

# Restored Wetlands in Grand Lake St. Marys Watershed

## GLSM Lake Restoration Commission — 2024 Update

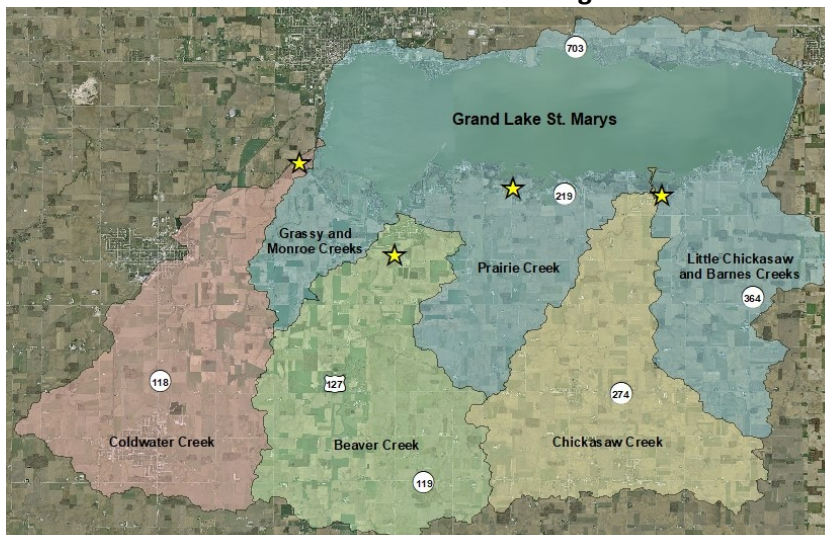
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Aaron Selby<sup>1</sup>, Myles Wheeler<sup>1</sup>, Theresa Dirksen<sup>2</sup>

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- Wetland restoration continues in the Grand Lake St. Marys watershed with well over a thousand acres restored over the past decade. These wetlands help filter nutrients, reduce runoff, recharge groundwater, provide wildlife habitat, and enhance outdoor recreation opportunities.
- Wetland restoration efforts in GLSM help to reverse historical habitat losses that had totaled nearly 90+% statewide and over 99% locally in GLSM as a result of land use changes.
- New 2024 GLSM projects included adding additional wetland habitat in Mercer Wildlife Area, finishing wetland and stream restoration projects on Big and Little Chickasaw Creeks, creating a new flow through wetland at Southwest Greenspace, finishing up habitat restoration projects at North Shore Greenspace and Rosenbeck Nature Preserve, and securing funding for the new Redwing Nature Preserve.



### GLSM Restored Wetland Monitoring Locales

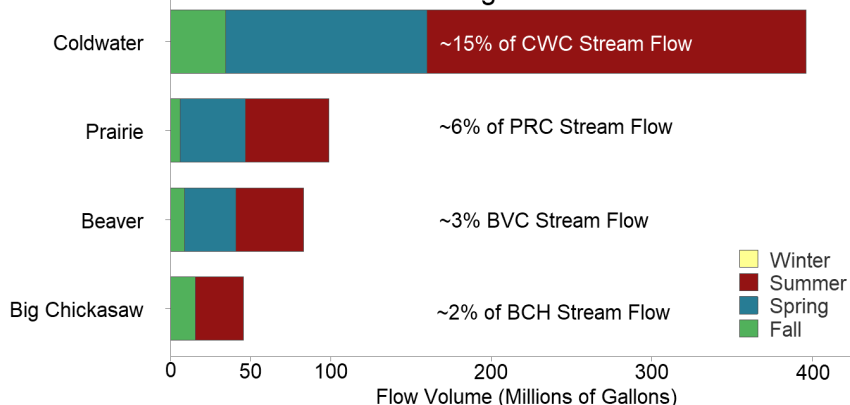


- The restoration of wetlands is critical to the health of the GLSM watershed. Year round weekly monitoring of nutrients (dissolved phosphorus SRP, dissolved nitrogen NOx, total phosphorus TP) and sediment (TSS) as well as hydrology began in 2017 continuing to present. Long term monitoring data improves our understanding of the potential for wetlands to enhance water quality. This report highlights 2024 data from three long-standing sites as well as a newly restored site.

