

in phosphorus in these areas. Don't apply fertilizer before rainstorms.

**3** Always mulch new seedlings. Apply mulch hay or straw at a rate of 2 bales per 1000 square feet. Wet the mulch down with water to hold it in place in flat areas. To hold the mulch down on steep slopes or in the bases of ditches, tack biodegradable netting over it, punch it into the soil with a shovel or roller, or stake it with baling twine. On very steep slopes you may need erosion control mats such as excelsior. **REMEMBER!** Your mulch is only as effective as your mulch anchoring. If mulch isn't anchored properly, the soil and seed will wash away. When using erosion control nets and mats, be sure to install them according to the manufacturer's recommendations. Otherwise, they generally won't work and your money is wasted.

**4** Check before storms to see that your silt fencing and hay bales are in good condition and ready for action. Check and repair them again after storms. Remove sediment that has accumulated. Replace silt fencing that no longer allows water to filter through it. If the barriers are being undercut at the edges, they should be replaced by a stone checkdam.

# 3 EROSION CONTROL FOR HOMEOWNERS

## CONSTRUCTION ON POND AND LAKE FRONT PROPERTY



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# EROSION CONTROL FOR HOMEOWNERS

## CONSTRUCTION ON POND & LAKE FRONT PROPERTY

### WHY CONTROL EROSION?

- To protect water quality in ponds and lakes
- To protect soil
- To save money

Soil erosion costs Maine homeowners millions of dollars a year. Soil loss not only causes damage to roads and property but eventually finds its way to a lake, pond, river or stream. It contributes to the phosphorus load and can result in algae blooms. In addition, silt removal from roadside ditches and storm drains is required, costing taxpayers money.

**REMEMBER!** Your property may be only one small part of the big picture but collectively, with other homes, it can represent a significant source of nutrient pollution and soil erosion.

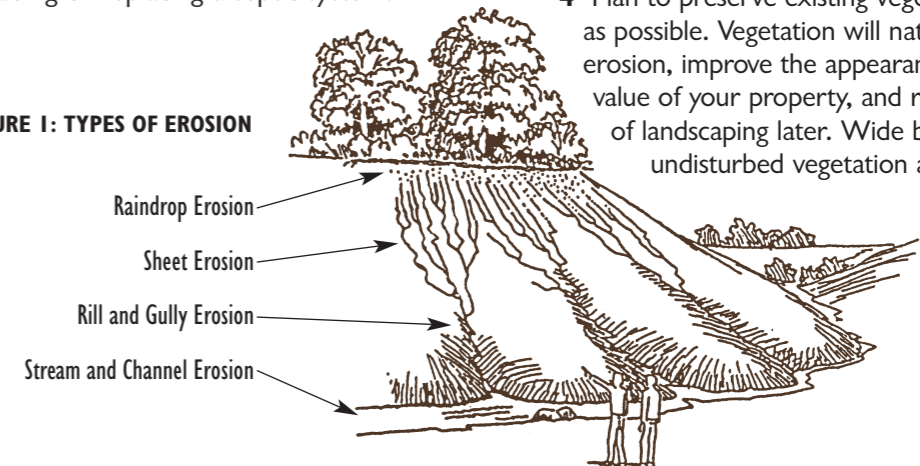
Nature slowly wears away land, but human activities, such as construction, can significantly increase the rate of erosion.

Are you planning to build a new home, camp or an addition? Thinking of installing a driveway or garage? Are you planning earth moving activities such as upgrading or replacing a septic system?

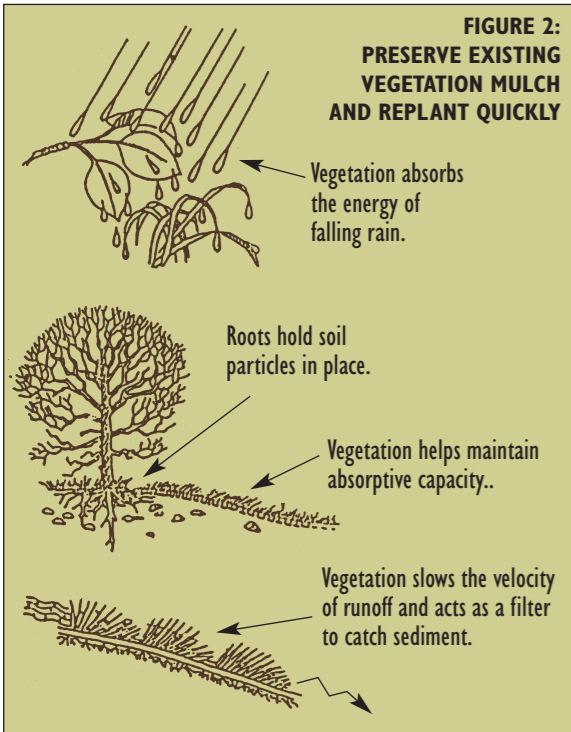
### TIPS TO CONSIDER BEFORE CONSTRUCTION

- 1** Determine if the soils on your selected site are really suited for the proposed use. Consult your county soil survey (available at the local Soil and Water Conservation District) to find out what kind of soil you have and its limitations. Avoid disturbing wet areas, steep slopes, drainageways, unstable soils, areas subject to flooding, stream banks or edges, and lake shores.
- 2** Become familiar with the natural drainage patterns of the property and try to avoid altering them. Proper site design will help you avoid expensive erosion control measures.
- 3** Contact your town office or code enforcement officer for any necessary permits or applications. Contact the Maine DEP for projects within 100 feet of a water body or wetland. If your property is in an unorganized territory, contact the Land Use Regulation Commission (LURC).
- 4** Plan to preserve existing vegetation as much as possible. Vegetation will naturally curb erosion, improve the appearance and the value of your property, and reduce the cost of landscaping later. Wide buffer strips of undisturbed vegetation are required

**FIGURE 1: TYPES OF EROSION**



along stream and lake shores. Don't allow heavy machinery to operate in these buffer areas.



