

I. INTRODUCTION

FIRE MANAGEMENT PLAN

FOR

MOUNTAIN LONGLEAF NATIONAL WILDLIFE REFUGE

Note: This plan defines objectives, guidance, organization, and methods for fire management at Mountain Longleaf NWR. The identified organization is not in place, and execution of this plan depends on interagency agreements and support from other refuges in Region 4 until the refuge is staffed.

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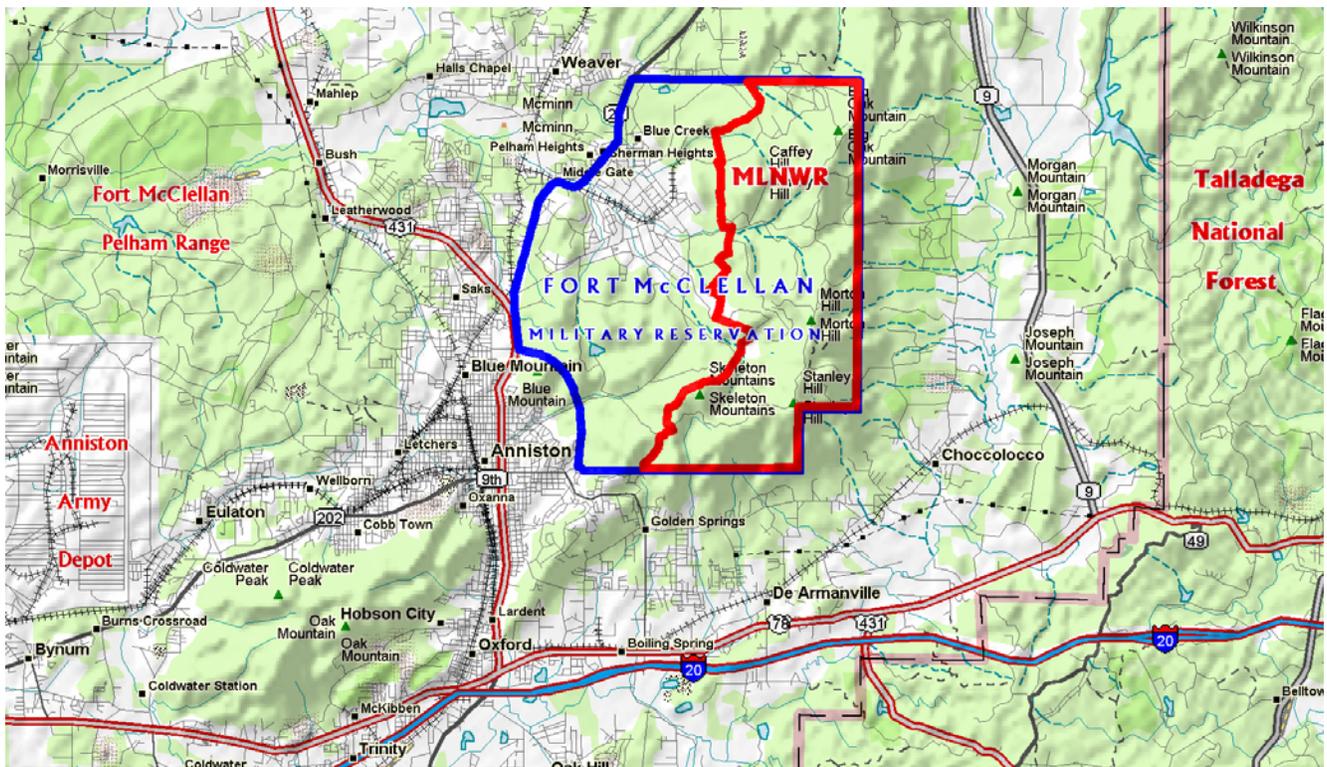
# I. INTRODUCTION

## A. Creation of MLNWR

The Service entered into a Memorandum of Agreement with the Army in March of 1999 to manage natural resources on this former military installation. The goal of both the Army and the Service in entering into this agreement was the eventual transfer of lands to the Service, and the formation of the Mountain Longleaf National Wildlife Refuge (MLNWR).

Congress authorized acquisition of the property by the Fish and Wildlife Service with the passage of PL#107-314, the Bob Stump National Defense Authorization Act for FY-2003. Transfer of the property is anticipated June 1, 2003. The lands to be transferred are referred to as Mountain Longleaf NWR (MLNWR) within this plan.

**Figure 1: Fort McClellan and MLNWR**



Longleaf pine is usually associated with the Atlantic and Gulf Coastal Plains where vast forests formerly dominated much of the landscape. Both historic and recent accounts of longleaf distribution, however, describe an extension of this forest type into the mountains of northeast Alabama and northwest Georgia. Within that isolated area, longleaf pine sites differ significantly from those on the Coastal Plain. At those sites, longleaf pine has become well adapted to shallow rocky soils along steep mountain slopes and ridges.

Fire is a natural process that plays a critical role in the ecosystem dynamics of natural communities represented within MLNWR. Historically, naturally caused lightning fires and anthropogenic fires burned the longleaf forests that cover Choccolocco Mountain and the surrounding hills. These frequent and recurring wildland fires allowed the formation of a fire-maintained system that is encountered on surrounding private lands.

Since 1900, the Alabama National Guard and the Army have used much of the area for artillery training, resulting in unplanned fires throughout what is now the proposed refuge. These frequent fires maintained vigorous, diverse upland and wetland plant communities in various stages of post-fire succession, providing a wide variety of habitat types and conditions for wildlife. While suppression and public education decreased wildland fires in the surrounding region, military training assured that a periodic fire regime was maintained on MLNWR.

The closure of Fort McClellan and the cessation of military training on the installation have eliminated the source of frequent fire on MLNWR. Recent studies by Auburn University (Maceina et al. 1997) have revealed that MLNWR longleaf pine is in serious decline even with the presence of recurring natural wildland fires. To stabilize this decline and compensate for the absence of training-related wildland fires, the Service proposes an active prescribed burning program for these lands.

## **B. Requirement for Fire Management Plan**

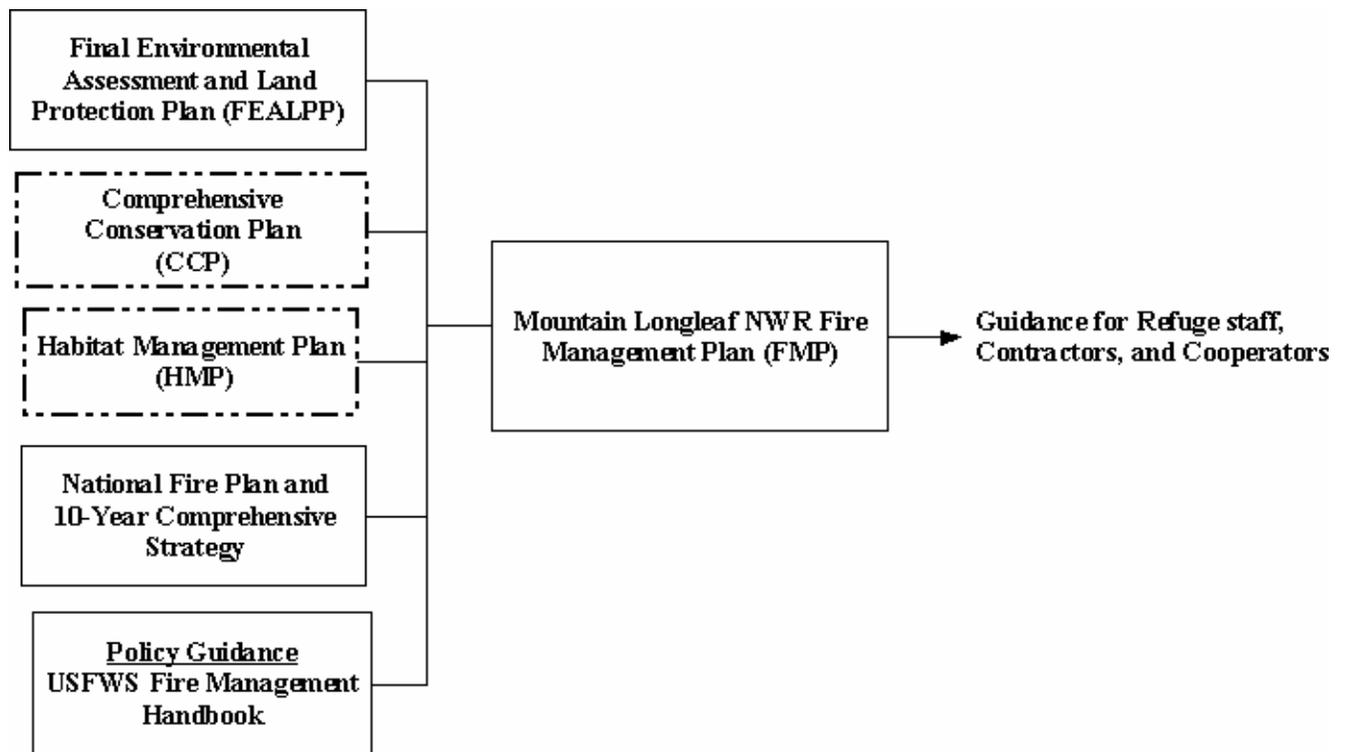
Department of Interior policy requires that every area with burnable vegetation must have an approved Fire Management Plan. Fire Management Plans must be consistent with firefighter and public safety, values to be protected, and land, natural, and cultural resource management plans, and must address public health issues. Fire Management Plans must also address all potential wildland fire occurrences and may include the full range of appropriate management responses. Fire Management Plans must be coordinated, reviewed, and approved by the responsible agency administrator, to ensure consistency with approved land management plans.

Additionally, Department of Interior policy requires that all fire management plans incorporate elements which support attainment of the goals identified in the National Fire Plan and the NFP 10-year Comprehensive Strategy.

## **C. Direction and Policy Guidance for Fire Management Plan**

Because neither a Comprehensive Conservation Plan (CCP) or Habitat Management Plan (HMP) have been prepared, this Fire Management Plan (FMP) initially addresses only the land management requirements of the Final Environmental Assessment and Land Protection Plan for the Proposed Establishment of Mountain Longleaf National Wildlife Refuge (FEALPP). Additionally, the FMP will incorporate elements made necessary by the Federal Wildland Fire Policy, by the USFWS Fire Management Handbook, and by the National Fire Plan.

**Figure 2: Direction and Policy Guidance**



In addition to formal direction and policy guidance, this plan is based in part on recommendations from recent studies by Auburn University (Varner et al, 2000; Maceina et al. 1997) and input from Service fire ecologists and local refuge biological staff.

#### **D. Compliance with NEPA and Environmental Regulations**

Environmental compliance requirements are satisfied in the FMP because fire management activities are categorically excluded from regulation when conducted in accordance with local and state laws and ordinances and in accordance with Departmental and Service procedures. The NEPA process was completed during the preparation of the Draft Environmental Assessment and Land Protection Plan: Proposed Establishment of Mountain Longleaf National Wildlife Refuge.

#### **E. Description of the Forest Resource to be managed**

The value of the natural resources on Mountain Longleaf NWR is mostly intrinsic. Mountain Longleaf NWR is home to an ecosystem that is fast disappearing in the Southeastern United States. These lands represent the finest remaining example of a fire maintained mountain longleaf pine ecosystem. The Nature Conservancy has identified 13 outstanding natural areas and 32 species of plants and animals that are candidates for listing as endangered or threatened, species of special concern, or rare or uncommon biota. Researchers have also identified Mountain Longleaf NWR as a significant tract of unfragmented forest required by many declining neotropical migratory birds.

