



ANALYTICAL REPORT

Lab Number:	L2457341
Client:	Maine DEP-Div. of Technical Services 17 State House Station Augusta, ME 04333
ATTN:	Molly King
Phone:	(207) 287-8169
Project Name:	NASB-HANGER 4 AFFF
Project Number:	83336
Report Date:	10/22/24

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Project Name: NASB-HANGER 4 AFFF
Project Number: 83336

Lab Number: L2457341
Report Date: 10/22/24

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2457341-01	SW-66-20241002	WATER	BRUNSWICK	10/02/24 14:27	10/03/24
L2457341-02	SW-65-20241002	WATER	BRUNSWICK	10/02/24 15:00	10/03/24
L2457341-03	SW-23-20241002	WATER	BRUNSWICK	10/02/24 15:20	10/03/24
L2457341-04	SW-17-20241002	WATER	BRUNSWICK	10/02/24 15:40	10/03/24
L2457341-05	SW-11-20241002	WATER	BRUNSWICK	10/02/24 16:00	10/03/24

Project Name: NASB-HANGER 4 AFFF
Project Number: 83336

Lab Number: L2457341
Report Date: 10/22/24

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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Case Narrative (continued)

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 1633

L2457341-02, -03, and -05: 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.

L2457341-03 and -04: 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.

The WG1985798-4 MS/MSD recoveries, performed on L2457341-01, are outside the acceptance criteria for 4,8-dioxa-3h-perfluorononanoic acid (adona) (189%).

The WG1985798-5 MS/MSD RPDs, performed on L2457341-01, are outside the acceptance criteria for 4,8-dioxa-3h-perfluorononanoic acid (adona) (37%).

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:

 Ashley Leita

Title: Technical Director/Representative

Date: 10/22/24

ORGANICS

SEMIVOLATILES

Project Name: NASB-HANGER 4 AFFF
Project Number: 83336

Lab Number: L2457341
Report Date: 10/22/24

SAMPLE RESULTS

Lab ID: L2457341-01
Client ID: SW-66-20241002
Sample Location: BRUNSWICK

Date Collected: 10/02/24 14:27
Date Received: 10/03/24
Field Prep: Not Specified

Sample Depth:

Matrix: Water
Analytical Method: 145,1633
Analytical Date: 10/18/24 14:26
Analyst: JW

Extraction Method: EPA 1633
Extraction Date: 10/17/24 19:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 1633 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	4.26	J	ng/l	6.59	2.20	1
Perfluoropentanoic Acid (PFPeA)	17.9		ng/l	3.30	1.10	1
Perfluorobutanesulfonic Acid (PFBS)	8.52		ng/l	1.65	0.552	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	6.59	2.20	1
Perfluorohexanoic Acid (PFHxA)	22.3		ng/l	1.65	0.552	1
Perfluoropentanesulfonic Acid (PFPeS)	7.39		ng/l	1.65	0.552	1
Perfluoroheptanoic Acid (PFHpA)	7.58		ng/l	1.65	0.552	1
Perfluorohexanesulfonic Acid (PFHxS)	30.9		ng/l	1.65	0.552	1
Perfluorooctanoic Acid (PFOA)	11.8		ng/l	1.65	0.552	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	50.4		ng/l	6.59	4.96	1
Perfluoroheptanesulfonic Acid (PFHpS)	3.89		ng/l	1.65	0.552	1
Perfluorononanoic Acid (PFNA)	0.668	J	ng/l	1.65	0.552	1
Perfluorooctanesulfonic Acid (PFOS)	221		ng/l	1.65	0.552	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.65	0.552	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	6.59	2.20	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.65	0.552	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.65	0.552	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.65	0.552	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.65	0.552	1
Perfluorooctanesulfonamide (PFOSA)	ND		ng/l	1.65	0.552	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.65	0.552	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.65	0.552	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.65	0.552	1
Perfluorotetradecanoic Acid (PFTeDA)	ND		ng/l	1.65	0.552	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		ng/l	6.59	2.20	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	6.59	2.20	1
Perfluorododecanesulfonic Acid (PFDoS)	ND		ng/l	1.65	0.552	1

Project Name: NASB-HANGER 4 AFFF
Project Number: 83336

Lab Number: L2457341
Report Date: 10/22/24

SAMPLE RESULTS

Lab ID: L2457341-01
Client ID: SW-66-20241002
Sample Location: BRUNSWICK

Date Collected: 10/02/24 14:27
Date Received: 10/03/24
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 1633 - Mansfield Lab						
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	6.59	2.20	1
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	6.59	2.20	1
N-Methyl Perfluorooctane Sulfonamide (NMeFOSA)	ND		ng/l	1.65	0.552	1
N-Ethyl Perfluorooctane Sulfonamide (NEtFOSA)	ND		ng/l	1.65	0.552	1
N-Methyl Perfluorooctanesulfonamido Ethanol (NMeFOSE)	ND		ng/l	16.5	5.52	1
N-Ethyl Perfluorooctanesulfonamido Ethanol (NEtFOSE)	ND		ng/l	16.5	5.52	1
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND		ng/l	3.30	1.10	1
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND		ng/l	3.30	1.10	1
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEEESA)	ND		ng/l	3.30	1.10	1
Nonafuoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND		ng/l	3.30	1.10	1
3-Perfluoropropyl Propanoic Acid (3:3FTCA)	ND		ng/l	8.24	2.74	1
2H,2H,3H,3H-Perfluorooctanoic Acid (5:3FTCA)	ND		ng/l	41.2	13.8	1
3-Perfluoroheptyl Propanoic Acid (7:3FTCA)	ND		ng/l	41.2	13.8	1
PFAS, Total (6)	272	J	ng/l	1.65	0.552	1

Project Name: NASB-HANGER 4 AFFF**Lab Number:** L2457341**Project Number:** 83336**Report Date:** 10/22/24**SAMPLE RESULTS****Lab ID:** L2457341-01**Date Collected:** 10/02/24 14:27**Client ID:** SW-66-20241002**Date Received:** 10/03/24**Sample Location:** BRUNSWICK**Field Prep:** Not Specified**Sample Depth:**

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 1633 - Mansfield Lab						
Surrogate	% Recovery			Qualifier	Acceptance Criteria	
Perfluoro-n-[13C4]Butanoic Acid (13C4-PFBA)	91				5-130	
Perfluoro-n-[13C5]Pentanoic Acid (13C5-PFPeA)	88				40-130	
Perfluoro-1-[2,3,4-13C3]Butanesulfonic Acid (13C3-PFBS)	101				40-135	
1H,1H,2H,2H-Perfluoro-1-[1,2-13C2]Hexanesulfonic Acid (13C2-4:2FTS)	97				40-200	
Perfluoro-n-[1,2,3,4,6-13C5]Hexanoic Acid (13C5-PFHxA)	94				40-130	
Perfluoro-n-[1,2,3,4-13C4]Heptanoic Acid (13C4-PFHpA)	95				40-130	
Perfluoro-1-[1,2,3-13C3]Hexanesulfonic Acid (13C3-PFHxS)	100				40-130	
Perfluoro-n-[13C8]Octanoic Acid (13C8-PFOA)	103				40-130	
1H,1H,2H,2H-Perfluoro-1-[1,2-13C2]Octanesulfonic Acid (13C2-6:2FTS)	101				40-200	
Perfluoro-n-[13C9]Nonanoic Acid (13C9-PFNA)	91				40-130	
Perfluoro-1-[13C8]Octanesulfonic Acid (13C8-PFOS)	79				40-130	
Perfluoro-n-[1,2,3,4,5,6-13C6]Decanoic Acid (13C6-PFDA)	73				40-130	
1H,1H,2H,2H-Perfluoro-1-[1,2-13C2]Decanesulfonic Acid (13C2-8:2FTS)	85				40-300	
N-Methyl-d3-perfluoro-1-octanesulfonamidoacetic Acid (D3-NMeFOSAA)	65				40-170	
Perfluoro-n-[1,2,3,4,5,6,7-13C7]Undecanoic Acid (13C7-PFUnA)	79				30-130	
Perfluoro-1-[13C8]Octanesulfonamide (13C8-PFOSA)	81				40-130	
N-Ethyl-d5-perfluoro-1-octanesulfonamidoacetic Acid (D5-NEtFOSAA)	66				25-135	
Perfluoro-n-[1,2-13C2]Dodecanoic Acid (13C2-PFDoA)	71				10-130	
Perfluoro-n-[1,2-13C2]Tetradecanoic Acid (13C2-PFTeDA)	57				10-130	
Tetrafluoro-2-heptafluoropropoxy-[13C3]-propanoic acid (13C3-HFPO-DA)	94				40-130	
N-Methyl-d3-Perfluoro-1-Octanesulfonamide (D3-NMeFOSA)	70				10-130	
N-Ethyl-d5-Perfluoro-1-Octanesulfonamide (D5-NEtFOSA)	70				10-130	
N-Methyl-d7-Perfluorooctanesulfonamidoethanol (D7-NMeFOSE)	56				10-130	
N-Ethyl-d9-Perfluorooctanesulfonamidoethanol (D9-NEtFOSE)	60				10-130	

Project Name: NASB-HANGER 4 AFFF
Project Number: 83336

Lab Number: L2457341
Report Date: 10/22/24

SAMPLE RESULTS

Lab ID: L2457341-02
Client ID: SW-65-20241002
Sample Location: BRUNSWICK

Date Collected: 10/02/24 15:00
Date Received: 10/03/24
Field Prep: Not Specified

Sample Depth:

