

Investigation of Per- and Polyfluoroalkyl Substances (PFAS) in Michigan's Ecorse River and Frank and Poet Drain watersheds: Surface Sampling Update September 2020

In November 2019, EGLE Water Resources Division (WRD), Surface Water Assessment Section (SWAS) conducted surface water sampling in the Rouge River and Ecorse River near their confluence with the Detroit River following a detection of PFOS in the Wyandotte drinking water intake. As a part of this sampling EGLE WRD collected three surface water samples from the Ecorse River. Another sample was collected from the Detroit River downstream of the confluence with the Ecorse River (Figure 1). PFOS in the Ecorse River upstream of the Detroit River confluence measured 13 parts per trillion (ppt). A PFOS concentration of 51 ppt was observed in a sample collected from the South Branch of the Ecorse River just upstream of the main branch confluence. The Main Branch had a PFOS concentration of 31 ppt upstream of the South Branch confluence. Each of these three sampling locations exceeded the Rule 57 Human Noncancer Value (HNV) for PFOS. In the Detroit River, the PFOS concentration was 2.3 ppt which was below the HNV. PFOS concentrations in surface water are compared to the Rule 57 HNV of 12 ppt for non-drinking water sources (Ecorse River) and 11 ppt for drinking water sources (Detroit River). PFOA concentrations in the Ecorse River ranged from 4.4 to 30 ppt and was 1.4 ppt in the Detroit River sample. The Rule 57 HNV for PFOA in surface water is 12,000 ppt for non-drinking water sources and 420 ppt for drinking water sources.

EGLE WRD SWAS conducted additional surface water sampling in the Ecorse River and Frank and Poet Drain watersheds in August 2020 to track down the source of contamination observed in the November 2019 samples and to determine if PFAS contamination exists elsewhere in the watershed. Surface water samples were collected in accordance with the Michigan Per- and Polyfluoroalkyl Substances (PFAS) Sampling Guidance document (MDEQ 2018) and tested for 28 different PFAS following the Michigan Surface Water PFAS Investigation 2019 QAPP (EGLE 2019).

As depicted in Table 1, 23 of 41 surface water samples exceeded the HNV for PFOS. The two highest PFOS concentrations were observed in two drains near the Detroit Metro Airport at Middlebelt Rd (Sample IDs SK-0080 [344 ppt] and PD-0010 [151 ppt]). Figure 2 depicts the sampling locations and PFOS concentrations (in ppt). The three X's in Figure 2 indicate locations where no sample was collected, either due to being dry or inaccessible (inside airport property). Fish were collected from the Ecorse River, the South Branch of the Ecorse River, and the Frank and Poet Drain in 2021 by EGLE's [Fish Contaminant Monitoring Program](#) (FCMP) and submitted for contaminant analysis including PFAS. These data are expected back in 2022.

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Table 1. Surface water PFOS and PFOA concentrations (in ppt) in surface water samples in Ecorse River and Frank and Poet Drain watersheds of Michigan in August 2020. As these water bodies are non-drinking water sources, Results are compared to the Rule 57 Human Noncancer Value (HNV) of 12 ppt for PFOS and 12,000 ppt for PFOA. Results exceeding the Rule 57 HNV are bolded and italicized.

