

# Updated Water and Fish Tissue Sampling Results from 2019 DNR PFAS Survey



June 2021  
Wisconsin Department of Natural Resources  
Water Quality Program

## Table of Contents

Starkweather Creek.....	2
Starkweather Creek: Surface Water Results.....	3
Starkweather Creek: Fish Tissue Results .....	6
Wisconsin River .....	7
Wisconsin River: Surface Water Results.....	8
Wisconsin River: Fish Tissue Results .....	11
Silver Creek and Suukjak Sep Creek.....	14
Silver Creek and Suukjak Sep Creek: Surface Water Results .....	15
Mississippi River .....	18
Mississippi River: Surface Water Results.....	19
Mississippi River: Fish Tissue Results .....	22
Menominee River .....	26
Menominee River: Surface Water Results .....	27
Menominee River: Fish Tissue Results .....	30
Peshtigo and St. Louis Rivers .....	32
Peshtigo and St. Louis Rivers: Surface Water Results .....	33

# Starkweather Creek

**Waterbody:** Starkweather Creek (WBICs: 805100 & 805200)

**County:** Dane

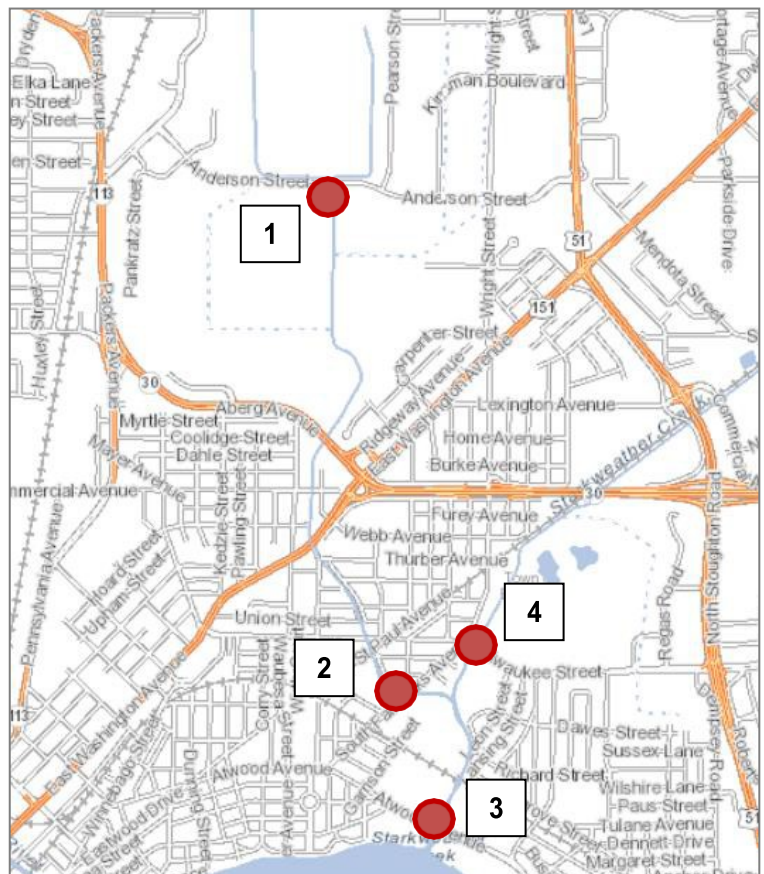
**Water chemistry sampling rounds reported:** 3 of 3

**Fish tissue results reported:** All

Why Starkweather Creek was selected for monitoring: PFAS were found in drinking water wells in the City of Madison in proximity to Starkweather Creek. Additionally, Truax Field Air National Guard Base historically held fire suppression training activities with AFFF, a now-known source of PFAS contamination. The headwaters of the West Branch of Starkweather Creek originate on or near Truax Field and the Dane County Regional Airport. Other historical sources of contamination are likely located in the Starkweather Creek watershed.

Monitoring Locations: Four locations were selected for monitoring in Starkweather Creek. Three locations were selected on the West Branch and Mainstem of Starkweather Creek to cover the longitudinal span of the Creek. A fourth monitoring location was selected on the East Branch of Starkweather Creek to determine background conditions of PFAS in the watershed. The East Branch does not originate from the airport. Additionally, fish tissue samples were collected in the mainstem of Starkweather Creek near the mouth of Lake Monona. Water chemistry results will be paired with fish tissue analysis for PFAS to aid in the potential development of a water quality standard.

- 1) West Branch Starkweather Creek at Anderson St
- 2) West Branch Starkweather Creek at Fair Oaks Ave
- 3) Starkweather Creek at Atwood Ave
- 4) East Branch Starkweather Creek at Milwaukee St



## Starkweather Creek: Surface Water Results

06/20/19	1) W Br Starkweather – Anderson St	2) W Br Starkweather – Fair Oaks Ave	3) Starkweather – Atwood Ave	4) E Br Starkweather – Milwaukee St	Field Blank
<b>Analyte (ng/l)</b>					
10:2 FTSA	ND	ND	ND	ND	ND
11Cl-PF3OUdS	ND	ND	ND	ND	ND
4:2 FTSA	0.11*	0.42	0.22*	ND	ND
6:2 FTSA	16	56	31	0.18*	ND
8:2 FTSA	4.1	7.9	3.3	ND	ND
9Cl-PF3ONS	ND	ND	ND	ND	ND
DONA	ND	ND	ND	ND	ND
FOSA	0.93	0.94	0.57	ND	ND
HFPO-DA	ND	ND	ND	ND	ND
N-EtFOSA	ND	ND	ND	ND	ND
N-EtFOSAA	ND	ND	ND	ND	ND
N-EtFOSE	0.56	ND	0.88	ND	ND
N-MeFOSA	ND	ND	ND	ND	ND
N-MeFOSAA	ND	ND	0.11*	0.072*	ND
N-MeFOSE	ND	ND	ND	ND	ND
PFBA	NR	NR	NR	NR	NR
PFBS	10	24	20	9	ND
PFDA	1.5	5.6	2	0.3*	ND
PFDoA	0.54	0.79	0.25*	ND	ND
PFDoS	ND	ND	ND	ND	ND
PFDS	ND	ND	ND	ND	ND
PFHpA	6.3	11	6.7	1.1	ND
PFHpS	2.2	7.9	4	ND	ND
PFHxA	21	42	26	4.3	ND
PFHxDA	ND	ND	ND	ND	ND
PFHxS	71	160	96	2.6	ND
PFNA	1.1	2.9	1.8	0.31	ND
PFNS	0.047*	0.17	ND	ND	ND
PFOA	23	43	27	2.6	ND
PFODA	ND	ND	ND	ND	ND
PFOS	79	270	160	2.6	ND
PFPeA	11	14	ND	ND	ND
PFPeS	8.7	20	12	ND	ND
PFTeDA	ND	ND	ND	ND	ND
PFTTrDA	ND	ND	ND	ND	ND
PFUnA	0.15*	0.46	0.2*	ND	ND

\*Between LOD and LOQ

ND = Non-Detect, NR = Non-Reportable

07/17/19	1) W Br Starkweather – Anderson St	2) W Br Starkweather – Fair Oaks Ave	3) Starkweather – Atwood Ave	4) E Br Starkweather – Milwaukee St	Field Blank
<b>Analyte (ng/l)</b>					
10:2 FTSA	ND	ND	ND	ND	ND
11Cl-PF3OUdS	ND	ND	ND	ND	ND
4:2 FTSA	0.21*	0.82	0.46	ND	ND
6:2 FTSA	25	56	28	ND	ND
8:2 FTSA	11	2.4	0.93	ND	ND
9Cl-PF3ONS	ND	ND	ND	ND	ND
DONA	ND	ND	ND	ND	ND
FOSA	2.3	1.0	0.59	0.13*	ND
HFPO-DA	ND	ND	ND	ND	ND
N-EtFOSA	ND	ND	ND	ND	ND
N-EtFOSAA	ND	ND	ND	ND	ND
N-EtFOSE	45	0.25*	0.38*	0.46	0.18*
N-MeFOSA	ND	ND	ND	ND	ND
N-MeFOSAA	ND	ND	ND	ND	ND
N-MeFOSE	ND	ND	ND	ND	ND
PFBA	NR	NR	NR	NR	NR
PFBS	13	21	14	2.3	ND
PFDA	2.2	0.82	0.43*	ND	ND
PFDoA	0.47	0.2*	0.12*	ND	ND
PFDoS	ND	ND	ND	ND	ND
PFDS	ND	ND	ND	ND	ND
PFHpA	8.6	10	6.7	0.93	ND
PFHpS	4.4	9.8	4.7	ND	ND
PFHxA	28	43	29	2.3	0.15*
PFHxDA	ND	ND	ND	ND	ND
PFHxS	86	210	120	3.1	ND
PFNA	3	2.5	1.3	0.21*	ND
PFNS	0.18	0.12*	ND	ND	ND
PFOA	30	40	24	2.1	ND
PFODA	ND	ND	ND	ND	ND
PFOS	180	360	180	1.8	ND
PFPeA	11	19	12	ND	ND
PFPeS	13	28	15	0.38	ND
PFTeDA	ND	ND	ND	ND	ND
PFTrDA	ND	ND	ND	ND	ND
PFUnA	0.18*	ND	ND	ND	ND

