A Guide for Foresters and other Natural Resource Professionals on using:

Managing Your Woodlands:

A template for your plans for the future

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Introduction to the Template and Guide

This guide was developed to assist you, the forester or natural resource professional, in working with landowners to develop a forest resources management plan using *Managing Your Woodlands: A template for your plans for the future* ("Template"). We encourage you to work with landowners as co-creators in the development of their plan. Landowners who are involved in plan development and have a clear understanding of what it specifies will be more likely to implement management guidance contained in the plan.

The companion document *Understanding Your Plan - A Guide for Landowners using Managing Your Woodlands: A Template for Your Plans for the Future* ("Landowner Guide") can be used to help landowners prepare materials in advance of working with foresters. The Landowner Guide describes the categories of information needed to complete the Template, and has suggestions for information sources. The Landowner Guide includes a glossary of relevant forestry terms, and a list of available resources. When you are meeting with landowners, you may wish to provide them with a copy of the Landowner Guide. The Template and guides are tools to assist you in working with landowners to develop forest management plans.

Why the template?

The Template allows landowners to participate in several different programs available to them:

> **American Tree Farm System**
>
> The American Tree Farm System® (ATFS) is the largest and oldest sustainable woodland system in America, internationally recognized, meeting strict third-party certification standards.
>
> For 70 years, ATFS has enhanced the quality of America's woodlands by giving forest owners the tools they need to keep forests healthy and productive. Stemming the loss of America's woodlands is vital to our country's clean water and air, wildlife habitat, recreational activities, and producing the wood and paper products we all need. ATFS provides landowners with the validation that they are doing right by their land, meeting the highest standards of sustainability and being good stewards for the future.
>
> ATFS is a program of the American Forest Foundation.
> *The American Tree Farm System grows stewardship from the roots.*
>
> To participate in a state ATFS program, please visit
> www.treefarmsystem.org/stateleaders

Forest Stewardship Program
The Forest Stewardship Program works through State forest agencies and other partners to sustain and improve our Nation's private forest landscapes. The program develops and delivers appropriate technical and planning assistance to enable active, informed, long-term forest management. Forest Stewardship management plans provide landowners with practical guidance for achieving their own unique objectives in a way that also maximizes public goods and services provided by forests, such as clean drinking water, clean air, carbon sequestration, wood fiber, recreation, and scenic landscapes. Landowners who implement Forest Stewardship management plans are in a much better position to participate in certification programs and access emerging markets, such as those for ecosystem services and biomass for energy.

Natural Resources Conservation Service (NRCS) assistance programs NRCS provides financial assistance to private landowners to implement forestry and agroforestry related practices through Farm Bill and discretionary conservation programs. Assistance is also provided for multi-year and permanent easements to conserve forest land to meet program goals. There are several assistance programs including:

- *Environmental Quality Incentives Program (EQIP)* offers financial and technical help to assist eligible participants including forest owners with management practices on their lands; a forest management plan is required to participate.
- *Conservation Stewardship Program (CSP)* offers stewardship contracts to landowners who meet a certain threshold of land stewardship and agree to maintain and improve their land.
- *For more information about these and other programs refer to http://www.nrcs.usda.gov/programs/ or contact the local NRCS office.*

Where to Begin?

A management plan should be completed by a forester or other natural resource professional, but landowners need to take an active role in the development of their plan. Landowners should be considered co-creators of the plan along with the forester.

The Landowner Guide is a companion to this guide and the Template, as described in the Introduction section. Foresters and natural resource professionals are encouraged to provide the Landowner Guide to their clients as a resource. There are several sections of the Template that landowners can either complete or begin before meeting with their forester. The forester can also begin gathering some of this information prior to the first meeting with the landowner(s):

- **Owner's contact information**
- **Property Description**: complete as much as possible, and review with the landowner(s).
- **Property History**: most of this information will be provided by the landowner(s) and then reviewed with the forester. The forester can gather information about the area surrounding the landowner's property, such as existing landscape or watershed plans.
- **Forest Management Goals**: the forester asks the landowner(s) about their goals for the property.
- **Property Maps**: collect the appropriate maps of the property (e.g., aerial photos, soil map, etc.) and compare or reconcile with any maps the landowners have.
- **Forest Natural Resources Enhancement and Protection**: the forester or planner will complete this section, but landowners can start to think about their goals and provide their thoughts to the forester. Ask the landowners:
    - Are there any special sites that you and your family have that you want to protect?
    - From your personal knowledge or research, are there special sites that threatened and endangered species might be using on your property (Reference: www.treefarmsystem.org/woodlandresources)
    - Have you considered the questions in the Landowner Guide and thought about your goals or concerns for the land?
- **Stand Level Information**: the forester will complete this section, but landowners should identify their objectives for each stand, given the goals that they have outlined.
- **Management Activity Schedule and Tracking**: the landowner(s) and forester, working together, will develop the schedule. The forester will be responsible for tracking activities (unless the landowner(s)s have designated someone else to be in charge of implementing the management plan). Make sure the landowner(s) understand and are comfortable with the dates documented for the different activities that have been outlined in the plan.

When completing a section, review the requirements in this guide to ensure that all the information is completed. When meeting with landowners initially, review information they have already compiled from following the Landowner Guide, to gain their perspectives or to clarify certain points.

Cover Page: Owner and Plan Author

This section provides contact information for the landowner(s) and the plan preparer (the forester or natural resource professional). Be sure to encourage landowners to keep this section updated. Remind them to inform you and their participating programs if any of the information changes:

- Forest Stewardship Program: State forestry contact or State Forester's office (list of State Foresters is available at http://www.stateforesters.org/about_nasf)
- American Tree Farm System: state American Tree Farm System contact (www.treefarmsystem.org/stateleaders)
- NRCS assistance programs: Local service center (http://offices.sc.egov.usda.gov/locator/app)

Note the date when the plan was originally completed. Encourage landowners to regularly review their plan. Be sure to date and initial any updates or notes that they add.

