

sample case study: Timber Management

Jack and Dianne are in their late 50s and own 70 acres of woodland on which they live. They would like to supplement their fixed retirement income and offset other expenses through timber harvesting. Their two daughters will inherit the family property.

Both Jack and Dianne want to be responsible land stewards. They have walked their forest and identified a spring and what appears to be an old home site. They want their forest management activities to avoid these two locations and be compatible with personal recreation and soil and water protection.

long term goals

- ✓ To leave the forest in better condition than when they purchased the property.
- ✓ To have a healthy, productive forest which generates income while protecting water and soil quality.
- ✓ To maintain a system of trails and roads, which support the timber harvest and enhances hiking and other outdoor activities.
- ✓ To protect the natural spring and cultural resources on their property.

recommended management practices

- ✓ Improve the attractiveness of the forest edge surrounding their house by thinning poorly formed trees.
- ✓ Perform uneven aged management by removing one-half of the large sawtimber on 50 acres to generate income and improve growth and vigor of future crop trees.
- ✓ The remaining 20 acres, minus the determined boundaries around the spring and old home site will be group selected for the second cycle of harvests to promote wildlife patches.
- ✓ Improve recreational access and water quality by reseeding logging access roads and skid trails and by improving stream crossings.

in the real world: Skyview Ranch

This case study has been provided by Sustainable Northwest.



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Colleen Krieger was raised on a cattle ranch. When she and her husband Wayne bought a 310 acre property in southwestern Oregon in 1973, they planned to clearcut and start a ranch of their own. Then they began talking to other people about forestry practices and getting other ideas. “Now,” says Colleen, “although we do run some cattle, we have more trees and fewer cattle than we expected.”

The land they bought had been logged in the 1940s and 1950s, with no follow-up planting. They found brush patches, lots of hardwoods, and, in other areas, densely-packed firs. The Kriegers sought help, and by the late 1970s, they were working with a state forester and their local extension agent to return their forest to a healthy state. They started with a management regime that included a few small clearcuts of six to 38 acres, regeneration cuts, site conversion, and thinning. In 1992, that work was formalized under a comprehensive Forest Stewardship Plan that has guided their management ever since.

“We had to convert the brush patches, which were full of twisted material,” Colleen says. “We thinned and replanted Douglas fir, and nature added white fir, alders, and cedars. We added some redwoods to see how they would do. The Port Orford cedars were not doing much until we thinned the Douglas fir, then they came in as an understory crop.”

The Kriegers perform 95 percent of the work on their land themselves. Over the years, they have improved the condition of streams and riparian areas. Their open meadows provide habitat for

elk and deer, and wild, fruit-bearing plants offer food for wildlife forage. “We went from having hardly any elk to having them break down a fence every now and again,” Colleen says without annoyance.

For three years the Kriegers raised salmon fingerlings in their pond as part of the Salmon Trout Enhancement Program; the fingerlings were used to repopulate nearby Euchre Creek. They maintain hiking trails on their land which are open to public schools and youth groups, and they conduct tours of their operation for local and national organizations.

Yet their focus remains in timber management, and in 1993 they were awarded the National Tree Farmer Award. The Kriegers sell small quantities of timber, and sometimes ornamental greens. But, says Colleen, “we don’t make a living off of it. Our main goal is to regrow the forest for our children and grandkids. The kids are being taught to manage the forest, respect its values, and take only what’s damaged or needs to be thinned.

“Nature doesn’t grow monocultures,” Colleen continues, “and it teaches us a lot of lessons. We’ve been studying how it does things like thinning, pruning, and leaving wood on the hillsides to provide moisture. Management puts these things in a better time frame.”

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in the real world: Endless Rhodes

This case study has been provided by Sustainable Northwest.

Endless Rhodes is a fitting name for Darci Rhodes' business. Darci has harvested non-timber, or so-called "special" forest products for most of her adult life. But she has now managed to turn the work she loves into a new value-added business that is kind to the earth, while supporting the best instincts and aspirations of landowners, harvesters, and others in the industry.

Once on the receiving end of training in sustainable harvest methods and value-added manufacturing of special forest products, Darci is now a stewardship instructor and an advocate for harvesters.