### Wetland Hydrology and Flows

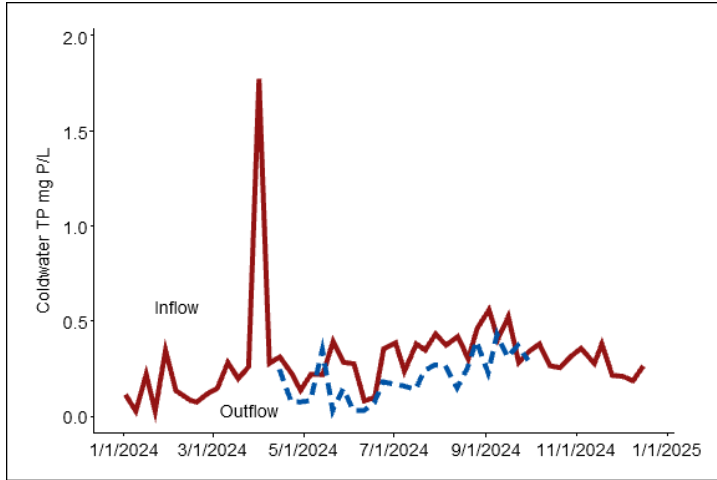
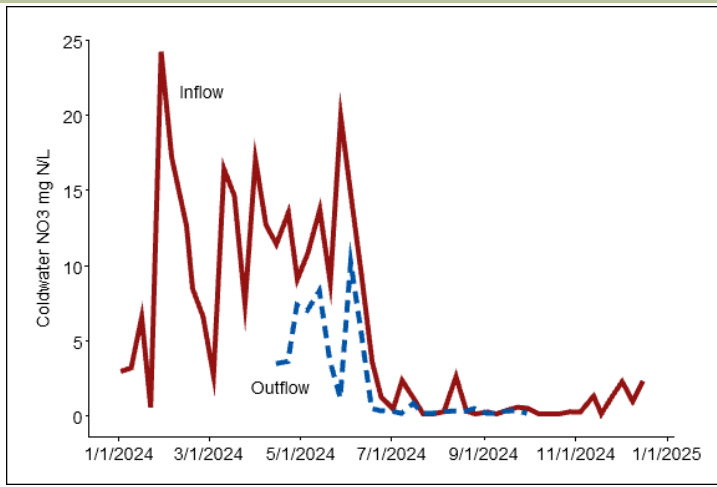
- In total, 2024 saw ~623,647,440 gallons of water move through Coldwater, Prairie, Beaver, and Big Chickasaw Creek Restored Wetlands. This is up over 200+ million gallons from 2023 and among the high water marks for the dataset.
- The GLSM watershed is nearly 59,000 acres in size (not including the lake). Despite the fact that these four highlighted wetlands occupy less than 0.2% of this land area, they continue to process far beyond their footprint.

#### Annual Flow Through GLSM Wetlands



- Residence times (i.e. amount of time water spends in each wetland when actively flowing) varied by site and season. Peak efficacy during summer months averaged 1.2 (BCH), 3.0 (CWC), 10.9 (PRC), and 13.1 (BVC) days.
- Improvements to Coldwater Creek and Prairie Creek pumping stations and an extended pumping schedule for Big Chickasaw and Beaver Creek Wetlands should boost these numbers even further next year.

