



United States Department of Agriculture
Natural Resources Conservation Service



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SOCIETY

New Jersey Fact Sheet: Forestry Operations and Soil Erosion

Introduction

New Jersey's forests provide many economic, ecological, and recreational benefits, including high aesthetic values and habitat for many plants and animals. New Jersey has about 2 million acres of forest, which make up approximately 42 percent of the state's land cover. Much of the state's water resources originate in or flow through these forests. Healthy forests filter and purify water, remove excess nutrients, slow stormwater runoff, and prevent soil erosion from occurring. Forest management practices that increase tree vigor and overall forest health can be an excellent tool for enhancing these functions; however, when forestry activities are conducted improperly, forest soil structure can be impaired and water quality compromised.

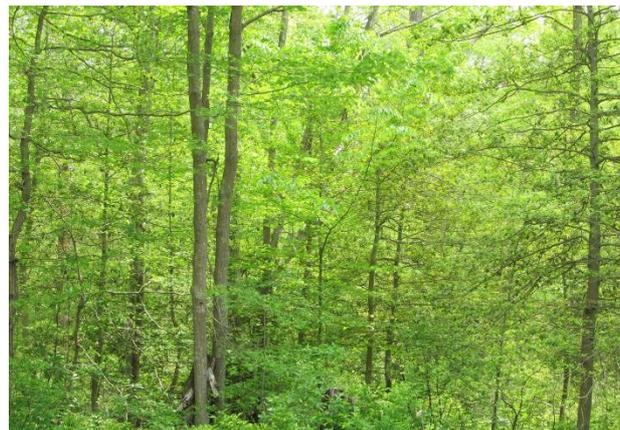
Why Prevent Soil Erosion?

An inch of forest soil may take several hundred years to develop as decaying organic material slowly mixes with weathered underlying parent materials such as stone or clay. During this process, a multitude of insects, invertebrates, fungi, and other micro-organisms assist with the soil formation process by altering the soil chemistry, adding nutrients, and enhancing soil porosity. The more developed these characteristics become, the greater the capacity of the soil to support vegetation and absorb water. With improper forestry planning, a single storm event could wash away several inches of soil, setting back watershed values for several centuries.

Aside from the direct loss of soil, watershed health can also be impaired through soil compaction. This tends to occur when equipment use is concentrated, or when activities are conducted during wet conditions. As soil pores become compressed, water percolation is diminished and gas exchange into the atmosphere is restricted, limiting root development. Compaction also tends to concentrate surface drainage, which can increase erosion down-slope of the compacted site.

Management Options

By following the guidelines recommended in the New Jersey Division of Parks and Forestry's *Forestry and Wetlands Best Management Practices Manual* and the



Healthy forests help filter and purify water while removing excess nutrients, slowing storm water runoff, and preventing soil erosion (Kristen Meistrell, NJA)

New Jersey Department of Agriculture's *Soil Erosion Control Standards*, management activities can be conducted in a way that decreases the risk of erosion during and after forestry operations. A Forest Stewardship Plan drafted by an approved forester or natural resource professional will typically identify areas, including wetland and riparian (river or stream) habitats, where certain best management practices (BMPs) and standards should be considered. BMPs are *general* recommendations, and the actual site conditions may require additional considerations.

Road and temporary access lane construction are often associated with soil erosion issues. These activities require very specific BMPs to minimize erosion. Some examples include:

- Use existing roads when available
- When constructing new roads, follow the contour of the land
- Locate roads in well-drained, dry areas
- Use proper grading, culverts, and water diversions on moderately steep slopes
- Use temporary mats or log corduroy roads when access must go through a wetland
- When access must cross a stream, use bridges or culverts across the narrowest section
- Use natural materials for all temporary roads

A common practice used in riparian systems is the establishment of Streamside Management Zones (SMZs), relatively undisturbed areas that buffer water bodies from forestry activities. Typically, the width of SMZs is determined by the surrounding topography and how erodible the soils are. The following precautions should be taken within an SMZ:

- Fell trees away from any water source while protecting those that stabilize banks
- Restrict the use of heavy machinery in wet areas and limit the amount of soil disturbance
- Avoid road construction in wet areas
- Limit the use of fertilizers and apply wetland-approved herbicides only when necessary

In addition to site-specific erosion BMPs, there are others that are more general and can be applied broadly within a project. On wetland sites, operating only during dry or frozen conditions and using low-ground-pressure tracked machines are good practices. In areas of concentrated use such as log landing stations, maintaining buffer strips of natural vegetation between water sources and the area of operation is an effective way to intercept runoff. Maintaining woody debris and slash within disturbed areas is also an effective means of slowing erosion and allowing soil to be captured and retained near the activity site. Certain regulations and restrictions may apply to specific projects, so it is important to consult an approved forester or qualified natural resource professional when implementing BMPs.

Financial and Technical Assistance

With an approved Forest Stewardship Plan, a landowner can improve the health of a forest stand while protecting both soil and water quality. A Forest Stewardship Plan should be drafted by an approved forester or qualified natural resource professional and should follow the recommendations outlined in the New Jersey *Forestry and Wetlands Best Management Practices Manual* and the New Jersey *Soil Erosion Control Standards*. The landowner is generally responsible for the cost of development and implementation of a Forest Stewardship Plan. However, qualifying landowners in New Jersey have several options for obtaining technical



If road access must go through a wetland, temporary log corduroy roads can be constructed (Don Donnelly, NJA)



Preserving healthy soil is crucial for maintaining a healthy, working soil ecosystem that helps vegetation facilitate gas exchange and absorb water (Kristen Meistrell, NJA)

and financial assistance for forest management.

The Natural Resources Conservation Service (NRCS) offers technical and financial assistance to forest landowners through the Environmental Quality Incentives Program (EQIP). Eligible landowners with 10 acres or more of land may receive cost-share assistance for the development and implementation of a Forest Stewardship Plan. All management plans cost-shared through EQIP must be prepared by an NRCS-approved Technical Service Provider (TSP). A list of TSPs can be found at a local NRCS service center or on the New Jersey NRCS website.

NRCS office locations and more detailed information about NRCS assistance and the EQIP program can be found at: www.nj.nrcs.usda.gov/

For More Information:

General Information on NRCS Forestry Programs

www.nj.nrcs.usda.gov/technical/forestry/index.html

Information on NRCS EQIP Program

www.nj.nrcs.usda.gov/programs/eqip/documents/EQIPForestryFactSheet08FB.pdf

Locating an NRCS TSP

<http://techreg.usda.gov/CustLocateTSP.aspx>

List of NJDEP-Approved Consulting Foresters

www.state.nj.us/dep/parksandforests/forest/ACF.pdf

NJ Forestry and Wetlands Best Management Practices Manual

www.state.nj.us/dep/parksandforests/forest/nj_bmp_manual1995.pdf

NJ Soil Erosion Control Standards

<http://www.state.nj.us/agriculture/divisions/anr/nrc/njerosion.html>

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