Refuge forest types reflect a meeting of the northern Appalachian forest with southern longleaf pine forests. These lands are often considered an outlier of the Blue Ridge Physiographic Province. The mixing of species from both northern and southern regions heightens floral and faunal diversity within these lands. Plants such as ground juniper and turkey oak represent species that reach their southern and northern range distribution on Choccolocco Mountain. The resulting forest cover comprises a mosaic of forests that grade from pine dominated stands to a variety of hardwood forest types. A range of environmental and physical factors, which include fire history, aspect, elevation, soils, moisture, and previous disturbances, largely determine the location and composition of these forests.

Historically, longleaf pine dominated the majority of these forests. With the advent of increased fire suppression along with extraction of mature longleaf pines, there has been a gradual change to less fire dependent and more opportunistic tree species. Within fire suppressed longleaf pine stands, woody species are prominent in both the shrub and understory layer, while fire maintained forests are more open with a dense herbaceous ground cover. Today's forests on the refuge still retain a significant longleaf pine component that ranges from fire suppressed to well maintain stands. Longleaf pines are typically found on more xeric sites, and south or southwest slopes and ridges up to an elevation of about 1900 feet. Other pine species occur on the refuge as part of the longleaf pine forest or as separate forest types. Fire suppressed and/or disturbed lands on the refuge are covered with a variety of pine and hardwood forest communities. Pines such as Virginia and shortleaf are common over many of the most xeric sites that may have been formerly dominated by longleaf pine. Virginia pine in particular seems to do well at elevations above 1900 feet. Loblolly pine is an opportunistic species that has reclaimed some of the more mesic sites and disturbed ranges.

Hardwood forests also comprise a prominent component of refuge forest cover and are critically important to neotropical migratory birds, and in particular, forest interior species. Because the vast majority of refuge lands contain steep slopes and xeric sites, most hardwood forests are comprised of oak-hickory forest types. Oaks such as chestnut, white, black, southern red, black jack and post, along with hickories such as pignut, sand and mockernut are common to these forests. Sprouts of the American chestnut can still be found on refuge slopes, particularly on Skeleton Mountain. Common understory trees include black cherry, hornbeam, red maple, flowering dogwood, blackgum and persimmon. Lowbush blueberry is often the most common shrub, with azaleas and hydrangeas commonly encountered.

Drainages on refuge lands comprise ephemeral and perennial headwater streams, springs and seepage areas. Seepage areas develop a dense shrub layer in absence of fire. Fire history indicates that during drought periods these areas are occasionally exposed to wildland fires that suppress the shrub layer and allow the establishment of an herbaceous layer of ferns, orchids and other wetland plants. White fringeless orchid, a candidate species, is found in refuge seeps with the Marcheta Hill Seep containing one of the largest known populations.

## **F. Refuge Fire History**

When Mountain Longleaf NWR was first used as a military training installation in 1898, fire was still a common occurrence in the forests of northeast Alabama. As the 20<sup>th</sup> century progressed and the dangers of wildland fire were taught to the public, the number of wildland fires steadily decreased in the surrounding region. Training with pyrotechnics and explosives, however, continued this fire regime on Mountain Longleaf NWR for many years. Only since the 1970s has a more intense suppression program been implemented that has reduced the number and acres that burn annually on

Mountain Longleaf NWR. This has led to an increasing hardwood mid-story and a decrease in natural regeneration of longleaf pine.

Although wildland fires have been recorded by the Army on Mountain Longleaf NWR since 1952, this data must be carefully interpreted. Until 1995, fires were only recorded if there was an economic loss associated with the fire. For example, a wildland fire that was judged not to have caused damage to facilities or forest resources was not considered in this compilation of wildland fires. Only since 1995 have all wildland fires been recorded and maintained in a written logbook. In addition, these fires represent incidences on both Mountain Longleaf NWR and Pelham Range. There has been no separation of these fires in historic logs that were maintained. However, Army policy dictated the expenditure of resources on wildland fires that caused, or potentially could have caused, economic loss. Because wildland fires in the mountains did not threaten economic loss, they were often allowed to burn unless they threatened isolated structures on the edge of the cantonment area or adjacent private property. This implies a more expansive (although undocumented) fire history than depicted in installation records. While this data is acknowledged to have been inconsistently recorded, it does provide a long-term record of fires on the installation and their consistent occurrence from year to year.

A review of wildland fires between 1995 and 1999 revealed five fires in excess of 100 acres occurred on what is now Mountain Longleaf NWR. On November 16, 1996 fires burned 1,176 acres on a single day. Since military training with pyrotechnic devices and tracers ended in 1998 the occurrence of wildland fire diminished greatly with an average of only three fires per year since 1998. This decrease in fire occurrence at MLNWR has long-term implications for the maintenance of longleaf pine forests on the refuge. Implementation of a prescribed burning program would compensate for the decrease in natural and human-caused fires.

There was a policy change by the Army in recent decades concerning suppression of wildland fires. As new facilities were built in the mountains, residences expanded along the installation boundary and smoke was perceived as a serious issue by the public, military commanders became more concerned about safety and stressed suppression of wildland fires that previously were allowed to burn to existing firebreaks. The eventual result of this policy has been an encroaching hardwood shrub and understory component that threatens the existence of future longleaf pine stands.

## **G Statement of Management Intent**

It is the intention of the Service to suppress all wildland fire occurring within or adjacent to the refuge, including natural lightning ignitions. Management-ignited prescribed fire will be utilized under controlled conditions and defined weather variables to mimic the natural role of fire in sustaining ecosystem functions, improving habitat conditions for wildlife and reducing hazardous accumulations of dead fuels.

Prescribed fire will not be used in the old-growth stands until all refuge stakeholders have reached consensus on limiting the risk to old-growth longleaf pine. Hazard fuel reduction activities including prescribed fire and mechanical treatments will be used on sites that do not contain high quality old-growth in order to provide a buffer around the old-growth stands.

## **II. RELATIONSHIP OF LAND MANAGEMENT PLANNING to FIRE MANAGEMENT POLICY**

### **A. Land Management Planning Objectives -- FEALPP**

The Final Environmental Assessment and Land Protection Plan (FEALPP) established the following objectives for management on these lands:

- Preservation and enhancement of the natural mountain longleaf pine ecosystem;
- Perpetuation of the neotropical migratory bird resource;
- Preservation of biotic diversity and abundance;
- The continuation of wildlife dependent recreational opportunities; and
- Promotion of a better understanding and appreciation of fish and wildlife ecology.

The primary goal of the FEALPP is the preservation and enhancement of the longleaf pine ecosystem. Meeting this objective will require a comprehensive prescribed burning program to ensure the continued maintenance and presence of this fire-adapted forest community. The most valuable natural resource on Mountain Longleaf NWR is the mountain longleaf pine forests. This species is tied to fire through natural processes and must have mineral soil exposed for the natural regeneration of the longleaf pine. Periodic forces, such as fire, are necessary to enable the regeneration process to continue on these lands.

This fire management plan describes in detail the strategies, goals, and tactics of fire management as a tool to implement the objectives of protecting, maintaining and enhancing the longleaf pine ecosystem.

### **B. National Fire Plan Objectives --NFP**

The encroaching urban-wildland interface has brought improvements such as residences and commercial operations to the very edge of the refuge. These structures must be protected from fires originating on the refuge, and conversely, refuge lands must be protected from wildland fire originating on nearby private lands. The National Fire Plan is a broad statement of federal policy that requires a range of fire management activities on and near federal lands.

The five “key points” of the National Fire Plan:

1. Maintain a cost-effective level of preparedness in firefighting and prevention.
2. Invest in projects to reduce fire risk with focused effort in wildland urban interface areas.
3. Work with communities to reduce the risks of catastrophic fire.
4. Rehabilitate fire-damaged wildlands and restore high-risk ecosystems.
5. Establish and maintain a high level of accountability including oversight reviews, progress tracking, and performance monitoring.

These five key points are further developed in a follow-on document entitled [A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment – 10-Year Comprehensive Strategy](#). In this document, known by the short title of “10-Year Comprehensive Strategy”, four objectives are identified:

- Improve Prevention and Suppression
- Reduce Hazardous Fuels
- Restore Fire-adapted Ecosystems
- Promote Community Assistance

The objectives identified in the National Fire Plan and in the 10-Year Comprehensive Strategy result in a range of specific strategies identified in this plan.

### **C. Policy Guidance-- USFWS Fire Management Handbook**

Service fire management policy is based on the Departmental Manual (620 DM 1) and the 2001 Federal Wildland Fire Policy. This policy includes the following requirements:

- Firefighter and public safety is the first priority. All Fire Management Plans and activities must reflect this commitment. With the possible exception of instances where the life of another is threatened, no Service employee, contractor, or cooperator will be purposely exposed to life-threatening conditions or situations.
- Only trained and qualified people will be assigned to fire management duties. Fire Management personnel will meet training and qualification standards established or adopted by the Service for the position they occupy. Agency Administrators will meet training standards established or adopted by the Service for the position they occupy.
- Employees who are trained and certified will participate in the wildland fire management program as the situation demands. Non-certified employees with operational, administrative, or other skills will support the wildland fire management program as needed. Agency Administrators will be responsible, be held accountable, and make employees available to participate in the wildland fire management program.
- Fire management planning, preparedness, wildland and prescribed fire operations, monitoring, and research will be conducted on an interagency basis with the involvement of all partners when appropriate.
- Fire, as an ecological process, will be integrated into resource management plans and activities on a landscape scale, across jurisdictional boundaries, and will be based upon best available science. All use of fire for natural and cultural resource management requires an approved plan which contains a formal prescription.
- The Service will employ prescribed fire whenever it is an appropriate tool for managing Service resources and to protect against unwanted wildland fire whenever it threatens human life, property and natural/cultural resources. Once people have been committed to an incident, these human resources become the highest value to be protected. If it becomes necessary to prioritize between property and natural/cultural resources, this is done based on relative values to be protected, commensurate with fire management costs.
- Regions will ensure their capability to provide safe, cost-effective fire management programs in support of land, natural, and cultural resource management plans through appropriate planning, staffing, training, and equipment.

- Management actions taken on wildland fires must consider firefighter and public safety, be cost effective, consider benefits and values to be protected, and be consistent with natural and cultural resource objectives.
- Refuges will work with their local cooperators and the public to prevent unauthorized ignition of wildland fires on Service lands.
- Structural firefighting is not the functional responsibility of the Service. Service assistance in structure protection should only be performed on an emergency basis to save lives.
- Fire management policies and procedures for safety, training and equipment are mandatory. See 241 FW 7 (Safety Operations - Firefighting), 232 FW 6 (Firefighting Training), and 241 FW 3 (Personal Protective Equipment).

#### **D. Other Legal Mandates**

Other compliance requirements include Section 106 of the 1966 National Historic Preservation Act, Section 7 of the Endangered Species Act (as amended in 1973), Section 810 of the 1980 Alaska National Interest Land Conservation Act, and Section 118 of the Clean Air Act (as amended in 1990). Additional state and local compliance requirements may also exist.

### **III. WILDLAND FIRE MANAGEMENT STRATEGIES**

#### **A. General Management Considerations**

The fire management operational options available for use at MLNWR are suppression; prescribed burning for hazard fuel reduction and habitat improvement; and mechanical fuel reduction in and around refuge improvements, urban-interface areas and old-growth longleaf stands. The operational options are augmented by outreach and training efforts intended to implement the requirements of the National Fire Plan.

The purpose of the fire management program is to support the accomplishment of the refuge management objectives. Therefore the specific refuge fire management strategies are as follows:

1. Suppress all wildland fire to protect human life and public and private property.
2. Use management ignited prescribed fire to restore and maintain the natural mountain longleaf pine fire sub-climax ecosystem.
3. Use management-ignited prescribed fire as a wildland fire prevention tool to reduce hazardous fuel accumulations along proposed refuge boundaries and adjacent to the refuge real property.
4. Use non-fire mechanical fuel reduction treatments to reduce hazard fuels in the wildland-urban interface, and at the perimeter of old-growth longleaf stands.
5. Provide for a wide range of planning, coordination, cooperation, and community assistance efforts to urban interface organizations neighboring the refuge.
6. Provide for the education of the local population in the benefits of wildland fire management and prescribed burning.

