



MI-6946-S
1998

UNIVERSITY OF MINNESOTA
Extension
SERVICE

Limiting Impact of Recreation on Water Quality

SHORELAND BEST MANAGEMENT PRACTICES

NUMBER 5 IN THE SERIES

What Are Shoreland BMPs?

Best Management Practices (BMPs) are actions you can take to reduce your impact on the environment. BMPs have been described for agriculture, forest management, and construction. This fact sheet describes BMPs you can adopt on your shoreland property to help protect and preserve water quality. In many cases, the best management for shorelands may be retaining the natural characteristics of your property.

Keeping Your Lake or River Healthy

Recreational activities can adversely affect both water quality and the shoreline, particularly when they focus on the waterfront. You can minimize these adverse impacts by developing and practicing a stewardship attitude as you enjoy your shoreland property and participate in outdoor activities.

Recreational opportunities are a primary reason people choose to live by or visit Minnesota lakes and rivers, and the demand on our water resources is always increasing. That increasing demand also increases the potential for damage to water quality and shorelines.

Assessing and improving leisure-time activities will help preserve water quality for fish and wildlife habitat as well as for our own recreational purposes. Poor water quality can affect recreation in and on the water, degrade fish and wildlife habitat, pose a health risk for water-contact recreation, and threaten the safety of your drinking water supply.

Over time, the waterfront environment has developed a natural balance based on linkages between water, land, vegetation, and wildlife. This delicate equilibrium can be easily disrupted when humans move in and rearrange the shoreland area or when any of the components are destroyed.

BMPs for Waterfronts

When using the waterfront for recreation, make sure your activities do not cause lasting damage to the shoreline or water. As a property owner, you should consider existing characteristics of the property to determine whether development is suitable. If you decide to alter your waterfront, develop a site plan that uses existing natural features of your shoreline instead of requiring major alteration.

Plan for both passive enjoyment of water resources and active pastimes. If a view of the water is important, consider strategic removal of vegetation to create a line-of-sight rather than clear-cutting and establishing an open lawn. Before removing vegetation in the shore impact zone, check with local zoning officials for guidelines. Remember to include appropriate aquatic and terrestrial wildlife habitat in your plans to enhance your shoreland enjoyment.

If you landscape your lot, plan to preserve or re-establish vegetation, install appropriate erosion control methods, and reduce runoff to protect your shoreland property and water quality (see fact sheets #6, 7, and 8).

The BMPs described below focus on specific recreational activities and are appropriate for property owners and visitors to Minnesota waters.

Managing Vegetation

Soil and rock in the shoreland area have characteristics that influence the type and amount of natural aquatic and upland vegetation and ground water in your area.

Vegetation physically slows runoff, enhances infiltration of runoff, and takes up nutrients dissolved in runoff and ground water. Fish, ducks, and other life depend on vegetation for food, spawning, and shelter. In addition, aquatic vegetation protects your shoreline by damping wave action (see Figure 1).

Remember to:

- follow your site plan when developing your property, which includes the installation of beaches, docks, accesses, and buildings

- minimize disturbance of aquatic vegetation; BEFORE altering or removing **any** aquatic vegetation, contact the MN Department of Natural Resources (DNR) Area Fisheries Supervisor to determine whether a permit is needed
- remove aquatic plants only where they seriously interfere with recreational use of water and then clear only the smallest possible area
- never use chemicals for controlling aquatic plants without first obtaining a permit from the DNR; although aquatic herbicides **may** be purchased without a permit, it is illegal to use them without a permit

Beaches and Swimming

If a swimming beach is a priority, try to purchase a lake or river lot that already has an established beach or sandy shoreline. If you choose to develop a beach, select a site that requires minimal alteration of your shoreline.

FIRST contact your DNR Area Hydrologist for information and appropriate permits for beach development. A good beach site should:

- have a gentle slope of less than 10:1, or 10 feet horizontal distance per each foot of vertical drop
- be located where the bottom is firm, with less than 6 inches of muck or silt, and no springs or flowing water
- be located in an area with minimal wave action; established aquatic vegetation dampens wave action on the shoreline
- be located away from areas of significant fish or wildlife habitat, such as wild rice, bulrush, and other protected vegetation

If you decide to develop a beach, consider the impact of alteration on the shore: you may be “gaining” a beach, but you will be losing habitat, runoff control, and erosion control. For additional information obtain a copy of the *Beach Sand Blankets* brochure from the DNR Division of Waters.