Sample ID	Waterbody Name	Sample Location	Latitude	Longitude	PFOS (ppt)	PFOS Flag	PFOA (ppt)	PFOA Flag
ER-0010	Ecorse River	mouth u/s Biddle Ave	42.23484	-83.149	2.8	J	1.5	K
ER-0020	Ecorse River	u/s of South Br confluence	42.2352	-83.1592	8.8		3.3	J
ER-0025	Ecorse River	Southfield	42.24511	-83.1595	7.9		3.1	J
ER-0030	Ecorse River	S Fort St	42.26158	-83.1671	5.9		2.4	J
ER-0040	Ecorse River	Allen Rd	42.27009	-83.1971	5.4		2.1	J
RE-0010	Reeck Drain	End of Hanfor Ave	42.27014	-83.2046	1.8	J	1.4	K
ER-0050	Ecorse River	End of Powers Ave	42.27367	-83.2212	10.8		4.6	
ER-0070	Ecorse River	S Beech Daly Rd	42.26946	-83.2898	17.0		4.5	
DK-0010	Douglas and Kelly Drain	Beverly Rd	42.2615	-83.2981	18.3		8.4	
ER-0080	Ecorse River	Bayham St	42.26952	-83.2965	15.5		3.8	J
ER-0090	Ecorse River	Beverly Rd	42.26074	-83.3153	14.4		4.7	
BK-0010	Black Creek	Middlebelt Rd	42.25629	-83.3288	6.8		5.5	
ER-0100	Ecorse River	Middlebelt Rd	42.24963	-83.3281	4.0	J	3.3	J
SBE-0010	South Branch Ecorse River	near Ecorse confluence	42.2345	-83.1596	11.6		5.6	
SBE-0020	S. Branch Ecorse River	13th St.	42.22321	-83.169	34.8		25.4	
SBE-0030	S. Branch Ecorse River	Hazel Ave	42.22406	-83.1976	19.3		10.0	
SK-0010	Sexton and Kilfoil Drain	Goddard Rd	42.22789	-83.2069	25.7		12.6	
SK-0020	Sexton and Kilfoil Drain	Reeck Rd	42.23304	-83.2196	22.2		9.8	
SK-0030	Sexton and Kilfoil Drain	Pelham Rd	42.22918	-83.2302	20.9		8.5	
UN-0010	Unnamed Drain to SK Drain	Mortenview Dr	42.22679	-83.2402	7.5		10.2	
SK-0040	Sexton and Kilfoil Drain	Mortenview Dr	42.22849	-83.2403	30.1		12.5	
SK-0050	Sexton and Kilfoil Drain	Westlake St	42.22851	-83.2795	27.4		9.5	
SK-0060	Sexton and Kilfoil Drain	Holland Rd	42.22865	-83.2979	15.4	Q	5.5	
SG-0010	Sloss and Ganong Drain	N Inkster Rd	42.23068	-83.3076	8.8		3.9	J
SK-0070	Sexton and Kilfoil Drain	N Inkster Rd	42.2255	-83.3077	39.0		26.6	
SK-0080	Sexton and Kilfoil Drain	Middlebelt Rd	42.22087	-83.3275	344.0		55.8	
SBE-0040	S. Branch Ecorse River	Goddard Rd	42.2227	-83.2046	9.5		4.0	J
HC-0010	Huntington Creek	W. Jefferson Ave	42.17649	-83.1674	4.7		2.3	J
BS-0010	Brownstone Creek	Gibraltar Rd	42.09549	-83.2111	8.4		7.6	
MA-0010	Marsh Creek	M85	42.10633	-83.2189	17.6		8.5	
BL-0010	Blakely Drain	Sibley Rd	42.16978	-83.2257	18.6		10.5	
BS-0013	Brownstone Creek	M85	42.10299	-83.2218	8.4		4.6	
FP-0009	Frank and Poet Drain	S. Gibraltar Rd	42.08779	-83.2002	18.2		5.3	

FP-0010	Frank and Poet Drain	W. Jefferson Ave	42.09517	-83.203	27.7	7.0
UF-0010	Unnamed Trib to Frank and Poet Drain	private access	42.10589	-83.2023	5.2	5.7
FP-0013	Frank and Poet Drain	Vreeland Rd	42.1122	-83.2055	21.8	6.6
FP-0090	Frank and Poet Drain	King Rd	42.15546	-83.2064	22.0	6.7
FP-0100	Frank and Poet Drain	Sibley Rd	42.1702	-83.2064	24.5	7.0
SKP-0010	Sutliff and Kenope Drain	N of Dix Toledo Rd	42.19645	-83.2159	16.9	5.1
PD-0010	Packard Drain	Middlebelt Rd	42.21494	-83.3266	151.0	54.2
FP-1000	Frank and Poet Drain	Harrison St	42.20629	-83.3165	11.8	2.9 J

PFAS Laboratory Codes

K: Result is below detection limit; therefore, the method detection limit is displayed

J: Result is above detection limit, below the reporting limit

Q: The ion transition ratio is outside of the acceptance criteria.

