Shoreline Alterations: Beach Blanket

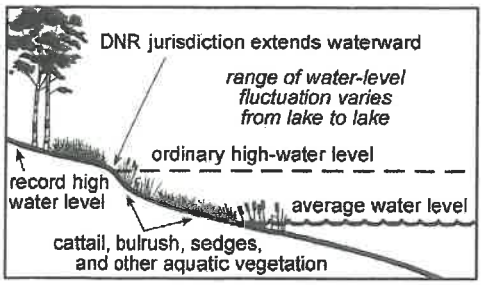
Minnesota Pollution Control Agency

Is an Individual Permit Required?

For most projects constructed *below* the ordinary high-water level* (OHWL) of public waters as determined by the Minnesota Department of Natural Resources (DNR), an individual permit is required from the DNR.

Beach blanket exception: An individual permit from the DNR is not required for beach sand or gravel placement if the conditions outlined in this information sheet are followed.

If you have questions concerning the contents of this information sheet, contact your local DNR Area Hydrologist. See contact information on reverse side.



Shoreline cross section

Are Other Permits Required?

Other governmental units (federal, state, city, county, township, and watershed authority) may require a permit for that portion of the project within their jurisdiction, which usually involves work above the OHWL. It is advisable to contact them.

*For lakes and wetlands, the OHWL is the highest elevation that has been maintained as to leave evidence on the landscape. It is commonly that point where the natural vegetation changes from predominantly aquatic to predominantly terrestrial. For watercourses, the OHWL is the top of the bank of the channel. For reservoirs and flowages, the OHWL is the operating elevation of the normal summer pool.

Will a sand beach work on my shoreline?

One goal of DNR Ecological and Waters Resources is to limit unnecessary and potentially damaging alterations to shorelines. Specifically, use of beach sand and other types of fill is limited in order to prevent damage to fish spawning areas, aquatic habitat, and water quality of Minnesota's lakes.

Although natural sand beaches can be found on many Minnesota lakeshores, landowners often attempt to create them on shores where they do not naturally occur (i.e., a muddy-bottom lake). If you are considering adding a beach blanket, you should know a few important things before investing your money.

- Beach material that erodes into the lake may coat aquatic plant beds and fish spawning grounds, degrading fish and wildlife habitat and damaging the water quality of your lake.
- Beach material must be clean and washed free of fine particles and must be of the appropriate grain size (coarse sand or larger) to stay in place under wave action. Placed material that migrates from your site may constitute a violation of water quality standards. To further minimize the risk of your beach migrating away from the site, maintain aquatic vegetation on both sides of your beach, like in the diagram on page two.
- The lakebed must be capable of holding beach material in place. If the lake bottom is soft, the sand or gravel will only sink into the muck and disappear.
- You are only allowed to install sand or gravel twice in the same location without a permit.
- Vegetation will constantly emerge through the beach material, and additional plant control will be needed on the beach. If you plan to weed by hand or apply herbicide, an aquatic plant management permit may be required from the DNR Division of Fisheries.
- Beach blankets may not be placed over emergent vegetation such as bulrush or cattails unless you obtain a permit from the Division of Fisheries.

Keep in mind that you are *not* allowed to install any plant barrier or liner (e.g., filter fabric or plastic) underneath your constructed beach. If owning lakeshore property with a sandy beach is a high priority for you, look for lakeshore property where sandy beaches occur naturally before you make that important purchase.

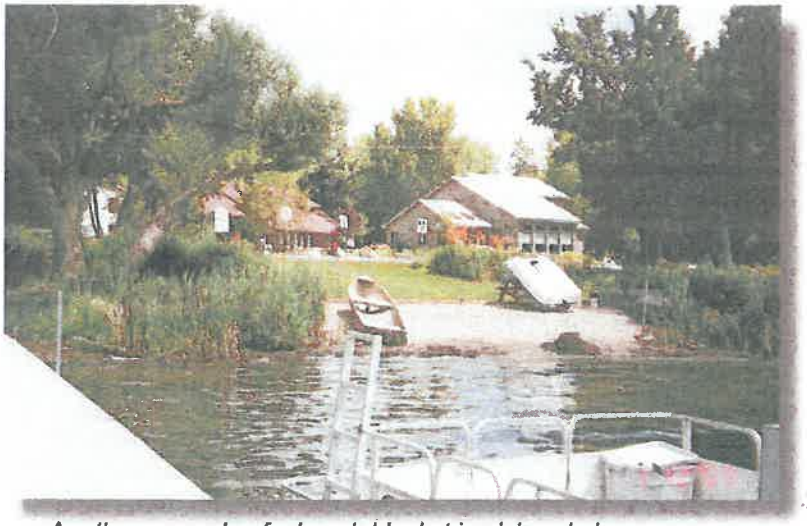
Beach blanket at shoreline.

