

CHAPTER 7

FOREST MANAGEMENT

7.1 Introduction

Forest management at Camp Lejeune involves many facets including the support of the military mission, maintaining and enhancing the ecological integrity of forestlands, compliance with all environmental laws and regulations and the generation of revenue to support active forest ecosystem management. The forestland at Camp Lejeune has been under professional forest management since 1946. Currently, there are approximately 95,000 acres of commercial forestland at Camp Lejeune. Portions of Camp Lejeune, such as the G-10, K-2, and BT-3 impact areas, are used exclusively for military training. These areas are not considered commercial forestland.

The Forest Management Section has always provided, and will continue to provide, a forested environment that meets the needs of the military mission and sustains a continuous flow of forest products such as quality wildlife habitat, quality threatened and endangered species habitat, clean water, clean air, outdoor recreation opportunities and high quality wood products through scientifically-based ecosystem management principles.

Fig. 7-1. Camp Lejeune provides a continuous flow of quality timber products.



Fig. 7-2. Forest products sold aboard Camp Lejeune support the Forest Management Program.



Activities conducted by the Forest Management Section are divided into two major categories: planning and implementation. Planning involves: 1) data collection for approximately 10 of 91 compartments annually and maintaining a continuous forest inventory (CFI) with updates every 10 years; 2) development of the annual Long Range Silvicultural Prescription Plan (LRSPP); 3) coordination of the LRSPP with other land managers and land use organizations; and 4) compliance with applicable laws and regulations.

Implementation includes development, volume computation, inspections, and closure procedures on 5-7 timber sales annually on an estimated 1500 to 2500 acres. In addition, implementation includes forest access road construction, repair, maintenance and closure procedures and the maintenance of the subject GIS geodatabase feature classes that support all activities.

Forest compartments will be treated on a 10-year prescription cycle. As discussed in **Chapter 4, Endangered and Threatened Species Management**, scheduled prescription compartments will also be assessed at the partition level. Partitions can overlap compartments. Partitions in urgent need of management, such as those likely to be occupied by RCWs in the short term, will be addressed outside of the 10-year prescription cycle. Although partitions may overlap stand and compartment boundaries, forest management, for the most part, will be prescribed at the stand level. Forest management will be consistent with the recommendations in the USFWS 2003 RCW Recovery Plan with respect to size of clearcuts and acceptable silvicultural techniques. Silvicultural systems utilized on Camp Lejeune are discussed in Appendix I.

Archaeological sites that are listed or may be eligible for listing on the National Register of Historic Places (NRHP) will not be degraded as a result of forest management activities. Archaeological surveys will be performed on high probability soils to identify and assess sites in areas that may be affected by site preparation, fireline construction, skid trails, and the construction of new forest access roads and logging decks prior to the approval of these

silvicultural treatments through annual review of the LRSPP. In addition, close day-to-day coordination between Forest Management and Cultural Resource sections is conducted to ensure that significant impacts to archaeological sites resulting from forest management practices are eliminated.

The LRSPP guides the professional management of the forest ecosystems aboard Camp Lejeune. Forest management activities require close coordination with other natural resources and land managers to ensure that impacts to the ecosystem are either beneficial or mitigated to within acceptable limits. The LRSPP is a prescription plan that is developed annually, but may take several years to implement. Silvicultural prescriptions are based on immediate needs, future desired conditions, and the overall health of the forest. In compartments containing RCW partitions, emphasis is placed on longleaf pine ecosystem management and restoration based on the Ecological Classification System.

Fig. 7-3. Guidelines of the 2003 RCW Plan recommend thinning mature pine stands to a residual basal area of 60 square feet per acre.



In cantonment areas, forest management emphasis is on loblolly pine management, preferred hardwood species management (specifically hard mast producing species), and mixed pine/hardwood management. Forest management in Greater Sandy Run Area (GSRA) emphasizes the maintenance of a healthy forest by utilizing sound silvicultural practices in established pine stands and longleaf ecosystem restoration/establishment based on the ECS.