Matrix: Water
Analytical Method: 145,1633
Analytical Date: 10/18/24 15:21
Analyst: JW

Extraction Method: EPA 1633
Extraction Date: 10/17/24 19:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 1633 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	50.4	J	ng/l	64.0	21.4	1
Perfluoropentanoic Acid (PFPeA)	168		ng/l	32.0	10.6	1
Perfluorobutanesulfonic Acid (PFBS)	132		ng/l	16.0	5.36	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	64.0	21.4	1
Perfluorohexanoic Acid (PFHxA)	290		ng/l	16.0	5.36	1
Perfluoropentanesulfonic Acid (PFPeS)	130		ng/l	16.0	5.36	1
Perfluoroheptanoic Acid (PFHpA)	55.8		ng/l	16.0	5.36	1
Perfluorohexanesulfonic Acid (PFHxS)	536		ng/l	16.0	5.36	1
Perfluorooctanoic Acid (PFOA)	200		ng/l	16.0	5.36	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	1720		ng/l	64.0	48.2	1
Perfluoroheptanesulfonic Acid (PFHpS)	68.4		ng/l	16.0	5.36	1
Perfluorononanoic Acid (PFNA)	6.88	J	ng/l	16.0	5.36	1
Perfluorooctanesulfonic Acid (PFOS)	4180		ng/l	16.0	5.36	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	16.0	5.36	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	47.8	J	ng/l	64.0	21.4	1
Perfluoronananesulfonic Acid (PFNS)	ND		ng/l	16.0	5.36	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	16.0	5.36	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	16.0	5.36	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	16.0	5.36	1
Perfluorooctanesulfonamide (PFOSA)	9.76	JF	ng/l	16.0	5.36	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	16.0	5.36	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	16.0	5.36	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	16.0	5.36	1
Perfluorotetradecanoic Acid (PFTeDA)	ND		ng/l	16.0	5.36	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		ng/l	64.0	21.4	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	64.0	21.4	1
Perfluorododecanesulfonic Acid (PFDoS)	ND		ng/l	16.0	5.36	1

Project Name: NASB-HANGER 4 AFFF
Project Number: 83336

Lab Number: L2457341
Report Date: 10/22/24

SAMPLE RESULTS

Lab ID: L2457341-02
Client ID: SW-65-20241002
Sample Location: BRUNSWICK

Date Collected: 10/02/24 15:00
Date Received: 10/03/24
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 1633 - Mansfield Lab						
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	64.0	21.4	1
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	64.0	21.4	1
N-Methyl Perfluorooctane Sulfonamide (NMeFOSA)	ND		ng/l	16.0	5.36	1
N-Ethyl Perfluorooctane Sulfonamide (NEtFOSA)	ND		ng/l	16.0	5.36	1
N-Methyl Perfluorooctanesulfonamido Ethanol (NMeFOSE)	ND		ng/l	160	53.6	1
N-Ethyl Perfluorooctanesulfonamido Ethanol (NEtFOSE)	ND		ng/l	160	53.6	1
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND		ng/l	32.0	10.6	1
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND		ng/l	32.0	10.6	1
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEEESA)	ND		ng/l	32.0	10.6	1
Nonafuoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND		ng/l	32.0	10.6	1
3-Perfluoropropyl Propanoic Acid (3:3FTCA)	ND		ng/l	80.0	26.6	1
2H,2H,3H,3H-Perfluorooctanoic Acid (5:3FTCA)	ND		ng/l	400	134.	1
3-Perfluoroheptyl Propanoic Acid (7:3FTCA)	ND		ng/l	400	134.	1
PFAS, Total (6)	4980	J	ng/l	16.0	5.36	1

Project Name: NASB-HANGER 4 AFFF
Project Number: 83336

Lab Number: L2457341
Report Date: 10/22/24

SAMPLE RESULTS

Lab ID: L2457341-02
Client ID: SW-65-20241002
Sample Location: BRUNSWICK

Date Collected: 10/02/24 15:00
Date Received: 10/03/24
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 1633 - Mansfield Lab						
Surrogate	% Recovery			Qualifier	Acceptance Criteria	
Perfluoro-n-[13C4]Butanoic Acid (13C4-PFBA)	101				5-130	
Perfluoro-n-[13C5]Pentanoic Acid (13C5-PFPeA)	95				40-130	
Perfluoro-1-[2,3,4-13C3]Butanesulfonic Acid (13C3-PFBS)	101				40-135	
1H,1H,2H,2H-Perfluoro-1-[1,2-13C2]Hexanesulfonic Acid (13C2-4:2FTS)	94				40-200	
Perfluoro-n-[1,2,3,4,6-13C5]Hexanoic Acid (13C5-PFHxA)	96				40-130	
Perfluoro-n-[1,2,3,4-13C4]Heptanoic Acid (13C4-PFHpA)	95				40-130	
Perfluoro-1-[1,2,3-13C3]Hexanesulfonic Acid (13C3-PFHxS)	100				40-130	
Perfluoro-n-[13C8]Octanoic Acid (13C8-PFOA)	104				40-130	
1H,1H,2H,2H-Perfluoro-1-[1,2-13C2]Octanesulfonic Acid (13C2-6:2FTS)	90				40-200	
Perfluoro-n-[13C9]Nonanoic Acid (13C9-PFNA)	114				40-130	
Perfluoro-1-[13C8]Octanesulfonic Acid (13C8-PFOS)	96				40-130	
Perfluoro-n-[1,2,3,4,5,6-13C6]Decanoic Acid (13C6-PFDA)	90				40-130	
1H,1H,2H,2H-Perfluoro-1-[1,2-13C2]Decanesulfonic Acid (13C2-8:2FTS)	84				40-300	
N-Methyl-d3-perfluoro-1-octanesulfonamidoacetic Acid (D3-NMeFOSAA)	76				40-170	
Perfluoro-n-[1,2,3,4,5,6,7-13C7]Undecanoic Acid (13C7-PFUnA)	93				30-130	
Perfluoro-1-[13C8]Octanesulfonamide (13C8-PFOSA)	103				40-130	
N-Ethyl-d5-perfluoro-1-octanesulfonamidoacetic Acid (D5-NEtFOSAA)	81				25-135	
Perfluoro-n-[1,2-13C2]Dodecanoic Acid (13C2-PFDoA)	79				10-130	
Perfluoro-n-[1,2-13C2]Tetradecanoic Acid (13C2-PFTeDA)	79				10-130	
Tetrafluoro-2-heptafluoropropoxy-[13C3]-propanoic acid (13C3-HFPO-DA)	96				40-130	
N-Methyl-d3-Perfluoro-1-Octanesulfonamide (D3-NMeFOSA)	88				10-130	
N-Ethyl-d5-Perfluoro-1-Octanesulfonamide (D5-NEtFOSA)	84				10-130	
N-Methyl-d7-Perfluorooctanesulfonamidoethanol (D7-NMeFOSE)	77				10-130	
N-Ethyl-d9-Perfluorooctanesulfonamidoethanol (D9-NEtFOSE)	86				10-130	

Project Name: NASB-HANGER 4 AFFF
Project Number: 83336

Lab Number: L2457341
Report Date: 10/22/24

SAMPLE RESULTS

Lab ID: L2457341-03
Client ID: SW-23-20241002
Sample Location: BRUNSWICK

Date Collected: 10/02/24 15:20
Date Received: 10/03/24
Field Prep: Not Specified

Sample Depth:

Matrix: Water
Analytical Method: 145,1633
Analytical Date: 10/18/24 15:30
Analyst: JW

Extraction Method: EPA 1633
Extraction Date: 10/17/24 19:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 1633 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	54.1	J	ng/l	64.0	21.4	1
Perfluoropentanoic Acid (PFPeA)	164		ng/l	32.0	10.6	1
Perfluorobutanesulfonic Acid (PFBS)	152		ng/l	16.0	5.36	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	64.0	21.4	1
Perfluorohexanoic Acid (PFHxA)	293		ng/l	16.0	5.36	1
Perfluoropentanesulfonic Acid (PFPeS)	140		ng/l	16.0	5.36	1
Perfluoroheptanoic Acid (PFHpA)	58.4		ng/l	16.0	5.36	1
Perfluorohexanesulfonic Acid (PFHxS)	648		ng/l	16.0	5.36	1
Perfluorooctanoic Acid (PFOA)	203		ng/l	16.0	5.36	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	1640		ng/l	64.0	48.2	1
Perfluoroheptanesulfonic Acid (PFHpS)	79.8		ng/l	16.0	5.36	1
Perfluorononanoic Acid (PFNA)	7.92	J	ng/l	16.0	5.36	1
Perfluorooctanesulfonic Acid (PFOS)	4800	E	ng/l	16.0	5.36	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	16.0	5.36	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	56.9	J	ng/l	64.0	21.4	1
Perfluoronananesulfonic Acid (PFNS)	ND		ng/l	16.0	5.36	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	16.0	5.36	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	16.0	5.36	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	16.0	5.36	1
Perfluorooctanesulfonamide (PFOSA)	11.0	JF	ng/l	16.0	5.36	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	16.0	5.36	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	16.0	5.36	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	16.0	5.36	1
Perfluorotetradecanoic Acid (PFTeDA)	ND		ng/l	16.0	5.36	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		ng/l	64.0	21.4	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	64.0	21.4	1
Perfluorododecanesulfonic Acid (PFDoS)	ND		ng/l	16.0	5.36	1