"With the decline in opportunities for harvesters, most of us have adapted to diverse seasonal markets and various jobs. It's very difficult to live off just the income from harvesting and selling fresh, because the price per pound for most products has not changed much in 20 years. I try to get as much as I can for the highest quality wildcrafts and stay working year round as close to home as possible."

Darci started collecting floral greens for local buyers about 20 years ago. Throughout the woods of the Northwest, this silent, nearly invisible industry has been growing for years. Special forest products encompass a range of goods other than timber, including: floral greens, Christmas ornaments, wild edibles like mushrooms, medicinal herbs, and a variety of craft products. They are harvested for a host of personal and commercial uses.

Over the years Darci has seen enormous

changes. In the early 1980s, the industry went through a rapid period of growth, contributing millions of dollars annually to the Pacific Northwest's economy. While she believes special forest products have great potential to reduce pressure to cut timber from important forest ecosystems, Darci has also watched overharvesting lead to environmental degradation in many of the region's forests.

The basic structure of the industry, where harvesters get access to land through permits and leases secured independently and with processors, has created a "cash and carry" element. Bad press and poor business practices have helped fuel the perception that the special forest products industry is an underground economy that often employs destructive harvesting practices.

Darci has also been saddened by the racial tensions and sometimes violent confrontations among the culturally diverse harvesters. "I have witnessed exploitation and mistreatment of minority harvesters by leaseholders, contractors, and law enforcement agents."

Darci, who describes herself as "a student of the forest," took a course in 1996 and earned a Special Forest Products Stewardship Certificate from Northwest Natural Resource Group (NNRG), a non-profit conservation organization based in Port Townsend, Washington. She believed so strongly in the concept of ecologically sustainable harvesting that she decided to become an instructor herself and went to work for them. She helped NNRG develop and deliver a successful Harvester Stewardship Training and Certification program that is aimed at improving special forest products harvesting practices, while developing economic opportunities for the harvesters.

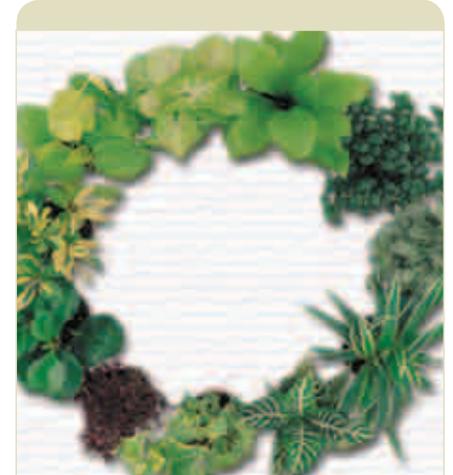


photo: photos.com

Darci Rhodes harvests floral greens, Christmas ornaments, wild edibles and a variety of craft products for both personal and commercial uses.

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The training course provides harvesters with species-specific best management and harvesting practices and a set of related skills to ensure land stewardship. By harvesting in the proper seasons, and using percentage harvesting and species-specific techniques, the harvesters can help protect and improve forest health. “The course itself consists of four hours in the classroom where we instruct harvesters in best practices and competencies such as forest land-owner relations, rules, regulations, safety, and map reading. Then we do four hours in the field for general and species-specific best harvest practices.”

Darci’s involvement does not end at the conclusion of the course. “We give the harvesters several months to get their certification and apply the best practices outlined in the Stewardship Training Manual (published by NNRG). Then I do a follow up visit with harvesters at their work sites and evaluate how they are doing. If they have complied with the requirements and are competent in all practices, then NNRG sends them a certificate.”

In addition, Darci and NNRG monitor the long-range ecological effects of the best management practices, and continue to assist and support the harvesters in their stewardship efforts.

NNRG program director Larry Nussbaum says that Darci’s experience in the industry is invaluable. “She brings a lot to the training beyond what’s in the manual, providing tips on harvesting, cultivation of plants, and marketing through creative channels. She actually encourages harvesters to do direct marketing, skipping the middle man altogether to get a better return for their efforts. She also encourages them to do value-added manufacturing instead of selling

high volumes of low-value product. That’s all part of creating the incentive for stewardship and good business practices.”