Discuss clearing limits with your contractor in advance. Field mark these limits with ribbons or flagging. Flag particular trees and shrubs that you want protected. Remember that heavy machinery must be kept well away from trees to avoid compacting their roots, otherwise they will die a few years later. Trees can also smother if excess fill is re-graded around their roots.

- 5 Consult with your construction contractor(s). Make sure everyone understands exactly what the job is, when it will be done, how long it will take, and what erosion control measures will be used.
- 6 Plan earth moving activities early enough in the year so that you can revegetate the site by September 15th. Plan to mulch disturbed areas over winter if

construction is delayed past September 15th. This will protect bare soil from spring runoff.

- 7 Machinery must not be allowed to cross streams. Major damage to streambanks occurs when heavy equipment is carelessly run in stream channels. If access across a stream is needed, plan for a temporary culvert and stream crossing that can be removed later.

## TIPS TO CONSIDER DURING CONSTRUCTION

- 1 Before doing anything else, install a filter barrier on the downslope side of the construction area. This barrier can either be a silt fence, an embedded hay bale barrier, or a combination of the two. A silt fence is better at filtering out soil from water, but it is easily pushed over by construction equipment. Hay bales don't filter dirty water as well, but are more rugged in the field. When working in a critical area (next to streams and ponds) use them both. Trench silt fencing in about 6 inches. Trench and stake hay bales (4 inch trench, 2 stakes per bale). **REMEMBER!** Hay bales and silt fencing don't work unless they are installed properly and maintained!
- 2 If possible when earth moving, separate topsoil so it can be spread back on top of the site. You'll have greater success in establishing a new lawn or buffer strip area, and you won't have the added expense of buying topsoil. Ring the downslope edge of topsoil stockpiles with silt fencing or embedded hay bales. Mulch the stockpile too. Take a soil sample and send it for testing to determine how much fertilizer and lime you'll need for your replanting. Soil test kits are available from the local office of the University of Maine Cooperative Extension Service.

- 3 Use mulch hay liberally on disturbed soil during the construction period to avoid having an erosion problem. Hay mulch is the cheapest and most effective way of protecting the soil. Be aware of the weather forecast and be sure to get your mulch out if rains are expected. Don't let a week pass without mulching!

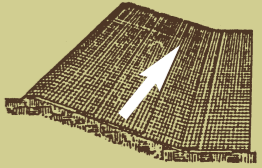
- 4 Construct suitable runoff and erosion control structures. Consult with an engineer for sites with very erodible soils, steep slopes, natural springs and seeps, and spring runoff channels and streams.

- Culverts are used where a driveway enters a main road. The minimum size should be 12" in diameter. A "rule of thumb" for estimating culvert size for watersheds smaller than 7 acres is to add 8 to the number of acres in the watershed to determine culvert diameter. For example, a 7 acre watershed + 8 = 15" diameter culvert. Larger culverts should be designed by a professional engineer. Generally, the inlet and the outlet areas of a culvert should be reinforced by stone (riprap).
- Grassed ditches or waterways can be used to channel moderate water flows. Be sure to line the base of new channels with geotextile fabric or use a combination of mulch and biodegradable netting to hold the soil until grass is established. Contact an engineer for ditches on steep slopes (greater than 5%) or ditches that will carry a steady flow of water.
- Diversions are similar to waterways but they take water across a slope, diverting it away from a critical area. A ridge or berm is constructed on the low side to intercept water.
- Structures such as stone (riprap) channels, catch basins, or pipe systems are used to carry large, concentrated flows down a steep slope. These should be designed by an engineer.

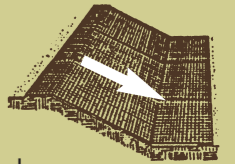
- Cut and fill slopes should be maximum of 2:1 (2 horizontal to 1 vertical) if vegetation will be used to stabilize them. Steeper slopes generally will need riprap or other structural modifications. If a lot of water comes down the slope you also may need riprap. Consult an engineer in these cases.

**FIGURE 3:  
ORIENTATION OF  
NETTING AND MATTING**

**SHALLOW SLOPE:**  
On shallow slopes, strips of netting may be applied across the slope.



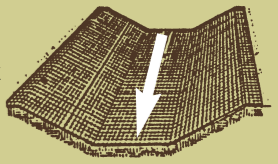
**STEEP SLOPE:**  
On steep slopes, apply strips of netting parallel to the direction of flow and anchor securely.



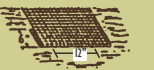
Where there is a berm at the top of the slope, bring the netting over the berm and anchor it behind the berm.



**DITCH:**  
In ditches, apply netting parallel to the direction of flow. Use check slots every 15 feet. Do not join strips in the center of the ditch.



Bring the netting down to a level area before terminating the installation. Turn the end under 6" and staple at 12" intervals.



## TIPS TO CONSIDER AFTER CONSTRUCTION

- 1 When the earthmoving is completed, replant the area! Don't automatically plant the area with grass – consider replacing the native trees and shrubs. These species are generally better at taking up pollutants and nutrients from storm runoff water.
- 2 Use your soil test results to determine fertilizer and lime needs. Be extremely careful when using fertilizers near streams, lakes and ponds. Use formulations very low