



Northern Lake Service, Inc • 400 N Lake Ave • Crandon, WI 54520
800-278-1254 • www.nlslab.com

March 27, 2023

Mark Pauli
Wisconsin Department of Natural Resources
101 S Webster St
Madison, WI 53707

Project: 2023 Drinking Water Testing - Starks Expanded Area
Project Number: PFAS Private Wells
Work Order: CB02226
Received: 03/08/23

Enclosed are the results of analyses for samples received by our laboratory on 3/8/2023. If you have any questions concerning this report, please feel free to contact a client service representative at clientservices@nlslab.com.

Sincerely,

A handwritten signature in black ink, appearing to read "Tom Priebe".

Tom Priebe For Client Services
Northern Lake Service, Inc.



Wisconsin Department of Natural Resources
101 S Webster St
Madison, WI 53707

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Project Manager: Mark Pauli

Reported:
3/27/23 9:53

Work Order:
CB02226

Sample Summary

Descriptions of all qualifiers listed throughout this report can be found on the Qualifiers and Definitions Page.

Lab ID	Sample	Matrix	Sample Type	Qualifiers	Date Sampled	Date Received
CB02226-01	US226	DW			3/8/23 13:48	3/8/23 16:50
CB02226-02	Field Blank	DW			3/8/23 0:00	3/8/23 16:50

Analysis Qualifiers:

LabNumber	Analysis	Qualifier
CB02226-01RE1	537.1 Perfluorinated Chemicals by LC/MS/MS	InVol



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Sample Results

Sample: US226

CB02226-01 (DW) Sampled: 03/08/23 13:48

Analyte	Result	Qualifier	Dilution	LOD	LOQ	MCL	Units	Date Prepared	Date Analyzed	Analyst	Method	Lab Cert Code
Semi-Volatiles												
11-chloroeicosafuoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ND		1	1.6	5.0		ng/L	3/20/23 6:51	3/22/23 18:06	RAW	EPA 537.1, Rev 2.0	2
9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	ND		1	1.7	5.5		ng/L	3/20/23 6:51	3/22/23 18:06	RAW	EPA 537.1, Rev 2.0	2
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND		1	1.8	6.0		ng/L	3/20/23 6:51	3/22/23 18:06	RAW	EPA 537.1, Rev 2.0	2
hexafluoropropylene oxide dimer acid (HFPO DA)	ND		1	2.0	7.0		ng/L	3/20/23 6:51	3/22/23 18:06	RAW	EPA 537.1, Rev 2.0	2
N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1	2.4	8.0		ng/L	3/20/23 6:51	3/22/23 18:06	RAW	EPA 537.1, Rev 2.0	2
n-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1	2.0	6.5		ng/L	3/20/23 6:51	3/22/23 18:06	RAW	EPA 537.1, Rev 2.0	2
perfluorobutanesulfonic acid (PFBS)	ND		1	1.5	5.0		ng/L	3/20/23 6:51	3/22/23 18:06	RAW	EPA 537.1, Rev 2.0	2
perfluorodecanoic acid (PFDA)	ND		1	1.6	5.5		ng/L	3/20/23 6:51	3/22/23 18:06	RAW	EPA 537.1, Rev 2.0	2
perfluorododecanoic acid (PFDoA)	ND		1	1.2	3.8		ng/L	3/20/23 6:51	3/22/23 18:06	RAW	EPA 537.1, Rev 2.0	2
perfluoroheptanoic acid (PFHpA)	150		1	2.2	7.5		ng/L	3/20/23 6:51	3/22/23 18:06	RAW	EPA 537.1, Rev 2.0	2
perfluorohexanoic acid (PFHxA)	210		1	2.4	8.0		ng/L	3/20/23 6:51	3/22/23 18:06	RAW	EPA 537.1, Rev 2.0	2
perfluorohexanesulfonic acid (PFHxS)	2.6	J	1	1.7	5.5		ng/L	3/20/23 6:51	3/22/23 18:06	RAW	EPA 537.1, Rev 2.0	2
perfluorononanoic acid (PFNA)	ND		1	2.3	7.5		ng/L	3/20/23 6:51	3/22/23 18:06	RAW	EPA 537.1, Rev 2.0	2
perfluorooctanoic acid (PFOA)	230		1	2.4	8.0		ng/L	3/20/23 6:51	3/22/23 18:06	RAW	EPA 537.1, Rev 2.0	2
perfluorooctanesulfonic acid (PFOS)	2.8	J	1	1.6	5.0		ng/L	3/20/23 6:51	3/22/23 18:06	RAW	EPA 537.1, Rev 2.0	2
perfluorotetradecanoic acid (PFTA)	ND		1	1.7	5.5		ng/L	3/20/23 6:51	3/22/23 18:06	RAW	EPA 537.1, Rev 2.0	2
perfluorotridecanoic acid (PFTrDA)	ND		1	2.2	7.0		ng/L	3/20/23 6:51	3/22/23 18:06	RAW	EPA 537.1, Rev 2.0	2
perfluoroundecanoic acid (PFUnA)	ND		1	1.5	5.0		ng/L	3/20/23 6:51	3/22/23 18:06	RAW	EPA 537.1, Rev 2.0	2
Surrogate: (SURR) C13-PFHxA	101%			Limits: 70-130%				3/20/23 6:51	3/22/23 18:06	RAW	EPA 537.1, Rev 2.0	2
Surrogate: (SURR) C13-HFPODA	97%			Limits: 70-130%				3/20/23 6:51	3/22/23 18:06	RAW	EPA 537.1, Rev 2.0	2
Surrogate: (SURR) C13-PFDA	99%			Limits: 70-130%				3/20/23 6:51	3/22/23 18:06	RAW	EPA 537.1, Rev 2.0	2
Surrogate: (SURR) d5-NEtFOSAA	90%			Limits: 70-130%				3/20/23 6:51	3/22/23 18:06	RAW	EPA 537.1, Rev 2.0	2

