

Stormwater site protects Lake Bemidji



Beltrami SWCD’s Clean Water Fund-backed project targets nutrient-impaired Lake Irving, but its benefits extend to Lake Bemidji and beyond. The work will safeguard a source of Twin Cities drinking water, contain the flow in case of an oil spill, beautify a bike trail and increase pollinator habitat.



Project partners include the city of Bemidji, the Mississippi Headwaters Board and Enbridge.

BEMIDJI — What’s good for Lake Irving is good for Lake Bemidji, the Mississippi River and the downstream communities that rely on the river as a source of drinking water.

Beltrami Soil & Water Conservation District’s (SWCD) stormwater treatment project under construction this fall is designed to improve the water quality of nutrient-impaired Lake Irving. The Mississippi River, which flows through both lakes, supplies St. Cloud and parts of the Twin Cities with drinking water.

“We’re cleaning up water that goes into the Mississippi River,” said



Christenson

Beltrami SWCD Board Supervisor Sam Christenson. “The impacts can go way downstream.”

The \$490,000 project — a stormwater treatment wetland, iron enhanced sand filter and re-meandered stretch of ditch that collects city stormwater runoff from an 886-acre drainage area including a Bemidji industrial park — taps a \$156,000 Clean Water Fund grant from the Minnesota Board of Water and Soil Resources (BWSR).

Zach Gutknecht, center, Beltrami SWCD clean water specialist, visited the construction site of a Clean Water Fund-backed stormwater treatment project Sept. 9 in Bemidji with HR Green lead scientist Shawn Tracy, right, and BWSR Board Conservationist Chad Severts. An iron enhanced sand filter is part of the project designed to improve the water quality of nutrient-impaired Lake Irving. The Mississippi River connects Lake Irving to Lake Bemidji; the work also will protect Lake Bemidji’s water quality.

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Ann Wessel, BWSR

“What we’re trying to do here is reduce as much of the negative impact from human use around the lake as possible,” said Zach Gutknecht, Beltrami SWCD clean water specialist. He said water-quality issues arise in lakes with a 50:1 watershed-to-lake surface area ratio. The higher the ratio, the more potential for pollution. “Lake Irving has a 500:1 ratio.”

Project partners include the city of Bemidji, the Mississippi Headwaters Board (MHB) and Enbridge.

At the city’s request, the SWCD expanded the project to re-meander an 800-foot-long stretch of ditch and plant native grasses, forbs and shrubs throughout the site. Those plants will not only improve aesthetics along the Paul Bunyan State Trail but also add pollinator habitat.

Bemidji will draw \$300,000 from its stormwater utility fund to cover most of the remaining cost. The city will own the treatment system and maintain the iron enhanced sand filter.

“Bemidji is the first city on the Mississippi, so stormwater treatment is very important,” said Craig Gray, city engineer and public works director. “Our city is on Lake Bemidji and Lake Irving and the Mississippi River. Without those three bodies of water, we really don’t have a city. The water quality of those bodies of water is very, very important to us, so we really try to do whatever we can to reduce any nutrient loading going into those lakes and the river.”

Street sweeping and existing stormwater ponds weren’t



The Lake Irving ditch is being re-meandered to look and function more like a stream. It’s part of the Beltrami SWCD’s Clean Water Fund-backed stormwater treatment project, which is designed to benefit nutrient-impaired Lake Irving and estimated to keep 233 pounds of phosphorus out of the lake each year.

enough to cut phosphorus loading to Lake Irving by 268 pounds a year — the 36% reduction the [Minnesota Pollution Control Agency \(MPCA\)](#) determined necessary to meet water-quality standards.

This project will keep an estimated 233 pounds of phosphorus — 87% of the reduction goal — out of Lake Irving each year. Phosphorus feeds the algae that can



Gray



Terrill

turn lakes green.

Lake Irving ranked in the Top 5 for phosphorus removal in a Mississippi

Headwaters Board study that identified more than 150 potential pollution-reduction projects for 12 cities on the first 400 miles of the Mississippi River. An \$81,000 Clean Water Fund grant from BWSR backed the study, which gave cities stormwater planning options that prioritized, targeted and calculated

“**The lake is kind of a regional hub for the local economy. It’s a fairly well-developed lake for the area, and it’s a major ecological resource as well. There’s several different important fish species including walleye and muskie.**”

— Zach Gutknecht, Beltrami SWCD

the effectiveness of best management practices.

“When we protect cities and we work on projects like Lake Irving, we’re doing a service not just to the people that live there but everyone downstream,” said Tim Terrill, MHB executive director.

“The Mississippi is used for drinking water in the Twin Cities,” Terrill said, and improving water quality upstream is more cost-effective than treating it downstream. “The Mississippi isn’t just a river that has a recreational value. It has a very important drinking water component to it.”

The MHB developed a public-private partnership with Enbridge, which contributed \$50,000 to the Lake Irving project. An Enbridge oil pipeline runs south of the site, which incorporates an outlet structure that can be closed in the event of an oil spill.

Work began in early September.



Left: Because the ditch flowing into the constructed wetland intersected with groundwater, water was pumped to the surface during construction, and then allowed to infiltrate back through the sand. As a precaution, a skimmer cleaned water before it discharged to the lake. **Middle:** From left: Gutknecht observed progress at the site Sept. 9 with Tracy and Severts. **Right:** Clouds and trees reflect in water at the site.

Shawn Tracy, a lead scientist with HR Green, worked with Bemidji on its stormwater retrofit analysis that led to a Lake Irving feasibility study. He was in Bemidji in early September to monitor construction.

By then, contractors had hauled in topsoil to boost the success of native seeds sown at the sandy site.

A skimmer mechanism at the temporary outlet cleaned water before it discharged to the lake. Along with additional de-watering, the skimmer safeguards groundwater that intersects with the

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— Zach Gutknecht, Beltrami SWCD



ditch. During construction, the ditch was closed off via the outlet structure that Enbridge would close in case of an oil spill.

Tracy described how the Lake Irving project will work:

Water from the re-meandered ditch will enter the stormwater wetland. There, sediment-bound phosphorus will settle out. Dissolved phosphorus will be stripped from runoff as it flows through the iron

enhanced sand filter to Lake Irving.

Construction was expected to finish in October. A Conservation Corps Minnesota & Iowa crew was slated to complete additional seeding and live-staking this season.

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