

# A GUIDE TO LOGGING AESTHETICS

PRACTICAL TIPS FOR LOGGERS,  
FORESTERS, AND LANDOWNERS

Northeast Forest Resources Extension Council Series

Natural Resource,  
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Cooperative  
Extension

Society for the  
Protection of New  
Hampshire Forests



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The Society for the Protection of New Hampshire Forests (SPNHF) was founded in 1901 as a nonprofit membership organization devoted to the wise use of the state's renewable natural resources. With innovative programs in land protection, forest management, resource education, and advocacy, the Society is the state's oldest and largest conservation organization. The Society owns and manages over 22,000 acres for multiple uses as promoted by the New Hampshire Tree Farm Program, which it cosponsors. As a Tree Farm cosponsor and participant, the Society is a steward of the land, as well as a steward of a conservation philosophy, which makes it unique among conservation organizations.

Geoffrey T. Jones is director of land management at SPNHF. He brings more than 13 years' experience in working with New Hampshire foresters and loggers to meet SPNHF's objectives of balancing timber production, wildlife, recreational, scenic, and water values on its lands while meeting its financial objectives from its forest resources. Jones holds a B.A. degree in biology from Keene State College and an A.A.S. degree from the University of New Hampshire, Thompson School of Applied Science.



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- \* to identify regional research needs and regional issues of importance
- \* to explore and act on opportunities to enhance renewable resource education in the northeast through sharing of publications, visual aids, faculty expertise, and other resources
- \* to identify, plan, and recommend programs that should be supported on a multi-state or regional basis

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FORESTERS, AND LANDOWNERS**

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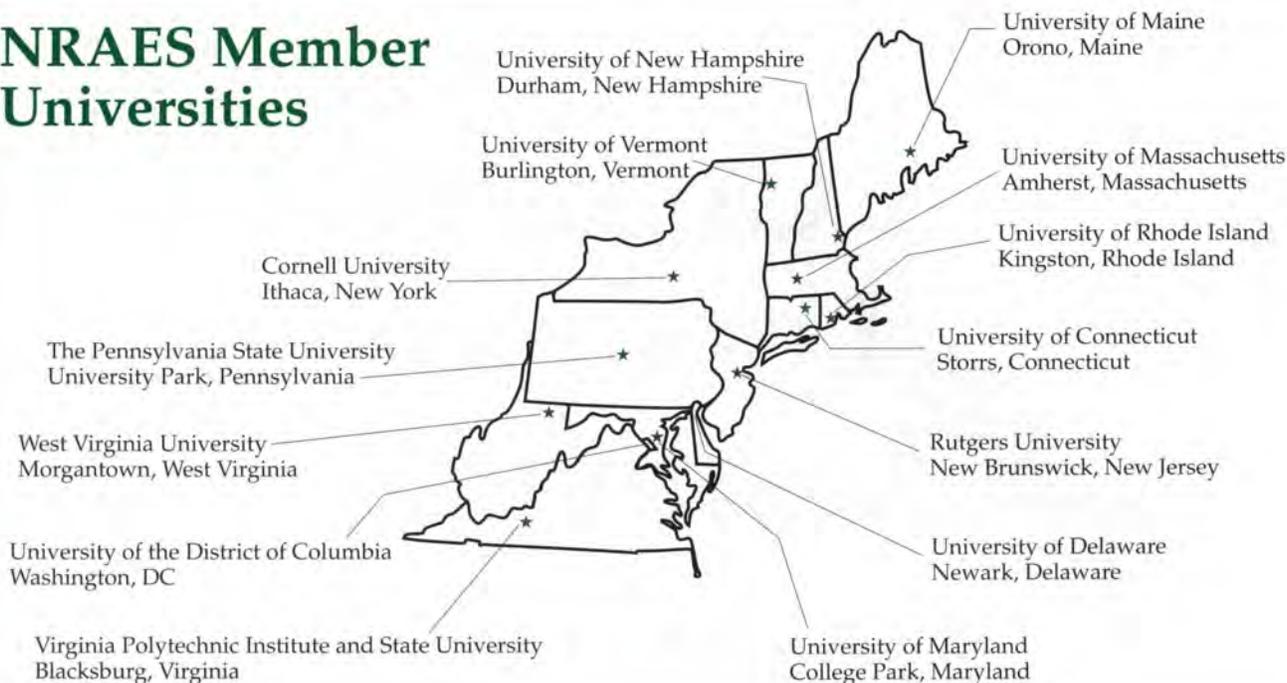
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*Many people have a difficult time accepting timber harvesting because of the physical and visual chaos that often characterizes the aftermath of a harvest.*



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# A Perspective on Logging Aesthetics



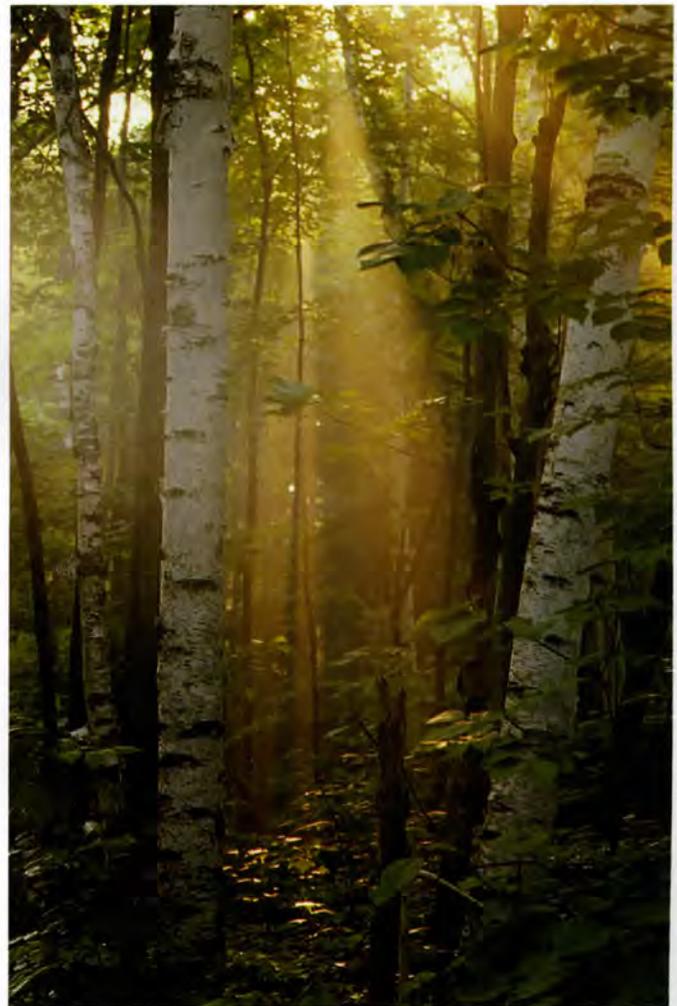
Sight is one of the most powerful senses. People like to see things that have a sense of order. Parallel lines (an even-aged stand of pruned trees), gentle curves (winding forest roads and trails), and nice symmetry (the silhouette of a well-developed tree) all have appeal. People dislike disorganization (trees randomly pushed over), chaos (unlogged slash), or things that are not in balance or harmony (areas with heavy soil erosion). Many people have a difficult time accepting timber harvesting because of the physical and visual chaos that often characterizes the aftermath of a harvest.

A forest means different things to different people. What one person may call attractive, another may not. Forest aesthetics, as applied to the woodlot, has been described as "the beauty, the attractiveness, the charm of our woodlands" or as "a branch of study of how forests are perceived by man." In this context, it sounds like some "touchy, feely" sort of thing that a "fussy, prissy" landowner or a tree-hugging environmental group might try to practice. Surely no real logger or forester could be bothered by aesthetics, particularly as it pertains to logging. Or could they?

I grew up in a small town in southwestern New Hampshire during the 1950s. A number of my childhood buddies were the sons of loggers and sawmill operators, and I used to help them peel pulp or work up firewood. What wasn't used from a tree was left in the woods, along with worn-out equipment, spent oil containers, and empty lunch bags. Not much thought was given to how an area looked when we were through. The concept of forest or logging aesthetics was unheard of.

