



Topsoil savers

Farmers' erosion fixes aid Marsh Lake water quality



ORTONVILLE — The Big Stone Soil & Water Conservation District's Clean Water Fund-backed work with farmers to curb field erosion will save topsoil while it reduces sediment and phosphorus-loading to Five Mile Creek, which feeds Marsh Lake and the Minnesota River.

Marsh Lake, a 5,000-acre shallow reservoir created in the 1930s by a flood-control dam on the Minnesota River, lies within the Lac qui Parle Wildlife Management Area. Aquatic



Above: Paul Maas, left, and Glen Danielson showed Big Stone SWCD Manager Tammy Neubauer the recently constructed water and sediment control basins in their adjacent fields on Nov. 4, 2022, east of Ortonville. The basins are part of a \$297,075 Clean Water Fund-backed project, which includes a series of 12 water and sediment control basins (left, top) and outlets into a wetland (bottom) on Danielson's land.

Photo Credits: Ann Wessel, BWSR

VIDEO:
["Big Stone SWCD Five Mile Creek Project"](#)



Five Mile Creek, **left**, is seen from Minnesota Highway 7 about two miles east of Correll in Big Stone County. The Big Stone SWCD's Clean Water Fund-backed work in the Five Mile Creek watershed will reduce sediment-loading by an estimated 352 tons and phosphorus by 352 pounds each year. The creek flows to Marsh Lake, **center**, and the Minnesota River. A sign at a public access in November 2022 stated that Marsh Lake was temporarily lowered to improve wildlife habitat. **Right**: Frank Earley, left, and his son Nick, both of Buffalo, Minnesota, embarked on an archery deer hunt Nov. 4, 2022, from the public water access on the Minnesota River near Correll.

life — and other wildlife — diminished as the reservoir filled with sediment. The Minnesota River is the No. 1 contributor of sediment to the Mississippi River.

The \$297,075 project drew from a Clean Water Fund grant from the Minnesota Board of Water and Soil Resources, which covered 75% of construction costs. In addition to its 25% match for technical and administrative services, the SWCD contributed another 5% to reduce landowners' cost to 20%.

Ag Tech Drainage of Sauk Centre finished

“ It is a good fishing lake. It’s a good fishery. ... The lake’s important not only as a place to fish but as a place that provides fish and forage for other locations. ”

— Chris Domeier,
Ortonville-based DNR area fisheries supervisor

construction late last year.

“I think most farmers, we want to conserve the land and keep the water clean. We don't like to lose the land and we like to keep chemicals and everything out of the waterway for the fish and everything else, (for) wildlife and people downstream,” said Glen Danielson.

One of three landowners who signed on to the project, Danielson grows corn and beans in Artichoke Township east of Ortonville with his son and grandson. In November 2022, he and neighboring farmer Paul Maas showed Big Stone SWCD Manager Tammy Neubauer the 12 recently constructed water and

sediment control basins installed in their adjoining fields.

“Soil is a resource, and we need to be good stewards of it. If you slow down the water, you shouldn't have the erosion problems that were present when we started,” said Maas, a beef and crop farmer. “You cut these gullies (into the field), and your best soil goes to the neighbor — that's not being a good steward.”

Initial plans called for 30 to 40 water and sediment control basins and involved five landowners. SWCD staff turnover, changes in land



Danielson walked along a berm in his Artichoke Township field. He was one of three landowners who signed on to a Clean Water Fund-backed Big Stone SWCD project, which installed basins designed to temporarily hold water after heavy rains, and then slowly release it to a wetland. Previously, when that wetland overflowed, it cut a gully that grew to 1,000 feet long. Contractors filled the gully, installed basins to slow the flow, and installed tile to transport water underground where it won't cause more soil erosion.

ownership and contractors' availability were among the factors that led to a redesigned project with fewer landowners.

The grant-funded work will reduce sediment-loading by an estimated 352 tons and phosphorus by 352 pounds each year. One pound of phosphorus can feed 500 pounds of algae.

