6	P080824044	ND	0.640	0.640			U	
PFECAs	ADONA	919005-14-4	P080824044	ND	0.606	0.606			U	
	EVE Acid	69087-46-3	P080824044	ND	1.44	1.44			U	
	HFPO-DA	13252-13-6	P080824044	ND	0.640	0.640			U	
	Hydro-EVE Acid	773804-62-9	P080824044	ND	0.640	0.640			U	
	NFDHA	151772-58-6	P080824044	ND	0.640	0.640			U	
	PEPA	267239-61-2	P080824044	ND	0.640	0.640			U	
	PFECA-G	801212-59-9	P080824044	ND	0.640	0.640			U	
	PFMOAA	674-13-5	P080824044	0.128	0.640	0.640			L	
	PFMOBA	863090-89-5	P080824044	ND	1.44	1.44			U	
	PFMOPrA	377-73-1	P080824044	ND	0.640	0.640			U	
	PFO2HxA	39492-88-1	P080824044	ND	0.640	0.640			U	
	PFO3OA	39492-89-2	P080824044	ND	0.640	0.640			U	
	PFO4DA	39492-90-5	P080824044	ND	3.20	3.20			U	
	PFO5DA	39492-91-6	P080824044	ND	3.20	3.20			U	
	PMPA	13140-29-9	P080824044	ND	0.640	0.640			U	
	R-EVE	2416366-22-6	P080824044	ND	1.44	1.44			U	
	PFESAs	11CI-PF3OUdS	763051-92-9	P080824044	ND	0.603	0.603			U
9CI-PF3ONS		756426-58-1	P080824044	ND	0.596	0.596			U	
Hydrolyzed PSDA		2416366-19-1	P080824044	ND	0.640	0.640			U	
Nafion Byproduct 1 (PS Acid)		29311-67-9	P080824044	ND	0.640	0.640			U	
Nafion Byproduct 2 (Hydro-PS Acid)		749836-20-2	P080824044	ND	0.640	0.640			U	
NVHOS		1132933-86-8	P080824044	ND	0.640	0.640			U	
PFEESA		113507-82-7	P080824044	ND	0.640	0.640			U	
R-PSDA		2416366-18-0	P080824044	ND	2.82	2.82			U	
R-PSDCA		2416366-21-5	P080824044	ND	0.640	0.640			U	
ES	MPFBA		P080824044				20-150%	92.1%		
	M5PFPeA		P080824044				20-150%	84.7%		
	M3PFBS		P080824044				20-150%	81.1%		
	M2-4:2 FTS		P080824044				20-150%	125%		
	M5PFFhxA		P080824044				20-150%	103%		
	M3HFPO-DA		P080824044				20-150%	100%		
	M4PFFHpA		P080824044				20-150%	101%		

# Enthalpy Analytical

Job No.: 0824-705-1 PFAS by Isotope Dilution (non-potable water)  
 Brunswick County Public Utilities - NC 211 Water Plant LELAND, N.C.

## Details

Sample Name	MB_17911_PFAS	Prep Batch	EU17911
Sampling Site		Analyst	alexandramejia
Enthalpy ID	MB_17911_PFAS	Instrument	Pippin
Matrix	aqueous	Sample Vol mL	250
Sampling Date		Extract Vol mL	0.4
Received Date		Split Factor	N/A
Prep Date	2024-08-05 12:30	Method Code	EU-047-NPW
AnalysisDate	2024-08-09 03:09		
SampleType	Blank		
Bottle ID	-		

Compound	CAS	Injection File Name	Sample Concentration ng/L	LOD ng/L	LOQ ng/L	Recovery Limits	Recovery	Flags
M3PFHxS		P080824044				20-150%	117%	
M2-6:2 FTS		P080824044				20-150%	117%	
M8PFOA		P080824044				20-150%	93.9%	
M9PFNA		P080824044				20-150%	77.2%	
M8PFOS		P080824044				20-150%	93.5%	
M2-8:2 FTS		P080824044				20-150%	77.6%	
M8FOSA-I		P080824044				20-150%	33.9%	
M6PFDA		P080824044				20-150%	95.0%	
d3-N-MeFOSAA		P080824044				20-150%	76.1%	
d5-N-EtFOSAA		P080824044				20-150%	69.1%	
M7PFUdA		P080824044				20-150%	76.9%	
MPFDoA		P080824044				20-150%	53.1%	
M2PFTeDA		P080824044				20-150%	10.3%	Q
d3-N-MeFOSA		P080824044				10-200%	0%	UQ
d5-N-EtFOSA		P080824044				10-200%	0%	UQ
d7-N-MeFOSE		P080824044				10-200%	15.1%	
d9-N-EtFOSE		P080824044				10-200%	12.6%	