Sample: Field Blank

CB02226-02 (DW) Sampled: 03/08/23 00:00

Analyte	Result	Qualifier	Dilution	LOD	LOQ	MCL	Units	Date Prepared	Date Analyzed	Analyst	Method	Lab Cert Code
Semi-Volatiles												



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Sample Results (Continued)

Sample: Field Blank (Continued)

CB02226-02 (DW) Sampled: 03/08/23 00:00

Analyte	Result	Qualifier	Dilution	LOD	LOQ	MCL	Units	Date Prepared	Date Analyzed	Analyst	Method	Lab Cert Code
Semi-Volatiles (Continued)												
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ND		1	0.30	0.98		ng/L	3/20/23 6:51	3/22/23 18:32	RAW	EPA 537.1, Rev 2.0	2
9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	ND		1	0.33	1.1		ng/L	3/20/23 6:51	3/22/23 18:32	RAW	EPA 537.1, Rev 2.0	2
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND		1	0.36	1.2		ng/L	3/20/23 6:51	3/22/23 18:32	RAW	EPA 537.1, Rev 2.0	2
hexafluoropropylene oxide dimer acid (HFPO DA)	ND		1	0.40	1.4		ng/L	3/20/23 6:51	3/22/23 18:32	RAW	EPA 537.1, Rev 2.0	2
N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1	0.46	1.6		ng/L	3/20/23 6:51	3/22/23 18:32	RAW	EPA 537.1, Rev 2.0	2
n-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1	0.39	1.3		ng/L	3/20/23 6:51	3/22/23 18:32	RAW	EPA 537.1, Rev 2.0	2
perfluorobutanesulfonic acid (PFBS)	ND		1	0.29	0.98		ng/L	3/20/23 6:51	3/22/23 18:32	RAW	EPA 537.1, Rev 2.0	2
perfluorodecanoic acid (PFDA)	ND		1	0.32	1.1		ng/L	3/20/23 6:51	3/22/23 18:32	RAW	EPA 537.1, Rev 2.0	2
perfluorododecanoic acid (PFDoA)	ND		1	0.23	0.75		ng/L	3/20/23 6:51	3/22/23 18:32	RAW	EPA 537.1, Rev 2.0	2
perfluoroheptanoic acid (PFHpA)	ND		1	0.43	1.5		ng/L	3/20/23 6:51	3/22/23 18:32	RAW	EPA 537.1, Rev 2.0	2
perfluorohexanoic acid (PFHxA)	ND		1	0.46	1.6		ng/L	3/20/23 6:51	3/22/23 18:32	RAW	EPA 537.1, Rev 2.0	2
perfluorohexanesulfonic acid (PFHxS)	ND		1	0.33	1.1		ng/L	3/20/23 6:51	3/22/23 18:32	RAW	EPA 537.1, Rev 2.0	2
perfluorononanoic acid (PFNA)	ND		1	0.45	1.5		ng/L	3/20/23 6:51	3/22/23 18:32	RAW	EPA 537.1, Rev 2.0	2
perfluorooctanoic acid (PFOA)	ND		1	0.48	1.6		ng/L	3/20/23 6:51	3/22/23 18:32	RAW	EPA 537.1, Rev 2.0	2
perfluorooctanesulfonic acid (PFOS)	ND		1	0.30	0.98		ng/L	3/20/23 6:51	3/22/23 18:32	RAW	EPA 537.1, Rev 2.0	2
perfluorotetradecanoic acid (PFTA)	ND		1	0.33	1.1		ng/L	3/20/23 6:51	3/22/23 18:32	RAW	EPA 537.1, Rev 2.0	2
perfluorotridecanoic acid (PFTTrDA)	ND		1	0.42	1.4		ng/L	3/20/23 6:51	3/22/23 18:32	RAW	EPA 537.1, Rev 2.0	2
perfluoroundecanoic acid (PFUnA)	ND		1	0.29	0.98		ng/L	3/20/23 6:51	3/22/23 18:32	RAW	EPA 537.1, Rev 2.0	2
Surrogate: (SURR) C13-PFHxA	94%			Limits: 70-130%				3/20/23 6:51	3/22/23 18:32	RAW	EPA 537.1, Rev 2.0	2
Surrogate: (SURR) C13-HFPODA	91%			Limits: 70-130%				3/20/23 6:51	3/22/23 18:32	RAW	EPA 537.1, Rev 2.0	2
Surrogate: (SURR) C13-PFDA	95%			Limits: 70-130%				3/20/23 6:51	3/22/23 18:32	RAW	EPA 537.1, Rev 2.0	2
Surrogate: (SURR) d5-NEtFOSAA	86%			Limits: 70-130%				3/20/23 6:51	3/22/23 18:32	RAW	EPA 537.1, Rev 2.0	2



