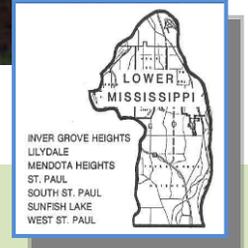


# Lake Augusta



## Results of a Water Quality Study on Lake Augusta in Mendota Heights

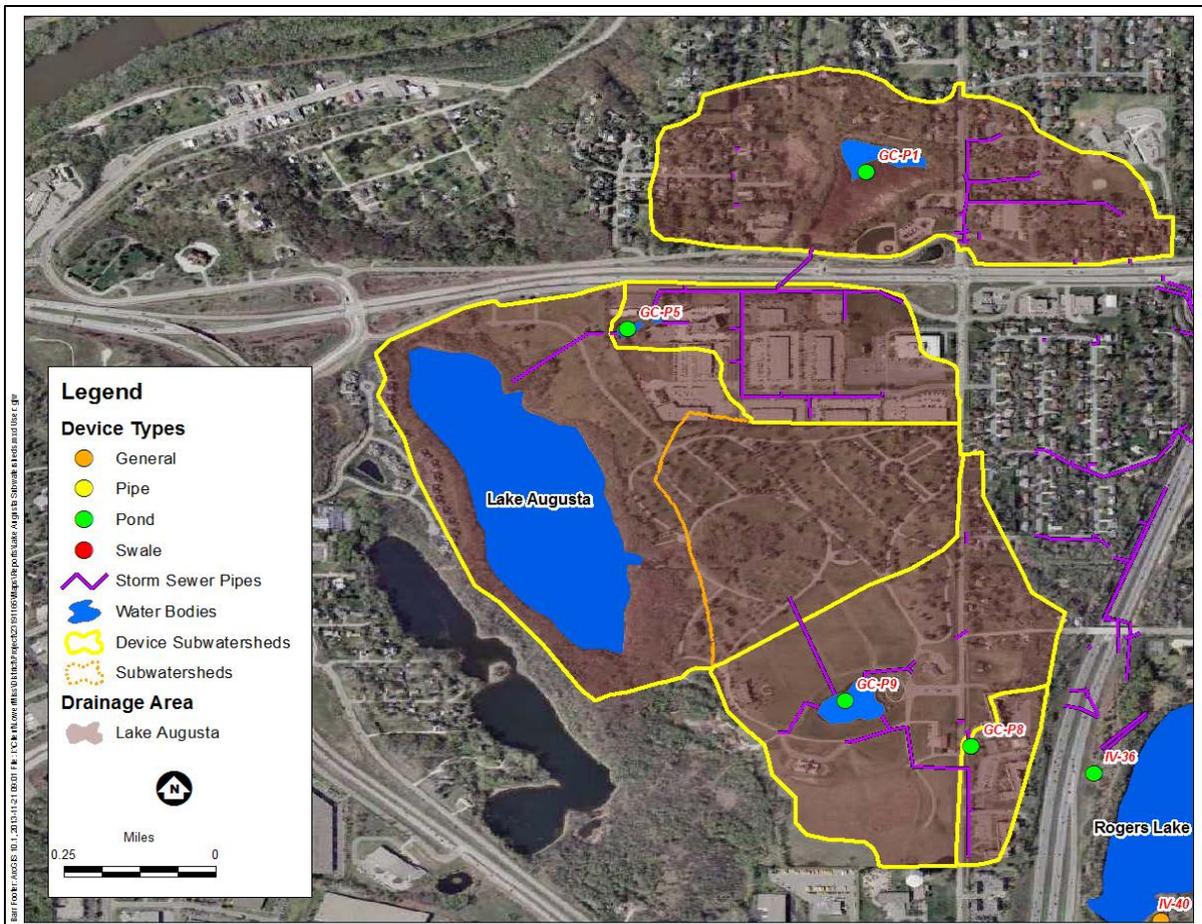
**Sub-watershed Area: 400 acres Lake surface area: 44 acres Maximum lake depth: 33 feet**