A beach sand blanket may consist of washed sand ranging in grain size from very fine sand to “pea-gravel.” If you add sand, use the largest available grain size, e.g., pea-

gravel, to provide a more stable beach. Use of a swimming raft may be a good alternative to the development of a sand beach. Due to boating safety concerns, the county sheriff’s department requires an easily obtainable permit for floating rafts.

When swimming:

- do not use soap or shampoo in the water
- insist that swimmers leave the water to use the bathroom

Boating and Fishing

Many recreational activities involve the use of motorized watercraft, including personal watercraft, inboard and outboard motor boats for fishing or water-skiing, and houseboats. The following BMPs will help minimize potential damage to lakes and rivers:

- Avoid spilling gas, oil, paint, varnish, or stripper; never pour over the water during fueling or boat maintenance; do not “top-off” fuel tanks; fuel the boat on the trailer whenever possible.
- Install fuel storage tanks far away from the waterfront.
- Properly store and dispose of all wastewater, both greywater (from sinks) and human waste, while boating or fishing, especially on houseboats.
- Adjust your speed to reduce the wake and consequent wave action that can damage the shoreline; observe surface water use guidelines, including “no-wake” and low speed zones.
- Fish responsibly; it is illegal to deposit fish entrails or parts into public waters or onto lake or stream shores.
- Inspect boats and trailers to avoid moving non-native plants or animals from one water body to another; in Minnesota, it is illegal to transport exotic species; see fact sheet #15.
- Store and then properly dispose of wastewater when ice fishing; human waste from several ice houses can have a significant impact on the water quality in your lake or river.

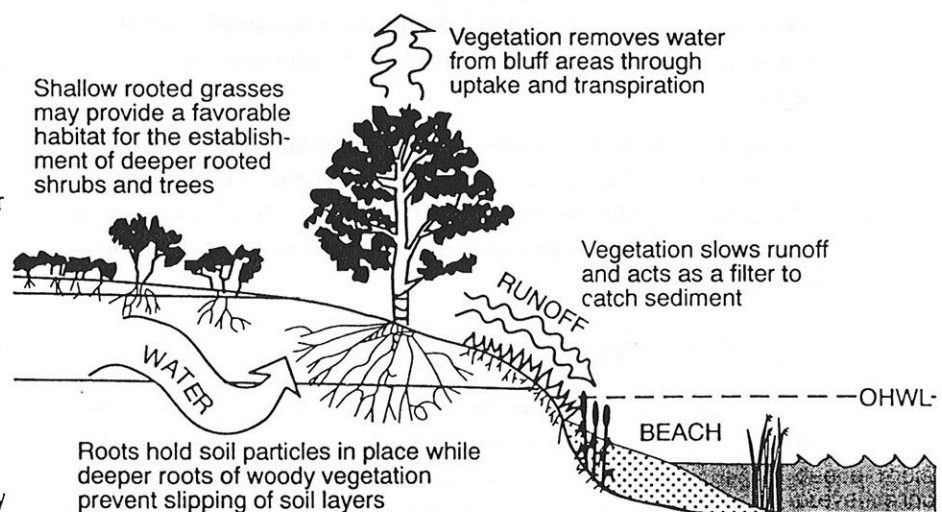


Figure 1: Terrestrial vegetation minimizes runoff that can impair water quality and aquatic vegetation dampens wave action to help reduce shoreline erosion.

Camping

Camping is a recreational activity that takes us away from regular habits for cleanup, washing, and waste disposal. Some practices that will help minimize impact on the environment are listed below:

- Use the latrine whenever one is provided; if none is available, bury human waste a minimum of 100 feet from water's edge; bacteria and viruses in human waste transmit disease.
- Properly dispose of all garbage, including litter you find.
- Never dispose of fish guts or other waste in the water, even if it is "biodegradable"; it attracts pests and can add nutrients to the water.
- Never wash in the lake or river; wash dishes, hair, clothes, and yourself at least 150 feet from the water's edge; always use biodegradable soap.
- If using surface water for drinking, collect it from below the surface near the center of the lake, not from near-shore; running water is more likely to carry giardia parasites, so avoid using river water for drinking; purify the water before drinking by boiling for 5 minutes; filters and chemicals are not always effective in removing giardia; for more information contact the U.S. Forest Service or MN Department of Health.