Years later, one of my first professional jobs was cruising a stand of recently cut hardwoods. Another forester and I spent hours climbing over and under unlogged oak tops. We waded through skid trails that co-mingled with stream beds. Landings were left choked full of blocks, where they remain today, decaying slowly. To make matters worse, adjacent landowners expressed their

*Forest aesthetics, as applied to the woodlot, has been described as "the beauty, the attractiveness, the charm of our woodlands"*



*A forest means different things to different people. What one person may call attractive, another may not.*

*For over ten years, I have found the techniques outlined in this publication useful in dealing with the “ugly parts” of timber harvesting*



*The impact of cutting and removing timber commercially can be minimized by doing a lot of little things that collectively make a big difference. Careful felling and skidding and good utilization have left this oak forest pleasant and productive.*

disgust at these conditions, which we did not create but were expected to correct. When we went back to put in water bars by hand, the temperatures were sub-zero. At the time, I felt there must be a better way to conduct a harvest. Fortunately, there is.

Logging is a physically and financially rough and risky business, where the margin of profit often lies in getting a job done quickly and with the least cost. These economic considerations often come into conflict with reducing or cleaning up the messes made during the harvest. The conditions created by a timber harvest last a long time, for better or worse.

My goal in planning and conducting a timber harvest is to minimize the disruptive effects that cutting and removing trees have on a forest. The impact of cutting and removing timber commercially can be minimized by carefully integrating the harvest plan with Best Management Practices (BMPs) and non-timber values and by doing a lot of little things that collectively make a big difference.

Why should we be concerned with logging aesthetics? In the long run, the forest industry may be denied entry to forest lands because of the “cut an’ git” image that has been fostered by certain logging practices and landowners who allow it. Today’s public and private forest-land owners are placing a greater emphasis on ecological, recreational, and aesthetic values than on timber production. Their opinions influence land-use laws and regulations.

If the forest industry wants to minimize unnecessary regulations, it must take a more active role in protecting non-timber values and in addressing aesthetic concerns. This can be done by convincing landowners that their land should be harvested in an aesthetically pleasing way and by making an investment in preventing unattractive results of logging.

For over ten years, I have found the techniques outlined in this publication useful in dealing with the “ugly parts” of timber harvesting. I believe that you will too.



# Introduction

Let's start with an important distinction. This publication is a guide to logging aesthetics, not forest aesthetics. The procedures outlined here have proven to be practical and cost-effective in minimizing the negative impacts of harvesting timber. While many of these techniques may also help address long-term forest aesthetics, such as stand quality and composition, those considerations are more appropriately covered in individual forest management plans. This guide is written primarily to assist foresters and logging contractors in addressing aesthetic concerns during and immediately following a timber harvest. A glossary beginning on page 21 defines terms that may be unfamiliar. You may want to read through the glossary before reading this guide.

Logging is a disruptive affair even under the best circumstances. Introduce adverse weather, difficult site conditions, and poor planning; and the disruptions are compounded. To the public, most logging operations are muddy and ugly. An untrained eye can't see the immediate and long-term benefits to the wildlife, water, and recreational opportunities that foresters and loggers know will evolve from proper forest management. Many private woodland owners and the general public have perceptions about land ownership and forestry practices that differ from those of the forest industry. As a result, logging is becoming less acceptable to growing suburban populations spreading into former rural areas.



*When trees in the way of truck roads are topped, shoved aside, and left because of tight schedules, an eyesore is created in the woods.*



*The procedures outlined here have proven to be practical and cost-effective in minimizing the negative impacts of harvesting timber.*



*Professional training and competence, not equipment size, is the key to reducing damage to timber and non-timber values during the course of a logging operation.*



*Logging is a disruptive affair even under the best circumstances.*



*Use of wet roads results in ruts, which can lead to erosion on roads that are neglected or poorly maintained. Improperly used roads are rough on the eyes and the land, as well as the contractor's equipment, pocketbook, and reputation.*



*Logging debris from downed wood is one of the biggest detractors from the scenic beauty of a woodland.*

## The Concern

*Many woodland owners are reluctant to harvest their timber for fear of destroying the natural beauty, recreational opportunities, aesthetic values, and wildlife habitat of the forest.*

In the combined northeast and north central regions of the United States (see glossary for definitions of regions), private nonindustrial woodland owners control 69% of the commercial forest land, grow 67% of the region's net annual tree growth, and produce 74% of the annual harvested timber volumes (AFC, 1991). There is no question that private landowners make a significant contribution to the region's current timber supplies, which by way of the forest industry meets consumer needs. But will these lands continue to be managed as a timber source that the general public can rely on in the future?

Forestry professionals, publications, and surveys consistently reveal that many woodland owners are reluctant to harvest their timber for fear of destroying the natural beauty, recreational opportunities, aesthetic values, and wildlife habitat of the forest. Generally, landowners are concerned about the following:



*Many landowners are intimidated by the thought of large, noisy equipment operating on their land. But the equipment does not damage the land; the operator does. With proper training and supervision, however, modern loggers using such equipment can minimize damage to the land and improve forest stand conditions by removing slash and low-grade wood that has traditionally been left behind.*

- \* Maintaining several large trees that have good form, interesting branching patterns, and attractive fall foliage coloration in areas that they frequent
- \* Minimizing the number of trees, particularly those in areas of high visibility or use, that are pushed over or have their bark, tree tops, or lower branches damaged
- \* Minimizing the amount of debris by maximizing the use of all trees cut in the woods and on the landing
- \* Assuring that stumps are cut low to the ground
- \* Assuring that unmerchantable tree tops, branches, and severely damaged trees are cut up and left close to the ground
- \* Protecting soil and water quality
- \* Assuring that garbage, equipment parts, and other refuse are picked up and removed
- \* Protecting stonewalls, cellar holes, and "unique trees"

While foresters, loggers, and sawmill operators have recognized these concerns, few have been able to find consistent solutions that are cost effective and practical. To sustain and increase the supply of raw forest products and the resulting economic benefits to meet future employment, consumer, and energy needs, a better effort has to be made to address the private landowner's concerns.

The four elements of timber harvesting that cause the most impact are truck roads, landings, skid trails, and tree felling. While in most cases these activities should be planned and supervised by a professional forester, they are ultimately under the direct control of the logger or the landowner (by way of timber sale contract, performance bond, and supervision). It is, therefore, imperative that the logger, as well as the landowner, understand the concerns and know how to resolve them.



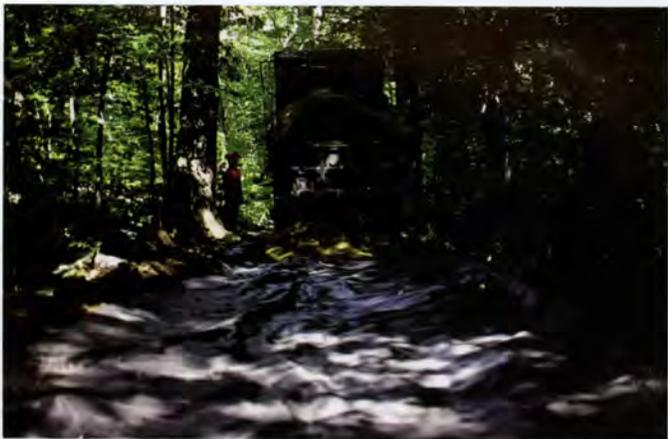
*Many landowners fear images like this when they consider a timber harvest on their land for the first time. Unpleasant surprises can be avoided when the services of a professional forester are sought to develop and administer a forest management plan that protects the resources as well as the interests of the landowner and logger.*



*It is imperative that foresters, loggers, and landowners understand the concerns and know how to resolve them.*



*Avoid using truck roads during mud season or after prolonged periods of rain.*



*The use of a geotextile mat is often an effective and inexpensive solution to roads that have wet, muddy conditions similar to the preceding picture. To install, roll out the desired length and cover with 6–8 inches of aggregate. Up to 50% less gravel is required when a mat is used, and heavy trucks are able to pass over previously impassable sections.*



# The Solution

*Construction and use of truck roads demand careful planning to reduce cost and minimize impact.*

## Truck Roads

Truck roads, because of their length and width, usually create the most dramatic permanent change in a woodlot. They can also be the greatest expense of a timber harvest. Construction and use of truck roads demand careful planning to reduce cost and minimize impact. When truck roads are built and used during the dry season, they hold up better, look neater, erode less, and are less expensive. Cutting and removing trees on the road right-of-way in advance of bulldozing results in better looking roads. Some goals in truck road construction and use are described below.