**Lake condition: Poor water quality due to excessive nutrients (phosphorus) that spur algae growth**

**Sources of nutrients: Releases of phosphorus from the lake bottom and runoff from streets and yards in the watershed**

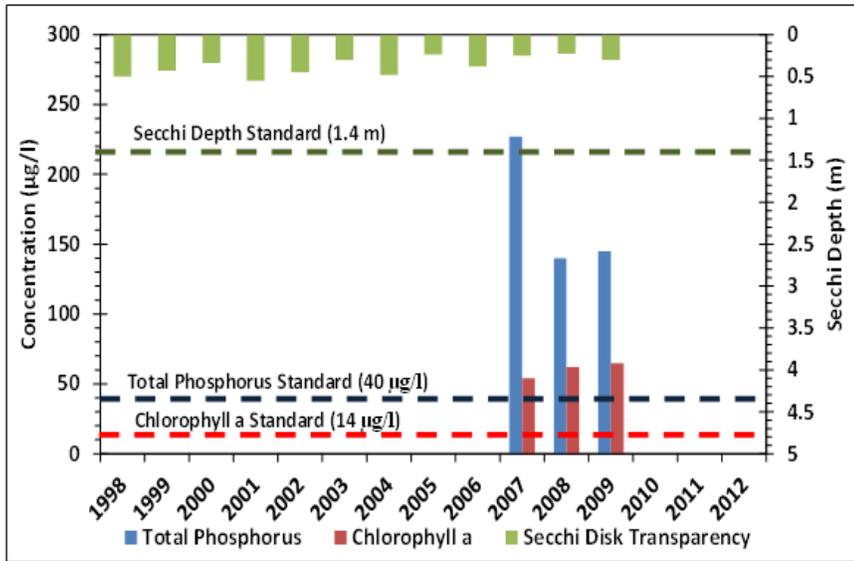
In 2012 and 2013, the Lower Mississippi River Watershed Management Organization (LMRWMO) studied five lakes, including Lake Augusta, to gain a better understanding of their water quality, sources of pollution, and the pollution reductions needed to improve the water quality and meet State standards. The Minnesota Pollution Control Agency funded the project through the Clean Water Land and Legacy Act. The project, called a “Watershed Restoration and Protection Strategy (WRAPS)” resulted in restoration plans for lakes with poor water quality, like Augusta, and protection plans for lakes with good water quality.

Lake Augusta is located in the western side of Mendota Heights just southeast of the intersection of highways 55 and 110. Most of the drainage area (i.e. the watershed) of the lake lies to the east and northeast of the lake. Land use within the lake’s watershed includes a large cemetery as well as commercial and low and high density residential areas. The lake is landlocked, meaning no water leaves the lake through a stream or outlet structure.



## Water Monitoring Results

Lake Augusta has a maximum depth of 33 feet and therefore must meet Minnesota water quality standards for deep lakes: the average total phosphorus (TP) concentrations during the summer must be less than 40 micrograms per liter ( $\mu\text{g/l}$ ); chlorophyll-a concentrations must be less than 14  $\mu\text{g/l}$ ; and Secchi depth transparency must be greater than 1.4 meters (4.6 feet). The lake was monitored through the Gun Club Lake Watershed Management Organization between 2007 and 2009. Secchi depth transparency measurements have been recorded between 1998 and 2009. The long-term average levels of all three criteria do not meet State water quality standards.



Lake Augusta Summer Average (June –September) Water Quality Data

**Phosphorus** is the plant nutrient that most often stimulates the growth of algae. A lake that is rich in phosphorus has the potential for abundant algal growth, which can reduce water clarity.

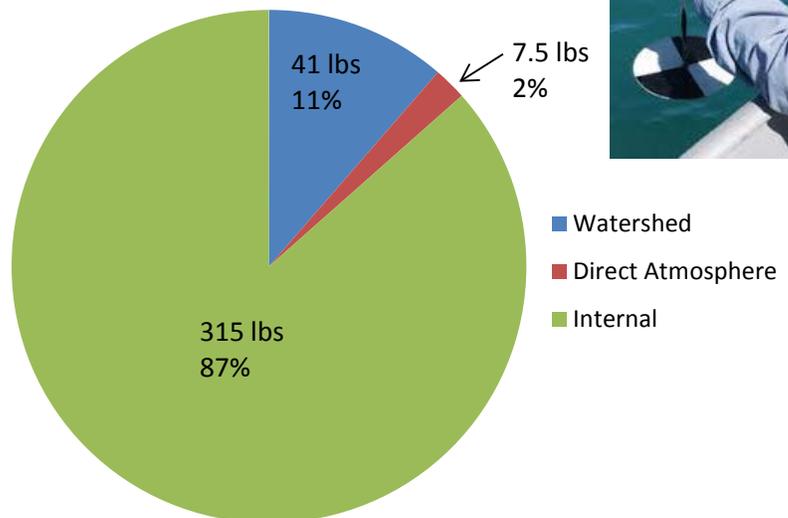
**Chlorophyll-a** is the main photosynthetic pigment in algae. Too much chlorophyll - a indicates an abundance of algae in the lake.

