



Northern Lake Service, Inc • 400 N Lake Ave • Crandon, WI 54520  
800-278-1254 • [www.nlslab.com](http://www.nlslab.com)

March 17, 2023

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

RE: 2023 Drinking Water Testing - Starks Expanded Area  
Work Order: CB01935  
Received: 03/01/23

Enclosed are the results of analyses for samples received by our laboratory on 3/1/2023. 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

Project: 2023 Drinking Water Testing - Starks Expanded Area  
Project Number: PFAS Private Wells  
Project Manager: Mark Pauli

**Reported:**  
3/17/23 11:00

**Work Order:**  
CB01935

### 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
CB01935-01	ZE084	DW			3/1/23 14:27	3/1/23 16:00
CB01935-02	Field Blank	DW			3/1/23 0:00	3/1/23 16:00

#### Analysis Qualifiers:

LabNumber	Analysis	Qualifier
CB01935-01	537.1 Perfluorinated Chemicals by LC/MS/MS	MS_B



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**Sample Results**

**Sample: ZE084**

**CB01935-01 (DW) Sampled: 03/01/23 14:27**

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		100	32	100		ng/L	3/3/23 10:13	3/6/23 18:23	RAW	EPA 537.1, Rev 2.0	2
9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	ND		100	35	110		ng/L	3/3/23 10:13	3/6/23 18:23	RAW	EPA 537.1, Rev 2.0	2
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND		100	39	120		ng/L	3/3/23 10:13	3/6/23 18:23	RAW	EPA 537.1, Rev 2.0	2
hexafluoropropylene oxide dimer acid (HFPO DA)	ND		100	43	150		ng/L	3/3/23 10:13	3/6/23 18:23	RAW	EPA 537.1, Rev 2.0	2
N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		100	49	170		ng/L	3/3/23 10:13	3/6/23 18:23	RAW	EPA 537.1, Rev 2.0	2
n-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		100	42	140		ng/L	3/3/23 10:13	3/6/23 18:23	RAW	EPA 537.1, Rev 2.0	2
perfluorobutanesulfonic acid (PFBS)	ND		100	31	100		ng/L	3/3/23 10:13	3/6/23 18:23	RAW	EPA 537.1, Rev 2.0	2
perfluorodecanoic acid (PFDA)	ND		100	34	110		ng/L	3/3/23 10:13	3/6/23 18:23	RAW	EPA 537.1, Rev 2.0	2
perfluorododecanoic acid (PFDoA)	ND		100	24	80		ng/L	3/3/23 10:13	3/6/23 18:23	RAW	EPA 537.1, Rev 2.0	2
perfluoroheptanoic acid (PFHpA)	3300		100	46	160		ng/L	3/3/23 10:13	3/6/23 18:23	RAW	EPA 537.1, Rev 2.0	2
perfluorohexanoic acid (PFHxA)	5200		100	49	170		ng/L	3/3/23 10:13	3/6/23 18:23	RAW	EPA 537.1, Rev 2.0	2
perfluorohexanesulfonic acid (PFHxS)	97	J	100	35	110		ng/L	3/3/23 10:13	3/6/23 18:23	RAW	EPA 537.1, Rev 2.0	2
perfluorononanoic acid (PFNA)	ND		100	48	160		ng/L	3/3/23 10:13	3/6/23 18:23	RAW	EPA 537.1, Rev 2.0	2
perfluorooctanoic acid (PFOA)	4200		100	51	170		ng/L	3/3/23 10:13	3/6/23 18:23	RAW	EPA 537.1, Rev 2.0	2
perfluorooctanesulfonic acid (PFOS)	170		100	32	100		ng/L	3/3/23 10:13	3/6/23 18:23	RAW	EPA 537.1, Rev 2.0	2
perfluorotetradecanoic acid (PFTA)	ND		100	35	110		ng/L	3/3/23 10:13	3/6/23 18:23	RAW	EPA 537.1, Rev 2.0	2
perfluorotridecanoic acid (PFTrDA)	ND		100	45	150		ng/L	3/3/23 10:13	3/6/23 18:23	RAW	EPA 537.1, Rev 2.0	2
perfluoroundecanoic acid (PFUnA)	ND		100	31	100		ng/L	3/3/23 10:13	3/6/23 18:23	RAW	EPA 537.1, Rev 2.0	2
Surrogate: (SURRE) C13-PFHxA	119%					Limits: 70-130%		3/3/23 10:13	3/6/23 18:23	RAW	EPA 537.1, Rev 2.0	2
Surrogate: (SURRE) C13-HFPODA	102%					Limits: 70-130%		3/3/23 10:13	3/6/23 18:23	RAW	EPA 537.1, Rev 2.0	2
Surrogate: (SURRE) C13-PFDA	107%					Limits: 70-130%		3/3/23 10:13	3/6/23 18:23	RAW	EPA 537.1, Rev 2.0	2
Surrogate: (SURRE) d5-NEtFOSAA	101%					Limits: 70-130%		3/3/23 10:13	3/6/23 18:23	RAW	EPA 537.1, Rev 2.0	2

