

REPLACEMENT

SHORELAND STANDARDS AND LAND USE

I. What is the issue? Why are we concerned?

Human interactions with the landscape affect water quality throughout the watershed. Development at the land-water interface, along the shoreline of lakes and rivers, can have significant impacts on the body of water. Loss of shoreline and aquatic biodiversity and habitat, destabilization of shoreline soils, and decreased water quality can result from shoreland alterations. As the human population increases, more pressure is put on the state's natural resources and Minnesota's population is expected to grow by 10 percent in the next decade and 24 percent over the next 30 years.

II. What are the trends?

Lakeshore development in Minnesota is changing. In the 1960's and 1970's lakeshore development in the state consisted mainly of seasonal cabins or small homes. The trend of turning these seasonal homes into year-round homes in the 1970's and 1980's continues today along with an increase of homes being built on lakes. In fact, lakeshore development is increasing mainly in the northern part of the state, with counties in Minnesota having a greater than 500 percent increase in seasonal housing units between 1990 and 2000. The Minnesota Department of Natural Resources (DNR) reports that in 2004 there were 225,000 lakeshore dwellings on Minnesota lakes. Not only is lakeshore development a concern, the type of development and land management techniques are important to note. It has been estimated that about two-thirds of all lakeshore in the state is privately owned and not all of the land has been developed. One study found that 25 percent of lakeshore owners have mowed lawns down to the lakeshore. This "lawn-to-lake" land use has been found to have significant cumulative impacts on water quality.

III. Why is this issue important to address?

Impacts to lake water quality are related to adjacent land use in the watershed. Negative impacts to Minnesota's lakes are due to increased pollutants and nutrients in stormwater runoff, septic system leakage, and altered shoreland.

Increased pollutants and nutrients in runoff, in "lawn-to-lake"

- Volume of water runoff 5-10 times greater than forested landscapes
- Phosphorus 7-9 times greater than natural vegetation
- Sediment 18 times greater than natural vegetation

Other pollutants in runoff include lawn herbicides and pesticides. A natural landscape has been found to produce about 10 percent runoff while a hard surface landscape (including lawns) has about 50 percent runoff. Lawns are often the largest fraction of land area of residential shoreland developments.

Abundant nutrients such as phosphorus in lakes cause a change in vegetation. Since the system is phosphorus limited, large inputs cause blooms of algae and other plants that are not wanted by lake users.

Septic System Leakage

- Pollutants leak from failing systems
- More than 190 communities in Minnesota have no central wastewater treatment system and rely on home septic systems

The main pollutants leaking from septic systems are nitrates and bacteria that come from the waste in the system. Nitrates in surface water cause an increase in plant growth and bacteria is hazardous to recreational users.

Altered Shoreland

- Change in bird communities, an increase in suburban birds (black-capped chickadees, brown-headed cowbirds, blue jays, and common grackles) and a decrease in forest birds or “species of concern” (warblers, common loons, vireos, and bald eagles), due to change in vegetation and habitat
- Loss of trees along shoreline with a decrease in fallen tree habitat for fish, aquatic invertebrates, turtles, frogs, waterbirds, and mammals; and an increase in shoreline erosion by waves
- One study found that developed shorelines had only 15 percent of the average wood habitat (logs/mile) of forested shorelines
- Loss of widely distributed green frogs has been found to be directly linked to alteration of shoreland (specifically woody debris and vegetative cover removal), where green frogs were found to disappear in developments greater than 30 homes/mile with an average lot width of 180 feet
- Loss of aquatic vegetation by direct removal; the DNR reports that developed shorelands have two-thirds less aquatic vegetation than undeveloped shorelands

Changes in shoreline vegetation can lead to water quality changes, an increase in non-native and invasive species, destabilization of shorelines, and ultimately decreased property values. Property values have been linked to water quality of an adjacent water body:

- A survey in 1999 found that 85 percent of people thought that development negatively impacted the scenic qualities of lakes in the state

- A water quality and property value study found a positive relationship with water quality and lakeshore property values because reduced water quality results in decreased aesthetic values, decreased recreation benefits, and lowering of property values due to reduced water clarity

IV. What factors contribute to this issue?

Individual shoreland development is difficult to monitor, regulate, and manage and the associated nonpoint source pollution poses the greatest threat. While the DNR has written Alternative Shoreland Management Standards for Minnesota, these are voluntary. Getting local governments, individuals, and lake associations to adopt these lake-friendly standards would help to decrease the impact of individual shoreland property owners.

Currently there are no incentives for protecting vegetation or reducing runoff from shoreland property. A conservation program with incentives for the property owner could help reduce cumulative impacts from individual actions.