Property Description

The legal property description includes the name of the state, name of the county, township number, range number, section number, and portion of a section where relevant. This information can be found on the property deed.

The Tax Parcel Number is the number assigned to a property by the local tax assessor. This number is not required but it can be helpful to record all relevant property information in one location.

If landowners are planning on participating in a USDA Farm Bill program, then they will need to register at the nearest USDA Service Center.

GPS coordinates are very helpful in locating relevant maps online.

The property may not be entirely wooded, and/or may not all be eligible for a forest management plan, but cleared land can be included if the intent is to plant trees on it. Hence the three acreage questions in this section:

- Total ownership acreage: the total acreage of the property
- Total forested acreage: the total acreage with trees
- Total acreage covered by plan: the portion of the acreage that will be described in this plan (forested or not).

For the topography and access information, develop estimates based on your experience of the property. For the slope section, include the percentage of land that is in each category.

For the road condition, the percentages represent how much of a road is accessible to vehicles. For the estimates of road length, include estimated miles of road for each category.

Include the watershed unit that is appropriate for the state.

Property History

The Property History is a brief description of the history of the land and ownership, including length of current ownership, past management activities, and surrounding environment (whether nearby property is developed, private woodland, public forests, etc.). This information can be based on personal knowledge, property records, and local information sources as well as evidence observed on the ground, such as stumps, skid trails, etc.

Forest Management Goals

Ownership Goals are at the heart of the plan and describe what the landowner(s) want to gain from their property and resources. We encourage landowners to make a list of goals and objectives that reflect their expectations, personal values, and the potential of the woodland. Goal statements should broadly summarize the landowner(s) vision for the land, but should be specific enough that it will be possible to tell whether the goals are being reached. In the Landowner Guide, we use some information about goal development from the *Good Forestry in the Granite State: Recommended Voluntary Forest Management Practices for New Hampshire* (Bennett, 2010).

Property Maps

Maps are a valuable tool for forest owners and many mapping tools are now available online. For the property maps section, include the following:

1. Delineate property boundaries, stands, special sites, threatened and endangered species present, water resources, roads, existing practices, and future conservation practices. Include the map scale and a directional arrow. Example of map types could include:
    - A contour map
    - Aerial photo (for free aerial photo downloads http://earth.google.com/)
    - GIS printout
2. Soils information
    - Soils map: including legend, interpretations, etc.
      For soil maps, NRCS has developed a web-based map-making tool for private landowners: http://websoilsurvey.nrcs.usda.gov.
      Or, check with the local NRCS office:
      (http://offices.sc.egov.usda.gov/locator/app). Soil maps are required for NRCS assistance programs.

Multiple copies of the maps might be necessary to ensure the legibility of information. Some state agencies also have mapping tools available online. Check with the state forestry agency for more information.

Forest Natural Resources Enhancement and Protection

This section relates to the natural resource elements found throughout the entire property. Some of the treatments related to these resource areas may qualify for federal and state assistance programs. Include appropriate activities and treatments in the Management Activity Schedule and Tracking table as well as on the map(s). Complete the Activity Schedule and draw and label the areas of management on the map if using this plan as part of an assistance program application. There is no need to repeat this information in the stand specific section.

For the following sections, consider the goals that landowners identified for their woodland. Address the following information for each section:

1. What treatments/ monitoring/ protection are planned?
2. When will treatments be implemented (season, year), and follow-up activities occur?
3. Where will the management take place: entire stand, part of a stand, acres?
4. Do landowners have applicable permits, professional assistance, and applications for the assistance programs?

Special Sites and Social Considerations

Special Sites

Are there special sites, including historic, archeological, or environmental properties and high-conservation-value forests (HCVF) and landscapes on the property that should be delineated and taken into account? Special sites may include locales that are designated by landowners, that represent places or things that are important to them or their community. These may include, but are not limited to, private family cemeteries, gardens, road-side markers and other locales with special ecosystem, landscape, historic or commemorative meaning. The HCFV concept is used by various organizations, including ATFS, to identify forests of outstanding and critical importance due to their social or environmental-values.

This section should include notes on the assistance and information you and the landowners utilized to help identify special sites and HCVF. There are online resources available to help identify special sites. Landowners may visit www.treefarmsystem.org/woodlandsresources to find information about their state.

Adjacent stand or ownership concerns

How does surrounding management affect the woodland, and how do landowner actions impact neighboring properties? Consider aesthetic quality, wildfire concerns, privacy, wildlife movement and habitat, noxious weeds, or urban encroachment, if applicable. Aesthetic qualities should be considered throughout the plan as it is being developed.

It may be appropriate to consider modifying forestry practices in consideration of aesthetics, particularly for sites in view of the public. Modifications could be made in timber sale layout, road and log landing locations, intersections with public roadways, distributing logging residue, tree retention, timing of operations, and other factors related

to the scale and location of the project.

For more information on federal and state designated weeds, please visit http://plants.usda.gov/java/noxiousDriver

Recreation
If recreation is one of the landowners' goals for their property, then identify the type of recreation desired and how it will be addressed through woodland management.

Access
Address access needed for management, and general access to the property. Do the landowners have a legal access route to the property? Is public access allowed? Are property boundaries posted? How are they marked?

Air, Water, and Soil Protection

Soil protection
Consider risks posed by steep slopes, erodible soils, wetness, flood potential, landslides, etc. Consider needs for nutrient cycling, inputs to soil organic matter, forest floor retention. Identify mitigations such as woody debris retention to benefit nutrient cycling, vehicle travel specifications to minimize soil compaction, road design to limit erosion and sedimentation, and the use of Best Management Practices (BMPs), if applicable. Include a soil map if desired (**Note**: required for NRCS).