### Minimize Effects of Mud and Erosion

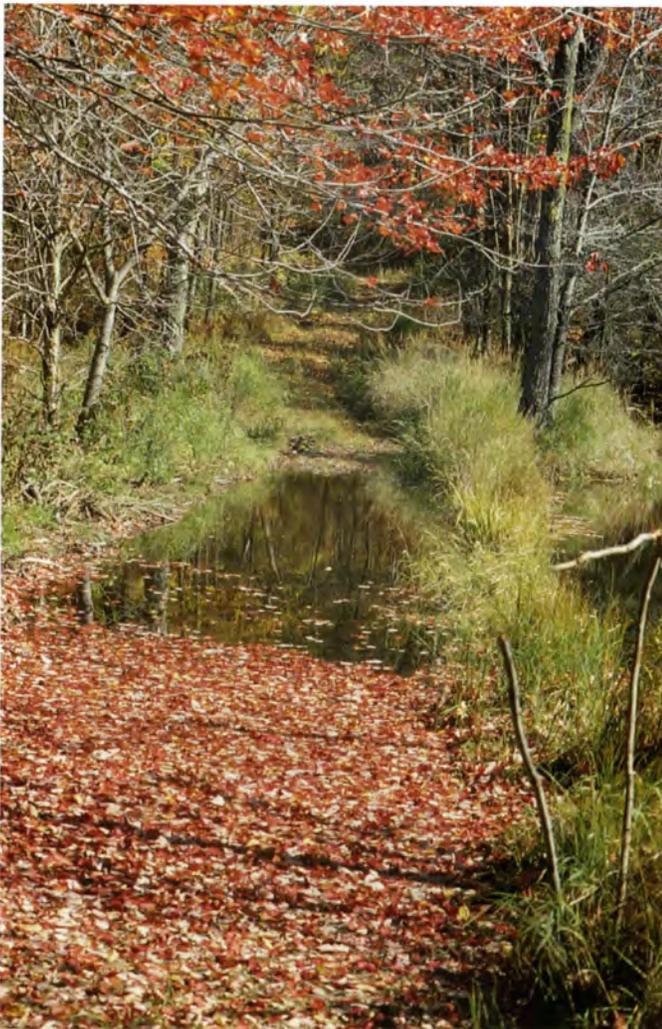
- \* Use Best Management Practices (BMPs) for minimizing soil erosion and protecting water quality. Contact the Cooperative Extension office in your state for information on BMPs.
- \* Use county soils maps to identify soils that may pose problems, and develop a strategy to deal effectively with those problems. Contact the Soil Conservation Service (SCS) to review soils maps.
- \* Fit road locations to the topography to minimize soil disturbance.
- \* Avoid long or steep grades.
- \* Avoid long, level sections that are difficult to drain. Use alternate routes, or use such sections only when the ground is frozen or dry.
- \* On perennial wet spots, use a fibrous mat (geotextile) to reduce the amount of fill and expense. Contact the local SCS office to see if wetlands regulations or permits are required.
- \* Determine proper cut-and-fill slope ratios based on soil conditions. Contact SCS for assistance in determining cut-and-fill ratios.

- \* Provide adequate ditching and cross drainage using culverts or broad-based dips.
- \* Reduce costs and impact to streams by using portable bridges and reusable culverts. Obtain permits when required.
- \* Use stone fords for stream crossings when a solid, permanent, maintenance-free base is required. Check with the local SCS office to see if permits are required.
- \* Locate winter roads on north slopes or in the shade of conifers to minimize thawing and rutting of the road surface.
- \* Allow new roads to settle and stabilize before use.
- \* Schedule road use when it is not wet or raining. Plan to avoid use during mud season.

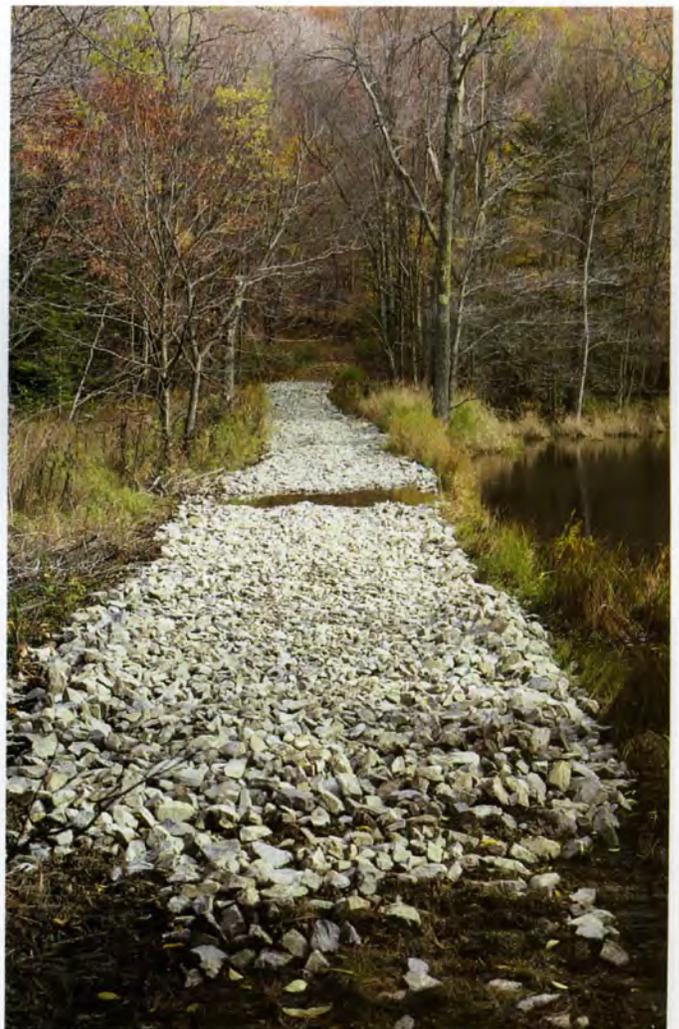


## Soften Impact of Tree Removal

- \* Clear trees and understory for only the minimum essential width needed for basic construction, maintenance, and traffic needs.
- \* Remove and use all merchantable wood that is marked and cut.
- \* When possible, push unmerchantable wood, slash, and stumps into depressions and bury, or place 10–25 feet (3–8 meters) behind the tree line or behind stonewalls.
- \* If stumps cannot be buried, push them off the road and leave in an upright position. Stumps left in this manner look more natural.
- \* Lop slash within 50 feet (15 meters) of the road edge to 2 feet (0.6 meters) in height.