# Enthalpy Analytical

Job No.: 0824-705-1 PFAS by Isotope Dilution (non-potable water)  
 Brunswick County Public Utilities - NC 211 Water Plant LELAND, N.C.

Enthalpy ID	OPR_17911_PFAS	Prep Batch	EU17911	Sample Vol (mL)	250
Sample Name	OPR_17911_PFAS	Prep Date	2024-08-05 12:30	Extract Vol (mL)	0.4
Matrix	aqueous	Analysis Date	2024-08-09 03:31	Split Factor	N/A
Sampling Date		Analyst	alexandramejia	Method Code	EU-047-NPW
Received Date		Instrument	Pippin	Sample Type	Control
		Bottle ID	-		

	Compound	CAS	InjFileName	Sample Concentration ng/L	LOD ng/L	LOQ ng/L	Recovery Limits	Recovery	Flags
Acids	PFBA	375-22-4	P080824045	20.7	0.640	0.640	69.1-122%	103.3%	
	PFPeA	2706-90-3	P080824045	19.7	0.640	0.640	68.5-121%	98.6%	
	PFHxA	307-24-4	P080824045	21.2	0.640	0.640	68.3-121%	105.8%	
	PFHpA	375-85-9	P080824045	19.6	0.640	0.640	62.4-128%	97.8%	
	PFOA	335-67-1	P080824045	20.2	0.640	0.640	66.3-124%	100.9%	
	PFNA	375-95-1	P080824045	20.4	0.640	0.640	70.5-120%	102.0%	
	PFDA	335-76-2	P080824045	20.4	0.640	0.640	68.9-117%	102.0%	
	PFUnDA	2058-94-8	P080824045	20.2	0.640	0.640	58.1-132%	101.0%	
	PFDoDA	307-55-1	P080824045	21.3	0.640	0.640	52.1-140%	106.7%	
	PFTrDA	72629-94-8	P080824045	40.8	0.640	0.640	65-144%	204.1%	Q
	PFTeDA	376-06-7	P080824045	20.5	0.640	0.640	36.1-161%	102.6%	
Sulfonates	PFBS	375-73-5	P080824045	17.6	0.640	0.640	67.5-111.6%	99.4%	
	PFPeS	2706-91-4	P080824045	18.8	0.603	0.603	51.8-142%	99.7%	
	PFHxS	355-46-4	P080824045	19.0	0.586	0.586	59.6-128%	103.8%	
	PFHpS	375-92-8	P080824045	21.3	0.610	0.610	46.9-157%	111.6%	
	PFOS	1763-23-1	P080824045	18.8	0.593	0.593	59.2-132%	101.1%	
	PFNS	68259-12-1	P080824045	18.0	0.616	0.616	53.9-133%	93.3%	
	PFDS	335-77-3	P080824045	15.2	0.616	0.616	38.1-142%	79.0%	
	4:2 FTS	757124-72-4	P080824045	19.3	0.600	0.600	61.9-131%	103.2%	
	6:2 FTS	27619-97-2	P080824045	20.2	0.610	0.610	62.3-129%	106.4%	
8:2 FTS	39108-34-4	P080824045	20.0	0.613	0.613	37.5-159%	103.9%		
Sulfonamidos	N-EtFOSAA	2991-50-6	P080824045	22.2	0.640	0.640	61.5-133%	110.9%	
	N-MeFOSAA	2355-31-9	P080824045	20.3	0.640	0.640	57.3-138%	101.4%	
	PFOSA	754-91-6	P080824045	20.5	0.640	0.640	49.1-143%	102.4%	
PFECAs	HFPO-DA	13252-13-6	P080824045	18.9	0.640	0.640	57.2-130%	94.3%	
ES	MPFBA		P080824045				20-150%	94.4%	
	M5PFPeA		P080824045				20-150%	87.9%	
	M3PFBS		P080824045				20-150%	87.3%	
	M2-4:2 FTS		P080824045				20-150%	96.9%	
	M5PFHxA		P080824045				20-150%	96.0%	
	M3HFPO-DA		P080824045				20-150%	100.5%	
	M4PFHpA		P080824045				20-150%	100.6%	
	M3PFHxS		P080824045				20-150%	99.9%	
	M2-6:2 FTS		P080824045				20-150%	100.0%	
	M8PFOA		P080824045				20-150%	96.9%	
	M9PFNA		P080824045				20-150%	89.5%	
	M8PFOS		P080824045				20-150%	93.6%	
	M2-8:2 FTS		P080824045				20-150%	81.9%	
	M8FOSA-I		P080824045				20-150%	19.0%	Q
	M6PFDA		P080824045				20-150%	96.0%	
	d3-N-MeFOSAA		P080824045				20-150%	88.0%	
	d5-N-EtFOSAA		P080824045				20-150%	78.0%	
	M7PFUDa		P080824045				20-150%	85.9%	
	MPFDa		P080824045				20-150%	64.6%	
	M2PFTeDA		P080824045				20-150%	20.9%	