BMPs are essential to ensuring that benefits for air, soil, and water are made possible through sound management. To find the BMPs for your state, visit www.treefarmsystem.org/woodlandresources/ and search by state to find the link to BMPs.

Roads
Consider general maintenance, erosion potential, BMPs, if applicable, road surface condition, road runoff, drain-dips, culverts, stream crossings, weed control, and time-of-year use.

Streams, wetlands, ponds, lakeshore
Consider BMPs, if applicable, riparian habitat, wildlife, and road crossings. If a wetlands delineation map is available, include as a reference.

Effects of Natural Disasters
Consider what landowners should do after a natural disaster occurred, if appropriate. Has the property been affected by floods, wildfire, wind, ice or other natural disasters? Are landowners at risk?

Rangeland Resources (if applicable)
If there is rangeland on the property, address any livestock impacts on the woodland, such as nutrient management, soil compaction, or plant damage.

Carbon sequestration (optional)
This is an optional resource that landowners may want to consider. Include a current estimation of the tons of standing carbon per acre, plus growth rate–tons of carbon captured per year. Carbon capture and storage is not currently a requirement of either the Forest Stewardship Program, American Tree Farm System, or NRCS programs.

Fish, Wildlife and Biodiversity

Fish &Wildlife
Consider desired species, habitat improvement, animal control, den sites, nest boxes, snag retention, access, hunting, and the current state of the habitat. What assistance did you seek or information did you gather?

State and Federal threatened or endangered species - plants or animals
What assistance did you seek or information did you gather related to state and federal threatened or endangered species? To search for site specific information visit www.treefarmsystem.org/woodlandsresources.

Management of Forest Resources

For the management described in this section, include general management that relates to the natural resource elements found throughout the entire property. For stand specific management activities, please include those in the **Stand Level Information** section.

Protection from Pests
Address existing and potential concerns for insects, diseases, weeds, and invasive species. Are these species likely to have negative impacts on the woodland? What inventory, control, monitoring, prevention guidelines are needed? Consider using a range of integrated pest management, including mechanical, physical, biological, cultural or chemical management, as needed.

Reforestation and Afforestation
Consider natural seedling recruitment, planting, site preparation, and current conditions that may affect regeneration.

Prescribed Fire/Burns (optional)
Prescribed fires/burns can be a useful management tool in certain conditions and locations. Consider using prescribed burns for stand/habitat improvement, and for reducing fuel buildup and degree of wildfire risk. Consult the National Fire Protection Association's (NFPA) Firewise Communities website for information on making homes and neighborhoods safer from wildland fire, by visiting www.firewise.org.

Management Plan Implementation Constraints
Consider available markets for wood products, landowner interest and time, financial limitations, land use ordinances, seasonal access, wildlife activity, insect activity, operability due to slope or soil characteristics, or any other factor that limits options for land use.

Other

Use this space to include information on any other natural resource enhancements and protection that are not included in the sections above.

Stand Level Information

Stand Objectives

Work with landowners to identify objectives for each stand that relate to the goals that they outlined for the property.

Stand Current Conditions

General Description:. This section includes the history, site index, elevation, slope, stand quality and health, average growth rate, summary of size classes, summary of heights, stocking level, density, risk rating, etc. for the stand in question. Further detailed inventory/plot data can be included and is desirable.

Current forest type and current age: For each forest type represented in the stand, include an estimate of its current age.

The bird's eye view of current stand conditions and structure are simple graphic representations of the landowner(s) woodland. The diagrams display some different tree spacings and arrangements showing what the stand looks like at present, and to consider for the future.

Stand Desired Future Condition

This section outlines what the stand will look like in the future, based on landowner objectives for the stand.

Desired Forest Type and Expected Longevity: This section shows the forest type(s) the landowners would like to see in this stand, and the maximum age trees are expected to reach before they die of natural causes or are harvested.

This section also addresses how the future trees would grow, either through natural regeneration or planting.

Forest Management Activities

After the desired future stand condition has been identified, the forest management activities for each stand will be outlined in this section.

Forest Health Management: These activities may include pruning, pre- commercial thinning from above/below, prescribed fires, sanitation, salvage, etc.

Harvesting: For harvest activities, describe the recommended silvicultural practices and how they will help achieve landowner goals. Silvicultural practices include even-aged and uneven-aged systems (e.g., coppice, clearcut, seed tree, shelterwood, group selection, single tree selection, overstory removal, etc.).

Also describe the harvesting system (e.g., ground based, in-woods chipping, cut-to-length, cable logging, etc.), along with the time of year and other harvesting considerations. Include the reason for choosing a particular harvesting system and how it protects the site.

Slash management: For this section, discuss how logging debris (i.e., slash) will be treated after a management activity. Examples include: leave slash on site, whole-tree skid to a landing and chip, whole-tree skid to a landing, delimb, and redistribute logging debris in the forest, etc. Address the benefits of retaining woody debris, including wildlife use and nutrient cycling, as well as concerns for fire risk.

Post-harvest: Activities following harvest could include establishing cover on roads and landings, treating weeds and invasive plants, controlling access, etc.

Permits: Include a list of permits applied for and/or needed for the management activities outlined in the Template.

Best Management Practices: Is there a wetland or stream within the activity area? Is it properly marked and are applicable laws and regulations being followed? The application of BMPs is essential to ensuring that benefits for air, soil, and water are made possible through sound management. To find the BMPs for your state, visit www.treefarmsystem.org/woodlandresources/ and search by state to find the link to BMPs.

Monitoring: After the management activity occurs, how often will the activity area be evaluated to ensure the overall forest management goals are being met?

Repeat the Stand Level Information sections for each stand identified on the property.

