



Northern Lake Service, Inc • 400 N Lake Ave • Crandon, WI 54520  
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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: CB02220  
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](mailto:clientservices@nlslab.com).

Sincerely,

A handwritten signature in black ink that reads "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 9:55

**Work Order:**  
CB02220

### 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
CB02220-01	QA077	DW			3/8/23 10:08	3/8/23 16:50
CB02220-02	Field Blank	DW			3/8/23 0:00	3/8/23 16:50

#### Analysis Qualifiers:

LabNumber	Analysis	Qualifier
CB02220-01RE1	537.1 Perfluorinated Chemicals by LC/MS/MS	InVol



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**Sample Results**

**Sample: QA077**

**CB02220-01 (DW) Sampled: 03/08/23 10:08**

Analyte	Result	Qualifier	Dilution	LOD	LOQ	MCL	Units	Date Prepared	Date Analyzed	Analyst	Method	Lab Cert Code
<b>Semi-Volatiles</b>												
11-chloroeicosafuoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ND		1	0.62	2.0		ng/L	3/20/23 6:51	3/22/23 16:49	RAW	EPA 537.1, Rev 2.0	2
9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	ND		1	0.68	2.2		ng/L	3/20/23 6:51	3/22/23 16:49	RAW	EPA 537.1, Rev 2.0	2
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND		1	0.74	2.4		ng/L	3/20/23 6:51	3/22/23 16:49	RAW	EPA 537.1, Rev 2.0	2
hexafluoropropylene oxide dimer acid (HFPO DA)	ND		1	0.82	2.8		ng/L	3/20/23 6:51	3/22/23 16:49	RAW	EPA 537.1, Rev 2.0	2
N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1	0.94	3.2		ng/L	3/20/23 6:51	3/22/23 16:49	RAW	EPA 537.1, Rev 2.0	2
n-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1	0.80	2.6		ng/L	3/20/23 6:51	3/22/23 16:49	RAW	EPA 537.1, Rev 2.0	2
perfluorobutanesulfonic acid (PFBS)	0.80	J	1	0.60	2.0		ng/L	3/20/23 6:51	3/22/23 16:49	RAW	EPA 537.1, Rev 2.0	2
perfluorodecanoic acid (PFDA)	ND		1	0.66	2.2		ng/L	3/20/23 6:51	3/22/23 16:49	RAW	EPA 537.1, Rev 2.0	2
perfluorododecanoic acid (PFDoA)	ND		1	0.46	1.5		ng/L	3/20/23 6:51	3/22/23 16:49	RAW	EPA 537.1, Rev 2.0	2
perfluoroheptanoic acid (PFHpA)	82		1	0.88	3.0		ng/L	3/20/23 6:51	3/22/23 16:49	RAW	EPA 537.1, Rev 2.0	2
perfluorohexanoic acid (PFHxA)	110		1	0.94	3.2		ng/L	3/20/23 6:51	3/22/23 16:49	RAW	EPA 537.1, Rev 2.0	2
perfluorohexanesulfonic acid (PFHxS)	0.89	J	1	0.68	2.2		ng/L	3/20/23 6:51	3/22/23 16:49	RAW	EPA 537.1, Rev 2.0	2
perfluorononanoic acid (PFNA)	ND		1	0.92	3.0		ng/L	3/20/23 6:51	3/22/23 16:49	RAW	EPA 537.1, Rev 2.0	2
perfluorooctanoic acid (PFOA)	42		1	0.98	3.2		ng/L	3/20/23 6:51	3/22/23 16:49	RAW	EPA 537.1, Rev 2.0	2
perfluorooctanesulfonic acid (PFOS)	1.5	J	1	0.62	2.0		ng/L	3/20/23 6:51	3/22/23 16:49	RAW	EPA 537.1, Rev 2.0	2
perfluorotetradecanoic acid (PFTA)	ND		1	0.68	2.2		ng/L	3/20/23 6:51	3/22/23 16:49	RAW	EPA 537.1, Rev 2.0	2
perfluorotridecanoic acid (PFTrDA)	ND		1	0.86	2.8		ng/L	3/20/23 6:51	3/22/23 16:49	RAW	EPA 537.1, Rev 2.0	2
perfluoroundecanoic acid (PFUnA)	ND		1	0.60	2.0		ng/L	3/20/23 6:51	3/22/23 16:49	RAW	EPA 537.1, Rev 2.0	2
Surrogate: (SURR) C13-PFHxA	97%			Limits: 70-130%				3/20/23 6:51	3/22/23 16:49	RAW	EPA 537.1, Rev 2.0	2
Surrogate: (SURR) C13-HFPODA	92%			Limits: 70-130%				3/20/23 6:51	3/22/23 16:49	RAW	EPA 537.1, Rev 2.0	2
Surrogate: (SURR) C13-PFDA	96%			Limits: 70-130%				3/20/23 6:51	3/22/23 16:49	RAW	EPA 537.1, Rev 2.0	2
Surrogate: (SURR) d5-NEtFOSAA	95%			Limits: 70-130%				3/20/23 6:51	3/22/23 16:49	RAW	EPA 537.1, Rev 2.0	2

