

Figure 5-12. Project Synopsis: Shady Oak Lake Use Attainability Analysis

A Use Attainability Analysis (UAA) is a scientific assessment of a water body’s physical, chemical, and biological conditions. This assessment provides the foundation for a lake-specific best management practices (BMPs) plan that is used to maintain or attain the existing and potential beneficial uses of a lake, such as swimming, fishing, or aesthetic viewing.

Goals for Shady Oak Lake

Nine Mile Creek Watershed District

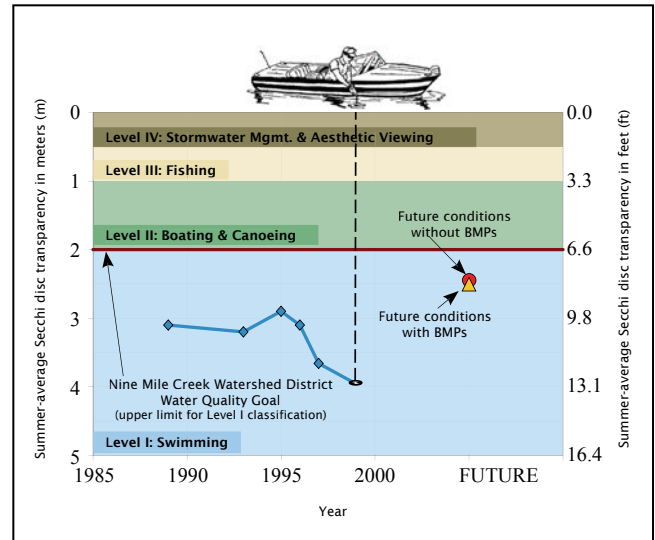
Water Quality Goal:

Level I Classification—full support of swimmable use and a Secchi disc reading ≥ 2.0 m.

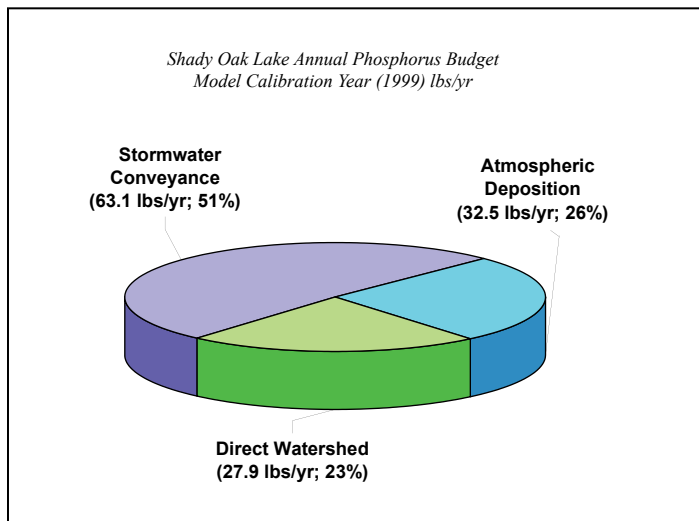
Investigative Techniques

The Shady Oak Lake UAA includes both a water quality analysis and prescription of protective measures for Shady Oak Lake and its watershed. This analysis and prescription is based on:

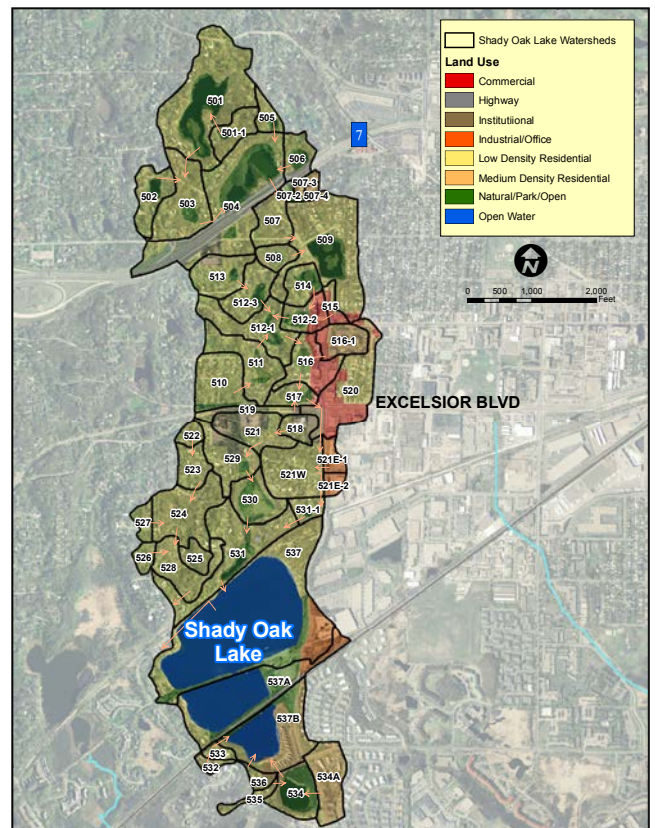
- Historical water quality data
- Intensive lakewater quality study
- P8 computer simulation modeling of runoff water quality
- Lake hydrologic and phosphorus budget analyses (see below)
- Best management practices (BMPs) analysis



This graph illustrates Shady Oak Lake’s historic and predicted future summer-average water clarity (transparency). Transparency is measured as the depth at which a black-and-white patterned disc (a Secchi disc) disappears from view as it is lowered into the water.



