



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

March 24, 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: CB02030  
Received: 03/03/23

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

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

**Reported:**  
3/24/23 9:40

**Work Order:**  
CB02030

### 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
CB02030-01	LT645	DW			3/3/23 8:50	3/3/23 15:00
CB02030-02	Field Blank	DW			3/3/23 0:00	3/3/23 15:00



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Sample Results

Sample: **LT645**

**CB02030-01 (DW) Sampled: 03/03/23 08:50**

Analyte	Result	Qualifier	Dilution	LOD	LOQ	MCL	Units	Date Prepared	Date Analyzed	Analyst	Method	Lab Cert Code
<b>Semi-Volatiles</b>												
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ND		1	0.31	1.0		ng/L	3/10/23 7:03	3/13/23 14:22	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	3/10/23 7:03	3/13/23 14:22	RAW	EPA 537.1, Rev 2.0	2
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND		1	0.37	1.2		ng/L	3/10/23 7:03	3/13/23 14:22	RAW	EPA 537.1, Rev 2.0	2
hexafluoropropylene oxide dimer acid (HFPO DA)	ND		1	0.41	1.4		ng/L	3/10/23 7:03	3/13/23 14:22	RAW	EPA 537.1, Rev 2.0	2
N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1	0.47	1.6		ng/L	3/10/23 7:03	3/13/23 14:22	RAW	EPA 537.1, Rev 2.0	2
n-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1	0.40	1.3		ng/L	3/10/23 7:03	3/13/23 14:22	RAW	EPA 537.1, Rev 2.0	2
perfluorobutanesulfonic acid (PFBS)	ND		1	0.30	1.0		ng/L	3/10/23 7:03	3/13/23 14:22	RAW	EPA 537.1, Rev 2.0	2
perfluorodecanoic acid (PFDA)	ND		1	0.33	1.1		ng/L	3/10/23 7:03	3/13/23 14:22	RAW	EPA 537.1, Rev 2.0	2
perfluorododecanoic acid (PFDoA)	ND		1	0.23	0.77		ng/L	3/10/23 7:03	3/13/23 14:22	RAW	EPA 537.1, Rev 2.0	2
perfluoroheptanoic acid (PFHpA)	1.0	J	1	0.44	1.5		ng/L	3/10/23 7:03	3/13/23 14:22	RAW	EPA 537.1, Rev 2.0	2
perfluorohexanoic acid (PFHxA)	ND		1	0.47	1.6		ng/L	3/10/23 7:03	3/13/23 14:22	RAW	EPA 537.1, Rev 2.0	2
perfluorohexanesulfonic acid (PFHxS)	ND		1	0.34	1.1		ng/L	3/10/23 7:03	3/13/23 14:22	RAW	EPA 537.1, Rev 2.0	2
perfluorononanoic acid (PFNA)	ND		1	0.46	1.5		ng/L	3/10/23 7:03	3/13/23 14:22	RAW	EPA 537.1, Rev 2.0	2
perfluorooctanoic acid (PFOA)	3.3		1	0.49	1.6		ng/L	3/10/23 7:03	3/13/23 14:22	RAW	EPA 537.1, Rev 2.0	2
perfluorooctanesulfonic acid (PFOS)	0.75	J	1	0.31	1.0		ng/L	3/10/23 7:03	3/13/23 14:22	RAW	EPA 537.1, Rev 2.0	2
perfluorotetradecanoic acid (PFTA)	ND		1	0.34	1.1		ng/L	3/10/23 7:03	3/13/23 14:22	RAW	EPA 537.1, Rev 2.0	2
perfluorotridecanoic acid (PFTrDA)	ND		1	0.43	1.4		ng/L	3/10/23 7:03	3/13/23 14:22	RAW	EPA 537.1, Rev 2.0	2
perfluoroundecanoic acid (PFUnA)	ND		1	0.30	1.0		ng/L	3/10/23 7:03	3/13/23 14:22	RAW	EPA 537.1, Rev 2.0	2
Surrogate: (SURR) C13-PFHxA	97%			Limits: 70-130%				3/10/23 7:03	3/13/23 14:22	RAW	EPA 537.1, Rev 2.0	2
Surrogate: (SURR) C13-HFPODA	92%			Limits: 70-130%				3/10/23 7:03	3/13/23 14:22	RAW	EPA 537.1, Rev 2.0	2
Surrogate: (SURR) C13-PFDA	98%			Limits: 70-130%				3/10/23 7:03	3/13/23 14:22	RAW	EPA 537.1, Rev 2.0	2
Surrogate: (SURR) d5-NEtFOSAA	87%			Limits: 70-130%				3/10/23 7:03	3/13/23 14:22	RAW	EPA 537.1, Rev 2.0	2

