



United States Department of Agriculture
Forest Service

Francis Marion National Forest Draft Preliminary Need to Change

(Review Draft-Not for Publication)

Francis Marion National Forest, Berkeley and Charleston Counties, South Carolina



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Draft Preliminary Need to Change
Berkeley and Charleston Counties, South Carolina**

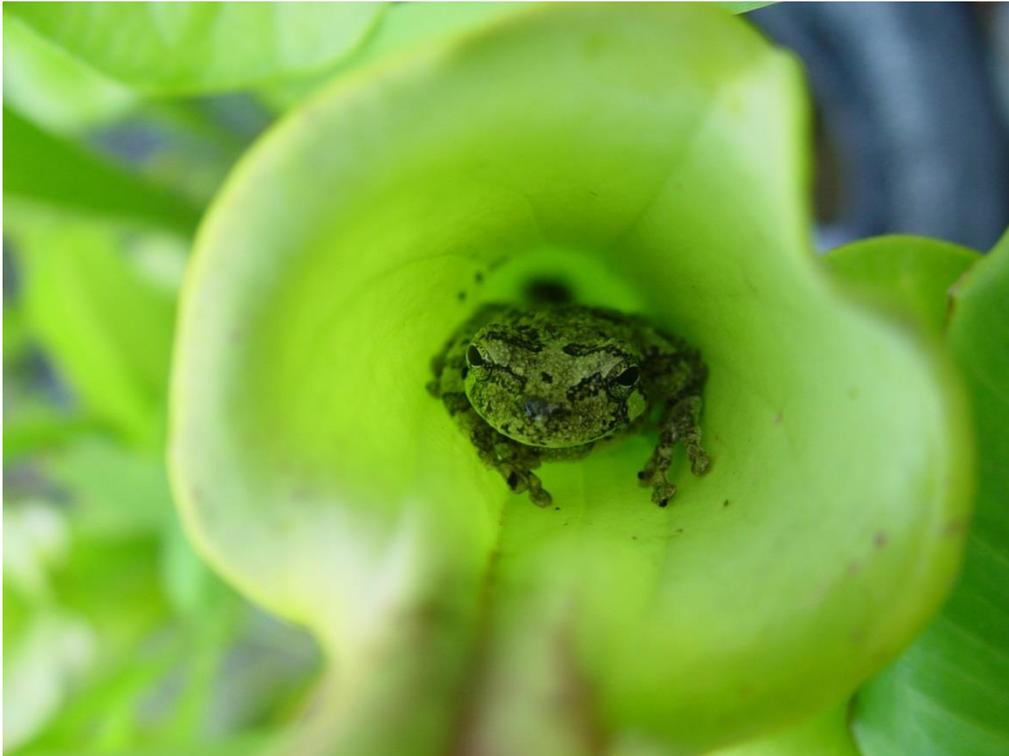
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A. Introduction

The National Forest Management Act of 1976 requires each national forest to develop a land and resource management plan (commonly referred to as a forest plan) and amend or revise the plan every 10 to 15 years. The Francis Marion National Forest Plan was approved in 1996 and forest personnel have begun revising this forest plan under guidance of the 2012 planning rule. Planning and revision for a national forest plan is an iterative process that includes three phases:

1. Assessment (36 CFR 219.6)
2. Developing, amending, or revising a forest plan (§§ 219.7 and 219.13)
3. Monitoring (§ 219.12).

The following diagram indicates the steps involved to complete Phases 1 and 2 and where we are in the plan revision process:



The draft assessment is now available for public review at <http://www.fs.usda.gov/scnfs> and focuses on changes that have occurred since 1996. Preparation of this draft assessment included evaluating existing information, forest plan amendments and annual monitoring reports. Additionally, outcomes from public meetings and other outreach efforts were considered. All these sources provide valuable information about changes that are needed in the existing forest plan. The need to revise the Francis Marion forest plan is driven by the changing conditions identified in the assessment including the changing public values associated with the Francis Marion National Forest.

This document – “The Preliminary Need to Change” - is the transition from the assessment to the forest plan development phase.

B. Preliminary Need to Change the Existing Forest Plan

1. What is the Preliminary Need to Change?

The preliminary need to change is a process for determining what plan direction should be changed or added to the existing Francis Marion National Forest Plan that has been in effect since 1996. Moreover, it identifies forest plan direction that “needs to change” and sets the framework for the development of plan components and other plan content, including the monitoring program. In this way, the framework builds on information gathered and developed during each phase of the planning process and supports adaptive management for informed and efficient planning. From this information, the Francis Marion National Forest has compiled the following preliminary revision items that will need to be addressed. These revision items will be used to guide the plan revision process.

Language in a Forest Plan

Forest plans provide guidance for projects and activities. There are requirements for what content must be in forest plans, and there are specific terms that are used. Forest plans are required to have: 1) plan components, and 2) other plan content, such as monitoring. Plan components are the core elements of plans, and all projects and activities must be consistent with plan components. Plan components are:

- Desired conditions;
- Objectives;
- Standards;
- Guidelines; and
- Suitability of lands and where these plan components apply.

Changing a plan component requires a formal process of revision or amending the plan. The language in this document considers the plan components in the existing 1996 Forest Plan and recommends changes to one or more of those components.

Other required plan content includes a monitoring program, which is not a plan component but an important part of a plan. It differs from a plan component in that projects and activities are not required to be consistent with them and changes can be made without a revision or amendment. It is important to have flexibility to change strategies or approaches in order to respond to new information. In this document, the terms management strategies or management approaches are used for monitoring types of plan contents.

The term “forest plan management direction” is also used throughout this document. It is a comprehensive term that means to consider both plan components and management strategies for the forest plan revision. Again, the forest plan management direction guides future projects and activities.

Process for Determining the Preliminary Need to Change

As the Francis Marion National Forest planning team develops information to revise the forest management plan, they intend to:

- Respond to public preferences about the future of the Francis Marion National Forest;
- Revise the 1996 existing plan to meet managers’ needs; and
- Comply with laws, regulations, and policies.

2. Emerging Themes

The following six themes emerged during a series of public meetings from October 2012 through September 2013 to start the forest plan revision process:

Theme 1	Maintain, improve, or restore the unique landscapes and features on the Francis Marion National Forest
Theme 2	Improve the quality of life and health for stakeholders
Theme 3	Respond to challenges
Theme 4	Share operational and planning resources among partners; keep ongoing collaborative efforts vibrant and develop new ones
Theme 5	Develop a monitoring strategy that provides information for rapid responses to changing conditions
Theme 6	Manage resources by integration and coordination

These themes are broad concepts relating to public preferences and forest management needs and will be used while revising the forest plan. Then, the planning team reviewed the information in their assessments and developed statements that describe specific needs for changing the existing forest plan. Next, a management emphasis statement for each theme was developed and the statements were linked with the theme it addressed, as described in Section 3. This process recommends a preliminary need to change the existing forest plan; however, it does not include every topic that will be addressed in the final forest plan.

