



## ANALYTICAL REPORT

Lab Number:	L2447196
Client:	Maine DEP-Div. of Technical Services 17 State House Station Augusta, ME 04333
ATTN:	Molly King
Phone:	(207) 287-8169
Project Name:	BRUNSWICK AIR BASE
Project Number:	P-749-2024
Report Date:	08/23/24

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Certifications & Approvals: MA (M-MA030), NH NELAP (2062), CT (PH-0825), DoD (L2474), FL (E87814), IL (200081), IN (C-MA-04), KY (KY98046), LA (85084), ME (MA00030), MD (350), MI (9110), MN (025-999-495), NJ (MA015), NY (11627), NC (685), OR (MA-0262), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #525-23-107-88708A1), USFWS (Permit #A24920).

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**Project Name:** BRUNSWICK AIR BASE  
**Project Number:** P-749-2024

**Lab Number:** L2447196  
**Report Date:** 08/23/24

<b>Alpha Sample ID</b>	<b>Client ID</b>	<b>Matrix</b>	<b>Sample Location</b>	<b>Collection Date/Time</b>	<b>Receive Date</b>
L2447196-01	NEAT PRODUCT	LIQUID	BRUNSWICK, ME	08/19/24 13:17	08/19/24
L2447196-02	MIXED PRODUCT	LIQUID	BRUNSWICK, ME	08/19/24 13:12	08/19/24
L2447196-03	POND IN	WATER	BRUNSWICK, ME	08/19/24 13:50	08/19/24
L2447196-04	POND OUT	WATER	BRUNSWICK, ME	08/19/24 14:15	08/19/24

**Project Name:** BRUNSWICK AIR BASE  
**Project Number:** P-749-2024

**Lab Number:** L2447196  
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### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments and solids are reported on a dry weight basis unless otherwise noted. Tissues are reported "as received" or on a wet weight basis, unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

**HOLD POLICY** - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

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**Project Name:** BRUNSWICK AIR BASE  
**Project Number:** P-749-2024

**Lab Number:** L2447196  
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### Case Narrative (continued)

#### Report Submission

August 23, 2024: This final report includes the results of all requested analyses.

August 23, 2024: This is a preliminary report.

#### Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

#### Perfluorinated Alkyl Acids by Isotope Dilution

L2447196-01D, -02, -03, WG1961733-4D, and WG1961733-5: The sample has elevated detection limits due to the limited sample volume utilized during extraction, as required by the elevated concentrations of target compounds in the sample.

L2447196-01D and WG1961733-4D: The sample was re-analyzed on dilution in order to quantitate the results within the calibration range. The result(s) should be considered estimated, and are qualified with an E flag, for any compound(s) that exceeded the calibration range in the initial analysis. The re-analysis was performed only for the compound(s) that exceeded the calibration range.

L2447196-01D, -02, -04, WG1961733-1, WG1961733-3, WG1961733-4D, WG1961733-5, WG1962279-2, and WG1962629-2: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

L2447196-04: The sample was re-extracted on dilution in order to quantitate the results within the calibration range. The result(s) should be considered estimated, and are qualified with an E flag, for any compound(s) that exceeded the calibration range in the initial analysis. The re-extraction was performed only for the compound(s) that exceeded the calibration range.

L2447196-01D2 and WG1961733-4D2: The sample has elevated detection limits due to the dilution required by the elevated concentrations of target compounds in the sample.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:  Michael Chang

Title: Technical Director/Representative

Date: 08/23/24

# ORGANICS

# SEMIVOLATILES

**Project Name:** BRUNSWICK AIR BASE**Lab Number:** L2447196**Project Number:** P-749-2024**Report Date:** 08/23/24**SAMPLE RESULTS**

Lab ID: L2447196-01 D2

Date Collected: 08/19/24 13:17

Client ID: NEAT PRODUCT

Date Received: 08/19/24

Sample Location: BRUNSWICK, ME

Field Prep: Not Specified

Sample Depth:

Matrix: Liquid

Extraction Method: ALPHA 23528

Analytical Method: 134,LCMSMS-ID

Extraction Date: 08/20/24 20:00

Analytical Date: 08/22/24 11:17

Analyst: PS

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctanesulfonic Acid (PFOS)	3230000000		ng/l	25000000	6300000	1000
PFAS, Total (6)	3780000000		ng/l	2500000	282000	1000

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	101		69-131

**Project Name:** BRUNSWICK AIR BASE  
**Project Number:** P-749-2024

**Lab Number:** L2447196  
**Report Date:** 08/23/24

**SAMPLE RESULTS**

**Lab ID:** L2447196-01      D  
**Client ID:** NEAT PRODUCT  
**Sample Location:** BRUNSWICK, ME

**Date Collected:** 08/19/24 13:17  
**Date Received:** 08/19/24  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Liquid  
**Analytical Method:** 134,LCMSMS-ID  
**Analytical Date:** 08/22/24 09:15  
**Analyst:** PS

**Extraction Method:** ALPHA 23528  
**Extraction Date:** 08/20/24 20:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	22400000		ng/l	2500000	510000	100
Perfluoropentanoic Acid (PFPeA)	34700000		ng/l	2500000	495000	100
Perfluorobutanesulfonic Acid (PFBS)	146000000		ng/l	2500000	298000	100
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2500000	565000	100
Perfluorohexanoic Acid (PFHxA)	78800000		ng/l	2500000	410000	100
Perfluoropentanesulfonic Acid (PFPeS)	120000000		ng/l	2500000	306000	100
Perfluoroheptanoic Acid (PFHpA)	21900000		ng/l	2500000	282000	100
Perfluorohexanesulfonic Acid (PFHxS)	462000000		ng/l	2500000	470000	100
Perfluorooctanoic Acid (PFOA)	69000000		ng/l	2500000	295000	100
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	41300000		ng/l	2500000	1660000	100
Perfluoroheptanesulfonic Acid (PFHpS)	94000000		ng/l	2500000	860000	100
Perfluorononanoic Acid (PFNA)	ND		ng/l	2500000	390000	100
Perfluorooctanesulfonic Acid (PFOS)	3780000000	E	ng/l	2500000	630000	100
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2500000	380000	100
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	15200000		ng/l	2500000	1520000	100
Perfluoronanesulfonic Acid (PFNS)	6320000		ng/l	2500000	1400000	100
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2500000	810000	100
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2500000	325000	100
Perfluorodecanesulfonic Acid (PFDS)	2100000	J	ng/l	2500000	1220000	100
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2500000	725000	100
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2500000	1000000	100
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2500000	465000	100
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2500000	409000	100
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2500000	310000	100
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	25000000	17800000	100
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	2500000	420000	100
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/l	5000000	1550000	100



Project Name: BRUNSWICK AIR BASE

Lab Number: L2447196

Project Number: P-749-2024

Report Date: 08/23/24

## SAMPLE RESULTS

Lab ID: L2447196-01 D

Date Collected: 08/19/24 13:17

Client ID: NEAT PRODUCT

Date Received: 08/19/24

Sample Location: BRUNSWICK, ME

Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/l	5000000	1440000	100

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	93		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	92		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	147	Q	70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	119		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	73		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	73		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	143	Q	71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	103		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	215	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	93		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	99		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	89		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	170	Q	10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	88		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	95		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	87		5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	93		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	119		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	97		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	106		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	101		10-206

