Thompson Lake

Results of a Water Quality Study on Thompson Lake in West St. Paul, MN

Sub-watershed Area: 180 acres Lake surface area: 7 acres Maximum lake depth: 8 feet
Lake condition: Poor water quality due to excessive nutrients (phosphorus) that spur algae growth
Sources of nutrients: Runoff from streets, parking lots, rooftops, and yards

In 2012 and 2013, the Lower Mississippi River Watershed Management Organization (LMRWMO) studied five lakes, including Thompson Lake, 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 Thompson, and protection plans for lakes with good water quality.

Thompson Lake is located in the City of West St. Paul just west of Highway 52, within the Thompson County Park. The area draining to the lake (its watershed) lies mainly to the west of the lake. It is comprised of commercial areas (including Signal Hills Shopping Center), institutional areas (including schools and churches), several blocks of low-density residential areas, and Dakota County park land immediately around the lake.

Water Monitoring Results

Thompson Lake has a maximum depth of 8 feet and therefore must meet Minnesota water quality standards for shallow lakes. The lake was monitored by Dakota County in 2011 and as part of this study in 2012. The averages for total phosphorus concentrations do not meet state water quality standards. Chlorophyll-a concentrations did not meet standards in 2011 and barely met standards in 2012, while the average Secchi depth did meet the water quality standard both years.

Parameter	Result (average of multiple summer samples)		Meets state water quality standard?
Total phosphorus concentrations during the summer must be less than 60 micrograms per liter (ug/l)	2011	85 ug/l	No
	2012	75 ug/l	No
Chlorophyll-a concentrations must be less than 20 ug/l	2011	39 ug/l	No
	2012	19.5 ug/l	Yes
Water clarity (Secchi disk depth) must be greater than 1 meter (3.3 ft)	2011	1.1 m	Yes
	2012	1.5 m	Yes

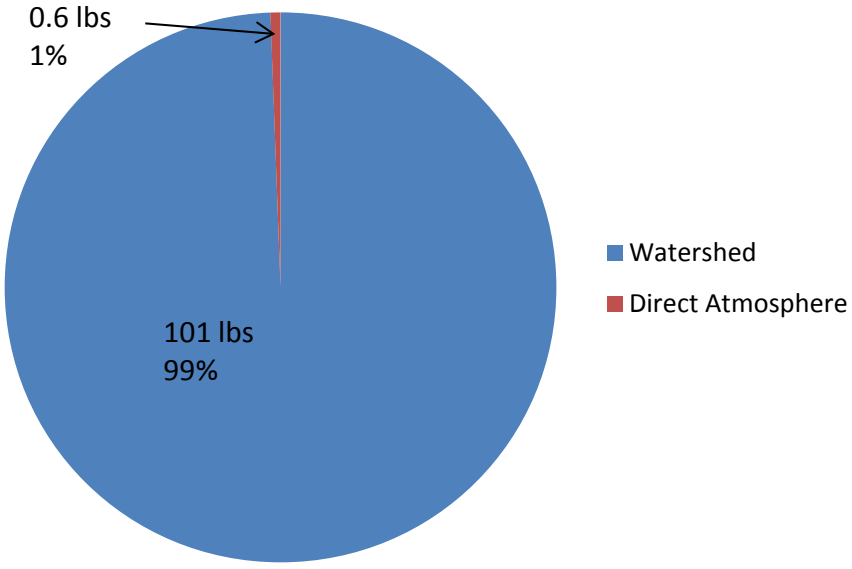
Phosphorus is the plant nutrient that most often stimulates the growth of algae. A lake that is rich in phosphorus has the potential for abundant algal growth, which can reduce water clarity.

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

Monitoring and modeling results of the study indicate that nearly all of the phosphorus in Thompson Lake is washed into the lake from the surrounding watershed in storm water runoff and snow melt.



Strategies for Reducing Phosphorus in Thompson Lake

The WRAPS report and restoration plan for Thompson Lake indicates that phosphorus coming from its contributing watershed should be reduced by 30 – 34%. Residents, businesses, schools, and churches can reduce pollutants in water by following best practices on their properties (see below). Other recommended phosphorus reduction strategies for Thompson Lake include construction of a pond to treat storm water entering the north end of the lake and/or some combination of stormwater treatment measures associated with future redevelopment projects in the watershed.

CLEAN WATER LAND & LEGACY AMENDMENT

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 Thompson Lake watershed may not be aware runoff from their property eventually gets to the lake. 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 Thompson 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 that 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 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 on the lawn (where city rules allow) so water soaks into the ground*