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Water Quality Improvements for Cedar Lake Subwatershed Complete

In 2002, citizens began to notice severe algal blooms in Cedar Lake, a high-value lake with exceptional clarity and habitat. In response, the Clearwater River Watershed District (CRWD) began a monitoring program in 2003 to identify nutrient sources. From this, the CRWD identified sources of nutrients to the lake: three nutrient-impaired shallow lakes (Albion, Henshaw and Swartout) and impaired wetlands in the upper watershed were discharging excess amounts of soluble phosphorus downstream.

In 2005-2006, the CRWD identified a suite of in-lake and watershed practices to improve water quality in both the impaired shallow lakes and Cedar Lake. In 2006, via citizen petition, the CRWD instituted Project #06-1, which resulted in the installation of rough fish migration barriers, the Segner Pond treatment system, the forming of a rough fish harvesting program from the shallow lakes and the installation of agricultural land best management practices via a cost-sharing program.

The cost of this project was funded entirely by special assessments on properties benefited by the project. Also included in the initial suite of elements were treatment components for wetlands in the upper watershed discharging phosphorus, but these were not instituted due to lack of funds. By 2013, results from this project demonstrated significant reductions in phosphorus entering Cedar Lake, but concentrations remained above the target of 20 mg/L, and Swartout Lake remained impaired.

In 2013, the CRWD was again petitioned by citizens to amend Project #06-1 to include additional components. The CRWD applied for and received a \$277,900 Clean Water Fund grant through the MN Board of Water & Soil Resources (MN BWSR) (<http://bwsr.state.mn.us/>) to design and install two phosphorus reducing components. An additional \$305,000 in local funds for implementation was provided. Total cost was \$582,900.



Sand-Iron Filter at Swartout Lake Inlet

This second phase, finished in 2016, included a limestone filter and iron-sand filter to remove soluble phosphorus exported from degraded wetlands and impaired shallow lakes. The filters treat baseflow and up to the 1.25" rain event, targeting ~80% and ~40% of the needed phosphorus load reductions to Swartout and Cedar Lake (800 lbs and 480 lbs/ yr., respectively). The filters provide maximum cost/ benefit while preserving upstream hydrology. The CRWD will monitor the filters to quantify effectiveness and determine maintenance needs.

The project was completed due to the successful cooperation between the CRWD, the MN BWSR, the MN DNR (which allowed construction of one of the filters on the Swartout Wildlife Management Area: http://www.dnr.state.mn.us/wmas/detail_report.html?id=WMA0052300), the Cedar Lake Conservation Club (<http://cedarlakeecc.org/>), and local property owners who contributed funding via special assessments. Learn more about the project here: http://crwd.org/cash_061_protectandimprove.html.