# Enthalpy Analytical

Job No.: 0824-705-3 PFAS by Isotope Dilution (non-potable water)  
 Brunswick County Public Utilities - NC 211 Water Plant LELAND, N.C.

## Details

Sample Name	MB_17910_PFAS		
Sampling Site			
Enthalpy ID	MB_17910_PFAS	Prep Batch	EU17910
Matrix	aqueous	Analyst	ext-magennaef
Sampling Date		Instrument	Bumblebee
Received Date		Sample Vol mL	0.1
Prep Date	2024-08-05 10:50	Extract Vol mL	0.2
AnalysisDate	2024-08-06 19:13	Split Factor	N/A
SampleType	Blank	Method Code	EU-047-NPW
Bottle ID	-		

	Compound	CAS	Injection File Name	Sample Concentration ng/L	LOD ng/L	LOQ ng/L	Recovery Limits	Recovery	Flags
Acids	PFPrA	422-64-0	B060824-08061913	ND	700	1530			U
ES	13C3-PFPrA		B060824-08061913				20-150%	123%	

# Enthalpy Analytical

Job No.: 0824-705-3 PFAS by Isotope Dilution (non-potable water)  
Brunswick County Public Utilities - NC 211 Water Plant LELAND, N.C.

## Details

Sample Name OPR\_17910\_PFAS  
Sampling Site  
Enthalpy ID OPR\_17910\_PFAS Prep Batch EU17910  
Matrix aqueous Analyst ext-magennaef  
Sampling Date Instrument Bumblebee  
Received Date Sample Vol mL 0.08  
Prep Date 2024-08-05 10:50 Extract Vol mL 0.2  
AnalysisDate 2024-08-06 19:25 Split Factor N/A  
SampleType Control Method Code EU-047-NPW  
Bottle ID -

	Compound	CAS	Injection File Name	Sample Concentration ng/L	LOD ng/L	LOQ ng/L	Recovery Limits	Recovery	Flags
Acids	PFPrA	422-64-0	B060824-08061925	15500	875	1910	40-150%	62.2%	
ES	13C3-PFPrA		B060824-08061925				20-150%	147%	

# Narrative Summary



# Enthalpy Analytical Narrative Summary

Company	Brunswick County Public Utilities - NC
Job No.	0824-705
Client ID.	211 Water Plant Site: LELAND, N.C.

## 1. Custody

Jayson-Shane Santos received the samples at 11.9 °C after being relinquished by Brunswick County Public Utilities - NC.

The samples were received in good condition. Prior to, during, and after analysis, the samples were kept under lock with access only to authorized personnel by Enthalpy Analytical, LLC.

