

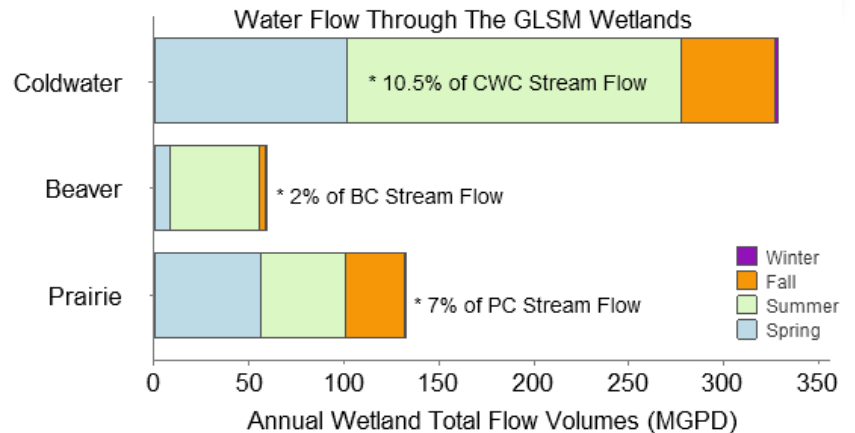
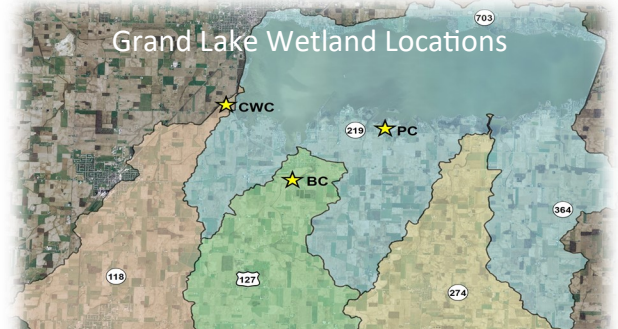
# Restored Wetlands in Grand Lake St. Marys Watershed

## Lake Restoration Commission — 2022 Update

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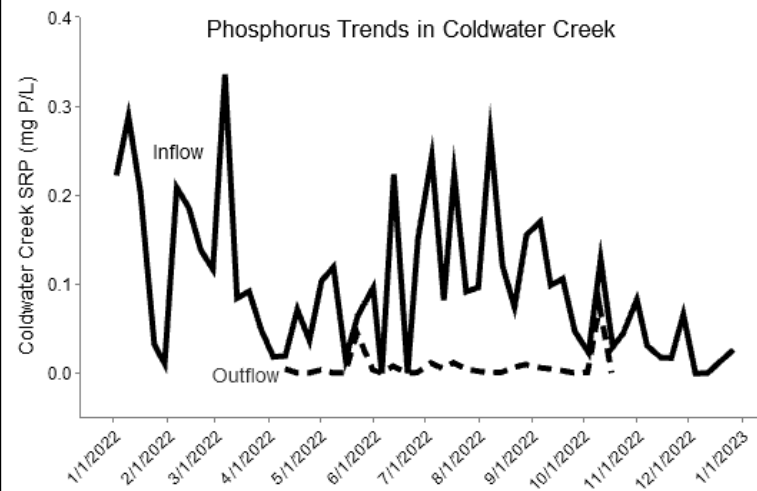
<sup>1</sup>Agricultural and Water Quality Educational Center, Wright State University—Lake Campus, <sup>2</sup>Mercer County Community and Economic Development Office

- Wetlands filter nutrients, reduce runoff, recharge groundwater, provide wildlife habitat, and enhance public outdoor recreation.
- Despite their ecological importance, however, these spaces have seen tremendous declines on the state and regional level — historical land surveys indicate that the majority of original wetlands (90+%) in the state of Ohio and Grand Lake St Marys (GLSM) watershed have been lost.
- However, in the past decade, over 1,000 wetland acres have been added to the GLSM watershed (~1.5+% watershed area). GLSM restored wetlands include a variety of restored floodplains, flow-through complexes, channel backwaters, edge of field pockets, and in-lake littoral systems.
- The continued restoration and monitoring of wetlands is critical to improving water quality in GLSM and beyond. Several additional GLSM wetlands are planned for 2023.
- Year round weekly monitoring of nutrients (dissolved phosphorus SRP, dissolved nitrogen NOx, total phosphorus (TP), sediment (TSS), and hydrology began in 2017 and continues to improve our understanding of the potential for wetlands to improve water quality. Below are data from three of our long-standing sites from 2022.



