

## Appendix J National Forest Stewardship Resource Elements

### Forest Stewardship Program Resource Elements

Version 7/15/2013

*This document was produced using information provided by the North Carolina Forest Service Stewardship Program in a similar guidance document. For further information about the North Carolina Forest Stewardship Program visit: <http://ncforestservice.gov/index.htm>*

The following 13 natural resource elements are addressed in all Forest Stewardship Management Plans when they are present and applicable to the landowner and the management of the property:

This document provides further guidance and information on addressing the resource elements that are specifically listed by the *Forest Stewardship Program National Standards and Guidelines*. “The plan preparer will consider, describe and evaluate resource elements present and their importance to the ownership”. The extent to which management plans addresses these elements will depend upon their prevalence on the property and their importance with respect to the landowners’ primary objectives. The intent of this quoted guidance is that all approved Forest Stewardship plans be multi-resource in scope and adequately comprehensive with respect to forest ecosystem management. For more locally specific guidance and resources, plan preparers are encouraged to contact their state Forest Stewardship Program coordinator. Additional information and resources are available online from the Forest Service at <http://www.fs.fed.us/spf/>, National Association of State Foresters (NASF) at <http://stateforesters.org>, Natural Resources Conservation Service (NRCS) at <http://www.nrcs.usda.gov/wps/portal/nrcs/site/national/home/>, and National Association of Conservation Districts (NACD) at <http://www.nacdnet.org/>.

Management of each of these resource elements should also be considered in the context of the broader landscape as described by the “Landscape Stewardship Approach”. This approach has strong potential to increase our ability to sustain the benefits that both society and individuals derive from privately-owned forest land by engaging landowners and their communities in its management.

#### **Soil and Water**

All Forest Stewardship Plans should include a discussion of soil features in a manner compatible with the landowner’s objectives. Diverse conditions and cover type may necessitate several different descriptions for the property. Use practices that promote soil stability and water quality, and refer to your state’s Best Management Practices (BMPs) where applicable. Site visits can be set up through district conservationists at your local NRCS office. Information on local soils and accompanying data can be found on the Natural Resources Conservation (NRCS) website at <http://soils.usda.gov/>. Web Soil Survey provides soil data and information produced by the National Cooperative Soil Survey. For further information about Web Soil Survey, please visit <http://websoilsurvey.nrcs.usda.gov/app/>.

All forestry activities must protect water quality and comply with, among others, your state’s Best Management Practices (BMPs) for forestry activities. Conservation districts provide

assistance and help conserve water and other resources at the county level. For a listing of contact information for conservation districts, please visit

<http://www.nacdnet.org/about/districts/contact>.

Forest Stewardship Plans should draw attention to bodies of water located on the landowner's property that should be protected during all management activities. This may include the establishment of streamside management zones (SMZs), which are meant to prevent sedimentation and maintain healthy water temperatures for aquatic life. Proper pre-harvest planning prior to cutting timber can help ensure protection of both soil and water resources. Guidelines and recommendations on water quality specific to each region and state can be found on the following websites: Southern Group of State Foresters (SGSF) at

<http://www.southernforests.org/>, Northeastern Area Association of State Foresters (NAASF) at <http://www.northeasternforests.org/FRPC/>, and Council of Western State Foresters (CWSF) at

## **Biological Diversity**

Biodiversity is the variety of life (including diversity of species, genetic diversity, and diversity of ecosystems) and the processes that support it. Landowners can contribute to the conservation of biodiversity by providing diverse habitats. It is important to select management options that offer the greatest opportunities for promoting wildlife habitats and conserving biodiversity while fulfilling other land ownership objectives. Some of these options include, but are not limited to, the conservation of wildlife habitats and biodiversity by:

1. Managing stand-level habitat features.
2. Promoting aquatic and riparian areas.
3. Managing landscape features.
4. Conserving rare species and communities.
5. Protecting special features and sites.
6. Developing partnerships with natural resource agencies and conservation organizations.