Shoreline Alterations: Beach Blanket

If you have considered all of the conditions above and you think adding beach sand or gravel will work for your shoreline, you may install a beach blanket without an individual permit if the installation meets all of the following conditions:

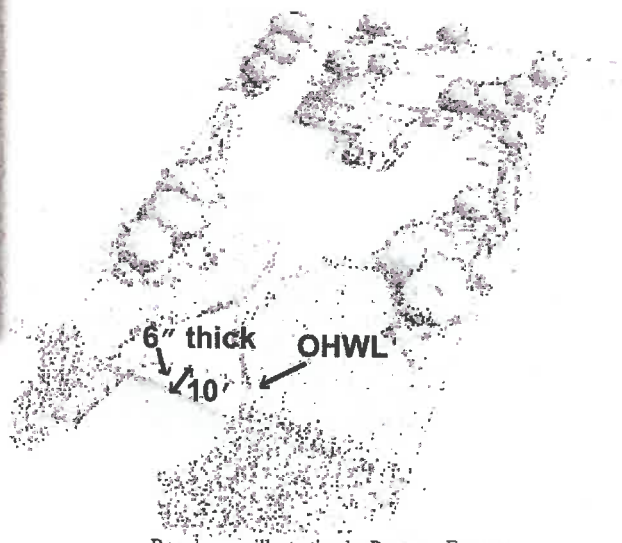
- The sand or gravel layer may be up to 6 inches thick; up to 50 feet wide along the shoreline or one-half the width of the lot, whichever is less; and up to 10 feet waterward of the ordinary high-water level (OHWL; see sidebar on page 1).
- The beach blanket does not cover emergent aquatic vegetation, unless authorized by an aquatic plant management permit (contact your local DNR Fisheries office).
- The sand or gravel is clean and washed so that it is free of fine particles.
- Local watershed district and local zoning officials are given at least 7 days' notice by the landowner.
- No plant barrier or liner (i.e., filter fabric or plastic) is installed underneath your beach sand.

Installation of sand and gravel may be repeated *once* at the same location but may not exceed the amount of sand and dimensions of the original sand blanket.



Another example of a beach blanket is pictured above.

The plan view of a diagram (right) shows dimensions of a beach blanket surrounded by vegetation with a path to the sand area.



Based on an illustration by Roxanna Esparza.

DNR Contact Information

DNR Ecological and Water Resources website and a listing of Area Hydrologists:
http://mndnr.gov/contact/ewr.html

DNR Ecological and Water Resources
500 Lafayette Road, Box 32
St. Paul, MN 55155
(651) 259-5100

For information about aquatic plant management permits:
http://mndnr.gov/shorelandmgmt/apg/regulations.html

DNR Information Center

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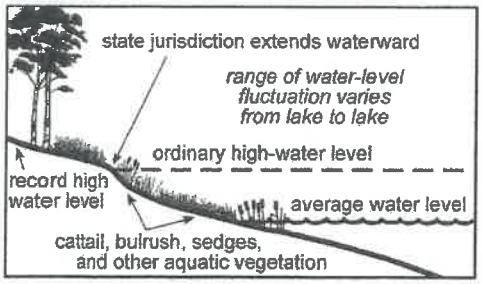
Minnesota toll free: 1-888-646-6367
Telecommunication device for the deaf (TDD): (651) 296-5484
TDD toll free: 1-800-657-3929

Shoreline Alterations: Riprap

Is an individual permit required?

For most projects constructed *below* the ordinary high-water level* (OHWL) of public waters, an individual Public Waters Work Permit is required by the Minnesota Department of Natural Resources (DNR) .

Riprap exception: An individual permit from the DNR is not required for riprap placement if the conditions outlined in this information sheet are followed.



Shoreline cross section.

If you have questions concerning the contents of this information sheet, contact your local DNR Area Hydrologist. See contact information on reverse side.

Please note that local units of government and other agencies may require a permit for this project.

*For lakes and wetlands, the OHWL is the highest elevation that has been maintained as to leave evidence on the landscape. It is commonly that point where the natural vegetation changes from predominantly aquatic to predominantly terrestrial. For watercourses, the OHWL is the top of the bank of the channel. For reservoirs and flowages, the OHWL is the operating elevation of the normal summer pool.