\*Between LOD and LOQ

ND = Non-Detect, NR = Non-Reportable

08/16/19	1) W Br Starkweather – Anderson St	2) W Br Starkweather – Fair Oaks Ave	3) Starkweather – Atwood Ave	4) E Br Starkweather – Milwaukee St	Field Blank
<b>Analyte (ng/l)</b>					
10:2 FTSA	ND	ND	ND	ND	ND
11Cl-PF3OUdS	ND	ND	ND	ND	ND
4:2 FTSA	ND	0.49	0.15*	ND	ND
6:2 FTSA	7.8	44	24	0.35*	ND
8:2 FTSA	1.4	2.3	1.2	ND	ND
9Cl-PF3ONS	ND	ND	ND	ND	ND
DONA	ND	ND	ND	ND	ND
FOSA	0.81	0.79	0.47*	ND	ND
HFPO-DA	ND	ND	ND	ND	ND
N-EtFOSA	ND	ND	ND	ND	ND
N-EtFOSAA	ND	ND	ND	ND	ND
N-EtFOSE	ND	ND	ND	ND	ND
N-MeFOSA	ND	ND	ND	ND	ND
N-MeFOSAA	ND	ND	ND	ND	ND
N-MeFOSE	ND	ND	ND	ND	ND
PFBA	NR	NR	NR	NR	NR
PFBS	7.3	23	10	2.5	ND
PFDA	0.71*	0.91	0.63*	ND	ND
PFDoA	0.19*	ND	ND	ND	ND
PFDoS	ND	ND	ND	ND	ND
PFDS	ND	ND	ND	ND	ND
PFHpA	6.5	11	6.2	0.98	ND
PFHpS	1.8	6.4	3.1	ND	ND
PFHxA	16	40	21	2.4	0.42*
PFHxDA	ND	ND	ND	ND	ND
PFHxS	64	140	72	2.7	ND
PFNA	1.1	1.9	1.1	0.29*	ND
PFNS	ND	0.098*	ND	ND	ND
PFOA	20	34	18	2.3	ND
PFODA	ND	ND	ND	ND	ND
PFOS	71	220	120	1.5	ND
PFPeA	13	20	13	ND	ND
PFPeS	6.9	23	11	ND	ND
PFTeDA	ND	ND	ND	ND	ND
PFTTrDA	ND	ND	ND	ND	ND
PFUnA	ND	ND	ND	ND	ND

\*Between LOD and LOQ

ND = Non-Detect, NR = Non-Reportable

Starkweather Creek: Fish Tissue Results

STARKWEATHER CREEK, at Atwood Ave (07/23/29 and 08/30/19), Fish Tissue Results (ng/g or ppb).											
	LM BASS	LM BASS	LM BASS	N PIKE	N PIKE	N PIKE	N PIKE	WALLEYE	WALLEYE	Y PERCH	Y PERCH
10:2 FTSA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
11CI-PF3OUdS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4:2 FTSA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
6:2 FTSA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
8:2 FTSA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
9CI-PF3ONS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
DONA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
HFPO-DA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
NEtFOSAA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
NMeFOSAA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFBS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFDA	1.4*	3.1	2.8*	ND	ND	5	4.4	4.8	1.5*	1.5*	1.7*
PFDoA	2.4*	2.3	2.2*	ND	ND	3*	2.2*	2.9*	1.8*	1.7*	2.1*
PFDoS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFDS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFHpA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFHpS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFHxA	ND	ND	ND	ND	ND	1.4*	1.1*	1.1*	ND	ND	ND
PFHxDA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFHxS	ND	ND	2.4*	ND	ND	ND	ND	ND	1.3*	ND	3.5
PFNA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFNS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFOA	ND	ND	ND	ND	ND	4.8	4.1	5.2	1.7*	1.2*	1.5*
PFODA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFOS	33	140	180	72	21	59	52	55	91	120	120
PFOSA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFPeA	ND	ND	ND	ND	ND	ND	0.65*	ND	ND	ND	ND
PFPeS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFTeDA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFTTrDA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFUnA	1.8*	1.5*	ND	ND	ND	ND	ND	ND	ND	ND	ND

\*Between LOD and LOQ

ND = Non-Detect

# Wisconsin River

**Waterbody:** Wisconsin River (WBIC: 1179900)

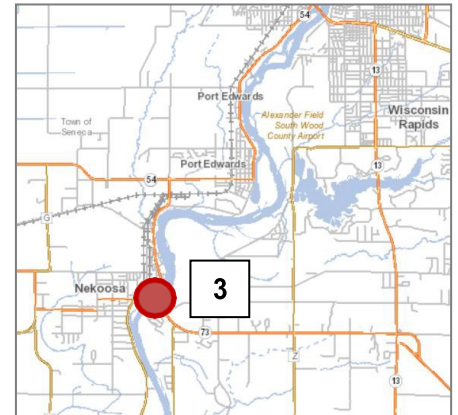
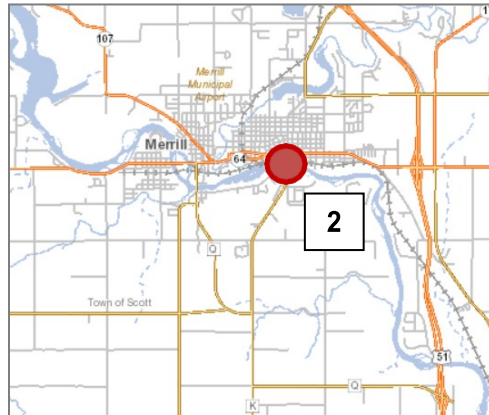
**County:** Oneida, Lincoln and Wood

**Water chemistry sampling rounds reported:** 3 of 3

**Fish tissue results reported:** All

Why the Wisconsin River was selected for monitoring: PFAS was detected in public water supply drinking water wells in the City of Rhinelander. Additionally, a study conducted by the WDNR Wildlife Bio-sentinel Program found that PFAS was elevated in plasma of bald eagles collected from a large reach of the “middle” Wisconsin River.

Monitoring Locations: Three locations were selected for monitoring on the Wisconsin River that spanned from below Rhinelander, WI to Nekoosa, WI. Sites were selected to spatially maximize coverage of the middle reach of the Wisconsin River. At these sites, fish were also collected for fish tissue PFAS concentrations. Water chemistry results will be paired with fish tissue analysis for PFAS to aid in the potential development of a water quality standard.



- 1) Wisconsin River Below Rhinelander, below Hat Rapids Dam
- 2) Wisconsin River in Merrill, below Merrill Flowage
- 3) Wisconsin River in Nekoosa, below HWY 73

Wisconsin River: Surface Water Results

06/27/19	1) Wisconsin River below Rhinelander	2) Wisconsin River at Merrill	3) Wisconsin River below HWY 73	Field Blank
<b>Analyte (ng/l)</b>				
10:2 FTSA	ND	ND	ND	ND
11Cl-PF3OUdS	ND	ND	ND	ND
4:2 FTSA	ND	ND	ND	ND
6:2 FTSA	0.56	0.18*	ND	ND
8:2 FTSA	ND	ND	ND	ND
9Cl-PF3ONS	ND	ND	ND	ND
DONA	ND	ND	ND	ND
FOSA	0.15*	0.95	0.42	ND
HFPO-DA	ND	ND	ND	ND
N-EtFOSA	ND	ND	ND	ND
N-EtFOSAA	3.5	9.4	3.2	ND
N-EtFOSE	0.64	0.16*	ND	ND
N-MeFOSA	ND	ND	ND	ND
N-MeFOSAA	ND	ND	ND	ND
N-MeFOSE	ND	ND	ND	ND
PFBA	NR	NR	NR	NR
PFBS	0.28	0.17*	1.3	ND
PFDA	ND	0.19*	ND	ND
PFDoA	ND	ND	ND	ND
PFDoS	ND	ND	ND	ND
PFDS	ND	ND	ND	ND
PFHpA	6.1	3.6	2.1	ND
PFHpS	0.14*	ND	ND	ND
PFHxA	6.8	4.2	3	ND
PFHxDA	ND	ND	ND	ND
PFHxS	0.47	0.26	0.53	ND
PFNA	1	0.69	0.51	ND
PFNS	ND	ND	ND	ND
PFOA	23	12	6.5	ND
PFODA	ND	ND	ND	ND
PFOS	3.1	2.7	3	ND
PFPeA	ND	ND	ND	ND
PFPeS	ND	ND	ND	ND
PFTeDA	ND	ND	ND	ND
PFTTrDA	ND	ND	ND	ND
PFUnA	ND	ND	ND	ND

\*Between LOD and LOQ

ND = Non-Detect, NR = Non-Reportable



08/09/19	1) Wisconsin River below Rhinelander	2) Wisconsin River at Merrill	3) Wisconsin River below HWY 73	Field Blank
<b>Analyte (ng/l)</b>				
10:2 FTSA	ND	ND	ND	ND
11Cl-PF3OUdS	ND	ND	ND	ND
4:2 FTSA	ND	ND	ND	ND
6:2 FTSA	0.36	0.1*	ND	ND
8:2 FTSA	ND	ND	ND	ND
9Cl-PF3ONS	ND	ND	ND	ND
DONA	ND	ND	ND	ND
FOSA	0.36*	1.9	0.95	ND
HFPO-DA	ND	ND	ND	ND
N-EtFOSA	ND	ND	ND	ND
N-EtFOSAA	10	17	7.3	ND
N-EtFOSE	3.4	ND	ND	ND
N-MeFOSA	ND	ND	ND	ND
N-MeFOSAA	ND	ND	ND	ND
N-MeFOSE	ND	ND	ND	ND
PFBA	NR	NR	NR	NR
PFBS	0.39	0.41	2.2	ND
PFDA	0.25*	0.28*	0.29*	ND
PFDoA	ND	ND	ND	ND
PFDoS	ND	ND	ND	ND
PFDS	ND	ND	ND	ND
PFHpA	11	5.6	3.6	ND
PFHpS	0.32*	0.13*	0.18*	ND
PFHxA	15	6.8	5.5	0.14*
PFHxDA	ND	ND	ND	ND
PFHxS	0.82	0.32	1.1	ND
PFNA	1.5	1	1.1	ND
PFNS	ND	ND	ND	ND
PFOA	36	15	11	0.11*
PFODA	ND	ND	ND	ND
PFOS	3.6	3.9	5.6	ND
PFPeA	11	ND	ND	ND
PFPeS	ND	ND	ND	ND
PFTeDA	ND	ND	ND	ND
PFTTrDA	ND	ND	ND	ND
PFUnA	ND	ND	ND	ND

