From left: *Warroad River Watershed District Board President Bill Thompson discussed final elements of a project to reduce erosion and downstream sediment deposition on the West Branch Warroad River with Derek Kayser of Houston Engineering, WRWD Treasurer Keith Landin and Minnesota Board of Water and Soil Resources Board Conservationist Matt Fischer in late July. The project eliminated a safety hazard on a township road.* **Photo Credits:** Ann Wessel, BWSR

With restored river channel comes improved road safety

Thompson

Landin

Warroad River Watershed District's first major undertaking taps Clean Water Fund, disaster relief grants; work expected to reduce sediment

WARROAD — The Warroad River Watershed District eliminated a safety hazard on a township road this season when contractors moved a stretch of the West Branch Warroad River from the erosion-prone road ditch back to its historic channel.

A $414,000 Disaster Relief Assistance Program grant from the Minnesota Board of Water and Soil Resources covered the cost. The grant was part of $3 million in additional disaster aid made available in 2016 to 15 local governments handling the aftermath of 2014 flooding.

In late July, contractors drove sheet piling — part of a 50-foot-long, riprap-armored water control structure — while WRWD Board President Bill Thompson and Treasurer Keith Landin monitored progress as they toured the site. A dam separated the restored channel from the ditch. Ferns flourished along the restored riverbank.

Workers from Gerit Hanson Contracting moved sheet piling across the ditch.

Since the 1970s when a landowner

diverted the West Branch into the ditch, the river had repeatedly eroded the gravel road. The steep ditch was especially dangerous during flood conditions.

The weir is designed to contain water within the river channel except during high flows. During high flows, the floodwater is meant to spill over the top; the ditch is meant to handle that overflow.

The structure held up to September's severe flooding, but water spilled around the edges and into the seeded area. Landin said that part of the weir will be raised. Some spots eroded at the field's edge; those will be fortified.

Returning the stream segment to its natural, meandering channel more than doubled its length — from a 4,300-foot straightened state to about 10,750 feet of twists and turns that cut velocity and reduce erosion.

Reducing erosion and downstream sediment deposition benefits the entire Warroad River system.

A top priority for the WRWD, the project also advanced the Roseau County Local Management Plan's No. 1 goal: Reduce erosion and sedimentation.

Nearly half of the sediment deposited into Warroad River harbor — about 1,000 tons a year — is from in-channel sources, a 2013 Houston Engineering study estimated.

A $73,720 Clean Water Fund accelerated implementation grant from BWSR in 2016 allowed the watershed district to further analyze the Warroad River's in-channel sediment and how it affects the harbor. Data helped to develop the targeted implementation plan. Houston Engineering completed the analysis.

A previously straightened stretch of the West Branch Warroad River flowed down a township road ditch. The gravel road was prone to erosion.

> **"This is a good first step in the management of the water resources of the Warroad River."**
>
> — Keith Landin, Warroad River Watershed District Board treasurer

"Now they have a pretty clear picture where sediment is coming from," said Matt Fischer, Bemidji-based BWSR board conservationist.

This project on 570th Avenue in Roseau County's Cedarbend Township would keep an estimated 35 tons of sediment out of the river annually.

Among its secondary benefits: Curbing sediment will preserve water quality and improve fish and

Left: *A Warroad River Watershed District project that returned a stretch of the West Branch Warroad River to its natural, sinuous streambank was nearly complete in late July.* **Center:** *The structure held up to severe flooding in September. Some spots that eroded at the field's edge, seen here in July, will be fortified.* **Right:** *Returning a segment of the West Branch Warroad River to its natural channel more than doubled its length to about 10,750 feet. The natural twists and turns cut velocity and reduce erosion.*



A crew from Gerit Hanson Contracting drove sheet piling into the ground in late July along the West Branch Warroad River in Roseau County. They built a 50-foot-long water control structure as part of a Warroad River Watershed District project funded by a Disaster Relief Assistance Program grant from the Minnesota Board of Water and Soil Resources. Contractors would later place rocks to help to armor the structure.

> **“It’s nice to see this district take this project on. Hopefully it ignites in them the desire to do more projects like this.”**
>
> — Matt Fischer, BWSR board conservationist

wildlife habitat. Cutting the velocity makes it easier for fish to swim upstream. The restored channel has the potential to serve as spawning habitat.

Residents’ concerns about how sedimentation would affect Lake of the Woods and related tourism revived the WRWD, which was established in the 1960s but remained largely inactive until 2007.

“It’s nice to see this district take this project on. Hopefully it ignites in them the desire to do more projects like this,” Fischer said.

The Warroad River is the second-longest Lake of the Woods tributary in the U.S. Streambank erosion is a perennial issue. Backflow from Lake of the Woods contributes to sediment deposits in the channel.

The disaster relief project is the WRWD’s largest undertaking to date. The Roseau Soil & Water Conservation District administers the grants. The watershed district contracted with Houston Engineering to complete survey design and to oversee construction. Thompson said the district was taking steps to hire a part-time administrator to help apply for grants.

“We’re just thankful that we’re able to do a project like this,” Landin said. “This is a good first step in the management of the water resources of the Warroad River.”

BWSR

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

Not far from the Warroad River Watershed District project, sediment deposition was evident in culverts through which the West Branch Warroad River flowed.