Darci is as interested in the economic well being of the harvesters as she is in the environmental health of the forests in which they work. She and NNRG often team up with ShoreBank Enterprise Pacific, a regional business support organization, to provide financing and business assistance to harvesters and special forest products companies. Of the first 12 people certified through the program, four started new businesses and five increased production in an existing business. Most were able to access new markets for their value-added products.

Darci is particularly pleased that the program has enabled low-income harvesters to enter into more equitable relations with forest-land owners, employers, and buyers. Armed with their new knowledge and skills, the harvesters have been able to negotiate better land access contracts. Darci believes that this has also “helped several non-English speaking harvesters in southwest Washington find more diverse work, which allows them to stay in the area year round instead of having to move to find additional work.”

The company may be called “Endless Rhodes,” but there is clearly a goal in sight.

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in the real world:

Goebel Tree Farm

This case study has been provided by Sustainable Northwest.

Leo Goebel was a school teacher who spent summers logging or working for the Forest Service. Bob Jackson was a forester and licensed surveyor who worked for timber companies, timber cruising and surveying. The two men had known each other for 20 years, when, in 1970, they bought a 160-acre parcel in Wallowa County. They bought the land as an investment, but things turned out differently than they had planned. Managing their land became an ongoing experiment and a commitment that brought years of work and public recognition.

At the time of purchase, the standing volume on their parcel was 1.9 million board feet. After 25 years of harvesting, they still retain close to two million standing board feet, and they have cut a total of two million feet in a steady annual flow of timber, which is exceptional for their dry, eastern terrain. Their forest is healthy and diverse, containing trees of all ages and many species, with a clear-running stream and a rich variety of birds and mammals.

Goebel and Jackson did not start with an old-growth stand. Like most of the forests in eastern Oregon, theirs had been logged. Its Ponderosa pine, particularly, had been cut in the 1920s, and the land had been used for pasture. “From the beginning, we managed it differently,” says Goebel. “In fact, we managed our timber the opposite way the companies and Forest Service that we had both worked for managed their timber. Our jobs (on other lands) were to get logs into the mill as cheaply as possible, cutting the biggest trees, as many per acre as possible. But here, we manage for forest health through

thinning and spacing.”

In the early years, they bought salvage sales from the Forest Service in the summer and worked their own land weekends and in the winter, learning as they went and adapting their management practices accordingly. “How we managed in 1975 wasn’t the same as it was in 1970,” Goebel says. “And how we manage today isn’t even the same as it was five years ago.”

Four or five years into their work, they were approached by the local state forester who knew and respected their work. He asked the two men to turn their land into a tree farm where others could come to learn from their approach. The Goebel-Jackson Tree Farm was born.

In their management, the two friends emphasize the health of the soil. “The more you care for the soil, the more forms of life it will support,” says Jackson. They fell dead and sick trees and take care not to damage the soil in removal. They leave much of their slash, scattering some to keep the soil cool and regenerate it, and piling some to offer habitat to small mammals and insects - including ants which eat the larvae of some of the budworm and moth forms that have devastated Oregon forests. Knowing that wildlife plays a crucial role in the mechanics of a healthy forest, Goebel and Jackson strive to maintain habitat complexity.

Their management is labor-intensive. They seem to know each pine, fir and larch personally, and, in fact, tag many of their trees to indicate their long-term management plans. They thin to allow the best trees to grow to full capacity. They point out that well-spaced trees are far less vulnerable to pests and disease. Cutting this way, they take down only three to four percent of their trees per



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*“If a tree is healthy,
then it doesn’t
make sense to cut
it down.”*

Leo Goebel

year; most will not be cut for a generation or two. Goebel and Jackson also prune many trees up to the live crowns to create better quality, clear lumber.

“If a tree is healthy, then it doesn’t make sense to cut it down,” says Goebel, who is fond of demonstrating to visitors that trees put on progressively more volume per year after their diameters reach 16 to 18 inches. He keeps cross sections of trees and bar graphs to prove it. At exactly the point many foresters judge a tree ready to cut, Goebel and Jackson say it has just begun to be a profitable enterprise.