#### **B. Fire Suppression Strategies**

Fire suppression strategies for Mountain Longleaf NWR will place primary emphasis on the development of a fire suppression program that is capable of suppressing wildland fires quickly, while minimizing resource damage from both the fire and from suppression efforts. Meeting this objective will require a refuge fire management program with a significant initial attack capability of equipment and personnel.

1. Fire suppression on the refuge will be conducted with a high regard for personnel safety, and appropriate care for the management objectives defined in the FEALPP.
2. The initial attack strategy for all wildland fires will be to make the appropriate suppression response necessary to control each fire at a reasonable cost consistent with land and resource management and fire management objectives. This initial attack response will utilize either direct attack or indirect attack based on several factors discussed in Section IV.
3. Hazard fuel reduction projects and fire prevention programs will augment fire suppression capabilities. Hazard fuel reduction will primarily consist of the systematic application of prescribed fire to gradually reduce accumulations of dead fuels in timber stands with either low or high intensity fires under carefully controlled conditions.

4. Since this is a newly formed refuge there are no fire management resources on site to begin necessary site-specific planning and implementation of preparedness, and suppression. The refuge will depend on assistance from local Alabama Forestry Commission (AFC) resources and U.S. Forest Service resources from the nearby Talledega National Forest.
5. Until FWS fire management resources can be assigned to the refuge, all initial attack will be conducted by cooperating agencies. Fire occurrence will be reported to the District 7 Fire Management Officer so that the proper Departmental and Service reports can be filed.

Mountain Longleaf NWR is surrounded by a rapidly developing wildland/urban interface. This area is dominated by pine and hardwood stands that often have a thick understory resulting from years of fire exclusion. Fuels within this interface are contiguous with those on the refuge boundaries in many places. Rapid, capable and effective control of all wildland fires in this situation is the only reasonable and prudent fire suppression alternative. Suppression costs will always be subordinate to values at risk for fires that escape refuge boundaries and threaten residences, businesses and private timber resources. **Fire preparedness and suppression activities will be complicated by the presence of unexploded ordnance (UXO) and the absence of Service resources on site.**

### C. Prescribed Fire Strategies

Prescribed fire will be the major tool used to ensure that the mission of preserving and enhancing the mountain longleaf pine ecosystem on the refuge is accomplished. However, since there are no approved habitat management plans for the refuge, initial prescribed burning will be designed to reduce hazardous fuels in stands surrounding the old-growth longleaf areas.

1. Input from the refuge biologist, Service ecologists, fire managers and resource managers from other agencies and universities will be sought in determining parameters and guidelines for re-introducing fire into the old-growth longleaf sites.
2. Weather, fuel and drought index conditions will be monitored remotely by the fire staff at Gulf Coast Refuge Complex (GCRC) and through discussions with the Talledega NF fire organization.
3. When conditions appear favorable, available Service personnel from GCRC and other refuges or agencies will conduct the planned prescribed fires.

**Prescribed fires on the refuge will be complicated by the presence of the unexploded ordnance (UXO) and the absence of Service resources on site.**

### D. Mechanical Fuel Reduction Strategies

Mechanical fuel reduction activities will be used as needed and where appropriate to reduce hazardous fuel accumulations in and around old-growth stands, refuge administrative sites, visitor use areas and wildland-urban interface areas. Strategies include:

1. Thinning and clearing of large areas may be conducted by wheeled or tracked vehicle-mounted cutting heads or chippers.
2. Selective thinning may be conducted by crews using chainsaws or hand tools.

## **E. Wildland Urban Interface Strategies**

Wildland Urban Interface (WUI) activities to implement National Fire plan and the 10-year Comprehensive Strategy include:

1. Prepare a WUI Annual Work Plan to allow proper management of wildland urban interface efforts at MLNWR.
2. Generate intelligence, as needed, including GIS mapping and risk-assessment databases for developed areas around the refuge.
3. Develop hazard fuel reduction plans as required to mitigate wildland fire risk to developed areas around the refuge. Facilitate community-based hazard fuel reduction efforts.
4. Manage the Rural Fire Assistance (RFA) grant program to assist local fire departments in meeting their structure protection and wildland fire suppression obligations.
5. Coordinate dispatch and operations planning with local fire departments providing fire protection to the refuge and surrounding lands; negotiate Annual Operating Plan.
6. Coordinate with county planning and zoning departments regarding provision of defensible space in all new construction. Initiate or facilitate WUI Council or Firewise/Firesafe organization.

## **F. Public Education Strategies**

The refuge fire management program will supplement the refuge outreach program by:

1. Purchase fire prevention & education materials for use at public events.
2. Provide talks and demonstrations to schools, civic groups and refuge visitors explaining the use of fire for hazardous fuels reduction and resource management.
3. Provide information for the preparation of news releases announcing the commencement of prescribed fire season.

## **G. Unexploded Ordnance (UXO)**

The presence of (UXO) will be a major limiting factor in implementing fire management activities at Mountain Longleaf NWR. Unexploded ordnance requires establishment of restricted areas that include approximately 2851 acres or 37% of the current refuge area. Soil disturbance and equipment use will not be allowed in these restricted areas; indirect attack and use of aerial resources will be employed. The Service will follow all guidance provided by the Army in conducting fire suppression activities in the restricted areas.

Currently the Army is conducting investigations to determine the degree of clean-up/removal required for these lands. All lands believed to possibly contain UXO will go through an Engineering Evaluation/Cost Analysis (EE/CA) to determine the extent of UXO on the lands. The EE/CA will determine the extent of UXO, make recommendations concerning the types of reuse that can be supported within these lands, and provide recommendations concerning clean-up/removal actions. The Department of Defense Explosive Safety Board will review all eventual remediation proposals and final land use restrictions for UXO contaminated lands on the refuge. Until the army declares these

lands clean of UXO, all fire suppression and prescribed burning access will be restricted to existing roads and firebreaks within these lands.

### H. Wildland Fire Management Strategy by Fire Management Unit

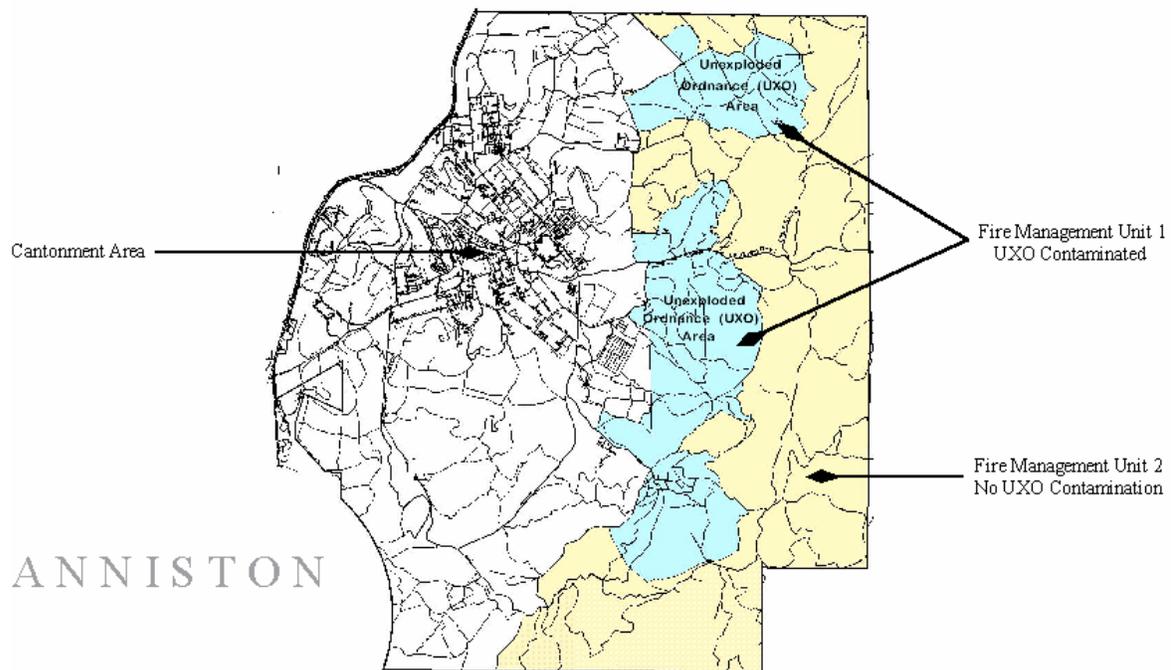
The refuge has been divided into two fire management units based upon property boundaries of the undeveloped portion of Mountain Longleaf NWR and the presence of UXO (Figure 3).

Fire Management Unit 1 (FMU 1), including two non-contiguous UXO contaminated land areas, is bounded by the cantonment area on the west and by Fire Management Unit 2 (FMU 2) on the north, east and south. FMU 2, including all non-contaminated areas, is bordered by private lands on the north, east and south and includes the proposed addition located at the south boundary of the refuge.

A pre-attack fire suppression plan will be prepared for each unit containing the following information:

- A detailed map of the unit showing roads, improvements, structures, fuel types, water refill points, old-growth longleaf stands and cultural resource areas.
- Fire suppression objectives for the unit
- Primary control strategies and tactics to be utilized within the unit.

**Figure 3: Fire Management Units**



**Fire Management Unit 1:** Fire Management Unit 1 (FMU1) includes all undeveloped lands within the area designated for restricted access due to UXO contamination. There will be no equipment use or use of hand tools allowed off the established roads, fire breaks and trails in this unit until such time as the area has been declared clear of UXO.

Appropriate suppression responses in FMU1 will be limited to indirect attack and aerial attack with water and retardant. Monitoring of small fires during periods of low fire danger may also be utilized. Soil disturbing activities will not be permitted; ground resources will be restricted to existing roads and fire breaks which have been cleared of UXO. Direct attack of small fires near cleared roads may be permitted with hose lays provided no hand tools are used.

Prescribed fire in FMU1 will be conducted with the same basic restrictions as suppression activities. Aerial ignition may be used in the restricted area but holding crews will be confined to roads and firebreaks. Prescribed fire within the old-growth longleaf stands will not begin until refuge resource management plans have been completed or stakeholders agree on acceptable prescription parameters and reach a consensus on pre and post burn monitoring standards and procedures. Until specific resource management direction is given, prescribed fire will be used only to manage hazardous fuel loadings to protect the old-growth stands from wildland fire.

Fuels on the unit are classified as Fire Behavior Fuel Models (FBO) Models 8 and 9 and National Fire Danger Rating System (NFDRS) Models E and R. Fuel loadings range from normal to high for the fuel models due to the lack of fire in the past five years. Topography ranges from nearly level to 90% slopes. There are numerous roads and firebreaks in place throughout FMU1 that will be cleared of UXO by the Army. These roads will need to be maintained every two to three years at a minimum.

There are no improvements within the unit that require protection from fire at this time. However, there are designated intensive-use areas, which will be cleared of UXO and utilized for administrative, and/or visitor use areas in the future.

Fire Management Unit 2: Fire management Unit 2 includes all undeveloped lands that are not contaminated by UXO and therefore have no man-caused limitations to fire management strategies or tactics. In these areas all appropriate suppression responses will be utilized. There will be some limitations on direct attack due to steep terrain or heavy fuels. In old-growth longleaf stands, burning out with high intensity head fire will not be permitted. Particular attention will be given to protecting all old-growth longleaf stands from adverse impacts due to suppression activities.

Fuels on this unit are similar to those on FMU 1 with the same fuel models represented. Fuel loadings range from normal to high, and slopes range from 10% to nearly 90%.

There are numerous roads and firebreaks in place throughout the unit; these will need to be maintained every two to three years at a minimum.

The only improvement within the unit that will require protection from wildland fire is the emergency communications (E-911) site at the top of Moorman Hill. Site improvements include an equipment building, guyed tower, and emergency generator with fuel tank.