What can I do to keep my shoreline from washing away?

If your shoreline is eroding, any of the following events may be destabilizing your soil, resulting in erosion: fluctuating water levels, increased wave or wake action, ice pushes, loss of natural vegetation, and human activity. Protecting your shoreline from erosion may not require you to replace natural shoreline with a high-cost, highly engineered retaining wall or riprap. There are affordable, low-impact methods to stabilize your shoreline and still protect property values, water quality, and habitat. The Minnesota Department of Natural Resources (DNR) encourages you to consider planting native vegetation to control shoreline erosion, enhance aesthetic values, and contribute to better water quality in your lake (see Lakescaping information sheet).

Shoreline stabilized with riprap and enhanced with a vegetative buffer.

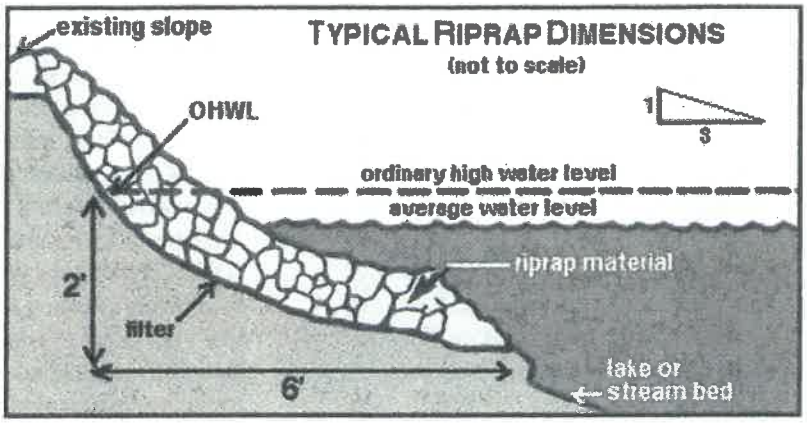
Both riprap and retaining walls can reduce erosion, but they can be expensive and negatively affect lakes by creating a barrier between upland areas and the shoreline environment. Riprap should only be used where necessary and never to replace a stable, naturally vegetated shoreline. Additionally, installing riprap on a stream or river bank is a special condition that may require professional advice to ensure that the structure will stand up to the fluctuations in water levels and flowing conditions.

Natural rock riprap consists of coarse stones randomly and loosely placed along the shoreline. You should consult your DNR Area Hydrologist to determine whether your shoreline needs riprap to stop erosion. If there is a demonstrated need, such as on steep slopes, you may want to consider placing riprap or a combination of riprap and vegetation. In most cases, vegetation planted in the rocks will stabilize the riprap and improve the appearance of your shoreline. Naturalizing your shoreline is the most important contribution you can make to enhance water quality, maintain fishery resources, and provide wildlife habitat.

Shoreline Alterations: Riprap

Installation of riprap is allowed only where there is a demonstrated need to stop existing erosion or to restore an eroded shoreline. An individual DNR Public Waters Work Permit is *not* required if the installation meets all of the following conditions:

- The riprap must not cover emergent aquatic vegetation, unless authorized by an aquatic plant management permit from the DNR's Division of Fisheries.
- Only natural rock (cannot average less than 6 inches or more than 30 inches in diameter) may be used that is free of debris that may cause pollution or siltation. Concrete is not allowed.
- A filter of crushed rock, gravel, or filter fabric material must be placed underneath the rock.
- The riprap must be no more than 6 feet waterward of the ordinary high-water level (OHWL; see sidebar on page 1).
- The riprap must conform to the natural alignment of shore and must not obstruct navigation or the flow of water.
- The minimum finished slope waterward of the OHWL must be no steeper than 3 to 1 (horizontal to vertical).
- The riprapped area must be no more than 200 linear feet of shoreline along lakes and wetlands or, along shorelines of streams, must be less than five times the average width of the affected watercourse.
- The site must not be a posted fish spawning area, designated trout stream, or along the shore of Lake Superior.



What are some other issues to consider?

A row of boulders at the water's edge is not considered natural rock riprap. Rows of stacked boulders function as a retaining wall, and installation would *require* an individual permit from the DNR. Retaining walls are very damaging to the near-shore environment. Retaining walls cause wave action that scours the lakebed, displacing bottom sediment and creating an extremely sterile environment. The cumulative effect of numerous wall structures on a lake reduces critical habitat for fish and wildlife resources and much of the food chain they depend on. Retaining walls require structural maintenance and are frequently damaged by ice action and undermined by wave action.

