

May 24 2021



# RRWMB

## BOIS DE SIOUX WATERSHED DISTRICT

*LAKE TRAVERSE  
PROJECT UNDERWAY*

*Features*

PROJECT LOCATION

TIMELINE OF PROJECT

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# LAKE TRAVERSE PROJECT UNDERWAY

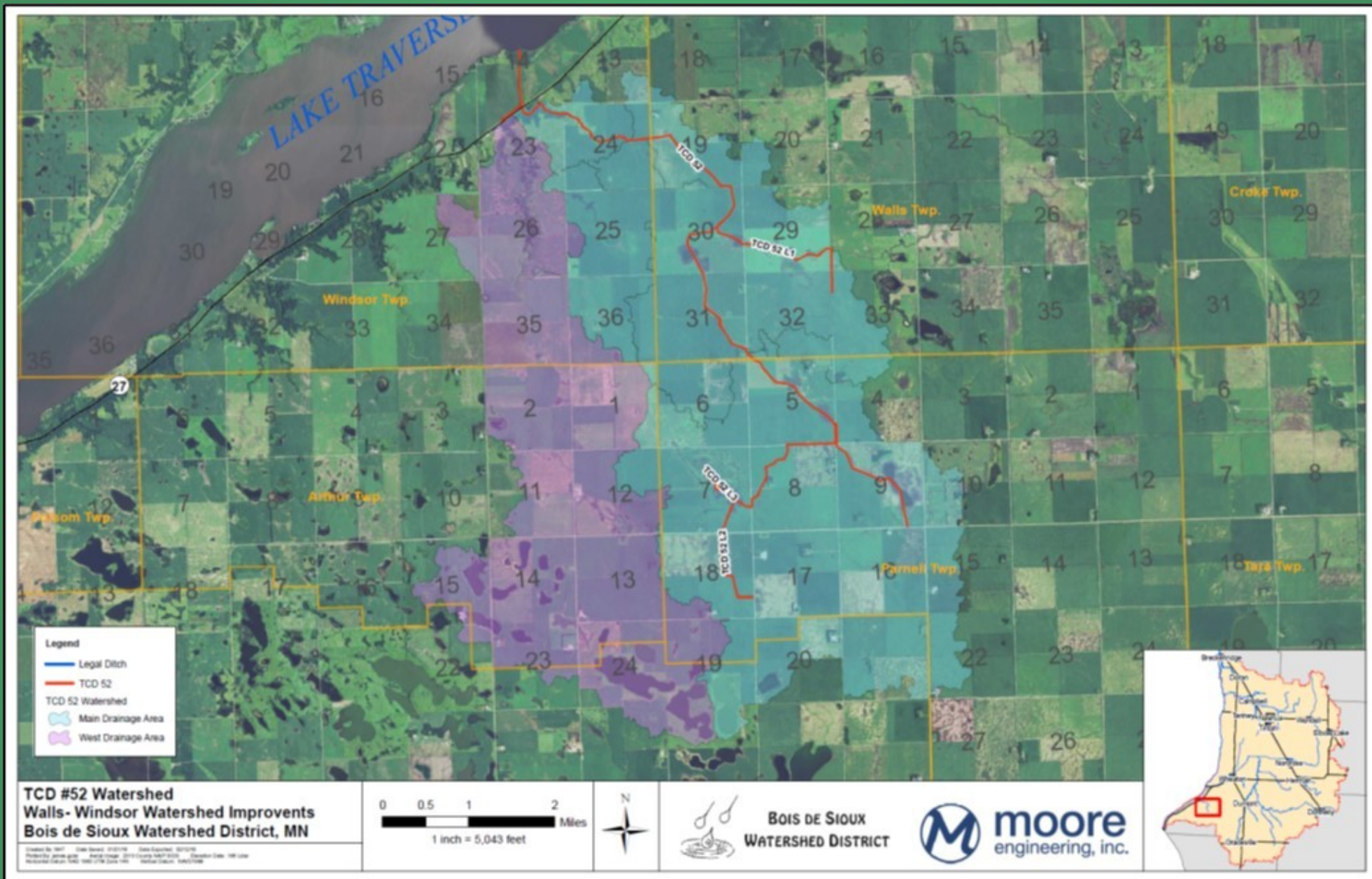
The Bois de Sioux Watershed District (BdSWD) commenced construction activities on the Lake Traverse Water Management Project in 2020.

This Project consists of a multi-phased approach to stabilize a tributary inlet to Lake Traverse. The tributary is listed as a Minnesota Public Water and is also a Minnesota Statute (MS) 103E ditch system known as Traverse County Ditch 52 (TCD 52). The project will preserve water storage capacity in Lake Traverse, improve water quality, enhance the natural resource value of the stream corridor,

and protect adjacent properties from continued degradation. The BdSWD and its partners have a goal to completely stabilize this tributary in a comprehensive effort to address water management and water quality impairments within Lake Traverse, which ultimately outlets to the main stem of the Red River of the North.