The selected fire management strategies for FMU2 are both direct and indirect or a combination of both. Topography and values at risk will determine the correct suppression response. Mechanical equipment may be used where slopes permit, and hand crews may be used anywhere within the unit where no limiting safety factors apply. Engines may be used on any road, fire break or trail where they can safely gain access.

Prescribed burning may be conducted throughout FMU2 in established burn units. At this time prescribed fire activity is not planned at the extreme eastern edge of the FMU along the refuge boundary since terrain precludes establishing firebreaks along the refuge boundary.

## **IV. FIRE MANAGEMENT PROGRAM COMPONENTS**

### **A. Preparedness for Wildland Fire Suppression and Prescribed Fire**

Fire suppression preparedness at MLNWR will be based on guidance found in the Service Fire Management handbook and Standards for Fire and Aviation Operations 2002. Even though there are no fire management personnel assigned to the refuge, the following preparedness standards will guide suppression actions taken by cooperating agencies and severity detailers until the refuge fire organization is staffed.

- **National Fire Danger Rating System (NFDRS)**

The NFDRS is a set of numeric indices that describe the potential over a given geographic area for fires to ignite, spread, and require fire suppression action. Fire weather information is integrated with fuel and topographic information to calculate NFDRS indices. To establish the initial indices at MLNWR, weather data for the years 1980–2002 from the nearby Talledega National Forest were acquired and processed with the FireFamily Plus program. This program identifies staffing level breakpoints for use in the refuge step-up plan.

Of the indices available through the NFDRS, Burning Index (BI) has been selected as the basis to rank fire danger in the Service's Southeast Region. Burning Index therefore provides the basis for increased readiness and determining staffing class levels. BI, defined as flame length times 10 is designed to reflect the difficulty in controlling a new fire start. It is driven by the variables of wind speed and fine dead fuel moisture, which in turn is directly related to relative humidity. BI (and all NFDRS outputs) relate only to the potential of an initiating fire that spreads, without crowning or spotting, through continuous fuels on a uniform slope.

There are other fire danger indices that are available through NFDRS and one or more of these may ultimately prove to be a better indicator of fire occurrence and spread. The ones that are most sensitive to the weather and fuel conditions on the refuge are Spread Component (SC) which is derived from the theoretical rate of spread in feet per minute and the Keetch and Byram Drought Index (KBDI) which is a measure of the net effect of evapotranspiration and precipitation in producing cumulative moisture deficiency in duff and upper soil layers. KBDI therefore relates to the flammability of organic material in the ground and is an indicator of the seasonal effect of drought on fire behavior. KBDI will be used to estimate increased levels of fire danger due to prolonged drought and will serve to determine when severity conditions exist. Severity conditions are best determined when current KBDI values are plotted against seasonal average levels and are then determined to be either significantly higher or lower than average for a given time of year.

By incorporating Fire Occurrence history into its database, The FireFamily Plus program has the ability to provide some insight into correlations between the NFDRS indices and fire occurrence. Linking USDA Forest Service, Shoal Creek Ranger District Fire Occurrence data with weather data from the Talladega National Forest, yields the following conclusions. When MLNWR is opened for public use similar conclusions should apply.

- 60% of fires on the Ranger District are caused by arson.

- The distribution of fire occurrence was more heavily weighted towards the mid-range than towards the high end of the indices. This could be related to the numerous arson fires—human factors may be as important as weather factors.
- SC and BI are equally effective as indicators of fire occurrence and spread.
- Sometimes, a basic weather observation may be as good as a calculated index: for instance...most fires occurred when the afternoon Relative Humidity was 45% or lower.

- **Seasonal Preparation**

Prior to the beginning of the established fire season, a readiness evaluation must be conducted to evaluate detection, communication, dispatch and response capabilities. MLNWR will use the current Interagency Fire and Aviation Preparedness Review Guide (IFAPRG) as a format to determine and document pre-season readiness. The IFAPRG will be used to evaluate the following minimum fire program elements.

- **Administration/Organization**
- **Facilities/Equipment**
- **Dispatch/Communication**
- **Safety/Hazard Mitigation**
- **Operations/Aviation**

An example of the thorough evaluation criteria in which the Interagency Fire and Aviation Preparedness Review Guide uses, is located in Appendix A (The exhibited template can be modified to meet the Refuge needs). The current edition of the IFAPRG can be downloaded at [www.fire.blm.gov](http://www.fire.blm.gov)

- **Fire Prevention & Community Education**

Traditional fire prevention measures such as the "Smokey Bear" program will not be utilized by the refuge fire prevention program. However, assistance will be given to the Alabama Forestry Commission and the U.S. Forest Service when requested to support their prevention programs. The emphasis of the refuge program will be in educating the local residents and refuge visitors to the importance of prescribed fire in preventing wildland fire and restoring endangered habitats. This will be done through demonstrations and lectures at local schools, scouting events, clubs and organizations and one-on-one conversation with refuge visitors and local residents.

- **Fire Season**

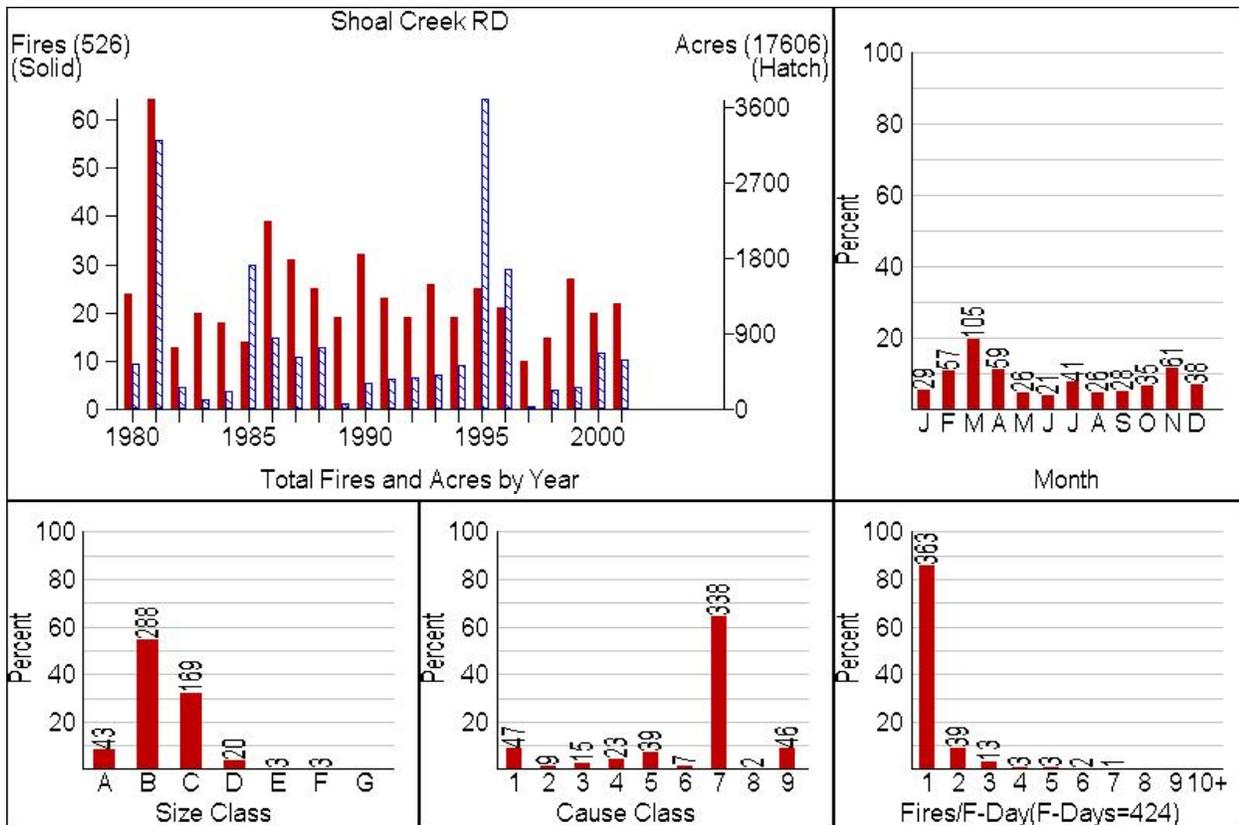
The following chart, Figure 4, was produced using the FireFamily Plus program. It shows a statistical summary of fire occurrence on the nearby Shoal Creek District of the Talladega National Forest. The bar graph in the upper right shows fire occurrence by month, for the period 1980-2001. The District has a split fire season, with most fires occurring during the months of October-December and February-April.

The month of July also stands out with a large number of fires. A similar statistical summary was produced for the month of July, and it revealed that over 40% of the fires were lightning caused. Similar trends can be expected at MLNWR.

There were 526 fires during the twenty-two years covered by the chart. 1981 had over sixty fires; 1995 had the most acres with over thirty-six hundred. Thirty-two per cent of the fires were between ten and one hundred acres in size while two-thirds of the fires were ten acres or smaller.

The main causes of fires at Shoal Creek were arson with over 60%, followed by lightning with 9% and escaped debris burning with 7%. Multiple occurrences were rare but not extraordinary, with 15% of all fires happening on the same day as another fire.

**Figure 4: Historical Fire Statistics for Shoal Creek Ranger District**



• **Fire Detection**

Fire detection on Mountain Longleaf NWR in Calhoun County is provided through cooperative agreement with the Alabama Forestry Commission. The Commission has come to rely on local residents reporting fires and the use of fixed wing spotter planes. During periods of high fire danger the U.S. Forest Service contracts with an OAS approved vendor to make detection flights over the Talledega National Forest. Through cooperative agreement the refuge will be included in these flights. Refuge resources will not normally be used for detection purposes but during periods of frequent fire activity or at staffing levels 4 or 5, refuge engine crews will be prepositioned at strategic locations on refuge lands to discourage arsonists and to shorten response time to fires started in flashy fuels. Until the refuge fire staff is hired, emergency presuppression or severity resources will be ordered to meet this need.

- **Fire Weather**

The National Weather Service located in Birmingham, AL provides a daily fire weather forecast available through their website ([www.srh.weather.gov/bmx/firewx/firewx.html](http://www.srh.weather.gov/bmx/firewx/firewx.html)). This fire weather forecast will be used by the refuge Fire Management Officer to develop NFDRS fire danger forecasts on a daily basis and made available to refuge personnel each morning. Until the refuge fire management program is staffed fire danger forecasts can be obtained from the U.S. Forest Service, Talladega National Forest Zone Dispatch Office in Talladega, AL.

Fire weather monitoring is accomplished through the use of a remote automated weather station (RAWS). Until a RAWS is purchased, weather may be recorded at the U.S. Forest Service RAWS located 10 miles away on the Shoal Creek District of the Talladega National Forest. All basic weather data required to calculate NFDRS indices are collected by the weather station. Daily at 1300 during Central Standard Time and at 1400 during Central Daylight Time the weather data is uploaded to the Weather Information Management System (WIMS), based in Kansas City, MO. Refuge staff accesses this information across the Internet and records NFDRS indices. An alternate method to access RAWS data is to purchase software from Forest Technology Systems (FTS), manufacturer of the weather station. This information is made known to the refuge fire crew by radio broadcast or phone call to the fire cache so that adjustments if necessary may be made in the crew activity according to the step-up plan. During prescribed fire operations and wildland fire incidents a weather/fire behavior observer will be designated to monitor current conditions and verify forecasts, using the fire weather observers record in the belt weather kit. The observer will submit a Fire Weather Special Forecast Request (“spot forecast”) to the National Weather Service, Birmingham office, using WS Form D-1. For each Spot Forecast requested, the observer will provide feedback to the fire weather forecasters.

- **Defining Potential Fire Behavior**

The main concern at the present time is the continuing accumulation of fuels due to the lack of recent prescribed fire on the Refuge. This condition, when combined with cumulative drought or a dry cold front, increases the potential for extreme and erratic fire behavior. The steep terrain promotes rapidly spreading fires with long flame lengths. Torching into the pine canopy and short range spotting ahead of the flaming front can cause serious safety problems for suppression crews.