**Project Name:** BRUNSWICK AIR BASE  
**Project Number:** P-749-2024

**Lab Number:** L2447196  
**Report Date:** 08/23/24

**SAMPLE RESULTS**

**Lab ID:** L2447196-02  
**Client ID:** MIXED PRODUCT  
**Sample Location:** BRUNSWICK, ME

**Date Collected:** 08/19/24 13:12  
**Date Received:** 08/19/24  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Liquid  
**Analytical Method:** 134,LCMSMS-ID  
**Analytical Date:** 08/20/24 22:25  
**Analyst:** PS

**Extraction Method:** ALPHA 23528  
**Extraction Date:** 08/20/24 20:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	65000		ng/l	25000	5100	1
Perfluoropentanoic Acid (PFPeA)	93600		ng/l	25000	4950	1
Perfluorobutanesulfonic Acid (PFBS)	379000		ng/l	25000	2980	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	25000	5650	1
Perfluorohexanoic Acid (PFHxA)	237000		ng/l	25000	4100	1
Perfluoropentanesulfonic Acid (PFPeS)	297000		ng/l	25000	3060	1
Perfluoroheptanoic Acid (PFHpA)	54500		ng/l	25000	2820	1
Perfluorohexanesulfonic Acid (PFHxS)	995000		ng/l	25000	4700	1
Perfluorooctanoic Acid (PFOA)	161000		ng/l	25000	2950	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	148000		ng/l	25000	16600	1
Perfluoroheptanesulfonic Acid (PFHpS)	131000		ng/l	25000	8600	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	25000	3900	1
Perfluorooctanesulfonic Acid (PFOS)	7520000		ng/l	25000	6300	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	25000	3800	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	35000		ng/l	25000	15200	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/l	25000	14000	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	25000	8100	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	25000	3250	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	25000	12200	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	25000	7250	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	25000	10000	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	25000	4650	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	25000	4090	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	25000	3100	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	250000	178000	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	25000	4200	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/l	50000	15500	1

**Project Name:** BRUNSWICK AIR BASE  
**Project Number:** P-749-2024

**Lab Number:** L2447196  
**Report Date:** 08/23/24

**SAMPLE RESULTS**

Lab ID: L2447196-02  
 Client ID: MIXED PRODUCT  
 Sample Location: BRUNSWICK, ME

Date Collected: 08/19/24 13:12  
 Date Received: 08/19/24  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/l	50000	14400	1
PFAS, Total (6)	8730000		ng/l	25000	2820	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	100		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	111		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	132	Q	70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	119		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	106		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	101		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	139	Q	71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	110		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	126		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	106		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	107		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	99		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	127		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	99		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	121		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	90		5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	94		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	102		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	127		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	123		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	142		10-206

**Project Name:** BRUNSWICK AIR BASE  
**Project Number:** P-749-2024

**Lab Number:** L2447196  
**Report Date:** 08/23/24

**SAMPLE RESULTS**

**Lab ID:** L2447196-03  
**Client ID:** POND IN  
**Sample Location:** BRUNSWICK, ME

**Date Collected:** 08/19/24 13:50  
**Date Received:** 08/19/24  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Water  
**Analytical Method:** 134,LCMSMS-ID  
**Analytical Date:** 08/22/24 11:10  
**Analyst:** PS

**Extraction Method:** ALPHA 23528  
**Extraction Date:** 08/21/24 19:51

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	2660	J	ng/l	5000	1020	1
Perfluoropentanoic Acid (PFPeA)	3800	J	ng/l	5000	990.	1
Perfluorobutanesulfonic Acid (PFBS)	15200		ng/l	5000	595.	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	5000	1130	1
Perfluorohexanoic Acid (PFHxA)	9700		ng/l	5000	820.	1
Perfluoropentanesulfonic Acid (PFPeS)	13100		ng/l	5000	613.	1
Perfluoroheptanoic Acid (PFHpA)	2490	J	ng/l	5000	563.	1
Perfluorohexanesulfonic Acid (PFHxS)	85200		ng/l	5000	940.	1
Perfluorooctanoic Acid (PFOA)	14100		ng/l	5000	590.	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	23600		ng/l	5000	3330	1
Perfluoroheptanesulfonic Acid (PFHpS)	17900		ng/l	5000	1720	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	5000	780.	1
Perfluorooctanesulfonic Acid (PFOS)	1040000		ng/l	5000	1260	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	5000	760.	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	4110	J	ng/l	5000	3030	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/l	5000	2800	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	5000	1620	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	5000	650.	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	5000	2450	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	5000	1450	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	5000	2010	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	5000	930.	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	5000	818.	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	5000	620.	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	50000	35500	1
4,8-Dioxo-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	5000	840.	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/l	10000	3100	1

**Project Name:** BRUNSWICK AIR BASE  
**Project Number:** P-749-2024

**Lab Number:** L2447196  
**Report Date:** 08/23/24

**SAMPLE RESULTS**

**Lab ID:** L2447196-03  
**Client ID:** POND IN  
**Sample Location:** BRUNSWICK, ME

**Date Collected:** 08/19/24 13:50  
**Date Received:** 08/19/24  
**Field Prep:** Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/l	10000	2870	1
PFAS, Total (6)	1140000	J	ng/l	5000	563.	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	90		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	104		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	102		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	89		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	92		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	87		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	104		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	94		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	94		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	88		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	82		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	84		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	79		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	82		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	94		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	25		5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	88		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	80		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	90		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	99		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	99		10-206

**Project Name:** BRUNSWICK AIR BASE  
**Project Number:** P-749-2024

**Lab Number:** L2447196  
**Report Date:** 08/23/24

**SAMPLE RESULTS**

**Lab ID:** L2447196-04  
**Client ID:** POND OUT  
**Sample Location:** BRUNSWICK, ME

**Date Collected:** 08/19/24 14:15  
**Date Received:** 08/19/24  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Water  
**Analytical Method:** 134,LCMSMS-ID  
**Analytical Date:** 08/22/24 11:27  
**Analyst:** PS

**Extraction Method:** ALPHA 23528  
**Extraction Date:** 08/21/24 19:51

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	16.0		ng/l	2.12	0.432	1
Perfluoropentanoic Acid (PFPeA)	44.6		ng/l	2.12	0.419	1
Perfluorobutanesulfonic Acid (PFBS)	44.7		ng/l	2.12	0.252	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	0.699	J	ng/l	2.12	0.479	1
Perfluorohexanoic Acid (PFHxA)	68.0		ng/l	2.12	0.347	1
Perfluoropentanesulfonic Acid (PFPeS)	46.7		ng/l	2.12	0.260	1
Perfluoroheptanoic Acid (PFHpA)	19.7		ng/l	2.12	0.238	1
Perfluorohexanesulfonic Acid (PFHxS)	262		ng/l	2.12	0.398	1
Perfluorooctanoic Acid (PFOA)	99.9		ng/l	2.12	0.250	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	117		ng/l	2.12	1.41	1
Perfluoroheptanesulfonic Acid (PFHpS)	25.8		ng/l	2.12	0.729	1
Perfluorononanoic Acid (PFNA)	2.60		ng/l	2.12	0.330	1
Perfluorooctanesulfonic Acid (PFOS)	701	E	ng/l	2.12	0.534	1
Perfluorodecanoic Acid (PFDA)	1.09	J	ng/l	2.12	0.322	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	6.58		ng/l	2.12	1.28	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/l	2.12	1.19	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.12	0.686	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.12	0.275	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.12	1.04	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.12	0.614	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.12	0.851	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.12	0.394	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.12	0.346	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.12	0.263	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	21.2	15.0	1
4,8-Dioxo-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	2.12	0.356	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/l	4.24	1.31	1