Theme 1: Maintain, improve, or restore the unique landscapes and features on the Francis Marion National Forest. Having more than 260,000 acres of natural landscapes that are adjacent to the Atlantic Ocean and the major metropolitan area of Charleston, South Carolina, many of the natural features on the forest are unique in local and regional settings. These landscapes form important ecological and historical centerpieces for the surrounding area adjacent to the national forest. For example, the restored longleaf pine ecosystems on the national forest not only provide habitat for animals, such as the endangered red cockaded woodpecker but also provide outstanding scenery of open pine stands of trees with grasses and rare plants. Wetland drainage, stream and other hydrologic modifications have altered habitats and function. The restoration of aquatic ecosystems, watersheds, and riparian areas are

included under this theme. Watersheds are lands around rivers, lakes and streams, and riparian areas are lands along rivers, lakes and streams.

Theme 2: Improve the quality of life and health for stakeholders. Stakeholders have said that interacting with the forest environment improves their quality of life, health and well-being. Stakeholders also cited important aspects of improving their livelihoods to include: getting away from congestion and reducing stress; enjoying the benefits of silence; becoming healthier through exercising; learning about the natural environment; and sustaining income and other basic needs for living.

Theme 3: Respond to challenges. Stakeholders are keenly interested in how the forest plan would address the major challenges of today. Among those challenges are: how to maintain fire-adapted natural systems in the face of severe restrictions on the use of prescribed fire in areas adjacent to development; the invasion of non-native species, such as the degradation of ecosystems caused by feral hogs; and management challenges, such as reducing conflicts among recreation users, especially during a time of budget reductions. Additionally, responding to major disturbances such as sea level rise, hurricanes and storm evacuations, floods, and severe wildfire is important for the stability of local communities.

Theme 4: Share operational and planning resources among partners; keep ongoing collaborative efforts vibrant and develop new ones. Sharing resources with partners and integrating into other planning efforts were important to stakeholders. Especially during this time of expanding communication technology, stakeholders are interested in having a forest plan that considers stakeholder contributions that can “make a bigger pie” and make possible the idea of “doing more with less.”

Theme 5: Develop a monitoring strategy that provides information for rapid responses to changing conditions. The framework for the 2012 planning regulations includes a rapid response system for dealing with risks and uncertainties. A broad scale and local level monitoring strategy is needed to respond to changing conditions. Stakeholders are interested in how the careful crafting of a broad scale monitoring program can provide information for local level adjustments on the national forest. Moreover, stakeholders would like to know how other government agencies’ and non-governmental entities’ information can be used to support a robust adaptive management system.

Theme 6: Integrate and coordinate resource management. Stakeholders and national forest managers want an integrated approach to managing the various natural resources and multiple uses of the national forest. The basic premise for this theme is how the desired conditions for landscapes and compatible multiple uses are packaged in discrete management areas that would derive to most benefit for the American public while protecting sensitive areas.

3.0 Management Emphases and Need to Change Statements for each Theme

Emphases for Theme 1: Maintain intact landscapes, ecosystems, cultural/historic, and recreational features and restore those that have been degraded; provide for plant and animal diversity by “keeping common species common” and “keeping all the pieces.” This means that species commonly found on the national forest would not become threatened or endangered and those that are currently threatened or endangered would survive. Forest management direction would be developed to:

1a) Maintain, improve, or restore terrestrial, aquatic, wetland and riparian ecosystems, taking into account the interconnectedness of these systems throughout the landscape.

Longleaf pine objectives: The existing forest plan recognized the importance of the longleaf pine ecosystems, but underestimated the range of longleaf pine historically on the Francis Marion National Forest. Objectives need to be revised to increase the amount of maintenance or restoration of longleaf pine woodlands, flatwoods, and savannas for at least 50 percent or more of land with the ecological potential to support those ecosystems. Longleaf pine needs to be promoted over loblolly pine to increase sustainability of pine forests and to severe wind and hurricane damage. (Refer to Assessment, Section 2.1.1.6, Upland Longleaf Pine Woodlands and Wet Pine Savannas and Flatwoods, Key Ecosystem Characteristics.)

Prescribed fire regimes: Lack of frequent prescribed fire is a primary threat to longleaf pine ecosystem integrity, particularly herbaceous understory communities. Recent research shows an increase in plant species richness across a 1-to 3 year fire-regime intervals depending on openness of the canopy, and greatest herbaceous dominance at 1 to 2 year fire-return intervals. Revision of management areas, desired conditions, and/or objectives to include prescribed fire regimes at locations, frequencies, and seasons are needed. As an initial estimate, at least 50 percent of the national forest should be maintained or restored to native ecosystems in order to achieve ecological integrity. (Refer to Assessment, Section 2.1.1, Fire Regimes.)

Remapping Management Area 26: Rather than mapping wet pine savannas in Management Area 26, the majority of the wet pine and flatwoods ecosystem was placed in Management Area 28. Management Area 28, which consists of “flatwoods and loamy ridges,” has no single goal emphasis for longleaf pine. Management Area 26 needs to be revised to include the areas most suited for the maintenance or restoration of longleaf pine and associated ecosystems requiring frequent, 1-3 year fire regimes, including a growing season burn every third burn. Large blocks of continuous habitat among longleaf pine and associated fire-maintained ecosystems need to be promoted. When developing plan components, these are priorities for at risk species, such as Carolina bays, depression ponds, pocossins and non-riverine swamp ecotones when developing plan components. (Refer to Assessment, Section 2.1.1.6, Upland Longleaf Pine Woodlands and Wet Pine Savannas and Flatwoods, Key Ecosystem Characteristics.)

Open woodland and savanna conditions: Natural upland longleaf pine woodland ecosystem canopies are open and park-like, but many-aged, consisting of a network of forest patches at various ages. Gap phase regeneration produces a forest structure of even-aged patches within an uneven-aged mosaic. Where longleaf ecosystem restoration is desired, plan components need to be developed to address open woodland and savanna structural conditions (less than 60 percent canopy cover), two-aged regeneration, low shrub cover (less than 25 percent), and diverse native herbaceous understories (more than 65 percent), including a mix of forbs and grasses. Diversity within stands needs to be maintained improved and restored to be ecologically sustainable in the face of climate change. Additionally, monitoring questions and indicators need to be developed to address these conditions. (Refer to Assessment, Section 2.1.1.6, Upland Longleaf Pine Woodlands and Wet Pine Savannas and Flatwoods, Key Ecosystem Characteristics, Structural Diversity and Natural Range of Variation.)

