

## What Are Forestry Best Management Practices?

Forest streams, ponds, and wetlands typically have excellent water quality. Best Management Practices (BMPs) are techniques employed before, during, and after a timber harvesting operation to minimize negative effects on water quality. BMPs are used to reduce any increase in water flows from harvesting operations to lessen its impact on wetlands, water bodies-including drinking water supplies, and animal habitats. Examples of BMPs are pre-harvesting planning, filter strips, water bars, and temporary stream crossings.



### Clean Water Act

Forest operations are regulated under the Clean Water Act (CWA) of 1972 which defines a best management practice as a practice or measure that has been demonstrated to be successful in protecting the water resources of the United States from nonpoint source pollution. The CWA identified forestry as a nonpoint source of pollution and required states to develop watershed or regional water quality management plans. Nonpoint source pollution refers to pollution that occurs over wide areas from land use activities such as agricultural cultivation, grazing of livestock, and forest management practices. The CWA provides an exemption from the permitting requirement if appropriate BMPs are used and are effective in preventing adverse effects on the quality of water resources. The silvicultural exemption, as the clause is known, thus relieves silvicultural activities (ex. timber harvesting) from the permitting requirement of the CWA if BMPs are used effectively. State BMP programs in the Northeast differ in the specific practices recommended and in the methods of enforcement.

### Harvesting Operations May Affect Water Quality

Timber harvesting operations typically involve the use of heavy machinery and thus have the potential to disturb the forest floor. This disturbance may expose mineral soil, reduce the soil's absorbency, lead to erosion, and divert and concentrate overland flow. Sediment and nutrient-laden overland flow as a result of erosion from harvesting operations can lessen water quality that directly affects living organisms and drinking water supplies if it gets into nearby streams, rivers, wetlands, lakes and ponds. Timber harvesting may also diminish the level and therefore the benefits of vegetation next to waterbodies. BMPs



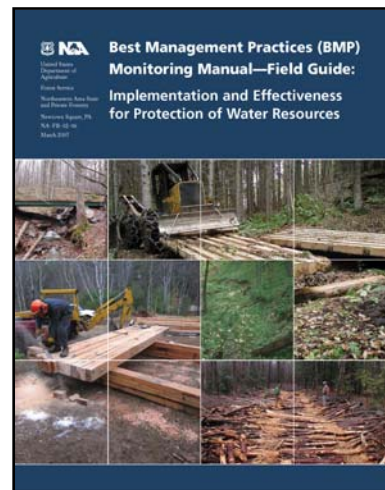
are important as they are the means of controlling erosion from harvesting operations. BMPs can minimize disturbance of the forest floor by limiting soil disturbance and stabilizing areas where mineral soil is exposed. BMPs can intercept, disperse, and absorb overland flow, hold onto nutrients, and filter sediments. By dealing with disturbances before they reach waterbodies, thus providing a filter area, the physical integrity of these waterbodies is sustained. BMP examples of minimizing erosion are: water bars, broad-based dips, cross-drainage culverts, hay bales and/or silt fences, and layout and timing considerations.

## **Roads, Skid Trails, Landings, and Drainage Structures**

A road system is needed for forest management, but is also has the potential to become a liability for watershed managers and foresters. Roads systems (roads, skid trails, landings, and drainage structures) have a disproportionate influence on water flow and quality. Stream crossings in particular are a major sediment source in forest streams because they are a primary entry point for sediment-laden stormwater. Sediment can adversely affect water quality by increasing turbidity and carrying phosphates, pesticides, and other hydrocarbons into surface water and groundwater resources. Up to 90% of the sediment generated during harvesting activities is from the construction and use of forest roads, skid trails and landings. Soil disturbance resulting from forest management activities can contribute to flood damage if erosion and sediment transport leads to stream aggradation and decreased channel capacity. Inadequate planning of the forest road system can result in more roads and stream crossings than needed. This often increases the cost of maintenance and the probability of more sediment reaching the stream. BMPs for timber harvesting operations can counteract these factors by reducing erosion and in-stream sedimentation through careful planning and location of roads, trails, and landings that minimize their length and surface area as well as the number of stream crossings within the road system.

### **BMP Monitoring Protocol**

One example of monitoring the use and effectiveness of BMPs is through the USDA Forest Service Northeastern Area's (NA) new BMP protocol. The BMP protocol is an automated monitoring system that uses a branched question set to lead the user through the process of efficiently address those areas of the timber harvest with the greatest potential to impact water resources: water crossings; haul roads, log landings, and skid trails; chemical pollutants; buffer/filter strips; and wetlands. Microsoft Access, Excel, and Word are used to analyze the data and produce an automated data summary. Customized reports can then be generated by adding personalized commentary and photos. The NA BMP Monitoring Protocol has been adopted for use by all NA States and endorsed by the Northeastern Area Association of State Foresters. The monitoring process is fully automated, from data gathering through report generation, in order to provide measured data and ease of use.



### **For Further Reading**

[Best Management Practices for Forestry: Protecting Maine's Water Quality](#)  
[Massachusetts Forestry Best Management Practices Manual](#)

### **Web Resources**

USDA Forest Service Northeastern Area Best Management Practices

<http://www.na.fs.fed.us/watershed/bmp.shtm>

Forestry Best Management Practices module (U.S. EPA Watershed Academy)

<http://www.epa.gov/watertrain/forestry/>

Introduction to the Clean Water Act (U.S. EPA Watershed Academy)

<http://www.epa.gov/watertrain/cwa/>

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