For more information on managing for biological diversity, please refer to the following websites:

- <http://www.fs.fed.us/ecosystemservices/biodiversity.shtml>
- <http://www.southernforests.org/>
- <http://www.northeasternforests.org/FRPC/>
- <http://offices.sc.egov.usda.gov/locator/app?agency=nrcs>
- <http://www.forestfoundation.org/>
- <http://mylandplan.org/>

## **Aesthetic Quality**

Measures to enhance natural aesthetics include: converting agricultural fields to hardwood or pine forests, creating wooded buffer zones to protect riparian areas, and enhancing wildlife suitability. Visual impacts of various forest management practices can also increase or decrease aesthetics. There are numerous proven management techniques that may be employed to achieve the landowner's desired level of aesthetic quality. Many of these techniques are discussed on the following websites:

- <http://www.ncrs.fs.fed.us/pubs/viewpub.asp?key=4866>
- <http://www.fs.fed.us/spf/coop/programs/loa/fsp.shtml>
- <http://www.southernforests.org/>

- <http://www.northeasternforests.org/FRPC/>

## **Recreation**

Management practices to enhance recreation opportunities may be easy to implement depending on the type of forest-oriented recreational activities valued by the landowner. Examples of recreational management activities include: birding, hiking trails, hunting, fishing, and camping. For tips on recreational management, please visit the following websites:

- <http://mylandplan.org/content/recreation>
- <http://www.treefarmssystem.org/outdoorrecreation>
- <http://www.fs.fed.us/spf/coop/library/Forest%20Stewardship%20deskguide.pdf>
- <http://www.fs.fed.us/spf/coop/library/Forest.Stewardship.brochure.pdf>
- <http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/plantsanimals/>

## **Timber**

The Forest Stewardship Program assists landowners in sustainably managing their forest to be productive, vigorous, and healthy. Each Forest Stewardship Plan will likely contain detailed information on timber management activities associated with the landowner's property. The type of management required by forest stands is based on your management recommendations, landowner objectives, and the current condition of the stand. The Forest Stewardship Plan should identify and recommend sound silviculture practices designed to help establish a new forest stand (regeneration), manage the existing trees (intermediate stand management), or implement a harvest activity to reach desired future stand condition based on management objectives. For additional information, please refer to the following websites:

- <http://www.fs.fed.us/spf/coop/programs/loa/fsp.shtml>
- <http://www.southernforests.org/>
- <http://www.northeasternforests.org/FRPC/>
- <http://www.rngr.net/>
- <http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/contact/local/>
- <http://www.treefarmssystem.org/tree-farm-management-plan-templates>

## **Fish and Wildlife**

Fish and other aquatic species depend on healthy water quality and quantity. Following state Best Management Practices (BMPs), which include establishing streamside management zones (SMZs), can increase and create fish habitats and wildlife diversity. Landowners that have bodies of water present on their property should contact natural resource professionals to obtain technical assistance on improvement, aquatic maintenance, and fish habitat conservation. Please visit the following websites for information on enhancing the quality of fish and wildlife habitats:

- <http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/technical/cta/>
- <http://www.fws.gov/coastal/farmBill.html>
- <http://www.fws.gov/partners/aboutus.html>

Forestry activities and how they relate to water quality are discussed on the following websites:

- <http://www.nacdnet.org/about/districts/contact>

- <http://www.southernforests.org/>
- <http://www.northeasternforests.org/FRPC/>
- [http://ncforestservice.gov/water\\_quality/water\\_quality.htm](http://ncforestservice.gov/water_quality/water_quality.htm)

An explanation of streamside management zones (SMZs) is located on the following websites:

- <http://www.southernforests.org/>
- <http://www.northeasternforests.org/FRPC/>
- <http://www.fs.fed.us/spf/coop/programs/loa/fsp.shtml>

Wildlife action plans outline the steps that are needed to conserve wildlife and their habitat before they become rare and more costly to protect. Wildlife action plans focus on the conservation of natural lands that provide clean water and habitats for wildlife. The plans describe many ways that we can educate the public and private landowners on the benefits for animals and people. Understanding relationships is the first step in determining how the landowner's property can be managed to attract desirable wildlife species. For more information on wildlife action plans, please refer to the following websites:

- <http://www.fws.gov/>

### **Threatened and Endangered Species**

Federally protected species will affect Forest Stewardship Plans. The U.S. Fish and Wildlife Service Endangered Species Program provides information on state and federal threatened and endangered (T&E) plant and wildlife species. All Forest Stewardship Plans should address rare, threatened, and endangered species. For more information regarding the management of T&E species, please refer to the following websites:

- <http://www.fws.gov/endangered/>
- <http://www.natureserve.org/explorer/>
- <http://www.southernforests.org/>
- <http://www.northeasternforests.org/FRPC/>

### **Forest Health**

A healthy forest is a forest that possesses the ability to sustain the unique species composition and processes that exist within it. Active management of the forest helps to maintain and improve its productive capacity, taking into account all the factors that influence the resource elements addressed in the Forest Stewardship Plan. Silviculture harvest practices and the use of prescribed fire as a tool can reduce risk from wildfire, pests, and invasive species, and ensure long-term forest health and vigor. Forest health protection issues are often directly related to the active management of insects and diseases, invasive plants, and wildfire. Yearly inspections for signs of insects, diseases, or invasive plant infestations should be completed by the landowner.

More forest health and pesticide management information can be found on the following websites:

- <http://www.fs.fed.us/foresthealth/>
- <http://stateforesters.org/current-issues-and-policy/other-priorities/forest-health-and-sustainability>
- <http://www.southernforests.org/>
- <http://www.northeasternforests.org/FRPC/>

- <http://www.forestpests.org>
- <http://www.treefarmssystem.org/certification-american-tree-farm-standards>
- <http://www.ipmcenters.org/>
- <http://npic.orst.edu/mlr.html>
- <http://www.treefarmssystem.org/pesticides5>
- [http://www.fs.fed.us/spf/coop/library/EPA\\_Funds.pdf](http://www.fs.fed.us/spf/coop/library/EPA_Funds.pdf)

### **Archeological, Cultural, and Historic Sites**

Cultural resources refer to landscapes, structures, archeological artifacts, and vegetation that represent a culture or society of historic value. Federal and state laws protect archeological, cultural, and historic sites from disturbances, destruction, or removal. Landowners should be made aware of laws pertaining to archeological, cultural, and historic sites in their state. As the plan writer, make sure you are aware of any such sites as you begin to develop the Forest Stewardship Plan. If you have specific questions about such sites, contact the historic preservation office, office of archeology, or agency in your state responsible for distributing cultural resource information. It is critical to understand where such sites may be located prior to ground-disturbing forest management activities. Natural Resources Conservation Service (NRCS) provides financial and technical assistance, including guidance related to cultural resources and implementation of conservation practices. Information concerning archeological, cultural and historic sites can be found on the following websites:

- <http://www.treefarmssystem.org/your-special-sites-resource-guide>
- <http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/technical/nra/cultural/>
- <http://www.southernforests.org/>
- <http://www.northeasternforests.org/FRPC/>
- <http://www.fs.fed.us/spf/coop/programs/loa/fsp.shtml>

### **Wetlands**

Wetlands include areas where water covers the soil or is present either at or near the surface of the soil all year or for varying periods of time during the year (including during the growing season). Wetlands generally include swamps, marshes, bogs, and fens. Wetlands are also highly diverse and productive ecosystems with emphasis on supporting timber production, water quality protection, wildlife habitat, and more. The landowner is responsible for understanding laws and regulations related to forestry practices before engaging in wetland management activities on their land. State Forest Service and Natural Resource Conservation Service (NRCS) local offices can also provide information on forestry practices permitted in wetlands. More information on wetlands, including forestry activities that may be carried out in them, can be found on the following websites:

- <http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/water/wetlands/>
- <http://water.epa.gov/type/wetlands/>
- <http://www.fws.gov/wetlands/index.html>
- <http://www.southernforests.org/>
- <http://www.northeasternforests.org/FRPC/>
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## **Fire**

Prescribed fire, also known as “controlled burn,” refers to the controlled application of fire by a team of fire experts under specified weather conditions that help restore health to fire-adapted environments to obtain specific management objectives. Prescribed burning is a critical management tool that enhances and benefits forests, grasslands, and wildlife habitats. Reducing excessive amounts of hazardous fuel build up prescribed burning helps reduce the catastrophic damage of wildfire on our lands and surrounding communities. Prescribed fire is one of the most effective tools we have in preventing the outbreak and spread of wildfires. Prescribed fire is especially important in States where there is a large amount of land lying in the Wildland Urban Interface (WUI). State forestry agencies provide fire management services to help prevent wildfire. For additional information on prescribed fire, wildfire prevention, and protecting your community and home in the WUI, please visit the following websites:

- <http://www.forestationplans.org/about-action-plans/forest-trends/wildfire-fuel-loads-and-urbanization>
- <http://www.fs.fed.us/spf/coop/activities/>
- <http://www.southernforests.org/>
- <http://www.northeasternforests.org/FRPC/>
- <http://www.forestsandrangelands.gov/>

A useful guide for prescribed burning in the Southeastern United States can be found at <http://www.bugwood.org/pfire/>.