**Water clarity**, or transparency, is often measured with a **Secchi disk** - a black and white disk that is lowered into the water until it disappears from view. The depth at which it is no longer visible is measured numerous times to get an average for the summer.



## Sources of Phosphorus

Lake Augusta receives nutrients, like phosphorus, from a variety of sources. Monitoring and modeling results indicate the majority (87%) of the phosphorus in Augusta comes from the sediments at the bottom of the lake or “internal loading.” Internal phosphorus loading is a problem in many lakes because historic inputs of phosphorus get concentrated in the sediments. This phosphorus is recycled from the lake sediments into the overlying waters, primarily during summer periods, when it contributes to the growth of nuisance algal blooms.



Another 11% of the phosphorus comes from the surrounding watershed. Storm water and snowmelt running off residential and commercial areas carry grass clippings, fertilizers, and leaves into the lake through storm drains and pipes. Fertilizer in runoff feeds algae blooms directly. Leaves and grass breakdown in the water, also releasing nutrients to the water column and feeding algae.

## Strategies for Reducing Phosphorus in Lake Augusta

The WRAPS report and restoration plan for Lake Augusta indicates that a 78% reduction of phosphorus from internal sources is needed to improve water quality, reduce algae growth and meet State standards. This will in turn allow sunlight to reach more of the lake bottom, improving rooted aquatic plant growth, habitat, and lake oxygen levels. In order to reduce internal sources that significantly, an in-lake alum treatment of the lake sediments is recommended.

Watershed residents can further improve water quality by reducing the amount of nutrients reaching the lake in storm water (see below).



### What Can You Do? Treat Your Curb Like a Shoreline

We all live in a watershed. Sometimes it's obvious our property drains to a particular body of water; sometimes it's not. Those in the Lake Augusta watershed may not be aware their property eventually drains through storm sewers and into the lake (see map on front). Even if you live several blocks or miles from the lake, runoff from your property drains to the lake through stormsewer pipes under your street – essentially turning every curb into a shoreline. Stormsewer systems are different from the sanitary sewer systems in which water used *inside* your home is treated at a wastewater treatment plant before being discharged to a waterbody. *Outside* your home, stormsewers collect rainwater and snowmelt leaving your property and convey them to the lake without treatment.



A storm drain funnels rain and snowmelt into stormwater pipes to prevent flooding. But, they also carry pollutants (like oil, deicers, and fertilizers) along with leaves and grass clippings into nearby lakes, streams, or wetlands.

Pollutants carried in runoff include lawn fertilizers, nutrients from decaying grass clippings and leaves, pesticides, toxins from coal-tar driveway sealants, oil from leaking cars, pet waste, and salt, sand and other deicers. In the lake, these pollutants result in poor water quality – effecting aesthetics and recreational enjoyment of the lake as well as fish, bugs, birds, and their habitats.

You can be part of the solution by using some easy practices at home.

- ✓ *Sweep up grass clippings, fertilizer, leaves, and extra sand and salt before they get into the storm drain (compost grass and leaves; save fertilizer, sand and salt for reuse)*
- ✓ *Install a raingarden to capture runoff from your roof or driveway and let it soak into the ground (visit [www.dakotaswcd.org](http://www.dakotaswcd.org) for information on Blue Thumb classes)*
- ✓ *Clean up after your pet (put waste in trash)*
- ✓ *Install a rain barrel to collect rainwater for use in gardens*
- ✓ *Keep your car in good repair to avoid leaks*
- ✓ *Use asphalt-based driveway sealants (or if using a service, ask the company to use them)*
- ✓ *Wash your car at a carwash rather than on the driveway*