"The water is running too quickly out of the Five Mile Creek watershed, and it's eroding the banks and taking with it phosphorus and sediment straight into Marsh Lake," Neubauer said. "Ultimately, we're looking to reduce sediment by about 25%, and the goal is 12% phosphorus (reduction) into Marsh Lake — hoping that this will bring back the aquatic life and improve the clarity of Marsh Lake waters."

The SWCD's grant-funded work augments a [\\$13.4 million](#) Minnesota Department of Natural Resources and U.S. Corps of Engineers [habitat enhancement project](#).

"We're not going to solve all of our sediment issues in our streams and our water bodies with one project. It takes many projects to get those cumulative impacts realized. So every one that gets done is good," Ortonville-based DNR Area Fisheries Supervisor Chris Domeier said of the SWCD's work upstream. "It's going to take a lot of time because it took a lot of time to create these kinds of problems."

Before the dam created the 5,000-acre reservoir — best-known as a stopover point for tens of thousands of migrating Canada geese — Domeier said the site consisted of a couple of marshes totaling a few



"We don't want the gullies back," Maas said during a look at recently installed erosion control structures, part of the Big Stone SWCD's project in the Five Mile Creek watershed that outlets to the west, where water is filtered through another wetland before it enters Five Mile Creek.

hundred acres, the river, and a riverine floodplain.

Marsh Lake, which supports nearly 30 fish species including walleye and crappies, was known as a Northern pike spearing lake when the water was less turbid.

"It's become somewhat of a sediment trap, as sediment moves down from places like Five Mile Creek and the Minnesota River," Domeier said. "Anything we can do to improve the water quality out there matters. That really turbid, dirty water that Marsh Lake generally had really affects the zooplankton and the basis of the whole the food web."

Upstream in the Five Mile Creek watershed, Danielson and Maas said they looked forward to retaining topsoil and farming their adjoining fields more efficiently, returning to the conditions present before increasingly frequent and heavy rains cut

gullies through their land. Engineers anticipate the SWCD project could reduce peak flows by as much as 85%.

"In the '60s when we took it over, you could farm it from one end to the other. I would say roughly in the '90s when we started getting more heavy rains, there were three separate fields because of the washouts," Danielson said of his 80-acre field. "It seems you got 3- (to) 4-inch rains and it just made so many washouts and gullies that we couldn't even cross them anymore."

The largest of the gullies stretched 1,000 feet across Danielson's field, measuring 6 feet wide and 3 feet deep at its widest and deepest end.

"That was some pretty significant erosion," said West Central Technical Service Area 2 Engineer Ross Reiffenberger, who conducted initial site visits

and topographic surveys, completed the final project design, and was involved with construction inspection.

Neubauer praised Reiffenberger and TSA 2 Engineering Technician Steve Linow — who completed preliminary design and inspection work — for their nimble redesign, which involved rerouting the tile, and taking care to maintain the hydrology of three wetlands within its boundaries.

The water and sediment control basins tie in to 9,200 linear feet of tile that was installed in August. The tile reduces soil erosion by conveying water underground instead of across the field, and helps to keep the township road from flooding.

"The purpose of the tile and the basins are to slow the water down and reduce the peak flow," Reiffenberger said. The three existing wetlands also help to store and filter water. The project finished in late November when grassed waterways were seeded and an erosion-control blanket was installed.

Danielson and Maas said Clean Water Funds made the Big Stone County improvements possible.

"The Clean Water Fund — if it wasn't for that, we just couldn't do it because there's no way you could afford it," Danielson said.

"It's just cost-prohibitive to do the project without help," Maas said.

The SWCD aims to design and seek funding for a second phase of work in the Five Mile Creek watershed, targeting land downstream from this project.



The Minnesota Board of Water and Soil Resources' mission is to improve and protect the state's water and soil resources by working in partnership with local organizations and private landowners.
Website: www.bwsr.state.mn.us