

Building landscape resiliency via water storage



Restored and enhanced wetlands like this one in Kandiyohi County temporarily hold back water to mitigate erosion in streams and rivers after heavy rains. BWSR is offering \$1 million in grants this year to support similar water storage projects across the state. **Photo Credits:** BWSR

Legislature-funded, BWSR-led pilot program makes \$1 million in grants available to offset flooding impacts, help Minnesota communities prepare to handle extreme weather events and other climate impacts

A series of storms that pounded Mankato in July 2020 — hitting the area with a two-day rainfall total of more than 8.5 inches — illustrates the need for a new grant program that aims to offset the effects of flooding and build resiliency in the face of a changing climate.

The Mankato event was added to the Minnesota Department of Natural Resources' (DNR) [list of historic mega-rain events](#). A mega-rain event occurs when 6 inches of rain covers more than 1,000 square miles in 24 hours or less, with at least 8 inches falling somewhere within the affected area.

According to the DNR, Minnesota has experienced 16 mega-rains between 1973 and 2020, with 10 of those occurring in the past 20 years.

“Minnesota is experiencing more frequent and intense rains, which can damage infrastructure, private property and disrupt agricultural operations,” said Minnesota Board of Water and Soil Resources (BWSR) Executive Director John Jaschke. “Water quality can also suffer due to significant erosion along riverbanks caused by more water moving faster. Action is needed to help our communities become more resilient



Jaschke

to these severe and increasingly frequent weather events.”

BWSR is offering \$1 million in grants via a new Water Quality and Storage Pilot Program for

water storage projects that can help offset some of these impacts. Eligible applicants include soil and water conservation districts, watershed districts, counties, watershed management organizations, and tribal governments using the information included in state-approved, locally

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—Rita Weaver, BWSR chief engineer

adopted water management plans. Successful projects funded through the pilot program will need to demonstrate a reduction in peak flow or volume within an area of interest defined in the grant application.

Applications will be accepted through 4:30 p.m. April 4. Application details are [here](#).

The pilot program is part of a statewide effort to better prepare Minnesota to handle the effects of climate change. Legislation passed in 2021 directed BWSR to create a program to provide financial assistance to local governments to control water rates and volumes to protect infrastructure, improve water quality and mitigate climate change impacts. BWSR plans to provide additional grants to further this work in 2023.

Water storage projects are designed to slow or temporarily hold back water to protect streams and rivers after heavy rains. These conservation practices include retention

structures and basins; soil and substrate infiltration; and wetland, channel and floodplain restorations and enhancements.

BWSR Chief Engineer Rita Weaver said storage practices come in many forms. Structural practices such as ponds or constructed wetlands are more effective at reducing peak flow rates. Locating these projects requires careful planning because water must be released at appropriate intervals to help prevent damage downstream.

Soil health practices such as cover crops and reduced tillage are more effective at reducing runoff volume. Project location is less important for soil health practices because they produce overall benefits via increased infiltration.

“It’s hard to find a practice that can both reduce peak flow rates and reduce overall volume,” Weaver said. “There can be some overlap, but typically a project is chosen to focus

on either reducing water rates or volumes. To get the improvements we want to see in our river systems, it’s important to implement both types of practices.”

Water storage projects can create downstream benefits by reducing erosion and keeping sediment and excess nutrients out of ditches, streams and rivers. One example of successful implementation exists along Dobbins Creek in Mower County. BWSR held a [joint event](#) with Mower Soil and Water Conservation District (SWCD) in September in Dexter Township to highlight the role water storage can play in addressing the effects of climate change.

Dobbins Creek is prone to flash flooding, which can erode fields, flood roads and homes and carry pollutants to downstream waters such as the Cedar River, which flows to the Mississippi by way of the Iowa River. The Cedar River Watershed District and Mower SWCD staff worked with landowners to implement 11 structural projects

including dams and controlled outlets within the Dobbins Creek watershed. Combined, the projects have reduced the flow of 100-year rain events by 10%. According to the DNR, a 100-year storm drops rainfall totals that had a 1% chance of occurring at that location that year.



Weaver

BWSR’s Water Quality and Storage Pilot Program is one of two BWSR climate initiatives lawmakers funded in 2021. The agency will use a \$1.35 million general fund appropriation to develop a new cover crop and soil health program later this year. Both developing programs are part of a statewide effort to find solutions that reduce greenhouse gas emissions, build resilient communities and create clean energy jobs. Learn more about the state’s climate work and share your ideas at [climate.state.mn.us](#).



Examples of water storage projects include a pond in Lincoln County (left), a restored wetland in Carver County (middle) and a storage basin in Mower County (right) along Dobbins Creek.