**Project Name:** BRUNSWICK AIR BASE  
**Project Number:** P-749-2024

**Lab Number:** L2447196  
**Report Date:** 08/23/24

**SAMPLE RESULTS**

Lab ID: L2447196-04  
 Client ID: POND OUT  
 Sample Location: BRUNSWICK, ME

Date Collected: 08/19/24 14:15  
 Date Received: 08/19/24  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/l	4.24	1.22	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	81		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	92		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	107		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	<b>191</b>	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	75		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	78		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	110		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	83		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	<b>169</b>	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	75		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	86		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	68		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	99		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	67		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	78		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	13		5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	64		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	68		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	85		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	79		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	106		10-206

**Project Name:** BRUNSWICK AIR BASE**Lab Number:** L2447196**Project Number:** P-749-2024**Report Date:** 08/23/24**SAMPLE RESULTS**

Lab ID: L2447196-04 RE

Date Collected: 08/19/24 14:15

Client ID: POND OUT

Date Received: 08/19/24

Sample Location: BRUNSWICK, ME

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Extraction Method: ALPHA 23528

Analytical Method: 134,LCMSMS-ID

Extraction Date: 08/22/24 18:29

Analytical Date: 08/23/24 08:30

Analyst: PS

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctanesulfonic Acid (PFOS)	603		ng/l	5.00	1.26	1
PFAS, Total (6)	988	J	ng/l	5.00	1.26	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	111		69-131



**Project Name:** BRUNSWICK AIR BASE  
**Project Number:** P-749-2024

**Lab Number:** L2447196  
**Report Date:** 08/23/24

### Method Blank Analysis Batch Quality Control

Analytical Method: 134,LCMSMS-ID  
Analytical Date: 08/20/24 21:01  
Analyst: PS

Extraction Method: ALPHA 23528  
Extraction Date: 08/20/24 20:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-02 Batch: WG1961733-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	500	102.
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	500	99.0
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	500	59.5
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	500	113.
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	500	82.0
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	500	61.3
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	500	56.3
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	500	94.0
Perfluorooctanoic Acid (PFOA)	ND		ng/l	500	59.0
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	500	333.
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	500	172.
Perfluorononanoic Acid (PFNA)	ND		ng/l	500	78.0
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	500	126.
Perfluorodecanoic Acid (PFDA)	ND		ng/l	500	76.0
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	500	303.
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	500	280.
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	500	162.
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	500	65.0
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	500	245.
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	500	145.
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	500	201.
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	500	93.0
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	500	81.8
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	500	62.0
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	5000	3550
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	500	84.0

**Project Name:** BRUNSWICK AIR BASE  
**Project Number:** P-749-2024

**Lab Number:** L2447196  
**Report Date:** 08/23/24

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 134,LCMSMS-ID  
Analytical Date: 08/20/24 21:01  
Analyst: PS

Extraction Method: ALPHA 23528  
Extraction Date: 08/20/24 20:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-02 Batch: WG1961733-1					
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/l	1000	310.
Perfluorooctadecanoic Acid (PFODA)	ND		ng/l	1000	287.
PFAS, Total (6)	ND		ng/l	500	56.3

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	104		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	105		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	103		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	<b>144</b>	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	109		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	100		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	103		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	113		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	133		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	118		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	104		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	101		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	120		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	97		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	121		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	79		5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	104		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	105		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	123		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	125		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	90		10-206

**Project Name:** BRUNSWICK AIR BASE  
**Project Number:** P-749-2024

**Lab Number:** L2447196  
**Report Date:** 08/23/24

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 134,LCMSMS-ID  
Analytical Date: 08/22/24 07:31  
Analyst: PS

Extraction Method: ALPHA 23528  
Extraction Date: 08/21/24 19:51

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 03-04 Batch: WG1962279-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	0.452
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	20.0	14.2
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	2.00	0.336

**Project Name:** BRUNSWICK AIR BASE  
**Project Number:** P-749-2024

**Lab Number:** L2447196  
**Report Date:** 08/23/24

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 134,LCMSMS-ID  
Analytical Date: 08/22/24 07:31  
Analyst: PS

Extraction Method: ALPHA 23528  
Extraction Date: 08/21/24 19:51

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 03-04 Batch: WG1962279-1					
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/l	4.00	1.24
Perfluorooctadecanoic Acid (PFODA)	ND		ng/l	4.00	1.15
PFAS, Total (6)	ND		ng/l	2.00	0.225

**Project Name:** BRUNSWICK AIR BASE  
**Project Number:** P-749-2024

**Lab Number:** L2447196  
**Report Date:** 08/23/24

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 134,LCMSMS-ID  
Analytical Date: 08/22/24 07:31  
Analyst: PS

Extraction Method: ALPHA 23528  
Extraction Date: 08/21/24 19:51

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 03-04 Batch: WG1962279-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	84		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	92		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	82		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	81		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	90		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	85		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	83		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	88		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	81		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	88		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	74		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	76		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	80		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	75		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	93		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	29		5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	89		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	83		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	76		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	96		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	79		10-206
1H,1H,2H,2H-Perfluorododecane Sulfonate (M2D4-10:2FTS)	107		50-150

**Project Name:** BRUNSWICK AIR BASE  
**Project Number:** P-749-2024

**Lab Number:** L2447196  
**Report Date:** 08/23/24

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 134,LCMSMS-ID  
Analytical Date: 08/23/24 07:41  
Analyst: PS

Extraction Method: ALPHA 23528  
Extraction Date: 08/22/24 18:29

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 04 Batch: WG1962629-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	0.452
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	20.0	14.2
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	2.00	0.336

**Project Name:** BRUNSWICK AIR BASE  
**Project Number:** P-749-2024

**Lab Number:** L2447196  
**Report Date:** 08/23/24

**Method Blank Analysis**  
**Batch Quality Control**

**Analytical Method:** 134,LCMSMS-ID  
**Analytical Date:** 08/23/24 07:41  
**Analyst:** PS

**Extraction Method:** ALPHA 23528  
**Extraction Date:** 08/22/24 18:29

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 04 Batch: WG1962629-1					
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/l	4.00	1.24
Perfluorooctadecanoic Acid (PFODA)	ND		ng/l	4.00	1.15
PFAS, Total (6)	ND		ng/l	2.00	0.225

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	113		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	115		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	125		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	136		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	116		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	112		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	128		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	124		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	140		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	114		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	112		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	113		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	120		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	83		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	117		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	30		5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	102		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	106		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	126		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	122		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	125		10-206