Landscape level diversity: Landscapes on the national forest deviate moderately in regard to structure for longleaf pine, and that low levels of late, open conditions exist compared to historic reference conditions. Objectives need to be revised to maintain or restore landscape-level vegetation structural diversity at low levels of departure as compared to historical reference conditions. Vegetation structural diversity considers both the percentages in various successional stages, as well as in grasslands, savannas, and woodlands. Landscape structural diversity will increase resiliency of forests to both climate change and hurricane damage. (Refer to Assessment, Section 2.1.1.6, Upland Longleaf Pine Woodlands and Wet Pine Savannas and Flatwoods, Key Ecosystem Characteristics, Structural Diversity and Natural Range of Variation.)

Native ecosystems: Forest plan components need to be developed to maintain or restore the full diversity of native ecosystems, to include consideration of composition, structure, and function within the natural range of variation. For example, restore existing loblolly-pine dominated forests to a forest composition that is native to the site. To be more ecologically sustainable in the face of climate change, forest communities need to be diversified. (Refer to Assessment, Section 2.1.1 for each ecosystem type.)

Old Growth: Desired conditions need to be revised to include old growth forests and woodlands on at least 10% of their relative ecosystem abundance. Additionally, a variety of old growth community types/ecosystems, small (1-99 acres), medium (100-2499 acres) and large patch sizes (more than 2500 acres) should be included. (Refer to Assessment, Section 2.1.1 for each ecosystem type.)

Mast-producing hardwoods: The existing plan emphasized mast-producing hardwoods in Management Area 27 and contained a forestwide objective to have 48,000 acres. The current forest vegetation database shows that this is overestimated. The 48,000 acre objective for having forested acres typed in mast-producing hardwoods needs to be revised or eliminated in order to reflect the ecological potential and existing conditions. The Francis Marion National Forest need to continue to partner with SC Department of Natural

Resources, the National Wild Turkey Federation, and other wildlife groups to ensure that hard mast is provided in appropriate areas to support sustainable wildlife populations. (Refer to Assessment, Section 2.1.1, Dry and Dry Mesic Oak Forests and Mesic Slope Forests.)

Ecological potentials: Upland hardwood forests (dry-mesic oak and mesic slope forests) occurred on less than 1 percent of the forest historically based on ecological modeling conducted in 2013. The existing plan contains an objective to have 20 percent of forested acres typed and managed as potential hard mast-producing hardwoods in the next 10 years, with an emphasis on Management Area 27. Forest plan management direction needs to be revised for both Management Area 27 and Management Area 28 to consider existing conditions and the potential to restore those that have been degraded. (Refer to Assessment, Section 2.1.1, Dry and Dry Mesic Oak Forests and Mesic Slope Forests.)

Mesic slopes and hardwood forests: Mesic Slope forests have historically been limited in distribution to fire-sheltered areas such as slopes adjacent to river terraces, islands in swamps, or on upper terraces adjacent to streams within dissected landscapes, as fire is naturally infrequent in these ecosystems. Several examples of mesic slope forests are influenced by marl or calcareous geology that provide habitat for at risk species. Forest plan management direction needs to be developed to ensure the maintenance and restoration of calcareous mesic slope and floodplain hardwood forests which provide habitat for at risk species. (Refer to Assessment, Section 2.1.1, Dry and Dry Mesic Oak Forests and Mesic Slope Forests.)

Forested and non-forested wetlands: Forested and non-forested wetlands support a high density and diversity of flora and fauna, help protect the quality of water and habitat in adjacent streams, and serve as flood water storage areas; however, many of these wetlands include past drainage modifications that should be evaluated for current level of impact. Develop desired conditions for forested and non-forested wetlands which consider composition, structure, function, and connectivity of associated ecosystems, taking into account the surface and subsurface hydrology of these wetlands. Furthermore, bald cypress is likely to be influenced by increased salinity in the future, especially in tidal forests. (Refer to Assessment, Section 2.1.1, Forested Wetlands).

Aquatic systems: Aquatic ecological systems are stream networks and depression ponds and bays with aquatic habitat representing a range of areas with distinct geomorphological patterns tied together by similar environmental processes such as hydrologic, nutrient, and temperature regimes. They form a distinct unit or hydrography map. The existing plan has limited direction about sustaining aquatic species and communities and aquatic habitat. Forest plan management direction should be expanded to include aquatic species and habitat diversity; protection and enhancement; stream connectivity; aquatic organism passage; aquatic ecosystem habitat; large wood recruitment; and opportunities to address modifications to the hydrology of the national forest. (Refer to Assessment, Section 2.1.2.)

Riparian areas: Zones of lands and waters, called riparian areas were not recognized as part of aquatic ecosystems and were included in Management Area 27. Forest plan management direction is needed to address riparian area management that includes riparian area designation; soil, water and habitat maintenance or restoration, and the maintenance of conditions that support natural recruitment of large wood from mature forests into aquatic systems. The riparian areas on the FMNF are typically a result of erosion features developed into broad marine terraces. As a result of this development and well distributed, ample rainfall, riparian areas are typically wetlands with hydric soils. (Refer to Assessment, Section 2.1.2).

1b) Maintain or restore recreational settings, wilderness, and cultural/historic landscapes or sites

Restoring recreation settings: In two instances, recreation sites are not being managed in compatibility with recreation setting objectives of the larger area: (1) the Wambaw and Still boat launches are being managed as development level 3 facilities within a primitive recreational setting (Wambaw Creek Wilderness); and (2) the Wambaw Cycle Trail is less than 0.2 mile from a primitive recreational setting and contributes noise pollution to the Wambaw Swamp Wilderness. Forest plan management direction needs to be revised to include restoring settings or facilities that depart from the intended condition and function. (Refer to Assessment, Section 9.1.4.)

Wilderness restoration: In 2011, the national forest conducted an information needs assessment for the four wilderness areas. Through an interdisciplinary approach, the needs assessment identified threats to wilderness character. Forest plan management direction needs to be revised to restore wilderness character in some areas from a variety of sources, including recreation use impacts; historical exclusion of fires; effects of non-native invasive plants and animals; effects of air pollution; aquatic habitat degradation; unmanaged illegal use; and effects of climate change. Additionally, motorized use within Wambaw Creek Wilderness is currently allowed but plan direction should be revised to remove that use and improve the undeveloped wilderness character of Wambaw Creek. (Refer to Assessment, Section 15.1.1.)