**Table 1 - Sample Inventory**

EU Lab Sample ID	Client Sample ID	Matrix	Received
0824-705-001-1	080124S02	aqueous	2024-08-01
0824-705-001-2	080124S02	aqueous	2024-08-01
0824-705-002-1	080124E02	aqueous	2024-08-01
0824-705-002-2	080124E02	aqueous	2024-08-01

## 2. Methods and Analytes

A list of analytes of interest and corresponding methods of analysis is shown in Table 3. Abbreviations are defined in the listed Appendices.

**Table 3 - Methods and Analytes**

EU Method	Analytes	Cleanup Method
EU-047	Custom List	ENVI-Carb

## 3. Analysis

The samples were analyzed using Sciex Triple Quad 7500 (LC/MS/MS "Bumblebee"). The samples were analyzed using Waters Acquity UPLC equipped with Xevo TQ MS (LC/MS/MS "Pippin").

The samples were analyzed using more than one batch preparation and analytical sequence in order to include all of the analytes of interest and to meet method acceptance criteria.

PFPrA was analyzed by direct inject analysis (DIA).

## 4. Calibration

In the initial calibration, the reported analytes exhibited  $R^2$  of  $\geq 0.99$ . The reported analytes in the calibration standards, Initial Calibration Verification (ICV) and continuing calibration (concal) met the accuracy criterion for native analytes.

# Enthalpy Analytical Narrative Summary

Company	Brunswick County Public Utilities - NC
Job No.	0824-705
Client ID.	211 Water Plant Site: LELAND, N.C.

## 5. QC Notes

Ongoing Precision Recovery (OPR) control limits have not been established for some analytes of interest.

Except where noted below, the QC sample analyses passed all method criteria.

QC samples that did not meet method acceptance criteria were:

- OPR\_17911\_PFAS (PFTTrDA) exceeded method recovery criteria but was not detected >LOQ in the samples; therefore, the data is reportable without adverse impact.
- Surrogates (ES) d3-N-MeFOSA and d5-N-EtFOSA were not detected in MB\_17911\_PFAS with results confirmed upon reinjection. These surrogates met method recovery criteria in the samples with their related analytes ND >LOQ. The data is accepted with no adverse impact.

Select surrogates (ES) deviated from method recovery criteria in the method blank (MB) and/or OPR. Target analytes are quantified based on their ratio to their labeled standard analogs. When detected at a signal-to-noise above 10:1 the ES peak area is used to quantify its respective target analyte using accepted isotope dilution principles. The data is reported without adverse impact.

PFAS by Isotope Dilution (non-potable water) samples were extracted within 28 days, and extracts analyzed within 28 days.

## 6. Reporting Notes

The results presented in this report are representative of the samples as provided to the laboratory.

This report provides all results including detections below LOD following client instruction.

Some labeled extraction standards (ES) in the sample analyses recovered outside the control limits for ES recovery, as denoted by the "Q" qualifier. The target analytes are quantified based on their ratio to their labeled standard analogs. As a result, low or high labeled standard recovery do not cause any change to ratios or contribute any additional error in the measurement of the target analytes. When detected at a signal-to-noise above 10:1 the ES peak area is used to quantify its respective target analyte using accepted isotope dilution principles. The data is reported without adverse impact.

These analyses met the requirements of the TNI Standard. Any deviations from the requirements of the reference method or TNI Standard have been stated above.

Enthalpy Analytical, LLC in Wilmington NC is accredited by the Louisiana Department of Environmental Quality to the 2009 TNI Standard under certificate number 05075.

## General Reporting Notes – Data Qualifiers

The following are general reporting notes that are applicable to all Enthalpy Analytical, LLC - Wilmington, NC data reports, unless specifically noted otherwise.