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: BRUNSWICK AIR BASE

Lab Number: L2447196

Project Number: P-749-2024

Report Date: 08/23/24

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02 Batch: WG1961733-2 WG1961733-3								
Perfluorobutanoic Acid (PFBA)	103		100		67-148	3		30
Perfluoropentanoic Acid (PFPeA)	100		98		63-161	2		30
Perfluorobutanesulfonic Acid (PFBS)	104		101		65-157	3		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	114		103		37-219	10		30
Perfluorohexanoic Acid (PFHxA)	99		95		69-168	4		30
Perfluoropentanesulfonic Acid (PFPeS)	107		103		52-156	4		30
Perfluoroheptanoic Acid (PFHpA)	100		99		58-159	1		30
Perfluorohexanesulfonic Acid (PFHxS)	100		98		69-177	2		30
Perfluorooctanoic Acid (PFOA)	101		98		63-159	3		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	108		108		49-187	0		30
Perfluoroheptanesulfonic Acid (PFHpS)	115		101		61-179	13		30
Perfluorononanoic Acid (PFNA)	89		90		68-171	1		30
Perfluorooctanesulfonic Acid (PFOS)	100		92		52-151	8		30
Perfluorodecanoic Acid (PFDA)	105		100		63-171	5		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	100		104		56-173	4		30
Perfluorononanesulfonic Acid (PFNS)	114		103		48-150	10		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	118		111		60-166	6		30
Perfluoroundecanoic Acid (PFUnA)	95		97		60-153	2		30
Perfluorodecanesulfonic Acid (PFDS)	118		114		38-156	3		30
Perfluorooctanesulfonamide (FOSA)	105		112		46-170	6		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	96		97		45-170	1		30
Perfluorododecanoic Acid (PFDoA)	108		104		67-153	4		30



## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** BRUNSWICK AIR BASE

**Project Number:** P-749-2024

**Lab Number:** L2447196

**Report Date:** 08/23/24

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02 Batch: WG1961733-2 WG1961733-3								
Perfluorotridecanoic Acid (PFTTrDA)	98		93		48-158	5		30
Perfluorotetradecanoic Acid (PFTA)	97		97		59-182	0		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	108		102		57-162	6		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	100		100		69-143	0		30
Perfluorohexadecanoic Acid (PFHxDA)	104		100		40-167	4		30
Perfluorooctadecanoic Acid (PFODA)	73		79		10-119	8		30

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: BRUNSWICK AIR BASE

Lab Number: L2447196

Project Number: P-749-2024

Report Date: 08/23/24

Parameter	LCS		LCSD		%Recovery		RPD	RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	Qual		Limits	
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02 Batch: WG1961733-2 WG1961733-3									

Surrogate (Extracted Internal Standard)	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Perfluoro[13C4]Butanoic Acid (MPFBA)	99		105		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	102		110		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	100		110		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	87		99		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	104		109		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	98		102		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	102		114		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	106		111		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	96		101		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	110		117		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	97		119		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	103		104		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	97		100		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	83		94		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	114		120		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	89		90		5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	98		116		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	99		108		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	105		139	Q	22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	111		117		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	149		162		10-206

## Lab Control Sample Analysis Batch Quality Control

**Project Name:** BRUNSWICK AIR BASE  
**Project Number:** P-749-2024

**Lab Number:** L2447196  
**Report Date:** 08/23/24

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 03-04 Batch: WG1962279-2								
Perfluorobutanoic Acid (PFBA)	133		-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	129		-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	130		-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	130		-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	133		-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	115		-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	134		-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	127		-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	132		-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	137		-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	150		-		61-179	-		30
Perfluorononanoic Acid (PFNA)	123		-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	135		-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	140		-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	149		-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	149		-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	133		-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	124		-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	142		-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	146		-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	149		-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	150		-		67-153	-		30



## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** BRUNSWICK AIR BASE

**Lab Number:** L2447196

**Project Number:** P-749-2024

**Report Date:** 08/23/24

<b>Parameter</b>	<b>LCS %Recovery</b>	<b>Qual</b>	<b>LCSD %Recovery</b>	<b>Qual</b>	<b>%Recovery Limits</b>	<b>RPD</b>	<b>Qual</b>	<b>RPD Limits</b>
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 03-04 Batch: WG1962279-2								
Perfluorotridecanoic Acid (PFTrDA)	148		-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	152		-		59-182	-		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	140		-		57-162	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	132		-		69-143	-		30
Perfluorohexadecanoic Acid (PFHxDA)	147		-		40-167	-		30
Perfluorooctadecanoic Acid (PFODA)	73		-		10-119	-		30

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: BRUNSWICK AIR BASE

Lab Number: L2447196

Project Number: P-749-2024

Report Date: 08/23/24

Parameter	LCS		LCSD		%Recovery		RPD	RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	Qual		Limits	
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 03-04 Batch: WG1962279-2									

Surrogate (Extracted Internal Standard)	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Perfluoro[13C4]Butanoic Acid (MPFBA)	70				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	79				62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	73				70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	75				12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	70				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	67				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	75				71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	72				62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	79				14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	70				59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	64	Q			69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	62				62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	68				10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	67				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	73				55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	22				5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	63				27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	64				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	56				22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	73				10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	69				10-206
1H,1H,2H,2H-Perfluorododecane Sulfonate (M2D4-10:2FTS)	85				50-150

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: BRUNSWICK AIR BASE

Lab Number: L2447196

Project Number: P-749-2024

Report Date: 08/23/24

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 04 Batch: WG1962629-2								
Perfluorobutanoic Acid (PFBA)	100		-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	99		-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	102		-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	105		-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	95		-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	92		-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	96		-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	95		-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	100		-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	106		-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	109		-		61-179	-		30
Perfluorononanoic Acid (PFNA)	91		-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	94		-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	104		-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	104		-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	102		-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	119		-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	90		-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	107		-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	106		-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	100		-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	106		-		67-153	-		30

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** BRUNSWICK AIR BASE

**Project Number:** P-749-2024

**Lab Number:** L2447196

**Report Date:** 08/23/24

<b>Parameter</b>	<b>LCS %Recovery</b>	<b>Qual</b>	<b>LCSD %Recovery</b>	<b>Qual</b>	<b>%Recovery Limits</b>	<b>RPD</b>	<b>Qual</b>	<b>RPD Limits</b>
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 04 Batch: WG1962629-2								
Perfluorotridecanoic Acid (PFTrDA)	92		-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	103		-		59-182	-		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	108		-		57-162	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	100		-		69-143	-		30
Perfluorohexadecanoic Acid (PFHxDA)	112		-		40-167	-		30
Perfluorooctadecanoic Acid (PFODA)	26		-		10-119	-		30

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: BRUNSWICK AIR BASE

Lab Number: L2447196

Project Number: P-749-2024

Report Date: 08/23/24

Parameter	LCS		LCSD		%Recovery		RPD	RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	Qual		Limits	
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 04 Batch: WG1962629-2									

Surrogate (Extracted Internal Standard)	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Perfluoro[13C4]Butanoic Acid (MPFBA)	145	Q			58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	156				62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	163	Q			70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	172	Q			12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	152	Q			57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	148	Q			60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	171	Q			71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	157	Q			62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	174	Q			14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	153	Q			59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	159	Q			69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	135	Q			62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	146				10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	107				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	148	Q			55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	34				5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	132	Q			27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	129				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	134				22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	148				10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	158				10-206