Project Name: NASB-HANGER 4 AFFF
Project Number: 83336

Lab Number: L2457341
Report Date: 10/22/24

SAMPLE RESULTS

Lab ID: L2457341-03
Client ID: SW-23-20241002
Sample Location: BRUNSWICK

Date Collected: 10/02/24 15:20
Date Received: 10/03/24
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 1633 - Mansfield Lab						
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	64.0	21.4	1
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	64.0	21.4	1
N-Methyl Perfluorooctane Sulfonamide (NMeFOSA)	ND		ng/l	16.0	5.36	1
N-Ethyl Perfluorooctane Sulfonamide (NEtFOSA)	ND		ng/l	16.0	5.36	1
N-Methyl Perfluorooctanesulfonamido Ethanol (NMeFOSE)	ND		ng/l	160	53.6	1
N-Ethyl Perfluorooctanesulfonamido Ethanol (NEtFOSE)	ND		ng/l	160	53.6	1
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND		ng/l	32.0	10.6	1
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND		ng/l	32.0	10.6	1
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEEESA)	ND		ng/l	32.0	10.6	1
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND		ng/l	32.0	10.6	1
3-Perfluoropropyl Propanoic Acid (3:3FTCA)	ND		ng/l	80.0	26.6	1
2H,2H,3H,3H-Perfluorooctanoic Acid (5:3FTCA)	ND		ng/l	400	134.	1
3-Perfluoroheptyl Propanoic Acid (7:3FTCA)	ND		ng/l	400	134.	1

Project Name: NASB-HANGER 4 AFFF
Project Number: 83336

Lab Number: L2457341
Report Date: 10/22/24

SAMPLE RESULTS

Lab ID: L2457341-03
Client ID: SW-23-20241002
Sample Location: BRUNSWICK

Date Collected: 10/02/24 15:20
Date Received: 10/03/24
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 1633 - Mansfield Lab						
Surrogate	% Recovery			Qualifier	Acceptance Criteria	
Perfluoro-n-[13C4]Butanoic Acid (13C4-PFBA)	83				5-130	
Perfluoro-n-[13C5]Pentanoic Acid (13C5-PFPeA)	80				40-130	
Perfluoro-1-[2,3,4-13C3]Butanesulfonic Acid (13C3-PFBS)	86				40-135	
1H,1H,2H,2H-Perfluoro-1-[1,2-13C2]Hexanesulfonic Acid (13C2-4:2FTS)	79				40-200	
Perfluoro-n-[1,2,3,4,6-13C5]Hexanoic Acid (13C5-PFHxA)	83				40-130	
Perfluoro-n-[1,2,3,4-13C4]Heptanoic Acid (13C4-PFHpA)	80				40-130	
Perfluoro-1-[1,2,3-13C3]Hexanesulfonic Acid (13C3-PFHxS)	85				40-130	
Perfluoro-n-[13C8]Octanoic Acid (13C8-PFOA)	101				40-130	
1H,1H,2H,2H-Perfluoro-1-[1,2-13C2]Octanesulfonic Acid (13C2-6:2FTS)	83				40-200	
Perfluoro-n-[13C9]Nonanoic Acid (13C9-PFNA)	92				40-130	
Perfluoro-1-[13C8]Octanesulfonic Acid (13C8-PFOS)	71				40-130	
Perfluoro-n-[1,2,3,4,5,6-13C6]Decanoic Acid (13C6-PFDA)	72				40-130	
1H,1H,2H,2H-Perfluoro-1-[1,2-13C2]Decanesulfonic Acid (13C2-8:2FTS)	71				40-300	
N-Methyl-d3-perfluoro-1-octanesulfonamidoacetic Acid (D3-NMeFOSAA)	58				40-170	
Perfluoro-n-[1,2,3,4,5,6,7-13C7]Undecanoic Acid (13C7-PFUnA)	68				30-130	
Perfluoro-1-[13C8]Octanesulfonamide (13C8-PFOSA)	77				40-130	
N-Ethyl-d5-perfluoro-1-octanesulfonamidoacetic Acid (D5-NEtFOSAA)	65				25-135	
Perfluoro-n-[1,2-13C2]Dodecanoic Acid (13C2-PFDoA)	66				10-130	
Perfluoro-n-[1,2-13C2]Tetradecanoic Acid (13C2-PFTeDA)	64				10-130	
Tetrafluoro-2-heptafluoropropoxy-[13C3]-propanoic acid (13C3-HFPO-DA)	83				40-130	
N-Methyl-d3-Perfluoro-1-Octanesulfonamide (D3-NMeFOSA)	72				10-130	
N-Ethyl-d5-Perfluoro-1-Octanesulfonamide (D5-NEtFOSA)	71				10-130	
N-Methyl-d7-Perfluorooctanesulfonamidoethanol (D7-NMeFOSE)	57				10-130	
N-Ethyl-d9-Perfluorooctanesulfonamidoethanol (D9-NEtFOSE)	64				10-130	

Project Name: NASB-HANGER 4 AFFF
Project Number: 83336

Lab Number: L2457341
Report Date: 10/22/24

SAMPLE RESULTS

Lab ID: L2457341-03 **D**
Client ID: SW-23-20241002
Sample Location: BRUNSWICK

Date Collected: 10/02/24 15:20
Date Received: 10/03/24
Field Prep: Not Specified

Sample Depth:

Matrix: Water
Analytical Method: 145,1633
Analytical Date: 10/18/24 17:28
Analyst: JW

Extraction Method: EPA 1633
Extraction Date: 10/17/24 19:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Perfluorinated Alkyl Acids by EPA 1633 - Mansfield Lab

Perfluorooctanesulfonic Acid (PFOS)	4560		ng/l	80.0	26.8	5
PFAS, Total (6)	5480	J	ng/l	16.0	5.36	5

Project Name: NASB-HANGER 4 AFFF

Lab Number: L2457341

Project Number: 83336

Report Date: 10/22/24

SAMPLE RESULTS

Lab ID: L2457341-03 D

Date Collected: 10/02/24 15:20

Client ID: SW-23-20241002

Date Received: 10/03/24

Sample Location: BRUNSWICK

Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 1633 - Mansfield Lab						

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro-n-[13C4]Butanoic Acid (13C4-PFBA)	74		5-130
Perfluoro-n-[13C5]Pentanoic Acid (13C5-PFPeA)	75		40-130
Perfluoro-1-[2,3,4-13C3]Butanesulfonic Acid (13C3-PFBS)	78		40-135
1H,1H,2H,2H-Perfluoro-1-[1,2-13C2]Hexanesulfonic Acid (13C2-4:2FTS)	75		40-200
Perfluoro-n-[1,2,3,4,6-13C5]Hexanoic Acid (13C5-PFHxA)	74		40-130
Perfluoro-n-[1,2,3,4-13C4]Heptanoic Acid (13C4-PFHpA)	76		40-130
Perfluoro-1-[1,2,3-13C3]Hexanesulfonic Acid (13C3-PFHxS)	74		40-130
Perfluoro-n-[13C8]Octanoic Acid (13C8-PFOA)	75		40-130
1H,1H,2H,2H-Perfluoro-1-[1,2-13C2]Octanesulfonic Acid (13C2-6:2FTS)	70		40-200
Perfluoro-n-[13C9]Nonanoic Acid (13C9-PFNA)	78		40-130
Perfluoro-1-[13C8]Octanesulfonic Acid (13C8-PFOS)	63		40-130
Perfluoro-n-[1,2,3,4,5,6-13C6]Decanoic Acid (13C6-PFDA)	63		40-130
1H,1H,2H,2H-Perfluoro-1-[1,2-13C2]Decanesulfonic Acid (13C2-8:2FTS)	56		40-300
N-Methyl-d3-perfluoro-1-octanesulfonamidoacetic Acid (D3-NMeFOSAA)	47		40-170
Perfluoro-n-[1,2,3,4,5,6,7-13C7]Undecanoic Acid (13C7-PFUnA)	59		30-130
Perfluoro-1-[13C8]Octanesulfonamide (13C8-PFOSA)	60		40-130
N-Ethyl-d5-perfluoro-1-octanesulfonamidoacetic Acid (D5-NEtFOSAA)	48		25-135
Perfluoro-n-[1,2-13C2]Dodecanoic Acid (13C2-PFDoA)	50		10-130
Perfluoro-n-[1,2-13C2]Tetradecanoic Acid (13C2-PFTeDA)	53		10-130
Tetrafluoro-2-heptafluoropropoxy-[13C3]-propanoic acid (13C3-HFPO-DA)	74		40-130
N-Methyl-d3-Perfluoro-1-Octanesulfonamide (D3-NMeFOSA)	60		10-130
N-Ethyl-d5-Perfluoro-1-Octanesulfonamide (D5-NEtFOSA)	57		10-130
N-Methyl-d7-Perfluorooctanesulfonamidoethanol (D7-NMeFOSE)	48		10-130
N-Ethyl-d9-Perfluorooctanesulfonamidoethanol (D9-NEtFOSE)	53		10-130

Project Name: NASB-HANGER 4 AFFF
Project Number: 83336

Lab Number: L2457341
Report Date: 10/22/24

SAMPLE RESULTS

Lab ID: L2457341-04
Client ID: SW-17-20241002
Sample Location: BRUNSWICK

Date Collected: 10/02/24 15:40
Date Received: 10/03/24
Field Prep: Not Specified

Sample Depth:

Matrix: Water
Analytical Method: 145,1633
Analytical Date: 10/18/24 16:33
Analyst: JW