## Coldwater Creek Wetlands

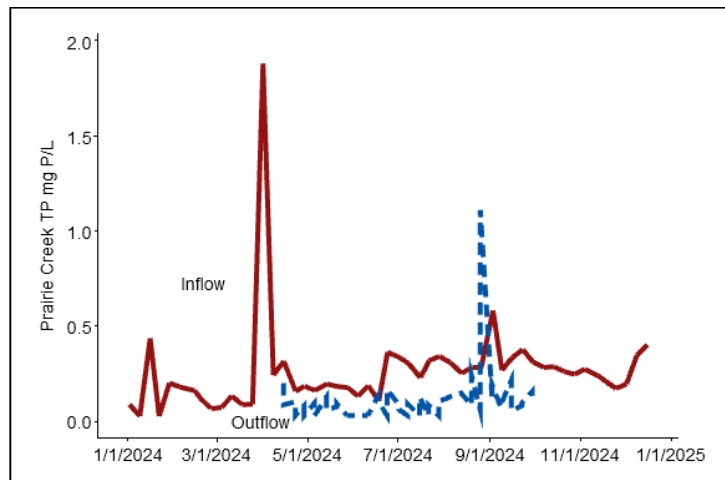
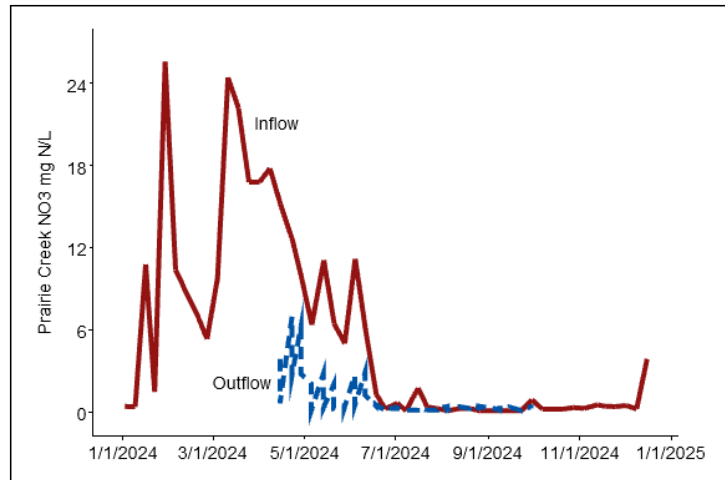


Coldwater Creek - 2024				
Variable	Season	Avg. Stream Conc. (mg/L)	Avg. Concentration Reduction (%)	Load Reduction (lbs)
NO3 - N	Winter	8.6	*	0
	Spring	12.5	55	9,499
	Summer	0.96	72	1,356
	Fall	0.62	51	83
TP - P	Winter	0.15	*	0
	Spring	0.36	52	172
	Summer	0.36	39	396
	Fall	0.30	16	30
SRP - P	Winter	0.06	*	0
	Spring	0.10	74	85
	Summer	0.11	53	129
	Fall	0.08	0	-3
TSS	Winter	17.1	*	0
	Spring	79.1	47	28,906
	Summer	39.5	49	46,503
	Fall	30.0	71	7,076

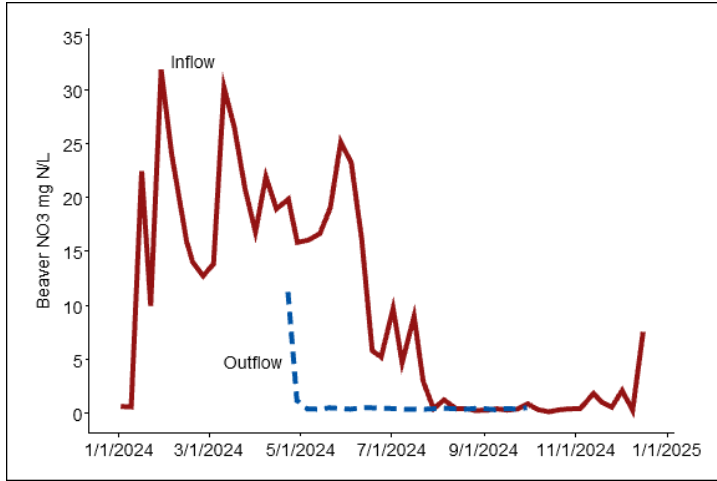
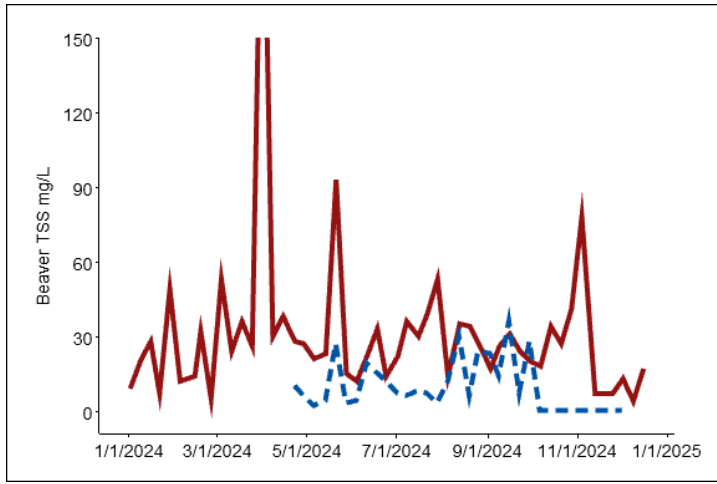