Cultural resources sustainability: Forest plan direction is needed to ensure responsible stewardship that identifies, preserves, protects, and enhances cultural resources for the greatest public benefit. Cultural resources are at risk from impacts due to natural threats, land management activities, and forest users. Forest plan management direction is needed for increased monitoring and condition assessment to identify threats. Direction should include development of treatment plans to address these threats to ensure long term sustainability. (Refer to Assessment, Section 13.)

1c) Provide for plant and animal diversity, including terrestrial and aquatic animals and plant “at risk” species

Threatened and endangered species and species of conservation concern: The following need to be identified: threatened, endangered, proposed and candidate species, and potential species of conservation concern present in the plan area. Forest plan components need to be developed to maintain and/or restore the ecological conditions necessary to contribute to the recovery of federally listed species, to conserve proposed and candidate species, and to maintain a viable population of each species of conservation concern within the plan area. In providing such plan components, coordination is needed with other federal, state, tribal and private land managers which have management authority over lands relevant to that population. (Refer to Planning Regulations, 36 CFR 219.9.)

Ecosystem characteristics: Forest plan components need to be developed to maintain or restore key characteristics of terrestrial and aquatic ecosystem types, including wetlands and the lands and waters forming riparian areas around lakes, rivers, and streams; as well as, rare aquatic and terrestrial plant and animal communities. (Refer to Planning Regulations, 36 CFR 219.9.)

Species-specific planning: If plan components are insufficient in providing for a viable population of a species of conservation concern, then include species-specific plan components to provide such ecological conditions in the plan area. If it is beyond the authority of the Forest Service or not within the inherent capability of the plan area to maintain or restore ecological conditions or a viable population for at-risk species, then document the basis for that determination. (Refer to Planning Regulations, 36 CFR 219.9.)

Emphases for Theme 2: Maintain the important benefits that stakeholders value and enhance those benefits while responding to changing social and ecological conditions as well as fiscal considerations. Forest management direction would be developed to:

2a) Provide benefits from healthy ecosystems

Benefits from healthy ecosystems: The current forest plan does not address ecosystem services or the benefits humans receive from a natural, clean and healthy environment. To ensure forest resources are managed to continually contribute to the long-term health and vitality of human and ecological communities, forest plan management direction needs to take into account benefits humans receive from nature such as plants, animals and other forest products. (Refer to Assessment, Section 7.1.1.2.)

Carbon sequestration: Carbon sequestration is the process by which atmospheric carbon dioxide is taken up by trees, grasses, and other plants through photosynthesis and stored as carbon in biomass (trunks, branches, foliage, and roots) and soils. Forest management activities play a critical role in ensuring that forests remain net carbon sinks. The most recent inventories indicate that the Francis Marion National Forest is a carbon sink, with

most recent 5-year accumulations at the rate of about 14 percent. Management strategies need to be developed to enhance the value that ecosystem carbon sequestration on the Francis Marion National Forest provides in the local and regional context. (Refer to Assessment, Section 4.1.1.2.)

Stream, wetlands and riparian area mitigation: Forest plan management direction is needed to address opportunities for Compensatory Environmental Mitigation associated with impacts on streams and wetlands from past management practices. Restoration typically also includes an integrated approach to address adjacent natural functions of the land and habitats, and consider outside influences within the adjacent area and associated hydrologic unit. An example is a public works project for marine navigation to dredge the Charleston harbor and to find areas to restore near the harbor that would help offset the impacts from dredging. (Refer to Assessment, Section 2.2.5)

2b) Provide for multiple uses

Changing values and uses: As human populations surrounding the forest change, community values and uses associated with the Francis Marion National Forest may change. Forest plan management direction needs to be revised and flexible enough to meet the changing wants and needs of forest users. This may be an important issue for recreation and facilities since the region's growing population of individuals more than 65 years old generally have different demand for these services than younger populations. (Refer to Assessment, Section 6.1.1.3.)

Wildlife and fisheries opportunities: Fishing, hunting, and wildlife watching help support state and national economies. Business generated by hunters and anglers is extremely important to rural communities. Management strategies are needed to develop hunting and fishing and wildlife watching opportunities that provide revenue to the local economy. (Refer to Assessment, Section 8.3.1.3, Hunting and Fishing.)

Cape Romain Wildlife Refuge: The Francis Marion National Forest is one of the few national forests directly adjacent to a national wildlife refuge and an ocean. Together, the Francis Marion National Forest and Cape Romain National Wildlife Refuge provide the largest and most contiguous protected avian habitat in all of South Carolina. Management strategies should provide opportunities to partner with the Cape Romain Wildlife Refuge to protect natural resources, particularly avian habitat, and provide opportunities for birding. (Refer to Assessment, Section 8.3.1.3, Avifauna.)

Reducing conflicts: With many users of the Francis Marion National Forest throughout the year, conflicts among users do arise. Hunting, especially deer hunting with dogs, has generated a conflict with other recreational users and the public on the national forest. Management strategies need to be developed to work closely with the South Carolina Department of Natural Resources and other partners to minimize conflicts among recreation users, particularly between deer hunters and other forest visitors. (Refer to

Assessment, Section 8.3.1.3, Hunting and Fishing.)

Young age forest: Young age classes of forest provides habitat that is important to a number of wildlife species; make the forest more resilient to disturbance events, insects and pathogens; and provide a sustained flow of habitats over time. Forest stands 0-10 years of age make up only 0.1 percent of the Francis Marion National Forest. The need for this habitat and for a flow of tree ages and habitats over time should be reflected in forest plan components. (Refer to Assessment, Section 8.4.1.2, Age Class Distribution.)

Thinning harvest: Commercial thinning has been the sole focus of timber harvest on the Francis Marion National Forest since a few years after Hurricane Hugo. This emphasis is beginning to shift. Projects now in planning stages are expected to complete most of first thinning harvest needed in stands that were established after Hurricane Hugo. The need for commercial thinning harvest will remain significant, but should soon begin to decrease from the very high levels created by Hurricane Hugo regenerated stands. It needs to be determined if the plan objective for first commercial thinning harvest should be revised or if other alternatives should be considered. (Refer to Assessment, Section 8.4.1.2, Plan Emphasis on First Commercial Thinnings.)

Wood products: Though the forest products industry has been through a continuing trend of consolidation, a strong, competitive market exists. Strong local demand has been reflected by the fact that the Francis Marion National Forest has been able to sell all the live timber sales it has offered during the last decade. There is a need to examine the timber production capabilities for a sustainable supply of wood products, which is one of the important uses provided by the national forest. (Refer to Assessment, Section 8.4.1.2, Timber Inventories, Demands and Values.)

Special forest products: Develop Forest plan management direction needs to specify the role of the national forest in providing special forest products. The current plan is silent on forest products such as pine straw, sweetgrass, mushrooms and other botanical products. (Refer to Assessment, Section 8.4.1.2, Other Forest Products.)