Extraction Method: EPA 1633
Extraction Date: 10/17/24 19:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 1633 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	51.3	J	ng/l	64.0	21.4	1
Perfluoropentanoic Acid (PFPeA)	168		ng/l	32.0	10.6	1
Perfluorobutanesulfonic Acid (PFBS)	153		ng/l	16.0	5.36	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	64.0	21.4	1
Perfluorohexanoic Acid (PFHxA)	247		ng/l	16.0	5.36	1
Perfluoropentanesulfonic Acid (PFPeS)	128		ng/l	16.0	5.36	1
Perfluoroheptanoic Acid (PFHpA)	55.7		ng/l	16.0	5.36	1
Perfluorohexanesulfonic Acid (PFHxS)	565		ng/l	16.0	5.36	1
Perfluorooctanoic Acid (PFOA)	271		ng/l	16.0	5.36	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	1070		ng/l	64.0	48.2	1
Perfluoroheptanesulfonic Acid (PFHpS)	61.3		ng/l	16.0	5.36	1
Perfluorononanoic Acid (PFNA)	6.24	J	ng/l	16.0	5.36	1
Perfluorooctanesulfonic Acid (PFOS)	4670	E	ng/l	16.0	5.36	1
Perfluorodecanoic Acid (PFDA)	6.72	J	ng/l	16.0	5.36	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	104		ng/l	64.0	21.4	1
Perfluorononanesulfonic Acid (PFNS)	8.08	J	ng/l	16.0	5.36	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	16.0	5.36	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	16.0	5.36	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	16.0	5.36	1
Perfluorooctanesulfonamide (PFOSA)	21.4		ng/l	16.0	5.36	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	16.0	5.36	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	16.0	5.36	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	16.0	5.36	1
Perfluorotetradecanoic Acid (PFTeDA)	ND		ng/l	16.0	5.36	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		ng/l	64.0	21.4	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	64.0	21.4	1
Perfluorododecanesulfonic Acid (PFDoS)	ND		ng/l	16.0	5.36	1

Project Name: NASB-HANGER 4 AFFF
Project Number: 83336

Lab Number: L2457341
Report Date: 10/22/24

SAMPLE RESULTS

Lab ID: L2457341-04
Client ID: SW-17-20241002
Sample Location: BRUNSWICK

Date Collected: 10/02/24 15:40
Date Received: 10/03/24
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 1633 - Mansfield Lab						
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	64.0	21.4	1
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	64.0	21.4	1
N-Methyl Perfluorooctane Sulfonamide (NMeFOSA)	ND		ng/l	16.0	5.36	1
N-Ethyl Perfluorooctane Sulfonamide (NEtFOSA)	ND		ng/l	16.0	5.36	1
N-Methyl Perfluorooctanesulfonamido Ethanol (NMeFOSE)	ND		ng/l	160	53.6	1
N-Ethyl Perfluorooctanesulfonamido Ethanol (NEtFOSE)	ND		ng/l	160	53.6	1
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND		ng/l	32.0	10.6	1
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND		ng/l	32.0	10.6	1
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEEESA)	ND		ng/l	32.0	10.6	1
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND		ng/l	32.0	10.6	1
3-Perfluoropropyl Propanoic Acid (3:3FTCA)	ND		ng/l	80.0	26.6	1
2H,2H,3H,3H-Perfluorooctanoic Acid (5:3FTCA)	ND		ng/l	400	134.	1
3-Perfluoroheptyl Propanoic Acid (7:3FTCA)	ND		ng/l	400	134.	1

Project Name: NASB-HANGER 4 AFFF**Lab Number:** L2457341**Project Number:** 83336**Report Date:** 10/22/24**SAMPLE RESULTS****Lab ID:** L2457341-04**Date Collected:** 10/02/24 15:40**Client ID:** SW-17-20241002**Date Received:** 10/03/24**Sample Location:** BRUNSWICK**Field Prep:** Not Specified**Sample Depth:**

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 1633 - Mansfield Lab						
Surrogate	% Recovery			Qualifier	Acceptance Criteria	
Perfluoro-n-[13C4]Butanoic Acid (13C4-PFBA)	94				5-130	
Perfluoro-n-[13C5]Pentanoic Acid (13C5-PFPeA)	91				40-130	
Perfluoro-1-[2,3,4-13C3]Butanesulfonic Acid (13C3-PFBS)	95				40-135	
1H,1H,2H,2H-Perfluoro-1-[1,2-13C2]Hexanesulfonic Acid (13C2-4:2FTS)	93				40-200	
Perfluoro-n-[1,2,3,4,6-13C5]Hexanoic Acid (13C5-PFHxA)	93				40-130	
Perfluoro-n-[1,2,3,4-13C4]Heptanoic Acid (13C4-PFHpA)	91				40-130	
Perfluoro-1-[1,2,3-13C3]Hexanesulfonic Acid (13C3-PFHxS)	97				40-130	
Perfluoro-n-[13C8]Octanoic Acid (13C8-PFOA)	103				40-130	
1H,1H,2H,2H-Perfluoro-1-[1,2-13C2]Octanesulfonic Acid (13C2-6:2FTS)	96				40-200	
Perfluoro-n-[13C9]Nonanoic Acid (13C9-PFNA)	101				40-130	
Perfluoro-1-[13C8]Octanesulfonic Acid (13C8-PFOS)	91				40-130	
Perfluoro-n-[1,2,3,4,5,6-13C6]Decanoic Acid (13C6-PFDA)	88				40-130	
1H,1H,2H,2H-Perfluoro-1-[1,2-13C2]Decanesulfonic Acid (13C2-8:2FTS)	86				40-300	
N-Methyl-d3-perfluoro-1-octanesulfonamidoacetic Acid (D3-NMeFOSAA)	82				40-170	
Perfluoro-n-[1,2,3,4,5,6,7-13C7]Undecanoic Acid (13C7-PFUnA)	90				30-130	
Perfluoro-1-[13C8]Octanesulfonamide (13C8-PFOSA)	106				40-130	
N-Ethyl-d5-perfluoro-1-octanesulfonamidoacetic Acid (D5-NEtFOSAA)	78				25-135	
Perfluoro-n-[1,2-13C2]Dodecanoic Acid (13C2-PFDoA)	79				10-130	
Perfluoro-n-[1,2-13C2]Tetradecanoic Acid (13C2-PFTeDA)	79				10-130	
Tetrafluoro-2-heptafluoropropoxy-[13C3]-propanoic acid (13C3-HFPO-DA)	90				40-130	
N-Methyl-d3-Perfluoro-1-Octanesulfonamide (D3-NMeFOSA)	85				10-130	
N-Ethyl-d5-Perfluoro-1-Octanesulfonamide (D5-NEtFOSA)	80				10-130	
N-Methyl-d7-Perfluorooctanesulfonamidoethanol (D7-NMeFOSE)	73				10-130	
N-Ethyl-d9-Perfluorooctanesulfonamidoethanol (D9-NEtFOSE)	79				10-130	

Project Name: NASB-HANGER 4 AFFF
Project Number: 83336

Lab Number: L2457341
Report Date: 10/22/24

SAMPLE RESULTS

Lab ID: L2457341-04 D
Client ID: SW-17-20241002
Sample Location: BRUNSWICK

Date Collected: 10/02/24 15:40
Date Received: 10/03/24
Field Prep: Not Specified

Sample Depth:

Matrix: Water
Analytical Method: 145,1633
Analytical Date: 10/20/24 15:59
Analyst: ANH

Extraction Method: EPA 1633
Extraction Date: 10/17/24 19:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 1633 - Mansfield Lab						
Perfluorooctanesulfonic Acid (PFOS)	4480		ng/l	80.0	26.8	5
PFAS, Total (6)	5380	J	ng/l	80.0	26.8	5
Surrogate	% Recovery		Qualifier	Acceptance Criteria		
Perfluoro-1-[13C8]Octanesulfonic Acid (13C8-PFOS)	69			40-130		

Project Name: NASB-HANGER 4 AFFF
Project Number: 83336

Lab Number: L2457341
Report Date: 10/22/24

SAMPLE RESULTS

Lab ID: L2457341-05
Client ID: SW-11-20241002
Sample Location: BRUNSWICK

Date Collected: 10/02/24 16:00
Date Received: 10/03/24
Field Prep: Not Specified

Sample Depth:

Matrix: Water
Analytical Method: 145,1633
Analytical Date: 10/18/24 16:42
Analyst: JW

Extraction Method: EPA 1633
Extraction Date: 10/17/24 19:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 1633 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	56.6	J	ng/l	64.0	21.4	1
Perfluoropentanoic Acid (PFPeA)	142		ng/l	32.0	10.6	1
Perfluorobutanesulfonic Acid (PFBS)	207		ng/l	16.0	5.36	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	64.0	21.4	1
Perfluorohexanoic Acid (PFHxA)	220		ng/l	16.0	5.36	1
Perfluoropentanesulfonic Acid (PFPeS)	188		ng/l	16.0	5.36	1
Perfluoroheptanoic Acid (PFHpA)	49.4		ng/l	16.0	5.36	1
Perfluorohexanesulfonic Acid (PFHxS)	767		ng/l	16.0	5.36	1
Perfluorooctanoic Acid (PFOA)	298		ng/l	16.0	5.36	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	383		ng/l	64.0	48.2	1
Perfluoroheptanesulfonic Acid (PFHpS)	70.2		ng/l	16.0	5.36	1
Perfluorononanoic Acid (PFNA)	7.20	J	ng/l	16.0	5.36	1
Perfluorooctanesulfonic Acid (PFOS)	3850		ng/l	16.0	5.36	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	16.0	5.36	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	46.7	J	ng/l	64.0	21.4	1
Perfluoronananesulfonic Acid (PFNS)	ND		ng/l	16.0	5.36	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	16.0	5.36	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	16.0	5.36	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	16.0	5.36	1
Perfluorooctanesulfonamide (PFOSA)	13.0	J	ng/l	16.0	5.36	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	16.0	5.36	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	16.0	5.36	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	16.0	5.36	1
Perfluorotetradecanoic Acid (PFTeDA)	ND		ng/l	16.0	5.36	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		ng/l	64.0	21.4	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	64.0	21.4	1
Perfluorododecanesulfonic Acid (PFDoS)	ND		ng/l	16.0	5.36	1

