What's happening

Managing plants

Lakes are complex ecosystems with many inter-connected processes. In order to manage aquatic plants in Lake Riley, it was first necessary to control common carp, a fish that disturbs plant roots. In 2015, with carp at a low level, the district conducted herbicide treatments to control two invasive aquatic plants: curlyleaf pondweed and Eurasian watermilfoil. By knocking down these invasives, the goal is to promote a healthy and balanced native plate population. Establishing a thriving native plant population now is particularly important as the district is looking ahead to applying an alum treatment to improve water clarity. Eurasian watermilfoil can reproduce rapidly in clear water, and having healthy native plants prior to alum treatment will help keep the invasives from spreading. The herbicide treatments were a part of the Lake Vegetation Management Plan, developed in winter 2013, and supported by the Lake Riley Improvement Association and residents and approved by the MN DNR.

Updating the use attainability analysis

A Use Attainability Analysis (UAA) is a scientific assessment that evaluates the health of a lake, and proposes actions to improve it. The district originally developed a UAA for Lake Riley in 2002. It included a water quality analysis and prescription of protective measures for the lake and its watersheds. It was based on historical water quality data, intensive lake water quality monitoring, and computer simulations of land use impacts on water quality. Since this original study, the district has implemented projects and monitored the water quality in Lake Riley.

In 2015, an updated UAA was completed. The goal was to assess the water quality in Lake Riley based on more recent physical, chemical, and biological data and to identify and evaluate watershed and in-lake best management practices (BMPs) that can be implemented to improve and preserve water quality in both lakes. Interested in learning more? The study can be found on our website www.rpbcwd.org.

Dive deeper

Interested in learning more? Find the reports below on our website. Fish, plant, and sediment studies are just some of the research the district and its partners conduct. Can't find what you are looking for? Feel welcome to call or write.

Aquatic plants
JaKa, J. and Newman, R. 2014. Aquatic Plant Community of Lakes Ann, Lotus, Lucy, Mitchell, Susan, Riley and Staring within the Riley Purgatory Bluff Creek Watershed: Final Report 2009 – 2014. University of Minnesota.

Watershed study
BARR Engineering. 2016. Rice Marsh Lake and Lake Riley: Use Attainability Analysis.

Stormwater ponds
RPBCWD. 2013. Stormwater pond project.

Paleolimnology
Ramstack J. M. and Edlund M. B. 2011. Historical water quality and ecological change of three lakes in the Riley Purgatory Bluff Creek Watershed District, MN.

Carp management
Bajer P. G., Headrick M., Miller B. D. and Sorensen P. W. 2014. Development and implementation of a sustainable strategy to control common carp in the Riley Creek chain of Lakes. University of Minnesota.

Contact us

and find out how you can get involved

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Lake Riley 2015

Riley Purgatory Bluff Creek Watershed District

Quick facts

Size	286 acres
Volume	6419 acre-ft
Average depth	23 ft
Maximum depth	49 ft
Watershed size	1763 acres
Direct land draining	818 acres
MPCA lake classification	Deep

Common fish
Bluegill, Northern Pike, Yellow Perch, Yellow Bullhead

Invasive Species
Common Carp, Curlyleaf Pondweed, Eurasian Watermilfoil

Trophic status	Impairment
Eutrophic (rich in nutrients)	Mercury, nutrients

Did you know?

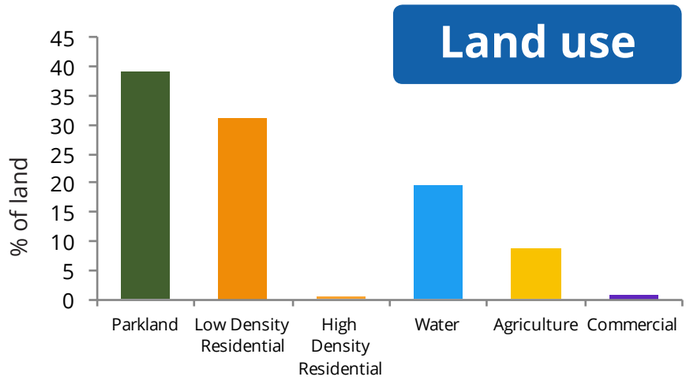
Lake Riley is the deepest lake in the district.

Fishing & boating are popular on Riley. The City of Eden Prairie operates a swimming beach & boat access.

Riley provides important habitat for migrating ducks, geese, and other waterfowl.

Lake Riley is located in Eden Prairie, south of Highway 212 and east of Great Plains Boulevard. Riley is part of the Riley Creek Chain of Lakes which originates at Lake Lucy. Lake Riley has a public boat ramp, a fishing pier, and a large public beach located in Riley Lake Park.

Land use



How healthy is Lake Riley?

For the past 40 years, Lake Riley has consistently failed to meet the clean water standards set by the Minnesota Pollution Control Agency (MPCA). In recent years however, there have been improvements, especially in water clarity. The graphs on the next page show the trends over time. The red line on each graph marks the MPCA standard. The goal for each graph is for the average values (the dots) to be below the red line.

During the growing season (May - September), district staff visit Lake Riley every other week to collect water samples and take measurements. The samples are sent to a lab where they are tested for several compounds including total phosphorous (TP) and chlorophyll a (Chl-a). Staff also measure how clear the water is using a disk that is lowered into the water until it can no longer be seen. All three of these parameters help indicate whether the water is clean. Find out more about each on the next page.