Riprap is not maintenance free and does not eliminate ice heaving, but it is easier to return the rocks to their original positions than to repair a wall. Consider planting within the riprap to add color, interest, and diversity. Live cuttings and plant plugs can be planted within riprap to provide additional slope stability and give your shoreline a more natural appearance.

DNR Contact Information

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Stairways, Landings and Lifts

What is the best way to access the water from steep slopes or bluffs?

Steep slopes and bluffs pose problems for access to lakes or rivers. Besides the practical difficulties for property owners to traverse slippery slopes, the soils on slopes and bluffs are highly susceptible to erosion. Stairways with landings or lift systems can provide safe access to the water in areas with steep topography. If designed and installed properly, they can blend in with the natural surroundings and reduce erosion in highly traveled areas by minimizing soil compaction.

Design Standards

The statewide shoreland rules contain standards for stairways, lifts and landings, that are implemented through local ordinances. Generally, these structures require a permit from your local government and must meet the following standards:

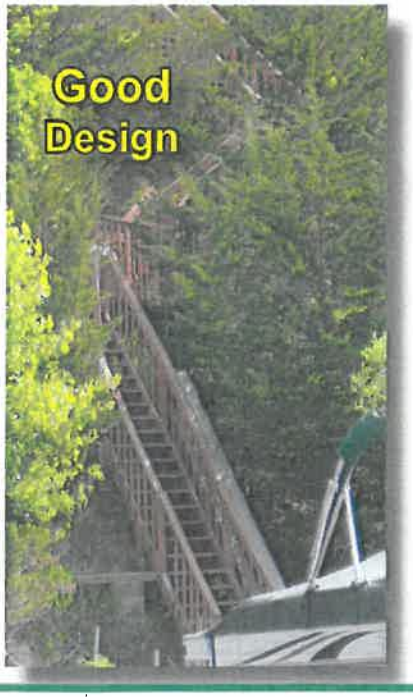
- Stairways and lifts must be no wider than **4 feet** on residential lots. Wider stairways may be used for commercial or public open-space recreational properties and planned unit developments (if allowed by local ordinance).
- Landings for stairways and lifts on residential lots must not exceed **32 square feet** but may be larger for commercial properties, public open-space recreational properties, and planned unit developments (check local ordinances).
- **Canopies or roofs are not allowed** on any stairways, lifts, or landings.

Steep Slopes: Foot traffic on steep slopes can lead to soil compaction and erosion.

Placement & Installation

Stairways, landings, and lifts should be located where they will require minimal disturbance to existing topography and vegetation, and installed properly as recommended below:

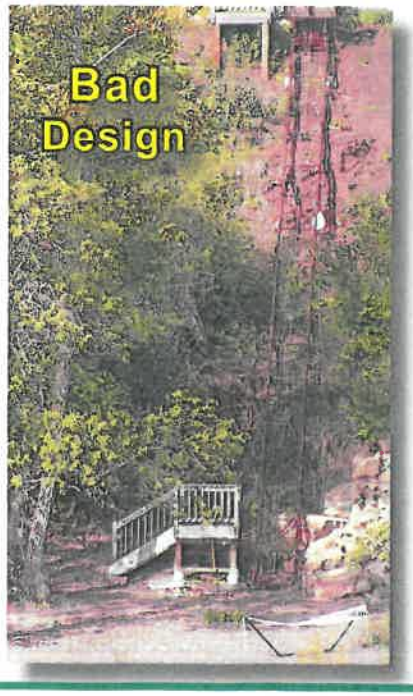
- Place stairways, landings, and lifts in the least conspicuous portion of the lot to mask their view from the water during summer leaf-on conditions.
- Avoid mature trees and native vegetation whenever practicable.
- Follow the natural contours of the land and don't alter the topography.
- Designing stairways that run straight down a slope, or stairways that follow the valley where water flows down the hill may encourage gully erosions. The placing of stairways can shade vegetation making the slope more erodable.
- Install stairways, landings, and lifts on posts or pilings above the ground surface or worked into the slope at grade.
- Take precautions to prevent erosion and runoff before, during, and after construction.



Stairway (above) This at-grade stone stairway is surrounded by thick vegetation that minimizes the impact of runoff.

Stairways: (left) The stairway angling back and forth on the slope, with landings, as well as ample vegetation, reduces erosion from runoff. Landings and two railings on the angled stairway make it more accessible.