Demands for water use: Specific requests for water uses from outside the Francis Marion National Forest have been infrequent; however, requests are expected to increase as more development occurs adjacent to the national forest. These requests can affect surface and subsurface water supplies important to habitats or resource functions. Forest plan management direction needs to be revised to better qualify our uses and needs for water and where these demands affect critical resources, look for funding opportunities or agreement requirements that would be needed to quantify resource needs such as through instream flow studies. (Refer to Assessment, Section 8.6.1.3, Consumptive Uses).

Demand for renewable energy: A management strategy that helps meet the demands for providing renewable energy needs to be developed. This may include looking for opportunities to address emerging technologies. Some examples may include opportunities

to develop biomass production or to fully utilize logging debris. (Refer to Assessment, Section 10.1.1.4, Renewable Energy.)

2c) Provide for sustainable recreation

Recreation use: The Francis Marion National Forest receives approximately 430,000 visits per year. This averages to 1,200 visitors per day or one visit for every acre of national forest in a 1-year period. The population of Berkeley County alone grew 88 percent between 1980 and 2010, with projections of steady growth of 5 to 7 percent every five years. At the same time, the backlog maintenance for recreation infrastructure is estimated at \$450,000 and exceeds current funding capabilities. Forest plan management direction for recreation needs to be developed for the following reasons: 1) the effect of steady population growth and urbanization of surrounding areas, 2) that the intensity of the Francis Marion National Forest's recreation use is expected to increase over the next fifteen years; and 3) the Francis Marion National Forest's recreation budget is decreasing, and fewer resources are available to maintain existing recreational facilities or to develop new ones. (Refer to Assessment, Section 9.1.1.2, Local Recreation Context and Trends; Section 9.1.3.2 Sustainability.)

Healthy lifestyles: America spends \$2 trillion dollars per year on crisis medical health care, with physical inactivity as a major risk factor. Physical activity is an integral part of a healthy lifestyle, and outdoor recreation is the natural solution—a disease prevention solution. Forest plan management direction needs to address the type and mix of outdoor recreation activities that will be provided as a means to create a healthy lifestyle, promoting a quality of life that contributes to the physical, mental, and spiritual health of people. (Refer to Assessment, Section 9.1.1.2 National Context and Trends; Section 9.1.3.2, Preferences.)

Visitor satisfaction: Monitoring data shows that visitors are generally satisfied with the way outdoor recreation settings are managed on the Francis Marion National Forest; however, forest plan management direction is needed for the few exceptions that warrant additional attention by recreation managers, (see Section 1b above, restoring recreation settings). Forest plan management direction should be provided with the intent to improve racial and gender composition of the Francis Marion National Forest's visitors. (Refer to Assessment, Section 9.1.3.3 and Section 9.1.3 Use on the Francis Marion National Forest, Ethnic Composition, Gender Composition.)

Semi-primitive settings: Forest plan management direction is needed for semi-primitive recreation settings. Since the Francis Marion National Forest is one of the largest land bases for outdoor recreation in the state of South Carolina, it is uniquely suited to provide certain types of recreation opportunities and settings that cannot be found elsewhere, especially semi-primitive recreation settings. (Refer to Assessment, Section 9.1.2)

Meeting recreation objectives: Objectives for the recreation resource in the existing forest plan need to be reevaluated.

Scenery: Forest plan management direction is needed for the scenic character of the Francis Marion National Forest through updated use of the Scenery Management System. (Refer to Assessment, Section 9.1.6.)

2d) Connect youth, minority, and low-income populations to nature on the Francis Marion National Forest

Low income, youth and minority populations: Since these populations may have differential patterns of consumption of natural resources, management strategies are needed to identify important relationships between low-income and minority populations and design management actions which contribute to the social and economic well-being of these communities such as developing management strategies with cooperators to address transportation needs to serve these populations. (Refer to Assessment, Section 6.1.1.3, Environmental Justice.)

Emphasis for Theme 3: Deal with stressors in a systematic manner to reduce harm and degradation of social, economic, and ecological systems. Provide forest plan management direction specifically for:

3a) Challenges with fire, especially within a wildland/urban interface zone

Fire maintained ecosystems: The existing forest plan management direction of focusing on Management Area 26 is not consistent with our capability to maintain or restore fire-adapted ecosystems with 1-3 year fire return intervals. Forest plan management direction needs to identify those areas to restore or maintain with prescribed fire on 1-3 year intervals. Prescribed fire is a necessary tool that provides an important function in maintaining fire-adapted systems. As restrictions of using fire continues or increases, forest plan management direction needs to identify additional methods of treatment that mimic wildland fire. (Refer to Assessment, Section 3.4.1.4, Restoring and Maintaining Resilient Landscapes.)

Fire regimes: Fire Regime Condition Class (FRCC) is an interagency, standardized tool for determining the degree of ecological departure from historical, or reference condition, vegetation, fuels, and disturbance regimes. Assessing Fire Regime Condition Class can help guide management objectives and set priorities for treatments. The existing forest plan does not use the Fire Regime Condition Class system. Forest plan management direction is needed to maintain or improve all lands currently in Fire Regime Condition Class 1 and 2 through the use of prescribed fire or similar treatments while also expanding the forest management plan direction to restore lands in Fire Regime Condition Class 3. (Refer to Assessment, Section 3.4.1.4, Fire Regime Condition Class.)

Growing season prescribed burning: Objective 5 in the existing forest plan provides direction to use growing-season fires on 40,000 acres of longleaf forest type by burning on a 2-4 year cycle, which is approximately 10,000 - 20,000 acres per year. Only 2,000 - 6,000 acres per

year have been achieved. Revise this objective to meet ecosystem maintenance and restoration needs, while considering operational capacity and fiscal constraints. (Refer to Assessment, Section 3.4.1.4, Restoring and Maintaining Resilient Landscapes.)

Potential threats: Approximately 32 percent of Forest Service-owned lands are classified as fire regime group IV; these systems are not often impacted by fire (30 to 200 years), but when impacted, it is usually a high-severity fire that is extremely difficult to control and can cause substantial risk to fire responders and affected publics. Forest plan management direction is needed for lands in Fire Regime Group IV systems, which pose the greatest threat from wildland fire, especially those lands in the wildland urban interface. Refer to Assessment, Section 3.4.1.3, Localized Fire Regimes.)

3b) Responding to a changing climate

Sea level rise: Forest plan management direction is needed for ecological systems that are in the margin of change due to rising waters, as well as, recreation developments and the risks associated with potential new development in the margin of change. (Refer to Assessment, Section 3.7, Natural Disturbances, Sea Level Rise.)