Riley is classified as a “Deep Lake”, which means that it is over 15 feet deep and light can not reach the bottom in most of the lake. To be considered healthy by the MPCA, deep lakes need to be clear enough to see 1.4 meters down, and have very low TP and Chl-a levels. These deep lake standards are listed in the summary table.

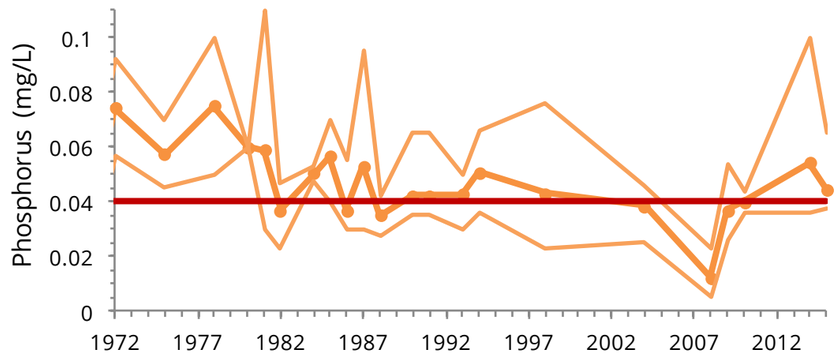
[Above] Staff launch the electro-fishing boat to monitor invasive carp.

[Right] Staff collect data from a lake water level sensor.

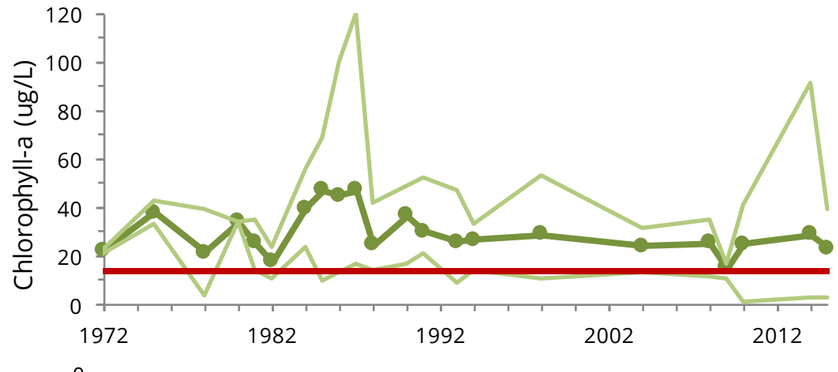
[Below] Water flows out of Lake Riley into Riley Creek.

Water quality graphs 1972 - 2015

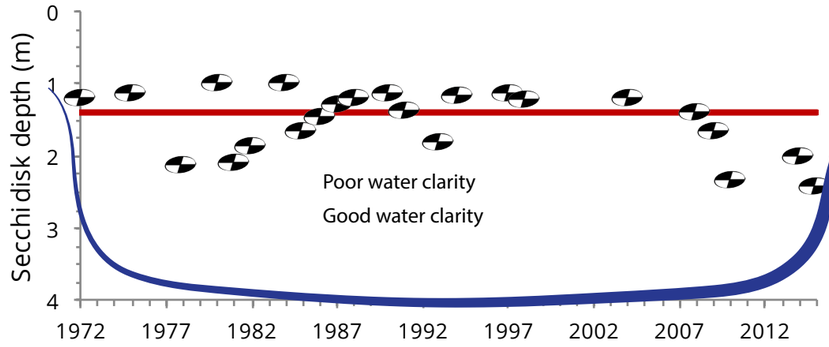
Points are growing season (May-Sep) averages. Thin lines are the minimum and maximum values for each year.



Phosphorus is a nutrient that plants and algae need for growth. It is often measured as total phosphorus (TP). Too much phosphorous can cause algae blooms.



Chlorophyll-a is the main pigment in algae, so measuring chl-a can tell us how much algae there is. Too much chl-a means that there are too many nutrients in the water.



Water clarity is measured using a **Secchi Disk**, a black and white disk the size of a dinner plate. It is lowered into the water, and the depth at which it is no longer visible is recorded.

Summary table

	MPCA standard	Since 1972			2015		
		max	min	average	max	min	average
TP	<0.04 mg/l	0.11	0.005	0.0449	0.065	0.038	0.0446
Chl-a	<14 ug/l	120	1.3	29.3	39	3	23
Secchi	>1.4 m	4.8	0.5	1.5	5.9	1.1	2.4

Rainwater runoff, the water that flows across yards, parking lots, and streets into stormdrains, is one of the main causes of pollution in urban areas. You can take simple actions to help protect Lake Riley.

Keep the curb clean

Sweep up leaves, grass clippings and fertilizer from driveways and streets.

Water with care

Grass requires 1-inch of water per week: about one hour of sprinkling per week if it has not rained.

Salt smart

The salt we use to melt ice can pollute our lakes and creeks. Use salt sparingly and always shovel first.

Reuse the rain

Collect and reuse rainwater with a rain barrel.

Build a raingarden

Raingardens soak up water and filter out pollution. Visit our website for help.