

4.1 WATER QUALITY

BACKGROUND

Human uses of surface waters, the survival of fish and other aquatic organisms, and the quality of groundwater supplies all depend on clean surface water.

The most important aspect of protecting water quality is maintaining the integrity of wetlands, instream, and riparian areas (see other chapters in the water resources section). Guidelines for conducting forest management in and adjacent to wetlands and surface waters are known as best management practices, or BMPs. They are designed to protect water quality. These guidelines, some of which are law, 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. We address other water-quality topics in more detail in other water resources chapters.

OBJECTIVE

Protect water quality during and following harvesting and road-building.

CONSIDERATIONS

- The N.H. Dept. of Environmental Services (NHDES) regulates wetlands (RSA 482-A: Fill and Dredge in Wetlands). The N.H. Dept. of Resources and Economic Development regulates, among other things, basal area and slash (RSA 227-J).
- Forest management is exempt from RSA 483-B, the Comprehensive Shoreland Protection Act (CSPA) as long as it isn't associated with shoreland development or land conversion and is conducted in compliance with RSA 227-J:9. Forestry conducted by or under the direction of a water supplier for the purpose of managing a water supply is also exempt from the CSPA.
- Timber harvesting near surface-water drinking supplies may be governed by specific statutes. Some water-supply watersheds are protected by state rules establishing setbacks and/or requiring the water supplier's approval prior to timber harvesting.
- A majority of timber harvests will encounter wetlands or surface waters. Crossing wetlands or surface waters (4.2 Wetlands, 4.4 Stream Crossings and Habitat) may require notifying NHDES before the start of the operation. NHDES requires that all wetland and stream crossings follow BMPs.
- Maintaining permanent culverts and other stream crossings could save a substantial amount of money in repairs in the long run.
- Timber harvesting may impact aquifers, wells, and municipal- and public-water supply reservoirs. These resources may be located outside your property and are vulnerable if located downstream. GIS data layers showing the location of some stratified drift aquifers, wellhead protection zones, and public water supplies are available at NH GRANIT.
- Water quality is affected by activities throughout a watershed, many of which may be beyond the control of the landowner or land manager.

4.1: Water Quality

RECOMMENDED PRACTICES

- ✓ Lay out timber harvests when the ground is bare (without snow) to identify water and other natural resources. Locate landings, roads and skid trails to minimize stream and wetlands crossings.
- ✓ Minimize soil disturbance near surface waters and wetlands. Regulations govern harvesting within certain distances of surface waters and wetlands.
- ✓ Apply BMPs according to guidelines in *Best Management Practices for Erosion Control on Timber Harvesting Operations in New Hampshire*. Consult the latest version before harvesting timber.
- ✓ When stream crossings are necessary, follow BMPs and regularly inspect and maintain crossings to make sure they function properly. Temporary stream-crossing structures shouldn't impede streamflow and should handle the increased flow that could occur in a storm during a harvest operation (4.4 Streams Crossings and Habitat).
- ✓ Monitor sites before, during and after harvesting, and also during rainstorms, for visible signs of erosion and sedimentation. Signs may include:
 - Cloudy or muddy water.
 - Increased growth of algae in streams or ponds (green slime).
 - Deposits of silt or muck on rocky or gravel streambeds.
 - New run-off channels or gullies.
- ✓ After the timber harvest, install water bars on skid trails, remove temporary stream-crossing structures, seed and mulch embankments, and apply other soil-stabilizing techniques as needed.
- ✓ In watersheds containing brooks or streams draining directly into a water supply reservoir, consult with a water company or municipal water supply representative. The water supplier may have specific recommendations to avoid or minimize water quality impacts. To determine whether a watershed is covered by special rules, consult N.H. Administrative Rules Env-Ws 386, or contact NHDES's Drinking Water Source Protection Program.
- ✓ Fill and maintain equipment well away from open water or wetlands. Park equipment and oil tanks where they won't leak into water. Keep sawdust or other absorbent material (a spill kit) on the site to soak up accidental spills or leaks. Report spills to NHDES unless:
 - The spill is less than the amount listed in the regulations as reportable for that chemical (25 gallons for oil).
 - The spill is immediately contained.
 - The spill doesn't threaten surface or groundwater.
 - All discharge and contamination are removed within 24 hours.If a spill occurs, contact NHDES for information at 271-3899 or, after hours or on weekends, the State Police at 271-3636.
- ✓ Consider using vegetable-based bar-and-chain oil as an alternative to petroleum-based oil. Check equipment manufacturer warranties to ensure biodegradable oils and lubricants won't damage equipment or invalidate the warranty.

CROSS REFERENCES

3.1 Timber Harvesting Systems; 3.2 Logging Aesthetics; 3.3 Aesthetics of Skid Trails, Truck Roads and Landings; 4.2 Wetlands; 4.3 Forest Management in Riparian Areas; 4.4 Streams Crossings and Habitat; 6.8 Beaver-Created Openings.

ADDITIONAL INFORMATION

N.H. Administrative Rules Env-Wt 101. http://www.gencourt.state.nh.us/Rules/state_agencies/env-wt100-800.html Accessed on May 27, 2010.

N.H. Administrative Rules Env-Ws 386. <http://des.nh.gov/organization/commissioner/legal/rules/documents/env-ws386.pdf> Accessed on February 1, 2010.

N.H. Dept. of Environmental Services. 2007. *Reporting Oil Spills, Hazardous Waste Spills and Groundwater Contamination*. <http://des.nh.gov/organization/commissioner/pip/factsheets/rem/documents/rem-13.pdf> Accessed on February 1, 2010.

N.H. Dept of Environmental Services. *Drinking Water Source Protection Program*. <http://des.nh.gov/organization/divisions/water/dwgb/dwspp/index.htm> Accessed on February 1, 2010.

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.

NH GRANIT. <http://www.granit.unh.edu/> Accessed on February 1, 2010.

RSA 227-J. *Timber Harvesting*. <http://www.gencourt.state.nh.us/rsa/html/xix-a/227-j/227-j-mrg.htm> Accessed May 27, 2010.

RSA 482-A. *Fill and Dredge in Wetlands*. <http://www.gencourt.state.nh.us/rsa/html/l/482-a/482-a-mrg.htm> Accessed May 27, 2010.

RSA 483-B. *Comprehensive Shoreland Protection Act*. <http://www.gencourt.state.nh.us/rsa/html/l/483-b/483-b-mrg.htm> Accessed May 27, 2010.

Smith, S. (ed). 2005. *Best Management Practices for Forestry: Protecting New Hampshire's Water Quality*. UNH Cooperative Extension, Durham N.H. http://extension.unh.edu/resources/representation/Resource000248_Rep267.pdf Accessed February 8, 2010.

Smith, S. 2009. *Guide to New Hampshire Timber Harvesting Laws*. UNH Cooperative Extension, Durham, N.H. 37 p.