3c) Reducing non-native invasive species

Non-native invasive species: Given the growth of non-native invasive plant and animal infestations, climate change predictions, and the high costs of control, invasive species will increasingly threaten the composition and function of our terrestrial and aquatic ecological systems on the landscape in the future. Plan components are needed to address minimum acceptable levels for non-native invasive species infestation, emphasizing prevention, treatment, and rehabilitation of high priority ecosystems for at-risk species, such as Carolina bays, depression ponds, wet pine savannas, upland longleaf, seepage slopes, and pocossins. Levels of infestation should be less than 5 percent occupancy in all native ecosystems. Recognize that non-native invasive species are expected to increase in the face of climate change. (Refer to Assessment, Sections 3.5.1 and 3.5.3.)

Aquatic non-native invasive species: The United States Department of Agriculture Forest Service Southern Region Aquatic Nuisance Species Strategy, Aquatic Animals (Leftwich 2013) provides guidance for managing nuisance species and supports the 2008 South Carolina Aquatic Invasive Species Management Plan. State agencies are recognized as the lead in controlling the establishment of aquatic nuisance species and managing established aquatic nuisance species both on and off the forests. Forest plan direction is needed to address the references to state and regional aquatic nuisance species plans and standards related to the spread of these species. (Refer to Assessment, Section 3.5.2.)

3d) Controlling effects of insects and disease

Remove outdated standards: Native insects and diseases have generally remained at endemic levels and not caused significant problems during the life of the existing plan. All standards contained in the 1989 Environmental Impact Statement for Vegetation Management in the Coastal Plain/Piedmont (VMEIS) are included in the 1996 Francis Marion National Forest Plan. Newer pesticide risk management tools, National Environmental Policy Act requirements for site specific analysis, and duplication of existing direction eliminate the need for these standards. Forest plan direction needs to identify which standards should be eliminated or revised. (Refer to Assessment, Section 3.3.1.2.)

Remove unnecessary standards: Southern pine beetle populations have generally been low through most of the existing plan, with the exception of a small outbreak during 2002. All standards contained in the 1987 Environmental Impact Statement for Suppression of Southern Pine Beetles (R8-SPB) are included in the 1996 Francis Marion National Forest Plan. Many of these standards are unnecessary, covered by other direction, or addressed by the Forest Environmental Assessment for southern pine beetle control. Forest plan direction needs to identify which standards should be eliminated or revised. (Refer to Assessment, Section 3.3.1.2,)

3e) Natural Disturbances-tornados, hurricanes, wild fire, floods, droughts: Forest plan management direction is needed that would assist with speedy salvage, road repairs or address other ecological damages after major disturbances by tornados, hurricanes, wildfire, floods or drought. (Refer to Draft Assessment, Section 3.2.).

3f) Increasing pressures for recreation opportunities and decreasing budgets: As the populations of Charleston and Berkeley counties are increasing, the backlog maintenance for recreation infrastructure is estimated at \$450,000 and exceeds current funding capabilities. Forest plan management direction for recreation needs to be developed for the following reasons: 1) the effect of steady population growth and urbanization of surrounding areas, 2) the intensity of the Francis Marion National Forest's recreation use is expected to increase over the next fifteen years, and 3) the Francis Marion National Forest's recreation budget is decreasing, and fewer resources are available to maintain existing recreational facilities or to develop new ones. (Refer to Assessment, Section 9.1.1.2, Local Recreation Context and Trends; Section 9.1.3.2, Sustainability).

Emphases for Theme 4: Develop management strategies to address partnering and collaborative efforts, learn how to do more with less by sharing operational and planning resources, and develop coalitions to solve future problems. Management strategies would be developed to address:

4a) Landscape scale restoration (including fire adapted ecosystems)

Partnering for longleaf restoration: Continued partnerships are needed with individuals, groups, organizations, and federal, state and local governments for the development of priority landscape management areas, objectives, and desired conditions for longleaf restoration. (Refer to Assessment, Section 2.1.1.6.)

4b) Priority for watershed restoration

Priority watersheds: Currently, the watersheds on the Francis Marion National Forest are considered to be in fair condition, which has been documented in an assessment using the Forest Service's watershed condition framework. Forest plan management direction needs to include watershed condition by updating the watershed condition framework assessment based on new information and identify which watersheds are priorities for restoration. (Refer to Assessment, Section 2.1.3.3.)

4c) Identifying the distinctive roles and contributions on the Francis Marion National Forest in broader landscape

Partnering for recreation planning: The distinctive roles and contributions of the Francis Marion National Forest to the recreation resource include: public access to the rivers and Intracoastal waterways; opportunity for remoteness and solitude; viewing diverse vegetation, wildlife, and cultural sites; hunting on public lands; hiking, bicycling, motorized and paddling trails; and cultivating forest stewardship through environmental education. Management strategies are needed for coordinated planning approaches for meeting and enhancing the distinctive roles for providing recreation among multiple federal, state, county, civic and private groups and businesses. (Refer to Assessment, Section 9.1.1.2, Collaborative Efforts and Contributions of Recreation.)

4d) Reducing wildfire risks and assisting with Community Wildfire Protection Planning

Wildfire risk: A management strategy is needed to collaboratively integrate wildland fire planning to assess the level of wildfire risk to adjacent communities, sharing responsibility and participating in actively mitigating the threat by incorporating wildfire risk awareness as part of the design process for future homes or communities. Through this engagement, implementation processes for creating fire adapted human communities can be established. (Refer to Assessment, Section 3.4.1.4, Community Wildfire Protection Plan.)

Community wildfire planning: A Community Wildfire Protection Plan, as authorized by the Healthy Forest Restoration Act of 2003, is a plan for an at-risk community that (A) is created and agreed upon by applicable local governments, fire departments, state agencies, and federal land management agencies; (B) identifies priorities for hazardous fuel reduction treatments and recommends types and methods of treatment; and (C) recommends measures to reduce structural ignitability throughout the at-risk community. A management

strategy is needed to acknowledge and support Community Wildfire Protection Plan development and to facilitate the development and implementation of Community Wildfire Protection Plan recommendations within national forest authority and fiscal constraints. (Refer to Assessment, Section 3.4.1.4, Community Wildfire Protection Plan.)

4e) Coordination with other state and local agencies and other non-governmental agencies

Regional air resources coordination: Regional air quality planners have utilized information provided by the Forest Service on the location, timing, size, and amount of fuel consumed in 2002 for National Ambient Air Quality Standards and Regional Haze planning. Management strategies are needed to coordinate with regional air planners to incorporate projected management activities into state and regional emissions inventory projections. (Refer to Assessment, Section 2.1.1.3, Ambient Air Quality Trends.)