### General Data Qualifiers

- Ac - Alternate calculation flag indicates the es recovery was calculated using the opening concal when either of the following situations is encountered in the data processing software: the ES recovery is over 400% or the JS is not detected.
- B – The analyte was found in the method blank, at a concentration that was at least 10% of the amount in the sample.
- Cxx – Two or more congeners co-elute. In EDDs, C denotes the lowest IUPAC congener in a co-elution group and additional co-eluters for the group ('xx') are shown with the number of the lowest IUPAC co-eluter.
- E – The reported concentration exceeds the calibration range (upper point of the calibration curve). For HRMS data, this condition does not imply additional measurement uncertainty. For LC-MS/MS data, these values should be considered as having measurement uncertainty higher than values within the calibration range.
- EDL – Estimated Detection Level: The EDL is unique to isotope dilution methods and reflects the conditions of analysis at the time of analysis, including the equipment used. Where the MDL is a static value, the EDL is a dynamic value.
- EMPC – Estimated Maximum Possible Concentration: EMPC is specific to Dioxin/Furan tests to indicate the determined ion-abundance ratio was outside the allowed theoretical range (usually due to being near the detection limit, although it can very rarely be caused by a co-eluting interference). The EMPC concentration is adjusted to reflect the value at the theoretical ion-abundance ratio.
- I/IR – The ion ratio between the primary and secondary ions was observed to be outside the method criteria. The analyte concentration may be inaccurate due to interference.
- J – The analyte has a concentration below the minimum calibration level (LOQ value) but greater than the LOD. These values should be considered as having measurement uncertainty higher than values within the calibration range
- L - For reports containing PFAS analytes only, this flag indicates that an analyte has a concentration below the Minimum Detection Limit (MDL) . The reported concentration is not recommended for regulatory use as the analyte signal may have a signal-to-noise ratio less than the criteria deemed necessary to be considered a detected analyte.
- LOD – Limit of Detection: For reports conforming to the DOD ELAP QSM, this is the QSM-defined LOD. For reports conforming to TNI requirements (but not DOD ELAP QSM requirements), this value is the minimum detection limit (MDL). The LOD is adjusted for sample weight or volume.

## General Reporting Notes – Data Qualifiers

- LOQ – Limit of Quantitation: For reports conforming to the DOD ELAP QSM, this is the QSM-defined LOQ. For reports conforming to TNI requirements (but not DOD ELAP QSM requirements), this value is the reporting limit (RL). The LOQ is adjusted for sample weight or volume.
- <LOD() – Analyte was not found at a concentration high enough to be reported as detected. It is reported as less than the LOD, and the LOD is given in the parentheses.
- <LOQ() – Analyte was not found at a concentration high enough to be reported as above the QSM-defined LOQ or TNI defined Reporting Limit. It is reported as less than the LOQ, and the LOQ is given in the parentheses.
- ND – Indicates a non-detect.
- NR – Indicates a value that is not reportable due to issues observed in sample preparation or analysis.
- PR – The associated congener(s) is(are) poorly resolved.
- QI – Indicates the presence of a quantitative interference.
- RL – Reporting Limit. Lowest reportable value. The level is higher than the MDL.
- SI – Denotes “Single Ion Mode” and is utilized for PCBs where the secondary ion trace has a significantly elevated noise level due to background PFK. Responses for such peaks are calculated using an EMPC approach based solely on the primary ion area(s) and may be considered estimates.
- U – The analyte was not detected.
- V / Q – The labeled standard recovery is not within method control limits.
- X – Indicates the result is from re-injection/repeat/second-column analysis.

### **Lab Identifiers/ Data Attributes**

- AR – Indicates use of the archived portion of the sample extract.
- CU – Indicates a sample that required additional clean-up prior to HRMS injection/processing.
- D – Dilution Data. Result was obtained from the analysis of a dilution. The number that follows the “D” indicates the dilution factor.
- DE – Indicates a dilution performed with the addition of ES (Extraction Standard) solution.
- DUP – Designation for a duplicate sample.
- MS – Designation for a matrix spike.
- MSD – Designation for a matrix spike duplicate.



## General Reporting Notes – Data Qualifiers

- R – Indicates a re-extraction of the sample.
- RJ – Indicates a reinjection of the sample extract.
- S – Indicates a sample split. The number that follows the “S” indicates the split factor.
- SAT – Indicates an analyte saturated the detector.