The Mountain Longleaf NWR is a mix of pine and pine/hardwood stands, generally characterized as the Southeastern Piedmont fuel type. The applicable fuel models are National Fire Danger Rating System Fuel Models E (hardwood litter, fall) and R (hardwood litter, summer), and NFFL Fuel Models 9 and 8, respectively.

Under normal conditions the fuel load is light to moderate, most of which is compacted on the ground. The predominant fuels are matted pine needles, cones, twigs and branches, compacted hardwood leaves, small saplings and deciduous shrubs. The amount of brush varies from almost non-existent to almost solid brush, depending on the frequency of fire and the density of the canopy. Fires in this type fuel generally have low flame lengths and low rates of spread. The surface fuel is compacted and dries out very slowly. Consequently, much of it is not available to burn. Shrubs and small saplings tend to be more readily available and will increase fire activity where they are present.

The autumn fire season is triggered by a drying trend that peaks in late September and early October. This season ends with increased precipitation in December and January. After a winter of dormancy,

curing and freezing, the lighter fuels become subject to the dry, windy cold fronts of March and April. The contrast between the autumn and the winter/spring fire seasons is highlighted by these statistics from the nearby Shoal Creek Ranger District.

Winter/Spring: Average Fire Size 55 ac, Median = 6 ac

Autumn: Average Fire Size 20 ac, Median = 5 ac.

Average KBDI during Winter/Spring: 20-180

Average KBDI during Autumn: 100-450

Most of the fires over 100 acres occurred during the winter/spring fire season, when low humidity and high winds combined with cured fuels to create an explosive situation. Some of these fires occurred even with KBDI values below 100, but were preceded by a period of two weeks or more with little or no rain. Fires that take place during the winter/spring season are more likely to be quickly spreading surface fires, primarily consuming the one-hour fuels. During the autumn season, humidities are higher and winds are lower, but the KBDI is higher. These will be hotter, slower moving fires, involving more of the 100-hr and 1000-hr fuels.

Table 1 shows estimated potential fire behavior for the Mountain Longleaf NWR, using the BEHAVE fire prediction program and inputs from the nearby Shoal Creek District of the Talladega National Forest. BEHAVE assumes that a fire is a single-point ignition, and that all of the input variables (fuel moisture, slope, wind, etc) are held constant.

**Table 1: Potential Fire Behavior**

**DEFINITION OF TERMS**

	WEATHER INPUTS				FUEL MOISTURE			BEHAVE OUTPUTS			
	TEMP	RH	LOW RH (24 hr)	WIND (20 ft)	1 hr	10 hr	100 hr	ROS	FL	HEAT	INTENSITY
Typical October Day Fuel model 9	70-80	48-58	40-50	3-5	10-15	11-13	17	2-4	1-2	330	12-25
12/1/95 Staffing Level 4 Fuel model 9	64	41	32	7	9	11	19	5-14	2-4	335	32-86
Chimney Peak Fire 11/16/96 250 ac. Fuel model 9	60	56	47	4	10	9	17	3-6	2	330	12
Typical April Day Fuel model 8	60-70	38-48	30-40	5-7	10-13	11-13	17	1	1	164	2
4/13/98 Staffing Level 4 Fuel model 8	76	36	19	9	8	7	15	1-4	1-2	173	4-12
Terrapin Creek Fire 4/10/95 3321 ac. Fuel model 8	89	24	24	5	6	8	15	2	1	187	2-8

ROS = Rate of Spread, in chains per hour.

FL = Flame Length.

HEAT = Heat energy release per square foot, within the flaming front. Expressed as BTU/ft sq.

INTENSITY = Heat energy release per second, from a one-foot wide section of the fuel bed extending from the front to the rear of the flaming front. Expressed as BTU/ft/sec.

• **Fire Personnel Requirements**

**Qualifications**

Refuge personnel engaged in wildland fire and/or prescribed fire operations must meet or exceed the standards set by the National Wildland fire Coordinating Group (NWCG). All refuge employees, permanent, seasonal, and temporary will be qualified within the NWCG system for the position served, unless assigned as trainees. Refuge personnel will meet the NWCG standards and requirements found in the Wildland and Prescribed Fire Qualification System Guide, PMS 310-1.

Refuge personnel who function in the following positions must meet the Agency-determined qualification and skill requirements found in the USFWS Fire Management Handbook. (The positions listed below are not covered in the PMS 310-1.)

- Engine Operator
- Tractor/Plow Operator
- Dozer Operator
- Prescribed Fire Burn Boss Type 3
- Incident Commander Type 5

### **Annual Requirements to Maintain Qualifications**

Refuge personnel engaged in wildland fire and/or prescribed fire operations must meet annual agency standards by completing and passing the following:

- Annual Safety Refresher covering the Standard Fire Orders, 18 Watch Out Situations, and Fire Shelter deployment (8hrs minimum).
- Work Capacity Test (pack) at the appropriate fitness level.

### **Personnel Training**

Refuge fire personnel are encouraged to participate and attend fire training in areas of Operations, Planning, Logistics, Command, Finance, and Ecosystem Management. In order to maintain high readiness standards, employees who function in any fire position must stay informed of the latest information, technology, tactical and safety concepts. Therefore, training must be thorough and ongoing. Not only is structured classroom training and local fire experience beneficial for gaining knowledge, but also it is important that employees receive “on the job” training by participating in interagency fire assignments and/or details off refuge. Training will be offered that will elevate personnel to National Interagency Incident Management System positions that will meet not only refuge needs, but also the district, regional and national needs of the Service.

Due to the complexities and workloads that wildland and prescribed fire operations impose on the refuge, it is necessary that the non-fire funded refuge staff support fire management activities either on the fireline or in logistical or financial management activities. Recommended training for refuge positions (non-fire) to provide this support is detailed in Table 2.

**Table 2: Training For Refuge Personnel**

<b>Refuge Position</b>	<b>Recommended Training</b>
Project Leader	I-100 Introduction to ICS I-200 Basic ICS S-260 Interagency Incident Business Management S-215 Fire Operations in the Wildland/Urban Interface M-580 Fire in Ecosystem Management M-581 Fire Program Management
Deputy Project Leader	S-130 Firefighter Training S-190 Introduction to Wildland Fire Behavior I-100 Introduction to ICS I-200 Basic ICS S-260 Interagency Incident Business Management S-215 Fire Operations in the Wildland/Urban Interface M-580 Fire in Ecosystem Management M-581 Fire Program Management
Office Assistant	I-100 Introduction to ICS I-200 Basic ICS S-260 Interagency Incident Business Management S-261 Applied Interagency Incident Business Management D-105 Entry Level Dispatcher D-110 Dispatch Recorder
Refuge Biologist	S-130 Firefighter Training S-190 Introduction to Wildland Fire Behavior I-100 Introduction to ICS I-200 Basic ICS S-215 Fire Operations in the Wildland/Urban Interface M-580 Fire in Ecosystem Management RX-510 Applied Fire Effects S-580 Advanced Fire Use Applications
Equipment Operator	S-130 Firefighter Training S-190 Introduction to Wildland Fire Behavior I-100 Introduction to ICS I-200 Basic ICS S-215 Fire Operations in the Wildland/Urban Interface S-290 Intermediate Wildland Fire Behavior

**B. Wildland Fire Suppression Operations**

Fire suppression operations at MLNWR will be based on guidance found in the Service Fire Management handbook and Standards for Fire and Aviation Operations 2002. Although there are no fire management personnel assigned to the refuge, the following standards will guide suppression actions taken by cooperating agencies and severity detailers until the refuge fire organization is staffed.

- **Emergency Pre-suppression**

During the fire season there will be short-term weather events and increased human activity that increase fire danger beyond what may be predicted for the step-up plan. These types of events cannot be planned or budgeted and may call for lengthening the duty day, extending the workweek or detailing extra resources to meet the anticipated danger. The Project Leader has the authority to make this decision with notification to the Regional Fire Management Coordinator. Limitations on utilizing emergency pre-suppression funds are listed in section 1.6 of the Service Fire Management Handbook.

- **Step Up Plan**

Step-up plans are designed to direct incremental preparedness actions in response to increasing fire danger. “Staffing levels” delineates those actions. The following table outlines MLNWR’s predetermined responses to increased fire danger for a burning period.

**Table 3: Step-Up Plan Actions**

<b>Staffing Level</b>	<b>Burning Index Fuel Model R Jan-Sep</b>	<b>Burning Index Fuel Model E Oct-Dec</b>	<b>Step-Up Action</b>
SL-1	0-6	0-8	Collect fire weather forecast at 0730 daily. Use fire prediction program to obtain 1300 Burning Index. Perform Preventative Maintenance checks on fire equipment. Crews will have PPE and fire packs with them at all times
SL-2	6-11	9-16	All of the above. If high wind event then suppression crews will patrol refuge boundary roads.
SL-3	12-22	17-32	All of the above. Suppression crews will dress in Nomex pants, take engines to project work assignments, and maintain radio contact with headquarters.
SL-4	23-26	33-38	All of the above. Initial Attack dozer/tractor plow operators will take units to project work. Projects will be of short duration and close to the refuge. A Dispatcher will staff and track resources.
SL-5	27+	39+	All of the above except suppression crews will standby at the fire compound or pre-position at strategic locations.

- **Morning Briefing**

Every morning at a predetermined time set by the FMO, refuge personnel with fire responsibilities or duties, will meet to discuss pertinent information and assignments for the day. This morning briefing will be mandatory during the Refuge’s fire season. Important fire topics include but are not limited to:

- Fire Weather
- Fire Behavior
- Staffing Level
- Personnel status
- Equipment status
- Projects/assignments
- Fire Situation (local)
- 6 minutes for safety

An appropriate morning briefing checklist is shown in Appendix B.

- **Equipment Checklists**

Any critical piece of fire equipment used in either wildland fire suppression or prescribed burning operations, will be checked, maintained, and restocked every morning during fire season. The Refuge will have vehicle/equipment preventative maintenance checklists/inventories for each piece of critical fire equipment. Any deficiencies or shortages will be documented and corrected. If serious deficiencies are found, the effected equipment will be considered Out of Service (OUT) at the direction of the FMO, until correction is made. An example of standardized checklist and inventory sheets are shown in Appendix C.

- **Initial Attack**

The purpose of the wildland fire suppression program is to provide the equipment and personnel necessary to make an appropriate management response to all human and natural caused fires. Management of unwanted ignitions for resource benefits will not be allowed by this plan. Therefore, the only appropriate response is suppression of all wildland fires that occur within or near proposed refuge boundaries that threaten life, property and refuge resources. The objectives of the refuge initial attack suppression program are:

- Protect the lives of refuge visitors, employees, and local residents and ensure firefighter safety during fire emergencies.
- Protect refuge resources and improvements from the threat of fire.
- Make the appropriate suppression response to all wildland fires that threaten refuge resources, utilizing suppression strategies and tactics that will provide the lowest level of negative impact to refuge resources.

Determining appropriate initial attack strategies and tactics must be based on the main incident and management objective: providing for firefighter and public safety. There are other factors, including fire behavior (rate of spread, fuel type, flame length), which along with values at risk and resources available will determine which strategy and tactic will be used. When selecting and implementing strategy and tactics, suppression objectives, the type and number of resources available, their condition (work/rest), present and predicted fire behavior and weather conditions will be considered. The Incident Commander, utilizing guidance from pre-attack plans and input from refuge resource advisors if available, will make determination of strategies and tactics.

Identification and mitigation of risk must be considered in all strategic and tactical planning prior to initiation of action. All personnel arriving at an incident must receive a briefing from the incident commander prior to initiating any actions on the incident. The presence of UXO within FMU1 must always be considered and crews briefed on safety constraints inherent with this contamination. Incident commanders must place a priority on providing briefings to resources already on scene. The principles of Lookout, Communicate, Escape-routes and Safety-zones (LCES) must be implemented prior to the initiation of any actions.