**Sample: Field Blank**

**CB02220-02 (DW) Sampled: 03/08/23 00:00**

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



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Sample Results (Continued)

Sample: Field Blank (Continued)

CB02220-02 (DW) Sampled: 03/08/23 00:00

Analyte	Result	Qualifier	Dilution	LOD	LOQ	MCL	Units	Date Prepared	Date Analyzed	Analyst	Method	Lab Cert Code
<b>Semi-Volatiles (Continued)</b>												
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ND		1	0.31	1.0		ng/L	3/20/23 6:51	3/22/23 17:15	RAW	EPA 537.1, Rev 2.0	2
9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	ND		1	0.34	1.1		ng/L	3/20/23 6:51	3/22/23 17:15	RAW	EPA 537.1, Rev 2.0	2
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND		1	0.37	1.2		ng/L	3/20/23 6:51	3/22/23 17:15	RAW	EPA 537.1, Rev 2.0	2
hexafluoropropylene oxide dimer acid (HFPO DA)	ND		1	0.41	1.4		ng/L	3/20/23 6:51	3/22/23 17:15	RAW	EPA 537.1, Rev 2.0	2
N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1	0.47	1.6		ng/L	3/20/23 6:51	3/22/23 17:15	RAW	EPA 537.1, Rev 2.0	2
n-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1	0.40	1.3		ng/L	3/20/23 6:51	3/22/23 17:15	RAW	EPA 537.1, Rev 2.0	2
perfluorobutanesulfonic acid (PFBS)	ND		1	0.30	1.0		ng/L	3/20/23 6:51	3/22/23 17:15	RAW	EPA 537.1, Rev 2.0	2
perfluorodecanoic acid (PFDA)	ND		1	0.33	1.1		ng/L	3/20/23 6:51	3/22/23 17:15	RAW	EPA 537.1, Rev 2.0	2
perfluorododecanoic acid (PFDoA)	ND		1	0.23	0.77		ng/L	3/20/23 6:51	3/22/23 17:15	RAW	EPA 537.1, Rev 2.0	2
perfluoroheptanoic acid (PFHpA)	ND		1	0.44	1.5		ng/L	3/20/23 6:51	3/22/23 17:15	RAW	EPA 537.1, Rev 2.0	2
perfluorohexanoic acid (PFHxA)	ND		1	0.47	1.6		ng/L	3/20/23 6:51	3/22/23 17:15	RAW	EPA 537.1, Rev 2.0	2
perfluorohexanesulfonic acid (PFHxS)	ND		1	0.34	1.1		ng/L	3/20/23 6:51	3/22/23 17:15	RAW	EPA 537.1, Rev 2.0	2
perfluorononanoic acid (PFNA)	ND		1	0.46	1.5		ng/L	3/20/23 6:51	3/22/23 17:15	RAW	EPA 537.1, Rev 2.0	2
perfluorooctanoic acid (PFOA)	ND		1	0.49	1.6		ng/L	3/20/23 6:51	3/22/23 17:15	RAW	EPA 537.1, Rev 2.0	2
perfluorooctanesulfonic acid (PFOS)	ND		1	0.31	1.0		ng/L	3/20/23 6:51	3/22/23 17:15	RAW	EPA 537.1, Rev 2.0	2
perfluorotetradecanoic acid (PFTA)	ND		1	0.34	1.1		ng/L	3/20/23 6:51	3/22/23 17:15	RAW	EPA 537.1, Rev 2.0	2
perfluorotridecanoic acid (PFTTrDA)	ND		1	0.43	1.4		ng/L	3/20/23 6:51	3/22/23 17:15	RAW	EPA 537.1, Rev 2.0	2
perfluoroundecanoic acid (PFUnA)	ND		1	0.30	1.0		ng/L	3/20/23 6:51	3/22/23 17:15	RAW	EPA 537.1, Rev 2.0	2
Surrogate: (SURR) C13-PFHxA	100%			Limits: 70-130%				3/20/23 6:51	3/22/23 17:15	RAW	EPA 537.1, Rev 2.0	2
Surrogate: (SURR) C13-HFPODA	94%			Limits: 70-130%				3/20/23 6:51	3/22/23 17:15	RAW	EPA 537.1, Rev 2.0	2
Surrogate: (SURR) C13-PFDA	96%			Limits: 70-130%				3/20/23 6:51	3/22/23 17:15	RAW	EPA 537.1, Rev 2.0	2
Surrogate: (SURR) d5-NEtFOSAA	85%			Limits: 70-130%				3/20/23 6:51	3/22/23 17:15	RAW	EPA 537.1, Rev 2.0	2