Remember to always follow the specific rules or guidelines established for the areas in which you are camping (e.g., wilderness areas, state parks, or private campgrounds).

Buildings Near the Shore

Local units of government have established standards that are based on statewide shoreland regulations for nearshore structures, such as boat houses, saunas, and gazebos. In developing a site plan or planning a waterfront structure, property owners should:

- **first** contact the local zoning official to determine if the structure is permitted and what standards are required
- minimize shoreland alteration and use adequate erosion control methods
- design the structure to reduce its visibility from the water and adjacent property
- locate boat houses where the water depth is sufficient to launch the boat and where aquatic plants need not be removed
- store gasoline, oil, and other potentially hazardous materials away from the water in a building with a solid floor; store emergency clean-up materials with the chemicals
- drain greywater from saunas through the septic system or connect with sewer lines to avoid adding soaps, oils, and bacteria to your water
- contact the DNR Area Hydrologist to obtain permit information **BEFORE** repairing any existing structures built over the water

Docks, Decks, and Accesses

Docks, boat ramps, and decks offer ways to reach and enjoy the waterfront. If not properly constructed and maintained, they may cause water quality problems. For more information contact the DNR Area Hydrologist or county zoning office and follow these BMPs:

- Follow your site plan when installing a docking facility; permanent docks, if allowed in your area, and seasonal docks must follow DNR guidelines.

- Use naturally resistant wood (cedar, tamarack, redwood), metal, or plastic instead of treated wood because the chemicals used to treat the wood may cause water quality problems.
- Construct all docks to allow free flow of water beneath them to prevent erosion and sedimentation along the shore.
- Construct the smallest possible dock to meet your needs.
- Never apply wood preservatives or paint to decks or docks while they are in or over the water.
- Follow shoreland ordinances when building decks near the shoreline; some setback requirements apply to decks to help protect water quality and minimize visual impact to other water users.
- Minimize the amount of ground surface covered with decks and patios to avoid increasing runoff and erosion.
- Eliminate paths to the waterfront that cut directly up and down slopes or over bluffs because they decrease stability of the shoreline and increase erosion; replace with stairways when necessary.
- Consider using the public access instead of developing your own boat ramp to minimize waterfront disturbance.

Off-Road Vehicles

The use of off-road vehicles, such as all-terrain vehicles (ATVs), mountain bikes, and snowmobiles, can have a severe effect on lakes and rivers by increasing erosion, turbidity, and sedimentation. Follow these BMPs to minimize the impact of your off-road recreation on water quality:

- Stay on well-maintained trails.
- Construct crossings over streams and wetlands to avoid damaging the bottom and banks (contact the DNR Area Hydrologist for appropriate permits)
- When entering or leaving an ice-covered lake or river, avoid wet or muddy areas and do not break down bluffs or banks.
- Stay away from sensitive areas during spring melt when the ground is thawing and very susceptible to rutting and erosion.
- Observe dates and time periods designed to regulate off-road recreation during muddy seasons.
- Stay off thin ice; not only is it potentially fatal to riders, but when motorized vehicles break through, petroleum products and battery acid can contaminate water.

Your Investment and Costs

Planning and maintaining a healthy waterfront is far less costly than trying to fix a disturbed system and benefits are far greater. Repairing shoreline damage is rarely successful and often impossible. For some shoreline modification projects, you will need a permit. Fees for permits vary; contact the DNR Area Hydrologist for more information.

Fees for many recreational licenses help enhance Minnesota's water-based recreation through educational programs, research, fish stocking, trails and access development, and habitat protection.

Your investment in Minnesota's water resources will pay off in returns to you and future generations through enhanced recreation and improved wildlife habitat.

Regulations that Apply

Any alteration of the lake/river bottom **below** the Ordinary High Water Level (OHWL) is subject to the regulatory jurisdiction of the DNR. Any alteration of the shoreland **above** the OHWL is subject to the regulations of the local unit of government (county, township, or municipality).

The OHWL is the highest water level that a lake has maintained for enough time to leave evidence on the landscape. It is often identified as where natural vegetation changes from aquatic to upland species. For streams, the OHWL is generally the top of the bank of the channel.