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List of Certifications

Code	Description	Number	Expires
2	NLS (Crandon) WDNR Laboratory ID No.	721026460	8/31/23



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Qualifiers and Definitions

Item	Definition
InVol	The initial volume used was 50.
J	Result is between LOD and LOQ and considered to be within a region of less-certain quantitation.
ND	Analyte NOT DETECTED at or above the LOD or MRL.
LOD	Limit of Detection.
LOQ	Limit of Quantitation.
NA	Not Applicable.
Dry	Dry Weight Basis.
Wet	Wet Weight Basis.
% Dry	Equal to: (mg/kg dry) / 10000.
1000 ug/L	Equal to: 1 mg/L.
MCL	Maximum Contaminant Levels for Drinking Water Samples. Shaded results indicate >MCL.
RPD	Relative Percent Difference.
%REC	Percent Recovery.
Source	Sample that was matrix spiked or duplicated.

All LOD/LOQs adjusted to reflect preparation volumes, dilutions, and/or solids content.

SAMPLE COLLECTION AND CHAIN OF CUSTODY RECORD

CB02226

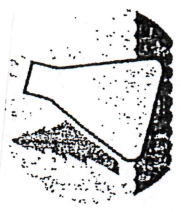
NO. Analyt
400 N
Tel: (7

Wisconsin Lab Cert. No. 721026460
WI DATCP 105-000330

CLIENT WISCONSIN DRINKING AND GROUNDWATER	
ADDRESS PO Box 7921, D615	
CITY MADISON	STATE WI
ZIP 53707	
PROJECT DESCRIPTION / NO. PHAS PRIVATE WELLS	
DNR FID #	DNR LICENSE #
CONTACT MARK PAUL	
PHONE 765-499-0612	FAX
PURCHASE ORDER NO. 000022899	
QUOTATION NO.	

MATRIX:
 SW = surface water
 WW = waste water
 GW = groundwater
 DW = drinking water
 TIS = tissue
 AIR = air
 SOIL = soil
 SED = sediment
 PROD = product
 SL = sludge
 OTHER

ANALYZE PER ORDER OF ANALYSIS			COLLECTION DATE	TIME	MATRIX (See above)	COLLECTION REMARKS (i.e. DNR Well ID #)
USE BOXES BELOW: Indicate Y or N if GW Sample is from Intersect	Indicate G or C if WW Sample is Grab or Composite	NO.				
			3/8/23	13:48	GW	(2) SAMPLE (1) FB



COLLECTED BY (signature) <i>William Robert</i>	CUSTODY SEAL NO. (IF ANY)	DATE/TIME 3-8-23 13:48
RELINQUISHED BY (signature) <i>William Robert</i>	RECEIVED BY (signature)	DATE/TIME 3-8-23 16:50
DISPATCHED BY (signature)		
METHOD OF TRANSPORT		

RECEIVED AT (signature) <i>William Robert</i>	DATE/TIME 3/8/23 16:50	CONDITION	TEMP. 0.4
REMARKS & OTHER INFORMATION			
WDNR FACILITY NUMBER	E-MAIL ADDRESS		

IMPORTANT!
 PRESERVATIVE: N = nitric acid, OH = sodium hydroxide, NP = no preservative, Z = zinc acetate, HA = hydrochloric & ascorbic acid, M = methanol, H = hydrochloric acid, S = sulfuric acid

- TO MEET REGULATORY REQUIREMENTS, THIS FORM MUST BE COMPLETED IN DETAIL AND INCLUDED IN THE COOLER CONTAINING THE SAMPLES DESCRIBED.
- PLEASE USE ONE LINE PER SAMPLE, NOT PER BOTTLE.
- RETURN THIS FORM WITH SAMPLES - CLIENT MAY KEEP PINK COPY.
- PARTIES COLLECTING SAMPLE, LISTED AS REPORT TO AND LISTED AS INVOICED TO AGREE TO STANDARD TERMS & CONDITIONS ON REVERSE.

REPORT TO
INVOICE TO