Sample: **Field Blank**

**CB02030-02 (DW) Sampled: 03/03/23 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)**

**CB02030-02 (DW) Sampled: 03/03/23 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	3/15/23 7:07	3/17/23 1:03	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	3/15/23 7:07	3/17/23 1:03	RAW	EPA 537.1, Rev 2.0	2
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND		1	0.37	1.2		ng/L	3/15/23 7:07	3/17/23 1:03	RAW	EPA 537.1, Rev 2.0	2
hexafluoropropylene oxide dimer acid (HFPO DA)	ND		1	0.41	1.4		ng/L	3/15/23 7:07	3/17/23 1:03	RAW	EPA 537.1, Rev 2.0	2
N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1	0.47	1.6		ng/L	3/15/23 7:07	3/17/23 1:03	RAW	EPA 537.1, Rev 2.0	2
n-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1	0.40	1.3		ng/L	3/15/23 7:07	3/17/23 1:03	RAW	EPA 537.1, Rev 2.0	2
perfluorobutanesulfonic acid (PFBS)	ND		1	0.30	1.0		ng/L	3/15/23 7:07	3/17/23 1:03	RAW	EPA 537.1, Rev 2.0	2
perfluorodecanoic acid (PFDA)	ND		1	0.33	1.1		ng/L	3/15/23 7:07	3/17/23 1:03	RAW	EPA 537.1, Rev 2.0	2
perfluorododecanoic acid (PFDoA)	ND		1	0.23	0.77		ng/L	3/15/23 7:07	3/17/23 1:03	RAW	EPA 537.1, Rev 2.0	2
perfluoroheptanoic acid (PFHpA)	ND		1	0.44	1.5		ng/L	3/15/23 7:07	3/17/23 1:03	RAW	EPA 537.1, Rev 2.0	2
perfluorohexanoic acid (PFHxA)	ND		1	0.47	1.6		ng/L	3/15/23 7:07	3/17/23 1:03	RAW	EPA 537.1, Rev 2.0	2
perfluorohexanesulfonic acid (PFHxS)	ND		1	0.34	1.1		ng/L	3/15/23 7:07	3/17/23 1:03	RAW	EPA 537.1, Rev 2.0	2
perfluorononanoic acid (PFNA)	ND		1	0.46	1.5		ng/L	3/15/23 7:07	3/17/23 1:03	RAW	EPA 537.1, Rev 2.0	2
perfluorooctanoic acid (PFOA)	ND		1	0.49	1.6		ng/L	3/15/23 7:07	3/17/23 1:03	RAW	EPA 537.1, Rev 2.0	2
perfluorooctanesulfonic acid (PFOS)	ND		1	0.31	1.0		ng/L	3/15/23 7:07	3/17/23 1:03	RAW	EPA 537.1, Rev 2.0	2
perfluorotetradecanoic acid (PFTA)	ND		1	0.34	1.1		ng/L	3/15/23 7:07	3/17/23 1:03	RAW	EPA 537.1, Rev 2.0	2
perfluorotridecanoic acid (PFTTrDA)	ND		1	0.43	1.4		ng/L	3/15/23 7:07	3/17/23 1:03	RAW	EPA 537.1, Rev 2.0	2
perfluoroundecanoic acid (PFUnA)	ND		1	0.30	1.0		ng/L	3/15/23 7:07	3/17/23 1:03	RAW	EPA 537.1, Rev 2.0	2
Surrogate: (SURR) C13-PFHxA	89%			Limits: 70-130%				3/15/23 7:07	3/17/23 1:03	RAW	EPA 537.1, Rev 2.0	2
Surrogate: (SURR) C13-HFPODA	87%			Limits: 70-130%				3/15/23 7:07	3/17/23 1:03	RAW	EPA 537.1, Rev 2.0	2
Surrogate: (SURR) C13-PFDA	95%			Limits: 70-130%				3/15/23 7:07	3/17/23 1:03	RAW	EPA 537.1, Rev 2.0	2
Surrogate: (SURR) d5-NEtFOSAA	88%			Limits: 70-130%				3/15/23 7:07	3/17/23 1:03	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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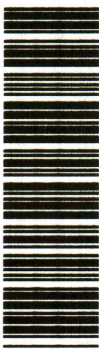
**Work Order:**  
CB02030

### Qualifiers and Definitions

Item	Definition
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.

CB02030



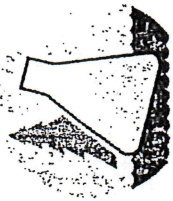
**SAMPLE COLLECTION AND CHAIN OF CUSTODY RECORD**

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.: PHAS PRIVATE WELLS QUOTATION NO.  
 DNR FID # \_\_\_\_\_ DNR LICENSE # \_\_\_\_\_  
 CONTACT: MARK PAULI PHONE: 765-499-0612  
 PURCHASE ORDER NO.: 0000022899 FAX: \_\_\_\_\_

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 \_\_\_\_\_

USL \_\_\_\_\_  
 Indicate G or C if WW Sample is Grab or Composite.  
 ANALYZE PER ORDER OF ANALYSIS  
 EXAMPLE 5371



NO.

ITEM NO.	ANALYSIS LAB NO.	SAMPLE ID	COLLECTION DATE	TIME	MATRIX (See above)	COLLECTION REMARKS (i.e. DNR Well ID #)
1.		LT645	3/3/23	8:50 AM	GW	(2) 97MP4(1) FG
2.						
3.						
4.						
5.						
6.						
7.						
8.						
9.						
10.						

COLLECTED BY (signature) *William Roberts* DATE/TIME 3-3-23 8:50  
 CUSTODY SEAL NO. (IF ANY) \_\_\_\_\_  
 RELINQUISHED BY (signature) *William Roberts* RECEIVED BY (signature) \_\_\_\_\_ DATE/TIME 3-3-23 15:00  
 DISPATCHED BY (signature) \_\_\_\_\_ METHOD OF TRANSPORT *Hand* DATE/TIME \_\_\_\_\_

RECEIVED AT (signature) *William Roberts* DATE/TIME 3/3/23 15:00  
 COOLER # \_\_\_\_\_  
 PRESERVATIVE: N = nitric acid OI = sodium hydroxide  
 NP = no preservative Z = zinc acetate HA = hydrochloric & ascorbic acid  
 S = sulfuric acid M = methanol H = hydrochloric acid  
 REMARKS & OTHER INFORMATION: *DATE*  
 WDNR FACILITY NUMBER \_\_\_\_\_ E-MAIL ADDRESS \_\_\_\_\_

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

**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, NOT PER BOTTLE.  
 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.