## Matrix Spike Analysis

*Batch Quality Control*

**Project Name:** BRUNSWICK AIR BASE

**Lab Number:** L2447196

**Project Number:** P-749-2024

**Report Date:** 08/23/24

<i>Parameter</i>	<i>Native Sample</i>	<i>MS Added</i>	<i>MS Found</i>	<i>MS %Recovery</i>	<i>Qual</i>	<i>MSD Found</i>	<i>MSD %Recovery</i>	<i>Qual</i>	<i>Recovery Limits</i>	<i>RPD</i>	<i>Qual</i>	<i>RPD Limits</i>
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 03-04 QC Batch ID: WG1962279-3 QC Sample: L2444323-02 Client ID: MS Sample												
Perfluorobutanoic Acid (PFBA)	0.872J	38.2	39.7	102		-	-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	1.89	38.2	41.8	105		-	-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	0.454J	33.9	34.9	102		-	-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	35.8	40.3	113		-	-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	2.59	38.2	40.1	98		-	-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	35.9	37.1	103		-	-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	0.707J	38.2	41.5	107		-	-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	10.2	34.9	45.3	101		-	-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	1.11J	38.2	40.3	103		-	-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	36.3	40.4	111		-	-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	36.4	40.8	112		-	-		61-179	-		30
Perfluorononanoic Acid (PFNA)	ND	38.2	36.0	94		-	-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	ND	35.4	34.1	96		-	-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	ND	38.2	40.2	105		-	-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	36.6	39.6	108		-	-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	ND	36.7	37.0	101		-	-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	38.2	44.2	116		-	-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	38.2	37.6	98		-	-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	ND	36.9	37.1	101		-	-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	ND	38.2	47.5F	124		-	-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	38.2	43.0	113		-	-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	ND	38.2	42.4	111		-	-		67-153	-		30

## Matrix Spike Analysis

*Batch Quality Control*

**Project Name:** BRUNSWICK AIR BASE

**Lab Number:** L2447196

**Project Number:** P-749-2024

**Report Date:** 08/23/24

<i>Parameter</i>	<i>Native Sample</i>	<i>MS Added</i>	<i>MS Found</i>	<i>MS %Recovery</i>	<i>Qual</i>	<i>MSD Found</i>	<i>MSD %Recovery</i>	<i>Qual</i>	<i>Recovery Limits</i>	<i>RPD</i>	<i>Qual</i>	<i>RPD Limits</i>
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 03-04 QC Batch ID: WG1962279-3 QC Sample: L2444323-02 Client ID: MS Sample												
Perfluorotridecanoic Acid (PFTTrDA)	ND	38.2	36.7	96		-	-		48-158	-		30
Perfluorotetradecanoic Acid (PFTTA)	ND	38.2	37.6	98		-	-		59-182	-		30

<i>Surrogate (Extracted Internal Standard)</i>	<i>MS % Recovery</i>	<i>Qualifier</i>	<i>MSD % Recovery</i>	<i>Qualifier</i>	<i>Acceptance Criteria</i>
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	87				10-162
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	116				12-142
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	104				14-147
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	70				27-126
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	69				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	88				55-137
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	81				62-124
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	100				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	91				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	102				71-134
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	81				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	89				22-136
Perfluoro[13C4]Butanoic Acid (MPFBA)	92				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	101				62-163
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	13				5-112
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	95				69-131
Perfluoro[13C8]Octanoic Acid (M8PFOA)	96				62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	97				59-139
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	99				70-131

## Matrix Spike Analysis

*Batch Quality Control*

**Project Name:** BRUNSWICK AIR BASE

**Lab Number:** L2447196

**Project Number:** P-749-2024

**Report Date:** 08/23/24

<i>Parameter</i>	<i>Native Sample</i>	<i>MS Added</i>	<i>MS Found</i>	<i>MS %Recovery</i>	<i>Qual</i>	<i>MSD Found</i>	<i>MSD %Recovery</i>	<i>Qual</i>	<i>Recovery Limits</i>	<i>RPD</i>	<i>Qual</i>	<i>RPD Limits</i>
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 04 QC Batch ID: WG1962629-3 QC Sample: L2446451-01 Client ID: MS Sample												
Perfluorobutanoic Acid (PFBA)	ND	42.8	43.1	101		-	-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	ND	42.8	41.7	98		-	-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	ND	38	38.4	101		-	-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	40.1	39.5	98		-	-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	ND	42.8	42.3	99		-	-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	40.3	39.7	98		-	-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	ND	42.8	42.6	100		-	-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	39.1	38.8	99		-	-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	ND	42.8	44.5	104		-	-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	40.7	44.4	109		-	-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	40.8	51.7	127		-	-		61-179	-		30
Perfluorononanoic Acid (PFNA)	ND	42.8	43.6	102		-	-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	ND	39.7	42.4	107		-	-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	ND	42.8	46.5	109		-	-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	41	47.2	115		-	-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	ND	41.1	43.4	105		-	-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	42.8	54.7	128		-	-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	42.8	44.4	104		-	-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	ND	41.3	47.1	114		-	-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	ND	42.8	47.4	111		-	-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	42.8	49.1	115		-	-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	ND	42.8	47.6	111		-	-		67-153	-		30

## Matrix Spike Analysis

*Batch Quality Control*

**Project Name:** BRUNSWICK AIR BASE

**Lab Number:** L2447196

**Project Number:** P-749-2024

**Report Date:** 08/23/24

<i>Parameter</i>	<i>Native Sample</i>	<i>MS Added</i>	<i>MS Found</i>	<i>MS %Recovery</i>	<i>Qual</i>	<i>MSD Found</i>	<i>MSD %Recovery</i>	<i>Qual</i>	<i>Recovery Limits</i>	<i>RPD</i>	<i>Qual</i>	<i>RPD Limits</i>
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 04 QC Batch ID: WG1962629-3 QC Sample: L2446451-01 Client ID: MS Sample												
Perfluorotridecanoic Acid (PFTTrDA)	ND	42.8	37.4	88		-	-		48-158	-		30
Perfluorotetradecanoic Acid (PFTTA)	ND	42.8	39.4	92		-	-		59-182	-		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	417	448F	107		-	-		57-162	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	40.4	39.9	99		-	-		69-143	-		30
Perfluorohexadecanoic Acid (PFHxDA)	ND	42.8	47.9	112		-	-		40-167	-		30
Perfluorooctadecanoic Acid (PFODA)	ND	42.8	18.4	43		-	-		10-119	-		30

<i>Surrogate (Extracted Internal Standard)</i>	<i>MS % Recovery</i>	<i>Qualifier</i>	<i>MSD % Recovery</i>	<i>Qualifier</i>	<i>Acceptance Criteria</i>
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	94				10-162
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	176	Q			12-142
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	130				14-147
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	115				10-165
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	102				27-126
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	77				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUODA)	104				55-137
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	97				62-124
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	107				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	110				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	151	Q			71-134
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	99				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	114				22-136
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	102				10-206

## Matrix Spike Analysis

*Batch Quality Control*

**Project Name:** BRUNSWICK AIR BASE

**Lab Number:** L2447196

**Project Number:** P-749-2024

**Report Date:** 08/23/24

<b>Parameter</b>	<b>Native Sample</b>	<b>MS Added</b>	<b>MS Found</b>	<b>MS %Recovery</b>	<b>Qual</b>	<b>MSD Found</b>	<b>MSD %Recovery</b>	<b>Qual</b>	<b>Recovery Limits</b>	<b>RPD</b>	<b>Qual</b>	<b>RPD Limits</b>
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Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 04 QC Batch ID: WG1962629-3 QC Sample: L2446451-01 Client ID: MS Sample