Most of the system is designated as Minnesota

Public Waters including the outlet reach which empties into Lake Traverse. Phase 1 of the stabilization project will begin at the outlet into Lake Traverse and proceed upstream to the first road crossing at State Highway 27. This 3,500 lineal foot stretch of public water has become a severely eroded gully and has discharged approximately 50,000 cubic yards of sediment since 1951 into Lake Traverse. This is equivalent to 5,000 standard dump truck loads of sediment. Further downstream, Mud Lake is impaired for nutrients. The map below, which can be found in the preliminary engineering report, illustrates the watershed area of the Project that drains into Lake Traverse.



## Project Location

## PROJECT BACKGROUND

The Traverse County Ditch 52 tributary consists of 15 miles of open channel draining approximately 32.4 square miles of agricultural lands. The overall multi-phase Project will stabilize the steepest slope of open channel for approximately three (3) miles of the tributary. This first phase consists of stabilizing approximately 3,500 lineal feet of channel from the Lake

Traverse outlet to State Highway 27, utilizing engineering principles to minimize in-channel erosion and downstream sedimentation, while enhancing fish passage and aquatic habitat.

Linda Vavra, BdSWD President said, "Through recent efforts and coordination fueled by the WRAPS process, the BdSWD and their partners, with landowner support, believe it

is important to stabilize the outlet reach of TCD 52 first, and we are committed to addressing other problem areas upstream from the outlet reach in future phases of the overall project plan." Much change has taken place on the landscape and below is a photograph from 1938 prior to construction of TCD 52. This photograph can be found in the preliminary engineering report for the Project.





## IN THE BEGINNING

The 1951 photograph above, which can be found in the preliminary engineering report for the Project shows original construction of TCD 52. Linda Vavra said that, “Many decades ago when the ditch was constructed, landowners had good intentions to make farmland productive and to provide adequate drainage”. However, since 1952, flooding and more intense storm events along with increased storm frequency during the growing season have led to significant

erosion and bank sloughing for several miles upstream of where TCD 52 enters Lake Traverse.

## PROJECT PHASES

This first phase of the Project will be used as a model for future upstream stabilization projects. Phases 2 and 3 of the Project will stabilize the upstream reaches of the tributary, including stabilization of failing banks and vegetation of the riparian corridor. The BdSWD has partnered with the Traverse County SWCD and solicited input from the Minnesota

Department of Natural Resources (DNR) and Minnesota Board of Water and Soil Resources (BWSR) to develop this project. Through Project development, the BdSWD has built momentum for the Project through civic engagement and support from the WRAPS and other efforts in the watershed. “The support for the Project is evident in feedback the BdSWD has received and the recent landowner petition of 140 signatures supporting the Project” said Jamie Beyer, BdSWD Administrator.

## FUNDING

Through development over the past twenty-one months, the BdSWD has created a Water Management District to generate funds for the construction of the Project and future maintenance. In addition, the BdSWD has received two Clean Water Fund Project and Practices Grants from BWSR totaling \$755,000.00. The Red River Watershed Management Board (RRWMB) has allocated \$283,000.00 for Phase 1 and \$367,765.00 for Phase 2. Total Project costs including all three phases will be approximately \$4.6 million. The Phase 2 request was recently approved by the RRWMB Managers on May 18, 2021 and was referred to the RRWMB Water Quality and Monitoring Advisory Committee for technical review. The Committee made recommendations to the RRWMB Managers for Phase 2.

## BIG GOALS

Beginning in 2017, the BdSWD established a goal of constructing projects on an annual basis to reduce sediment transport and nutrient loading to downstream waters to advance local water quality objectives. This initiative has proven to be well received and as a result has been

supported by the BWSR Clean Water Fund every year since the inception of this program. Typical projects include MS 103E ditch retrofits and stream stabilization projects. Chad Engels, engineer for the BdSWD said that “Ditch retrofits are a critical component of reducing local flood damages and allows the BdSWD to better manage how water is metered out at the outlet of 103E drainage systems”. This is the BdSWD’s first stream stabilization project. To date, projects have been constructed or are currently under construction in the Twelve-mile Creek Watershed, Rabbit River Watershed, and Bois de Sioux Direct Watershed.

## FIRST TIME

This will be the BdSWD’s first project in the Lake Traverse Direct Watershed. The Lake Traverse Direct Watershed consists of those lands that drain to Lake Traverse directly, rather than via the Mustinka River. Troy Fridgen, BdSWD Technician said that “Lake Traverse and the Lake Traverse Direct Watershed are being targeted because it has long been identified as impacted by sediment and phosphorus discharged from tributary streams, including TCD 52.” Troy also stated that “The Project will support the

goals of several plans and Phase 1 alone will provide significant water management, quality protection, and restoration benefits, but it will not entirely eliminate the upstream contribution of sediment and nutrient loading to Lake Traverse from this sub-basin.”

