

Lake studies often examine the underlying factors that impact a lake's health, such as lake size, depth, water sources, and the land use in a lake's watershed. Many forms of data can be collected and analyzed to gauge a lake's health including: physical data (oxygen, temperature, etc.), chemical data (including nutrients such as phosphorus and nitrogen), biological data (algae, zooplankton, and aquatic plants), geological data (soils, glacial till, and sediment geochemistry), and land use within a lake's watershed. Lake studies and data collection can be funded through the Wisconsin Department of Natural Resources Lake Planning Grant program, and other sources.

Lake studies identify challenges and threats to a lake's health along with opportunities for improvement. These studies identify practices already being implemented by watershed residents to improve water quality and areas providing benefits to a lake's ecosystem. Additionally, these studies quantify practices or areas on the landscape, or within the lake that have the potential to negatively impact the health of a lake and identify best management practices for improvement.

The end product of a lake study is a lake management plan which identifies goals, objectives, and action items to either maintain or improve the health of a lake. These goals should be realistic based on inherent lake and watershed characteristics (lake size, depth, land use, etc.) and should align with the goals of watershed residents. A management plan is designed to be a working document that is used to guide the actions which take place to manage a specific lake. They should be under constant review and adjusted depending on the condition of a lake, available funding, level of volunteer commitments, and the needs of lake stakeholders. Successful lake management should rely on a repeated process of planning, implementation, and evaluation, known as adaptive management.

The actions proposed in a Wisconsin Department of Natural Resources approved lake management plan are eligible for funding through the WDNR Lake Protection Grant program. Typically lake management plans have goals for improving water quality, enhancing fish and wildlife habitat, improving natural beauty, providing information and education, preventing aquatic invasive species, managing nuisance plant growth, future monitoring, and sustaining the implementation of the plan.

Examples of specific actions include:

- Installation of shoreline restorations and rain gardens
- Installation of infiltration and diversion practices
- Fish sticks and other habitat improvements
- Streambank erosion management
- Sediment and retention ponds
- Alum treatment
- Biomanipulation
- Aeration
- Septic system upgrades
- Boat decontamination stations
- Aquatic invasive species monitoring
- Manual or chemical control of aquatic plants
- Land acquisition and the formation of conservancies