## **Carbon Cycle**

All forest plants and soils “store” carbon, so management influences the natural cycles of that storage in both living and dead plant material. The removal of carbon from the atmosphere is the process called carbon sequestration. Carbon sequestration is the process by which atmospheric carbon dioxide is consumed by trees, grasses, and other plants through photosynthesis and stored as carbon in biomass (trunks, branches, foliage, and roots) and soils. Sustainable forestry practices can increase the ability of forests to sequester atmospheric carbon while enhancing other ecosystem services, such as improved soil and water quality. Planting new trees and improving forest health through thinning and prescribed burning are some of the ways to increase forest carbon in the long run. Harvesting and regenerating forests can also result in net carbon sequestration in wood products and new forest growth. More information on this topic can be found on the following websites:

- <http://www.fs.fed.us/ecosystemservices/carbon.shtml>
- <http://www.forestationplans.org/about-action-plans/forest-trends/climate-change-carbon-sequestration-and-biomass-energy>
- <http://www.southernforests.org/services/carbon-sequestration-faqs>
- <http://www.northeasternforests.org/FRPC/>

## **Range/Agroforestry/Silvopasture**

**Rangelands** are described as lands on which the indigenous vegetation is predominately grasses, grass-like plants, forbs, and possibly shrubs or dispersed trees. Existing plant communities can include both native and introduced plants. Disturbed lands that have been re-vegetated naturally or artificially are included. Rangelands provide a diverse and significant production of economic benefits and ecosystem goods and services. Livestock production and sustainable wildlife populations provide major, direct economic benefits; however, tourism,

recreational uses, minerals/energy production, renewable energy, and other natural resource uses can be quite significant.

**Agroforestry** intentionally combines agriculture and forestry to create integrated and sustainable land use systems. Agroforestry takes advantage of the interactive benefits from combining trees and shrubs with crops and/or livestock. In the United States, agroforestry is commonly divided into five main practices: Windbreaks, Alley Cropping, Silvopasture, Riparian Forest Buffers, and Forest Farming.

**Silvopasture** combines trees with forage and livestock production. The trees are managed for high-value saw logs while providing shade and shelter for livestock and forage, reducing stress and sometimes increasing forage production. To practice silvopasture effectively, landowners need specific information about tree species, spacing, stand density, site preparation, herbicides, pruning, and canopy management. They also need to know about the animals they want to graze, fencing and gates, and forage. Silvopasture is increasingly popular in the southeastern region of the United States as a way to supplement timber income on small pine plantations and some hardwood stands. However, there can be problems with combining the two management schemes if it is not done correctly. Before any new silvopasture system is established, landowners should thoroughly explore the associated economic and environmental considerations along with local land use, zoning, cost-share programs, and tax regulations.

More information on range, agroforestry, and silvopasture may be found on the following websites along with consultation from State Forest Service and Natural Resource Conservation Service offices:

- <http://www.fs.fed.us/spf/coop/programs/loa/agro.shtml>
- <http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/landuse/rangepasture/>
- <http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/landuse/forestry/>
- <http://www.northeasternforests.org/FRPC/>
- <http://www.southernforests.org/>
- <http://www.forestationplans.org/regional-state>
- <http://nac.unl.edu/silvopasture.htm>

You can find training courses on silvopasture on the following websites:

- <http://www.silvopasture.org/>
- <http://www.srs.fs.usda.gov/compass/issue15/03pastures.html>
- <http://www.srs.fs.usda.gov/compass/issue15/03top.html>
- [http://www.silvopasture.org/pdf\\_content/silvopasture\\_handbook.pdf](http://www.silvopasture.org/pdf_content/silvopasture_handbook.pdf)
- <http://www.srs.fs.usda.gov/compass/issue15/03what.html>