Their profits are also increased by avoiding planting costs. “We much prefer natural reproduction to planting,” Goebel continues. “It’s site specific. If you bring in trees from outside, they may have come from a different elevation or slope—you don’t know. And since we leave our best trees standing, for us, natural reproduction comes from the best stock. We do get more fir coming in that way, but we can cut it back in our pre-commercial thinning. We do that because we favor a mix of trees, and pine and larch are more resistant to root rot.”

In addition to hosting regular tours, they have received recognition through several awards, including Oregon Tree Farmer of the Year in 1984 and in 1991, and the Outstanding Western Tree Farmer in 1992 from the American Forest Council. Leo Goebel’s son, Ed, won the district Proficiency Award for forest management at the state Future Farmers of America convention in 1982, 1983, and 1984. In 1984, Ed was the state winner in Forest Management and he also won the Star State Agribusinessman Award, all for his work on the tree farm.

“Jackson and Goebel have set an example of resource management creativity for other managers in the Blue Mountains region of northeast Oregon and southeast Washington,” comments Bill Mullarkey of the Blue Mountain Natural Resource Institute in LaGrande.

At a roundtable discussion during the Seventh American Forest Congress, Bob Jackson had this advice: “For this area, forget about sophisticated or clever forest practices. Spend the time and money on basics: regenerate depleted areas, thin over-stocked areas in stages, and manage downed woody material for rapid decomposition and restoration of soil organic material. In all of it, consider genetic improvement and diversity in a relentless manner.”

Leo Goebel’s family is involved in the management of the tree farm, giving him reason to believe his work will continue past his lifetime, but both Jackson and Goebel take the long-term view, anyway. They are at peace with the fact that many of the trees under their stewardship will not be ready for harvest under their guidelines until after their death.

“My vision is for 300 to 800 years—to have our forest land restored as highly productive, diverse, and sustainable forests,” says Jackson, speaking about more than the land he shares with Leo Goebel.

“I hope there will be people who are willing to do manual labor,” he continues, “people willing to work beyond discouragement, willing to think beyond standards, guidelines and popular ideas, and willing to forego the pretentious and compulsive use of resources.”

Wildlife (linking forest and wildlife)

Wildlife management and forestry are interrelated. If one of your goals is to manage your forest for wildlife, understand that harvest or other management decisions will likely alter wildlife habitat. You can still have a productive forest and abundant wildlife; this is achieved through careful consideration of each decision and how that decision may affect a wildlife species.

The age and composition of a forest stand will directly affect the type of wildlife you can attract. For example, certain songbirds thrive in forest stands that are zero to five years old, while certain animals require a mature forest with den trees. A den tree has one or more cavities used by birds, reptiles, and mammals for roosting or nesting. Several aspects of your property determine how many species can live and thrive within your forest: 1) plant cover, 2) forest cover-age, 3) water resources and 4) topography.

timber management tips to promote wildlife

- ✓ When or if you harvest, use an irregular pattern to create more “edge” perimeter than a typical square.
- ✓ Separating harvest areas with 100+ft. wide areas of uncut timber will enhance diversity of habitats and provide travel corridors between fragmented forest stands.
- ✓ Keep riparian buffer zones intact.
- ✓ Islands of uncut timber within a harvest area will provide wildlife habitat and mast (food)

producing trees.

- ✓ Thinning timber stands allows more sunlight to reach the forest floor, which will promote understory growth.
- ✓ Mark den and mast producing trees before harvest to insure that the most desirable wildlife trees are not removed.
- ✓ Use native grasses when reseeding your skid trails and logging roads. Insects attracted to the vegetation are an important wildlife food source.
- ✓ Seeding and establishment recommendations vary depending upon soil type, moisture availability and fertility as well as time of year.



sample case study: Wildlife management

Sarah is married and in her late 30s. She, her sister, and one brother inherited their 200-acre, non-working farm from their mother. Although there is sentimental attachment to the property, for monetary reasons they are going to subdivide the property and sell off parcels.

