



Minnesota  
Pollution  
Control  
Agency

# Lake Magda Total Maximum Daily Load

## Excess Nutrients Project Overview

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Lake Magda, located in Brooklyn Park, Minnesota, was placed on the state's list of impaired waters in 2002. The lake contains excess levels of nutrients, such as phosphorus from stormwater runoff. Lakes with excess nutrients experience frequent algal blooms in the summer months, which interfere with canoeing, fishing, and other aquatic recreation.

### Lake Magda

Lake Magda is a shallow, 11-acre lake located in the City of Brooklyn Park, Hennepin County, Minnesota, in the Shingle Creek watershed. It is a neighborhood lake that is valued for its aesthetic qualities. The drainage area to the lake is fully developed urban and suburban land. Lake Magda outlets into a wetland area on the west side of Highway 169, then through storm sewer to Eagle Creek. Eagle Creek is a tributary to Shingle Creek, which ultimately discharges into the Mississippi River.

### Total daily maximum load background

Based on the federal Clean Water Act, lakes that do not meet water quality standards are "impaired." The Clean Water Act requires states to develop a clean-up plan for each impairment affecting a waterbody. The clean-up 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 waterbody to violate standards. The TMDL also determines how much pollution reduction is needed from each source to ensure the waterbody meets water quality standards in the future.



### Lake Magda impairment

The goal of this TMDL is to quantify the pollutant reductions needed for Lake Magda to meet state water quality standards. For shallow lakes in the North Central Hardwood Forest Ecoregion, summer averages of less than or equal to 60 µg/L total phosphorus and 20 µg/L chlorophyll-a concentrations, and greater than or equal to one meter of Secchi depth are considered appropriate.

Summer averages taken from Lake Magda between 1999 and 2006 measured:

- total phosphorus concentrations ranging from 101 to 187 µg/L
- chlorophyll-a ranging from 40 to 127 µg/L
- water clarity, as measured by Secchi depth, averaging around 0.5 meters

## Pollution sources

The primary source of phosphorus to Lake Magda is stormwater runoff. Phosphorus in stormwater results when organic material (such as leaves, grass clippings), lawn fertilizers, and sediments wash into the stormwater system. Impervious surfaces such as paved driveways, roads, and sidewalks, in the watershed cause stormwater to flow more directly to streams, rather than filtering through the ground. This results in an increased transport of phosphorus into local waterbodies. In addition, lake sediments and the aquatic plant curly-leaf pondweed can release phosphorus into Lake Magda waters.

## Pollution reductions needed

A reduction of 69 percent in phosphorus loading to Lake Magda would be required to consistently meet water quality standards under average precipitation conditions. Some high-impact strategies for improving water quality in Lake Magda include implementing Best Management Practices (BMP) to reduce phosphorus from stormwater runoff and in-lake sources in the watershed.

Examples of BMPs would be:

- Increase infiltration and filtration in the Lake Magda watershed through the use of rain gardens, native plantings, and reforestation.
- Identify key areas for more frequent street sweeping.
- Retrofit or install detention ponds, sump manholes, swirl separators, and trash collectors to remove debris, litter, and other pollutants from stormwater.
- Encourage shoreline restoration.
- Educate property owners about proper fertilizer use and low-impact lawn care practices.
- Monitor and manage plant and fish populations to promote native communities.

## For more information

The Lake Magda Nutrient TMDL Report was prepared for the Shingle Creek Watershed Management Commission and Minnesota Pollution Control Agency by Wenck Associates, Inc.

For more information about the Lake Magda Nutrient TMDL Report, view the Web pages at <http://www.pca.state.mn.us/water/tmdl/project-lakemagda-nutrients.html> or contact:

Minnesota Pollution Control Agency  
520 Lafayette Road  
St. Paul, MN 55155  
651-296-6300 or 1-800-657-3864

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

For more information about waterbodies in the Shingle Creek Watershed, go to <http://www.shinglecreek.org/>.