\*Between LOD and LOQ

ND = Non-Detect, NR = Non-Reportable

09/03/19	1) Wisconsin River below Rhinelander	2) Wisconsin River at Merrill	3) Wisconsin River below HWY 73	Field Blank
<b>Analyte (ng/l)</b>				
10:2 FTSA	ND	ND	ND	ND
11Cl-PF3OUdS	ND	ND	ND	ND
4:2 FTSA	ND	ND	ND	ND
6:2 FTSA	0.18*	ND	ND	ND
8:2 FTSA	ND	ND	ND	ND
9Cl-PF3ONS	ND	ND	ND	ND
DONA	ND	ND	ND	ND
FOSA	ND	1.2	0.69	ND
HFPO-DA	ND	ND	ND	ND
N-EtFOSA	ND	ND	ND	ND
N-EtFOSAA	3	11	5.4	ND
N-EtFOSE	0.31*	0.52*	ND	ND
N-MeFOSA	ND	ND	ND	ND
N-MeFOSAA	ND	ND	ND	ND
N-MeFOSE	ND	ND	ND	ND
PFBA	NR	NR	NR	NR
PFBS	0.3*	0.31*	0.91	ND
PFDA	ND	ND	ND	ND
PFDoA	ND	ND	ND	ND
PFDoS	ND	ND	ND	ND
PFDS	ND	ND	ND	ND
PFHpA	6.9	4.6	2.2	ND
PFHpS	ND	ND	ND	ND
PFHxA	9.2	6.2	4.6	ND
PFHxDA	ND	ND	ND	ND
PFHxS	0.5	0.21*	0.58	ND
PFNA	0.84	0.7	0.63	ND
PFNS	ND	ND	ND	ND
PFOA	17	12	8.2	ND
PFODA	ND	ND	ND	ND
PFOS	1.6	2.6	3.1	ND
PFPeA	7.3	2.9	ND	ND
PFPeS	ND	ND	ND	ND
PFTeDA	ND	ND	ND	ND
PFTTrDA	ND	ND	ND	ND
PFUnA	ND	ND	ND	ND

\*Between LOD and LOQ

ND = Non-Detect, NR = Non-Reportable

Wisconsin River: Fish Tissue Results

WISCONSIN RIVER, Rhinelander above Hat Rapids Dam (08/09/19), Fish Tissue Results (ng/g or ppb)															
	SM BASS	SM BASS	SM BASS	SM BASS	SM BASS	SM BASS	PS <sup>1</sup>	PS	PS	RB <sup>1</sup>	N PIKE	BG <sup>1</sup>	BG	BG	BG
10:2 FTSA	1.38*	1.04*	1.16*	1.31*	1.09*	1.25*	1.23*	1.28*	0.863*	0.703*	1.02*	0.745*	0.894*	0.914*	0.875*
11CI-PF3OUdS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
8:2 FTSA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
9CI-PF3ONS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
DONA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
HFPO-DA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
NEtFOSAA	5.89	3.11	2.72	2.45	5.71	13.5	4.98	3.24	13.6	2.19	3.54	1.11*	2.25	1.2*	1.6*
NMeFOSAA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFBS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFDA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFDoA	3.15	2.4	ND	3.3	1.79*	ND	1.59*	ND	ND	ND	ND	ND	ND	ND	ND
PFDoS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFDS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFHpA	ND	ND	ND	ND	1.05*	0.968*	0.917*	ND	ND	ND	ND	ND	ND	ND	ND
PFHpS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFHxA	ND	ND	1.54*	1.54*	1.94*	1.67*	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFHxS	ND	ND	0.715*	0.684*	ND	0.689*	0.874*	ND	0.699*	ND	0.692*	ND	0.692*	ND	ND
PFNA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFNS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFOA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFOS	6.53	7.31	4.56	11.1	8.21	23.8	32.9	14.7	21.3	12.3	7.33	6.7	14.4	25.4	19.4
PFPeA	ND	ND	ND	ND	ND	ND	ND	2.01*	ND	ND	ND	3.04	3.27	ND	ND
PFPeS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFTeDA	2.66	1.98	1.49*	2.92	1.31*	0.796*	1.23*	0.676*	ND	ND	ND	0.648*	1.21*	0.766*	0.99*
PFTrDA	3.48	2.9	1.72*	4.1	1.66*	ND	1.56*	ND	ND	ND	ND	ND	1.4*	ND	ND
PFUnA	2.11	1.88*	1.31*	2.43	1.39*	0.956*	1.35*	1.11*	1.14*	0.897*	0.953*	0.825*	1.1*	1.08*	0.855*

<sup>1</sup> Fish species abbreviations: YP = yellow perch, NP = northern pike, LB = largemouth bass, SB = smallmouth bass, RB = rock bass, WB = white bass, PS = pumpkinseed, BC = Black Crappie, BG = bluegill, WE = walleye

\*Between LOD and LOQ

ND = Non-Detect

<b>WISCONSIN RIVER, Below Merrill (08/09/19) Fish Tissue Results (ng/g or ppb)</b>											
	<b>SM BASS</b>	<b>SM BASS</b>	<b>SM BASS</b>	<b>SM BASS</b>	<b>N PIKE</b>	<b>N PIKE</b>	<b>LM BASS</b>	<b>R BASS</b>	<b>WALLEYE</b>	<b>WALLEYE</b>	<b>WALLEYE</b>
<b>10:2 FTSA</b>	1.7*	1.87*	1.5*	1.66*	0.827*	1.6*	1.06*	1.13*	1.65*	1.73*	2.56
<b>11CI-PF3OUdS</b>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
<b>8:2 FTSA</b>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
<b>9CI-PF3ONS</b>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
<b>DONA</b>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
<b>HFPO-DA</b>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
<b>NEtFOSAA</b>	7.12	6.38	4.49	4.78	4.83	6.73	3.01	9.62	11.3	9.42	10.7
<b>NMeFOSAA</b>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
<b>PFBS</b>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
<b>PFDA</b>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
<b>PFDoA</b>	8.81	6.29	5.19	3.48	ND	2.12*	ND	3.18	1.54*	2.06	3.61
<b>PFDoS</b>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
<b>PFDS</b>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
<b>PFHpA</b>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
<b>PFHpS</b>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
<b>PFHxA</b>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
<b>PFHxS</b>	ND	ND	ND	ND	ND	0.715*	ND	ND	ND	ND	ND
<b>PFNA</b>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
<b>PFNS</b>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
<b>PFOA</b>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
<b>PFOS</b>	30.3	25.1	24.2	18.8	16.7	17.9	6.61	40.2	16.5	24.9	59.6
<b>PFPeA</b>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
<b>PFPeS</b>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
<b>PFTeDA</b>	5.58	3.27	2.97	2.24	0.771*	1.41*	0.855*	1.69*	0.976*	1.29*	1.56*
<b>PFTrDA</b>	7.6	4.56	3.65	2.4	1.18*	1.6*	ND	2.26	ND	1.37*	2.46
<b>PFUnA</b>	4.19	3.26	2.68	1.95	1.01*	1.54*	1.13*	2.02	1.08*	1.31*	2.44

\*Between LOD and LOQ

ND = Non-Detect

<b>WISCONSIN RIVER, Nekoosa, Upper Pentenwell Flowage (08/09/19) Fish Tissue Results (ng/g or ppb)</b>															
	YP <sup>1</sup>	WALLEYE	WALLEYE	R BASS	B CRAPPIE	SM BASS	SM BASS	SM BASS	BG <sup>1</sup>	BG	BG	BG	BG	BG	BG
10:2 FTSA	0.897*	0.478*	0.525*	ND	0.57*	0.527*	ND	0.573*	0.881*	0.532*	0.512*	ND	ND	0.499*	0.676*
11CI-PF3OUdS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
8:2 FTSA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
9CI-PF3ONS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
DONA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
HFPO-DA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
NEtFOSAA	3.99	4.08	3.95	6.71	4.64	2.45	3.89	3.44	4.84	5.58	3.26	4.55	4.5	3.2	2.58
NMeFOSAA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFBS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFDA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFDoA	2.39	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFDoS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFDS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFHpA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFHpS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFHxA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFHxS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFNA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFNS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFOA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.35
PFOS	35.5	22.7	39.1	77.3	55.4	18.9	21	20.6	31.1	16.8	24.6	18.8	21.1	28.5	38
PFPeA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFPeS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFTeDA	1.09*	1.08*	0.99*	0.958*	1.18*	1.22*	1.05*	1.1*	0.94*	0.825*	0.842*	0.705*	0.699*	0.848*	1.09*
PFTrDA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFUnA	1.31 *	ND	ND	ND	ND	ND	ND	ND	0.968*	ND	ND	ND	ND	ND	ND

<sup>1</sup> Fish species abbreviations: YP = yellow perch, NP = northern pike, LB = largemouth bass, SB = smallmouth bass, RB = rock bass, WB = white bass, PS = pumpkinseed, BC = Black Crappie, BG = bluegill, WE = walleye