Currently, all siblings live several hours away. Sarah comes home most frequently and is the primary caretaker of the property. She enjoys fishing and hunting (deer, turkey) and often cuts her own firewood to heat the old farmhouse. Her siblings enjoy the relaxation and solitude they get when visiting.

The inherited farm is mostly wooded with a large meadow and a high quality trout stream running through it. Part of the farm is an apple orchard, with blackberry patches upslope of a former hay field. One field next to the orchard is rented for pasture.

long term goals

- ✓ To maintain the forest habitat optimal for deer and turkey.
- ✓ To manage the forest for a feathered edge which will enhance wildlife diversity.
- ✓ To have a productive forest which generates income to help pay property taxes and general maintenance while protecting water quality.
- ✓ To specifically protect the quality trout stream.

recommended management practices

- ✓ Improve timber stands by removing poorly formed trees for firewood and to sell the firewood.
- ✓ Thin the entire forest to generate income.
- ✓ Seed skid trails and logging roads with native grasses.
- ✓ Expand the riparian buffer zone for added protection around the trout stream.



photo: photos.com

White tail deer are a favorite of wildlife watchers and hunters, but they're also known to gobble up understory plants and vegetable gardens.

Recreation

Whether you decide to primarily manage your forest for income, wildlife or aesthetics, it is likely that recreation is your second goal. Regardless of the type of recreation you enjoy, it is likely compatible with your second goal. Let's face it, managing a forest requires a lot of hard work. You deserve an afternoon picnic, an early morning bird sighting or an evening alone with your fishing pole. Mutual funds may be a popular investment, but they're worthless on a camping trip. Naturalist John Muir put it best, "The clearest way into the Universe is through a forest wilderness."

timber management tips to promote wildlife

Because you are investing the time and effort to enhance your recreational opportunities, you should think of ways to ensure that others do not compromise your efforts.

- ✓ Restrict access to only family, friends, neighbors and responsible recreationists that contact you for permission. Post signs to control activities and limit liability on your land.
- ✓ Leasing your land for recreational activities is a sound way to restrict access and earn income. Organizations, such as hunt clubs, frequent the property on- and off-season and provide extra eyes for unwanted visitors. Leasing your land usually can pay for the property taxes. Your contribution may be to maintain roads, gates and trails. *Note: There may be restrictions to this option in some areas.*

- ✓ Another alternative to leasing your land is to provide daily permit fees for visitors. This is a good option if you wish to limit the amount of visitors.

It is important to remember that recreational opportunities can be enhanced with sound forest management.

Remember to gate forest access roads to keep all-terrain vehicles and off-road trucks from trespassing.



sample case study: Recreation management

Donny and Sarah, in their late 30s, own twenty acres of forestland that has a high quality stream running along their northern property boundary. Two years ago a State Nature Preserve was dedicated just a couple of miles away. Since that time, Donny and Sarah have noticed that hikers and outdoor enthusiasts come from as far as Louisville to enjoy the natural beauty.

There is no camping permitted on State Nature Preserves properties, so most of the visitors come only for day-trips.

Donny and Sarah organized several neighbors and together, they plan on opening a fishing preserve, small restaurant and campground.

Their property is in enviable condition and they want certain areas to remain “off-limits” to visitors.

long term goals

- ✓ A healthy forest and beautiful property.

- ✓ Protection of high-quality trout stream, which runs through the property.
- ✓ Maintain a healthy forest, especially within the riparian buffer zone.

Recreation



photo: photos.com

Recreation is a blanket term used to describe various activities. When working on your management plan, it's helpful to be specific about the type of recreational activities you would like to support or avoid.

Popular forest-friendly outdoor activities include: bird watching, horseback riding, camping, fishing, hunting, biking and hiking or taking nature walks. Off-roading and all terrain vehicles (ATVs) may be popular, but they can easily damage your forest, streams and the plants and animals that live within. Keep these vehicles in designated areas that can withstand high impact.

recommended management practices

- ✓ Create a campground near the stream, but outside the riparian buffer.
- ✓ Transplant some native ornamental trees and shrubs near the campground entrance.
- ✓ Remove deformed trees and selectively thin around the campground to promote a healthy forest stand that provides shade and shelter.
- ✓ Annually remove dead or dying trees within the riparian buffer zone and near the campground to protect visitors from falling trees.

