

7.7 STEEP SLOPES

BACKGROUND

Steep slopes are especially vulnerable to erosion.

Extra care is needed when harvesting on steep slopes. Good judgment is needed when determining harvest size and timing, when selecting the appropriate silvicultural method and harvesting system, and when laying out skid trails and truck roads. Proper use of best management practices (BMPs) is needed during harvest operations and closeout. These guidelines are found in *Best Management Practices for Erosion Control on Timber Harvesting Operations in New Hampshire* published by the N.H. Dept. of Resources and Economic Development, Division of Forests and Lands.

OBJECTIVE

Limit erosion and maintain water quality and drainage patterns, ecological integrity and habitat, and aesthetics on steep slopes.

CONSIDERATIONS

- According to the Natural Resources Conservation Service (NRCS) *Important Forest Soils Group* (see appendix), operators may begin to experience equipment limitations on slopes between 25 to 35 percent. Slopes greater than 35 percent are considered to have severe equipment limitations.
- For the purposes of this document, steep refers to slopes greater than 25 to 35 percent and more than 300 feet long.
- Logging equipment and techniques continue to develop, enabling logging on steep slopes.
- Some logging equipment may be better suited to operating on steep slopes and may have less impact to the ground, resulting in less erosion.
- Skid trails and forest roads create more erosion potential than any other harvest activity, particularly on steep slopes. Proper skid-trail and truck-road layout, installation, use, and maintenance minimize erosion, even on steep slopes.
- Steep slopes often contain seeps and intermittent streams that are important to seasonal run-off but that may not be apparent at some times of the year. Intermittent streams can fill rapidly with fast-moving water during rain storms or at wet times of the year, and may cause serious erosion, water-quality, and drainage-pattern problems if they are compromised during harvest activities.
- The size of the harvest area and the silvicultural techniques used can drastically change the forest cover, resulting in less interception and water uptake, which may result in increased run-off on steep slopes.
- Steep slopes may contain thin, fragile, and unique soils, uncommon plants, and exemplary natural communities and habitats.
- Steep slopes are often visible to surrounding viewsheds, and the choice of silvicultural techniques may impact the aesthetic appeal of a harvest.

RECOMMENDED PRACTICES

- ✓ Apply BMPs. Refer to *Best Management Practices for Erosion Control on Timber Harvesting Operations in New Hampshire*. Consult the latest version before harvesting timber.
- ✓ Select a harvesting system appropriate for the terrain and conditions.
- ✓ Schedule harvests when the ground is dry or frozen to minimize impacts.
- ✓ Increase buffer widths and riparian management zones along wetlands, streams, rivers, ponds, and lakes on slopes greater than 25 percent.
- ✓ Reduce the potential for increased run-off and erosion, as well as possible impacts on surrounding viewsheds, by minimizing the use of clearcuts and reducing the size of openings on slopes greater than 35 percent, except when a well-established understory is present or when salvage operations are necessary.
- ✓ Lay out skid trails and truck roads before the start of operations. Identify intermittent streams in the harvest area and minimize crossings. To help slow down and spread out run-off, avoid long, continuous skid trails. Use the natural contours of the land to establish breaks in the grade and to create small bends and turns.
- ✓ During the course of the operation apply liberal amounts of slash and tree tops to help stabilize skid trails.
- ✓ Monitor weather forecasts throughout the operation and prepare skid trails in advance of heavy rains. Construct temporary water bars and suspend operations in severe weather, when erosion potential is the greatest.
- ✓ When operations are completed, close out skid trails and truck roads as soon as possible. Remove temporary crossings and install water bars and ditches as recommended by the BMPs. Seed and mulch skid trails and truck roads to further stabilize exposed areas.

CROSS REFERENCES

3.1 Timber Harvesting Systems; 3.2 Logging Aesthetics; 3.3 Aesthetics of Skid Trails, Truck Roads and Landings; 3.5 Soil Productivity; 4.1 Water Quality; 4.3 Forest Management in Riparian Areas; 7.1 Natural Communities and Protected Plants; 7.2 Seeps.

ADDITIONAL INFORMATION

N.H. Dept. of Resources and Economic Development, Division of Forests and Lands. 2004. *Best Management Practices for Erosion Control on Timber Harvesting Operations in New Hampshire*. State of New Hampshire. http://extension.unh.edu/resources/files/Resource000247_Rep266.pdf Accessed March 13, 2010.

Vt. Dept. of Forests, Parks and Recreation. 2006. *Acceptable Management Practices for Maintaining Water Quality on Logging Jobs in Vermont*. State of Vermont. Waterbury, Vt. 51 p.