Partnering for wildlife and fisheries: Hunting and fishing are among the highest uses of the national forest, and these activities are regulated by the South Carolina Department of Natural Resources (SCDNR). Management strategies are needed to coordinate work with partners to enhance hunting and fishing opportunities and to protect and improve habitat. Forest plan components should address management of wildlife openings and waterfowl areas. (Refer to Assessment, Section 8.3.1.3, Hunting and Fishing.)

State Forestry Best Management Practices coordination: Continued coordination with the South Carolina Forestry Commission on coastal Best Management Practices implementation, monitoring, and compliance checks is needed. (Refer to Assessment).

Water resources coordination: Continued coordination with South Carolina Department of Health Environment Control, South Carolina Rural Water Resources Association, counties and communities on the needs and demands for water within the extended vicinity of the national forest. (Refer to Assessment).

Emphasis for Theme 5: Determine what information can be collected and evaluated at a broader scale and develop a strategy for its use to adapt to changing conditions on the Francis Marion National Forest. Several monitoring needs for determining information are, but not limited to:

5a) Coordinate climate change monitoring with other entities.

Coordinate climate change monitoring with other entities on the following topics:

- **Sea level rise:** Rising seas, in combination with more intense hurricanes, will alter the composition of coastal marshes. Collaboration with Cape Romain is needed to monitor loss of marshland. The installation of monitoring plots along the marsh-to-forest gradient needs to be considered to monitor the effects of sea level rise on vegetation. (Refer to Assessment, Sections 3.2.1.3 and 3.7.1.2.)

- Saltwater intrusion: Sea level rise will increase the potential for saltwater intrusion into coastal freshwater tables and groundwaters. Collaboration with local municipalities is needed to monitor saltwater intrusion. (Refer to Assessment, Sections 3.2.1.3 and 8.6.1.2.)
- Temperature and precipitation: Changing climate variability is expected to continue to lead to higher temperatures, more intense rainfall events and longer periods of drought in the future. Collaboration with the Santee Experimental Forest is needed to monitor temperature and precipitation changes which will determine any departure from projections used in the plan assessment. (Refer to Assessment, Sections 3.2.1.3.)
- Stream water temperatures and flows: Freshwater mussel species already declining in the region may see increased risk with future changes. Collaboration is needed with Santee Experimental Forest to monitor stream water temperatures and flows. (Refer to Assessment, Sections 3.2.1.3.)
- Tidal forests: Tidal forests that include bald cypress may be particularly vulnerable to future changes, including higher air and water temperatures as well as increased salinity with sea level rise. Tidal forests with bald cypress need to be monitored for effects of increasing salinity. (Refer to Assessment, Sections 3.2.1.3.)

5b) Monitor physical resources and national best management practices

Monitoring soil quality: The 2012 Planning Regulations (36 CFR 291) require that forest plan management direction be consistent with national best management practices. It is equally important to demonstrate compliance with state and local level best management practices. There is a need to develop soil quality monitoring questions and indicators that are consistent with national direction. Additionally, activities need to be monitored, and changes in soil conditions need to be tracked. (Refer to Assessment, Section 2.2.2.4.)

Acid deposition: When sulfur and nitrogen are deposited in amounts that exceed critical thresholds, the harm to soil quality and sensitive key ecosystem elements are adversely affected, which is estimated to be about 15 percent of the Francis Marion National Forest. More information is needed to detect how much more (or less) of the Francis Marion National Forest has exceeded these thresholds. In the monitoring program, questions and indicators for acid deposition at the broad-scale and local scale need to be developed. (Refer to Assessment, Section 2.1.1.3, Critical Loads for Soil Acidification on the Francis Marion National Forest.)

Aquatic ecosystems: Develop management and monitoring strategies for aquatic species diversity, aquatic habitat components and riparian conditions to identify changes in aquatic ecosystems, adapt to changing conditions, measure management effectiveness and be consistent with national direction.

5c) Other required monitoring topics

Required Topics: The following monitoring topics are required under the planning regulations:

- Ecological characteristics and focal species,
- The status of visitor use and satisfaction and
- The status of select watershed conditions.
- (Refer to Planning Regulations, 36 CFR 219.12.)

Emphases for Theme 6: Integrated resource management and coordination. Review desired conditions, objectives, and suitable uses among all resources and map those lands most suited for each management area. Consider individual resource program plans when revising management areas and forest plan management direction.

6a) Review forest-wide and management area direction and determine if updates are necessary

Hydric soils and wetlands: Using the latest mapping technology, approximately 56 percent of the national forests have hydric soils, which typically are wetlands. The existing forest plan management direction may be overly restrictive in some areas and not restrictive enough in other areas in order to prevent impairment to soil productivity and provide for and wetland protection and management which needs to be revised as plan components for management areas are developed. (Refer to Assessment, Sections 2.2.2.2 and 2.2.2.3.)

Past management activities on soils: One addition to forest plan management direction is the need to address changes in soils from past drainage, diking and associated activities, including areas severely rutted from past management activities. (Refer to Assessment, Section 2.2.2.3.)

Hydrologic modifications: Changes to hydrology have occurred from past land use activities. This not only affects soils (as above), but also, can affect the quantity, permanence, function and quality of water flow and water uses. When developing plan components for management areas, there are needs to include examples of areas that need restoration due to past hydrologic modifications on water quality and quantity including stream, riparian and wetland conditions. Examples of opportunity are mentioned or provided so as not to limit the location, extent or potential for these considerations on the forest ecosystems. (Refer to Assessment, Section 2.1.3.3.)

6b) Determine land suitability for resources

Suitability for mineral operations: The existing forest plan management direction does not address where it is suitable or not suitable to allow for the development of salable mineral operations, and this suitability determination is needed for the forest plan revision. (Refer to Assessment, Section 10, Minerals.)

6c) Examine individual resource plans for integration and coordination

Transportation: In compliance with the Travel Management Rule (36 CFR 212), a transportation analysis process has been completed for the Francis Marion National Forest that recommends changes to the road system. Examples of these changes include designating open or closed roads, maintenance levels and user-created roads that need decommissioning. When developing plan components for all resources, information should be used from the transportation analysis process concerning the minimum road system for the national forest. (Refer to Assessment, Section 11.4, Roads.)

Land acquisition: With nearly 260,000 acres, there are areas that are fragmented with other landownership that may be needed to achieve management objectives. To update the Land Ownership Adjustment Strategy, a management strategy with adjacent landowners and other partners needs to be developed. (Refer to Assessment, Section 14.1.2.2.)

High Wildfire Risks: A “Potential Problem Fire Area” map has been prepared to use in order to protect Francis Marion National Forest’s values that may be at risk. Forest management plan direction is needed to ensure all resource managers are aware of potential high risk problem areas for wildfire as they prepare project plans and manage activities. (Refer to Assessment, Section 3.4, Assessment of Potential Problem Areas, Figure 3-34.)