*Road improvements are designed to be cost-effective and functional, but how often is the appearance of these improvements considered?*



*Through thoughtful planning, the same road can be upgraded so that it is attractive, functional, and maintenance-free at a competitive cost.*



*The negative impact of truck road construction can be reduced by cutting trees before bulldozing. Remove merchantable sections of wood and bury or push aside unmerchantable wood and debris.*



*Push debris into depressions, cover with fill, and grade; use these areas as turn-outs for parking, or seed them to provide browse for wildlife.*



*Instead of leaving stumps on their sides, give them an extra push so they remain upright.*



*Stumps left upright appear more natural; and hardwood stumps may sprout, helping to further soften the impact of their removal.*



*Ditch, crown, and grade roads after use to reduce erosion and leave a more positive sense of stewardship.*



*Walking on a logging road that has been properly used and maintained results in a more universal public acceptance of logging.*



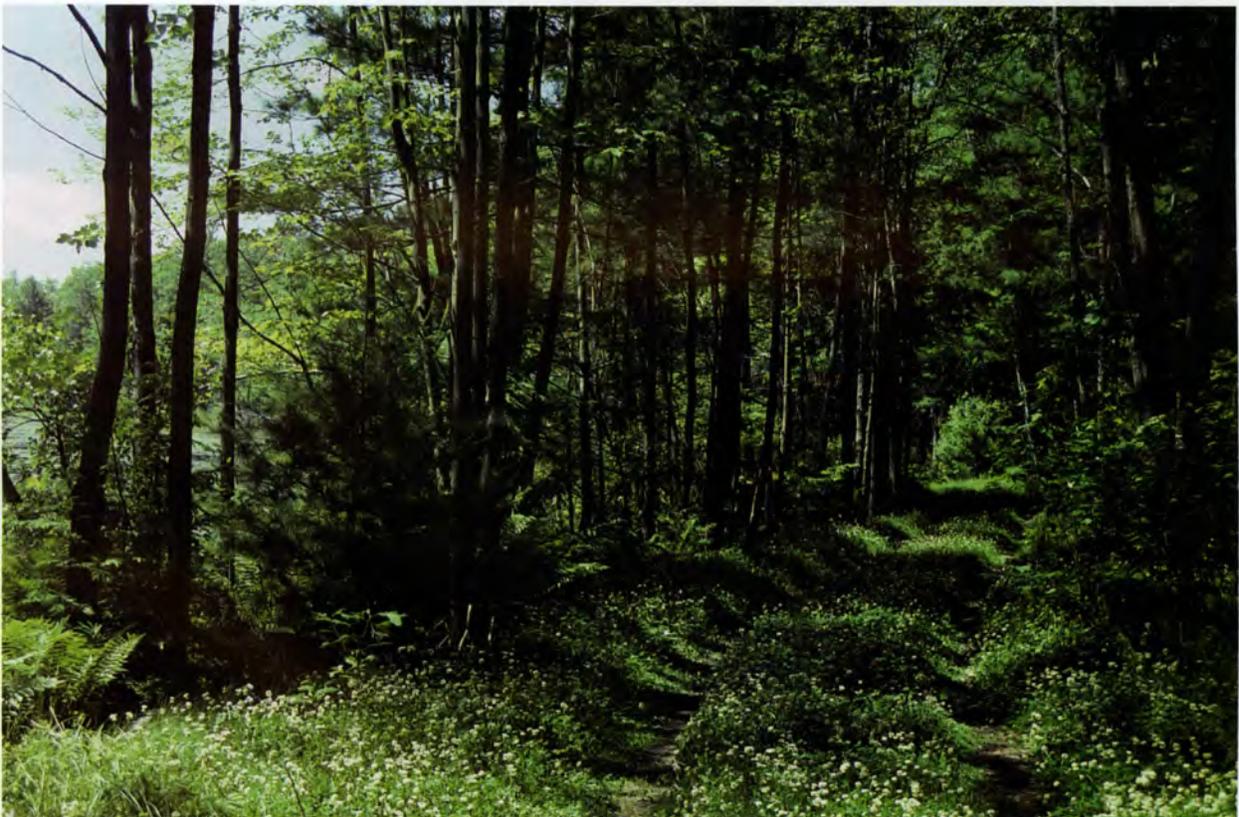
## Enhance Recreational Use

- \* Avoid crossing stonewalls when possible. When crossings are necessary, use existing openings or limit the number of new openings. Rebuild the stonewalls if desired by landowner.
- \* When feasible, leave large, attractive trees along the road.
- \* Strategically prune trees along the road.
- \* Where appropriate, create openings for views and/or wildlife habitat.
- \* In high-use areas, remove trees that become badly damaged (large broken branches, excessive bark loss, etc.); otherwise, leave trees for wildlife.



## Protect Investment

- \* Install a gate across the road and post *No Trespassing* signs to keep unauthorized vehicles off the roads during and after logging.
- \* Replace temporary culverts with water bars, broad-based dips, or ditches.
- \* During road use and when the sale is complete, ditch, crown, and grade roads to protect them from damage by runoff.
- \* Seed all disturbed areas that are vulnerable to erosion, using approved SCS procedures. Allow natural seeding to occur in other areas not subject to erosion. In most areas, a natural protective cover can be expected within one year. Contact SCS for information on seeding prescriptions.



*If a truck road is not scheduled for frequent use after the harvest, soften its presence by seeding. This practice is attractive and attracts wildlife as well.*

# Landings

*There is seldom adequate forethought given to the impact of merging men, mud, and machinery on these openings in the woods.*

Landings are the nerve center of a logging operation. They need to be connected to skid trails and relatively close to public roads but not too far from the harvesting operation. Their sizes and shapes must also be considered. Beyond these basic requirements, there is seldom adequate forethought given to the impact of merging men, mud, and machinery on these openings in the woods. This is unfortunate because many people tend to judge timber harvesting by the appearance of the landings during and after the harvest, without ever stepping into the woods.

When landings are “punched in” at the last moment, opportunities for careful construction become buried under the log piles. The effort required to plan an efficient and productive landing will more than pay for itself through increased productivity, lower cleanup costs, and a safer place to work. In addition, the landing can be a valuable permanent asset for the landowner.



## Soften Presence

- \* Follow Best Management Practices (BMPs) for controlling soil erosion when locating and constructing landings. Contact your local Cooperative Extension office for information on BMPs.
- \* Shield landings from view on major highways, buildings, trails, or other sensitive areas by using topography and vegetation as buffers.
- \* Locate landings on well-drained sites away from water bodies and courses.
- \* To reduce noise, particularly in more populated areas, modify working hours, shut down idling equipment, reduce truck speed (RPMs) to and from the landing, and use equipment with noise-reducing features.
- \* Keep mud off public roads by providing clean fill (gravel or wood chips) for about 200 feet (61 meters) before the entrance to a highway or by restricting use of highway vehicles to dry or frozen ground.



*Here, poor planning has resulted in an overcrowded landing that is difficult for skidders and trucks to access, thus reducing productivity. If the landing is a reflection of the quality of work in the woods, what impression does this landing convey?*



*Some logging crews measure and mark the logs to be cut from a tree in the woods, rather than on the landing. This results in a more efficient logging crew.*



*When logs from a tree are identified in the woods, unmerchantable sections can be cut off and left in the woods. This practice can reduce a significant amount of waste wood that would otherwise accumulate on the landing and create disposal problems during cleanup.*



*Many people tend to judge the quality of an entire harvest by the appearance of the landing both during and after the harvest.*



*Landings left in this condition send a strong message that the landowner cares about his or her land. Cost-share funding can be an incentive for converting "ugly landings" into attractive, open centerpieces.*



*Avoid landing situations like this by planning for the disposal of waste wood before the job begins.*



*On most jobs, wood is disposed of at one end of the landing. By working toward that end over the course of the job, an operator can reduce the cost and effort of landing cleanup.*



*The amount of wood that accumulates on a landing can be reduced if hardwood blocks are salvaged for firewood. Make the task easier by pushing this wood into an area where it can be easily retrieved.*



## Reduce Mess and Clutter

- \* Organize landings to accommodate sorting, processing, and short-term storage and to allow safe movement of workers and equipment.
- \* Reduce cleanup costs by identifying disposal areas for blocks and other debris in advance. Work toward those areas over the course of the job.
- \* Minimize the amount of wood waste on the landings, through good utilization and by cutting and leaving unmerchantable sections in the woods.
- \* Remove and properly dispose of all trash, motor oil, and other refuse from the woodlot daily.
- \* When the job is done, clear landings of all debris. Level and smooth the ground. Plant with grass seed only if necessary to stabilize the soil, for wildlife, or for appearance. Otherwise, let natural vegetation establish itself. Contact the Soil Conservation Service (SCS) for information on seeding prescriptions.



## Create Wildlife Habitat

- \* Stabilize disturbed areas by liming, fertilizing, and seeding landings according to SCS standards. It is possible that between 50% and 75% of the cost can be recovered through federal cost-sharing grants. Contact the Agricultural Stabilization and Conservation Service (ASCS) for information on cost-sharing programs.
- \* Leave attractive, undamaged trees around the edges of landings. If they do not pose a hazard, leave trees and shrubs that have wildlife value (such as nuts or berries, cavities for dens, or dead tops for perches).