- **Direct Attack**

This strategy will be utilized primarily in FMU-2, which contains no UXO. Direct attack on the flaming edge of the fire will start with an anchor point established at a road or permanent fire line, stream or other natural or man-made barrier to fire. An anchor point may be established in the black at the rear of a fire. Burnouts will be used to stabilize and strengthen control lines. Tractor plow units or dozers will be used where there are no limitations on equipment use due to terrain, cultural resource or natural resource concerns.

Due to the possibility of heat-induced detonation of UXO, direct attack with hose lays will not normally be used within FMU1. Ground disturbance by equipment or hand tools will not be allowed. The refuge manager must authorize any direct attack within FMU1.

- **Indirect Attack**

This strategy will be utilized in FMU-1, which contains UXO, and anywhere that terrain, fire behavior or sensitive natural or cultural features makes direct attack unsafe for firefighters or might cause unacceptable damage to sensitive features. Indirect attack will include setting backing fires from established fire lines and roads and burning-out of the containment area using aerial ignition.

Mop-up will be a component of each type of attack in both FMU's. Water use only will be permitted to mop-up following wildland fires in FMU-1 and only from established roads and firebreaks.

No matter which strategy is employed incident commanders should ensure that sufficient suppression resources are available on scene to deal with any fire escape from the containment perimeter as well as providing for adequate patrol and mop-up.

The basic initial attack organization for refuge crews responding to fires on refuge lands will include an initial attack incident commander (ICT4) who will supervise a tractor plow unit and a type 6 engine. A law enforcement officer will be dispatched if necessary to provide security for fire fighting resources or to provide initial investigation of human caused fires. The refuge office assistant, when hired, will act as initial attack dispatcher.

If local fire departments or AL Forestry Commission crews respond to refuge wildland fires then their dispatchers will notify the refuge office so that a refuge ICT4 can be dispatched to take command and order appropriate resources to supplement or relieve the non-Federal crews. At a minimum a refuge resource advisor must be present with non-refuge crews to ensure that refuge resource values are protected.

All fires occurring on the refuge will be manned with refuge resources until mopped up or declared contained. Refuge fires will be declared out no sooner than 24 hours following control or when sufficient fuel moisture recovery has taken place to prevent escape.

- **Extended attack**

Extended attack occurs when a fire has not been contained or controlled by the initial attack forces within the first burning period, and operations must continue until either transition to a higher level incident management team is completed or until the fire has been contained or controlled. Extended

attack requires preparation of a Wildland Fire Situation Analysis (WFSA) by the refuge manager to guide the selection of fire management strategies during the extended attack.

The extended attack incident at MLNWR will most commonly be a fire that escapes initial attack and continues to burn into the next burning period or beyond. Extended attack may also be required if containment is accomplished during the first burning period but patrol and/or mop-up is required over an extended period to safely control the fire.

Most extended attack fires at MLNWR will be managed as a type 3 incident. In these cases an extended attack incident commander (ICT3) must be ordered to assume control of the fire if there is not one assigned to the refuge staff. In this case some or all of the command and general staff positions may be activated, usually at the division/group supervisor and/or the unit leader position. Only in a rare case should a type 2 incident management team be ordered to manage an extended attack incident.

Service policy and guidelines on dealing with incident management teams on extended attack fires are listed in Chapter 3.2 of the Service Fire Management Handbook.

- **Minimum Impact Suppression Tactics**

The Mountain Longleaf Pine National Wildlife Refuge will utilize Minimum Impact Suppression Tactics (MIST) while suppressing fire only if the following guidelines are met.

1. Firefighter and Public safety are not compromised.
2. MIST tactics and implementation will be discussed in pre-incident briefings prior to action.
3. The Incident Commander will continuously evaluate weather conditions, fire behavior, and MIST effectiveness during the incident.
4. Suppression objectives can be met.

If the above conditions are met, the refuge will suffer minimal environmental impacts by using MIST in the fire suppression efforts identified in Table 4:

**Table 4: Minimum Impact Suppression Techniques**

SUPPRESSION ACTIVITIES	PRIMARY ECOLOGICAL CONSIDERATIONS	PRIMARY MITIGATION/ACTION
<b>Fire Line Phase Mop-up Phase Camp-sites/Personal Conduct Restoration/Rehabilitation</b>	<b>A) Old-growth/High Quality Longleaf Pine</b>  <b>B) Soil Disturbance</b>  <b>C) Drainages/Seepage Springs/Streams/Water</b>  <b>D) Erosion</b>	<b>A) Use of Natural barriers/water instead of Mechanical line construction. Minimize cutting/mechanical damage to live trees.</b>  <b>B) Same as above except if mechanical line construction is used, then the line shall be shallow in depth. Vegetation clearance for temporary Camp- sites/parking areas to be minimal. Mechanical lines rehabilitated by hand and/or low impact heavy equipment not more than a week after first constructed and before moderate/heavy precipitation.</b>  <b>C) Limit use of Foam/Gel/Retardant. Spill Protection for portable pumps if used.</b>  <b>D) Water Bar use. Limited felling/cutting of live/dead fuels on slopes. Seeding if necessary. Limit quantity of water to minimize run off.</b>

- **Emergency Rehabilitation and Restoration**

Departmental and Service burned area emergency stabilization and rehabilitation policy is found in 620 DM3 and 095FW3.9 respectively. This policy requires that all bureaus use the Interagency Burned Area Emergency Stabilization and Rehabilitation Handbook. This handbook replaces FWS guidance that was found in chapter 5 of the Fire Management Handbook.

Emergency stabilization and rehabilitation (ESR) requires immediate action following an intense fire. Therefore these policies require the project leader to prepare a site-specific plan, which must be reviewed by the Regional Fire Coordinator and, depending on dollar amount requested, either at the Regional or Washington Office. Implementation of the plan is the responsibility of the project leader and not the incident commander or incident command team assigned to the fire. As the interpretation of appropriate ESR activities is ever changing, the project leader should base all plans on the most recent guidance listed in the newest electronic copy of the Interagency Burned Area Emergency Stabilization and Rehabilitation Handbook located on the Service Fire Management Branch home page.

The majority of wildland fires on the refuge will not require ESR. Following every suppression action on the refuge that requires the use of plows and hand tools, control lines and surface damage will be rehabilitated by pulling the berms back into the line and building waterbars at the rate of one for every five feet of change in elevation. Grass seed will not normally be sown on plow lines but rather native plants will grow into the line from either side.

- **Air Quality & Smoke Management**

On wildland fires strategies and tactics will be used that minimize smoke production as a public safety hazard.

- Mop up within 200 feet of any control line adjacent to major roads or residential areas.
- Place smoke ahead signs on the new bypass and Alabama Highway 21, along with any public paved road that serves as an arterial or primary feeder route when suppressing fires that are producing enough smoke to impair visibility. Notify Alabama Highway Patrol during these incidents.
- When burning out is used as a suppression tactic, ignition methods will be used that provide rapid burnout of fuels and quick smoke dispersion.

### **C. Wildland Fire Use**

Wildland fire use is not an option for Mountain Longleaf NWR due to the relatively small size of the refuge and the values at risk both on and surrounding the refuge. Wildland fire use will not be considered in this plan.

### **D. Prescribed Fire**

Prescribed fire is defined by the U.S. Fish & Wildlife Service as "the controlled application of fire to wildland fuels in either their natural or modified state, under specified environmental conditions which allow the fire to be confined to a predetermined area and at the same time produce the fire line intensity and rate of spread required to attain planned resource management objectives".

The goals of the prescribed fire program at MLNWR are to:

1. Conduct a vigorous prescribed fire program with the highest professional and technological standards using all means available to prevent escaped fires.
2. Identify and implement firing techniques that are most appropriate for achieving stated objectives on specific sites and habitats.
3. Efficiently accomplish resource management objectives through the application of prescribed fire.
4. Continually evaluate the prescribed fire program to better meet program objectives by updating prescriptions and monitoring plans and integrating newly proven technical and scientific treatments, if applicable.

- **Long term Prescribed Fire Program**

The long-term program of prescribed fire use at the refuge will be applied in a manner, which is consistent with the above goals in order to accomplish the resource management objectives of the refuge. The use of prescribed fire to enhance and maintain sites that support old-growth longleaf pine will be a continual and ongoing event. Accomplishing these objectives requires consistent management strategies including measurable objectives, qualified personnel, quantified ranges of conditions under which the burns will be conducted, a description of actions which will be taken if these conditions are exceeded (contingency plan for escaped fires), a monitoring and documentation process and a review and approval process for each prescribed burn. Once a management ignited fire program is started it must be supported and sustained by refuge and regional policies and modified or improved based on advances in scientific study.

- **Planning & Implementation**

Prior to implementation, all prescribed fires must have a written plan that is reviewed and approved by the refuge manager. The Prescribed Fire Plans should ideally be prepared and developed by an interdisciplinary team in which at least one member has successfully completed the FWS Prescribed Fire Planning and Implementation or the NWCG Prescribed Fire Burn Boss training course. The Prescribed Fire Plan must discuss all key issues and concerns identified during refuge strategic and operational planning. The formal Prescribed Fire Plan is made up of many operational elements. Each element addresses a specific aspect of the prescribed fire operation. If they do not apply, they should be noted as "N/A", they should not be omitted or not addressed. In some cases, special prescription elements, variables, or other requirements unique to the refuge will require additional entries. The standard Prescribed Fire Plan format used by the Southeastern Region is found in exhibit 1-4-2 of the Service Fire Management Handbook.

Another qualified burn boss also reviews this plan for technical accuracy. Prescribed fire plans will also be reviewed by appropriate permitting agencies for clearances regarding the protection of air quality, endangered species or cultural resources.

The following are key issues that will be addressed in all Prescribed Fire Plans.

1. Prescribed burn objectives and how they support the land use objectives for the area
2. Expected fire behavior.
3. Buffer and safety zones.
4. Fire perimeter length and acreage burned limit.
5. Analysis of the cumulative effects of weather and drought on fire behavior. This should include a historical analysis of a drought index (i.e., Palmer, Keetch-Byram, ERC, etc.).
6. Potential risks to and impacts on visitors, users, and local communities, both on and off site.
7. Considerations of environmental, economic, and social effects, both on and off site.
8. Regional and national fire activity is within planned limits.
9. The number of fires burning in the planning area at one time is within planned limits.
10. Items to be checked during the burn day go-no-go checklist must include:

- Predicted weather, environment, and fire behavior are within prescribed limits.
- Availability of implementation personnel, contingency forces, equipment, and supplies are within planned limits.
- Implementation personnel are briefed.
- Required notifications are made.

- **Prescribed Fire Strategy**

The primary strategy in the use of prescribed fire will be to approximate the role of natural fire in the maintenance of the various vegetation types and habitats found within the refuge. Research has shown that the fire return interval in the longleaf pine of the region is three to five years. A preliminary estimate places approximately 6,000 acres in this natural fire frequency, which requires the ignition of nearly one third of the area or approximately 2,000 acres per year. Prescribed fire units will be rotated between various locations to create a more natural mosaic effect in the burn pattern within the refuge and decrease the potential for creating too much of a homogeneous habitat condition within any single management unit. Burn units will vary in size from 5 to 700 acres depending on the resource objectives and the natural and man-made boundaries of the various units. Multiple burns will be conducted within each identified burn unit to better manage fire behavior, smoke production and operational safety on steep slopes.

Although portions of Mountain Longleaf NWR have experienced recurring wildland fires and prescribed burns, much of the area has suffered from fire exclusion and contains heavy fuel loads and encroaching midstory. In addition, the longleaf pine forests occur within a mosaic of forest types, some of which have light fuel loads and do not necessarily require fire to function as a viable ecosystem. Some of the heaviest fuel loads can be found within lands dominated by pines and in particular, longleaf pine.