<b>Surrogate (Extracted Internal Standard)</b>	<b>MS % Recovery</b>	<b>Qualifier</b>	<b>MSD % Recovery</b>	<b>Qualifier</b>	<b>Acceptance Criteria</b>
Perfluoro[13C4]Butanoic Acid (MPFBA)	109				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	114				62-163
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	15				5-112
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	124				69-131
Perfluoro[13C8]Octanoic Acid (M8PFOA)	114				62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	100				59-139
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	<b>146</b>	Q			70-131

## Lab Duplicate Analysis

### Batch Quality Control

Project Name: BRUNSWICK AIR BASE

Project Number: P-749-2024

Lab Number: L2447196

Report Date: 08/23/24

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1961733-4 QC Sample: L2447196-01 Client ID: NEAT PRODUCT						
Perfluorobutanoic Acid (PFBA)	22400000	23300000	ng/l	4		30
Perfluoropentanoic Acid (PFPeA)	34700000	37800000	ng/l	9		30
Perfluorobutanesulfonic Acid (PFBS)	146000000	160000000	ng/l	9		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	78800000	84300000	ng/l	7		30
Perfluoropentanesulfonic Acid (PFPeS)	120000000	126000000	ng/l	5		30
Perfluoroheptanoic Acid (PFHpA)	21900000	22800000	ng/l	4		30
Perfluorohexanesulfonic Acid (PFHxS)	462000000	488000000	ng/l	5		30
Perfluorooctanoic Acid (PFOA)	69000000	73400000	ng/l	6		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	41300000	44900000	ng/l	8		30
Perfluoroheptanesulfonic Acid (PFHpS)	94000000	106000000	ng/l	12		30
Perfluorononanoic Acid (PFNA)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonic Acid (PFOS)	3780000000E	4060000000E	ng/l	7		30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	15200000	17400000	ng/l	13		30
Perfluorononanesulfonic Acid (PFNS)	6320000	6620000	ng/l	5		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
Perfluorodecanesulfonic Acid (PFDS)	2100000J	2200000J	ng/l	NC		30
Perfluorooctanesulfonamide (FOSA)	ND	ND	ng/l	NC		30

## Lab Duplicate Analysis

### Batch Quality Control

Project Name: BRUNSWICK AIR BASE

Project Number: P-749-2024

Lab Number: L2447196

Report Date: 08/23/24

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1961733-4 QC Sample: L2447196-01 Client ID: NEAT PRODUCT						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30
Perfluorotridecanoic Acid (PFTTrDA)	ND	ND	ng/l	NC		30
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ng/l	NC		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	ND	ng/l	NC		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	ND	ng/l	NC		30
Perfluorohexadecanoic Acid (PFHxDA)	ND	ND	ng/l	NC		30
Perfluorooctadecanoic Acid (PFODA)	ND	ND	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	93		103		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	92		90		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	147	Q	159	Q	70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	119		119		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	73		73		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	73		76		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	143	Q	158	Q	71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	103		111		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	215	Q	241	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	93		101		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	99		104		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	89		92		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	170	Q	172	Q	10-162

**Lab Duplicate Analysis**  
Batch Quality Control

**Project Name:** BRUNSWICK AIR BASE  
**Project Number:** P-749-2024

**Lab Number:** L2447196  
**Report Date:** 08/23/24

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1961733-4 QC Sample: L2447196-01 Client ID: NEAT PRODUCT						

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	88		93		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	95		104		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	87		93		5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	93		94		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	119		130		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	97		107		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	106		103		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	101		110		10-206

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1961733-4 QC Sample: L2447196-01 Client ID: NEAT PRODUCT

Perfluorooctanesulfonic Acid (PFOS)	3230000000	3410000000	ng/l	10	30
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Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	101		101		69-131



## Lab Duplicate Analysis

### Batch Quality Control

Project Name: BRUNSWICK AIR BASE

Project Number: P-749-2024

Lab Number: L2447196

Report Date: 08/23/24

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1961733-5 QC Sample: L2447196-02 Client ID: MIXED PRODUCT						
Perfluorobutanoic Acid (PFBA)	65000	69400	ng/l	7		30
Perfluoropentanoic Acid (PFPeA)	93600	100000	ng/l	7		30
Perfluorobutanesulfonic Acid (PFBS)	379000	387000	ng/l	2		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	237000	254000	ng/l	7		30
Perfluoropentanesulfonic Acid (PFPeS)	297000	295000	ng/l	1		30
Perfluoroheptanoic Acid (PFHpA)	54500	53600	ng/l	2		30
Perfluorohexanesulfonic Acid (PFHxS)	995000	1030000	ng/l	3		30
Perfluorooctanoic Acid (PFOA)	161000	160000	ng/l	1		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	148000	145000	ng/l	2		30
Perfluoroheptanesulfonic Acid (PFHpS)	131000	131000	ng/l	0		30
Perfluorononanoic Acid (PFNA)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonic Acid (PFOS)	7520000	7450000	ng/l	1		30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	35000	19400J	ng/l	NC		30
Perfluorononanesulfonic Acid (PFNS)	ND	ND	ng/l	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
Perfluorodecanesulfonic Acid (PFDS)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonamide (FOSA)	ND	ND	ng/l	NC		30

## Lab Duplicate Analysis

### Batch Quality Control

**Project Name:** BRUNSWICK AIR BASE  
**Project Number:** P-749-2024

**Lab Number:** L2447196  
**Report Date:** 08/23/24

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1961733-5 QC Sample: L2447196-02 Client ID: MIXED PRODUCT						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30
Perfluorotridecanoic Acid (PFTTrDA)	ND	ND	ng/l	NC		30
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ng/l	NC		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	ND	ng/l	NC		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	ND	ng/l	NC		30
Perfluorohexadecanoic Acid (PFHxDA)	ND	ND	ng/l	NC		30
Perfluorooctadecanoic Acid (PFODA)	ND	ND	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	100		102		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	111		110		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	<b>132</b>	Q	<b>136</b>	Q	70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	119		109		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	106		101		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	101		100		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	<b>139</b>	Q	<b>140</b>	Q	71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	110		108		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	126		136		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	106		105		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	107		109		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	99		109		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	127		150		10-162

## Lab Duplicate Analysis

Batch Quality Control

Project Name: BRUNSWICK AIR BASE

Project Number: P-749-2024

Lab Number: L2447196

Report Date: 08/23/24

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1961733-5 QC Sample: L2447196-02 Client ID: MIXED PRODUCT						

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	99		95		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	121		130		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	90		91		5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	94		97		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	102		104		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	127		122		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	123		118		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	142		148		10-206

## Lab Duplicate Analysis

### Batch Quality Control

Project Name: BRUNSWICK AIR BASE

Project Number: P-749-2024

Lab Number: L2447196

Report Date: 08/23/24

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 03-04 QC Batch ID: WG1962279-4 QC Sample: L2444323-03 Client ID: DUP Sample						
Perfluorobutanoic Acid (PFBA)	0.915J	0.937J	ng/l	NC		30
Perfluoropentanoic Acid (PFPeA)	2.16	2.19	ng/l	1		30
Perfluorobutanesulfonic Acid (PFBS)	0.344J	0.359J	ng/l	NC		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	2.59	2.54	ng/l	2		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	0.851J	0.973J	ng/l	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	10.6	10.6	ng/l	0		30
Perfluorooctanoic Acid (PFOA)	1.17J	1.24J	ng/l	NC		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ND	ng/l	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/l	NC		30
Perfluorononanoic Acid (PFNA)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonic Acid (PFOS)	ND	ND	ng/l	NC		30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/l	NC		30
Perfluorononanesulfonic Acid (PFNS)	ND	ND	ng/l	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
Perfluorodecanesulfonic Acid (PFDS)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonamide (FOSA)	ND	ND	ng/l	NC		30