PFAS Compound Acronym List			
Acronym	CAS #	Compound Name	
* accredited for SOP EU047 / EPA method 1633 # Method 537.1 Accredited ^ Method 533 Accredited ~EPA 1633 extended list			
<b>Target Analytes</b>			
* , ^	PFBA	375-22-4	Perfluorobutanoic Acid
* , # , ^	PFPeA	2706-90-3	Perfluoropentanoic Acid
* , # , ^	PFHxA	307-24-4	Perfluorohexanoic Acid
* , # , ^	PFHpA	375-85-9	Perfluoroheptanoic Acid
* , # , ^	PFOA	335-67-1	Perfluorooctanoic Acid
* , # , ^	PFNA	375-95-1	Perfluorononanoic Acid
* , # , ^	PFDA	335-76-2	Perfluorodecanoic acid
* , # , ^	PFUnA (PFUnDA)	2058-94-8	Perfluoroundecanoic acid
* , #	PFDoA (PFDoDA)	307-55-1	Perfluorododecanoic acid
* , #	PFTriA (PFTriA)	72629-94-8	Perfluorotridecanoic acid
* , # , ^	PFTeDA (PFTA)	376-06-7	Perfluorotetradecanoic acid
* , ^	PFBS	375-73-5	Perfluorobutane sulfonic acid
* , # , ^	PFPeS	2706-91-4	Perfluoropentane sulfonic acid
* , ^	PFHxS	355-46-4	Perfluorohexane sulfonic acid
* , # , ^	PFHpS	375-92-8	Perfluoroheptane sulfonic acid
* , # , ^	PFOS	1763-23-1	Perfluorooctane sulfonic acid
*	PFNS	68259-12-1	Perfluorononane sulfonic acid
*	PFDS	335-77-3	Perfluorodecane sulfonic acid
* , ^	4:2 FTS	757124-72-4	4:2 fluorotelomer sulfonic acid
* , ^	6:2 FTS	27619-97-2	6:2 fluorotelomer sulfonic acid
* , ^	8:2 FTS	39108-34-4	8:2 fluorotelomer sulfonic acid
~	10:2 FTS	120226-60-0	Fluorotelomer sulfonate 10:2
~	FHxSA	41997-13-1	Perfluorohexanesulfonamide
*	PFOSA (FOSA)	754-91-6	Perfluorooctane sulfonamide
* , #	N-MeFOSAA	2355-31-9	N-methyl perfluorooctane sulfonamido acetic acid
*	N-MeFOSA	31506-32-8	N-methylperfluoro-1-octanesulfonamide
*	N-MeFOSE	24448-09-7	2-(N-methylperfluoro-1-octanesulfonamido)-ethanol
* , #	N-EtFOSAA	2991-50-6	N-ethyl perfluorooctane sulfonamido acetic acid
*	N-EtFOSA	4151-50-2	N-ethylperfluoro-1-octanesulfonamide
*	N-EtFOSE	1691-99-2	2-(N-methylperfluoro-1-octanesulfonamido)-ethanol
* , # , ^	HFPO-DA	13252-13-6	2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-propanoic acid (Gen-X)
* , # , ^	11Cl-PF3OUdS	763051-92-9	11-chloroheptafluoro-3-oxadecane-1-sulfonic acid
* , # , ^	9Cl-PF3ONS	756426-58-1	9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid
* , # , ^	ADONA	919005-14-4	4,8-dioxa-3H-perfluorononanoic acid
* , ^	PFEESA	113507-82-7	Perfluoro(2-ethoxyethane)sulphonic acid
* , ^	PFMOBA (PFMBA)	863090-89-5	Perfluoro-4-methoxybutanoic acid
* , ^	NFDHA	151772-58-6	Nonafluoro-3,6-dioxahexanoic acid
* , ^	PFMOPrA (PFMPA)	377-73-1	Perfluoro-3-methoxypropanoic acid
~	PFPrA	422-64-0	2,2,3,3,3-Pentafluoropropionic acid
~	PFPrS (PFPS)	423-41-6	Perfluoropropanesulfonic acid
~	PFMOAA	674-13-5	Perfluoro-2-methoxyacetic acid
~	PFO2HxA	39492-88-1	Perfluoro (3,5-dioxahexanoic) acid
~	PFO3OA	39492-89-2	Perfluoro (3,5,7-trioxaoctanoic) acid
~	PFO4DA	39492-90-5	Perfluoro (3,5,7,9-tetraoxadecanoic) acid
~	PFO5DA	39492-91-6	Perfluoro(3,5,7,9,11-pentaoxadodecanoic) acid
~	Nafion Byproduct 1 (PS Acid)	29311-67-9	Nafion Byproduct 1
~	Nafion Byproduct 2 (Hydro-PS Acid)	749836-20-2	Nafion Byproduct 2
~	PEPA	267239-61-2	Perfluoro-2-ethoxypropanoic acid
~	PMPA	13140-29-9	Perfluoro-2-methoxypropanoic acid