Management Activity Schedule and Tracking

This section includes the schedule of management activities for each stand. It can be used by landowners to keep records of when activities were completed, what assistance programs were used (if any), and what the net cash flow was for that activity. The net cash flow is optional and is only a tool to help landowners track the financial costs/benefits for the different management activities. Encourage landowners to update the schedule if an activity date changes.

If the landowners wish to apply for NRCS assistance programs, then the NRCS Practice Code will need to be included in this activity schedule. These codes can be found on the NRCS Conservation Practice Standards Web site (http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/technical/cp/ncps/).

Common forest practices for NRCS programs:

- Forest Stand Improvement
- Tree or Shrub Site Preparation
- Tree or Shrub Establishment
- Forest Trails and Landings
- Road/Trail/Landing Closure and Treatment
- Forest Slash Treatment
- Firebreak
- Fuel Break
- Prescribed Burning
- Tree or Shrub Pruning
- Riparian Forest Buffer
- Silvopasture Establishment
- Multi-Story Cropping
- Windbreak or Shelterbelt Establishment
- Windbreak or Shelterbelt Renovation
- Integrated Pest Management
- Wetland Restoration
- Restoration and Management of Rare and Declining Habitats
- Early Successional Habitat Development/Management
- Upland Wildlife Habitat Management
- Access Control
- Access Road

Please visit the following site for more information about the conservation practices:

http://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/national/technical/cp/ncps/?cid=nrcs143_026849

Each state NRCS office adds state-specific information to these practice standards and specifications and can be viewed at the state's field office technical guide: http://www.nrcs.usda.gov/technical/efotg/index.html

There may also be state-run assistance programs that could be included in this section as well.

Signatures and Approvals

With this plan, landowners are eligible to participate in the USDA-Forest Service's Forest Stewardship Program, the American Forest Foundation's American Tree Farm System, and USDA-NRCS assistance programs. This forest resources management plan must be reviewed and approved by representatives for each of the programs in which the landowner(s) would like to participate.

References

Bennett, Karen P. editor. 2010. *Good Forestry in the Granite State: Recommended Voluntary Forest Management Practices for New Hampshire (second edition)*. University of New Hampshire Cooperative Extension, Durham, N.H. www.goodforestry.org

Swenson, Steve, 2009. *My Healthy Woods: A Handbook for Family Woodland Owners managing woods in Southwest Wisconsin.* A publication of the Aldo Leopold Foundation and the American Forest Foundation, Baraboo, WI. https://www.aldoleopold.org/Programs/myhealthywoods.shtml

Resources for Landowners

- Forest Stewardship Program: http://www.fs.fed.us/spf/coop/programs/loa/fsp.shtml
- List of State Foresters and their contact information: http://www.stateforesters.org/about_nasf
- American Tree Farm System: www.treefarmsystem.org
- Your state's American Tree Farm System contact: www.treefarmsystem.org/stateleaders
- NRCS: http://www.nrcs.usda.gov/
- 2008 NRCS Farm Bill Conservation Programs: http://www.nrcs.usda.gov/programs/farmbill/2008/index.html
- NRCS Conservation Practice Standards: http://www.nrcs.usda.gov/technical/standards/nhcp.html Provides information on all the different Conservation Practices and their codes.
- NRCS Field Office Technical Guide: http://www.nrcs.usda.gov/technical/efotg/index.html Technical guides are the primary scientific references for NRCS. Technical guides used in each field office are localized so that they apply specifically to the geographic area for which they are prepared..
- Woodland Owners Brochure on 2008 Farm Bill: http://www.treefarmsystem.org/2008FarmBill/AFFFarmBillBrochure_web_lo.pdf
- Woodland Owner Resources: http://www.treefarmsystem.org/woodlandresources/ Provides information on fish, wildlife, biodiversity, special sites and Best

Management Practices for your state.

- To find information on your watershed, visit: http://cfpub.epa.gov/surf/locate/index.cfm
- **The attached appendices are additional resources for landowners**.

Appendix 1: Glossary

Acceptable Growing Stock: Saleable trees that are of good form, species and quality and would be satisfactory as crop trees. .

Adaptive management: A dynamic approach to forest management in which the effects of treatments and decisions are continually monitored and used to modify management on a continuing basis to ensure that objectives are being met (Helms et al, The Dictionary of Forestry, Society of American Foresters, 1998)

Adverse regulatory actions: Written warning, citations or fines issued by law enforcement or regulatory bodies.

Aerial Photo: Photo taken from an elevated position like on an aircraft.

Afforestation: the establishment of a forest or a stand in an area where the preceding vegetation or land was not forest. (Helms et al, The Dictionary of Forestry, Society of American Foresters, 1998)

Age Class: A distinct aggregation of tree that originated at the same time, from a single natural event or regeneration activity or a grouping of trees (e.g. ten year age class) as used in inventory or management. (Helms et al, The Dictionary of Forestry, Society of American Foresters, 1998)

Aspect: The direction that a slope faces (north, south, etc.)

Basal Area: The cross-sectional area of a tree, in square feet, at 4.5 feet from the ground (at breast height). When the basal area of all the trees in a stand are added together, the result is expressed as square feet of basal area per acre, which is a measure of a stand's density.

Biomass: A renewable energy source of biological materials derived from living, or recently living organisms, such as wood, waste, and crop residues.

Biodiversity: The variety and abundance of life forms, processes, functions and structures of plants, animals and other living organisms, including the relative complexity of species, communities, gene pools and ecosystems at spatial scales that range from local through regional to global (Helms et al, The Dictionary of Forestry, Society of American Foresters, 1998).

Board Feet: A unit for measuring wood volumes. It is commonly used to express the amount of wood in a tree, sawlog, or individual piece of lumber. A piece of wood 1 foot long, 1 foot wide, and 1 inch thick (144 cubic inches).