Most of the prescribed burns conducted will have specific hazard fuel reduction objectives in terms of reducing accumulations of dead fuels or reducing the densities of shrubs and encroaching midstory in specific areas in order to reduce intensity of future wildland fires. Most hazard reduction burns will be conducted in the months of November through March. May and June are better months to burn for reduction of live fuels due to the fact that carbohydrate reserves are lowest in woody plants at that time of year. No growing season fire will be attempted until fuel loadings have been reduced to a safe and manageable level. No prescribed burning will be attempted in the old-growth longleaf stands until an interdisciplinary team consisting of at least the refuge biologist, invited scientists, the Region 4 Fire Ecologist and a qualified RXB2 has had the opportunity to study the areas and make recommendations for acceptable prescribed fire parameters. Acceptable parameters for hazard reduction burning are listed in Table 5 below.

**Table 5: Acceptable Parameters for Hazard Reduction Burning**

FLAME LGTH	2-4 FT
1 HR Fuel M.	5% MIN
10 HR Fuel M.	7% MIN
RH MINIMUM	30%
20 FT WIND	<18 MPH
MID-FL WIND	2-5 MPH
MAX TEMP	75 °F
MAX KBDI	300

• **Annual Prescribed Fire Activities to Implement Program**

Prior to the prescribed burn season refuge fire management staff will develop an annual prescribed fire program of work, which targets specific burn units. Burns may be conducted during any season of the year depending on the specific management objectives of the burn. Annual prescribed burn activities will be based upon fuel reduction and longleaf pine regeneration and maintenance objectives.

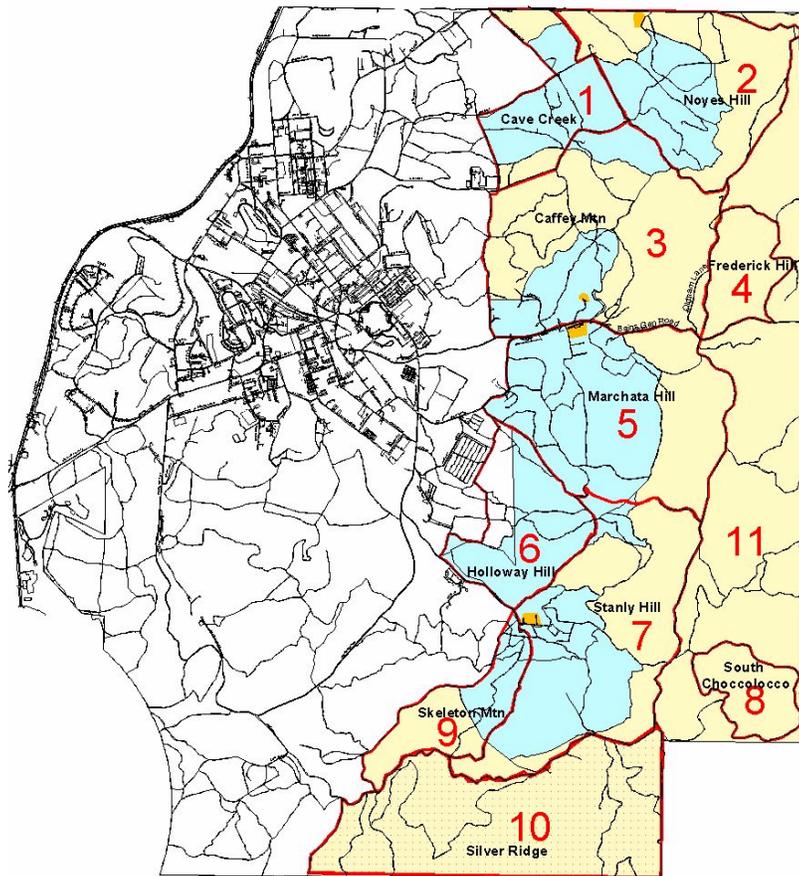
Table 6 shows the annual prescribed fire program of work, arranged by prescribed fire units. These are projections only as the schedule can be changed due to unforeseen weather events that prevent the completion of planned ignitions.

**Table 6: Annual Prescribed Fire Program of Work**

<b>PRESCRIBED FIRE UNIT (#)</b>	<b>CYCLE A</b>	<b>CYCLE B</b>	<b>CYCLE C</b>
CAVE CREEK (1)		427	
NOYES HILL (2)	868		
CAFFEY MOUNTAIN (3)		1264	
FREDERICK HILL (4)	248		
MARCHATA HILL (5)			1127
HOLLOWAY HILL (6)		483	
STANLEY HILL (7)	1179		
SOUTH CHOCCOLOCO (8)		227	
SKELETON MOUNTAIN (9)			334
SILVER RIDGE (proposed) (10)			1228
<b>TOTAL ACRES</b>	<b>2295</b>	<b>2401</b>	<b>2689</b>

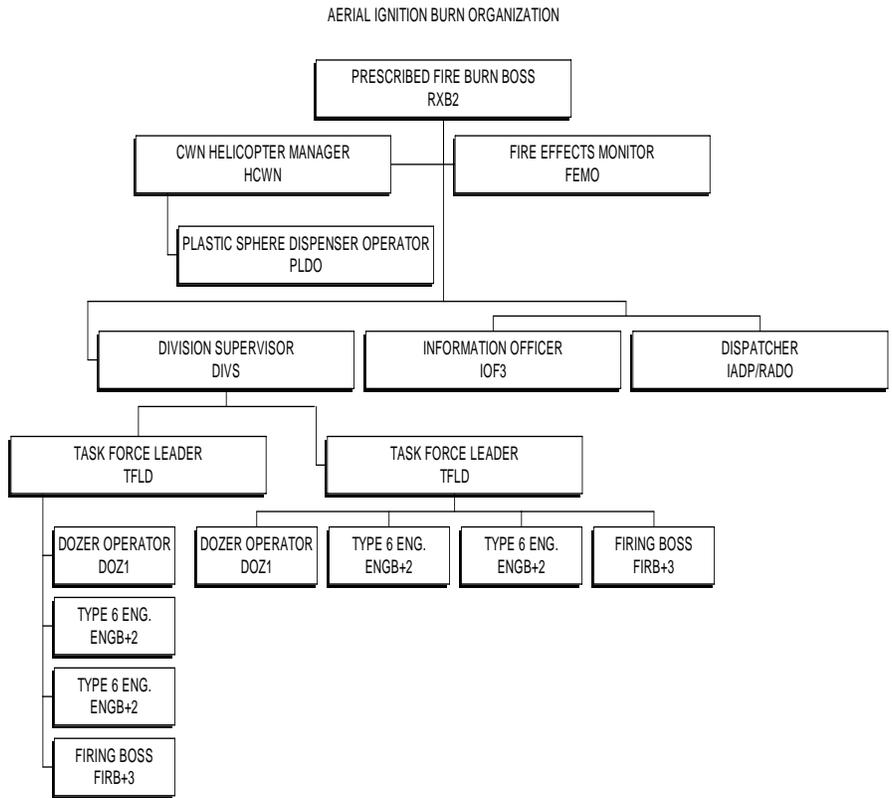
Upon approval of the burn plan, preparation of the unit for implementation of the burn will be initiated. Prescribed fire preparation activities include identifying and preparing containment lines around the burn unit perimeter. In many cases, these containment lines will be located along existing management roads and require only superficial removal of the layer of fine fuels to mineral soil for effectiveness. Special considerations for holding and firing will be minimized by pre-burn activities such as raking around snags along the fire breaks or mechanical removal of heavy fuel accumulations near structures or other areas of high fiscal or resource value.

**Figure 5: Prescribed Fire Burn Units**



Due to the complex interaction of aerial ignition, flammable fuels, smoke management and wildland/urban interface, a number of highly trained individuals must perform specific tasks that require coordination of different firing techniques using aerial ignition, mechanical equipment, water handling equipment and hand tools. The suggested aerial ignition burn organization is presented in Figure 6. Only personnel meeting National Wildland fire Coordinating Group standards (NWCG) can be allowed to participate in refuge prescribed burn operations. Even after the refuge fire program is staffed some resources will still need to be detailed from other refuges or agencies to staff the prescribed burning organization.

**Figure 6: Suggested Organization for Aerial Burn**



- **Burn Day Activities**

Before, during and after a burn there are several tasks that must be conducted so that the project can be successfully completed. These tasks range from prepping of equipment, obtaining forecasts and permits to ignition to monitoring. Table 7 lists the required activities that must be completed to successfully accomplish a prescribed burn.

**Table 7: Burn Day Activities and Responsibilities**

<u>ACTIVITY</u>	<u>RESPONSIBILITY</u>	<u>TIME FRAME</u>
Inspect Equipment	TFLD & Crew	0700-0800
Prep. Helicopter	Helo. Crew	0730 - 0800
Aerial Recon	RXBoss/DIVS	0800 - 0830
Obtain Forecast	FEMO	0800 - 0830
Obtain permit	Dispatcher	0830 - 0900

Notify cooperators	Dispatcher	0830 - 0900
Notify Public	IOF3	Throughout
Place Flyers	Fire Crew	0800 - 1000
Place Smoke Signs	Fire Crew	0800 – 0830
Install PLD Machine	HCWN/PLDO	0830 – 0900
Brief Crew	RxBoss	1000 - 1030
Burn Approval	Project Leader	1000 - 1030
Begin Backfire	TFLD/Fire Crew	1100 - 1130
Begin Aerial Ignition	RxBoss	1200 - 1300
Monitor Smoke	RxBoss/IOF3	Throughout
Monitor Behavior	FEMO	Throughout
Monitor Public	Dispatcher	Throughout
Monitor Lines	DIVS/TFLD/Crew	Throughout
Mop-up	DIVS/TFLD/Crew	1600-1900
Final Reconnaissance	RXBoss	1730 – 1800
De-briefing	RXBoss/DIVS	1930-2000
Check Road Visibility.	Crew	2200 - 0300
Burn Declared Out	RXBoss	Next Morning

- **Impact of Preparedness Levels**

There can be certain situations at local, regional or national levels which can cause management ignited prescribed burning operations on the refuge to be limited or curtailed. The Alabama Interagency Coordination Center does not declare preparedness levels so therefore there is no local limitation to the amount of prescribed fire that can be applied to federal and state lands within Alabama on a given day. However there are several constraints that govern the number of acres that can be ignited on the refuge at one time. Smoke management is the number one constraint to the amount of prescribed fire that the refuge can initiate. There is simply not enough time to ignite more than two burns in one day and have them completed by the time specified in the permit. Insufficient manpower to staff multiple prescribed fires is also a significant constraint.

The Southern Area Coordination Center (SACC) in consultation with agency fire coordinators determines regional preparedness levels. These levels are based on wildland fire activity within the

Southern Area and the need for fire suppression resources. When at regional or national Preparedness Level IV and V the Regional Director must approve all prescribed burns if all prescribed burning has not been discontinued area wide.

The National Interagency Coordination Center establishes national preparedness levels to keep track of resource availability at a national level to ensure national preparedness. These levels may constrain prescribed fire activities in some Geographic Areas not experiencing significant activity to ensure sufficient resources are available for National needs.

- **Required Documentation and Reports**

The completion of an approved prescribed fire plan is the primary documentation that a prescribed fire has been attempted or completed. Various documents that record weather data or public comments may be attached to the completed plan, which includes a record of observed fire behavior and the kind and amount of resources committed to the burn. All completed burn plans and associated documents will be kept in a binder as a permanent record of the burn day activities.

On the day of the burn the refuge dispatcher will notify the Alabama Forestry Commission dispatcher that a prescribed burn is planned and provide that person with the size, time of ignition and the location of the burn. The dispatcher will also notify AICC of the size of burn to be attempted. The day after the burn AICC will be notified of the number of acres that were successfully burned. Within ten days following the completion of a prescribed burn a web-based fire report will be electronically submitted into the Fire Management Information System (FMIS). Prescribed fire accomplishments must also be reported to the National Fire Plan Operations and Reporting System (NFPORS) in the same time frame as FMIS.

