

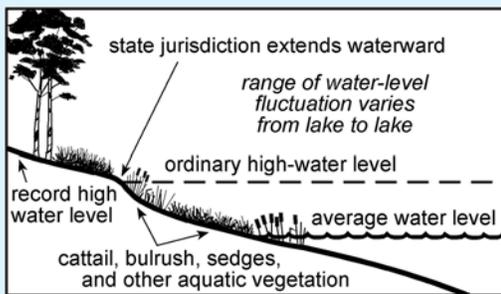
# Shoreline Alterations: Riprap



## 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.

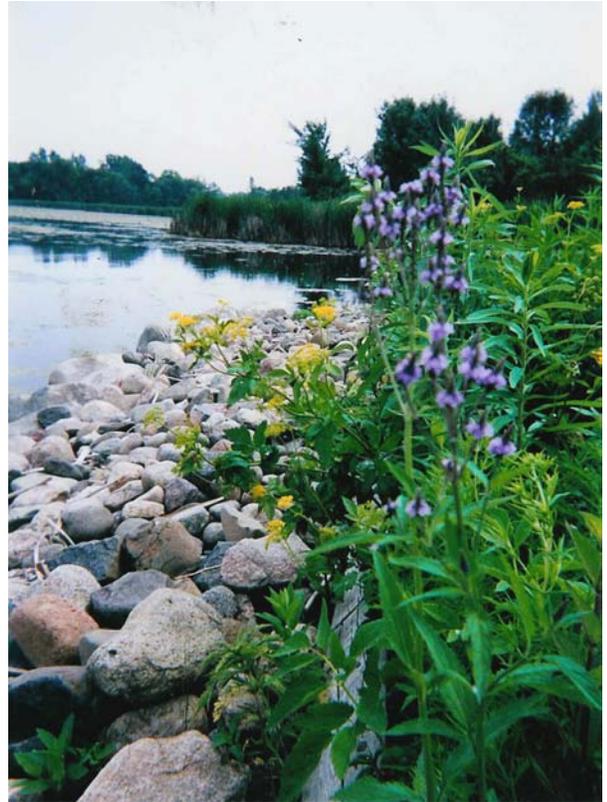
## What can I do to keep my shoreline from washing away?

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).

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.

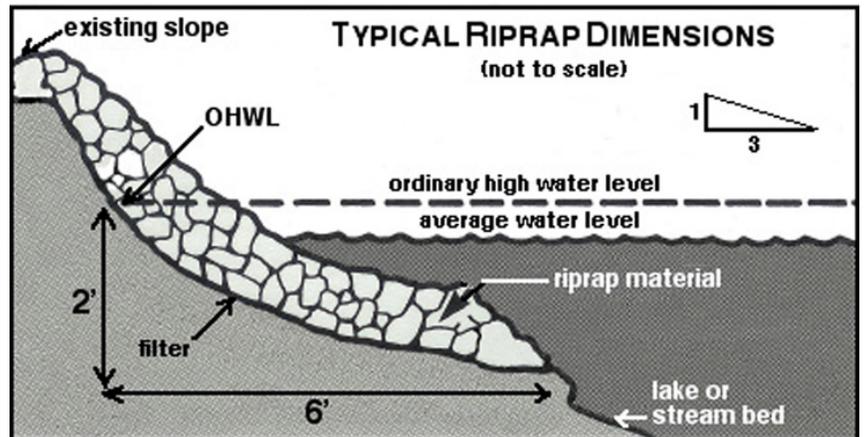


Shoreline stabilized with riprap and enhanced with a vegetative buffer.

# 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.

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## DNR Contact Information



DNR Waters website lists Area Hydrologists:  
[www.mndnr.gov/waters](http://www.mndnr.gov/waters)  
DNR Waters in St. Paul: 500 Lafayette Road,  
Box 32, St. Paul, MN 55155-4032, (651)  
259-5700

DNR Ecological Resources website provides  
information about aquatic plant management

permits: [www.mndnr.gov/eco](http://www.mndnr.gov/eco)

DNR Ecological Resources in St. Paul: 500 Lafayette Road,  
Box 25, St. Paul, MN 55155, (651) 259-5100

## DNR Information Center

Twin Cities: (651) 296-6157  
Minnesota toll free: 1-888-646-6367  
Telecommunication device for the deaf (TDD): (651) 296-5484  
TDD toll free: 1-800-657-3929

This information is available in an alternative format on request.

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