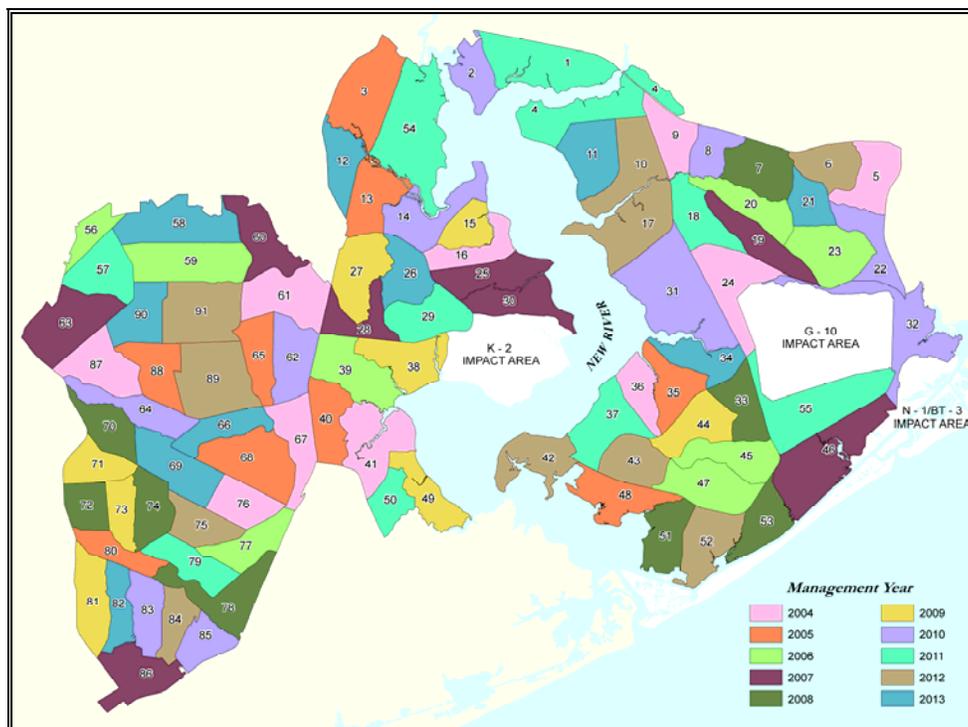
The compartment prescription schedule and associated fiscal year entry schedule for the next ten years is found in Table 7-1 and Figure 7-4. It also allows for out-of-cycle entry into compartments where immediate natural resource management initiatives can be addressed. As an ecosystem planning document, the prescription plan has the flexibility necessary to meet land management requirements and cope with unforeseeable events such as insect infestations, catastrophic wildland fires, hurricanes, changes in land use and military training requirements and other natural and/or man-caused events which impact the forest ecosystems. The current and past LRSPP are available for review upon request.

Forest managers utilize Geographic Information System (GIS) technology to assist in LRSPP development. Global Positioning System (GPS) technology in conjunction with satellite imagery is utilized during field data collection to update and maintain subject feature classes in the enterprise geodatabase for resource management decisions. With the use of this technology and customized tools, accurate stand data is compiled and stand boundaries are updated. This current information is used for generating map and tabular documents in the LRSPP.

Table 7-1. Compartment entry schedule for development of the long range silvicultural prescription plan.

FISCAL YEAR	COMPARTMENT
2007	19, 25, 28, 30, 46, 60, 63, 86
2008	7, 33, 51, 53, 70, 72, 74, 78
2009	15, 27, 38, 44, 49, 71, 73, 81
2010	2, 8, 14, 22, 31, 32, 62, 64, 83, 85
2011	1, 4, 18, 29, 37, 50, 54, 55, 57, 79
2012	6, 10, 17, 42, 43, 52, 75, 84, 89, 91
2013	11, 12, 21, 26, 34, 58, 66, 69, 82, 90
2014	5, 9, 16, 24, 36, 41, 61, 67, 76, 87
2015	3, 13, 35, 40, 48, 65, 68, 80, 88
2016	20, 23, 39, 45, 47, 56, 59, 77

Fig. 7-4. Compartment entry map.