Project Name: NASB-HANGER 4 AFFF
Project Number: 83336

Lab Number: L2457341
Report Date: 10/22/24

SAMPLE RESULTS

Lab ID: L2457341-05
Client ID: SW-11-20241002
Sample Location: BRUNSWICK

Date Collected: 10/02/24 16:00
Date Received: 10/03/24
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 1633 - Mansfield Lab						
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	64.0	21.4	1
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	64.0	21.4	1
N-Methyl Perfluorooctane Sulfonamide (NMeFOSA)	ND		ng/l	16.0	5.36	1
N-Ethyl Perfluorooctane Sulfonamide (NEtFOSA)	ND		ng/l	16.0	5.36	1
N-Methyl Perfluorooctanesulfonamido Ethanol (NMeFOSE)	ND		ng/l	160	53.6	1
N-Ethyl Perfluorooctanesulfonamido Ethanol (NEtFOSE)	ND		ng/l	160	53.6	1
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND		ng/l	32.0	10.6	1
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND		ng/l	32.0	10.6	1
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND		ng/l	32.0	10.6	1
Nonafuoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND		ng/l	32.0	10.6	1
3-Perfluoropropyl Propanoic Acid (3:3FTCA)	ND		ng/l	80.0	26.6	1
2H,2H,3H,3H-Perfluorooctanoic Acid (5:3FTCA)	ND		ng/l	400	134.	1
3-Perfluoroheptyl Propanoic Acid (7:3FTCA)	ND		ng/l	400	134.	1
PFAS, Total (6)	4970	J	ng/l	16.0	5.36	1

Project Name: NASB-HANGER 4 AFFF
Project Number: 83336

Lab Number: L2457341
Report Date: 10/22/24

SAMPLE RESULTS

Lab ID: L2457341-05
Client ID: SW-11-20241002
Sample Location: BRUNSWICK

Date Collected: 10/02/24 16:00
Date Received: 10/03/24
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 1633 - Mansfield Lab						
Surrogate	% Recovery			Qualifier	Acceptance Criteria	
Perfluoro-n-[13C4]Butanoic Acid (13C4-PFBA)	94				5-130	
Perfluoro-n-[13C5]Pentanoic Acid (13C5-PFPeA)	88				40-130	
Perfluoro-1-[2,3,4-13C3]Butanesulfonic Acid (13C3-PFBS)	98				40-135	
1H,1H,2H,2H-Perfluoro-1-[1,2-13C2]Hexanesulfonic Acid (13C2-4:2FTS)	91				40-200	
Perfluoro-n-[1,2,3,4,6-13C5]Hexanoic Acid (13C5-PFHxA)	95				40-130	
Perfluoro-n-[1,2,3,4-13C4]Heptanoic Acid (13C4-PFHpA)	99				40-130	
Perfluoro-1-[1,2,3-13C3]Hexanesulfonic Acid (13C3-PFHxS)	98				40-130	
Perfluoro-n-[13C8]Octanoic Acid (13C8-PFOA)	101				40-130	
1H,1H,2H,2H-Perfluoro-1-[1,2-13C2]Octanesulfonic Acid (13C2-6:2FTS)	91				40-200	
Perfluoro-n-[13C9]Nonanoic Acid (13C9-PFNA)	101				40-130	
Perfluoro-1-[13C8]Octanesulfonic Acid (13C8-PFOS)	90				40-130	
Perfluoro-n-[1,2,3,4,5,6-13C6]Decanoic Acid (13C6-PFDA)	89				40-130	
1H,1H,2H,2H-Perfluoro-1-[1,2-13C2]Decanesulfonic Acid (13C2-8:2FTS)	94				40-300	
N-Methyl-d3-perfluoro-1-octanesulfonamidoacetic Acid (D3-NMeFOSAA)	69				40-170	
Perfluoro-n-[1,2,3,4,5,6,7-13C7]Undecanoic Acid (13C7-PFUnA)	88				30-130	
Perfluoro-1-[13C8]Octanesulfonamide (13C8-PFOSA)	94				40-130	
N-Ethyl-d5-perfluoro-1-octanesulfonamidoacetic Acid (D5-NEtFOSAA)	75				25-135	
Perfluoro-n-[1,2-13C2]Dodecanoic Acid (13C2-PFDoA)	80				10-130	
Perfluoro-n-[1,2-13C2]Tetradecanoic Acid (13C2-PFTeDA)	76				10-130	
Tetrafluoro-2-heptafluoropropoxy-[13C3]-propanoic acid (13C3-HFPO-DA)	89				40-130	
N-Methyl-d3-Perfluoro-1-Octanesulfonamide (D3-NMeFOSA)	78				10-130	
N-Ethyl-d5-Perfluoro-1-Octanesulfonamide (D5-NEtFOSA)	73				10-130	
N-Methyl-d7-Perfluorooctanesulfonamidoethanol (D7-NMeFOSE)	71				10-130	
N-Ethyl-d9-Perfluorooctanesulfonamidoethanol (D9-NEtFOSE)	77				10-130	

Project Name: NASB-HANGER 4 AFFF
Project Number: 83336

Lab Number: L2457341
Report Date: 10/22/24

Method Blank Analysis Batch Quality Control

Analytical Method: 145,1633
Analytical Date: 10/18/24 13:39
Analyst: JW

Extraction Method: EPA 1633
Extraction Date: 10/17/24 19:30

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by EPA 1633 - Mansfield Lab for sample(s): 01-05 Batch: WG1985798-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	6.40	2.14
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	3.20	1.06
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.60	0.536
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	6.40	2.14
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.60	0.536
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.60	0.536
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.60	0.536
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.60	0.536
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.60	0.536
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	6.40	4.82
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.60	0.536
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.60	0.536
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.60	0.536
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.60	0.536
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	6.40	2.14
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.60	0.536
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.60	0.536
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.60	0.536
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.60	0.536
Perfluorooctanesulfonamide (PFOSA)	ND		ng/l	1.60	0.536
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.60	0.536
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.60	0.536
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.60	0.536
Perfluorotetradecanoic Acid (PFTeDA)	ND		ng/l	1.60	0.536
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		ng/l	6.40	2.14
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	6.40	2.14
Perfluorododecanesulfonic Acid (PFDoS)	ND		ng/l	1.60	0.536

Project Name: NASB-HANGER 4 AFFF
Project Number: 83336

Lab Number: L2457341
Report Date: 10/22/24

Method Blank Analysis Batch Quality Control

Analytical Method: 145,1633
Analytical Date: 10/18/24 13:39
Analyst: JW

Extraction Method: EPA 1633
Extraction Date: 10/17/24 19:30

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by EPA 1633 - Mansfield Lab for sample(s): 01-05 Batch: WG1985798-1					
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	6.40	2.14
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	6.40	2.14
N-Methyl Perfluorooctane Sulfonamide (NMeFOSA)	ND		ng/l	1.60	0.536
N-Ethyl Perfluorooctane Sulfonamide (NEtFOSA)	ND		ng/l	1.60	0.536
N-Methyl Perfluorooctanesulfonamido Ethanol (NMeFOSE)	ND		ng/l	16.0	5.36
N-Ethyl Perfluorooctanesulfonamido Ethanol (NEtFOSE)	ND		ng/l	16.0	5.36
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND		ng/l	3.20	1.06
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND		ng/l	3.20	1.06
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND		ng/l	3.20	1.06
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND		ng/l	3.20	1.06
3-Perfluoropropyl Propanoic Acid (3:3FTCA)	ND		ng/l	8.00	2.66
2H,2H,3H,3H-Perfluorooctanoic Acid (5:3FTCA)	ND		ng/l	40.0	13.4
3-Perfluoroheptyl Propanoic Acid (7:3FTCA)	ND		ng/l	40.0	13.4
PFAS, Total (6)	ND		ng/l	1.60	0.536