The advantages of leaving landings cleaned up and seeded down according to SCS specifications are three-fold:

- \* Potential eyesores become attractive, open center-pieces.
- \* The seeded landings can provide a quick, vigorous, and lasting source of new browse for wildlife, particularly in the spring. Many wildlife species use openings to satisfy some of their food and cover requirements. Landings help provide these openings, which are often few and far between in heavily forested areas.
- \* Landings maintained as open areas can be reused for subsequent logging with minimal cost and effort. They also provide parking or turnaround areas for vehicles carrying visitors to the woods.



*This landing was located in a recreational area. It was deliberately built large in order to safely accommodate two skidders, tractor-trailers, and the sorting and processing of over 500,000 board feet of saw logs and 1,200 cords of pulp.*



*To soften the impact, after the harvest, the contractor cleared the landing of debris and graded the surface as part of his contractual responsibility.*



*In mid-August, the landowner used a farm tractor to lime, fertilize, and seed the landing according to SCS recommendations. A federal cost-share program reimbursed 75% of the costs.*



*By November of the same year, most evidence of the recent harvest had been replaced by a vigorous protective cover of grass.*



*In June of the following year, the grass was lush and fully established.*



*Landings can help provide wildlife openings, which are often few and far between in heavily forested areas.*



Skid trails provide openings in the forest canopy that are a logical place to fell trees and lop tops. However, if skid trails are to be used for post-logging access, fell trees away from skid trails or remove tops from the trails before they are lopped.



When a market or operating conditions are marginal, a local cordwood operator may be enticed into cleaning up slash from skid trails and the surrounding areas in exchange for the wood.



Minimize the cost and cleanup effort by keeping slash out of and back from skid trails that are scheduled for postharvest use. Skid trails left free of slash can be easily water barred, seeded, or developed into recreational or forest management access.

## Skid Trails

Many of the same principles that apply to truck roads and landings can be applied to skid trails. Use a schematic map of the timber sale area and terrain to plan a systematic network of skid trails. Keep in mind that carefully planned skid trails can be used for recreation and wildlife, as well as for future logging. By planning and flagging skid trails before cutting, unnecessary problems or expenses will be avoided during logging, and future access to the woods will be enhanced.



### Minimize Mud and Erosion

- \* Follow Best Management Practices (BMPs) for controlling erosion when locating and constructing skid trails. Contact your local Cooperative Extension office for information on BMPs.
- \* Develop a plan for a systematic layout of all main skid trails before harvesting.
- \* Locate skid trails to fit the terrain by following the contours whenever possible.
- \* Keep all skid trails out of stream channels and away from stream banks.
- \* Limit the number of stream bank crossings, and choose to cross where the stream is narrow. Cross at right angles, using portable bridges, temporary culverts, or stone or pole fords. Abide by any legal and practical seasonal restrictions. Obtain permits when required.
- \* Reinforce sections of soft ground by placing logs perpendicular to roadways. Provide additional protection by placing slash in skid trails when it won't interfere with other uses, or plan to log when the ground is dry or frozen.
- \* Avoid steep grades to minimize soil disturbance and erosion.
- \* Provide good drainage by using natural and constructed water bars or S-turns to help direct water off skid trails.
- \* Install water bars when the trail slope is 5% or greater. As soon as possible after use, seed sections of skid trails that are vulnerable to erosion, using approved soil conservation standards. Contact the Soil Conservation Service (SCS) for information on seeding prescriptions.



### Protect Residual Trees

- \* Designate "bumper" trees along the skid trails to minimize damage to the residual trees; remove severely damaged trees afterward.

- \* Avoid winching and skidding at sharp angles, which cause unnecessary barking of trees and put stress on equipment.
- \* Don't yard or haul timber under wet conditions that will result in excessive rutting, soil erosion, or soil compaction. This can cause tree dieback from root damage.



## Minimize Impact

- \* Avoid crossing stonewalls. If necessary, use existing barways and limit the number of openings used.
- \* If sections of stonewalls must be dismantled, save the rocks for reconstruction.
- \* Avoid old cellar holes, wells, and other cultural features.
- \* When building skid trails to be used for recreation or other access, cut all stems 2 inches (5 centimeters) or larger in diameter; or remove them by using a skidder or dozer blade to lightly scrape the surface. Push saplings, stumps, and other debris into depressions; or place them 10–25 feet (3–8 meters) off the skid trail behind the tree line. If possible, feather the edges of these piles.
- \* Keep slash out of and back from main skid trails that may offer post-logging access.
- \* Leave debris on the lower side of the trail when one side is higher than the other.
- \* Seed all disturbed areas vulnerable to erosion, using approved SCS procedures. In areas not subject to erosion, allow natural seeding to occur. In most areas, a natural protective cover can be expected within one year. Contact SCS for information on seeding prescriptions.



*Minimize damage to the residual stand by avoiding sharp angles when winching or skidding.*



*Locate skid trails so that low-quality "bumper" trees provide protection for more valuable trees along the skid trails. Remove these trees if they are an eyesore or a hazard; otherwise, leave them as "bumpers" for the future.*



*While heavy equipment is on location for soil-erosion control work, additional skid trail improvement and cleanup work can often be accomplished at a bargain price.*



*Portable bridges offer a quicker, less expensive, and much neater alternative to stream crossings than poled fords. When the operation is complete, there is no wood to dispose of, and the bridge is reusable for up to five or more years with careful use.*



Careful and effective directional felling is essential in minimizing damage to the residual stand and to the tree that is being felled. Furthermore, careful felling positions the tree properly for the skidder, so that damage from skidding is also reduced.



Obtain good utilization of small-diameter trees and topwood to help reduce the amount of slash left behind.



On conventional operations when topwood cannot be profitably removed, reduce its presence by lopping tops so they are no more than 2–4 feet (0.6–1.2 meters) above the ground.

## Tree Felling and Other Tips

- \* Have trees to be cut marked with paint. Trees marked on two sides enable a logger to make better choices regarding felling direction and hitch selection.
- \* Mark trees only if they can be felled without causing excessive damage to the residual stand.
- \* Work in an orderly manner. Start at the back of the lot and work toward the landing to minimize having to work in cut-over areas. Finish harvesting one section before moving to the next to avoid missing marked sections of standing or downed wood.
- \* Avoid unnecessary movement of skidders to minimize soil compaction and damage to the residual stand.
- \* Use directional felling techniques to avoid damage to unmarked trees during felling and to position the downed tree for the skidder, so that damage to trees from skidding is also reduced.
- \* Cut stumps as low to the ground as possible. Recut multiple stems when trees are cut above a crotch to reduce unsightliness.
- \* Utilize tree tops down to 4 inches (10 centimeters) or less in diameter, or as markets permit.
- \* When harvesting whole trees, hinge bulky tops before skidding so branches will fold under pressure. On conventional jobs, limb logs before yarding to minimize soil disturbance.
- \* Lop tops down to 2–4 feet (0.6–1.2 meters) above ground throughout the sale area. In regions where deer severely disrupt natural regeneration, aesthetics may be less of a concern than establishing regeneration. Under this circumstance, leave slash higher to protect new seedlings. Contact state wildlife biologists for more information on potential wildlife management problems that may result from timber harvesting.
- \* Cut and lop leaners and damaged trees in the understory, particularly in visible sections of the woodlot.
- \* After an appropriate time, revisit the sale area to assure that all stabilization measures are effective. Maintain water-control devices and road surfaces as necessary.

