

Definitions/Glossary

Client: NDNG-ENV

Job ID: 410-67223-1

Project/Site: PFOA Testing Edgeley, ND Armory

Qualifiers

LCMS

Qualifier	Qualifier Description
cn	Refer to Case Narrative for further detail
M	Manual integrated compound.
U	Undetected at the Limit of Detection.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
1C	Result is from the primary column on a dual-column method.
2C	Result is from the confirmation column on a dual-column method.
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Client Sample Results

Client: NDNG-ENV
 Project/Site: PFOA Testing Edgeley, ND Armory

Job ID: 410-67223-1

Client Sample ID: Trip Blank

Lab Sample ID: 410-67223-1

Date Collected: 12/15/21 09:30

Matrix: Drinking Water

Date Received: 12/16/21 11:42

Method: EPA 537.1 - EPA 537.1, Ver 1.0 Nov 2018

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorohexanoic acid	1.4	U cn	1.9	1.4	0.46	ng/L		12/28/21 20:41	1
Perfluoroheptanoic acid	1.4	U cn	1.9	1.4	0.46	ng/L		12/28/21 20:41	1
Perfluorooctanoic acid	1.4	U cn	1.9	1.4	0.46	ng/L		12/28/21 20:41	1
Perfluorononanoic acid	1.4	U cn	1.9	1.4	0.46	ng/L		12/28/21 20:41	1
Perfluorodecanoic acid	1.4	U cn	1.9	1.4	0.46	ng/L		12/28/21 20:41	1
Perfluorotridecanoic acid	1.4	U cn	1.9	1.4	0.46	ng/L		12/28/21 20:41	1
Perfluorotetradecanoic acid	1.4	U cn	1.9	1.4	0.46	ng/L		12/28/21 20:41	1
Perfluorobutanesulfonic acid	1.4	U cn	1.9	1.4	0.46	ng/L		12/28/21 20:41	1
Perfluorohexanesulfonic acid	1.4	U cn	1.9	1.4	0.46	ng/L		12/28/21 20:41	1
Perfluorooctanesulfonic acid	1.4	U cn	1.9	1.4	0.46	ng/L		12/28/21 20:41	1
NEtFOSAA	1.4	U cn	1.9	1.4	0.46	ng/L		12/28/21 20:41	1
NMeFOSAA	1.4	U cn	1.9	1.4	0.46	ng/L		12/28/21 20:41	1
Perfluoroundecanoic acid	1.4	U cn	1.9	1.4	0.46	ng/L		12/28/21 20:41	1
Perfluorododecanoic acid	1.4	U cn	1.9	1.4	0.46	ng/L		12/28/21 20:41	1
HFPODA	1.4	U cn	1.9	1.4	0.46	ng/L		12/28/21 20:41	1
9Cl-PF3ONS	1.4	U cn	1.9	1.4	0.46	ng/L		12/28/21 20:41	1
11Cl-PF3OUdS	1.4	U cn	1.9	1.4	0.46	ng/L		12/28/21 20:41	1
DONA	1.4	U cn	1.9	1.4	0.46	ng/L		12/28/21 20:41	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFDA	101	cn	70 - 130	12/22/21 17:56	12/28/21 20:41	1
13C2 PFHxA	94	cn	70 - 130	12/22/21 17:56	12/28/21 20:41	1
13C3 HFPO-DA	94	cn	70 - 130	12/22/21 17:56	12/28/21 20:41	1
d5-NEtFOSAA	86	cn	70 - 130	12/22/21 17:56	12/28/21 20:41	1

Client Sample ID: Room 116 - Cold Water

Lab Sample ID: 410-67223-2

Date Collected: 12/15/21 09:30

Matrix: Drinking Water

Date Received: 12/16/21 11:42

Method: EPA 537.1 - EPA 537.1, Ver 1.0 Nov 2018

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorohexanoic acid	1.3	U cn	1.8	1.3	0.44	ng/L		12/29/21 13:47	1
Perfluoroheptanoic acid	1.3	U cn	1.8	1.3	0.44	ng/L		12/29/21 13:47	1
Perfluorooctanoic acid	1.3	U cn	1.8	1.3	0.44	ng/L		12/29/21 13:47	1
Perfluorononanoic acid	1.3	U cn	1.8	1.3	0.44	ng/L		12/29/21 13:47	1
Perfluorodecanoic acid	1.3	U cn	1.8	1.3	0.44	ng/L		12/29/21 13:47	1
Perfluorotridecanoic acid	1.3	U cn	1.8	1.3	0.44	ng/L		12/29/21 13:47	1
Perfluorotetradecanoic acid	1.3	U cn	1.8	1.3	0.44	ng/L		12/29/21 13:47	1
Perfluorobutanesulfonic acid	1.3	U cn	1.8	1.3	0.44	ng/L		12/29/21 13:47	1
Perfluorohexanesulfonic acid	1.3	U cn	1.8	1.3	0.44	ng/L		12/29/21 13:47	1
Perfluorooctanesulfonic acid	1.3	U cn	1.8	1.3	0.44	ng/L		12/29/21 13:47	1
NEtFOSAA	1.3	U cn	1.8	1.3	0.44	ng/L		12/29/21 13:47	1
NMeFOSAA	1.3	U cn	1.8	1.3	0.44	ng/L		12/29/21 13:47	1
Perfluoroundecanoic acid	1.3	U cn	1.8	1.3	0.44	ng/L		12/29/21 13:47	1
Perfluorododecanoic acid	1.3	U cn	1.8	1.3	0.44	ng/L		12/29/21 13:47	1
HFPODA	1.3	U cn	1.8	1.3	0.44	ng/L		12/29/21 13:47	1
9Cl-PF3ONS	1.3	U cn	1.8	1.3	0.44	ng/L		12/29/21 13:47	1
11Cl-PF3OUdS	1.3	U cn	1.8	1.3	0.44	ng/L		12/29/21 13:47	1
DONA	1.3	U cn	1.8	1.3	0.44	ng/L		12/29/21 13:47	1

