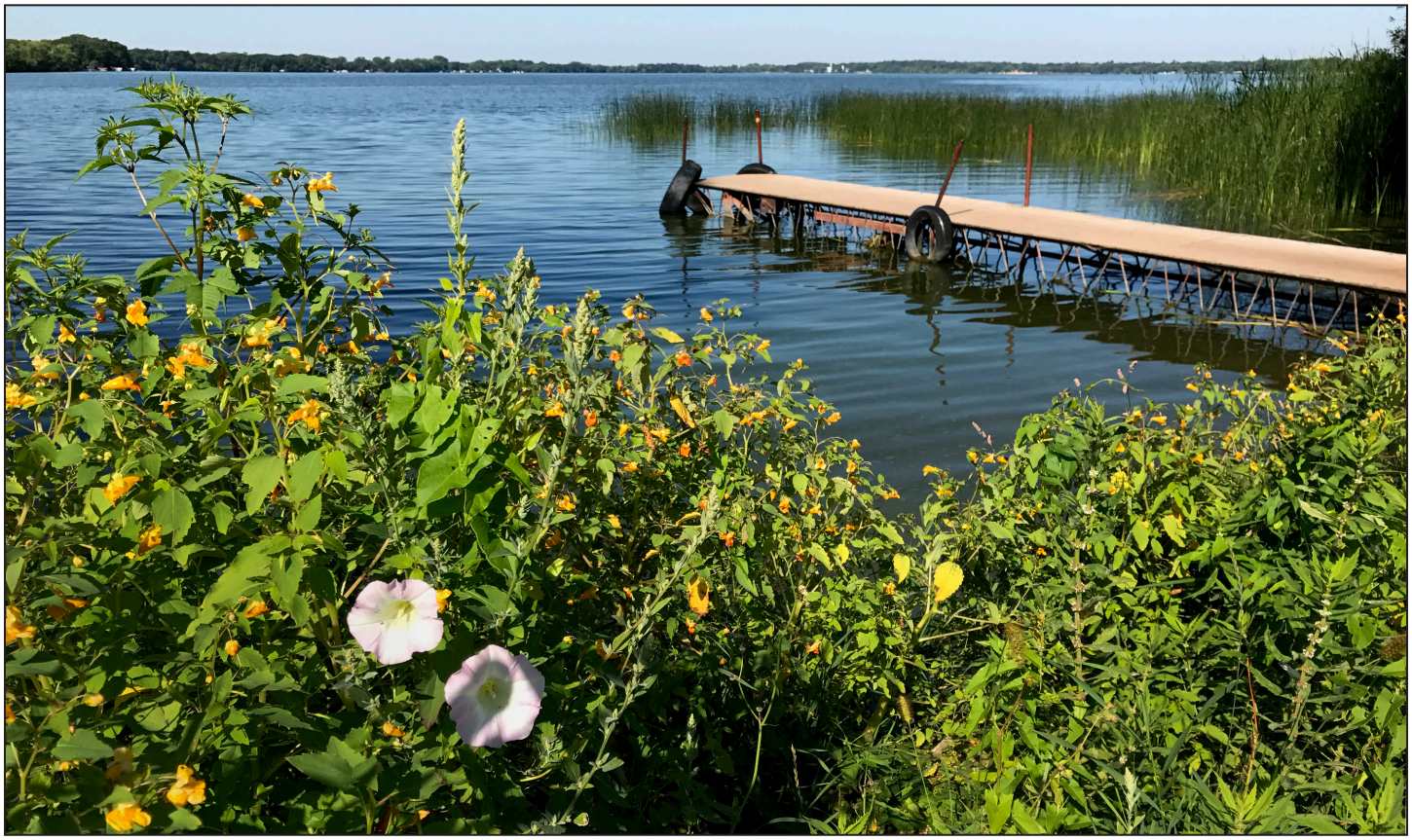


Water, wildlife & waterfowl

Clearing up a popular Kandiyohi County lake would benefit all three. The watershed district is pursuing a drawdown, ag incentives, invasive species management, and landowner education.

ATWATER – A Clean Water Fund grant is one element of the Middle Fork Crow River Watershed District's multifaceted plan to improve the clarity of Diamond Lake, a popular walleye fishery with a Kandiyohi County park on its western shore.

Diamond Lake was added to Minnesota's list of impaired waters in 2006. The lake's high levels of phosphorous, total suspended solids and chlorophyll-a feed the algae that turns it green. Tests showed four shallow lakes upstream contribute 45 percent of the water and about 80 percent of the phosphorus entering Diamond Lake.

"If you want something you can see to the bottom and swim in, then you might as well have a pool," said Cory Netland, the Minnesota Department of Natural Resources' area wildlife manager.

The watershed district's goal: Get the lake delisted.