When potential buyers are shown or negotiate a sale, have a prospectus outlining the conditions of the timber sale available, so that all costs can be estimated and factored into the stumpage price. A thorough written agreement will help identify the responsibilities and expectations of all involved. (See Taber, *Woodland Owner's Guide to Selling Timber and Timber Sale Contracts.*)



# Administration and Planning

*Understand what is expected before starting a job*

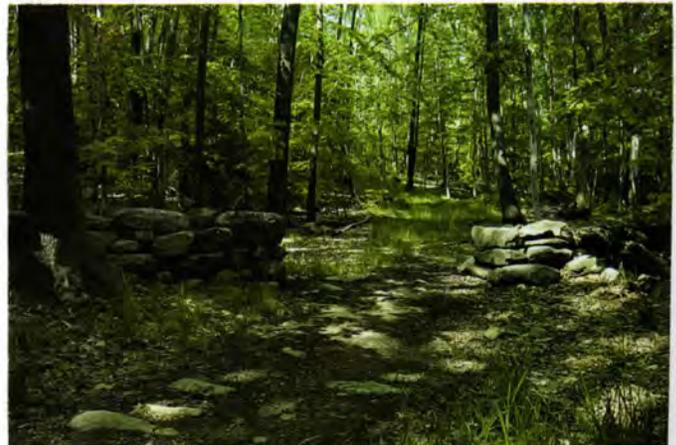
- \* Work with a qualified forester to save time and money. A forester can handle paperwork for contracts, timber taxes, and permits; provide maps and perform necessary boundary work; mark stands to maximize the silvicultural and wildlife habitat potential; lay out truck roads and skid trails; seek federal cost-share funds; help maintain quality control; help market products; and coordinate other interests of the landowner.
- \* Follow all local and state regulations, and allow enough time to obtain all necessary permits.
- \* Attend workshops and seminars that will improve your knowledge and technical skills.
- \* Refer to Best Management Practices (BMPs), Cooperative Extension publications, and publications and services of state and federal agencies that may be helpful in planning a timber sale. (See the public assistance section, beginning on page 23.)
- \* Identify and apply for appropriate federal cost-share programs that can be integrated into various stages of the harvest. Be sure to get advanced approval. Contact the Agricultural Stabilization and Conservation Service (ASCS) for information on cost-share programs.
- \* Understand what is expected before starting a job.
- \* Make non-timber values a priority during all stages of an operation. Understand the particular concerns of each landowner and give those concerns special consideration.
- \* Schedule phases of an operation with the appropriate seasons to limit costs and disturbance.
- \* Protect pockets of seedlings, saplings, and pole-size stands. Protecting the residual stand is imperative not only for aesthetics but also for maintaining the biological and economic health of the forest.
- \* When operating in heavily stocked stands or stands of high value, planning is more important in minimizing damage than equipment size. However, be prepared to restrict log length and/or equipment size to minimize residual damage.



*Selective cutting is a popular method for managing woodlands owned by private nonindustrial landowners. Protecting advanced regeneration and growing stock is imperative for maintaining the biological and economic health of the forest.*



*Find creative solutions for cleaning up harvested areas on lands that are open to the public for recreational use. Converting skid trails to hiking trails using volunteer groups such as scouts, fish and game clubs, or state prison work crews may be the only way some landowners can afford to clean up a harvested area.*



*Protect historic cultural features such as stonewalls and cellar holes. This barway located on a popular hiking trail was reconstructed after the harvest was over. The logger cooperated by carefully pushing the rocks to one side, by keeping slash away from the skid trail, and by limiting the use of this section to the winter, when the frozen ground offered additional protection.*



*Improving the appearance of a timber harvest does not require a lot of time or money.*



*Federal cost-share programs will pay up to 75% of the cost for site preparation, lime, fertilizer, and seed.*



*Labor and machine time involved in conducting this practice is also cost-shared.*

## The Cost

Does the landowner have to sacrifice financial objectives to obtain these goals? Not necessarily, nor do the loggers have to make up the difference. Improving the appearance of a timber harvest does not require a lot of time or money. It does require understanding the principles and techniques outlined in this manual and applying them in the right sequence at the right time to the right extent. Knowing how to avoid or minimize problems makes the effort much less than it seems. The adage “an ounce of prevention is worth a pound of cure” is the cornerstone of addressing most aesthetic concerns.

The cost of addressing aesthetic concerns during a logging operation, as outlined in this manual, should average between 5% and 6% of the gross stumpage for most timber sales. This expense can be further reduced to 2–3% of the gross stumpage with cost-sharing programs.

Most of the 5–6% expense pertains to Soil Conservation Service (SCS) seeding prescriptions for landings, roads, and portions of main skid trails. The costs of lime, fertilizer, seed, labor, and equipment to prepare the site and spread materials for seeding are the responsibility of the landowner; but some loggers perform this work as part of the timber sale contract. However, the work may be contracted out at hourly or acreage rates to other contractors or performed by the landowner. Either way, the landowner can be reimbursed for up to 75% of these costs. Interested landowners should contact their county Agricultural Stabilization and Conservation Service (ASCS) office for details.

The balance of the costs associated with other aesthetic practices—such as landing construction and cleanup, skid trail construction and cleanup, installation of water bars, lopping tops, and double-cutting stumps—are, for the most part, standard practices that loggers factor into competitive bids, when requested by responsible landowners and specified in the contract. In instances where these costs are too risky to bid on, the forester and landowner should identify what work needs to be performed and establish a price per unit of volume or set separate hourly rates for the additional work.

Some costs of conducting an attractive logging operation are known. Others are a labor of love and depend upon the people involved. At times, a job well done translates into a reputation which may open doors to other landowners. For the landowner, the effort represents an investment in the forest-land environment and its beauty, as well as its future value.

Stumpage prices on twenty-five timber sales conducted by Society for the Protection of New Hampshire Forests (SPNHF), where logging aesthetics was observed, were compared with the average prices reported in the *New Hampshire Forest Market Reports* to determine the impact to stumpage rates. Contractors bidding on sales understood that the following special conditions would be included in the contract:

- \* Landing construction and cleanup (seeding not included). On some sales, truck roads needed to be upgraded.
- \* Best Management Practices (BMPs) would be observed (that is, putting skid trails to bed, protecting stream crossings, and so on).
- \* Lopping tops would be required 2–4 feet (0.6–1.2 meters) throughout.
- \* Damage to stonewalls and residual trees would be minimized.
- \* Stumps would be cut to 6 inches (15 centimeters) or less above ground.
- \* Seasonal restrictions could be applied.

SPNHF stumpage prices received were an average of 5% more than those reported in the *New Hampshire Forest Market Reports* for the respective years in which the contracts were signed. Although this comparison is not comprehensive, it does suggest that the stumpage prices received are not being noticeably affected when the above special conditions are observed.

On eleven sales, the landings, portions of main skid trails, and exposed road banks were graded, limed, fertilized, and seeded to SCS specifications. The cost for this activity and other miscellaneous cleanup work not included in the contract averaged between 5% and 6% of the gross stumpage. (On especially sensitive SPNHF timber sales, those costs ranged up to 12%.) With cost-share reimbursement from federal programs, this cost was reduced to 2–3% of the gross stumpage for the sale. The expense categories in which the 5–6% costs were incurred are described in the following table.

*Logging is a physically and financially rough and risky business, where the margin of profit often lies in getting a job done quickly and with the least cost.*

Expense Category	Cost of Aesthetics
Labor (averaged 4 person-days/job)	40%
Materials (lime, fertilizer, seed)	32%
Equipment	
Tractor averaged 1.2 days/job	17%
Dozer averaged 0.4 days/job	11%
	100%

*Sales ranged in size from 20 to 450 acres; volumes ranged from 48,000 board feet and 400 cords to over 600,000 board feet and 1,100 cords. Sales averaged 60% pulp.*



*For landowners concerned about protecting the soil and scenic qualities of their woodlot, the results are worth the effort. The cost-sharing makes seeding a reality for many landowners who otherwise couldn't afford it.*



# Conclusion

*A better effort must be made to address landowner and public concerns about protecting non-timber values during a timber harvest.*

Nonindustrial private landowners control nearly three-quarters of the commercial forest land in twenty states that comprise the northeast and north central region of the United States. These landowners collectively are a leading supplier of raw forest products to this region. Managing these forests benefits landowners, loggers, the wood-using industry, consumers, and the public.

However, many of these landowners are skeptical about the benefits of timber harvesting. If these lands are going to be available for future use, a better effort must be made to address landowner and public concerns about protecting non-timber values during a timber harvest.

