

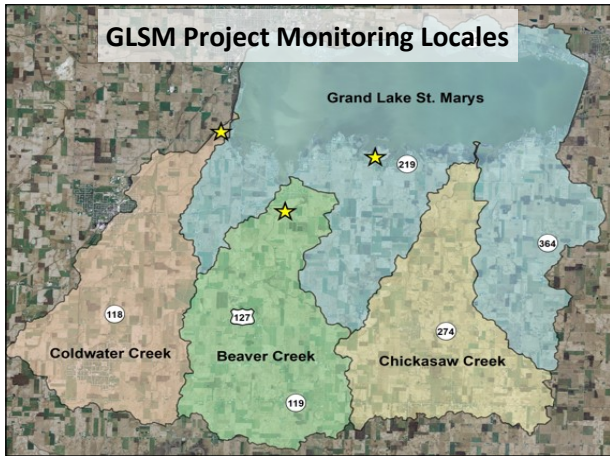
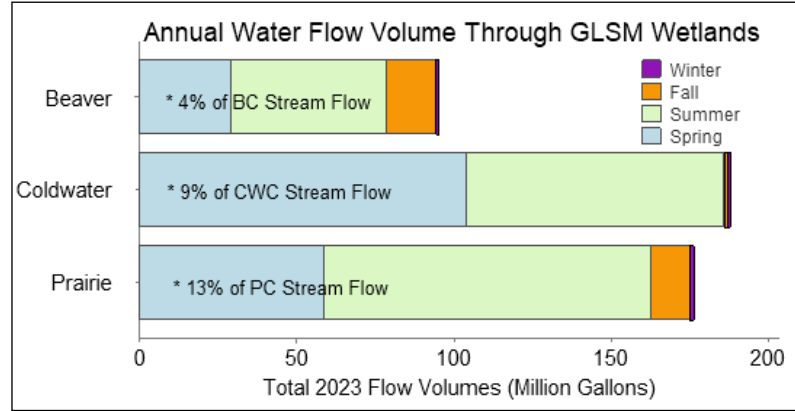
Restored Wetlands in Grand Lake St. Marys Watershed

GLSM Lake Restoration Commission — 2023 Update

Stephen Jacquemin, Morgan Grunden, Madison Gels, Kenneth Kline, Aaron Selby, Skye Wendel, Theresa Dirksen

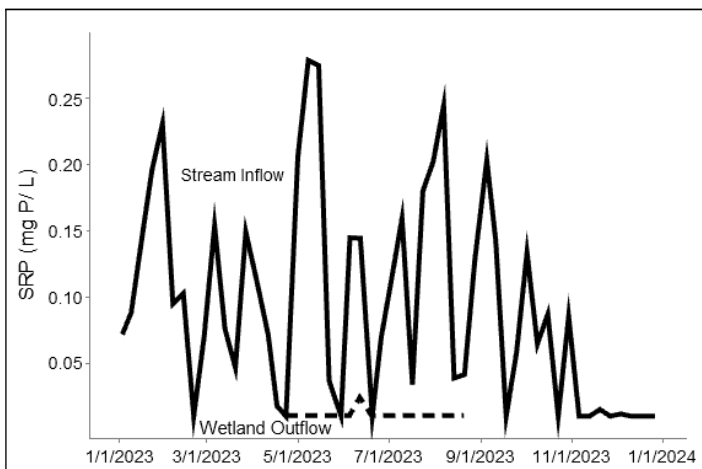
¹Agricultural and Water Quality Educational Center, Wright State University—Lake Campus, ²Mercer County Community and Economic Development Office

- Over a thousand wetland acres have been restored in the Grand Lake St Marys watershed over the past decade to leverage the positive ecosystem services these systems provide—including filtering nutrients, reducing runoff, recharging groundwater, providing wildlife habitat, and enhancing outdoor recreation.
- Wetland restoration efforts help to re-establish these vital areas that were once almost completely lost resultant of over a century of land use changes in the GLSM region (~99+% wetland loss) as well as across Ohio (~90+% loss) dating back to the 1800s.



- New 2023 GLSM projects included adding additional wetland habitat in Mercer Wildlife Area, restoring stream areas and adding wetlands along Big and Little Chickasaw Creeks, as well as establishing the Rosenbeck Nature Preserve. Plans for 2024 are currently underway and will include more wetland acres.
- The restoration of wetlands is critical to the GLSM watershed. Year round weekly monitoring of nutrients (dissolved phosphorus SRP, dissolved nitrogen NOx, total phosphorus TP, and sediment TSS) as well as hydrology began in 2017 and continues to improve our understanding of the potential for wetlands to improve water quality. This report highlights 2023 data from three long-standing sites.