To get there, the District is following four recommendations of a recent Total Maximum Daily Load study: Draw down

Top: *A shallow lake drawdown is one element of the Middle Fork Crow River Watershed District's plan to clear up Diamond Lake, seen here. The level of Schultz Lake dropped 52 inches in the first month of a drawdown that started July 20. Once the lakebed is exposed, a 200-year-old seed bed can germinate.* ***Left:*** *Margaret Johnson, Middle Fork Crow River Watershed District administrator, delivers a presentation about Diamond Lake during the Minnesota Board of Water and Soil Resources' August tour of Kandiyohi County.*
Photo Credits: BWSR

Diamond Lake is about 27 feet deep. It hosted the fishing opener in 1995. In addition to walleye, it's known for northerns, plus largemouth bass, sunfish, crappies and perch. The DNR lists carp and bullheads among the species found here.

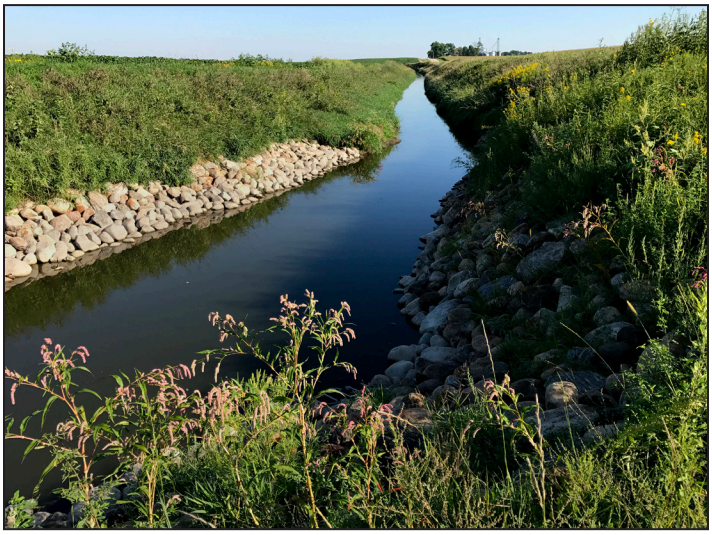
the shallow lakes upstream; provide incentives to address agricultural runoff and soil health; manage the habitat-altering aquatic invasive curlyleaf pondweed on Diamond Lake; educate lake residents about fertilizer use and shoreline erosion.

"All of these put together made up all the strategies that we could use. Once implemented, we would see a substantial reduction in nutrient loading," said Margaret Johnson, watershed administrator.

Meeting water quality standards would mean cutting the daily phosphorus load from 5.3 kilograms a day to 3.8 kg/day. The plan would reduce both watershed and in-lake phosphorus sources.

The Middle Fork has had help from partners including the Minnesota Board of Water and Soil Resources, Ducks Unlimited, the DNR and the Diamond Lake Area Recreational Association.

A $176,000 Clean Water Fund grant plus a $59,184 cash and in-kind match paid for projects such as wetland restoration, buffer strips, sediment control basins and culverts – all meant to reduce how much phosphorus enters Diamond Lake.



The Minnesota Board of Water and Soil Resources saw the first phase of the shallow-lake drawdown in August. Here, an underground pipe drains water from Schultz Lake into the County Ditch 28 system.

The Schultz Lake drawdown started July 20.

A typical drawdown would run September through December. But this one, on the lake at the top of the four-lake chain, will prepare for fall construction of two weir dams. Eventually, four of the stop-log control structures will regulate water levels. The dams will be built between lakes, and from Schultz Lake to Branch 6 of County Ditch 28 – the Diamond Lake outlet. A 1,700-foot-long outlet connecting Schultz Lake to the ditch was installed in fall 2016.

"Essentially what we're doing is reversing the flow," Johnson said.

Barring a drought, the shallow lakes will return to pre-drawdown levels in 12 to 18 months. The watershed will own, pay for and maintain the drawdown structures. DNR staff will help with operations.

Safeguards are in place to ensure downstream landowners are not flooded. Diamond Lake water levels are expected to drop no more than 6 to 12 inches during drawdown periods.