Broadcast: to spread or apply seed, fertilizer, or pesticides more or less evenly over an entire area. (Helms et al, The Dictionary of Forestry, Society of American Foresters, 1998)

Canopy: The more or less continuous cover of branches and foliage formed collectively by the tops, or crowns of adjacent trees.

Carbon sequestration: the incorporation of carbon dioxide into permanent plant tissue. (Helms et al, The Dictionary of Forestry, Society of American Foresters, 1998)

Chip: a small piece of wood used to make pulp or wood composite or fuel. (Helms et al, The Dictionary of Forestry, Society of American Foresters, 1998)

Clearcut: 1. a stand in which essentially all trees have been removed in one operation – *note* depending on management objectives, a clearcut may or may not have reserve trees left to attain goals other than regeneration. 2. a regeneration or harvest method that

removes essentially all trees in a stand. (Helms et al, The Dictionary of Forestry, Society of American Foresters, 1998)
Contour Map: A map where each line represents a change in elevation.
Crop Tree: A tree identified to be grown to maturity for the final harvest cut, usually on the basis of its location with respect to other trees and its timber quality.
Cull: A tree, log, lumber or seedling that is rejected because it does not meet certain specifications for usability or grade. (Helms et al, The Dictionary of Forestry, Society of American Foresters, 1998)
Culvert: a device used to channel water. It may be used to allow water to pass underneath a road, railway, or embankment for example. Culverts can be made of many different materials; steel, polyvinyl chloride (PVC) and concrete are the most common. Formerly, construction of stone culverts was common.
Den Tree: A living tree with a cavity large enough to shelter wildlife.
Desired species: Those species of flora and fauna designated in the management plan and not known to cause negative impacts on the local environment. **Diameter Breast Height (DBH):** The diameter of a tree at 4.5 feet above the ground. **Endangered Species:** Any species of plant or animal defined through the Endangered Species Act of 1976 as being in danger of extinction throughout all or a significant portion of its range, and published in the Federal Register. (Helms et al, The Dictionary of Forestry, Society of American Foresters, 1998)
Even-Aged Management: Forest management with periodic harvest of all trees on part of the forest at one time or over a short period to produce stands containing trees all the same or nearly the same age or size.
Forest owner: Landowner or designated representative such as, but not limited to, professional resource manager, family member, trustee, etc.
Forest product: [Forest Produce] Any raw material yielded by a forest. Generally defined in Forest Acts or Ordinances, and subdivided conventionally into major forest products, i.e. timber and fuelwood, and minor forest products, i.e. all other products including leaves, fruit, grass, fungi, resins, gums, animal parts, water, soil, gravel, stone and other minerals on forest land (F. C. Ford –Robertson, Terminology of Forest Science Technology, Practice, and Products, Society of American Foresters, 1971.
Forest Stand Improvement: See timber stand improvement.
Forest type: A category of forest usually defined by it trees, particularly its dominant tree species as based on percentage cover of trees, e.g. spruce fir, longleaf-slash pine, Douglas fir.
Forest vitality: The health and sustainability of a forest.
Fuel management: the act or practice of controlling flammability and reducing resistance to control of wildland fuels through mechanical, chemical, biological, or manual means, or by fire in support of land management objectives. (Helms et al, The Dictionary of Forestry, Society of American Foresters, 1998)
Group Select: trees are removed and new age classes are established in small groups – *note* – 1. the width of groups is commonly approximately twice the height of the mature trees with smaller openings providing microenvironments suitable for tolerant regeneration and larger openings providing conditions suitable for more intolerant regeneration – *note* 2. the management unit or stand in which regeneration, growth, and

yield are regulated consists of an aggregation of groups. (Helms et al, The Dictionary of Forestry, Society of American Foresters, 1998)

Girdling: Completely encircling the trunk of a tree with a cut that severs the bark and cambium of the tree. Herbicide is sometimes injected into the cut to ensure death of the tree.

GPS (Global Positioning System) Coordinates: a commonly hand held, satellite based navigational device that records x, y, z coordinators and other data allowing users to determine their location on the surface of the earth. (Helms et al, The Dictionary of Forestry, Society of American Foresters, 1998)

Hack-n-squirt: A tree treatment method where an axe or hatchet is used to make "hacks" (injections) into the tree's cambium layer. A plastic "squirt" bottle is used to spray a specific amount of herbicide into the cuts placed around the tree.

Harvesting: the felling skidding, on-site processing, and loading of trees or logs onto trucks. (Helms et al, The Dictionary of Forestry, Society of American Foresters, 1998)

High conservation value forests (HCVF): Forests of outstanding and critical importance due to their environmental, social, biodiversity or landscape values. Due to the small scale and low-intensity of family forest operations, informal assessment of HCVF occurrence through consultation with experts or review of available and accessible information is appropriate.

High-grading: Cutting only the high-value trees from a forest property, leaving a stand of poor quality with decreased future timber productivity.

Assistance Programs: State and federal agencies will offer landowners the opportunity to apply for assistance programs that will provide support and financial assistance to implement forestry and agroforestry related practices through conservation programs. Assistance can also provided for multi-year and permanent easements to conserve forest land to meet program goals. For more information on the federal assistance programs, see Appendix 4.

Integrated Pest Management: The maintenance of destructive agents, including insects, at tolerable levels by planned use of a variety of preventative, suppressive, or regulatory tactics and strategies that are ecologically and economically efficient and socially acceptable (Helms et al, The Dictionary of Forestry, Society of American Foresters, 1998). A pest control strategy that uses a variety of complementary strategies including: mechanical devices, physical devices, genetic, biological or cultural management and chemical management (US EPA).

Intermediate Cut: Removing immature trees from the forest sometime between establishment and stand harvest to improve the quality of the remaining forest stand. Contrast this technique with a harvest cut.