There also appears to be a lack of awareness among shoreland property owners of the connection between individual management techniques and lake health. A study performed by the Minnesota Cooperative Fish and Wildlife Research Unit found that:

- About 30 percent of property owners kept an area free of aquatic plants
- In the Twin Cities Metro, 51 percent remove aquatic plants from their lake
- Swimming (82%), boating (58%), and shoreline aesthetics (35%) were the most common reasons people removed aquatic plants

When asked about the importance of aquatic plants, responses were:

- A slight majority viewed aquatic plants as valuable and favored some protection
- Most believed that native aquatic plants have value for fish and wildlife and are beneficial to lake ecosystems
- About half believed that aquatic plants contribute to the economic value of their property

V. What is the regulatory oversight?

- Minnesota Statutes (103f.211, et. seq.) requires the Department of Natural Resources to adopt a model ordinance establishing standards and criteria for shoreline development. Counties and cities with lakeshore are then required to adopt and enforce zoning ordinances that are approved by the DNR as being at least as protective as the DNR Model Ordinance.

VI. Is this issue a priority for other non-governmental groups?

Minnesota Waters, the result of a merger between the Minnesota Lakes Association and the Rivers Council of Minnesota, works with lakes and rivers groups in the state to protect and restore the state's water resources. The Minnesota Center for Environmental Advocacy was a member of the Shoreland Standards Update Advisory Council that helped produce the Alternative Shoreland Standards.

VII. Who are the primary stakeholders?

Primary stakeholder groups involved in this issue include lake association groups, local governments, resort owners, anglers, natural resource users, shoreland property owners, shoreland developers, and commercial and industrial users.

VIII. What is working?

Programs that aid property owners in preserving or restoring shoreland vegetation have been effective. Many lake associations are working with the DNR, local governments, extension agents, watershed districts, and soil and water conservation groups to implement shoreland changes. Demonstration sites that function to teach people about the technical aspects of restoring native vegetation are also being created.

Projects that address the issue of shoreland development and water quality are growing around the state. The Caribou Lake protection effort came about because of a proposed residential development and associated environmental review process. The county developed a plan to guide lake development activities and local partners will institute a lake water quality monitoring plan. Through shoreland development plans, future development can be part of a monitored process rather than a haphazard process.

Another project involved shoreland restoration on Perch Lake in Baxter, Minnesota. A shoreland property owner worked with the DNR to restore native plants along a section of shoreline. After discontinuing mowing from the house to the lake, native plants began to grow back and through the Lakescaping Program of the Legislative-Citizen Commission on Minnesota Resources, funding was used to replant native shoreland vegetation. Technical assistance as well as grant programs can provide needed resources for property owners willing to create and restore native habitat on their properties.

Through the Healthy Lakes and Rivers Partnership landowners in some lake associations have implemented septic system inspections to check for nonpoint source pollution. This program provides low-interest loans for upgrading noncompliant systems.

IX. What are the information gaps?

There has been limited study of the cumulative long-term impacts of development on lakes since this is difficult to trace and document. Data are needed to develop quantitative guidelines regarding critical levels of development to guide lake development. It has also been noted that

there is a lack of watershed information with consistent lake data to track changes in lake conditions over time and thus prevent water quality degradation.

There is also a great deal of anecdotal information about how and why people make certain decisions related to their shoreland properties. Studies of behavior and attitudes toward shoreland activities with a focus on creating education programs and building awareness could be used to see real improvements on this issue.

X. What is necessary to see real improvements?

In order to see real improvements in the issue of shoreland development, a compilation of resources on best management practices could guide individuals and lakeshore developers. There are many resources on the Internet, but they are not organized and compiled to make it easy for people who are looking for the information.

Facilitating shoreland restoration by following the DNR Alternative Shoreland Standards could prevent the negative impacts associated with shoreland degradation. A key example is encouraging shoreland owners to remove lawns and plant native plants. Restoration projects on many acres of shoreland are needed to improve lake ecosystems.

XI. What is the current climate to publicly impact this issue?

The updated Alternative Shoreland Management Standards for Minnesota could be used to provide information to local governments, individuals, and lake associations on how to adopt these lake-friendly standards. A public awareness campaign could help to make a cultural shift in relation to current shoreland management. In the Second Minnesota Report Card on Environmental Literacy from 2004, 61 percent of Minnesotans reported that they have “a lot” or “a fair amount” of knowledge of water pollution and conservation of natural resources. Putting this knowledge into action could foster the cultural changes needed to make an impact on shoreland resources.

XII. For more information

Minnesota Department of Natural Resources

http://www.dnr.state.mn.us/waters/watermgmt_section/shoreland/index.html

University of Minnesota Extension Service

<http://www.extension.umn.edu/Shoreland/>

Minnesota Shoreland Management Resource Guide

<http://www.shorelandmanagement.org/>

Minnesota Waters

<http://www.minnesotawaters.org/>

University of Wisconsin Extension Service
<http://clean-water.uwex.edu/>

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