

Filters boost Cedar

Editor's note: This is the first of two articles focusing on water improvement projects recently completed by the Clearwater River Watershed District. See next week's Advocate for information about efforts to reduce phosphorus in Lake Betsy and the Clearwater River itself.

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Managing Editor

More than a decade of effort to address Cedar Lake water quality concerns was capped last year by the completion of a sand iron filter upstream near Swartout Lake.

Final details of that project were recently wrapped up, according to the Clearwater River Watershed District, which has administered efforts to reduce phosphorus levels in Cedar Lake since residents first voiced concern about severe algae blooms in 2002.

A monitoring program began in 2003, through which the CRWD determined that three impaired, shallow lakes upstream — Henshaw, Albion and Swartout — were significant contributors to excess phosphorus in Cedar Lake.

Initial treatment efforts, undertaken in response to a citizen petition in 2006, included the installation of migration barriers to limit the movement of rough fish such as carp, and the harvesting of rough fish from those three lakes. Removing rough fish has the benefit of reducing the amount of phosphorus-rich sediment they stir up from the lake bottoms, which can cause algae blooms.

Additional treatment components included the Segner Pond treatment basin and the initiation of a best practices program to limit the phosphorus contribution of agricultural land surrounding the three lakes.

Those efforts, completely funded by assessments on benefiting properties, were effective in lowering the overall phosphorus level in Cedar Lake from a peak of about 58 micrograms per liter, but the lake remained above the state phosphorus standard of 40 micrograms per liter, and Swartout Lake likewise remained impaired.

Lake

Turn to page 2B



Photo courtesy of the Clearwater River Watershed District

Construction of the sand iron filter just off County State Aid Highway 6 near Swartout Lake took place last year and was completed in May. The basin was lined with the sand iron material to remove phosphorus from water, then allowed to fill in like a pond.

► Lake

From page 1A

Two filters installed

Another citizen petition in 2013 resulted in augmented treatment efforts. The CRWD received a Minnesota Board of Water and Soil Resources Clean Water Fund grant in the amount of \$277,900, and an additional \$305,000 in local funds were contributed to construct a pair of filters that remove phosphorus from the stream that enters Cedar Lake.

The first filter, a limestone rock berm, was constructed across the stream just north of Highway 55 and west of Illsley Avenue NW in early 2015.

According to CRWD Administrator Cole Loewen, limestone and phosphorus have a strong chemical bond, so when the water filters through the rock the phosphorus stays put while the water continues on.

While the materials and design were different, the same science applied to the sand iron filter just east of County State Aid Highway 6 and Swartout Lake that was completed in May of 2016. In that case, slow-moving water coming from Henshaw Lake through a wetland toward Swartout Lake is filtered in what looks like a pond before it heads downstream to the limestone filter and eventually Cedar Lake.

In theory, the filter at Swartout Lake will remove about 800 pounds of phosphorus a year, and the limestone filter should remove about 480 pounds of phosphorus per year. Loewen

said the Swartout filter should remove more because the phosphorus load of the water is higher in that location. Combined, the filters are expected to cut the current flow of about 2,000 pounds of phosphorus per year by more than half.

The filters are expected to have a life of about 20 years, after which the material will have to be removed and replaced in order for strong chemical bonding to continue.

Positive results

It may take years for the impact of the two filters to be appropriately quantified, but Cedar Lake Conservation Club officials are already pleased with the lake's response to the array of treatment efforts.

"The lake is in excellent condition," said Karen Lohn, the club's vice president. "The CRWD projects have positioned our lake well to deal with the pressures of recreation, development and land use around the lake."

Even though recent years have included heavy rains, Lohn said the water quality has already improved substantially.

"We have monitored numerous lake quality parameters for decades, and the values for water clarity in 2015 and 2016 were the best since we started monitoring in 1993, with average clarity over nine feet," she said.

While Loewen cautioned that more time was needed before the improvements could be credited entirely to the filters and other measures taken, he said the watershed's own monitoring has also shown a sizable improvement.

"Anecdotally, a lot of (Cedar Lake) residents feel like it's already making a difference. It's hard to say that it's our project, because we also had a better year overall in terms of when rain came and the certain temperatures we had," Loewen said. "But a lot of people on Cedar Lake say this is the best year they've seen in recent memory in terms of good water clarity. We measure the lake once a month from June to September, and our measurements also are indicating a dramatic improvement."

There has been some concern from residents upstream that the limestone filter near Highway 55 causes water to back up and cause flooding, but Loewen said the filter is designed to allow water to overflow the limestone when necessary and that the elevations involved make such an outcome impossible.

"I think the wet year didn't help with the certain residents that were really concerned with water levels and thought it was due to our project," said Loewen. "It's hard to make that explanation that it would be that high no matter what. We just had that much water coming through."

"The elevation change is such that whatever happens at Highway 55 doesn't back up that far. In fact it doesn't back up at all.

It's just right there where the water pools, contrary to what some residents upstream feel."

Final push

The goal of the watershed district's improvement efforts has ultimately been to lower Cedar Lake's phosphorus content to 20 micrograms per liter. The state standard is 40 micrograms per liter.

"By getting to 20 you will have the more pristine water condition that residents are really looking for," said Loewen. "Forty, while it meets the state standard, isn't necessarily there."

Cedar has approached that goal in recent years, dropping under 25 micrograms per liter, but has never quite met it. While the number of 2016 was not yet available, the lake had a concentration of 21 micrograms per liter in 2015.

"So the hope is that this project, over the next couple of years, will be enough to push it the rest of the way," said Loewen.

No additional improvements are planned along the length of the stream, though the watershed district will continue to monitor the infrastructure in place, limit the rough fish population, and monitor the results.

"We anticipate these projects (will) serve our lake well for decades to come," said Lohn.

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