The steps outlined in this publication have proven to be effective in addressing aesthetic concerns raised from certain timber-harvesting practices. Foresters and loggers who take the time to carefully integrate these concepts into their timber-harvesting operations will be able to effectively address most aesthetic considerations. Without compromising the economic or practical integrity of the forest operation, controversial forest practices that cause public concern can be replaced by acceptable ones. Thereby forest lands managed for forest products will remain a place of scenic beauty and natural resource value long after the saws have been silenced, during the interlude before tree harvesting begins again.



*When an effort is made to integrate the silvicultural, recreational, and wildlife needs with best management practices in a practical and economic manner, the harvested area can be a place of scenic beauty and natural-resource value long after the saws have been silenced.*



# Glossary

**ASCS:** The Agricultural Stabilization and Conservation Service. An agency of the U.S. Department of Agriculture administering and providing funding for several federal cost-share practices for private forest-land owners. Cost-shared practices vary from state to state and from county to county. Landowners may order aerial photographs through their local ASCS offices.

**BARWAY:** A deliberate opening in a stonewall for passage.

**BEST MANAGEMENT PRACTICES (BMPs):** Standards or guidelines encouraging wise use of natural resources. BMPs are recommended for maintaining water quality and for controlling soil erosion during timber harvesting.

**BLOCKS:** Unmerchantable, short, chunky pieces of wood often cut from saw logs to improve their value.

**BROAD-BASED DIP:** A shallow depression excavated in the road, designed to drain water off an access road while permitting vehicles to pass.

**BROWSE:** Twigs and leaves of woody plants eaten by browsing animals such as deer, moose, and snowshoe hare.

**BUMPER TREE:** Poor-quality, low-value tree that grows in close proximity to higher-value trees. Skid roads should be located next to bumper trees in order to protect residual trees from damage during a logging operation.

**CONTOUR:** Truck roads and skid trails that "follow the contour" are laid out to closely follow points along the same elevation, where grades are kept to a minimum to minimize soil erosion.

**CROWN:** To prevent water from channeling down the road surface, unpaved roads should be shaped so that, in cross section, the center is higher than the sides, thereby forming a crown.

**GEOTEXTILE:** A strong, highly permeable nonwoven

fabric designed to increase ground stabilization and load-bearing capabilities of unpaved roads. This product can be purchased in rolls of varying width and length. It forms a flexible slab that can distribute a heavy wheel load over a large area. Installation requires placing a layer of the fabric on the road surface and spreading 6–8 inches of aggregate over the surface. Gravel requirements can be reduced by up to 50% when used in combination with this fabric.

**GRAPPLE:** A tongs-like device used for grabbing wood. Grapples are used on skidders and log trucks to haul and load logs.

**HINGE TOPS:** On logging operations where the whole tree is removed and utilized, tree branches are partially cut at their major forks before they are moved, allowing them to collapse under pressure. This will reduce the chance for damage to trees as they are skidded to the landing.

**LANDING:** A cleared area where logs or trees are brought from the woods, usually by a skidder. The wood is cut up into various products, then sorted and stored until they are loaded onto trucks and hauled to market.

**LEANER:** A tree that is pushed over during the felling or skidding process and continues to stand at an angle. Trees assuming this position, depending upon their size, number, and location, can be unattractive and unsafe.

**LOP:** To cut the limbs off a felled tree, so that all portions lie 2–4 feet (0.6–1.2 meters) above the ground.

**MARKED LOT:** Area within a woodlot where trees selected to be cut (or left) are marked by paint or other means.

**MERCHANTABLE:** Tree or portion of a tree having economic value based on size, quality, condition, and location.

**NORTHEAST REGION** (as defined by the American Forest Council, or AFC): Includes the following states: Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, and West Virginia. The nonindustrial private landowners in this region own 72% of the commercial forest land, produce 66% of the region's annual harvested timber volumes, and grow 70% of the region's net annual tree growth (AFC, 1991).

**NORTH CENTRAL REGION** (as defined by the American Forest Council, or AFC): Includes the following states: Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Ohio, and Wisconsin. The nonindustrial private landowners in this region own 66% of the commercial forest land, produce 74% of the region's annual harvested timber volumes, and grow 63% of the region's net annual tree growth (AFC, 1991).

**RESIDUAL STAND:** The trees that remain after the harvest. They are candidates for the next harvest.

**SCS:** The Soil Conservation Service. Like the ASCS, it is an agency of the U.S. Department of Agriculture. It provides technical assistance to landowners for soil and water conservation programs that are administered by ASCS. Before cost-share funding can be obtained, a landowner must have a project reviewed and approved by an SCS field visit.

**SEEDING:** Planting vegetation to protect disturbed areas from erosion. Truck roads, skid trails, landings, and gravel pits have their vegetative cover disturbed over the course of a timber sale. Many of these areas are a prime source of sedimentation and erosion, and need protection from the forces of wind and water. Establishing vegetative cover through the use of grasses and legumes is a way to establish quick, effective, long-term protection. The U.S. Department of Agriculture has a cost-sharing soil erosion control program for forest land that is disturbed during the course of a timber sale. This program is administered by the county Agricultural Stabilization and Conservation Service (ASCS) under the SL-II practice. To obtain cost sharing, a landowner or his agent (ideally a forester) must file a *Request for Cost-Sharing* (Form ACP-245) before starting the practice. The cost-share rates and specifications vary between states and counties within states. For further information regarding specifics, contact your local ASCS office.

**SKID:** To pull logs or tree lengths on the ground. This is done by using a horse, crawler, tractor, skidder, or system of cables and winches to perform the pulling.

**SKID TRAIL:** A temporary road in the forest that provides access for a machine (skidder—not trucks and cars) to drag felled trees or logs from the stump to a central yarding area (landing).

**SKIDDER:** A commercially built four-wheel-drive, rubber-tired machine used to drag logs or trees from the stump to the landing. Skidders use winches with wire rope or grapples to carry logs.

**SLASH** (logging debris): Tree tops, branches, poor quality logs or portions of logs, and stumps that have little or no value.

**SLOPE:** The change in elevation divided by the horizontal distance over which it occurs. Expressed as a percent. For example, a 4-foot drop that occurs over 200 feet is a 2% slope ( $\frac{4}{200} \times 100$ ).

**SLOPE RATIO:** Different soil materials require minimal slope grades to insure stability. A slope ratio is the vertical height of the bank divided by the horizontal distance between the top and bottom of the bank.

**STEEP GRADES:** Slopes that exceed 12% for truck roads and 20% for skid roads.

**STUMPAGE PRICE:** The dollar value a landowner receives for standing timber.

**TRUCK ROAD:** A road (often unpaved) connecting the landing with publicly maintained roads.

**UNDERSTORY:** Trees and shrubs that comprise the vegetation below the forest canopy.

**WATER BAR:** A dip in the road designed to carry water runoff from the uphill side across the road, not down it, thereby preventing erosion of the road.

**WHOLE TREE OPERATION:** A timber harvest where the cut tree is removed from the woods with its branches left intact. At the landing, the tree is cut into sections which maximize its best and highest product use. Portions of the tree with the least value (branches, crooked logs) are ground into small pieces and sold as wood chips for pulp, fuel, or landscaping.