\*Between LOD and LOQ

ND = Non-Detect

## Silver Creek and Suukjak Sep Creek

**Waterbody:** Silver Creek and Suukjak Sep Creek (WBICs: 1660500 & 1665800)

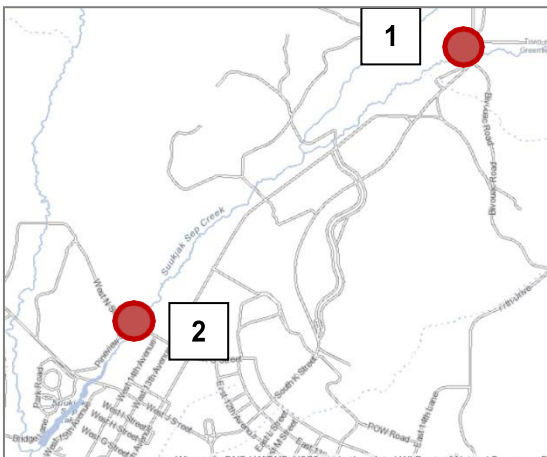
**County:** Monroe

**Water chemistry sampling rounds reported:** 3 of 3

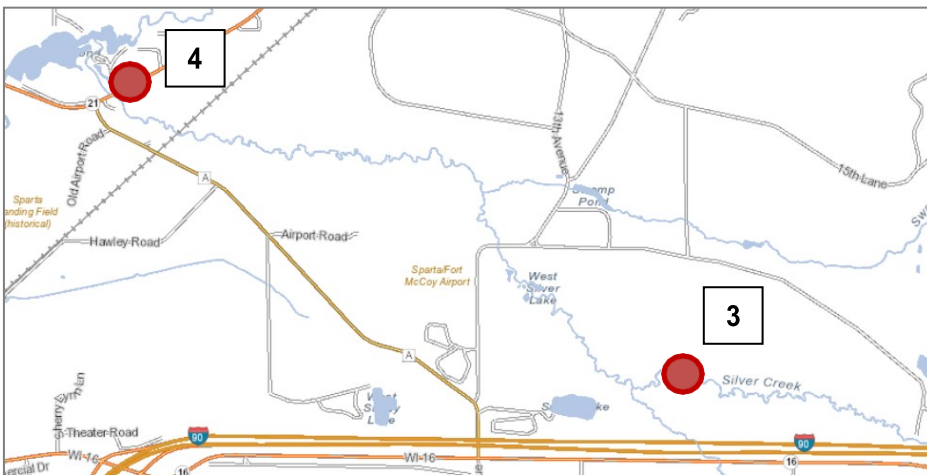
**Fish tissue results reported:** No fish samples collected in 2019

Why the Silver Creek and Suukjak Sep Creek were selected for monitoring: PFAS contamination is suspected at two locations that are historic fire suppression training locations on or near the U.S. Army Fort McCoy training center.

Monitoring Locations: Two locations were selected on each waterbody: one location upstream of the old fire suppression training areas and one location downstream. The upstream locations should serve as a control to understand background concentrations of PFAS in streams within the region.



- 1) Suukjak Sep Creek at 17<sup>th</sup> Road
- 2) Suukjak Sep Creek at West N Street
- 3) Silver Creek at Fort McCoy access bridge
- 4) Silver Creek at HWY 21 (downstream of Fort McCoy)



Silver Creek and Suukjak Sep Creek: Surface Water Results

06/25/19	1) Suukjak Sep Creek at 17th Road	2) Suukjak Sep Creek at West N Street	3) Silver Creek at Fort McCoy access bridge	4) Silver Creek at HWY 21 (downstream of Fort McCoy)	Field Blank
<b>Analyte (ng/l)</b>					
10:2 FTSA	ND	ND	ND	ND	ND
11Cl-PF3OUdS	ND	ND	ND	ND	ND
4:2 FTSA	ND	ND	ND	ND	ND
6:2 FTSA	ND	0.077	ND	2.2	ND
8:2 FTSA	ND	ND	ND	0.42	ND
9Cl-PF3ONS	ND	ND	ND	ND	ND
DONA	ND	ND	ND	ND	ND
FOSA	ND	ND	ND	ND	ND
HFPO-DA	ND	ND	ND	ND	ND
N-EtFOSA	ND	ND	ND	ND	ND
N-EtFOSAA	ND	ND	ND	ND	ND
N-EtFOSE	ND	ND	ND	ND	ND
N-MeFOSA	ND	ND	ND	ND	ND
N-MeFOSAA	ND	ND	ND	ND	ND
N-MeFOSE	ND	ND	ND	ND	ND
PFBA	NR	NR	NR	NR	NR
PFBS	0.07*	ND	0.12*	1.5	ND
PFDA	ND	ND	ND	ND	ND
PFDoA	ND	ND	ND	ND	ND
PFDoS	ND	ND	ND	ND	ND
PFDS	ND	ND	ND	ND	ND
PFHpA	ND	0.49	ND	0.86	ND
PFHpS	ND	ND	ND	ND	ND
PFHxA	ND	0.84	ND	2.2	ND
PFHxDA	ND	ND	ND	ND	ND
PFHxS	ND	2.9	0.26	8.9	ND
PFNA	0.10*	0.085*	ND	0.18*	ND
PFNS	ND	ND	ND	ND	ND
PFOA	0.16*	1.4	0.11*	4.0	ND
PFODA	ND	ND	ND	ND	ND
PFOS	ND	3.2	0.59	21.0	ND
PFPeA	ND	ND	ND	1.2	ND
PFPeS	ND	0.29	ND	1.2	ND
PFTeDA	ND	ND	ND	ND	ND
PFTrDA	ND	ND	ND	ND	ND
PFUnA	ND	ND	ND	ND	ND

\*Between LOD and LOQ

ND = Non-Detect, NR = Non-Reportable

07/23/19	1) Suukjak Sep Creek at 17th Road	2) Suukjak Sep Creek at West N Street	3) Silver Creek at Fort McCoy access bridge	4) Silver Creek at HWY 21 (downstream of Fort McCoy)	Field Blank
<b>Analyte (ng/l)</b>					
10:2 FTSA	ND	ND	ND	ND	ND
11Cl-PF3OUdS	ND	ND	ND	ND	ND
4:2 FTSA	ND	ND	ND	ND	ND
6:2 FTSA	ND	ND	ND	2.5	ND
8:2 FTSA	ND	ND	ND	0.29*	ND
9Cl-PF3ONS	ND	ND	ND	ND	ND
DONA	ND	ND	ND	ND	ND
FOSA	ND	ND	ND	ND	ND
HFPO-DA	ND	ND	ND	ND	ND
N-EtFOSA	ND	ND	ND	ND	ND
N-EtFOSAA	ND	ND	ND	ND	ND
N-EtFOSE	ND	ND	ND	0.85	ND
N-MeFOSA	ND	ND	ND	ND	ND
N-MeFOSAA	ND	ND	ND	ND	ND
N-MeFOSE	ND	ND	ND	ND	ND
PFBA	NR	NR	NR	NR	NR
PFBS	ND	0.48	0.11*	3.2	ND
PFDA	ND	ND	ND	ND	ND
PFDoA	ND	ND	ND	ND	ND
PFDoS	ND	ND	ND	ND	ND
PFDS	ND	ND	ND	ND	ND
PFHpA	ND	0.5	ND	2	ND
PFHpS	ND	ND	ND	1	ND
PFHxA	ND	0.85	ND	4.4	0.27*
PFHxDA	ND	ND	ND	ND	ND
PFHxS	ND	2.9	0.21*	19	ND
PFNA	ND	0.1*	ND	0.44	ND
PFNS	ND	ND	ND	ND	ND
PFOA	0.15*	1.2	0.16*	7.8	ND
PFODA	ND	ND	ND	ND	ND
PFOS	ND	2.9	0.43	43	ND
PFPeA	ND	ND	ND	2.2	ND
PFPeS	ND	0.3	ND	2.7	ND
PFTeDA	ND	ND	ND	ND	ND
PFTTrDA	ND	ND	ND	ND	ND
PFUnA	ND	ND	ND	ND	ND

\*Between LOD and LOQ

ND = Non-Detect, NR = Non-Reportable



08/20/19	1) Suukjak Sep Creek at 17th Road	2) Suukjak Sep Creek at West N Street	3) Silver Creek at Fort McCoy access bridge	4) Silver Creek at HWY 21 (downstream of Fort McCoy)	Field Blank
<b>Analyte (ng/l)</b>					
10:2 FTSA	ND	ND	ND	ND	ND
11Cl-PF3OUdS	ND	ND	ND	ND	ND
4:2 FTSA	ND	ND	ND	ND	ND
6:2 FTSA	ND	ND	ND	1.5	ND
8:2 FTSA	ND	ND	ND	0.22*	ND
9Cl-PF3ONS	ND	ND	ND	ND	ND
DONA	ND	ND	ND	ND	ND
FOSA	ND	ND	ND	ND	ND
HFPO-DA	ND	ND	ND	ND	ND
N-EtFOSA	ND	ND	ND	ND	ND
N-EtFOSAA	ND	ND	ND	ND	ND
N-EtFOSE	ND	ND	ND	ND	ND
N-MeFOSA	ND	ND	ND	ND	ND
N-MeFOSAA	ND	ND	ND	ND	ND
N-MeFOSE	ND	ND	ND	ND	ND
PFBA	NR	NR	NR	NR	NR
PFBS	ND	0.61	ND	1.8	ND
PFDA	ND	ND	ND	ND	ND
PFDoA	ND	ND	ND	ND	ND
PFDoS	ND	ND	ND	ND	ND
PFDS	ND	ND	ND	ND	ND
PFHpA	ND	0.62*	ND	1	ND
PFHpS	ND	ND	ND	0.57	ND
PFHxA	ND	1.1	ND	2.6	0.5*
PFHxDA	ND	ND	ND	ND	ND
PFHxS	ND	3.9	0.29*	11	ND
PFNA	ND	ND	ND	0.23*	ND
PFNS	ND	ND	ND	ND	ND
PFOA	ND	1.9	ND	4.1	0.2*
PFODA	ND	ND	ND	ND	ND
PFOS	ND	4.4	0.4*	26	ND
PFPeA	ND	0.99	ND	1.8	ND
PFPeS	ND	0.39	ND	1.7	ND
PFTeDA	ND	ND	ND	ND	ND
PFTTrDA	ND	ND	ND	ND	ND
PFUnA	ND	ND	ND	ND	ND