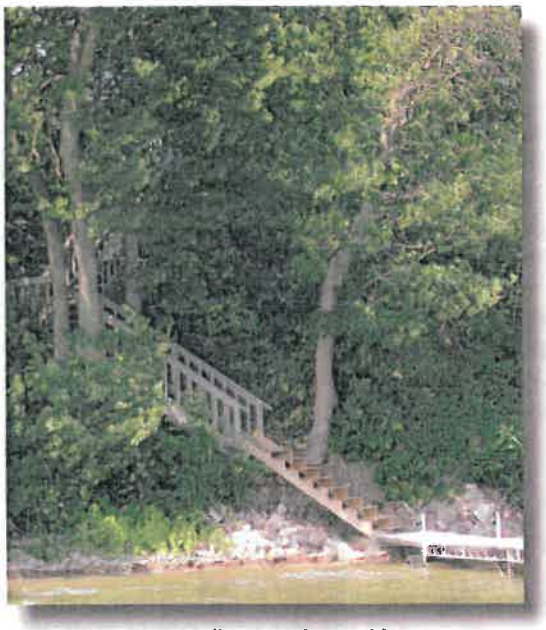
Lifts: (right) Note how the lack of adequate vegetation to the side and below the base of the lift leads to severe erosion.



Stairways, Landings and Lifts

Vegetation for Screening & Slope Protection

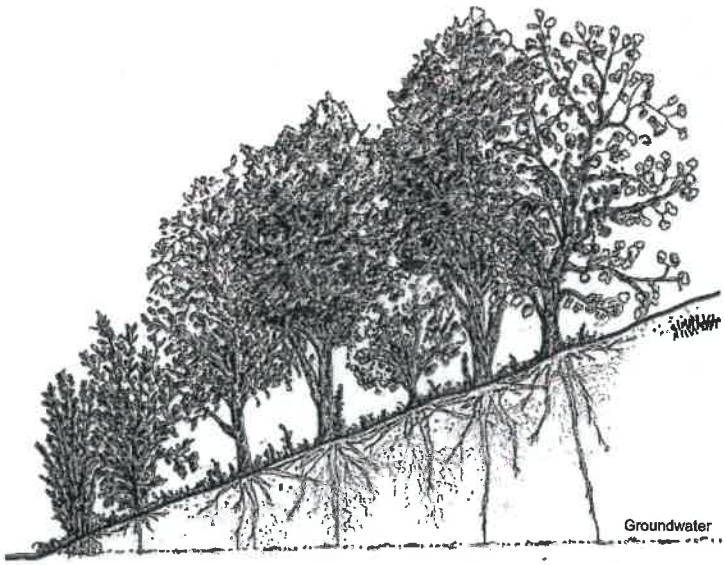
Native trees, shrubs, and groundcover serves many important functions. Along the shoreline, it acts as a buffer to protect water quality, preserve habitat for fish and wildlife, enhance property values, and contributes to the scenic beauty of riparian home sites. On steep slopes and bluffs, vegetation is the first line of defense for stabilizing fragile soils; minimizing erosion; and slowing storm water runoff near rivers, lakes, and wetlands.



Vegetation surrounding a stairway: Mature vegetation above and around this zig-zag stairway protects the slope from erosion.

If a stairway with landings or a lift system is needed, it usually means the slope is steep enough that it requires deep-rooted vegetation to prevent erosion. Trying to maintain turf grass on steep slopes by mowing is difficult at best, and grass will not adequately control erosion or filter and absorb storm water runoff. Where vegetation is lacking or must be removed for construction, native trees, shrubs, and groundcover should be planted to protect the soils around the structure and screen the structures from the water to restore the natural appearance of the property. Native vegetation is ideal because it is adapted to local soil and water conditions, generally has deep roots to stabilize the slope, and requires little maintenance once established.

Planting and maintaining native vegetation is less expensive and easier than restoring an eroded slope and replacing unstable stairways, landings, or lift systems. Staff from your local DNR or county soil and water conservation district can help you select plants suitable for your site conditions.



Mature vegetation: The planting sketch (right) for a slope near water displays woody species with long roots that stabilize the slope. The sketch includes cottonwoods, a boxelder, a sycamore, and three types of willows. Mature trees and grasses are aesthetically pleasing and the deep root systems stabilize the slope against erosion better than turf grass.

A good source for additional information on erosion control is Minnesota PCA's BMP manuals (www.pca.state.mn.us)

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