PFAS Compound Acronym List		
Acronym	CAS #	Compound Name
<b>* accredited for SOP EU047 / EPA method 1633 # Method 537.1 Accredited ^ Method 533 Accredited ~EPA 1633 extended list</b>		
~ PFECA-G	801212-59-9	4-(Heptafluoroisopropoxy)hexafluorobutanoic acid
~ PFHxDA	67905-19-5	Perfluorohexadecanoic acid
~ R-PSDA (Nafion Byproduct 4)	2416366-18-0	Perfluoro-4-(2-sulfoethoxy)pentanoic acid
Hydrolyzed PSDA (Nafion Byproduct 5)	2416366-19-1	2-fluoro-2-[1,1,2,3,3,3-hexafluoro-2-(1,1,2,2-tetrafluoro-2-sulfoethoxy)propoxy]-acetic acid
~ R-PSDCA (Nafion Byproduct 6)	2416366-21-5	1,1,2,2-tetrafluoro-2-[1,2,2,3,3-pentafluoro-1-(trifluoromethyl)propoxy] ethanesulfonic acid
~ EVE Acid	69087-46-3	2,2,3,3-tetrafluoro-3-({1,1,1,2,3,3-hexafluoro-3-[(1,2,2-trifluoroethenyl)oxy]propan-2-yl)oxy}propionic acid
~ FBSA	30334-69-1	Perfluorobutylsulfonamide
~ MeFBSA	68298-12-4	1-Butanesulfonamide; (N-(Methyl)nonafluorobutanesulfonamide)
~ Hydro-EVE Acid	773804-62-9	2,2,3,3-Tetrafluoro-3-[[1,1,1,2,3,3-hexafluoro-3-(1,2,2,2-tetrafluoroethoxy)propan-2-yl]oxy}propanoic acid
~ R-EVE Acid	2416366-22-6	4-(2-carboxy-1,1,2,2-tetrafluoroethoxy)-2,2,3,3,4,5,5,5-octafluoro-pentanoic acid
~ NVHOS	1132933-86-8	Perfluoroethoxysulfonic acid
*~ PFDoS	79780-39-5	Perfluorododecane sulfonic acid
~ PFODA	16517-11-6	Perfluorooctadecanoic acid
* 3:3 FTCA	356-02-5	2H,2H,3H,3H-Perfluorohexanoic acid
* 5:3 FTCA	914637-49-3	2H,2H,3H,3H-Perfluorooctanoic acid
* 7:3 FTCA	812-70-4	2H,2H,3H,3H-Perfluorodecanoic acid
~ N-AP-FHxSA	50598-28-2	N-(3-(Dimethylamino)propyl)tridecafluoro-1-hexanesulfonamide
~ N-CMAmP-6:2 FOSA	34455-29-3	N-(Carboxymethyl)-N,N-dimethyl-3-(((3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctyl)sulfonyl)amino)1-propanaminium
~ BPAF	1478-61-1	Bisphenol AF
~ HQ-115	90076-65-6	Bis(trifluoromethane)sulfonimide lithium salt

# Sample Custody

0824-705



# Chain of Custody Record

Enthalpy Ultratrace Job#: \_\_\_\_\_ COC Page 1 of 1

**Special Handling:**  
 Standard Turn Around Time  
 Rush Turn Around Time -- Date Needed \_\_\_\_\_  
 • All Fast TATs Subject to Approval by Enthalpy Analytical, Inc.  
 • All Samples Disposed of After 6 months Unless Otherwise Instructed.  
 Enthalpy Analytical-Wilmington, NC has added enhancements to standard methods to improve accuracy, precision and permit an assessment of laboratory performance in the context of your specific data needs. For more information email Cindy.James@enthalpy.com.