\*Between LOD and LOQ

ND = Non-Detect, NR = Non-Reportable

# Mississippi River

**Waterbody:** Mississippi River (WBIC: 72100)

**County:** Pierce, Pepin, Buffalo and Vernon

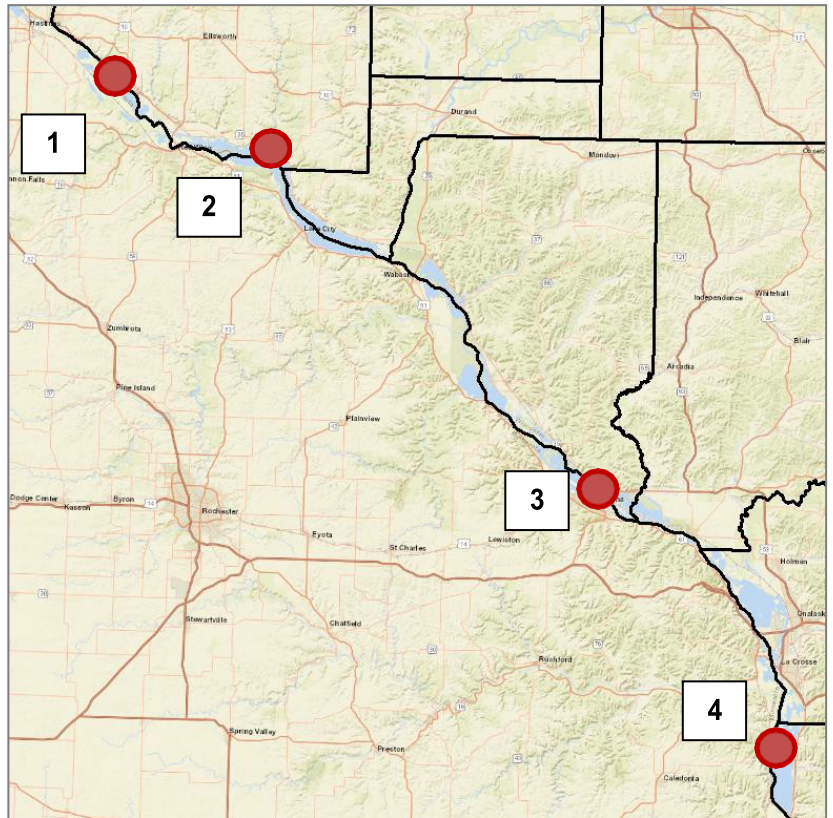
**Water chemistry sampling rounds reported:** 3 of 3

**Fish tissue results reported:** None

Why the Mississippi River was selected for monitoring: Given the large watershed and history of industrial users within the watershed, there are likely many possible diffuse sources of PFAS in the river. One well-documented source of PFAS contamination is a 3M plant located just outside of St. Paul, Minnesota.

Monitoring Locations: Water chemistry monitoring stations were selected in Pools 3, 4, 6 & 8 to match scheduled WDNR Fisheries Management fish contaminants monitoring. Water chemistry results will be paired with fish tissue analysis for PFAS to aid in the potential development of a water quality standard.

- 1) Mississippi River Pool 3
- 2) Mississippi River Pool 4
- 3) Mississippi River Pool 6
- 4) Mississippi River Pool 8



Mississippi River: Surface Water Results

06/27/19	1) Mississippi River, Pool 3	2) Mississippi River, Pool 4	3) Mississippi River, Pool 6	4) Mississippi River, Pool 8	Field Blank
<b>Analyte (ng/l)</b>					
10:2 FTSA	ND	ND	ND	ND	ND
11Cl-PF3OUdS	ND	ND	ND	ND	ND
4:2 FTSA	ND	ND	ND	ND	ND
6:2 FTSA	0.93	0.15*	ND	0.14*	ND
8:2 FTSA	ND	ND	ND	ND	ND
9Cl-PF3ONS	ND	ND	ND	ND	ND
DONA	ND	ND	ND	ND	ND
FOSA	ND	ND	ND	ND	ND
HFPO-DA	ND	ND	ND	ND	ND
N-EtFOSA	ND	ND	ND	ND	ND
N-EtFOSAA	ND	ND	ND	ND	ND
N-EtFOSE	ND	ND	ND	ND	ND
N-MeFOSA	ND	ND	ND	ND	ND
N-MeFOSAA	ND	ND	ND	ND	ND
N-MeFOSE	ND	ND	ND	ND	ND
PFBA	NR	NR	NR	NR	NR
PFBS	2	1.3	1.2	1.7	ND
PFDA	ND	ND	ND	ND	ND
PFDoA	ND	ND	ND	ND	ND
PFDoS	ND	ND	ND	ND	ND
PFDS	ND	ND	ND	ND	ND
PFHpA	0.84	0.43*	0.4*	0.58*	ND
PFHpS	ND	ND	ND	ND	ND
PFHxA	1.7	0.78	0.83	1.3	ND
PFHxDA	ND	ND	ND	ND	ND
PFHxS	1	0.53	0.54	0.89	ND
PFNA	0.6	0.44	0.43	0.71	ND
PFNS	ND	ND	ND	ND	ND
PFOA	5.2	2.6	2.3	3.8	ND
PFODA	ND	ND	ND	ND	ND
PFOS	3.1	1.7	1.7	2.5	ND
PFPeA	ND	ND	ND	ND	ND
PFPeS	0.17*	ND	ND	0.13*	ND
PFTeDA	ND	ND	ND	ND	ND
PFTTrDA	ND	ND	ND	ND	ND
PFUnA	ND	ND	ND	ND	ND

\*Between LOD and LOQ

ND = Non-Detect, NR = Non-Reportable

07/25/19	1) Mississippi River, Pool 3	2) Mississippi River, Pool 4	3) Mississippi River, Pool 6	4) Mississippi River, Pool 8	Field Blank
<b>Analyte (ng/l)</b>					
10:2 FTSA	ND	ND	ND	ND	ND
11Cl-PF3OUdS	ND	ND	ND	ND	ND
4:2 FTSA	ND	ND	ND	ND	ND
6:2 FTSA	0.23*	0.16*	0.2*	ND	ND
8:2 FTSA	ND	ND	ND	ND	ND
9Cl-PF3ONS	ND	ND	ND	ND	ND
DONA	ND	ND	ND	ND	ND
FOSA	ND	ND	ND	0.15*	ND
HFPO-DA	ND	ND	ND	ND	ND
N-EtFOSA	ND	ND	ND	ND	ND
N-EtFOSAA	ND	ND	ND	ND	ND
N-EtFOSE	ND	ND	ND	ND	ND
N-MeFOSA	ND	ND	ND	ND	ND
N-MeFOSAA	ND	ND	ND	ND	ND
N-MeFOSE	ND	ND	ND	ND	ND
PFBA	NR	NR	NR	NR	NR
PFBS	1.6	1	1.7	1.3	ND
PFDA	ND	ND	ND	ND	ND
PFDoA	ND	ND	ND	ND	ND
PFDoS	ND	ND	ND	ND	ND
PFDS	ND	ND	ND	ND	ND
PFHpA	0.52	0.48	0.69	0.76	ND
PFHpS	ND	ND	ND	ND	ND
PFHxA	1	0.71	0.99	ND	ND
PFHxDA	ND	ND	ND	ND	ND
PFHxS	0.65	0.41	0.63	0.58	ND
PFNA	0.31	0.32	0.45	0.54	ND
PFNS	ND	ND	ND	ND	ND
PFOA	2.9	1.9	3	2.2	ND
PFODA	ND	ND	ND	ND	ND
PFOS	1.5	1.3	2.1	1.9	ND
PFPeA	ND	ND	ND	ND	ND
PFPeS	0.12*	ND	ND	ND	ND
PFTeDA	ND	ND	ND	ND	ND
PFTrDA	ND	ND	ND	ND	ND
PFUnA	ND	ND	ND	ND	ND

