Figure 5-8. Project Synopsis:
Minnetoga 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.

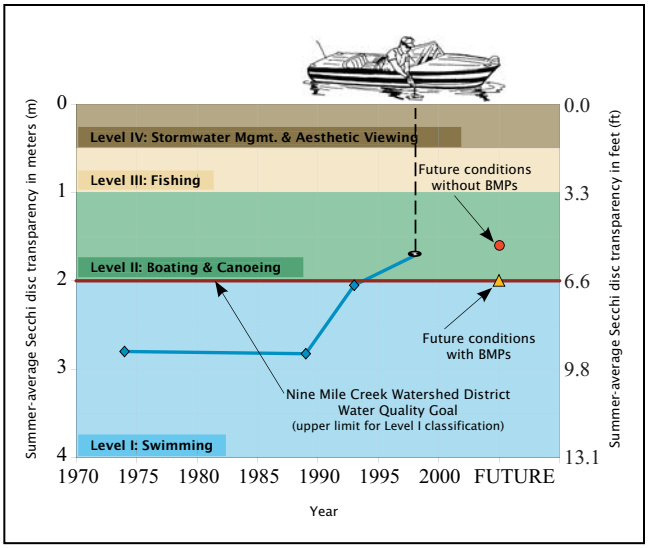
Goals for Minnetoga Lake

Nine Mile Creek Watershed District Water Quality Goal:
Level I Classification—full support of swimmable use and a Secchi disc reading ≥ 2.0 m.

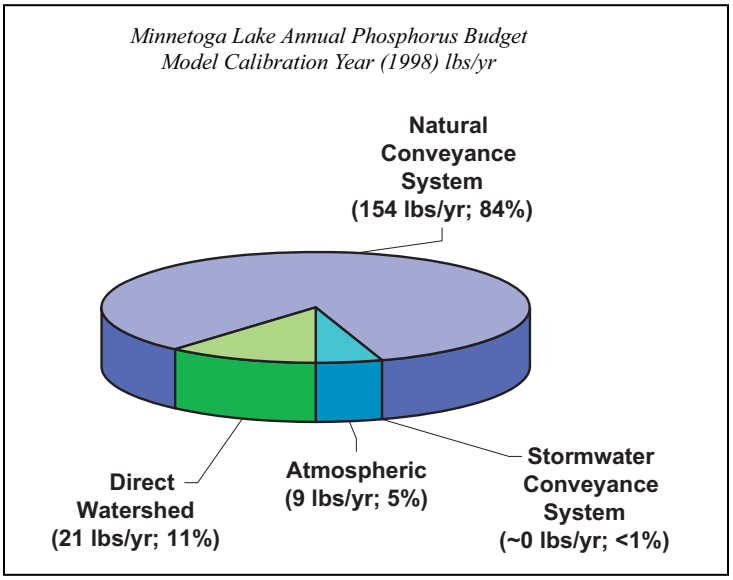
Investigative Techniques

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

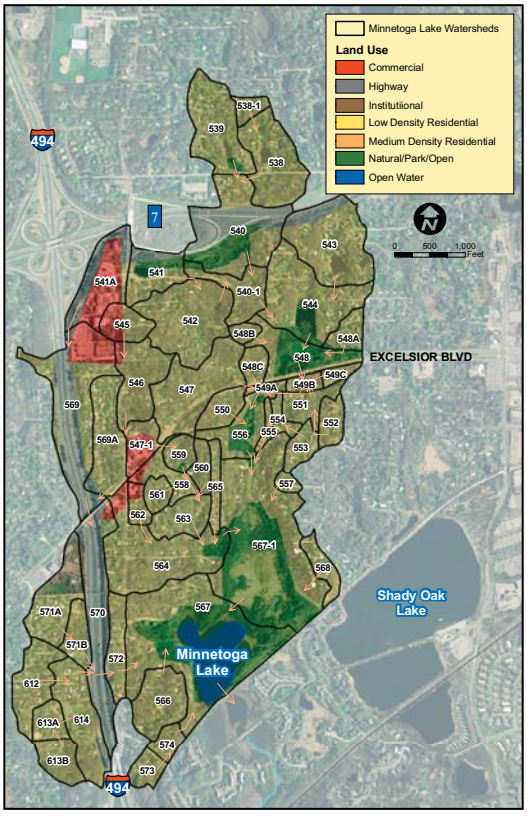
- Historical water quality data
- Intensive lakewater quality study
- P8 computer simulation modeling of runoff water quality
- Lake hydrologic and phosphorus budget analyses (see below)
- Best management practices (BMPs) analysis



This graph illustrates Minnetoga 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.