Client Sample Results

Client: NDNG-ENV
Project/Site: PFOA Testing Edgeley, ND Armory

Job ID: 410-67223-1

Client Sample ID: Room 116 - Cold Water

Lab Sample ID: 410-67223-2

Date Collected: 12/15/21 09:30

Matrix: Drinking Water

Date Received: 12/16/21 11:42

<u>Surrogate</u>	<u>%Recovery</u>	<u>Qualifier</u>	<u>Limits</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>Dil Fac</u>
13C2 PFDA	82	cn	70 - 130	12/22/21 17:56	12/29/21 13:47	1
13C2 PFHxA	89	cn	70 - 130	12/22/21 17:56	12/29/21 13:47	1
13C3 HFPO-DA	105	cn	70 - 130	12/22/21 17:56	12/29/21 13:47	1
d5-NEtFOSAA	82	cn	70 - 130	12/22/21 17:56	12/29/21 13:47	1

Surrogate Summary

Client: NDNG-ENV
 Project/Site: PFOA Testing Edgeley, ND Armory

Job ID: 410-67223-1

Method: EPA 537.1 - EPA 537.1, Ver 1.0 Nov 2018

Matrix: Drinking Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)			
		PFDA (70-130)	PFHxA (70-130)	HFPODA (70-130)	d5NEFOS (70-130)
410-67223-1	Trip Blank	101 cn	94 cn	94 cn	86 cn
410-67223-2	Room 116 - Cold Water	82 cn	89 cn	105 cn	82 cn
LCS 410-208719/2-A	Lab Control Sample	82	88	102	81
LCSD 410-208719/3-A	Lab Control Sample Dup	86	90	89	92
MB 410-208719/1-A	Method Blank	83	76	81	77

Surrogate Legend

- PFDA = 13C2 PFDA
- PFHxA = 13C2 PFHxA
- HFPODA = 13C3 HFPO-DA
- d5NEFOS = d5-NEtFOSAA



QC Sample Results

Client: NDNG-ENV
 Project/Site: PFOA Testing Edgeley, ND Armory

Job ID: 410-67223-1

Method: EPA 537.1 - EPA 537.1, Ver 1.0 Nov 2018

Lab Sample ID: MB 410-208719/1-A
Matrix: Drinking Water
Analysis Batch: 209675

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 208719

Analyte	MB MB		LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorohexanoic acid	1.5	U	2.0	1.5	0.50	ng/L		12/28/21 18:11	1
Perfluoroheptanoic acid	1.5	U	2.0	1.5	0.50	ng/L		12/28/21 18:11	1
Perfluorooctanoic acid	1.5	U	2.0	1.5	0.50	ng/L		12/28/21 18:11	1
Perfluorononanoic acid	1.5	U	2.0	1.5	0.50	ng/L		12/28/21 18:11	1
Perfluorodecanoic acid	1.5	U	2.0	1.5	0.50	ng/L		12/28/21 18:11	1
Perfluorotridecanoic acid	1.5	U	2.0	1.5	0.50	ng/L		12/28/21 18:11	1
Perfluorotetradecanoic acid	1.5	U	2.0	1.5	0.50	ng/L		12/28/21 18:11	1
Perfluorobutanesulfonic acid	1.5	U	2.0	1.5	0.50	ng/L		12/28/21 18:11	1
Perfluorohexanesulfonic acid	1.5	U	2.0	1.5	0.50	ng/L		12/28/21 18:11	1
Perfluorooctanesulfonic acid	1.5	U	2.0	1.5	0.50	ng/L		12/28/21 18:11	1
NEtFOSAA	1.5	U	2.0	1.5	0.50	ng/L		12/28/21 18:11	1
NMeFOSAA	1.5	U	2.0	1.5	0.50	ng/L		12/28/21 18:11	1
Perfluoroundecanoic acid	1.5	U	2.0	1.5	0.50	ng/L		12/28/21 18:11	1
Perfluorododecanoic acid	1.5	U	2.0	1.5	0.50	ng/L		12/28/21 18:11	1
HFPODA	1.5	U	2.0	1.5	0.50	ng/L		12/28/21 18:11	1
9CI-PF3ONS	1.5	U	2.0	1.5	0.50	ng/L		12/28/21 18:11	1
11CI-PF3OUdS	1.5	U	2.0	1.5	0.50	ng/L		12/28/21 18:11	1
DONA	1.5	U	2.0	1.5	0.50	ng/L		12/28/21 18:11	1