Heritage Program Plans: Forest planning should incorporate cultural resource program goals, objectives, and desired outcomes in three primary areas: cultural resources stewardship, public service, and facilitating natural resource management. (Refer to Assessment, Section 13.)

6d) Designated Areas

Botanical areas: Of the 60 current designated natural areas, several have degraded. Additionally, some no longer warrant botanical area designation, or they need to be remapped due to condition change or representation of rare plant populations only. Several new areas should be recognized. Allocations for botanical areas need to be revised and refined to maintain and restore those special characteristics and support associated at-risk species. (Refer to Assessment, Section 15.3.3.)

Potential wilderness: The Francis Marion National Forest has four statutorily designated wildernesses established by Congress in 1980 (Public Law 96-560 of 1980). A reevaluation of areas for potential wilderness is needed during the planning process. (Refer to Assessment, Section 15.1.1.)

Roadless areas: The Francis Marion National Forest has two inventoried roadless areas on the forest, Hellhole Bay Extension (890 acres) and Little Wambaw Swamp Extension (530 acres) that were identified in the 1996 plan and then again in the 2001 Roadless Area Conservation Rule. Forest plan management direction is needed to protect roadless area

characteristics. (Refer to Assessment, Section 15.2.3.3.)

Historic areas: Forest plan management direction is needed to change the amount and size of areas that are designated as historic and to add special historical designated areas such as the Salt Pond Tract (which includes Sewee Shell Ring), Walnut Grove area, the area south of Awendaw Creek, Wythewood Plantation and Clayfield Plantation. (Refer to Assessment, Section 15.3.2.)

Eligible Wild and Scenic River: A reevaluation of rivers on the forest to determine if they are eligible for inclusion in the Wild and Scenic Rivers system is needed. Forest plan management direction for any river found eligible needs to include a description of the outstandingly, remarkable values and direction to maintain those values. (Refer to Assessment, Section 15.3.5.)

Seed Orchard: At more than 700 acres (686 acres orchard, 33 progeny sites), the seed orchard is guided by direction in Region 8's Genetics Management Program to provide seed sources. There is a need for continued baseline monitoring and documentation of conditions at seed orchard, site progeny sites and helibase. The forest plan management direction needs to be revised for the changes in locations of various activities that need to occur within the site. (Refer to Assessment, Section 15.4.1.1.)

Santee Experimental Forest: The Santee Experimental Forest, which is 6,067 acres, is located within the boundaries of the Francis Marion National Forest. In the past, personnel have worked together on management of the Santee Experimental Forest, such as prescribed burning or timber management. Forest plan components are needed to promote a working relationship between the Santee Experimental Forest and the Francis Marion National Forest to meet research and monitoring needs. (Refer to Assessment, Section 15.2.5.)

C. Changes in Laws, Policies and Regulations

Numerous changes in national and regional policy and direction have occurred since the 1996 Francis Marion National Forest Plan was signed. This section is a summary of some of the changes in laws, policy, and regulations. For a more detailed version, see www.usda.gov.

2005 Travel Management Rule (36 CFR 212). Following direction in this rule, a travel analysis was completed for the Francis Marion National Forest, and the results are documented in the Transportation Analysis Process Report for the Francis Marion National Forest. The report identifies the risks and benefits associated with the current road system. Ecological, social, and economic considerations relative to the Francis Marion National Forest transportation system were evaluated consistent with publication FS-643–Roads Analysis: Informing Decisions about Managing the National Forest Transportation System. A map was developed that displays the road system and can be used to inform project-level decisions for identifying unneeded roads and the minimum road system. This requirement is codified in the Code of Federal Regulations

36 CFR 212.5. It states, “The minimum road system is the road system determined to be needed to meet resource and other management objectives adopted in the relevant land and resource management plan (36 CFR part 219).

2012 Planning Rule. This final rule describes the National Forest System’s (NFS) land management planning framework; sets up requirements for sustainability of social, economic, and ecological systems; and gives directions for developing, amending, revising, and monitoring land management plans. It also clarifies that, absent rare circumstances, land management plans under this final rule are strategic in nature and are one stage in an adaptive cycle of planning for management of National Forest System’s lands. The intended effects of the rule are to strengthen the role of science in planning; to strengthen collaborative relationships with the public and other governmental entities; to reaffirm the principle of sustainable management consistent with the Multiple-Use Sustained-Yield Act of 1960 (MUSYA) and other authorities; and to streamline and improve the planning process by increasing adaptability to changes in social, economic, and environmental conditions. The 2012 planning rule replaces the 1982 planning rule.

County Laws, Regulations and Policies

2010 Berkeley County Comprehensive Plan, Planning the Future while Preserving the Past –

The purpose of the 2010 Comprehensive Plan is to serve as a mechanism for which future land use and development decisions can be made that will help shape the future of Berkeley County. This plan is located at

https://www.berkeleycountysc.gov/forms/planning/2010_BC_Comprehensive_Plan.pdf.

Continued growth and development has led to a changing set of issues, goals and needs for Berkeley County. The 2010 Comprehensive Plan is a document intended to both identify the important positive attributes and components which continue to define Berkeley County, while guiding the growth and development of Berkeley County for the next fifteen to twenty years. The plan will guide decision-makers when making decisions, policies and laws regarding the future development of land, provision of essential community facilities, and preservation of natural and cultural resources.

2008 Charleston County South Carolina Comprehensive Plan Update. Charleston County Council adopted the 10-year update of the County’s Comprehensive Plan on November 18, 2008. Charleston County’s Comprehensive Plan is an expression of the County’s intent for where and how future growth and development should occur. The plan also identifies parts of the county that may or may not be appropriate for certain types of growth, given the Lowcountry’s unique character and natural conditions. For more information on the plan, go to <http://www.charlestoncounty.org/departments/Planning/CompplanUpdate/index.htm>

State Laws, Regulations and Policies

2011 South Carolina Comprehensive Wildlife Strategy. The wildlife strategy is a comprehensive step-by-step guide for conservation actions designed to preserve species and habitats statewide. States are mandated to update their comprehensive strategies every 10 years. South Carolina Department of Natural Resources started revising South Carolina's comprehensive wildlife strategy in April 2011; it is due by October 2015. Findings, to date, include a high priority conservation action to prevent the spread of existing invasive and non-native species, and eliminating them, where possible. Invasive plant species are expected to increase with changes in climate (South Carolina Department of Natural Resources [SCDNR] 2013), and will increasingly threaten ecological integrity of Longleaf Pine Ecosystems in the future.