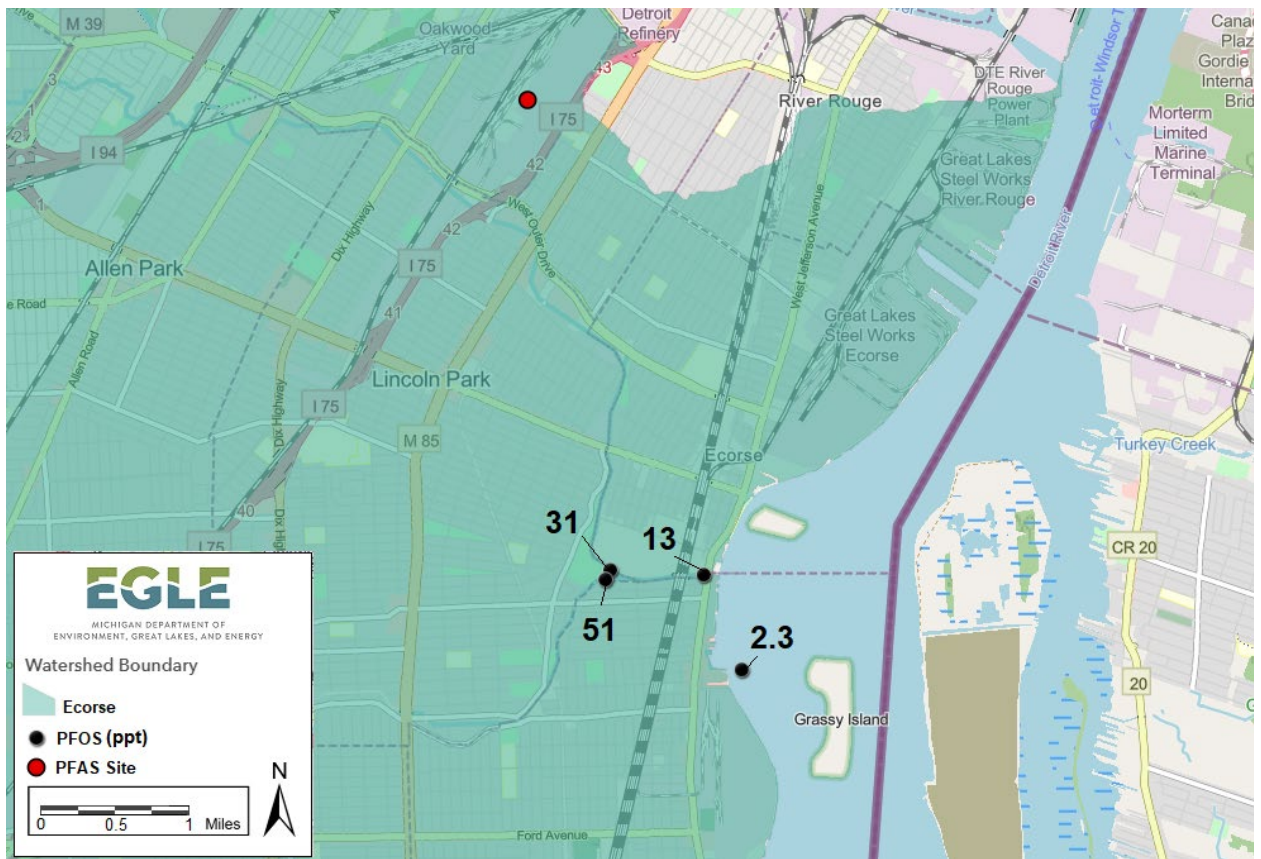


Figure 1. Surface water PFAS sampling locations in and near the Ecorse River watershed in November 2019. PFOS concentrations are depicted in parts per trillion (ppt).