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C2 PFDA	83		70 - 130	12/22/21 17:56	12/28/21 18:11	1
13C2 PFHxA	76		70 - 130	12/22/21 17:56	12/28/21 18:11	1
13C3 HFPO-DA	81		70 - 130	12/22/21 17:56	12/28/21 18:11	1
d5-NEtFOSAA	77		70 - 130	12/22/21 17:56	12/28/21 18:11	1

Lab Sample ID: LCS 410-208719/2-A
Matrix: Drinking Water
Analysis Batch: 210448

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 208719

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluoroheptanoic acid	80.0	62.4		ng/L		78	70 - 130
Perfluorooctanoic acid	80.0	66.3		ng/L		83	70 - 130
Perfluorononanoic acid	80.0	62.1		ng/L		78	70 - 130
Perfluorodecanoic acid	80.0	60.5		ng/L		76	70 - 130
Perfluorotridecanoic acid	80.0	60.7		ng/L		76	70 - 130
Perfluorotetradecanoic acid	80.0	61.8		ng/L		77	70 - 130
Perfluorobutanesulfonic acid	70.8	61.4		ng/L		87	70 - 130
Perfluorohexanesulfonic acid	73.0	63.3	M	ng/L		87	70 - 130
Perfluorooctanesulfonic acid	74.0	59.5	M	ng/L		80	70 - 130
NEtFOSAA	80.0	61.6		ng/L		77	70 - 130
NMeFOSAA	80.0	61.9		ng/L		77	70 - 130
Perfluoroundecanoic acid	80.0	60.8		ng/L		76	70 - 130
Perfluorododecanoic acid	80.0	60.4		ng/L		75	70 - 130
HFPODA	80.0	72.2		ng/L		90	70 - 130
9CI-PF3ONS	74.4	62.7		ng/L		84	70 - 130
11CI-PF3OUdS	74.4	58.7		ng/L		79	70 - 130
DONA	75.6	60.3		ng/L		80	70 - 130

QC Sample Results

Client: NDNG-ENV
Project/Site: PFOA Testing Edgeley, ND Armory

Job ID: 410-67223-1

Method: EPA 537.1 - EPA 537.1, Ver 1.0 Nov 2018 (Continued)

Lab Sample ID: LCS 410-208719/2-A

Matrix: Drinking Water

Analysis Batch: 210448

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 208719

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
13C2 PFDA	82		70 - 130
13C2 PFHxA	88		70 - 130
13C3 HFPO-DA	102		70 - 130
d5-NEtFOSAA	81		70 - 130

Lab Sample ID: LCSD 410-208719/3-A

Matrix: Drinking Water

Analysis Batch: 209675

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 208719

Analyte	Spike Added	LCSD LCSD		Unit	D	%Rec	%Rec.		RPD	
		Result	Qualifier				Limits	RPD	Limit	
Perfluorohexanoic acid	80.0	63.6		ng/L		79	70 - 130	2	30	
Perfluoroheptanoic acid	80.0	68.1		ng/L		85	70 - 130	9	30	
Perfluorooctanoic acid	80.0	66.8		ng/L		83	70 - 130	1	30	
Perfluorononanoic acid	80.0	70.6		ng/L		88	70 - 130	13	30	
Perfluorodecanoic acid	80.0	68.0		ng/L		85	70 - 130	12	30	
Perfluorotridecanoic acid	80.0	63.4		ng/L		79	70 - 130	4	30	
Perfluorotetradecanoic acid	80.0	66.1		ng/L		83	70 - 130	7	30	
Perfluorobutanesulfonic acid	70.8	50.2		ng/L		71	70 - 130	20	30	
Perfluorohexanesulfonic acid	73.0	67.5	M	ng/L		93	70 - 130	7	30	
Perfluorooctanesulfonic acid	74.0	61.6	M	ng/L		83	70 - 130	3	30	
NEtFOSAA	80.0	60.9		ng/L		76	70 - 130	1	30	
NMeFOSAA	80.0	65.7		ng/L		82	70 - 130	6	30	
Perfluoroundecanoic acid	80.0	76.0		ng/L		95	70 - 130	22	30	
Perfluorododecanoic acid	80.0	64.7		ng/L		81	70 - 130	7	30	
HFPODA	80.0	64.5		ng/L		81	70 - 130	11	30	
9Cl-PF3ONS	74.4	58.2		ng/L		78	70 - 130	7	30	
11Cl-PF3OUdS	74.4	60.3		ng/L		81	70 - 130	3	30	
DONA	75.6	69.6		ng/L		92	70 - 130	14	30	

Surrogate	LCSD LCSD		Limits
	%Recovery	Qualifier	
13C2 PFDA	86		70 - 130
13C2 PFHxA	90		70 - 130
13C3 HFPO-DA	89		70 - 130
d5-NEtFOSAA	92		70 - 130