Special Consideration: Wetland Forest Management

All wetlands provide beneficial functions to our environment. They reduce flooding, trap and filter pollutants, clean groundwater and provide abundant wildlife habitat. At one time there were an estimated 1,566,000 acres of wetlands in Kentucky. As of 1978, only about 637,000 remained (REP America, 2002). Forestry operations can devastate wetlands and should be considered with great care and planning.

Fens and bogs are typical forested wetlands found in Kentucky's Appalachia region. Fens and Bogs are peat-forming ecosystems with high water tables, accumulation of organic matter (peat), and low nutrient availability to plants.

In Canada, fens and bogs can cover several square miles; in Kentucky they are limited in size to just a few acres. Therefore, protecting their unique contribution to Kentucky's environment is very important.

Harvesting trees in wetlands can alter the hydrology of the wetland, thus, changing the wetland's functionality forever. Potential forestry operation impacts occur from road and skid trail construction, log decks, and harvesting. **Since wetland areas are considered fragile, each wetland should be regarded as a "hands off" zone.**

You should be aware of the numerous laws and regulations (both federal and state) that apply to forestry activities. Accordingly, forestry activities in wetland areas require special permitting from the U.S. Army Corps of Engineers. This is

required by Section 404(a) of the Clean Water Act, which regulates the discharge of dredged or fill material into waters of the United States.

The best practice to protect your wetlands is to identify, flag the boundary and consider these areas off limits to forestry operations.

Regulatory requirements for Wetlands Areas can be found in the PreHarvest Appendix under Forest Buffers.



photo:© Courier-Journal

Not all wetlands look wet all year long. This photo shows a bog during a dry summer. The bog acts like a giant sponge, gradually releasing water underground to feed the forest. The cinnamon ferns in this photo are common bog plants in Kentucky. They sometimes grow upwards of 4 feet.

Land and Water Protection Measures

Your efforts to preserve the land and water will be enjoyed and appreciated for generations to come. This Appendix is designed to provide you with the basic concepts of protecting your natural resources to ensure that they will be viable and productive.

It is important to note the management measures that follow are designed for Kentucky landowners interested in protecting their land and water resources and managing their forest with an eye toward the long term.

If you are only interested in short term monetary gains and have little regard for the true assets in your forest, this publication is not for you.

The recommendations that follow differ from the state's legally mandated minimum requirements, which were developed "to establish minimum acceptance quality levels for . . . agriculture and silviculture facilities and operation." In short, the state best management practices (BMPs) provide an important service as a baseline for everyone conducting forestry activities: loggers, paper companies, industry, etc. As a private forest landowner with a stake in the long term value of your forest, water and soil resources, you will likely want to offer enhanced protection. A good

analogy is one of a rental car compared to your personal vehicle. Would you ever pay to have an oil change or engine tune-up on a rental car? By the same token, you understand that regular car care can extend the life and value of your personal vehicle.

The following Land and Water Protection Measures offer suggestions to best protect your property from damage during harvest activities. When working with a logger or forester you should feel comfortable asking them to follow these guidelines to avoid negative repercussions that can stem from harvesting timber.

The following Land and Water Protection Appendix differentiates the guidelines that are legally required from the suggestions for maximum protection. **At the end of each Protection Measure, there is a section that says "required by law."**

Why is it necessary to follow land and water protection measures?

Kentucky's forests play an important role in stabilizing soil and protecting water quality through filtering and absorbing water runoff. As previously mentioned, land and water protection measures are a practical means to prevent and control water quality degradation and soil loss. When a forest is disturbed the potential for erosion and sedimentation of surface waters increases. This potential increases significantly within the steep topography of Kentucky's Appalachian mountains.

Sedimentation of any water body from forestry is considered nonpoint source (NPS) pollution. Nonpoint source pollution is defined as diffuse

discharges entering water in a diffuse manner at intermittent intervals based on rain or snowmelt. Forestry activities compound nonpoint source pollution because they often increase the amount of sediments, nutrients, organic matter, and toxic compounds that flow into lakes, rivers and groundwater during rain and snow. Erosion and sedimentation affect water quality by increasing water temperature, clogging streams, ruining fish habitat and increasing nutrient levels in the water that reduce the oxygen available to aquatic life (known as dissolved oxygen).