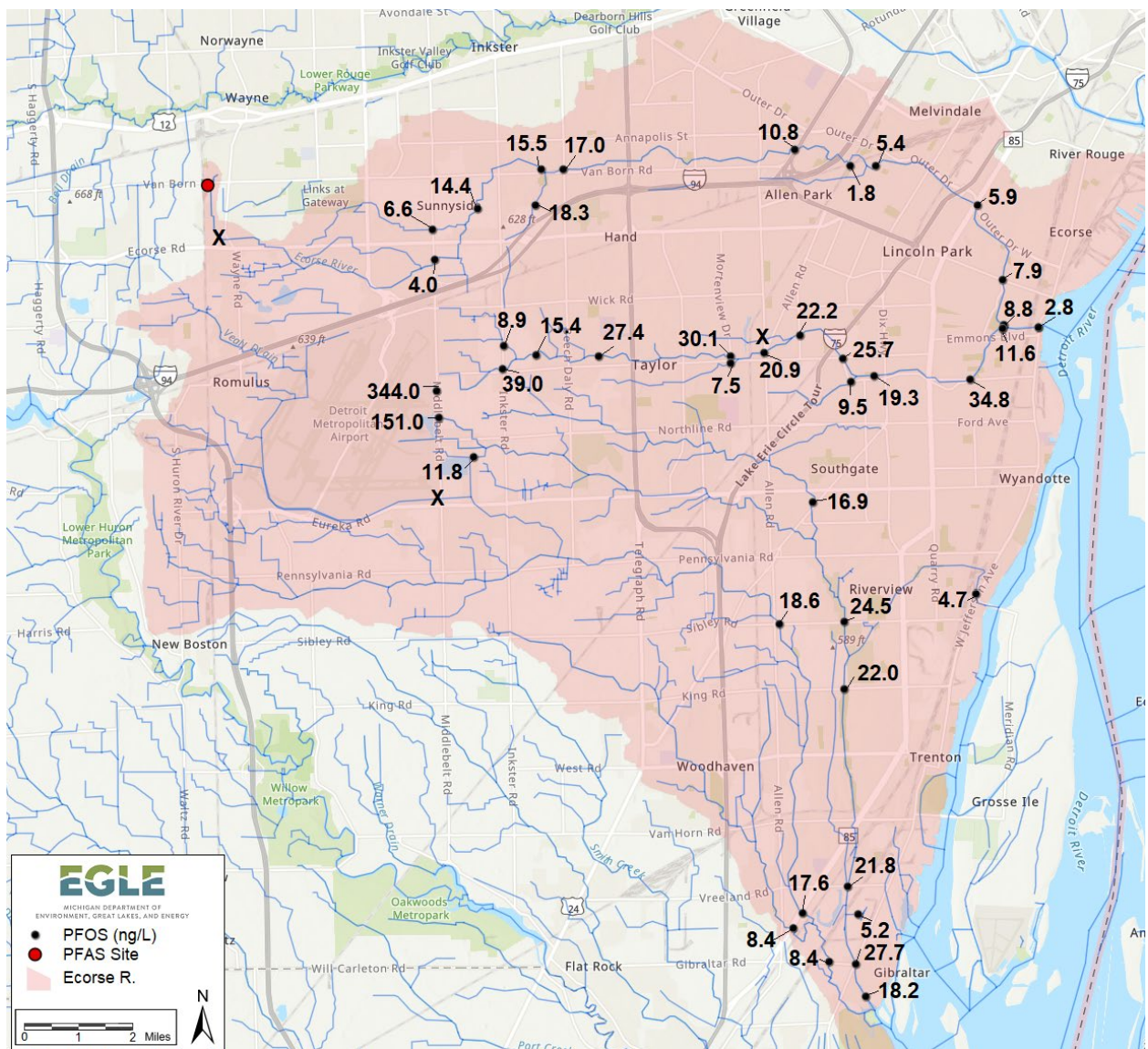


Figure 2. Surface water PFAS sampling locations in the Ecorse River and Frank and Poet Drain watersheds in August 2020. PFOS concentrations are depicted in parts per trillion (ppt). The X indicates a sample collection was attempted but the location was either dry at the time of sampling or inaccessible.