7.2 Restoration of Longleaf Pine and Timber Stand Improvement

Camp Lejeune will continue its aggressive program to return longleaf pine to its historic range due to its historical significance, importance to RCW and wildland fire management. The number of acres restored to longleaf pine may vary from year to year depending on RCW habitat requirements, the number of acres in the scheduled compartment available for conversion as determined by the Ecological Classification System (ECS), and the number of acres in the scheduled compartment currently in longleaf regeneration. Camp Lejeune will continue to restore and enhance longleaf pine dominated communities on sites where they historically occurred. This involves reintroducing longleaf pine to sites where the current species is truly off-site. Camp Lejeune has defined off-site as those sites where a species other than longleaf pine occupies Land type Phase (LTP) 902, 1101, 1102, 1103, or 1302. These LTPs will be given priority when converting off-site species to longleaf pine and are fully described in Appendix F. However, other LTPs that historically contained longleaf pine may be converted depending on RCW habitat requirements. These LTPs include 0401, 0402, 0601, 0602, 0901, 1001, 1002, 1301, 1303, and 1304. Existing longleaf pine trees are retained when stands that are predominately off-site species are converted. In areas that were not historically longleaf pine, other native species will be considered along with longleaf pine for regeneration. Where the residual timber is of the quality desired for a seed source, and land type phase is appropriate, natural regeneration will be the preferred stand replacement method for both pine and hardwood stands. Natural regeneration techniques are less labor intensive and they often produce healthier stands that are better matched to the site. Artificial regeneration will be used in areas where longleaf restoration is desired, or where a suitable seed source is not available.

Fig. 7-5. Sites that historically grew longleaf and are occupied with offsite species will be clearcut and planted with containerized longleaf seedlings. This longleaf site was occupied by loblolly pine before being restored.



Fig. 7-6. If a natural seed source is not available, longleaf pine is re-established by planting containerized seedlings.



Current research has shown that seedling stock should be from seed collected as close to the planting site as possible. Therefore, the Base will utilize planting stock consisting of containerized longleaf seedlings, contract grown from seed locally collected on Base by Environmental Conservation (ECON) personnel.

Fig. 7-7. A tree shaker is utilized aboard Camp Lejeune for longleaf pine cone collection.



Timber stand improvement projects are initiated to ensure desirable species establishment, improve vigor and productivity of residual trees, reduce forest fuel levels, create browse, and improve wildlife habitat. Timber stand improvement can be accomplished by sanitation and salvage timber harvests where practical, or by pre-commercial thinning.

In regenerated pine stands, mechanical methods of pre-commercial thinning are used to reduce higher than desired stocking levels (tree density). The work is generally accomplished before the seedlings/saplings reach a height greater than five feet. If regeneration is taller than five feet, or in the case of hardwood regeneration where a specific species is desired over other species, work is accomplished by manual or gas-powered hand tools. Mechanical methods, such as drum

choppers or the Hydro-ax mower may also be used to reduce competition for seedlings, improve wildlife habitat, and help eliminate the build up of forest fuels during the period the seedlings are most susceptible to damage from intense wildfire.

Fig. 7-8. Completed pre-commercial thin in a loblolly pine stand accomplished with Hydro-ax mower.



Camp Lejeune intends to apply a flexible (rather than proscriptive) management approach to longleaf restoration, consistent with the 2003 Recovery Plan, in order to maximize practical benefits to each RCW partition. Collaboration between the Threatened and Endangered Species and Forestry sections will ensure that all prescribed treatments are appropriate given the site-specific circumstances.

7.3 Site Preparation

Adequate preparation of the site to be regenerated is key to a successful stand regeneration effort. A well-prepared site provides for control of both shade tree species and root competition, which is critical to the establishment and growth of intolerant species such as longleaf pine and hard mast producing hardwoods.

The least intensive site preparation method, based on site conditions, will be applied to each regeneration site. Site preparation methods – by general level of intensity – are identified in Fig. 7-9 below.