Land and Water Protection Measures are essential—regardless of your management objectives. Allow for the planning and budgeting to implement the proper management measures in advance of your forestry activities. A little preparation is a wise way to insure against costly and time-consuming remediation.

Federal and State Requirements for Water Quality Protection

There are several federal and Kentucky state regulations pertaining to water quality law violations as a result of forestry practices. In 1987, Congress amended the Clean Water Act and enacted Section 319, which established a national program for the control of NPS pollution (EPA, 1993). Section 319 requires states, tribes, and territories to address NPS pollution by assessing its causes and sources, as well as implementing management programs to control them. The federal government also has the Total Maximum Daily Load Program (TMDL). A TMDL is a statement of the total quantity of a pollutant that can be released into a waterbody or stretch of stream or river on a daily basis to maintain water quality standards (EPA, 2001).

Section 404 of the Clean Water Act

Other federal programs include Section 404 of the Clean Water Act, which regulates dredge and fill of wetlands, for which a federal permit is required. See page 63 for more details about wetlands. Federal and state laws are often written in technical and complicated language. **The basic principal that you need to know as a land steward is not to degrade water quality with sedimentation (that is, prevent soil and pollutants from entering the stream).**

Kentucky Agriculture Water Quality Act (AWQA)

In 1994, the Kentucky General Assembly enacted the Kentucky Agriculture Water Quality Act (KRS 224.71-100). The act established a 15-member Agriculture Water Quality Authority representing the state’s agricultural and environmental community. The Authority developed the Kentucky Agriculture Statewide Water Quality Plan (Statewide Plan). The Statewide Plan mandates that any person who owns 10 or more contiguous acres of land in Kentucky and who uses that land for agriculture and/or forestry, must have an individual water quality plan by October 23, 2001.

To apply for state cost-share assistance, you need to have a water quality plan in place. A forester with the Division of Forestry can assist you with this. Otherwise, it is the logger or forester’s responsibility to follow all of the state mandated BMPs when working on your property. If you are uncertain of a logger’s qualifications, ask for references and to see his/her “Kentucky Master Logger” card. It certifies they have been trained in, and are responsible for implementing, state BMPs.

Before a logger conducts any activities on your property, ask to see his or her Master Logger Card. Loggers are required to have this card with them and attend re-certification training every three years.

Is there a special use waterbody in your area? Find out at http://nrepcapps.ky.gov/special_waters/specialwaters.htm or by calling the Division of Water (502) 564-3410.

Keep in mind, BMPs were developed to establish minimum acceptance quality levels. At the end of each Land and Water Protection Measure, the minimum BMP requirements are listed. You are well within your rights though to stipulate—maybe even contractually require—a logger or forester to follow the enhanced protection measures offered!

Currently, landowners are exempt from obtaining regulatory permits to perform forestry operations (except for Section 404) on your land. *However, if a water quality law violation does take place on your property, then you will be held accountable by the state and federal government.*

Poor forestry practices are a cause for concern at the federal, state and local level. But water quality concerns aren't limited to government agencies. As a landowner you have a vested interest in the quality of your land and water resources. By implementing the following Land and Water Protection Measures, you can protect your assets for the long term. You may also want to let your neighbors know about these land and water protection measures. *Remember, when it comes to water quality, we all live downstream.*

Kentucky Forest Conservation Act (FCA)

In 1998, the Kentucky General Assembly passed KRS 149.330 to 149.355, known as the Kentucky Forest Conservation Act. While the act places its primary responsibility on loggers, private forestland owners also need be aware of the law because they provide most of the timber in Kentucky. The act requires the Natural Resources and Environmental Protection Cabinet to provide education, standards and enforcement of forest related activities.

Specific activities include:

- conducting and maintaining an inventory of Kentucky's forests;
- establishing a stewardship incentives fund;
- implementing a Master Logger Program to assure loggers comply with state and federal logging regulations*;
- implementing the state's minimum requirements and specifications of BMPs; and
- establishing a Best Management Practices Board to update forest practice guidelines.