\*Between LOD and LOQ

ND = Non-Detect, NR = Non-Reportable

08/14/19	1) Mississippi River, Pool 3	2) Mississippi River, Pool 4	3) Mississippi River, Pool 6	4) Mississippi River, Pool 8	Field Blank
<b>Analyte (ng/l)</b>					
10:2 FTSA	ND	ND	ND	ND	ND
11Cl-PF3OUdS	ND	ND	ND	ND	ND
4:2 FTSA	ND	ND	ND	ND	ND
6:2 FTSA	0.3*	0.14*	0.19*	0.11*	ND
8:2 FTSA	ND	ND	ND	ND	ND
9Cl-PF3ONS	ND	ND	ND	ND	ND
DONA	ND	ND	ND	ND	ND
FOSA	ND	ND	ND	ND	ND
HFPO-DA	ND	ND	ND	ND	ND
N-EtFOSA	ND	ND	0.3*	0.28*	ND
N-EtFOSAA	0.25*	ND	ND	ND	ND
N-EtFOSE	ND	ND	ND	ND	ND
N-MeFOSA	ND	ND	ND	ND	ND
N-MeFOSAA	ND	ND	ND	ND	ND
N-MeFOSE	ND	ND	ND	ND	ND
PFBA	NR	NR	NR	NR	NR
PFBS	5.3	5	7	4.2	ND
PFDA	ND	ND	ND	ND	ND
PFDoA	ND	ND	ND	ND	ND
PFDoS	ND	ND	ND	ND	ND
PFDS	ND	ND	ND	ND	ND
PFHpA	1.3	0.62	0.83	0.64	ND
PFHpS	0.15*	ND	ND	ND	ND
PFHxA	2.9	1	1.4	1.2	ND
PFHxDA	ND	ND	ND	ND	ND
PFHxS	1.9	0.77	1	0.76	ND
PFNA	0.65	0.37	0.5	0.4	ND
PFNS	ND	ND	ND	ND	ND
PFOA	8.7	3.3	4.6	3.2	ND
PFODA	ND	ND	ND	ND	ND
PFOS	4.2	1.5	2.1	1.5	ND
PFPeA	ND	ND	ND	ND	ND
PFPeS	0.4	ND	0.11*	0.1*	ND
PFTeDA	ND	ND	ND	ND	ND
PFTrDA	ND	ND	ND	ND	ND
PFUnA	ND	ND	ND	ND	ND

\*Between LOD and LOQ

ND = Non-Detect, NR = Non-Reportable

Mississippi River: Fish Tissue Results

MISSISSIPPI RIVER, Pool 3 (06/24/19) Fish Tissue Results (ng/g or ppb)																
	BG <sup>1</sup>	BG	BG	BG	BG	BG	BG	BG	BG	BG	BG	FW DRUM	LM BASS	SAUGER	SAUGER	WHITE BASS
10:2 FTSA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
11Cl-PF3OUdS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4:2 FTSA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
6:2 FTSA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
8:2 FTSA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
9Cl-PF3ONS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
DONA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
HFPO-DA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
NEtFOSAA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
NMeFOSAA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFBS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFDA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFDoA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFDoS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFDS	ND	ND	4.9	1.1*	ND	ND	1.6*	2.9	1.1*	ND	1.2*	4.6	ND	0.93*	3.1	
PFHpA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFHpS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFHxA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFHxDA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFHxS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFNA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFNS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFOA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFODA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFOS	16	24	28	14	15	15	22	24	10	12	36	20	16	15	38	
PFOSA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFPeA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	6.3	ND	ND	ND	ND	ND
PFPeS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFTeDA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFTrDA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFUnA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

<sup>1</sup> Fish species abbreviations: YP = yellow perch, NP = northern pike, LB = largemouth bass, SB = smallmouth bass, RB = rock bass, WB = white bass, PS = pumpkinseed, BC = Black Crappie, BG = bluegill, WE = walleye

\*Between LOD and LOQ

ND = Non-Detect

MISSISSIPPI RIVER, Pool 4 (06/24/19), Fish Tissue Results (ng/g or ppb)																			
	FW DRUM	BG <sup>1</sup>	BG	BG	BG	RB <sup>1</sup>	BG	BG	RB	BG	SAUGER	LB <sup>1</sup>	YP <sup>1</sup>	SB <sup>1</sup>	BG	BG	BG	BG	
10:2 FTSA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
11CI-PF3OUdS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4:2 FTSA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
6:2 FTSA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
8:2 FTSA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
9CI-PF3ONS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
DONA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
HFPO-DA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
NEtFOSAA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
NMeFOSAA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFBS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFDA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFDoA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFDoS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFDS	ND	1.9*	ND	ND	1.2*	ND	ND	ND	ND	ND	0.89*	0.97*	0	2.3	ND	ND	ND	ND	ND
PFHpA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFHpS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFHxA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFHxDA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFHxS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFNA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFNS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFOA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFODA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFOS	16	8.9	3.6	4.1	7.8	19	7.2	2.5	6.9	4.8	24	27	5.5	13	4.2	5	0.96*	7.2	
PFOSA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFPeA	3.8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFPeS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFTeDA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFTrDA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFUnA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

<sup>1</sup> Fish species abbreviations: YP = yellow perch, NP = northern pike, LB = largemouth bass, SB = smallmouth bass, RB = rock bass, WB = white bass, PS = pumpkinseed, BC = Black Crappie, BG = bluegill, WE = walleye

\*Between LOD and LOQ

ND = Non-Detect

MISSISSIPPI RIVER, Pool 6 (06/25/19), Fish Tissue Results (ng/g or ppb)															
	N PIKE	BG <sup>1</sup>	BG	Y PERCH	Y PERCH	LM BASS	LM BASS	BG	BG	BG	BG	BG	BG	BG	BG
10:2 FTSA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
11CI-PF3OUdS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4:2 FTSA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
6:2 FTSA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
8:2 FTSA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
9CI-PF3ONS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
DONA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
HFPO-DA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
NEtFOSAA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
NMeFOSAA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFBS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFDA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFDoA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFDoS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFDS	ND	3.4	1.6*	4.4	4	3.6	4.8	1.5*	3.5	1.7*	ND	ND	1.6*	ND	ND
PFHpA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFHpS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFHxA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFHxDA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFHxS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFNA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFNS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFOA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFODA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFOS	6.8	14	12	16	23	20	25	8.2	36	7.1	13	7.2	10	4.7	9.9
PFOSA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFPeA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFPeS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFTeDA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFTrDA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFUnA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

<sup>1</sup> Fish species abbreviations: YP = yellow perch, NP = northern pike, LB = largemouth bass, SB = smallmouth bass, RB = rock bass, WB = white bass, PS = pumpkinseed, BC = Black Crappie, BG = bluegill, WE = walleye

\*Between LOD and LOQ

ND = Non-Detect



MISSISSIPPI RIVER, Pool 8 (06/24/19), Fish Tissue Results (ng/g or ppb)															
	BG <sup>1</sup>	BG	BG	BG	Y PERCH	Y PERCH	Y PERCH	BG	R BASS	SM BASS	BG	BG	BG	BG	BG
10:2 FTSA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
11CI-PF3OUdS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4:2 FTSA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
6:2 FTSA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
8:2 FTSA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
9CI-PF3ONS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
DONA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
HFPO-DA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
NEtFOSAA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
NMeFOSAA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFBS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFDA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFDoA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFDoS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFDS	ND	ND	ND	1.2*	ND	ND	ND	ND	ND	1.1*	1.2*	ND	ND	ND	ND
PFHpA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFHpS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFHxA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFHxDA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFHxS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFNA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFNS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFOA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFODA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFOS	6.1	13	26	8.8	15	9.6	10	9.5	22	13	14	11	14	17	10
PFOSA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFPeA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5.8	ND	ND	ND
PFPeS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFTeDA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFTrDA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFUnA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

<sup>1</sup> Fish species abbreviations: YP = yellow perch, NP = northern pike, LB = largemouth bass, SB = smallmouth bass, RB = rock bass, WB = white bass, PS = pumpkinseed, BC = Black Crappie, BG = bluegill, WE = walleye

\*Between LOD and LOQ

ND = Non-Detect

# Menominee River

**Waterbody:** Menominee River (WBICs: 634500, 609400, 609200 & 609000)

**County:** Marinette

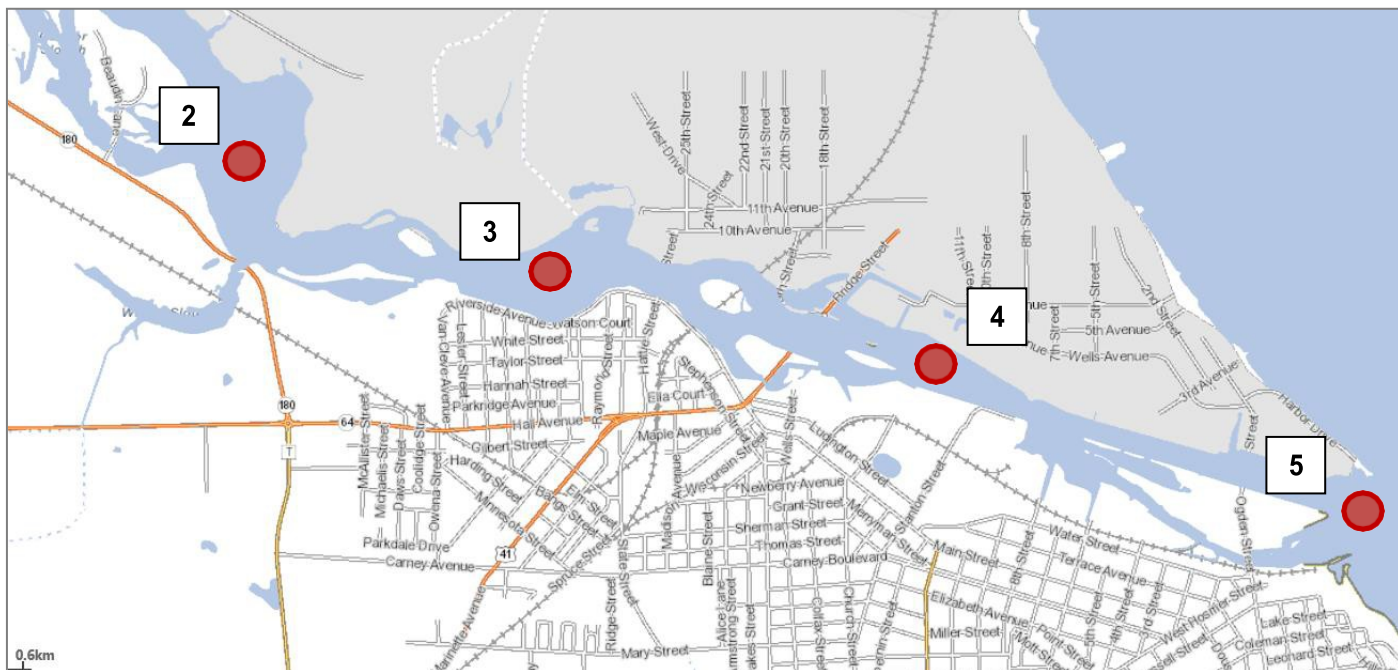
**Water chemistry sampling rounds reported:** 3 of 3

**Fish tissue results reported:** None

Why the Menominee River was selected for monitoring: PFAS contamination has been detected in surface water, groundwater and drinking water wells in the Marinette, WI area. Johnson Controls/Tyco manufactured and tested AFFF and is actively remediating two small streams that drain the City of Marinette south to Lake Michigan.