Stormwater conveyance accounts for more than 50 percent of Shady Oak Lake’s annual phosphorus load.



The land use on a lake’s watershed directly impacts the water quality in the lake. Therefore, the Shady Oak Lake UAA assessed existing and ultimate watershed land-use conditions.



An invasive aquatic plant, Eurasian watermilfoil adversely impacts aquatic ecosystems by forming dense canopies that often shade out native vegetation. It can “travel” from lake to lake via boat trailers.



Purple loosestrife is an exotic species that invades wetlands and lake shorelines. It out-competes native species and, if left unchecked, will eventually become the dominant plant wherever it appears.



Purple loosestrife can be managed by releasing root-boring weevils onto the plants.

Water Quality Problems

Swimming Issues

Problem: Summer algal blooms (caused by high phosphorus levels)

Cause: Urban stormwater runoff conveying large amounts of phosphorus to the lake

Biological Issues

Problem: Exotic lake weed species (see left)

Cause: Eurasian watermilfoil and purple loosestrife

Recommended Remedial Measures*

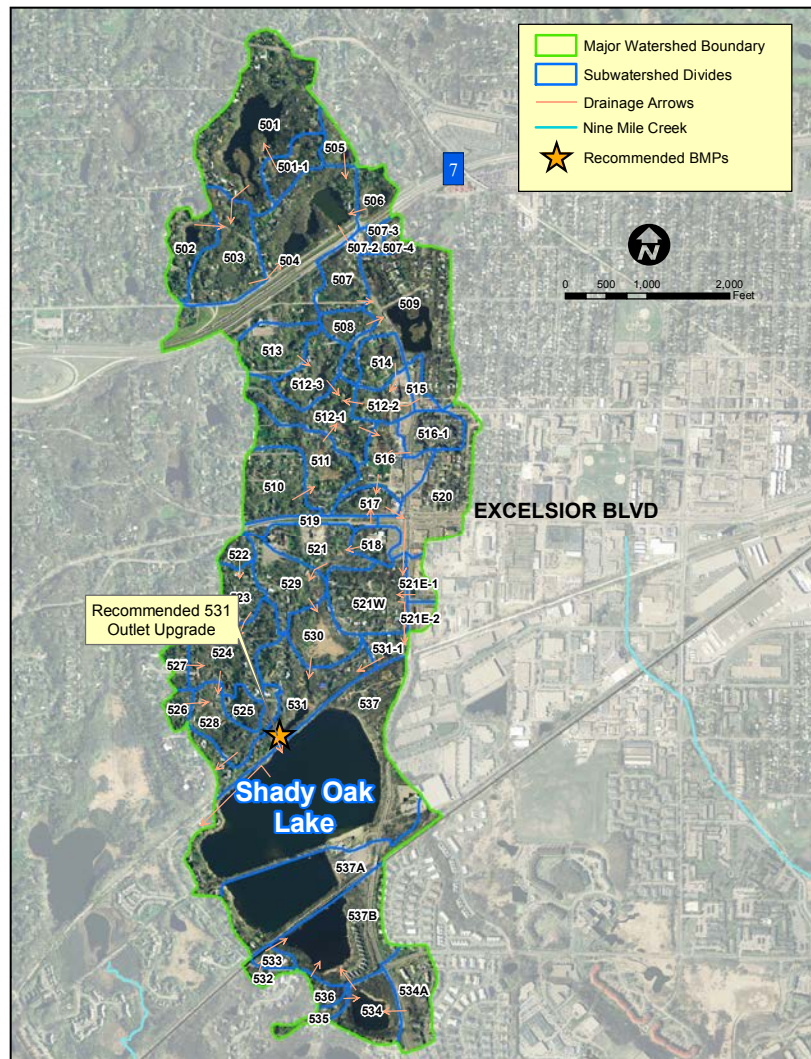
Conventional Runoff BMPs—No further BMPs, besides those prescribed by the Minnetonka Water Resources Management Plan, are required to meet the district’s water quality goals. However, elevating the outlet from pond 531 could improve the water quality in the lake.

Biological Management Techniques—

- Aquatic plant management



Harvesting Eurasian watermilfoil is a biological management technique used on many area lakes.



* Implementation of remedial measures may change based on municipal petitions.