**YARD:** See **LANDING**.

**YARDING:** See **SKID**.



# Public Assistance

## SCS Offices

Soil Conservation Service  
16 Professional Park Road  
Storrs, CT 06268-1299  
(203) 487-4013

Soil Conservation Service  
1203 College Park Drive, Suite 1  
Dover, DE 19901  
(302) 678-4160

Soil Conservation Service  
1902 Fox Drive  
Champaign, IL 61820  
(217) 398-5267

Soil Conservation Service  
6013 Lakeside Boulevard  
Indianapolis, IN 46278  
(317) 290-3200

Soil Conservation Service  
210 Walnut Street  
693 Federal Building  
Des Moines, IA 50309  
(515) 284-4261

Soil Conservation Service  
5 Godfrey Drive  
Orono, ME 04473  
(207) 866-7241

Soil Conservation Service  
John Hanson Business Center  
339 Busch's Frothage Road, Suite 301  
Annapolis, MD 21401  
(410) 757-0861

Soil Conservation Service  
451 West Street  
Amherst, MA 01002  
(413) 253-4350

Soil Conservation Service  
Manly Miles Building, Room 101  
1405 South Harrison Road

East Lansing, MI 48823-5202  
(517) 337-6702

Soil Conservation Service  
600 Farm Credit Services Bldg.  
375 Jackson St.  
St. Paul, MN 55101-1854  
(612) 290-3675

Soil Conservation Service  
601 Business Loop  
70 West Park Aid Center, Suite 250  
Columbia, MO 65202  
(314) 876-0903

Soil Conservation Service  
Federal Building  
2 Madbury Road  
Durham, NH 03824  
(603) 868-7581

Soil Conservation Service  
1370 Hamilton Street  
Somerset, NJ 08873  
(908) 246-1662

Soil Conservation Service  
James M. Hanley Federal Building  
100 South Clinton Street  
PO Box 7248  
Syracuse, NY 13261-7248  
(315) 423-5521

Soil Conservation Service  
Federal Building, Room 522  
200 North High Street  
Columbus, OH 43215  
(614) 469-6962

Soil Conservation Service  
One Credit Union Place, Suite 340  
Harrisburg, PA 17110-2993  
(717) 782-2202

Soil Conservation Service  
West Bay Office Park  
60 Quaker Lane, Suite 46  
Warwick, RI 02886  
(401) 828-1300

Soil Conservation Service  
69 Union Street  
Winooski, VT 05404  
(802) 951-6795

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*Note: These lists cover organizations in the northeastern United States, as defined by the USDA, Forest Service. These twenty states are Connecticut, Delaware, Illinois, Indiana, Iowa, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, Vermont, West Virginia, and Wisconsin. Addresses and telephone numbers are accurate as of December 1992.*

Soil Conservation Service  
75 High Street, Room 301  
Morgantown, WV 26505  
(304) 291-4151

Soil Conservation Service  
6515 Watts Road, Suite 200  
Madison, WI 53719-2726  
(608) 264-5577

## ASCS State Offices

State Executive Director  
Agricultural Stabilization and Conservation Service  
88 Day Hill Road  
Windsor, CT 06095  
(203) 285-8483

State Executive Director  
Agricultural Stabilization and Conservation Service  
1201 College Park Drive, Suite A  
Dover, DE 19901  
(302) 573-6536

State Executive Director  
Agricultural Stabilization and Conservation Service  
3500 Wabash  
PO Box 19273  
Springfield, IL 62794-9273  
(217) 492-4180

State Executive Director  
Agricultural Stabilization and Conservation Service  
5981 Lakeside Boulevard  
Indianapolis, IN 46278-1996  
(317) 290-3030

State Executive Director  
Agricultural Stabilization and Conservation Service  
10500 Buena Vista Court  
Des Moines, IA 50322  
(515) 254-1548

State Executive Director  
Agricultural Stabilization and Conservation Service  
444 Stillwater Avenue, Suite 1  
PO Box 406  
Bangor, ME 04402-0406  
(207) 942-0342

State Executive Director  
Agricultural Stabilization and Conservation Service

Rivers Center  
10270-B Old Columbia Road  
Columbia, MD 21046  
(410) 381-4550

State Executive Director  
Agricultural Stabilization and Conservation Service  
445 West Street  
Amherst, MA 01002-2953  
(413) 256-0232

State Executive Director  
Agricultural Stabilization and Conservation Service  
Manly Miles Building, Room 116  
1405 South Harrison Road  
East Lansing, MI 48823  
(517) 337-6659

State Executive Director  
Agricultural Stabilization and Conservation Service  
400 AgriBank Building  
375 Jackson Street  
St. Paul, MN 55101-1852  
(612) 290-3651

State Executive Director  
Agricultural Stabilization and Conservation Service  
Suite 225  
601 Business Loop, 70 West  
Columbia, MO 65203  
(314) 876-0925

State Executive Director  
Agricultural Stabilization and Conservation Service  
22 Bridge Street, 4th Floor  
PO Box 1398  
Concord, NH 03302-1398  
(603) 224-7941

State Executive Director  
Agricultural Stabilization and Conservation Service  
Mastoris Professional Plaza, Building 2, Suite E  
163 Route 130  
Bordentown, NJ 08505  
(609) 298-3446

State Executive Director  
Agricultural Stabilization and Conservation Service  
James M. Hanley Federal Building, Room 811  
100 South Clinton Street  
Syracuse, NY 13261-7308  
(315) 423-5176

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State Executive Director  
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200 North High Street  
Columbus, OH 43215  
(614) 469-6735

State Executive Director  
Agricultural Stabilization and Conservation Service  
One Credit Union Place, Suite 320  
Harrisburg, PA 17110-2994  
(717) 782-4547

State Executive Director  
Agricultural Stabilization and Conservation Service  
West Bay Office Park, Room 40  
60 Quaker Lane  
Warwick, RI 02886  
(401) 828-8232

State Executive Director  
Agricultural Stabilization and Conservation Service  
Executive Square Office Building  
346 Shelburne Street  
Burlington, VT 05401  
(802) 951-6715

State Executive Director  
Agricultural Stabilization and Conservation Service  
75 High Street  
PO Box 1049  
Morgantown, WV 26507-1049  
(304) 291-4351

State Executive Director  
Agricultural Stabilization and Conservation Service  
6515 Watts Road, Suite 100  
Madison, WI 53719-2726  
(608) 264-5304

## Extension Foresters

Extension Forester  
Extension Center  
139 Wolf Den Road  
Brooklyn, CT 06234  
(203) 774-9600

Extension Forester  
University of Delaware  
RD 2, Box 48  
Georgetown, DE 19947  
(302) 856-7303

Extension Forester  
University of Illinois  
N507 or N509 Turner Hall  
1102 South Goodwin  
Urbana, IL 61801  
(217) 333-2777 or (217) 333-2778

Extension Forester  
Department of Forestry and Natural Resources  
Purdue University  
West Lafayette, IN 47907  
(317) 494-3590

Extension Forester  
Iowa State University  
251 Bessey Hall  
Ames, IA 50011  
(515) 294-1168 or (515) 294-4465

Extension Forester  
University of Maine  
5755 Nutting Hall  
Orono, ME 04469-5755  
(207) 581-2892

Extension Specialist, Natural Resources  
University of Maryland  
18330 Keedysville Road  
Keedysville, MD 21756  
(301) 791-2298

Extension Forester  
Department of Forestry  
University of Massachusetts  
Holdsworth Hall  
Amherst, MA 01003  
(413) 545-2943

Extension Forester  
Department of Forestry  
Michigan State University  
126 Natural Resources Building  
East Lansing, MI 48824-1222  
(517) 355-0096

Extension Forester  
Forest Resources  
University of Minnesota  
115 Green Hall  
1530 North Cleveland Avenue  
St. Paul, MN 55108  
(612) 624-0734

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## State Foresters

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State Forester  
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Division of Resource Management  
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State Forester  
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State Forester  
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## *A Guide to Logging Aesthetics will achieve the following objectives:*



### **Loggers will**

- \* appreciate the importance of aesthetic values to landowners
- \* understand how they can minimize the disruptive impacts associated with timber harvesting
- \* understand that protecting aesthetic values does not mean sacrificing time and money
- \* have step-by-step, practical tips to follow when in the woods
- \* understand how federal cost-sharing programs can help reduce costs and increase effectiveness of timber harvest activities



### **Foresters will**

- \* be better able to describe the steps in a timber harvest to clients
- \* be able to show logging contractors how to protect aesthetic values without incurring significant extra cost
- \* be able to incorporate specific instructions, diagrams, and directions in management plans
- \* understand how federal cost-sharing programs can help reduce cost and increase effectiveness of timber harvest activities



### **Landowners will**

- \* be able to visualize the steps involved in timber harvesting
- \* recognize what elements of a harvest have the greatest potential aesthetic impact
- \* be better equipped to advise foresters and loggers of their objectives and how they can be met
- \* be better able to evaluate the quality of the timber harvest performed on their land
- \* understand that aesthetic and wildlife values do not have to be sacrificed during timber harvesting
- \* learn how certain federal cost-sharing programs can be integrated into a timber sale.



**NRAES-60**