You should determine the location of the OHWL on your waterfront property (Figure 2). Contact your DNR Area Hydrologist or county zoning officials for assistance. Your DNR Area Fisheries Supervisor can assist you with questions regarding aquatic plant management methods and permits.

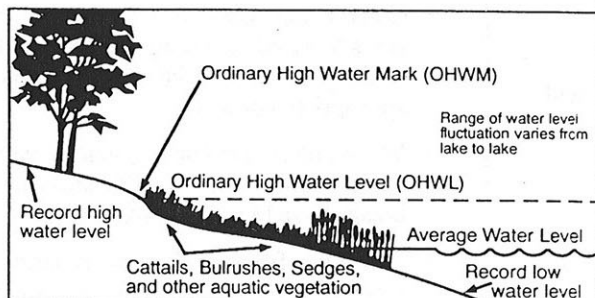


Figure 2: Cross section showing the ordinary high water level (OHWL) which is the legal boundary of the lakebed; in some cases, the OHWL is located many yards away from the open water.

In some areas, concerned citizens or lake associations have informally established restrictions for recreational use of surface waters. Some of these, such as "no-wake" zones, are intended to help protect water quality. Others are more social and are designed to enhance community enjoyment, such as noise reduction and curfews. In some cases, county boards have enacted ordinances to formalize these guidelines into regulations. Check with your zoning officials or property owners association about whether any apply in your area.

For More Information...

call

county offices:

- Soil and Water Conservation District (SWCD) • Planning and Zoning Department
- University of Minnesota Extension Service

regional offices of MN State agencies:

- MN Department of Natural Resources (DNR), Division of Fish and Wildlife, Division of Forestry
- Area Hydrologist • Area Fisheries Supervisor • Area Wildlife Supervisor

federal agencies:

- Natural Resources Conservation Service (NRCS) • U.S. Army Corps of Engineers (USACE)
- U.S. Forest Service

read (all available from the DNR)

Beach Sand Blankets

Boat Launching Ramps

Rip-rap and streambank protection

Leaflets on algae and aquatic vegetation

PART OF A SERIES...

This fact sheet is one of a series designed to assist shoreland property owners in protecting and preserving water quality. The series includes:

- 1 Understanding Shoreland BMPs
- 2 Maintaining Your Shoreland Septic System
- 3 Installing a Shoreland Septic System
- 4 Ensuring a Safe Water Supply
- 5 Limiting Impact of Recreation on Water Quality
- 6 Developing Shoreland Landscapes and Construction Activities
- 7 Stabilizing Your Shoreline to Prevent Erosion
- 8 Minimizing Runoff from Shoreland Property
- 9 Caring for Shoreland Lawns and Gardens
- 10 Managing Your Shoreland Woodlot
- 11 Valuing Your Shoreland Trees
- 12 Preserving Wetlands
- 13 Managing Crops and Animals Near Shorelands
- 14 Reducing the Use of Hazardous Household Products
- 15 Preventing the Introduction of Exotic Species
- 16 Accessing Information to Protect Water Quality
- 17 Shoreland Stewardship Scorecard
- 18 Conserving Water

This series of fact sheets is a cooperative effort of the following agencies:

University of Minnesota Extension Service of the Arrowhead counties
College of Natural Resources, University of Minnesota
Water Plan Coordinators of the Arrowhead counties
Minnesota Board of Water and Soil Resources
Minnesota Department of Health
Minnesota Department of Natural Resources, Division of Fish and Wildlife,
Division of Waters, Division of Forestry
Minnesota Pollution Control Agency
Minnesota Sea Grant Extension Program
Mississippi Headwaters Board
St. Louis County Health Department, Environmental Services Division
Soil and Water Conservation Districts of the Arrowhead counties
Natural Resources Conservation Service
Environmental Protection Agency
Western Lake Superior Sanitary District

USE OF PUBLICATION...

Copyright © 1998 Regents of the University of Minnesota. All rights reserved.

These publications may be photocopied for local distribution. The addition of commercial names, products, or identifiers is not permitted. Please do not add or delete any text material without contacting:

University of Minnesota Extension Service, Distribution Center
20 Coffey Hall • 1420 Eckles Ave
St Paul, MN 55108-6069 • 612-625-8173

You may add information about contact persons or regulations specific to your county, region, or lake association.