## Lab Duplicate Analysis

### Batch Quality Control

**Project Name:** BRUNSWICK AIR BASE  
**Project Number:** P-749-2024

**Lab Number:** L2447196  
**Report Date:** 08/23/24

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 03-04 QC Batch ID: WG1962279-4 QC Sample: L2444323-03 Client ID: DUP Sample						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30
Perfluorotridecanoic Acid (PFTTrDA)	ND	ND	ng/l	NC		30
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	91		90		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	98		101		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	91		98		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	97		110		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	95		98		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	89		92		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	94		103		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	96		96		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	87		94		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	86		93		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	76		80		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	80		81		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	75		80		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	63		68		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	87		85		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	16		17		5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	76		76		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	73		77		48-131

**Lab Duplicate Analysis**  
**Batch Quality Control**

**Project Name:** BRUNSWICK AIR BASE

**Project Number:** P-749-2024

**Lab Number:** L2447196

**Report Date:** 08/23/24

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 03-04 QC Batch ID: WG1962279-4 QC Sample: L2444323-03 Client ID: DUP Sample						

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	90		77		22-136

## Lab Duplicate Analysis

### Batch Quality Control

Project Name: BRUNSWICK AIR BASE

Project Number: P-749-2024

Lab Number: L2447196

Report Date: 08/23/24

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 04 QC Batch ID: WG1962629-4 QC Sample: L2446454-01 Client ID: DUP Sample						
Perfluorobutanoic Acid (PFBA)	ND	ND	ng/l	NC		30
Perfluoropentanoic Acid (PFPeA)	ND	ND	ng/l	NC		30
Perfluorobutanesulfonic Acid (PFBS)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	ND	ND	ng/l	NC		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	ND	ND	ng/l	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	ND	ng/l	NC		30
Perfluorooctanoic Acid (PFOA)	0.383J	0.460JF	ng/l	NC		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ND	ng/l	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/l	NC		30
Perfluorononanoic Acid (PFNA)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonic Acid (PFOS)	1.12J	1.11J	ng/l	NC		30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/l	NC		30
Perfluorononanesulfonic Acid (PFNS)	ND	ND	ng/l	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
Perfluorodecanesulfonic Acid (PFDS)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonamide (FOSA)	ND	ND	ng/l	NC		30

## Lab Duplicate Analysis

### Batch Quality Control

Project Name: BRUNSWICK AIR BASE

Project Number: P-749-2024

Lab Number: L2447196

Report Date: 08/23/24

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 04 QC Batch ID: WG1962629-4 QC Sample: L2446454-01 Client ID: DUP Sample						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30
Perfluorotridecanoic Acid (PFTTrDA)	ND	ND	ng/l	NC		30
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ng/l	NC		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	ND	ng/l	NC		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	ND	ng/l	NC		30
Perfluorohexadecanoic Acid (PFHxDA)	ND	ND	ng/l	NC		30
Perfluorooctadecanoic Acid (PFODA)	ND	ND	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	103		95		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	113		104		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	158	Q	145	Q	70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	164	Q	157	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	108		100		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	107		98		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	165	Q	149	Q	71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	115		110		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	134		122		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	115		100		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	140	Q	125		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	115		101		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	116		81		10-162



## Lab Duplicate Analysis

Batch Quality Control

Project Name: BRUNSWICK AIR BASE

Project Number: P-749-2024

Lab Number: L2447196

Report Date: 08/23/24

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 04 QC Batch ID: WG1962629-4 QC Sample: L2446454-01 Client ID: DUP Sample						

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	96		73		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	134		108		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	9		8		5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	109		93		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	125		97		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	122		111		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	115		105		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	178		148		10-206

**Project Name:** BRUNSWICK AIR BASE  
**Project Number:** P-749-2024

Serial\_No:08232415:55  
**Lab Number:** L2447196  
**Report Date:** 08/23/24

**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

**Cooler Information**

**Cooler**                      **Custody Seal**  
A                                      Absent

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2447196-01A	Plastic 250ml unpreserved	A	NA		3.2	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2447196-02A	Plastic 250ml unpreserved	A	NA		3.2	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2447196-03A	Plastic 250ml unpreserved	A	NA		3.2	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2447196-03B	Plastic 250ml unpreserved	A	NA		3.2	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2447196-04A	Plastic 250ml unpreserved	A	NA		3.2	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2447196-04B	Plastic 250ml unpreserved	A	NA		3.2	Y	Absent		A2-ME-537ISOTOPE-28+(14)

\*Values in parentheses indicate holding time in days



**Project Name:** BRUNSWICK AIR BASE  
**Project Number:** P-749-2024

Serial\_No:08232415:55  
**Lab Number:** L2447196  
**Report Date:** 08/23/24

### PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
<b>PERFLUOROALKYL CARBOXYLIC ACIDS (PFCAs)</b>		
Perfluorooctadecanoic Acid	PFODA	16517-11-6
Perfluorohexadecanoic Acid	PFHxDA	67905-19-5
Perfluorotetradecanoic Acid	PFTA/PFTeDA	376-06-7
Perfluorotridecanoic Acid	PFTrDA	72629-94-8
Perfluorododecanoic Acid	PFDoA	307-55-1
Perfluoroundecanoic Acid	PFUnA	2058-94-8
Perfluorodecanoic Acid	PFDA	335-76-2
Perfluorononanoic Acid	PFNA	375-95-1
Perfluorooctanoic Acid	PFOA	335-67-1
Perfluoroheptanoic Acid	PFHpA	375-85-9
Perfluorohexanoic Acid	PFHxA	307-24-4
Perfluoropentanoic Acid	PFPeA	2706-90-3
Perfluorobutanoic Acid	PFBA	375-22-4
<b>PERFLUOROALKYL SULFONIC ACIDS (PFSAs)</b>		
Perfluorododecanesulfonic Acid	PFDoDS/PFDoS	79780-39-5
Perfluorodecanesulfonic Acid	PFDS	335-77-3
Perfluorononanesulfonic Acid	PFNS	68259-12-1
Perfluorooctanesulfonic Acid	PFOS	1763-23-1
Perfluoroheptanesulfonic Acid	PFHpS	375-92-8
Perfluorohexanesulfonic Acid	PFHxS	355-46-4
Perfluoropentanesulfonic Acid	PFPeS	2706-91-4
Perfluorobutanesulfonic Acid	PFBS	375-73-5
Perfluoropropanesulfonic Acid	PFPrS	423-41-6
<b>FLUOROTELOMERS</b>		
1H,1H,2H,2H-Perfluorododecanesulfonic Acid	10:2FTS	120226-60-0
1H,1H,2H,2H-Perfluorodecanesulfonic Acid	8:2FTS	39108-34-4
1H,1H,2H,2H-Perfluorooctanesulfonic Acid	6:2FTS	27619-97-2
1H,1H,2H,2H-Perfluorohexanesulfonic Acid	4:2FTS	757124-72-4
<b>PERFLUOROALKANE SULFONAMIDES (FASAs)</b>		
Perfluorooctanesulfonamide	FOSA/PFOSA	754-91-6
N-Ethyl Perfluorooctane Sulfonamide	NEtFOSA	4151-50-2
N-Methyl Perfluorooctane Sulfonamide	NMeFOSA	31506-32-8
<b>PERFLUOROALKANE SULFONYL SUBSTANCES</b>		
N-Ethyl Perfluorooctanesulfonamido Ethanol	NEtFOSE	1691-99-2
N-Methyl Perfluorooctanesulfonamido Ethanol	NMeFOSE	24448-09-7
N-Ethyl Perfluorooctanesulfonamidoacetic Acid	NEtFOSAA	2991-50-6
N-Methyl Perfluorooctanesulfonamidoacetic Acid	NMeFOSAA	2355-31-9
<b>PER- and POLYFLUOROALKYL ETHER CARBOXYLIC ACIDS</b>		
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid	HFPO-DA	13252-13-6
4,8-Dioxa-3h-Perfluorononanoic Acid	ADONA	919005-14-4
<b>CHLORO-PERFLUOROALKYL SULFONIC ACIDS</b>		
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid	11Cl-PF3OUdS	763051-92-9
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid	9Cl-PF3ONS	756426-58-1
<b>PERFLUOROETHER SULFONIC ACIDS (PFESAs)</b>		
Perfluoro(2-Ethoxyethane)Sulfonic Acid	PFEEESA	113507-82-7
<b>PERFLUOROETHER/POLYETHER CARBOXYLIC ACIDS (PFPCAs)</b>		
Perfluoro-3-Methoxypropanoic Acid	PFMPA	377-73-1
Perfluoro-4-Methoxybutanoic Acid	PFMBA	863090-89-5
Nonafluoro-3,6-Dioxaheptanoic Acid	NFDHA	151772-58-6