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**List of Certifications**

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



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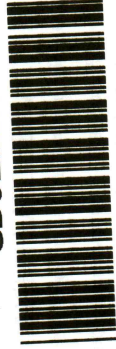
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### Qualifiers and Definitions

Item	Definition
InVol	The initial volume used was 125.
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.

CB02220



# SAMPLE COLLECTION AND CHAIN OF CUSTODY RECORD

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

CLIENT: **WISCONSIN DNR-DRINKING AND GROUNDWATER**

ADDRESS: **PO Box 7921, D665** STATE: **WI** ZIP: **53707**

CITY: **MADISON**

PROJECT DESCRIPTION / NO.: **PHAS PRIVATE WELLS** QUOTATION NO.

DNR FID # \_\_\_\_\_ DNR LICENSE # \_\_\_\_\_

CONTACT: **MARK PAULI** PHONE: **765-499-0612** FAX: \_\_\_\_\_

PURCHASE ORDER NO.: **000022899**

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 \_\_\_\_\_

USE BOXES BELOW: Indicate Y or N if GW Sample is field filtered.  
 Indicate G or C if WW Sample is Grab or Composite.

ANALYZE PER ORDER OF ANALYSIS

**EPANET HD 5371**

ITEM NO.	ANALYSIS LABELING	SAMPLE ID	DATE	COLLECTION TIME	MATRIX (See above)	NO.	COLLECTION REMARKS (i.e. DNR Well ID #)
1.		<b>QA077</b>	<b>3/8/23</b>	<b>10:08</b>	<b>GW</b>		<b>2) Samples (C) BS</b>
2.							
3.							
4.							
5.							
6.							
7.							
8.							
9.							
10.							

REPORT TO \_\_\_\_\_

INVOICE TO \_\_\_\_\_

COLLECTED BY (signature): *William Robert* DATE/TIME: **3-8-23 10:08**

RECEIVED BY (signature): *William Robert* DATE/TIME: **3-8-23 16:50**

CUSTOMER SEAL NO. (IF ANY) \_\_\_\_\_

METHOD OF TRANSPORT \_\_\_\_\_

RECEIVED AT (signature): *William Robert* DATE/TIME: **3/8/23 1650** TEMP: **0.4**

CONDITION: \_\_\_\_\_

REMARKS & OTHER INFORMATION \_\_\_\_\_

WDNR FACILITY NUMBER \_\_\_\_\_ E-MAIL ADDRESS \_\_\_\_\_

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

**IMPORTANT!**

1. TO MEET REGULATORY REQUIREMENTS, THIS FORM MUST BE COMPLETED IN DETAIL AND INCLUDED IN THE COOLER CONTAINING THE SAMPLES DESCRIBED.  
 2. PLEASE USE ONE LINE PER SAMPLE - CLIENT MAY KEEP PINK COPY.  
 3. RETURN THIS FORM WITH SAMPLES - CLIENT MAY KEEP PINK COPY.  
 4. PARTIES COLLECTING SAMPLE, LISTED AS REPORT TO AND LISTED AS INVOICED TO AGREE TO STANDARD TERMS & CONDITIONS ON REVERSE.