**Sample: Field Blank**

**CB01935-02 (DW) Sampled: 03/01/23 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)

CB01935-02 (DW) Sampled: 03/01/23 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	3/8/23 6:51	3/15/23 12:01	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	3/8/23 6:51	3/15/23 12:01	RAW	EPA 537.1, Rev 2.0	2
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND		1	0.37	1.2		ng/L	3/8/23 6:51	3/15/23 12:01	RAW	EPA 537.1, Rev 2.0	2
hexafluoropropylene oxide dimer acid (HFPO DA)	ND		1	0.41	1.4		ng/L	3/8/23 6:51	3/15/23 12:01	RAW	EPA 537.1, Rev 2.0	2
N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1	0.47	1.6		ng/L	3/8/23 6:51	3/15/23 12:01	RAW	EPA 537.1, Rev 2.0	2
n-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1	0.40	1.3		ng/L	3/8/23 6:51	3/15/23 12:01	RAW	EPA 537.1, Rev 2.0	2
perfluorobutanesulfonic acid (PFBS)	ND		1	0.30	1.0		ng/L	3/8/23 6:51	3/15/23 12:01	RAW	EPA 537.1, Rev 2.0	2
perfluorodecanoic acid (PFDA)	ND		1	0.33	1.1		ng/L	3/8/23 6:51	3/15/23 12:01	RAW	EPA 537.1, Rev 2.0	2
perfluorododecanoic acid (PFDoA)	ND		1	0.23	0.77		ng/L	3/8/23 6:51	3/15/23 12:01	RAW	EPA 537.1, Rev 2.0	2
perfluoroheptanoic acid (PFHpA)	ND		1	0.44	1.5		ng/L	3/8/23 6:51	3/15/23 12:01	RAW	EPA 537.1, Rev 2.0	2
perfluorohexanoic acid (PFHxA)	ND		1	0.47	1.6		ng/L	3/8/23 6:51	3/15/23 12:01	RAW	EPA 537.1, Rev 2.0	2
perfluorohexanesulfonic acid (PFHxS)	ND		1	0.34	1.1		ng/L	3/8/23 6:51	3/15/23 12:01	RAW	EPA 537.1, Rev 2.0	2
perfluorononanoic acid (PFNA)	ND		1	0.46	1.5		ng/L	3/8/23 6:51	3/15/23 12:01	RAW	EPA 537.1, Rev 2.0	2
perfluorooctanoic acid (PFOA)	ND		1	0.49	1.6		ng/L	3/8/23 6:51	3/15/23 12:01	RAW	EPA 537.1, Rev 2.0	2
perfluorooctanesulfonic acid (PFOS)	ND		1	0.31	1.0		ng/L	3/8/23 6:51	3/15/23 12:01	RAW	EPA 537.1, Rev 2.0	2
perfluorotetradecanoic acid (PFTA)	ND		1	0.34	1.1		ng/L	3/8/23 6:51	3/15/23 12:01	RAW	EPA 537.1, Rev 2.0	2
perfluorotridecanoic acid (PFTTrDA)	ND		1	0.43	1.4		ng/L	3/8/23 6:51	3/15/23 12:01	RAW	EPA 537.1, Rev 2.0	2
perfluoroundecanoic acid (PFUnA)	ND		1	0.30	1.0		ng/L	3/8/23 6:51	3/15/23 12:01	RAW	EPA 537.1, Rev 2.0	2
Surrogate: (SURR) C13-PFHxA	91%			Limits: 70-130%				3/8/23 6:51	3/15/23 12:01	RAW	EPA 537.1, Rev 2.0	2
Surrogate: (SURR) C13-HFPODA	94%			Limits: 70-130%				3/8/23 6:51	3/15/23 12:01	RAW	EPA 537.1, Rev 2.0	2
Surrogate: (SURR) C13-PFDA	96%			Limits: 70-130%				3/8/23 6:51	3/15/23 12:01	RAW	EPA 537.1, Rev 2.0	2
Surrogate: (SURR) d5-NEtFOSAA	87%			Limits: 70-130%				3/8/23 6:51	3/15/23 12:01	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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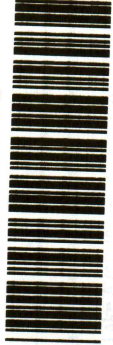
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### Qualifiers and Definitions

Item	Definition
J	Result is between LOD and LOQ and considered to be within a region of less-certain quantitation.
MS_B	The matrix spike and matrix duplicate spike recoveries could not be calculated effectively due to the sample matrix and dilution.
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.

CB01935



NC

Anal

400

Tel:

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, D615**

CITY: **MADISON** STATE: **WI** ZIP: **53707**

PROJECT DESCRIPTION NO: **PHS PRIVATE WELLS** QUOTATION NO.

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

CONTACT: **MARK PAULI** PHONE: **715-499-0612**

PURCHASE ORDER NO: **000022899** FAX: \_\_\_\_\_

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

ANALYZE PER ORDER OF ANALYSIS

EPAMETHOD 5371

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

ITEM NO.	ANALYSIS LAB NO.	SAMPLE ID	COLLECTION		MATRIX (See above)	COLLECTION REMARKS (i.e. DNR Well ID #)
			DATE	TIME		
1.		ZE084	3/1/23	2:27 PM	GW	4 Samples/D/FB
2.						
3.						
4.						
5.						
6.						
7.						
8.						
9.						
10.						

REPORT TO

INVOICE TO

COLLECTED BY (signature): *William Robert* CUSTODY SEAL NO. (IF ANY)

RECEIVED BY (signature): *William Robert* DATE/TIME: 3-1-23 14:27

DISPATCHED BY (signature): *William Robert* DATE/TIME: 3-1-23 16:00

METHOD OF TRANSPORT: *Hand drop*

RECEIVED AT (signature): <i>William Robert</i>	DATE/TIME: 3/1/23 16:00	CONDITION: <input checked="" type="checkbox"/>	TEMP: 6.8
REMARKS & OTHER INFORMATION			
WDNR FACILITY NUMBER		E-MAIL ADDRESS	

COOLER # \_\_\_\_\_

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

**IMPORTANT!**

- 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 - CLIENT MAY KEEP PINK COPY.
- 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.