Monitoring Locations: Water chemistry stations were selected at Chalk Hills Flowage to pair with Fisheries Management fish contaminants monitoring and provide background concentrations. Four other monitoring locations were selected between Upper Scott Flowage and the mouth of Green Bay to capture a gradient of possible PFAS contamination to the lower Menominee River from multiple possible sources. Water chemistry results will be paired with fish tissue analysis for PFAS to aid in the potential development of a water quality standard.

- 1) Chalk Hills Flowage (not shown here, ~50 miles upstream)
- 2) Upper Scott Flowage
- 3) Lower Scott Flowage
- 4) Menominee River ~250 meters downstream POTW outfall
- 5) Menominee River at mouth to Green Bay



Menominee River: Surface Water Results

05/29/19 (CHF) & 06/27/19	1) Menominee River, Chalk Hills Flowage	2) Menominee River, Upper Scott Flowage	3) Menominee River, Lower Scott Flowage	4) Menominee River, BI WWTP outfall	5) Menominee River, Mouth to Green Bay	Field Blank
<b>Analyte (ng/l)</b>						
10:2 FTSA	ND	ND	ND	ND	ND	ND
11CI-PF3OUdS	ND	ND	ND	ND	ND	ND
4:2 FTSA	ND	ND	ND	ND	ND	ND
6:2 FTSA	ND	ND	ND	ND	1.3	ND
8:2 FTSA	ND	ND	ND	ND	ND	ND
9CI-PF3ONS	ND	ND	ND	ND	ND	ND
DONA	ND	ND	ND	ND	ND	ND
FOSA	ND	ND	ND	ND	ND	ND
HFPO-DA	ND	ND	ND	ND	ND	ND
N-EtFOSA	ND	ND	ND	ND	ND	ND
N-EtFOSAA	ND	ND	ND	ND	ND	ND
N-EtFOSE	ND	ND	ND	ND	ND	ND
N-MeFOSA	ND	ND	ND	ND	ND	ND
N-MeFOSAA	ND	ND	ND	ND	ND	ND
N-MeFOSE	ND	ND	ND	ND	ND	ND
PFBA	NR	NR	NR	NR	NR	NR
PFBS	ND	ND	ND	ND	ND	ND
PFDA	ND	ND	ND	ND	ND	ND
PFDoA	ND	ND	ND	ND	ND	ND
PFDoS	ND	ND	ND	ND	ND	ND
PFDS	ND	ND	ND	ND	ND	ND
PFHpA	ND	0.3	0.24*	ND	0.41*	ND
PFHpS	ND	ND	ND	ND	ND	ND
PFHxA	ND	ND	ND	ND	ND	ND
PFHxDA	ND	ND	ND	ND	ND	ND
PFHxS	0.068*	0.088*	0.092*	ND	0.094*	ND
PFNA	0.18*	0.19*	0.18*	0.094*	0.19*	ND
PFNS	ND	ND	ND	ND	ND	ND
PFOA	0.32*	0.51*	0.44	ND	0.6	ND
PFODA	ND	ND	ND	ND	ND	ND
PFOS	0.31*	0.29*	0.3*	ND	0.31*	ND
PFPeA	ND	ND	ND	ND	ND	ND
PFPeS	ND	ND	ND	ND	ND	ND
PFTeDA	ND	ND	ND	ND	ND	ND
PFTTrDA	ND	ND	ND	ND	ND	ND
PFUnA	ND	ND	ND	ND	ND	ND

\*Between LOD and LOQ

ND = Non-Detect, NR = Non-Reportable

07/29/19	1) Menominee River, Chalk Hills Flowage	2) Menominee River, Upper Scott Flowage	3) Menominee River, Lower Scott Flowage	4) Menominee River, BI WWTP outfall	5) Menominee River, Mouth to Green Bay	Field Blank
<b>Analyte (ng/l)</b>						
10:2 FTSA	NS	ND	ND	ND	ND	ND
11Cl-PF3OUdS	NS	ND	ND	ND	ND	ND
4:2 FTSA	NS	ND	ND	ND	ND	ND
6:2 FTSA	NS	ND	ND	ND	5.7	ND
8:2 FTSA	NS	ND	ND	ND	ND	ND
9Cl-PF3ONS	NS	ND	ND	ND	ND	ND
DONA	NS	ND	ND	ND	ND	ND
FOSA	NS	ND	ND	ND	ND	ND
HFPO-DA	NS	ND	ND	ND	ND	ND
N-EtFOSA	NS	ND	ND	ND	ND	ND
N-EtFOSAA	NS	ND	ND	ND	ND	ND
N-EtFOSE	NS	ND	ND	ND	ND	ND
N-MeFOSA	NS	ND	ND	ND	ND	ND
N-MeFOSAA	NS	ND	ND	ND	ND	ND
N-MeFOSE	NS	ND	ND	ND	ND	ND
PFBA	NS	NR	NR	NR	NR	NR
PFBS	NS	0.17*	0.21*	ND	0.2*	ND
PFDA	NS	ND	ND	ND	ND	ND
PFDoA	NS	ND	ND	ND	ND	ND
PFDoS	NS	ND	ND	ND	ND	ND
PFDS	NS	ND	ND	ND	ND	ND
PFHpA	NS	0.48	0.53	0.51	0.65	ND
PFHpS	NS	ND	ND	ND	ND	ND
PFHxA	NS	ND	ND	ND	0.98	0.96
PFHxDA	NS	ND	ND	ND	ND	ND
PFHxS	NS	0.12*	0.11*	0.13*	0.15*	ND
PFNA	NS	0.25	0.26	0.29	0.26	ND
PFNS	NS	ND	ND	ND	ND	ND
PFOA	NS	0.67	0.71	0.71	0.82	ND
PFODA	NS	ND	ND	ND	ND	ND
PFOS	NS	0.31*	0.32*	0.32*	0.4*	ND
PFPeA	NS	ND	ND	ND	ND	ND
PFPeS	NS	ND	ND	ND	ND	ND
PFTeDA	NS	ND	ND	ND	ND	ND
PFTTrDA	NS	ND	ND	ND	ND	ND
PFUnA	NS	ND	ND	ND	ND	ND

\*Between LOD and LOQ

NS = No Sample, ND = Non-Detect, NR = Non-Reportable

09/16/2019	1) Menominee River, Chalk Hills Flowage	2) Menominee River, Upper Scott Flowage	3) Menominee River, Lower Scott Flowage	4) Menominee River, BI WWTP outfall	5) Menominee River, Mouth to Green Bay	Field Blank
<b>Analyte (ng/l)</b>						
10:2 FTSA	NS	ND	ND	ND	ND	ND
11Cl-PF3OUdS	NS	ND	ND	ND	ND	ND
4:2 FTSA	NS	ND	ND	ND	ND	ND
6:2 FTSA	NS	ND	ND	ND	2.5	ND
8:2 FTSA	NS	ND	ND	ND	ND	ND
9Cl-PF3ONS	NS	ND	ND	ND	ND	ND
DONA	NS	ND	ND	ND	ND	ND
FOSA	NS	ND	ND	ND	ND	ND
HFPO-DA	NS	ND	ND	ND	ND	ND
N-EtFOSA	NS	ND	ND	ND	ND	ND
N-EtFOSAA	NS	ND	ND	ND	ND	ND
N-EtFOSE	NS	ND	ND	ND	ND	ND
N-MeFOSA	NS	ND	ND	ND	ND	ND
N-MeFOSAA	NS	ND	ND	ND	ND	ND
N-MeFOSE	NS	ND	ND	ND	ND	ND
PFBA	NS	NR	NR	NR	NR	NR
PFBS	NS	ND	ND	ND	ND	ND
PFDA	NS	ND	ND	ND	ND	ND
PFDoA	NS	ND	ND	ND	ND	ND
PFDoS	NS	ND	ND	ND	ND	ND
PFDS	NS	ND	ND	ND	ND	ND
PFHpA	NS	0.37*	0.44*	0.5*	0.61*	ND
PFHpS	NS	ND	ND	ND	ND	ND
PFHxA	NS	ND	ND	ND	ND	1.5
PFHxDA	NS	ND	ND	ND	ND	ND
PFHxS	NS	ND	ND	ND	ND	ND
PFNA	NS	0.18*	0.19*	0.21*	0.22*	ND
PFNS	NS	ND	ND	ND	ND	ND
PFOA	NS	0.5*	0.6*	0.56*	0.82	ND
PFODA	NS	ND	ND	ND	ND	ND
PFOS	NS	ND	ND	ND	ND	ND
PFPeA	NS	ND	ND	ND	ND	ND
PFPeS	NS	ND	ND	ND	ND	ND
PFTeDA	NS	ND	ND	ND	ND	ND
PFTTrDA	NS	ND	ND	ND	ND	ND
PFUnA	NS	ND	ND	ND	ND	ND