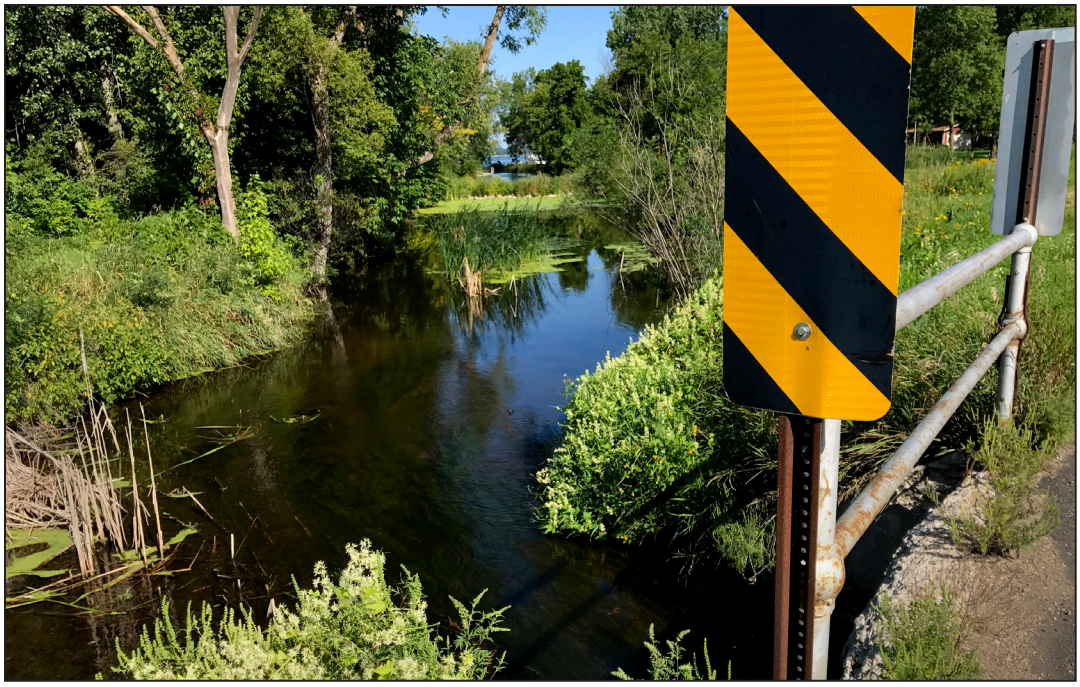
Ducks Unlimited provided an Outdoor Heritage Fund grant that paid for construction. MFCRWD funds paid for easements.

The drawdown will kill carp and other rough fish that stir up the lake bottom and prevent native plants from growing. It will allow sediment to settle and the native seed bank to germinate. Those native plants will help to anchor sediment, absorb nutrients, and attract waterfowl and other wildlife.

The Minnesota Board of Water and Soil Resources saw the first phase of the shallow-lake drawdown during its annual board tour in late August. The bus stopped where an underground pipe drains water from Schultz Lake into the County Ditch 28 system.

Corn tasseled where the pipe was buried, and blue sky reflected in the ditch as Netland explained how his agency would work with farmers to ensure the ditch remained operational.

At a second tour stop, a fish barrier installed in 2012 kept carp from entering Diamond Lake.



About 460 acres drain into Diamond Lake here. Just downstream, a rock structure anchors four perforated pipes that allowswater to pass through but prevents carp from entering Diamond Lake. "Some tiny ones could likely still get through, but no fish barrier is 100 percent effective. What we've seen on this one is it does seem to be pretty darn effective," said Cory Netland, DNR area wildlife manager.

As of August, the watershed district had spent about $100,000 of the $176,000 Clean Water Fund grant it was awarded in 2015.

What the board didn't see was work done on agricultural land farther up in the watershed.

Two wetland restorations on the northwest side of Diamond Lake are complete.

In one case, a new landowner decided not to farm the 0.65-acre property. There, a culvert into Diamond Lake was closed, and the basin was allowed to fill. A farmer who was tiling a field on adjacent land agreed to install a bioreactor – a buried wood-chip basin that removes nitrates. Now, tiled water will run through the bioreactor before it enters that wetland.

The second wetland restoration was in a low-lying area split between two property owners who struggled to farm the land.

> **"Now that there's so much money invested in natural resources – the time and energy and staff for projects – people are just wanting it to be fixed overnight. That is just not reality."**
>
> – Margaret Johnson, watershed administrator

Now a berm straddles the property line.

A waterway built in conjunction with a township project protects Bass Lake. Also at Bass Lake, the watershed district helped the township rectify an erosion problem at the public access.

Bass Lake drains into Diamond Lake through a ditch system.

Next summer, an $80,000 treatment system will replace a subterranean pipe that drains about 100 acres of tiled land directly into Diamond Lake. That work will coincide with rerouting a road at Diamond Lake County Park.

"Now that there's so much money invested in natural resources – the time and energy and staff for projects – people are just wanting it to be fixed overnight. That is just not reality," Johnson said.

Johnson reminds people that water quality worsened gradually, over the past century. It took time to alter shoreline hydrology, to build ditches, to drain wetlands.

"All the time and energy and money in the world isn't going to fix it tomorrow. Things take time. Water quality is not in a vacuum."

When city dwellers, farmers and lakeshore residents blame each other, Johnson reminds them that responsibility is shared. Everyone uses water – whether it's to flush a toilet, irrigate a field or water a lawn.

"It's going to be everyone's issue," Johnson said.

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. Website: www.bwsr.state.mn.us.

CLEAN WATER LAND & LEGACY AMENDMENT