Project Name: NASB-HANGER 4 AFFF
Project Number: 83336

Lab Number: L2457341
Report Date: 10/22/24

Method Blank Analysis Batch Quality Control

Analytical Method: 145,1633
Analytical Date: 10/18/24 13:39
Analyst: JW

Extraction Method: EPA 1633
Extraction Date: 10/17/24 19:30

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by EPA 1633 - Mansfield Lab for sample(s): 01-05 Batch: WG1985798-1					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Perfluoro-n-[13C4]Butanoic Acid (13C4-PFBA)	75		5-130
Perfluoro-n-[13C5]Pentanoic Acid (13C5-PFPeA)	82		40-130
Perfluoro-1-[2,3,4-13C3]Butanesulfonic Acid (13C3-PFBS)	75		40-135
1H,1H,2H,2H-Perfluoro-1-[1,2-13C2]Hexanesulfonic Acid (13C2-4:2FTS)	77		40-200
Perfluoro-n-[1,2,3,4,6-13C5]Hexanoic Acid (13C5-PFHxA)	80		40-130
Perfluoro-n-[1,2,3,4-13C4]Heptanoic Acid (13C4-PFHpA)	84		40-130
Perfluoro-1-[1,2,3-13C3]Hexanesulfonic Acid (13C3-PFHxS)	74		40-130
Perfluoro-n-[13C8]Octanoic Acid (13C8-PFOA)	96		40-130
1H,1H,2H,2H-Perfluoro-1-[1,2-13C2]Octanesulfonic Acid (13C2-6:2FTS)	77		40-200
Perfluoro-n-[13C9]Nonanoic Acid (13C9-PFNA)	90		40-130
Perfluoro-1-[13C8]Octanesulfonic Acid (13C8-PFOS)	76		40-130
Perfluoro-n-[1,2,3,4,5,6-13C6]Decanoic Acid (13C6-PFDA)	78		40-130
1H,1H,2H,2H-Perfluoro-1-[1,2-13C2]Decanesulfonic Acid (13C2-8:2FTS)	70		40-300
N-Methyl-d3-perfluoro-1-octanesulfonamidoacetic Acid (D3-NMeFOSAA)	63		40-170
Perfluoro-n-[1,2,3,4,5,6,7-13C7]Undecanoic Acid (13C7-PFUnA)	80		30-130
Perfluoro-1-[13C8]Octanesulfonamide (13C8-PFOSA)	87		40-130
N-Ethyl-d5-perfluoro-1-octanesulfonamidoacetic Acid (D5-NEtFOSAA)	70		25-135
Perfluoro-n-[1,2-13C2]Dodecanoic Acid (13C2-PFDoA)	73		10-130
Perfluoro-n-[1,2-13C2]Tetradecanoic Acid (13C2-PFTeDA)	65		10-130
Tetrafluoro-2-heptafluoropropoxy-[13C3]-propanoic acid (13C3-HFPO-DA)	85		40-130
N-Methyl-d3-Perfluoro-1-Octanesulfonamide (D3-NMeFOSA)	64		10-130
N-Ethyl-d5-Perfluoro-1-Octanesulfonamide (D5-NEtFOSA)	62		10-130
N-Methyl-d7-Perfluorooctanesulfonamidoethanol (D7-NMeFOSE)	65		10-130
N-Ethyl-d9-Perfluorooctanesulfonamidoethanol (D9-NEtFOSE)	70		10-130

Lab Control Sample Analysis **Batch Quality Control**

Project Name: NASB-HANGER 4 AFFF

Lab Number: L2457341

Project Number: 83336

Report Date: 10/22/24

Parameter	Low Level LCS %Recovery	Qual	Low Level LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 1633 - Mansfield Lab Associated sample(s): 01-05 Batch: WG1985798-2 LOW LEVEL								
Perfluorobutanoic Acid (PFBA)	113		-		70-140	-		30
Perfluoropentanoic Acid (PFPeA)	112		-		65-135	-		30
Perfluorobutanesulfonic Acid (PFBS)	104		-		60-145	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	95		-		70-145	-		30
Perfluorohexanoic Acid (PFHxA)	114		-		70-145	-		30
Perfluoropentanesulfonic Acid (PFPeS)	102		-		65-140	-		30
Perfluoroheptanoic Acid (PFHpA)	114		-		70-150	-		30
Perfluorohexanesulfonic Acid (PFHxS)	99		-		65-145	-		30
Perfluorooctanoic Acid (PFOA)	102		-		70-150	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	103		-		65-155	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	102		-		70-150	-		30
Perfluorononanoic Acid (PFNA)	110		-		70-150	-		30
Perfluorooctanesulfonic Acid (PFOS)	105		-		55-150	-		30
Perfluorodecanoic Acid (PFDA)	104		-		70-140	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	108		-		60-150	-		30
Perfluorononanesulfonic Acid (PFNS)	104		-		65-145	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	104		-		50-140	-		30
Perfluoroundecanoic Acid (PFUnA)	100		-		70-145	-		30
Perfluorodecanesulfonic Acid (PFDS)	101		-		60-145	-		30
Perfluorooctanesulfonamide (PFOSA)	97		-		70-145	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	96		-		70-145	-		30
Perfluorododecanoic Acid (PFDoA)	108		-		70-140	-		30

Lab Control Sample Analysis **Batch Quality Control**

Project Name: NASB-HANGER 4 AFFF

Lab Number: L2457341

Project Number: 83336

Report Date: 10/22/24

Parameter	<i>Low Level</i> <i>LCS</i> <i>%Recovery</i>	<i>Qual</i>	<i>Low Level</i> <i>LCSD</i> <i>%Recovery</i>	<i>Qual</i>	<i>%Recovery</i> <i>Limits</i>	<i>RPD</i>	<i>Qual</i>	<i>RPD</i> <i>Limits</i>
Perfluorinated Alkyl Acids by EPA 1633 - Mansfield Lab Associated sample(s): 01-05 Batch: WG1985798-2 LOW LEVEL								
Perfluorotridecanoic Acid (PFTrDA)	118		-		65-140	-		30
Perfluorotetradecanoic Acid (PFTeDA)	118		-		60-140	-		30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	114		-		70-140	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	122		-		65-145	-		30
Perfluorododecanesulfonic Acid (PFDoS)	96		-		50-145	-		30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	122		-		70-155	-		30
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	110		-		55-160	-		30
N-Methyl Perfluorooctane Sulfonamide (NMeFOSA)	95		-		60-150	-		30
N-Ethyl Perfluorooctane Sulfonamide (NEtFOSA)	98		-		65-145	-		30
N-Methyl Perfluorooctanesulfonamido Ethanol (NMeFOSE)	99		-		70-145	-		30
N-Ethyl Perfluorooctanesulfonamido Ethanol (NEtFOSE)	103		-		70-135	-		30
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	103		-		55-140	-		30
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	110		-		60-150	-		30
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	122		-		70-140	-		30
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	118		-		50-150	-		30
3-Perfluoropropyl Propanoic Acid (3:3FTCA)	106		-		65-130	-		30
2H,2H,3H,3H-Perfluorooctanoic Acid (5:3FTCA)	121		-		70-135	-		30
3-Perfluoroheptyl Propanoic Acid (7:3FTCA)	74		-		50-145	-		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: NASB-HANGER 4 AFFF

Lab Number: L2457341

Project Number: 83336

Report Date: 10/22/24

Parameter	Low Level LCS %Recovery	Qual	Low Level LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 1633 - Mansfield Lab Associated sample(s): 01-05 Batch: WG1985798-2 LOW LEVEL								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro-n-[13C4]Butanoic Acid (13C4-PFBA)	95				5-130
Perfluoro-n-[13C5]Pentanoic Acid (13C5-PFPeA)	94				40-130
Perfluoro-1-[2,3,4-13C3]Butanesulfonic Acid (13C3-PFBS)	108				40-135
1H,1H,2H,2H-Perfluoro-1-[1,2-13C2]Hexanesulfonic Acid (13C2-4:2FTS)	103				40-200
Perfluoro-n-[1,2,3,4,6-13C5]Hexanoic Acid (13C5-PFHxA)	91				40-130
Perfluoro-n-[1,2,3,4-13C4]Heptanoic Acid (13C4-PFHpA)	92				40-130
Perfluoro-1-[1,2,3-13C3]Hexanesulfonic Acid (13C3-PFHxS)	103				40-130
Perfluoro-n-[13C8]Octanoic Acid (13C8-PFOA)	114				40-130
1H,1H,2H,2H-Perfluoro-1-[1,2-13C2]Octanesulfonic Acid (13C2-6:2FTS)	96				40-200
Perfluoro-n-[13C9]Nonanoic Acid (13C9-PFNA)	108				40-130
Perfluoro-1-[13C8]Octanesulfonic Acid (13C8-PFOS)	100				40-130
Perfluoro-n-[1,2,3,4,5,6-13C6]Decanoic Acid (13C6-PFDA)	98				40-130
1H,1H,2H,2H-Perfluoro-1-[1,2-13C2]Decanesulfonic Acid (13C2-8:2FTS)	91				40-300
N-Methyl-d3-perfluoro-1-octanesulfonamidoacetic Acid (D3-NMeFOSAA)	80				40-170
Perfluoro-n-[1,2,3,4,5,6,7-13C7]Undecanoic Acid (13C7-PFUnA)	98				30-130
Perfluoro-1-[13C8]Octanesulfonamide (13C8-PFOSA)	99				40-130
N-Ethyl-d5-perfluoro-1-octanesulfonamidoacetic Acid (D5-NEtFOSAA)	88				25-135
Perfluoro-n-[1,2-13C2]Dodecanoic Acid (13C2-PFDoA)	86				10-130
Perfluoro-n-[1,2-13C2]Tetradecanoic Acid (13C2-PFTeDA)	75				10-130
Tetrafluoro-2-heptafluoropropoxy-[13C3]-propanoic acid (13C3-HFPO-DA)	89				40-130
N-Methyl-d3-Perfluoro-1-Octanesulfonamide (D3-NMeFOSA)	74				10-130
N-Ethyl-d5-Perfluoro-1-Octanesulfonamide (D5-NEtFOSA)	76				10-130
N-Methyl-d7-Perfluorooctanesulfonamidoethanol (D7-NMeFOSE)	75				10-130
N-Ethyl-d9-Perfluorooctanesulfonamidoethanol (D9-NEtFOSE)	82				10-130