Coldwater Creek Wetlands



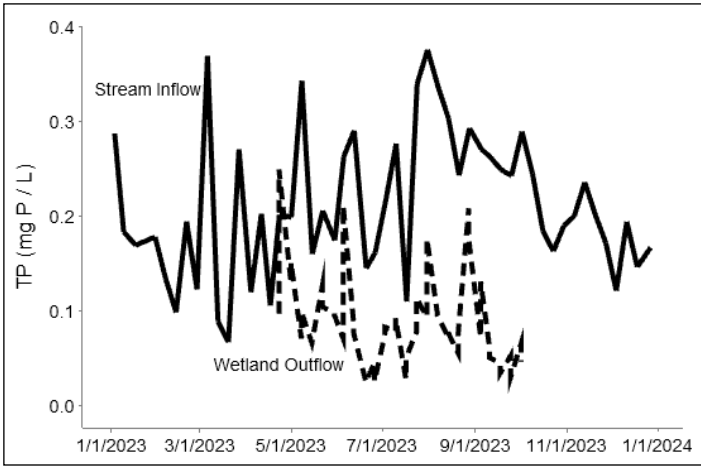
Coldwater Creek Wetlands — 26 Acres Restored 2015



Coldwater Creek - 2023				
Variable	Season	Avg Stream Conc. (mg/L)	Avg. Conc. Reduction (%)	Load Reduction (lbs)
NO3 - N	Winter	9.88	*	0
	Spring	9.41	49%	4,190
	Summer	2.49	6%	930
	Fall	1.06	*	0
TP - P	Winter	0.18	*	0
	Spring	0.31	40%	204
	Summer	0.31	68%	164
	Fall	0.20	*	0
SRP - P	Winter	0.1	*	0
	Spring	0.12	90%	98
	Summer	0.12	91%	73
	Fall	0.04	*	0
TSS	Winter	14.81	*	0
	Spring	42.23	42%	26,243
	Summer	32.46	52%	17,432
	Fall	24.31	*	0

* Coldwater Creek Inflows Included 9 Spring and 9 Summer Weeks

Prairie Creek Wetlands



Prairie Creek Wetlands — 32 Acres Restored 2012



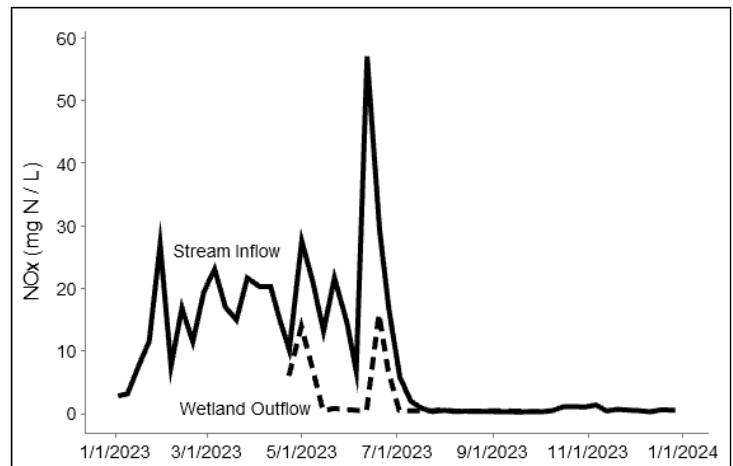
Prairie Creek - 2023				
Variable	Season	Avg. Stream Conc. (mg/L)	Avg. Conc. Reduction (%)	Load Reduction (lbs)
NO3 - N	Winter	7.5	*	0
	Spring	12.55	82%	4,881
	Summer	2.21	38%	1,323
	Fall	0.35	36%	11
TP - P	Winter	0.18	*	0
	Spring	0.20	43%	66
	Summer	0.26	68%	187
	Fall	0.21	78%	23
SRP - P	Winter	0.05	*	0
	Spring	0.05	81%	18
	Summer	0.06	78%	43
	Fall	0.02	0%	-12
TSS	Winter	19.6	*	0
	Spring	27.00	29%	9,968
	Summer	28.00	60%	22,275
	Fall	23.46	55%	2,567

* Prairie Creek Inflows Included 9 Spring, 13 Summer, and 3 Fall Weeks

Beaver Creek Wetlands

Beaver Creek - 2023				
Variable	Season	Avg Stream Conc. (mg/L)	Avg. Conc. Reduction (%)	Load Reduction (lbs)
NO3 - N	Winter	11.5	*	0
	Spring	20.36	82%	4,786
	Summer	4.45	54%	1,288
	Fall	0.66	57%	16
TP - P	Winter	0.24	*	0
	Spring	0.17	51%	28
	Summer	0.27	70%	93
	Fall	0.30	23%	15
SRP - P	Winter	0.17	*	0
	Spring	0.08	69%	19
	Summer	0.17	69%	56
	Fall	0.17	11%	0
TSS	Winter	10.54	*	0
	Spring	20.23	18%	316
	Summer	21.38	81%	8,103
	Fall	18.46	73%	2,954

* Beaver Creek Inflows Included 9 Spring, 13 Summer, and 3 Fall Weeks



Beaver Creek Wetlands — 30 Acres Restored 2018



GLSM Lake Restoration Commission Acknowledgements

The LRC would like to acknowledge those whose dedication to conservation has supported the restoration of these wetlands: the Ohio Department of Natural Resources (Sean Finke), local community members and volunteer organizations (G.A. Wintzer & Son, Local Rotary Clubs), watershed groups (Lake Improvement Association), Wright State University—Lake Campus undergraduate research technicians, and the late Dr. Thomas Knapke.