Invasive species: Non-native species whose introduction does or is likely to cause economic or environmental harm or harm to human health (Executive Order 13112 (Feb. 3, 1999). **Invasive Species**: is a species that is 1) non-native (or alien) to the ecosystem under consideration and 2) whose introduction causes or is likely to cause economic or environmental harm or harm to human health. Invasive species can be plants, animals, and other organisms (e.g., insects, microbes, etc.). Human actions are the primary means of invasive species introductions. (Invasive Species Definition Clarification and Guidance White Paper Submitted by the Definitions Subcommittee of the Invasive Species Advisory Committee (ISAC), Approved by ISAC Apr 27, 2006.)

Landings: a cleared are in the forest to which logs are yarded or skidded for loading onto trucks for transport. (Helms et al, The Dictionary of Forestry, Society of American Foresters, 1998)
Landowner: Entity that holds title to the property for which the management plan is being written.
Large woody debris: any piece(s) of dead woody material, e.g. dead boles, limbs and large root masses, on the ground in the forest stands or in streams. (Helms et al, The Dictionary of Forestry, Society of American Foresters, 1998)
Log Rules: A table showing estimated amount of lumber that can be sawed from logs of given lengths and diameters. Two log rules are commonly used in Missouri:

> ***Doyle Rule*** is a simple formula rule used in the eastern United States. It underestimates the amount of lumber in small logs and overestimates large logs.
> ***International 1/4-inch Rule*** is a formula rule allowing 1/2 –inch taper for each 4 feet of length and 1/16-inch shrinkage for each one-inch board. This measure approximates the actual sawmill lumber tally.

Management plan: Documents that guide actions and that change in response to feedback and changed conditions, goals, objectives and policies. Management plans may incorporate several documents including, but not limited to, harvest plans, activity implementation schedules, permits, research, etc. For the purposes of the American Tree Farm System® eligible management plans, plan amendments may include letters, notes, and other forms of informal updates in addition to formal plan revisions.
Mast: Nuts of trees, such as oak, walnut, and hickory, that serve as food for many species of wildlife.
Mature Tree: A tree that has reached the desired size or age for its intended use.
MBF: Abbreviation for 1,000 board feet.
Noxious plant (weed): a plant specified by law as being especially undesirable, troublesome and difficult to control (Helms et al, The Dictionary of Forestry, Society of American Foresters, 1998)
Nutrient cycle: the exchange or transformation of elements among the living and nonliving components of the ecosystem. (Helms et al, The Dictionary of Forestry, Society of American Foresters, 1998)
Overstocked: A forest stand condition where too many trees are present for optimum tree growth.
Overstory: That portion of the trees in a stand forming the upper crown cover.
Overstory removal: the cutting of trees constituting an upper canopy layer to release trees or other vegetation in an understory. (Helms et al, The Dictionary of Forestry, Society of American Foresters, 1998)
Pesticide: Pesticides include chemicals commonly known as herbicides and insecticides.
Pole Timber: Trees from 6 inches to 12 inches in diameter at breast height.
Prescribed Burn/Fire: To deliberately burn natural fuels under specific weather conditions, which allows the fire to be confined to a predetermined area and produces the fire intensity to meet predetermined objectives. A fire ignited by management to meet specific objectives (Helms et al, The Dictionary of Forestry, Society of American Foresters, 1998).
Pruning: Removing live or dead branches from standing trees to improve wood quality.

Pulpwood: Wood cut primarily for manufacture of paper, fiberboard, or other wood fiber products.
Qualified contractor: Forest contractors who have completed certification, licensing, recommended training and education programs offered in their respective states.
Qualified natural resource professional: A person who by training and experience can make forest management recommendations. Examples include foresters, soil scientists, hydrologists, forest engineers, forest ecologists, fishery and wildlife biologists or technically trained specialists in such fields.
Qualified Tree Farm inspector: A natural resource professional who has completed ATFS required training for certifying forested properties and is eligible to inspect properties on behalf of ATFS. ATFS requires all trained inspectors meet approved eligibility requirements.
Rangeland Land on which the historic climax plant community is predominantly grasses, grasslike plants, forbs, or shrubs. Includes lands revegetated naturally or artificially when routine management of that vegetation is accomplished mainly through manipulation of grazing. Rangelands include natural grasslands, savannas, shrublands, most deserts, tundra, alpine communities, coastal marshes, and wet meadows
Rare species: A plant or animal or community that is vulnerable to extinction or elimination.
Reforestation: the reestablishment of forest cover either naturally (by natural seeding, coppice, or root suckers) or artificially (by direct seeding or planting) – *note* reforestation usually maintains the same forest type and is done promptly after the previous stand or forest was removed. (Helms et al, The Dictionary of Forestry, Society of American Foresters, 1998)
Regeneration: The number of seedlings or saplings existing in a stand. The process by which a forest is renewed by direct seeding, planting, or naturally by self-sown seeds and sprouts.
Regeneration Cut: Any removal of trees intended to assist regeneration already present or to make regeneration possible.
Release: To free trees from competition by cutting, removing, or killing nearby vegetation.
Riparian: related to, living or located in conjunction with a wetland, on the bank of a river or stream but also at the edge of a lake or tidewater – *note* the riparian community significantly influences and is significantly influenced by, the neighboring body of water. (Helms et al, The
Dictionary of Forestry, Society of American Foresters, 1998)
Riparian Zone: The area adjacent to or on the bank of rivers and streams.
Sapling: Trees from 2 inches to 6 inches in diameter at breast height.
Sawtimber: Trees at least 12 inches in diameter at breast height from which a sawed product can be produced.
Scale: The extent of forest operations on the landscape/certified property.
Seedling: a young plant.
Seed-tree Harvest: A harvest and regeneration method where nearly all trees are removed at one time except for scattered trees to provide seed for a new forest.
Selection Harvest: Harvesting trees to regenerate and maintain a multi-aged structure by removing some trees in all size classes either singly or in small groups.