Lab Control Sample Analysis **Batch Quality Control**

Project Name: NASB-HANGER 4 AFFF

Lab Number: L2457341

Project Number: 83336

Report Date: 10/22/24

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 1633 - Mansfield Lab Associated sample(s): 01-05 Batch: WG1985798-3								
Perfluorobutanoic Acid (PFBA)	124		-		70-140	-		30
Perfluoropentanoic Acid (PFPeA)	119		-		65-135	-		30
Perfluorobutanesulfonic Acid (PFBS)	117		-		60-145	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	101		-		70-145	-		30
Perfluorohexanoic Acid (PFHxA)	129		-		70-145	-		30
Perfluoropentanesulfonic Acid (PFPeS)	126		-		65-140	-		30
Perfluoroheptanoic Acid (PFHpA)	115		-		70-150	-		30
Perfluorohexanesulfonic Acid (PFHxS)	120		-		65-145	-		30
Perfluorooctanoic Acid (PFOA)	109		-		70-150	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	117		-		65-155	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	119		-		70-150	-		30
Perfluorononanoic Acid (PFNA)	114		-		70-150	-		30
Perfluorooctanesulfonic Acid (PFOS)	103		-		55-150	-		30
Perfluorodecanoic Acid (PFDA)	116		-		70-140	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	112		-		60-150	-		30
Perfluorononanesulfonic Acid (PFNS)	111		-		65-145	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	106		-		50-140	-		30
Perfluoroundecanoic Acid (PFUnA)	123		-		70-145	-		30
Perfluorodecanesulfonic Acid (PFDS)	106		-		60-145	-		30
Perfluorooctanesulfonamide (PFOSA)	109		-		70-145	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	104		-		70-145	-		30
Perfluorododecanoic Acid (PFDoA)	121		-		70-140	-		30

Lab Control Sample Analysis **Batch Quality Control**

Project Name: NASB-HANGER 4 AFFF

Project Number: 83336

Lab Number: L2457341

Report Date: 10/22/24

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 1633 - Mansfield Lab Associated sample(s): 01-05 Batch: WG1985798-3								
Perfluorotridecanoic Acid (PFTrDA)	119		-		65-140	-		30
Perfluorotetradecanoic Acid (PFTeDA)	121		-		60-140	-		30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	120		-		70-140	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	142		-		65-145	-		30
Perfluorododecanesulfonic Acid (PFDoS)	107		-		50-145	-		30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	125		-		70-155	-		30
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	117		-		55-160	-		30
N-Methyl Perfluorooctane Sulfonamide (NMeFOSA)	106		-		60-150	-		30
N-Ethyl Perfluorooctane Sulfonamide (NEtFOSA)	107		-		65-145	-		30
N-Methyl Perfluorooctanesulfonamido Ethanol (NMeFOSE)	107		-		70-145	-		30
N-Ethyl Perfluorooctanesulfonamido Ethanol (NEtFOSE)	111		-		70-135	-		30
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	117		-		55-140	-		30
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	114		-		60-150	-		30
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	126		-		70-140	-		30
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	140		-		50-150	-		30
3-Perfluoropropyl Propanoic Acid (3:3FTCA)	110		-		65-130	-		30
2H,2H,3H,3H-Perfluorooctanoic Acid (5:3FTCA)	120		-		70-135	-		30
3-Perfluoroheptyl Propanoic Acid (7:3FTCA)	83		-		50-145	-		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: NASB-HANGER 4 AFFF

Lab Number: L2457341

Project Number: 83336

Report Date: 10/22/24

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
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Perfluorinated Alkyl Acids by EPA 1633 - Mansfield Lab Associated sample(s): 01-05 Batch: WG1985798-3

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro-n-[13C4]Butanoic Acid (13C4-PFBA)	97				5-130
Perfluoro-n-[13C5]Pentanoic Acid (13C5-PFPeA)	111				40-130
Perfluoro-1-[2,3,4-13C3]Butanesulfonic Acid (13C3-PFBS)	107				40-135
1H,1H,2H,2H-Perfluoro-1-[1,2-13C2]Hexanesulfonic Acid (13C2-4:2FTS)	101				40-200
Perfluoro-n-[1,2,3,4,6-13C5]Hexanoic Acid (13C5-PFHxA)	108				40-130
Perfluoro-n-[1,2,3,4-13C4]Heptanoic Acid (13C4-PFHpA)	107				40-130
Perfluoro-1-[1,2,3-13C3]Hexanesulfonic Acid (13C3-PFHxS)	94				40-130
Perfluoro-n-[13C8]Octanoic Acid (13C8-PFOA)	120				40-130
1H,1H,2H,2H-Perfluoro-1-[1,2-13C2]Octanesulfonic Acid (13C2-6:2FTS)	101				40-200
Perfluoro-n-[13C9]Nonanoic Acid (13C9-PFNA)	117				40-130
Perfluoro-1-[13C8]Octanesulfonic Acid (13C8-PFOS)	105				40-130
Perfluoro-n-[1,2,3,4,5,6-13C6]Decanoic Acid (13C6-PFDA)	104				40-130
1H,1H,2H,2H-Perfluoro-1-[1,2-13C2]Decanesulfonic Acid (13C2-8:2FTS)	90				40-300
N-Methyl-d3-perfluoro-1-octanesulfonamidoacetic Acid (D3-NMeFOSAA)	86				40-170
Perfluoro-n-[1,2,3,4,5,6,7-13C7]Undecanoic Acid (13C7-PFUnA)	96				30-130
Perfluoro-1-[13C8]Octanesulfonamide (13C8-PFOSA)	101				40-130
N-Ethyl-d5-perfluoro-1-octanesulfonamidoacetic Acid (D5-NEtFOSAA)	91				25-135
Perfluoro-n-[1,2-13C2]Dodecanoic Acid (13C2-PFDoA)	90				10-130
Perfluoro-n-[1,2-13C2]Tetradecanoic Acid (13C2-PFTeDA)	84				10-130
Tetrafluoro-2-heptafluoropropoxy-[13C3]-propanoic acid (13C3-HFPO-DA)	112				40-130
N-Methyl-d3-Perfluoro-1-Octanesulfonamide (D3-NMeFOSA)	85				10-130
N-Ethyl-d5-Perfluoro-1-Octanesulfonamide (D5-NEtFOSA)	88				10-130
N-Methyl-d7-Perfluorooctanesulfonamidoethanol (D7-NMeFOSE)	83				10-130
N-Ethyl-d9-Perfluorooctanesulfonamidoethanol (D9-NEtFOSE)	88				10-130

Matrix Spike Analysis

Batch Quality Control

Project Name: NASB-HANGER 4 AFFF
Project Number: 83336

Lab Number: L2457341
Report Date: 10/22/24

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 1633 - Mansfield Lab Associated sample(s): 01-05 QC Batch ID: WG1985798-4 WG1985798-5 QC Sample: L2457341-01 Client ID: SW-66-20241002												
Perfluorobutanoic Acid (PFBA)	4.26J	96.1	125	126		108	121		70-140	15		30
Perfluoropentanoic Acid (PFPeA)	17.9	48	77.4	124		69.5	120		65-135	11		30
Perfluorobutanesulfonic Acid (PFBS)	8.52	21.3	35.2	125		29.7	111		60-145	17		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	90.1	107	119		92.3	115		70-145	15		30
Perfluorohexanoic Acid (PFHxA)	22.3	24	51.0	119		43.2	97		70-145	17		30
Perfluoropentanesulfonic Acid (PFPeS)	7.39	22.6	34.5	120		34.8	136		65-140	1		30
Perfluoroheptanoic Acid (PFHpA)	7.58	24	33.7	109		31.1	109		70-150	8		30
Perfluorohexanesulfonic Acid (PFHxS)	30.9	22	55.2	110		53.8	116		65-145	3		30
Perfluorooctanoic Acid (PFOA)	11.8	24	38.8	112		33.7	102		70-150	14		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	50.4	91.4	144	102		142	112		65-155	1		30
Perfluoroheptanesulfonic Acid (PFHpS)	3.89	22.9	37.7	148		31.0	132		70-150	20		30
Perfluorononanoic Acid (PFNA)	0.668J	24	31.1	127		27.7	126		70-150	12		30
Perfluorooctanesulfonic Acid (PFOS)	221	22.3	250	130		240	95		55-150	4		30
Perfluorodecanoic Acid (PFDA)	ND	24	29.7	124		28.0	130		70-140	6		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	92.3	104	113		103	125		60-150	1		30
Perfluorononanesulfonic Acid (PFNS)	ND	23.2	25.9	112		25.3	122		65-145	2		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	24	28.6	119		24.0	112		50-140	17		30
Perfluoroundecanoic Acid (PFUnA)	ND	24	27.5	114		27.8	129		70-145	1		30
Perfluorodecanesulfonic Acid (PFDS)	ND	23.2	25.8	111		24.1	116		60-145	7		30
Perfluorooctanesulfonamide (PFOSA)	ND	24	27.8	116		27.7	129		70-145	0		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	24	26.9	112		29.6	138		70-145	10		30
Perfluorododecanoic Acid (PFDoA)	ND	24	31.1	129		27.2	127		70-140	13		30