## Prairie Creek Wetlands

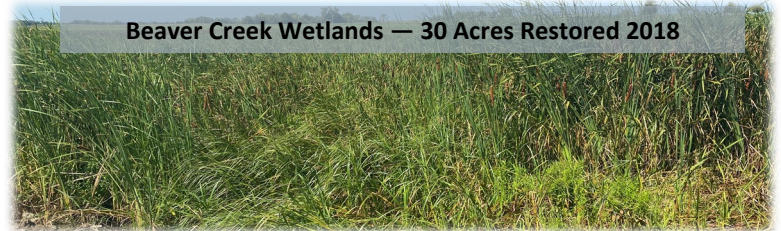
Prairie Creek - 2024				
Variable	Season	Avg. Stream Conc. (mg/L)	Avg. Concentration Reduction (%)	Load Reduction (lbs)
NO3 - N	Winter	8.99	*	0
	Spring	12.11	77	2,878
	Summer	0.45	44	161
	Fall	0.36	30	14
TP - P	Winter	0.16	*	0
	Spring	0.31	67	48
	Summer	0.30	56	118
	Fall	0.27	65	15
SRP - P	Winter	0.06	*	0
	Spring	0.09	55	14
	Summer	0.10	75	38
	Fall	0.03	53	2
TSS	Winter	14.9	*	0
	Spring	59.5	54	6,099
	Summer	28.9	33	8,592
	Fall	25.2	32	1,035



## Beaver Creek Wetlands



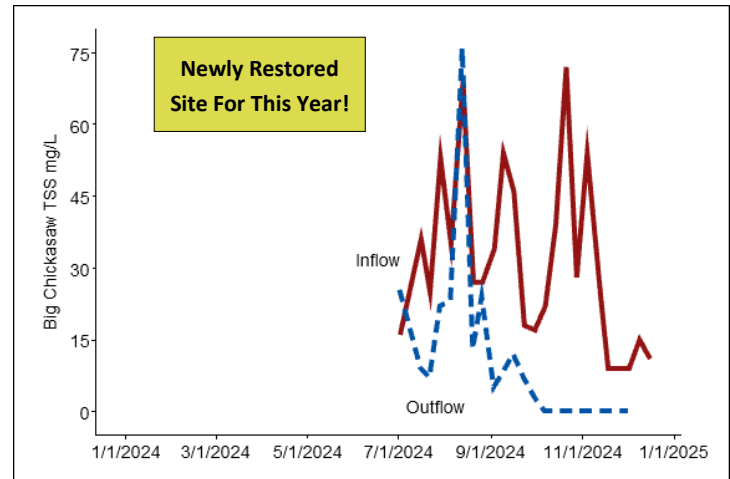
Beaver Creek - 2024				
Variable	Season	Avg. Stream Conc. (mg/L)	Avg. Concentration Reduction (%)	Load Reduction (lbs)
NO3 - N	Winter	15.3	*	0
	Spring	19.7	90	5,259
	Summer	3.12	89	855
	Fall	0.67	23	25
TP - P	Winter	0.18	*	0
	Spring	0.25	56	35
	Summer	0.32	22	69
	Fall	0.32	0	22
SRP - P	Winter	0.09	*	0
	Spring	0.10	54	15
	Summer	0.17	28	36
	Fall	0.12	10	10
TSS	Winter	22.5	*	0
	Spring	47.6	69	7,432
	Summer	29.2	57	7,676
	Fall	23.9	5	1,513



**Beaver Creek Wetlands — 30 Acres Restored 2018**

## Big Chickasaw Creek Wetlands

Big Chickasaw Creek - 2024				
Variable	Season	Avg. Stream Conc. (mg/L)	Avg. Concentration Reduction (%)	Load Reduction (lbs)
NO3 - N	Winter	*	*	*
	Spring	*	*	*
	Summer	1.9	48	102
	Fall	0.73	69	38
TP - P	Winter	*	*	*
	Spring	*	*	*
	Summer	0.27	50	53
	Fall	0.27	3	-10
SRP - P	Winter	*	*	*
	Spring	*	*	*
	Summer	0.06	37	6
	Fall	0.05	0	-19
TSS	Winter	*	*	*
	Spring	*	*	*
	Summer	37.6	44	3,561
	Fall	27.8	73	2,692



**Big Chickasaw Creek — 5 Acres Restored 2024**

### 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.