### Coldwater Creek Wetlands

Coldwater Creek Wetlands - 2022				
Variable	Season	Avg. Stream Conc. (mg/L)	Avg. Conc. Reduction (%)	Load Reduction (lbs)
NO3-N	Winter	7.26	*	0
	Spring	8.56	51%	3025
	Summer	1.41	48%	955
	Fall	0.82	60%	-25
TP-P	Winter	1.22	*	0
	Spring	0.71	19%	30
	Summer	1.27	55%	340
	Fall	0.85	-4%	40
SRP-P	Winter	0.17	*	0
	Spring	0.07	91%	50
	Summer	0.14	96%	200
	Fall	0.05	68%	25
TSS	Winter	95.5	*	0
	Spring	47.2	0%	-3450
	Summer	40.4	2%	1305
	Fall	38.0	-50%	-1260



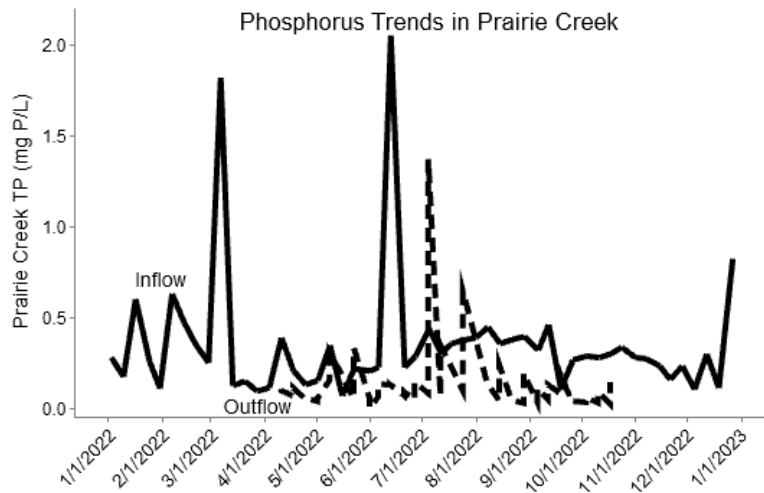
CWC Wetlands — 26 Acres Restored 2015



\* CWC was a sediment source at times due to bioturbation from rough fish populations

## Prairie Creek Wetlands

Prairie Creek Wetlands - 2022				
Variable	Season	Avg. Stream Conc. (mg/L)	Avg. Conc. Reduction (%)	Load Reduction (lbs)
NO3-N	Winter	7.61	*	0
	Spring	8.59	42%	1400
	Summer	1.30	44%	255
	Fall	0.34	39%	48
TP-P	Winter	0.46	*	0
	Spring	0.34	66%	95
	Summer	0.37	46%	103
	Fall	0.24	70%	48
SRP-P	Winter	0.19	*	0
	Spring	0.07	77%	35
	Summer	0.09	86%	30
	Fall	0.03	79%	6
TSS	Winter	71.10	*	0
	Spring	36.77	55%	9435
	Summer	45.25	-74%	12510
	Fall	35.75	55%	8800

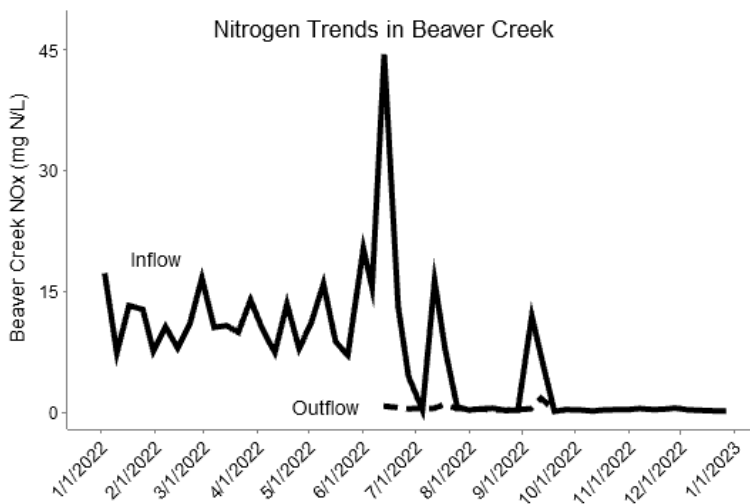


PC Wetlands — 32 Acres Restored 2012



\* PC was a sediment source at times in 2021 due to bioturbation from rough fish but winter 21-22 management actions facilitated overall improvement for 2022

## Beaver Creek Wetlands



BC Wetlands — 30 Acres Restored 2018



Beaver Creek Wetlands - 2022				
Variable	Season	Avg. Stream Conc. (mg/L)	Avg. Conc. Reduction (%)	Load Reduction (lbs)
NO3-N	Winter	11.49	*	0
	Spring	14.36	*	2110
	Summer	4.91	89%	1844
	Fall	0.41	*	-4
TP-P	Winter	0.48	*	0
	Spring	0.19	*	16
	Summer	0.57	28%	73
	Fall	0.29	*	-2
SRP-P	Winter	0.23	*	0
	Spring	0.08	*	6
	Summer	0.38	25%	46
	Fall	0.15	*	-6
TSS	Winter	125.90	*	0
	Spring	48.00	*	7030
	Summer	33.46	74%	9720
	Fall	23.92	*	185

\* BC operated for the first time this year and established baseline characteristics for future reference. Note that inflow volume at the site led to outflows primarily during the summer with water pumped in other times of year for settling sediment.

## Lake Restoration Commission Acknowledgements

The LRC would like to acknowledge those whose dedication to conservation has supported the restoration of these wetlands: the ODNR (Sean Finke), local donors and community volunteer organizations (G.A. Wintzer & Son, Celina Rotary), watershed groups (Lake Improvement Association), past WSU—Lake Campus undergraduate technicians, and the late Dr. Thomas Knapke.