Matrix Spike Analysis

Batch Quality Control

Project Name: NASB-HANGER 4 AFFF
Project Number: 83336

Lab Number: L2457341
Report Date: 10/22/24

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 1633 - Mansfield Lab Associated sample(s): 01-05 QC Batch ID: WG1985798-4 WG1985798-5 QC Sample: L2457341-01 Client ID: SW-66-20241002												
Perfluorotridecanoic Acid (PFTrDA)	ND	24	30.2	126		26.2	122		65-140	14		30
Perfluorotetradecanoic Acid (PFTeDA)	ND	24	32.0	133		29.3	136		60-140	9		30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND	96.1	115	120		108	126		70-140	6		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	90.8	172	189	Q	118	145		65-145	37	Q	30
Perfluorododecanesulfonic Acid (PFDoS)	ND	23.4	26.6	114		24.2	116		50-145	9		30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND	89.7	117	130		109	136		70-155	7		30
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND	90.6	106	117		99.4	123		55-160	6		30
N-Methyl Perfluorooctane Sulfonamide (NMeFOSA)	ND	24	28.1	117		26.6	124		60-150	5		30
N-Ethyl Perfluorooctane Sulfonamide (NEtFOSA)	ND	24	29.1	121		26.8	125		65-145	8		30
N-Methyl Perfluorooctanesulfonamido Ethanol (NMeFOSE)	ND	240	281	117		266	124		70-145	5		30
N-Ethyl Perfluorooctanesulfonamido Ethanol (NEtFOSE)	ND	240	290	121		271	126		70-135	7		30
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND	48	61.0	127		51.5	120		55-140	17		30
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND	48	61.8	129		54.0	126		60-150	13		30
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND	42.9	53.8	126		46.4	121		70-140	15		30
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND	48	63.0	131		53.0	123		50-150	17		30
3-Perfluoropropyl Propanoic Acid (3:3FTCA)	ND	120	148	123		137	127		65-130	8		30
2H,2H,3H,3H-Perfluorooctanoic Acid (5:3FTCA)	ND	601	753	125		657	122		70-135	14		30
3-Perfluoroheptyl Propanoic Acid (7:3FTCA)	ND	601	678	113		665	124		50-145	2		30

Matrix Spike Analysis

Batch Quality Control

Project Name: NASB-HANGER 4 AFFF
Project Number: 83336

Lab Number: L2457341
Report Date: 10/22/24

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 1633 - Mansfield Lab Associated sample(s): 01-05 QC Batch ID: WG1985798-4 WG1985798-5 QC Sample: L2457341-01 Client ID: SW-66-20241002												

Surrogate	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro-1-[1,2-13C2]Decanesulfonic Acid (13C2-8:2FTS)	79		75		40-300
1H,1H,2H,2H-Perfluoro-1-[1,2-13C2]Hexanesulfonic Acid (13C2-4:2FTS)	97		90		40-200
1H,1H,2H,2H-Perfluoro-1-[1,2-13C2]Octanesulfonic Acid (13C2-6:2FTS)	97		92		40-200
N-Ethyl-d5-Perfluoro-1-Octanesulfonamide (D5-NEtFOSA)	59		74		10-130
N-Ethyl-d5-perfluoro-1-octanesulfonamidoacetic Acid (D5-NEtFOSAA)	57		64		25-135
N-Ethyl-d9-Perfluorooctanesulfonamidoethanol (D9-NEtFOSE)	50		61		10-130
N-Methyl-d3-Perfluoro-1-Octanesulfonamide (D3-NMeFOSA)	60		71		10-130
N-Methyl-d3-perfluoro-1-octanesulfonamidoacetic Acid (D3-NMeFOSAA)	61		74		40-170
N-Methyl-d7-Perfluorooctanesulfonamidoethanol (D7-NMeFOSE)	48		57		10-130
Perfluoro-1-[1,2,3-13C3]Hexanesulfonic Acid (13C3-PFHxS)	98		88		40-130
Perfluoro-1-[13C8]Octanesulfonamide (13C8-PFOSA)	66		77		40-130
Perfluoro-1-[13C8]Octanesulfonic Acid (13C8-PFOS)	66		79		40-130
Perfluoro-1-[2,3,4-13C3]Butanesulfonic Acid (13C3-PFBS)	94		91		40-135
Perfluoro-n-[1,2,3,4,5,6,7-13C7]Undecanoic Acid (13C7-PFUnA)	69		77		30-130
Perfluoro-n-[1,2,3,4,5,6-13C6]Decanoic Acid (13C6-PFDA)	65		74		40-130
Perfluoro-n-[1,2,3,4,6-13C5]Hexanoic Acid (13C5-PFHxA)	97		102		40-130
Perfluoro-n-[1,2,3,4-13C4]Heptanoic Acid (13C4-PFHpA)	94		97		40-130
Perfluoro-n-[1,2-13C2]Dodecanoic Acid (13C2-PFDoA)	57		71		10-130
Perfluoro-n-[1,2-13C2]Tetradecanoic Acid (13C2-PFTeDA)	51		57		10-130
Perfluoro-n-[13C4]Butanoic Acid (13C4-PFBA)	83		91		5-130
Perfluoro-n-[13C5]Pentanoic Acid (13C5-PFPeA)	87		89		40-130
Perfluoro-n-[13C8]Octanoic Acid (13C8-PFOA)	92		105		40-130
Perfluoro-n-[13C9]Nonanoic Acid (13C9-PFNA)	83		86		40-130

Matrix Spike Analysis
Batch Quality Control

Project Name: NASB-HANGER 4 AFFF
Project Number: 83336

Lab Number: L2457341
Report Date: 10/22/24

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 1633 - Mansfield Lab Associated sample(s): 01-05 QC Batch ID: WG1985798-4 WG1985798-5 QC Sample: L2457341-01 Client ID: SW-66-20241002												

Surrogate	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
Tetrafluoro-2-heptafluoropropoxy-[13C3]-propanoic acid (13C3-HFPO-DA)	98		98		40-130



Project Name: NASB-HANGER 4 AFFF
Project Number: 83336

Serial_No:10222410:17
Lab Number: L2457341
Report Date: 10/22/24

Sample Receipt and Container Information

Were project specific reporting limits specified?

YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2457341-01A	Plastic 500ml unpreserved	A	NA		3.2	Y	Absent		A2-ME-1633+(28)
L2457341-01B	Plastic 500ml unpreserved	A	NA		3.2	Y	Absent		A2-ME-1633+(28)
L2457341-01C	Plastic 500ml unpreserved	A	NA		3.2	Y	Absent		A2-ME-1633+(28)
L2457341-02A	Plastic 500ml unpreserved	A	NA		3.2	Y	Absent		A2-ME-1633+(28)
L2457341-02B	Plastic 500ml unpreserved	A	NA		3.2	Y	Absent		A2-ME-1633+(28)
L2457341-02C	Plastic 500ml unpreserved	A	NA		3.2	Y	Absent		A2-ME-1633+(28)
L2457341-03A	Plastic 500ml unpreserved	A	NA		3.2	Y	Absent		A2-ME-1633+(28)
L2457341-03B	Plastic 500ml unpreserved	A	NA		3.2	Y	Absent		A2-ME-1633+(28)
L2457341-03C	Plastic 500ml unpreserved	A	NA		3.2	Y	Absent		A2-ME-1633+(28)
L2457341-04A	Plastic 500ml unpreserved	A	NA		3.2	Y	Absent		A2-ME-1633+(28)
L2457341-04B	Plastic 500ml unpreserved	A	NA		3.2	Y	Absent		A2-ME-1633+(28)
L2457341-04C	Plastic 500ml unpreserved	A	NA		3.2	Y	Absent		A2-ME-1633+(28)
L2457341-05A	Plastic 500ml unpreserved	A	NA		3.2	Y	Absent		A2-ME-1633+(28)
L2457341-05B	Plastic 500ml unpreserved	A	NA		3.2	Y	Absent		A2-ME-1633+(28)
L2457341-05C	Plastic 500ml unpreserved	A	NA		3.2	Y	Absent		A2-ME-1633+(28)

Project Name: NASB-HANGER 4 AFFF
Project Number: 83336

Serial_No:10222410:17
Lab Number: L2457341
Report Date: 10/22/24

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
PERFLUOROALKYL CARBOXYLIC ACIDS (PFCAs)		
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
PERFLUOROALKYL SULFONIC ACIDS (PFSAs)		
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
FLUOROTELOMERS		
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
PERFLUOROALKANE SULFONAMIDES (FASAs)		
Perfluorooctanesulfonamide	FOSA/PFOSA	754-91-6
N-Ethyl Perfluorooctane Sulfonamide	NEtFOSA	4151-50-2
N-Methyl Perfluorooctane Sulfonamide	NMeFOSA	31506-32-8
PERFLUOROALKANE SULFONYL SUBSTANCES		
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
PER- and POLYFLUOROALKYL ETHER CARBOXYLIC ACIDS		
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
CHLORO-PERFLUOROALKYL SULFONIC ACIDS		
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid	11Cl-PF3OUdS	763051-92-9
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid	9Cl-PF3ONS	756426-58-1
PERFLUOROETHER SULFONIC ACIDS (PFESAs)		
Perfluoro(2-Ethoxyethane)Sulfonic Acid	PFEESA	113507-82-7
PERFLUOROETHER/POLYETHER CARBOXYLIC ACIDS (PFPCAs)		
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: NASB-HANGER 4 AFFF
Project Number: 83336

Serial_No:10222410:17
Lab Number: L2457341
Report Date: 10/22/24

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: NASB-HANGER 4 AFFF
Project Number: 83336

Lab Number: L2457341
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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.

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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

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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.)

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REFERENCES

- 145 Analysis of Per- and Polyfluoroalkyl Substances (PFAS) in Aqueous, Solid, Biosolids, and Tissue Samples by LC-MS/MS. EPA Method 1633, EPA 821-R-24-001, January 2024.

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, NO₂, NO₃.

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, SM4500CI-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.

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