Client Name: BRUNSWICK COUNTY UTILITIES  
 Project Manager: GLENN WALKER  
 Report To: SAME

Project Number: \_\_\_\_\_  
 Site Name: 211 WATER PLANT  
 Location: LELAND N.C.

PO#: \_\_\_\_\_  
 Telephone#: \_\_\_\_\_  
 Email: \_\_\_\_\_

This Chain of Custody is applicable to Non-Air samples. Standard TAT differ per analysis and are provided by request.

Client Special Instructions: \_\_\_\_\_

Matrix: GW-Groundwater, WW-Wastewater, NW-Non-Potable Water, DW-Drinking Water, S-Soil, SL-Sludge, BT-Biological Tissue, O-Other  
 Type: G=Grab C=Composite Q=Quality Control

						Sample Containers				Analyses:							Notes:		
Sample ID	Date	Time	Sample Volume	Type	Matrix	# of Bottles	# of Jars	# of Bags	# Other	Method 1613	Method 8290	Method 1668A/B/C PCB	PFAS by LC/MS/MS	PAHs by HRC/HRMS	Sample on Hold	Method 23		ALL PFAS	
080124S02	08/01/24	0752	250mL	G	GW	2												X	Please Add PFPrA and
080124F02	08/01/24	0753	250mL	G	GW	2												X	PFHpA To All The Testing.
			250mL	G	GW	2												X	Mark Hager Knows About
			250mL	G	GW	2												X	This If you Have Questions
			250mL	G	GW	2												X	
			250mL	G	GW	2												X	
			250mL	G	GW	2												X	
			250mL	G	GW	2												X	
			250mL	G	GW	2												X	
			250mL	G	GW	2												X	
			250mL	G	GW	2												X	
			250mL	G	GW	2												X	
			250mL	G	GW	2												X	

Relinquished By: <u>Kenny Revels</u>	Date: <u>08/01/24</u>	Received By: <u>[Signature]</u>	Date: <u>8/1/24</u>	Time: <u>12:08</u>	Sample Temperature Upon Receipt:
					<input checked="" type="checkbox"/> Iced <input type="checkbox"/> Ambient °C <u>11.9</u>
					<input type="checkbox"/> Iced <input type="checkbox"/> Ambient °C _____
					<input type="checkbox"/> Iced <input type="checkbox"/> Ambient °C _____

JOB ID: 0824-705

Date / Time: 8/19/24 12:08

Initials: S.S.

OR

Client: Brunswick County Utilities

Cooler 1 of 1

Temp °C: 11.9

Thermometer ID: 715

Received via

- FedEx
- UPS
- DHL
- USPS
- Courier
- Other

*Check one*

On ice:

Melted ice:

Ambient:

*Check one*

in a Box:

in a Cooler:

Cooler in Box:

	Yes	No
Cooler seals:	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Sample seals:	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Good condition:	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Comment:

Empty comment box

Cooler of

Temp °C:

Thermometer ID:

Received via

- FedEx
- UPS
- DHL
- USPS
- Courier
- Other

*Check one*

On ice:

Melted ice:

Ambient:

*Check one*

in a Box:

in a Cooler:

Cooler in Box:

	Yes	No
Cooler seals:	<input type="checkbox"/>	<input type="checkbox"/>
Sample seals:	<input type="checkbox"/>	<input type="checkbox"/>
Good condition:	<input type="checkbox"/>	<input type="checkbox"/>

Comment:

Empty comment box

Cooler of

Temp °C:

Thermometer ID:

Received via

- FedEx
- UPS
- DHL
- USPS
- Courier
- Other

*Check one*

On ice:

Melted ice:

Ambient:

*Check one*

in a Box:

in a Cooler:

Cooler in Box:

	Yes	No
Cooler seals:	<input type="checkbox"/>	<input type="checkbox"/>
Sample seals:	<input type="checkbox"/>	<input type="checkbox"/>
Good condition:	<input type="checkbox"/>	<input type="checkbox"/>

Comment:

Empty comment box

**This Is The Last Page  
Of This Report.**