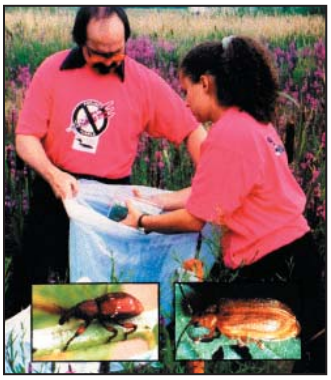


Minnetoga Lake's natural conveyance system contributes roughly 84 percent of the lake's annual phosphorus load.



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

Purple loosestrife is an exotic species that invades wetlands and lake shorelines. It outcompetes 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.

Digging loosestrife by hand is another possible management method.

Water Quality Problems

Swimming Issues

Problem: Summer algal blooms

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

Biological Issues

Problem: Exotic lake weed species (see left)

Cause: Purple loosestrife

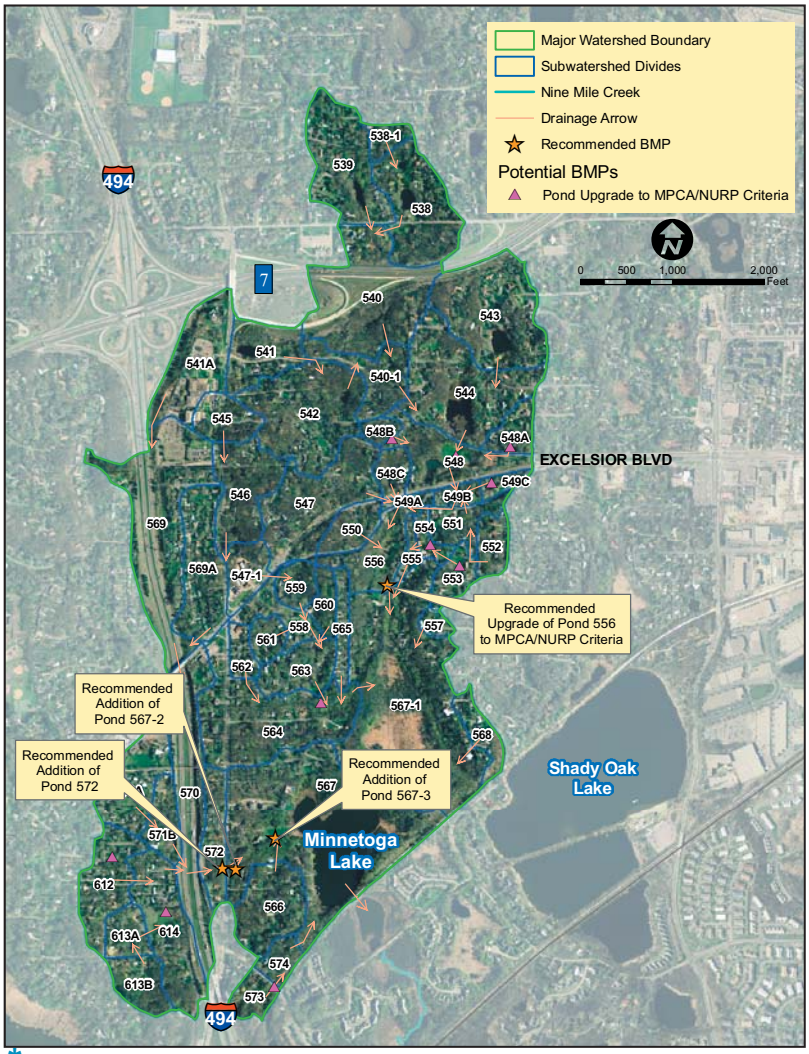
Recommended Remedial Measures*

Conventional Runoff BMPs—Implementing the projects listed below will improve water quality sufficiently to fully meet the Nine Mile Creek Watershed District's goals.

- Add three new stormwater treatment ponds (572, 567-2**, and 567-3)
- Upgrade pond 556 for the City of Minnetonka Surface Water Management Plan (to meet Minnesota Pollution Control/Nationwide Urban Runoff Program criteria for a regional runoff detention pond)

Biological Management Techniques—

- Aquatic plant management (see left)



*Implementation of remedial measures may change based on municipal petitions.
**The final design did not include construction of 567-2.