* As of July 15, 2000, all timber-harvesting operations within the Commonwealth require at least one logger on-site and in charge that has successfully completed the Master Logger Program.

Special Use Waters

Special use waters are rivers, streams and lakes listed in Kentucky Administrative Regulations that are worthy of additional protection.

They are recognized as:

- Cold Water Aquatic Habitat;
- Exceptional Waters;
- Reference Reach Waters;
- Outstanding State Resource Waters;
- Outstanding National Resource Waters;
- State Wild Rivers and Federal Wild Rivers; and
- Scenic Rivers.

To learn more about specific locations in Kentucky and the guidelines for protection, visit <http://www.water.ky.gov/sw/specialwaters/> or call the Division of Water (502) 564-3410.

Alternative Harvesting Options

Erosion from timber harvesting should be a serious concern of every landowner-particularly if you live on steep terrain like that of Appalachian Kentucky. In many cases, harvesting on steep terrain is just plain dangerous and shouldn't be done using traditional ground-based skidders.

There are a few techniques that will allow you to safely harvest on otherwise hazardous slopes. These techniques are gaining popularity, but still are not widely available in Appalachia. If enough landowners are interested though, who knows? Maybe horse-logging could one day be a booming enterprise in Kentucky.

cable yarding

Cable yarding is a preferred, environmentally friendly, physically feasible, and socially acceptable means to extract timber on otherwise difficult slopes. Harvesting timber with a cable yarding system requires the expertise of a professional. It is perfectly suited to steep terrain because cables lift and transport the logs to the log deck; making skid trails obsolete. To read more about the process of cable yarding visit: http://www.cnr.vt.edu/visser/cable_logging/index.htm.

Advantages to Cable Yarding:

- Cable yarding reduces the number and length of roads needed.
- Cable yarding increases productivity.
- Skyline cable yarding prevents environmental impacts by lifting the logs above the ground and transporting them to the deck via the skyline.
- No skid trails need to be created.
- Yard logs uphill, which minimizes erosion.

Cable Yarding Tips:

- Avoid yarding across streams.
- Cut or clear cable ways if yarding over a stream.
- Place log deck next to the access road so logs can be swung onto trucks.



photo: Temperate Forest Foundation



photo: Horizon Helicopters

helicopter logging

Extracting timber with a helicopter is costly, primarily because of the equipment involved. However, the expense of using a helicopter can pay off if there is high value timber that could not otherwise be reached. The costs of rehabilitating the land after conventional logging can often pay the difference between helicopter and conventional methods.

Helicopter yarding is low impact because of:

- reduced access roads;
- no skid trails;
- no stream crossings;
- less damage to the tree harvested and the surrounding standing timber;
- a single log deck;
- limited soil disturbance; and
- minimal closeout BMPs.

Helicopter yarding does have setbacks, but when comparing timber harvesting systems, helicopter yarding is the least environmentally intrusive of all harvesting methods.

Talk with a state professional to see if cable or helicopter yarding is a cost effective means to harvest your timber. It is important to remember that another alternative is to not harvest your timber because of the environmental risks associated with the steep slopes.



photo: Ed Christopher

horse logging (also mule or ox logging)

There is another alternative method to steep terrain harvesting—horse logging. But the benefits of horse logging are not limited to steep terrain. Horse logging can be used for most harvesting situations. It is ideal when light thinning is needed, since horses are better at avoiding large standing trees than less maneuverable skidders or tractors.

Horse logging is considered an ideal alternative for small private woodland tracts because of its minimal disturbance. By nature, it is more sustainable than other methods because it is labor intensive (for the horse). Horses cost less than big logging machines; they can be used for many other rural applications and can make it economically feasible for landowners to cut just a few trees at a time.

There are several benefits to horse logging:

- low cost;
- no mechanized skid trails;
- no loud equipment (except for the chain saw);
- impact of horse skid trails are limited to the width of the log being skidded;
- no refueling of equipment (except with hay and oats);
- it only requires one or two people;
- closeout BMPs are minimal.