



Minnesota
Pollution
Control
Agency

Sweeney Lake Total Maximum Daily Load

Excess Nutrients Project Overview

Water Quality/Impaired Waters #8.06a • January 2010

Sweeney Lake has been placed on the state's list of impaired waters. The lake contains excess levels of nutrients such as phosphorus from stormwater runoff. These excess nutrients can lead to frequent algae overgrowth in the lake, interfering with swimming, fishing, and other aquatic recreation.

Sweeney Lake

Sweeney Lake is located in the city of Golden Valley in Hennepin County, Minnesota. Areas of land that drain into the lake include portions of the cities of Golden Valley and St. Louis Park. The land in this watershed is mostly developed, and a high percentage of the land is covered by impervious surfaces such as concrete.

The lake occupies approximately 62 surface acres in size, with a maximum depth of 27 feet. The outlet of Sweeney Lake drains into Bassett Creek which drains into the Mississippi River.

Total Maximum Daily Load background

Based on the federal Clean Water Act, lakes and streams that do not meet water quality standards are "impaired". The Clean Water Act requires states to develop a cleanup plan for each impairment affecting a water body. The cleanup plan and the process used to create it are called a Total Maximum Daily Load (TMDL). A TMDL must identify all sources of the pollutant that cause a water body to violate standards. The TMDL also determines how



much pollutant reduction is needed from each source to ensure the water body meets water quality standards in the future.

Sweeney Lake impairment

The Bassett Creek Watershed Management Commission (BCWMC) and the Minnesota Pollution Control Agency (MPCA) have prepared a TMDL report on Sweeney Lake. The goal of this report is to quantify the pollutant reductions needed for Sweeney Lake to meet water quality standards. For lakes in the North Central Hardwoods Forest Ecoregion, summer averages of less than 40 µg/L total phosphorus concentration, less than 14 µg/L chlorophyll-a concentration, and at least 1.4 meters of Secchi depth are considered appropriate.

Historical data for Sweeney Lake indicate annual variations in average phosphorus concentrations but consistent non-compliance with state standards. The combination of high phosphorus, high chlorophyll-*a* and low Secchi depth support listing Sweeney Lake as impaired.

Pollution sources

About 67 percent of the total phosphorus load to Sweeney Lake comes from the stormwater runoff from the watershed. Most of the remaining phosphorus comes from internal loading. Phosphorus in stormwater results when organic material (such as leaves, grass clippings, fertilizers, and sediments) washes into the stormwater system. Impervious surfaces in the watershed cause water to move more directly into streams and lakes, without the benefit of natural filtration.

There are two primary internal sources of phosphorus in Sweeney Lake: sediment release of phosphorus and curlyleaf pondweed die off.

Pollution reductions needed

For Sweeney Lake to consistently meet water quality standards external phosphorus loading to Sweeney Lake must be reduced by 15 percent in the watershed and in-lake phosphorus must be reduced by 55 percent. This will require continued management of in-lake phosphorus loading and retrofitting Best Management Practices (BMPs) to reduce phosphorus from urban runoff.

Implementation strategies

BMPs recommended for Sweeney Lake include:

Incorporate stormwater BMPs into redevelopment sites.

- Increase infiltration and filtration in the watershed through the use of rain gardens, native plantings, and reforestation.
- Increase infiltration and filtration in the watershed through the use of rain gardens, native plantings, and reforestation.
- Target street sweeping to high priority areas and when there is the most benefit.
- Work with lake property owners to restore shoreline.
- Manage in-lake phosphorus levels through plant and fish population manipulations.

For more information

The Sweeney Lake Excess Nutrient TMDL Report was prepared for the MPCA, and the Bassett Creek Watershed Management Commission by SEH.

For more information about the Sweeney Lake Excess Nutrient TMDL Report, view the Web pages at <http://www.pca.state.mn.us/water/tmdl/project-sweeneylake.html> or contact the MPCA at 800-657-3864 or 651-296-6300.

For general TMDL information, browse MPCA's Impaired Waters Web pages at www.pca.state.mn.us/water/tmdl/.

For more information about water bodies in the Bassett Creek Watershed, go to www.bassettcreekwmo.org.