



Minnesota
Pollution
Control
Agency

Minnehaha Creek Watershed Lakes Nutrient Total Maximum Daily Load

Water Quality/Impaired Water #11.09a • July 2010

Lake Nokomis in Hennepin County and Parley Lake, Lake Virginia, and Wasserman Lake in Carver County are highly-used recreational water bodies, but excess nutrients (phosphorus) have limited their use and quality by causing frequent algae blooms.

Due to the excess nutrients all are considered impaired. As a result, they were placed on the Minnesota Pollution Control Agency's (MPCA) Impaired Waters list in 2002 and 2004.

Total maximum daily load (TMDL) background

The MPCA in partnership with the Minnehaha Creek Watershed District, which has jurisdiction for all four lakes, conducted TMDL studies for the four water bodies.

A TMDL sets the maximum quantity, or load, of a given pollutant a water body can receive and continue to meet state water quality standards without creating an impairment of that water's designated uses.

Required by the federal Clean Water Act, the multi-year TMDL effort results in a pollution reduction plan and engages stakeholders and the general public. An approved TMDL is followed by implementation activities for achieving the necessary reductions.

Pollution sources and reductions needed

The Carver County lakes' watersheds include a variety of land uses including undeveloped, agricultural and urban lands that contribute external loading (usually



Lake Nokomis swimming beach

runoff from agricultural lands, feedlots, lawns, roads, rooftops, wastewater treatment plants and failing septic systems) of phosphorus to the lakes via streams, ditches and stormwater pipes. The Hennepin County watershed is primarily urban and stormwater runoff is the chief source of external loading. Internal loading is a phosphorus source for all the lakes as well. This includes release of phosphorus from the lake sediment due to low oxygen, wind mixing, and disturbance by rough fish (carp and black bullhead). Decaying curlyleaf pondweed, an invasive aquatic plant, is also a source of excess phosphorus in these lakes.

The amount of pollutant reduction needed to meet the TMDL and state water quality standard varies from lake to lake. The Carver County lakes' reductions range from 20 to 62 percent below current phosphorus loading levels.

For Nokomis the needed reduction to meet the state water quality standards is 57 percent. However, this study includes a proposal to instead use a "site-specific" water quality standard for this lake, which translates to a 35 percent reduction in loading but still assures achieving the desired beneficial uses of the lake.

This proposal requires EPA approval and is based on a detailed analysis of the lake's characteristics, the long-term response to phosphorus loading and other factors.

Implementation strategies

Reduction implementation strategies will vary by lake. In general, however, reducing external phosphorus sources in the watershed will be accomplished by installing and retrofitting best management practices associated with both urban and rural stormwater runoff. Internal load management will be done via fish and aquatic plant management. Both approaches will rely upon regulatory (e.g., local rules and ordinances) and voluntary (e.g., district and municipality-funded projects and education) efforts.

For more information

To contact the MPCA project manager for this TMDL, visit the project Web page at: <http://www.pca.state.mn.us/water/tmdl/tmdl-draft.html>.

Alternatively, call the MPCA at 651-296-6300 or 800-657-3864 and ask for the Metro and St. Croix Unit (in the Watershed Section).

General information on TMDLs can be found on the Web at: <http://www.pca.state.mn.us/water/tmdl/index.html> and www.epa.gov/owow/tmdl.