Shelterwood Harvest: A harvesting and regeneration method that entails a series of partial cuttings over a period of years in the mature stand. Early cuttings improve the vigor and seed production of the remaining trees. The trees that are retained produce seed and also shelter the young seedlings. Subsequent cuttings harvest shelterwood trees and allow the regeneration to develop as an even-aged stand.
Single Tree Selection: Individual trees of all size classes are removed more or less uniformly throughout the stand, to promote growth of remaining trees and to provide space for regeneration. (Helms et al, The Dictionary of Forestry, Society of American Foresters, 1998)
Site Index: An expression of forest site quality based on the height of a free-growing dominant or co-dominant tree at age 50 (or age 100 in the western United States).
Skid: 1. to haul a log from the stump to a collection point (landing) by a skidder. 2. a load pulled by a skidder. (Helms et al, The Dictionary of Forestry, Society of American Foresters, 1998)
Skid Trail: A road or trail over which equipment or horses drag logs from the stump to a landing.
Skidding: Pulling logs from where they are cut to a landing or mill.
Skyline: harvesting a cableway stretched tautly between two points, such as yarding tower and stump anchor, and used as a track for a block or skyline carriage. (Helms et al, The Dictionary of Forestry, Society of American Foresters, 1998)
Slash: the residue, e.g., treetops and branches, left on the ground after logging or accumulating as a result of storm, fire, girdling, or delimbing. (Helms et al, The Dictionary of Forestry, Society of American Foresters, 1998)
Snag: a standing, generally un-merchantable dead tree from which the leaves and most of the branches have fallen – *note* for wildlife habitat purposes, a snag is sometimes regarded as being at least 10 inches in diameter at breast height and at least 6 feet tall; a hard snag is composed primarily of sound wood, generally merchantable, and a soft snag is composed primarily of wood in advanced stages of decay and deterioration. (Helms et al, The Dictionary of Forestry, Society of American Foresters, 1998)
Soil Compaction: The process by which the soil grains are rearranged, resulting in a decrease in void space and increasing bulk density. Can occur from applied loads, vibration or pressure from harvesting or site preparation equipment. Compaction can cause decreased tree growth, increased water runoff and soil erosion. (Helms et al, The Dictionary of Forestry, Society of American Foresters, 1998)
Soil map: A map showing the distribution of soils or other soil map units in relation to prominent physical and cultural features of the earth's surface. (Helms et al, The Dictionary of Forestry, Society of American Foresters, 1998)
Special sites: Those areas offering unique historical, archeological, cultural, geological, biological or ecological value. Special Sites include:

A. Historical, archaeological, cultural and ceremonial sites or features of importance to the forest owner;
B. Sites of importance to wildlife such as rookeries, refuges, fish spawning grounds, vernal ponds and shelters of hibernating animals;
C. Unique ecological communities like relic old-growth, springs, glades, savannas, fens and bogs; and
D. Geological features such as terminal moraines, cliffs and caves.

Stand: A group of trees with similar characteristics, such as species, age, or condition that can be distinguished from adjacent groups. A stand is usually treated as a single unit in a management plan.
Stand Density: A measure of the stocking of a stand of trees based on the number of trees per area and diameter at breast height of the tree of average basal area.
Stand Management Recommendations: The recommended management activities that should be done in that stand, based on landowner goals and objectives.
Stand Structure: The horizontal and vertical distribution of plants in the forest, including the height, diameter, crown layers, and stems of trees, shrubs, understory plants, snags and down woody debris. (Helms et al, The Dictionary of Forestry, Society of American Foresters, 1998)
State forestry best management practice(s) (BMPs): Forestry BMPs are generally accepted forest management guidelines that have been developed by state forestry agencies with broad public stakeholder input.
Stocking: An indication of the number of trees in a stand in relation to the desirable number of trees for best growth and management.
Sustainability: The capacity of forests, ranging from stands to ecoregions, to maintain their health, productivity, diversity and overall integrity, in the long run, in the context of human activity (Helms et al, The Dictionary of Forestry, Society of American Foresters, 1998).
Sustainable forest management: The practice of meeting the forest resource needs and values of the present without compromising the similar capability of future generations (Helms et al, The Dictionary of Forestry, Society of American Foresters, 1998). *Note* – AFF's Standards of Sustainability reflect criteria of sustainability based on the Montreal Process, 1993, and the Pan-European Operational- Level Guidelines (PEOLGs).
Thinning: a cultural treatment made to reduce stand density of trees primarily to improve growth, enhance forest health, or recover potential mortality. Types of thinning include: chemical, crown, free, low, mechanical, selection. (Helms et al, The Dictionary of Forestry, Society of American Foresters, 1998)
Threatened Species: A plant or animal species that is likely to become endangered throughout all or a significant portion of its range within the foreseeable future. A plant or animal identified and defined in the Federal Register in accordance with the Endangered Species Act of 1976. (Helms et al, The Dictionary of Forestry, Society of American Foresters, 1998)
Timber Stand Improvement (TSI): A thinning made in immature stands to improve the composition, structure, condition, health, and growth of the remaining trees.
Undesirable Growing Stock: Trees of low quality or less valuable species that should be removed in a thinning.
Understocked: Insufficiently stocked with trees.
Understory: all forest vegetation growing under an overstory. (Helms et al, The Dictionary of Forestry, Society of American Foresters, 1998)
Uneven-Aged Management or Stand: A stand of trees containing at least three age classes intermingled on the same area.
Visual quality measures: Modifications of forestry practices in consideration of public view, including timber sale layout, road and log landing locations, intersections with

public roadways, distributing logging residue, tree retention, timing of operations and other factors relevant to the scale and location of the project.