## CONTINUED BENEFITS

Additional water quality and habitat benefits will be accomplished through subsequent phases upstream of this project. Troy Fridgen indicated that he has long been interested in having the BdSWD work on this Project. It was only after enough landowners came forward that the BdSWD recognized how serious landowners in the immediate watershed area of the Project were about commencing work on a project to correct the past. Troy also indicated that, “Landowners have major concerns about how much land they are losing each year to severe erosion along with constantly having to replace side water inlets and in-field road approaches”.

***BdSWD Technician Troy Fridgen pointing out severe bank sloughing and erosion in the upper reaches of the Project watershed area. Photograph courtesy of Robert Sip, RRWMB Executive Director – April 22, 2021.***



Troy is responsible for inspecting 426 miles of 103E drainage systems in the BdSWD, with approximately 142 miles per year being inspected and he said that “This is probably the worst erosion I’ve seen in my career”. Top left is a photograph of Troy showing erosion areas to Robert Sip, RRWMB Executive Director.

There have also been impacts to pasturelands as indicated in the photograph below. While pasture areas in the Project area are relatively stable, with adequate vegetation, areas immediately adjacent to the ditch are sloughing into the bottom of the ditch. In some areas, the ditch is several feet deep and can only be surveyed by a drone with LiDAR capabilities.

According to Jim Guler, one of BdSWD’s engineers, “The BdSWD has been coordinating the Project with input from Minnesota DNR fisheries specialists”. Jim further stated that, “Eventually the culvert underneath Minnesota State Highway 27 will be replaced, and it is likely the State of Minnesota will include a means for fish passage”. The existing culvert does not allow fish to move upstream into the watershed to spawn in the spring due to the design. Currently the culvert under Highway 27 is slowly undercutting as indicated in the photograph below and the right-of-way is in jeopardy of continued encroachment as a result of bank erosion and sloughing.

***Pastureland erosion impacts. Photograph courtesy of Robert Sip, RRWMB Executive Director – April 22, 2021.***





***Minnesota State Highway 27 culvert. Photograph courtesy of Robert Sip, RRWMB Executive Director – April 22, 2021.***

While the Project is primarily focused on reducing erosion and sedimentation and augmenting fishery habitat, the project will work towards preserving flood storage in Lake Traverse by limiting the amount of sediment currently entering the Lake. Phase 1 also incorporates the use of four separate rock riffle areas that will contribute to fishery habitat and sediment management. Phase 2 will incorporate five additional riffle areas. The next three photographs illustrate construction, final placement of rock riffles, and stockpiles of various sizes of aggregate.



***Phase 1 construction in November 2020. Photograph courtesy of the BdSWD.***



Regarding the selection of aggregate resources for the Project, “The BdSWD received input from the Minnesota DNR and a subcontractor that specializes in rock riffle design for projects such as this,” said Troy Fridgen. Troy also mentioned that, “The subcontractor actually rode in the backhoe and provided instruction to the backhoe operator for exact placement of individual boulders”. The following photographs include a closer view of aggregate sizes along with the construction right-of-way area where aggregate is currently stockpiled.

Jim Guler indicated that, “A variety of different sizes of aggregate have been used thus far ranging from small 3/4-inch chinking rock to five-foot wide boulders. Chinking rock is used for filling the voids of larger boulders and aids in fish passage. Jim also stated that, “Aggregate resources came from local sources and that the larger boulders were individually selected due to their size and shape for the specific purpose of creating stepped weirs”.




***Close up view of a rock riffle in Phase 1. Photograph courtesy of Robert Sip, RRWMB Executive Director – April 22, 2021.***

# WHAT'S NEXT FOR THIS PROJECT?

The BdSWD is commencing construction on Phase 2 in April 2021 and preliminary design for Phase 3 is currently underway. Like most projects of this size, many permits and environmental review processes are required. In addition, coordinating funding partners is challenging and time consuming but when completed, construction begins, and success is achieved.

The RRWMB primarily funds Flood Damage Reduction (FDR) projects, with approximately 90 percent of its levy funds currently going towards FDR projects. In 2020, the RRWMB allocated \$2.1 million for water quality projects of its member watershed districts. In 2021, \$3 million is currently available for these types of projects. In contrast, the RRWMB currently has \$19,059,626.77 in funding commitments for FDR projects. For more information about the RRWMB, contact Robert Sip, RRWMB Executive Director at [rob.sip@rrwmb.org](mailto:rob.sip@rrwmb.org) or by cell at 218-474-1084.



***Aggregate stockpile area in the Project construction right of way. Photograph courtesy of Robert Sip, RRWMB Executive Director – April 22, 2021.***