**Project Name:** BRUNSWICK AIR BASE  
**Project Number:** P-749-2024

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**Lab Number:** L2447196  
**Report Date:** 08/23/24

### PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
FLUOROTELOMER CARBOXYLIC ACIDS (FTCAs)		
3-Perfluoroheptyl Propanoic Acid	7:3FTCA	812-70-4
2H,2H,3H,3H-Perfluorooctanoic Acid	5:3FTCA	914637-49-3
3-Perfluoropropyl Propanoic Acid	3:3FTCA	356-02-5

**Project Name:** BRUNSWICK AIR BASE  
**Project Number:** P-749-2024

**Lab Number:** L2447196  
**Report Date:** 08/23/24

## GLOSSARY

### Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)  Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



**Project Name:** BRUNSWICK AIR BASE  
**Project Number:** P-749-2024

**Lab Number:** L2447196  
**Report Date:** 08/23/24

### Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

**Chlordane:** The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

**Difference:** With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

**Final pH:** As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

**Frozen Date/Time:** With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

**Gasoline Range Organics (GRO):** Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

**Initial pH:** As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

**PAH Total:** With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

**PFAS Total:** With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

**Total:** With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers



**Project Name:** BRUNSWICK AIR BASE  
**Project Number:** P-749-2024

**Lab Number:** L2447196  
**Report Date:** 08/23/24

#### **Data Qualifiers**

Identified Compounds (TICs). For calculated parameters, this represents that one or more values used in the calculation were estimated.

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

**Project Name:** BRUNSWICK AIR BASE  
**Project Number:** P-749-2024

**Lab Number:** L2447196  
**Report Date:** 08/23/24

## REFERENCES

- 134 Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS) using Isotope Dilution. Alpha SOP 23528.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.





## Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

### Westborough Facility

**EPA 624.1:** m/p-xylene, o-xylene, Naphthalene

**EPA 625.1:** alpha-Terpineol

**EPA 8260D:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

**EPA 8270E:** NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol, Azobenzene; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.

### Mansfield Facility

**SM 2540D:** TSS.

**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

**Nonpotable Water:** EPA RSK-175 Dissolved Gases

**Biological Tissue Matrix:** EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

### Westborough Facility:

#### Drinking Water

**EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

**EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**

**EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

**Microbiology:** SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.

#### Non-Potable Water

**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

**SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300:** Chloride, Sulfate, Nitrate.

**EPA 624.1:** Volatile Halocarbons & Aromatics,

**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables).

**Microbiology:** SM9223B-Colilert-QT; Enterolert-QT, EPA 1600, EPA 1603, SM9222D.

### Mansfield Facility:

#### Drinking Water

**EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.

**EPA 522, EPA 537.1.**

#### Non-Potable Water

**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

**EPA 245.1** Hg.

**SM2340B**

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

CHAIN OF CUSTODY PAGE 1 OF 1



8 Walkup Drive  
Westboro, MA 01581  
508-898-9220

320 Forbes Blvd  
Mansfield, MA 02048  
Tel: (508)-822-9300

Project Information

Site Name: **Brunswick Air Base**

Town: **Brunswick, ME**

Spill Number: **P-749-2024**

Project Manager:

Copies to: **Molly King, ENV WHITING**

ALPHA Quote: **1000000**

Turn-Around Time  
 Rush (only confirmed if pre-approved)  
 Date Due: **ASAP**

Date Rec'd in Lab: **8/19/24 12447196**

ALPHA Job #: **REM02**

Report Information - Data Deliverables  
 EMAIL  ADEX

Billing Information  
 Same as Client info  
 PO #:

Client Information

Client: **Maine DEP**

Contact Name: **Charles Rodda**

City: **Augusta**

State: **Maine** Zip Code: **04333**

Phone: **207-680-5798**

email: **charles.i.rodदा@maine.gov**

Additional Project Information:  
**SAMPLES "NEAT PRODUCT" & "MIXED PRODUCT" LIKELY TO HAVE HIGH CONCENTRATIONS OF AFFF (PFAS)**

ANALYSIS

ALPHA Lab ID (Lab Use Only)	Sample Point Name	Sample Collection		Sample Matrix/Type	Sample Location	Sample Collection Method	Treatment Status	PID Result	EPH with targets and ranges	VPH with targets and ranges	Standard 8260	Potability	Radon	824.2	Standard 8270	PFAS + DEP Assay	PFAS	SAMPLE INFO		TOTAL # BOTTLES
		Date	Time															Filtration	Preservation	
47196-01	NEAT PRODUCT	Aug	13:17	N	0	PST	NA	NA										<input type="checkbox"/> Field <input type="checkbox"/> Lab to do	<input type="checkbox"/> Lab to do	
-02	MIXED PRODUCT		13:2	N	0	PST												<input type="checkbox"/> Lab to do	<input type="checkbox"/> Lab to do	
-03	POND IN		13:50	SW	0D	GS												<input type="checkbox"/> Lab to do	<input type="checkbox"/> Lab to do	
-04	POND OUT		14:15	SW	0D	GS												<input type="checkbox"/> Lab to do	<input type="checkbox"/> Lab to do	
																		<input type="checkbox"/> Lab to do	<input type="checkbox"/> Lab to do	

Container Type: **P**

Preservative: **40C**

Relinquished By: **Bob Maerz**  
 Date/Time: **8/19/24 16:49**

Received By: **Bob Maerz**  
 Date/Time: **8/19/24 2:55**

Received By: **Bob Maerz**  
 Date/Time: **8/19/24 1:57**

All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.