\*Between LOD and LOQ

NS = No Sample, ND = Non-Detect, NR = Non-Reportable

Menominee River: Fish Tissue Results

MENOMINEE RIVER, Lower Scott Flowage (07/29/19), Fish Tissue Results (ng/g or ppb)																														
	YP <sup>1</sup>	LB	PS	YP	YP	YP	SB	YP	SB	YP	NP	YP	NP	PS	YP	LB	YP	SB	YP	NP	YP	NP	YP	BC	PS	BC	PS	RB	RB	RB
10:2 FTSA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
11CI-PF3OUdS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
8:2 FTSA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
9CI-PF3ONS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
DONA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
HFPO-DA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
NEtFOSAA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
NMeFOSAA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFBS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFDA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFDoA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFDoS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFDS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFHpA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFHpS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFHxA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFHxS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFNA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFNS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFOA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
<b>PFOS</b>	<b>9.7</b>	<b>6.4</b>	<b>12</b>	<b>2.2</b>	<b>3</b>	<b>6.4</b>	<b>2.5</b>	<b>2</b>	<b>ND</b>	<b>ND</b>	<b>6.2</b>	<b>6.4</b>	<b>7.1</b>	<b>7.8</b>	<b>10</b>	<b>4.2</b>	<b>18</b>	<b>3.6</b>	<b>8.7</b>	<b>ND</b>	<b>6.6</b>	<b>ND</b>	<b>6</b>	<b>2.6</b>	<b>9.2</b>	<b>4.9</b>	<b>20</b>	<b>23</b>	<b>5.8</b>	<b>4.7</b>
PFPeA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFPeS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFTeDA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFTrDA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFUnA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

<sup>1</sup> Fish species abbreviations: YP = yellow perch, NP = northern pike, LB = largemouth bass, SB = smallmouth bass, RB = rock bass, WB = white bass, PS = pumpkinseed, BC = Black Crappie, BG = bluegill, WE = walleye

\*Between LOD and LOQ  
ND = Non-Detect

MENOMINEE RIVER, Mouth at Green Bay (07/29/19), Fish Tissue Results (ng/g or ppb)															
	BG <sup>1</sup>	PS <sup>1</sup>	WE <sup>1</sup>	WE	SB <sup>1</sup>	SB	WE	BG	BG	BG	BG	YP <sup>1</sup>	YP	YP	PS <sup>1</sup>
10:2 FTSA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
11Cl-PF3OUdS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
8:2 FTSA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
9Cl-PF3ONS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
DONA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
HFPO-DA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
NEtFOSAA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
NMeFOSAA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFBS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFDA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFDoA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFDoS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFDS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFHpA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFHpS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFHxA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFHxS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFNA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFNS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFOA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFOS	13.4	13.7	11.5	9.91	3.38	10.5	8.82	7.62	4.94	10	7.2	9.73	20.2	11.6	5.46
PFPeA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFPeS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFTeDA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFTrDA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFUnA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

<sup>1</sup> Fish species abbreviations: YP = yellow perch, NP = northern pike, LB = largemouth bass, SB = smallmouth bass, RB = rock bass, WB = white bass, PS = pumpkinseed, BC = Black Crappie, BG = bluegill, WE = walleye

ND = Non-Detect

## Peshtigo and St. Louis Rivers

**Waterbody:** Peshtigo River and St Louis River (WBICs: 515500 & 2843800)

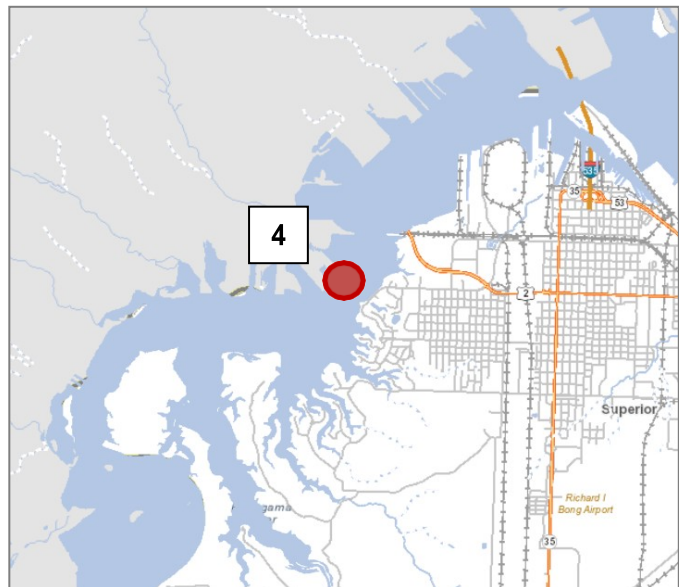
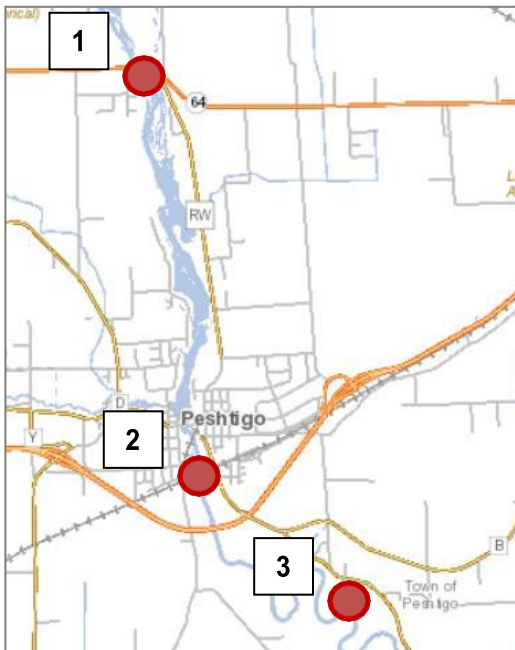
**County:** Marinette and Douglas

**Water chemistry sampling rounds reported:** 1 of 1

**Fish tissue results reported:** No fish samples collected

Why the Peshtigo River and St Louis River were selected for monitoring: Agricultural fields in the Peshtigo River watershed have historically land spread biosolids received from the Marinette POTW. There have been public concerns about PFAS in the Peshtigo River, but no confirmed samples from the river. St Louis River was selected to pair water chemistry samples with fish contaminants monitoring being conducted by Minnesota DNR.

Monitoring Locations: Three monitoring stations above, within and below the City of Peshtigo were selected for monitoring. If PFAS are found, this monitoring design should help determine if sources are from the upstream watershed, or from more localized sources within the City of Peshtigo. A single water chemistry sample was collected on the Saint Louis River to pair with Minnesota DNR's Fisheries Management fish contaminants monitoring. The monitoring location was pre-selected by MN DNR. Water chemistry results will be paired with fish tissue analysis for PFAS to aid in the potential development of a water quality standard.



- 1) Peshtigo River above HWY 64 at boat landing
- 2) Peshtigo River downstream Peshtigo Flowage between railroad bridges
- 3) Peshtigo River below City of Peshtigo (river mile 7.65)
- 4) St. Louis River at Arrowhead Pier fishing access



Peshtigo and St. Louis Rivers: Surface Water Results

08/14/19 & 07/01/19 (St Louis)	1) Peshtigo River above HWY 64	2) Peshtigo River below Peshtigo Flowage	3) Peshtigo River below City of Peshtigo	4) St Louis River at Arrowhead Pier
<b>Analyte (ng/l)</b>				
10:2 FTSA	ND	ND	ND	ND
11Cl-PF3OUdS	ND	ND	ND	ND
4:2 FTSA	ND	ND	ND	ND
6:2 FTSA	ND	ND	0.17*	ND
8:2 FTSA	ND	ND	ND	ND
9Cl-PF3ONS	ND	ND	ND	ND
DONA	ND	ND	ND	ND
FOSA	ND	ND	ND	ND
HFPO-DA	ND	ND	ND	ND
N-EtFOSA	ND	ND	ND	ND
N-EtFOSAA	ND	ND	ND	ND
N-EtFOSE	0.15*	ND	ND	ND
N-MeFOSA	ND	ND	ND	ND
N-MeFOSAA	ND	ND	ND	ND
N-MeFOSE	ND	ND	ND	ND
PFBA	ND	ND	ND	ND
PFBS	NR	NR	NR	NR
PFDA	ND	ND	ND	ND
PFDoA	ND	ND	ND	ND
PFDoS	ND	ND	ND	ND
PFDS	ND	ND	ND	ND
PFHpA	0.71	0.65	0.75	0.35*
PFHpS	ND	ND	ND	ND
PFHxA	ND	ND	0.85	ND
PFHxDA	ND	ND	ND	ND
PFHxS	ND	0.095*	0.093*	0.37
PFNA	0.26	0.29	0.27	0.31
PFNS	ND	ND	ND	ND
PFOA	0.73	0.87	1	0.62
PFODA	ND	ND	ND	ND
PFOS	0.19*	0.27*	0.41	0.63
PFPeA	ND	ND	ND	ND
PFPeS	ND	ND	ND	ND
PFTeDA	ND	ND	ND	ND
PFTTrDA	ND	ND	ND	ND
PFUnA	ND	ND	ND	ND

\*Between LOD and LOQ

ND = Non-Detect, NR = Non-Reportable