Volume: The amount of wood in a tree, stand of trees, or log according to some unit of measurement, such as board foot, cubic foot, etc.

Watershed: the area of land where all of the water that is under it or drains off of it goes into the same place. For example the Mississippi River watershed includes all the land that drains into the Mississippi River. This watershed is the fourth largest in the world and includes water from 31 states.

Wetland: A transitional area between water and land that is inundated for periods long enough to produce wet soil and support plants adapted to that environment. (Helms et al, The Dictionary of Forestry, Society of American Foresters, 1998)

Wolf Tree: A very large, overmature tree that is or was open grown. These trees tend to have large full crowns and numerous branches.

Woody Debris: Any piece(s) of dead woody material (e.g. dead tree trunk, limbs, large root ball) on the ground in the forest or in streams. (Helms et al, The Dictionary of Forestry, Society of American Foresters, 1998)

Appendix 2 Tax and Business Management

Woodland owners have to deal with property taxes, income tax for timber harvests and other revenue generating activities, and estate taxes when properties are passed on to future generations. This section was developed to help landowners consider tax implications when they are planning for the management of their property.

Some states have special tax programs that can be used by woodland owners to help minimize their tax liability.

Landowners could consider addressing the following in their plan:

1. Property tax: The forest management plan should document the current tax status of the property. Their state might have specific property tax programs that you may be eligible to participate in. Please be aware of the program rules and regulations.
2. Income tax: Include a statement that timber harvest and other revenue generating activities generally produce a federal and state income tax liability. Tax credits may be available for some management activities.
3. Federal and State Assistance Programs: There are tax implications for participating, so be aware of those implications.
4. Estate tax: Good estate planning can help to lessen tax liability when passing land to heirs. Landowners should seek good planning and tax advice.
5. Record keeping: Good record keeping can help landowners manage their assets, increase their revenues, and minimize their tax liability.
6. Land Use: Document the land use classifications of the property from the county land use plan.

It is recommended that landowners work with a professional tax advisor who can assist in developing this section.

Appendix 3 Timber Sale Contract Checklist for Private Landowners and Loggers

This is a checklist of issues private landowners and logging contractors may want to consider when preparing a logging contract. Each of the items should be addressed in a contract to allow for a minimum probability of a dispute. **Issues can be as detailed as both parties find acceptable and economically feasible.**

___ **Property location and legal description are clearly defined**
Include Tree Farm certification number if applicable.

___ **Property boundaries and harvest units are clearly and accurately marked**
Logging trespass can result in a minimum cost of 3x value of trees.

___ **Property ownership is documented and type of ownership is specified**
Ownership may be individual, partnerships, corporations, etc.

___ **Insurance is documented**
Any contractor working for a landowner must have Commercial General Liability $1-million, Loggers Broad Form Property Damage Liability $1-million, Workers' Compensation $100,000, or an Independent Contractor Exemption, and Automobile Liability $1-million. If they do not have these, landowners will be held liable for any damage or personnel injury that may occur. Insurance can be written to include owner and consulting forester.

___ **Access to the property/harvest unit are specified and documented**
To avoid trespass or the disturbance of sensitive areas, access routes should be clearly delineated. If access across other ownerships is required, written and notarized documentation of access permission should be obtained.

___ **Type of harvest is <u>clearly</u> specified for each stand**
Typically, trees are marked both at eye level and on the stump, or harvest tree characteristics are defined by species, diameter, crown characteristic, or residual tree spacing.

___ **Timing of harvest is specified**
Identify the dates when harvesting and/or other treatments need to be conducted or completed.

___ **Residual property specifications should be defined**
Conditions after the timber sale should be described in as much detail as landowner(s) and contractor(s) can foresee. Issues to address can include the completeness of residual logging debris disposal, burn pile rehabilitation, grass seeding, skid trail rehabilitation, weed control, tree planting, noncommercial thinning, access roads (must the logger repair or improve roads to a particular standard, or obliterate them and remove culverts?).

___ **Best Management Practices (BMPs) responsibilities are designated**
Compliance with state BMPs is ultimately a landowner's responsibility, but should be specified in the contract.

___ **Performance bond or contract penalty**
Create provisions for compensation to the landowner(s) for harvesting activities that deviate from specifications. Having the contractor post a bond is the best protection for landowners, but imposes a risk on the contractor.

___ **Method of payment is clearly defined**
The payment method could be:

- **Lump sum,** or one payment for the entire estimated log volume. This method may over- or under-estimate actual value, but is simple and can be secured in advance of the actual harvesting.
- **Payment by unit,** where payment for logs occurs based upon log scaling at the mill. Either the contractor pays an agreed-upon percentage to the landowner(s), or the mill pays agreed-upon percentages separately to the contractor and landowner. A pitfall of this method is that when dead and dying trees are being salvaged, a delayed harvesting job can result in losses of standing tree value.

___ **Method of scaling is defined**
Either direct scaling or weight scaling are used. Direct scaling tends to be more accurate, though each mill may use different defect deductions. Weight scaling works well for large volume sales where trees are of similar species and diameters. In general, logs should be trucked to the mill quickly following harvest or they lose significant water weight, or, for the most accurate conversions, a continuous representative sample of logs should be check-scaled and weighed.

___ **Notification**
Describe if and when the contractor or landowner needs to notify the other party about activities starting or ending. Specify the type of communication desired – written, e-mail, or telephone. This is to avoid issues with blocked access, noise, special sites, etc.

___ **Expiration date**
Any contract should have a defined end date after which the contract is no longer valid.

___ **Notarization**
Any legally binding document should have signatures notarized.

* This is a suggested checklist compiled from a variety of sources including the Montana Logging Association. Any contract can be challenged. It is recommended that contracts be reviewed by your attorney. You may also want to include an attorney's fees recovery statement in the document, to allow for recovery of legal fees should a dispute require legal action.