Fig. 7-9. Site Preparation Method by Level of Intensity

No Site Prep.	Site Prep Burn	Drum Chop, Burn,	KG Blade, Drum Chop, Burn,	KG Blade, Root Rake, Burn	KG Blade, Burn, Bed	KG Blade, Root Rake, Bed	KG, Drum Chop, Root Rake, Bed
Least			INTENSITY		Most		

Fig. 7-10. Drum chopping with a follow up site preparation burn is a low intensity form of site preparation used on Camp Lejeune.



Ideally, prescribed burning treatments will be the only site preparation needed to maintain regenerating stands. However, in regenerating stands containing high concentrations of competing hardwood species, herbicides such as Velpar, Arsenal, or Garlon may be used to reduce or eliminate these competing species. On “mainside” Base, east of Highway 17, in areas of intact ground cover of desired species, bedding will not be an option. Decisions regarding sites in GSRA, where bedding may be required, will be made on a case-by-case basis as silvicultural plans are developed and implemented.

OBJECTIVE FOR1: Develop, maintain and utilize current timber data to effectively manage the forest.

- **Action 7-01:** *Develop annual LRSP*
- **Action 7-02:** *Implement LRSP*
- **Action 7-03:** *Maintain current and post-harvest timber data*
- **Action 7-04:** *Maintain/upgrade GIS custom tools to adapt to changing data and management processes.*
- **Action 7-20:** *Maintain a continuous forest inventory (CFI) on a 10 year schedule.*

OBJECTIVE FOR2: Manage the forest to promote a healthy, natural forest ecosystem.

- **Action 7-05:** *Utilize pre-commercial thinning.*
- **Action 7-06.** *Utilize intermediate thinning.*
- **Action 7-07.** *As needed, utilize sanitation and/or salvage harvests.*
- **Action 7-08.** *Control southern pine beetle infestations.*
- **Action 6-05.** *Exclude timber harvesting in bottomland hardwood drains.*

OBJECTIVE FOR3: Integrate mission-critical conservation issues with forest management.

- **Action 7-09:** *Reduce the number of acres bedded and/or root-raked to minimize disturbance to desired intact ground cover.*
- **Action 7-10:** *Maintain/upgrade the Ecosystem Management Model as management and data processes/requirements change.*
- **Action 7-11:** *Utilize the shelterwood and small patch clearcut methods of natural regeneration for longleaf pine.*
- **Action 4-01:** *Develop RCW Habitat/Ecosystem Management Model.*
- **Action 4-02:** *Evaluate RCW partitions covered in current forest prescription.*
- **Action 4-03:** *Evaluate high-priority RCW partitions that are outside the timber prescription cycle.*
- **Action 4-05:** *Modify Base forest data collection to better quantify variables contributing to good quality habitat*
- **Action 4-06:** *Restore longleaf pine within the guidelines of the 2003 Recovery Plan for the RCW.*
- **Action 4-07:** *Use prescribed fire and mechanical control for midstory vegetation control and maintenance*
- **Action 5-03:** *Consider the eight high priority natural community types in conservation management.*

OBJECTIVE FOR4: Promote responsible timber harvesting.

- **Action 7-12:** *Use Best Management Practices (1989 NC Div Forest Resources) for all forestry-related activities.*
- **Action 7-13:** *Ensure timber marking compliance*
- **Action 7-14:** *Ensure timber sales contract compliance*

OBJECTIVE FOR5: Restore the longleaf pine ecosystem to its historical range based on the Ecological Classification System.

- **Action 7-15:** *Restore forest structure to a condition more typical of an open longleaf pine by thinning to 60ft basal area.*
- **Action 7-16:** *Experiment with groundcover restoration by collecting native seeds and broadcast planting on degraded areas.*
- **Action 7-17:** *Experiment with planting of longleaf pine under loblolly pine stands to retain suitable RCW forage habitat.*

- **Action 4-06:** *Convert offsite species to longleaf pine within the guidelines of the 2003 Recovery Plan for the RCW.*
- **Action 4-08:** *Promote high-quality RCW habitat through silvicultural activities, including removal of canopy hardwoods and thinning of mature pine stands.*

OBJECTIVE FOR6: Manage for multiple uses of forest lands.

- **Action 7-18:** *Provide a sustainable flow of timber products.*
- **Action 7-19:** *Promote hard mast producing species.*