- **Air Quality**

Since fires are not point sources, but rather tend to be spatially distributed singular events, temporary impacts to visibility must be recognized, expected and managed. All refuges, including those with exclusive jurisdiction, are required to obtain necessary permits for prescribed fires, comply with the national ambient air quality standards (NAAQS) both inside and outside refuge unit boundaries, and protect visibility in Congressionally-mandated Class I areas. There are certain absolute or minimum requirements that apply to Fish and Wildlife Service fire management activities, such as compliance with the NAAQS and the visibility protection regulations for Class I areas. There is no Class I air shed on or near MLNWR. These are federally mandated programs that are enforced nationwide. Implementation of these programs is primarily carried out by state and local air quality agencies.

The State of Alabama administers the Clean Air Act through the Department of Environmental Quality, which provides for legal agricultural or forestry burning. The State of Alabama does not have any requirements pertaining to mixing height or transport wind speed. However, the Alabama Forestry Commission recommends the use of the Smoke Dispersion Index to indicate how well smoke will disperse into the atmosphere. The Index was developed by the U.S. Forest Service and has been adopted by the Commission to classify atmospheric conditions relative to smoke dispersal. The Dispersion Index incorporates measurements of atmospheric stability, mixing height, transport wind, and radiant heat, into an equation that produces a numerical value. The higher the value, the better the

smoke dispersion. The Commission recommends burning when the Dispersion Index is at least 21 in order to provide for adequate smoke dispersal.

Therefore the standard recommendations for the southeast (mixing height of at least 1640 feet transport wind speed of at least 8 mph, and Dispersion Index of 21) will be the prescription standards for air quality and smoke management for refuge burns.

- **Smoke Management Implementation**

Prescribed fire program implementation at the refuge must always be sensitive to potential smoke impacts to the local communities, residential areas and travel corridors that could be impacted by smoke from refuge burns. Before any burning is initiated a smoke management map will be prepared that shows the location of all critical smoke management targets within ½ mile of the proposed burn and all smoke sensitive areas within 10 miles of the proposed burn. While the use of prescribed fire may be desired throughout all seasons of the year the combination of atmospheric conditions for excellent smoke dispersal and timing of the burn to achieve optimum fire effects on fuels or habitat seldom coincide. Since the refuge is surrounded by urban interface with many smoke sensitive areas deference must be made to managing smoke. The strategies that the refuge will use in the smoke management program are as follows.

- Priority will be given to burning compartments within 1/2 mile of the new bypass road, once opened and any urban areas when the dispersion index is good or higher.
- Burning will not be conducted within ½ mile up drainage from the new by-pass road, once opened when fog has been forecasted
- Burning will be curtailed when an air-pollution alert, warning, or emergency is in effect.
- No burns larger than 150 acres will be conducted within 1/2 mile of the new bypass road, once opened and any urban areas when KBDI is greater than 400.
- Mop up within 200 feet of any control line adjacent to major roads or residential areas.
- Place smoke ahead signs on the news bypass and highway 21 when conducting prescribed fires adjacent to these travel routes.
- Ignition methods will be used that provide rapid burnout of fuels and quick smoke dispersion.

- **Rehabilitation of Fire lines**

Emergency rehabilitation measures do not apply to prescribed fires, only to severe damage resulting from suppression efforts and extreme fire behavior on wildland fires. Most of the control lines for prescribed fires will be refuge roads or permanent fire breaks that can be cleared of dead fuel, brush and rocks using a dozer blade or pulling an off-set disc behind a dozer. Following a prescribed burn permanent fire breaks will be “put to bed” by smoothing out ruts caused by wheeled vehicles and establishing or repairing water bars at the rate of one for every five feet of change in elevation. Where needed pushing up dirt mounds or felling trees across the lane to prevent off road vehicle use by refuge visitors will block firebreaks.

The crawler tractor unit will remain the most common method of establishing firebreaks to serve as control lines on prescribed fires and initial attack operations on refuge fires. This method is quick and efficient in suppressing fires in the rough, rocky and steep terrain in the mountains. However the resulting line, if left open and exposed to the elements can cause accelerated erosion and changes in local hydrology and damage to tree roots. Following every fire on the refuge plow lines and hand lines will be rehabilitated by pulling the berms back into the line and building waterbars at the rate of one for every five feet of change in elevation. Grass seed will not normally be sown on plow lines but rather native plants will grow into the line from either side. However there may be some cases in steep terrain that it will be necessary to sow some type of grass seed to help prevent erosion. If this is determined to be necessary, care should be taken not to choose a variety that could become invasive and compete with the native vegetation.

## **V. ORGANIZATION AND BUDGET**

Initially the refuge fire organization will remain un-staffed. There have been no fire base projections made and most of the historical wildland fire occurrence resulted from the Army's training exercises. Therefore the proposed organization and equipment listed in Table 8 represents a minimal staffing level to perform initial attack, support UXO clean up and prepare for prescribed burns. This table does not imply that all of these positions will be fire funded. Some of the positions may be filled by refuge employees who should be trained and qualified to assist with fire management needs when required to do so. Whether an FMO or a Prescribed Fire Specialist (PFS) is hired to manage the refuge fire program he or she should also be qualified to serve as the refuge forester since management of longleaf pine is the main objective of this refuge.

- **Refuge Fire Management Team**

The fire management program at Mountain Longleaf NWR requires several levels of technical competence in order to function efficiently and professionally. When the fire organization at MLNWR is fully staffed and funded the fire management team will be responsible for fire prevention, suppression and prescribed burning on several thousand acres of refuge land. The team will also cooperate with local, state and federal fire management agencies to support suppression efforts and to provide assistance with prescribed burns. Refuge resources will also be mobilized to support large incidents at the regional and national level.

- **Individual Position Responsibilities**

The refuge manager is ultimately responsible for all fire management activities that occur on the refuge. By delegation from the refuge manager the station fire management officer has the authority to declare either a wildland fire or prescribed fire out. Based upon the recommendation of the fire management officer who monitors the fire weather and other decision criteria, the refuge manager decides whether or not a management ignited prescribed fire will be attempted.

The FMO or the PFS serves as the fire management specialist on the refuge. The FMO provides the refuge manager support in areas of wildland fire suppression, fire danger rating, fire behavior, prescribed burning and fire management administration. All NWCG training at the 100 and 200 levels is provided by this person.

The refuge lead forestry technician (Fire) serves as an assistant to the FMO and provides support in wildland fire suppression, prescribed burning and training at MLNWR and any other refuge in the area that may need assistance. In the absence of the FMO he assumes the responsibilities of the position.

The initial attack incident commander, when filled by an off refuge detailer, guided by the refuge pre-attack plan has the authority to decide which tactics will be used to accomplish refuge objectives. In the absence of the FMO he may declare a wildland fire out after consultation with the refuge manager.

**Table 8: Estimated Fire Management Personnel and Equipment Needs**

<b>ESTIMATED PERSONNEL NEEDS</b>	
Fire Management Officer/Forester: GS-460-09/11	\$ 61,779
Lead Forestry Technician (Fire): GS-462-06-07-08-09	50,505
Engineering Equipment Operator: (Fire)WG-5716-08	45,115
Forestry Technician (Firefighter): GS-462-05	40,771
Forestry Technician (Firefighter): GS-462-04	36,439
Forestry Technician (Firefighter): GS-462-04	36,439
<b>ESTIMATED PERSONNEL COSTS FIRST YEAR</b>	<b>\$271,048</b>
<b>EQUIPMENT NEEDS</b>	
D-6 or equivalent Bulldozer with 6-way blade	\$120,000
Transport & tractor for Dozer	100,000
4x4 pick-up-FMO	30,000
4x4 pick-up-Lead Tech.	30,000
Type 6 Engine	80,000
4x4 ATV	10,000
FTS WX STN with GOES Modification	20,000
NUS Supplies & non-capitalized equipment	25,000
Personal Computers & Lap Top	15,000
Estimated Equipment & Supplies Cost	\$430,000
<b>ESTIMATED START-UP COSTS</b>	<b>\$701,048</b>

## VI. MONITORING AND EVALUATION

### • **Development of Monitoring Plan**

The refuge manager, FMO, and biologist will prepare the Fuels and Fire Effects Monitoring Plan for MLNWR jointly. It will serve as an umbrella description for all proposed fuel and fire effects monitoring activities for the refuge. This plan will be subject to amendments and modifications periodically to include various changes made in stated monitoring objectives, methods and etc., as needed. This plan may also be incorporated into a larger, more general refuge-monitoring plan that incorporates all monitoring activities throughout the refuge, if developed in the future.

This Plan will be prepared in accordance with the U.S. Fish and Wildlife Service Fire Management Handbook guidance on Fuel Management Effectiveness Monitoring (FWS 2002). The purpose of this Monitoring Plan is to identify specific measures that will be used by the refuge to:

- Evaluate the fuels management program and treatment effectiveness
  
- Ensure that refuge resource management goals and objectives are not compromised by fuels management projects.

This Monitoring Plan will provide for adaptive management “feedback”, and conforms to monitoring protocols established by the Service’s Southeast Region Monitoring Recommendations under the guidance of “Fulfilling the Promise” WH-10 (1) action item, the Service’s Fuel and Fire Effects Monitoring Guide (FWS 2002) and the FWS Southeast Region Fuel and Fire Effects Monitoring Field Guide (FWS 2003).

This Monitoring Plan will also define those activities that qualify for funding under the Hazard Fuel Reduction Operations and Wildland/Urban Interface (sub-activities 9263 and 9264 respectively), as well as monitoring activities that require additional funding sources.

### • **Definition of appropriate funding sources for fuels treatment monitoring activities**

The use of 9263 and 9264 sub-activity funds are limited to monitoring activities related to first and second order fire effects of fuel management projects (e.g., prescribed fires, mechanical or chemical fuel treatments). This includes monitoring fuel and wildlife habitat composition and structure, as recognized by clearly defined and measurable objectives in the approved refuge Fire Management Plan and/or an approved refuge habitat management plan. Monitoring frequency is limited to before, during and after treatments at 1, 2, 5, 10, and 20 years.

### • **Definition of non-appropriate funding sources for fuels treatment monitoring activities**

Funding wildlife population inventories, fire effects research projects, and/or management studies on wildlife are not an appropriate use of 9263 or 9264 funds. There are Emergency Stabilization and Rehabilitation funding sources that can be used for impacts due to wildland fires on Threatened and Endangered Species. Other sources of funding for wildlife inventories, or wildlife management studies may include 1261 or other refuge-level base biological funding. Obtaining outside funding sources to support research projects is encouraged. Evaluating fuel management treatment effects on wildlife

habitat composition and structure is intended to complement these inventories, management studies and research projects.

- **Research**

While the main focus of the fire program is management and not research, every consideration will be given to participate in research projects that contribute to greater knowledge of the fire environment, management techniques or firefighter safety. Cooperation will be extended to researchers whenever possible.

Ideas and proposals for research projects will be forwarded to the Service Fire Ecologist through the Regional Fire Ecologist.

**Fire Management Plan for  
Mountain Longleaf NWR**

**Appendix**

- A. Preseason Readiness Checklist**
- B. Daily Morning Briefing Checklist**
- C. Vehicle Preventive Maintenance and Engine Inventory Checklist**

## Appendix A: Preparedness: Preseason Readiness (IFAPRG exhibit)

### Dispatch

### Checklist #10

**Location:**

**Date:**

**Respondent:**

**Reviewed By:**

Key Code: E = Exceeds Standard M = Meets Standard NI = Needs Improvement NR = Not Reviewed			
	Description	Code	Remarks
1.	Review the current Interagency Dispatch MOU signed by all cooperators. This MOU will identify administrative oversight/support groups directly involved with the coordination center.		
2.	Review the current Operations plan that <b>defines the roles and responsibilities of each interagency partner and includes:</b> a) A delegation from each agency representative to the center manager outlining the constraints and agency specific guidelines for the management of their resources.  b) Details of each agency's fiscal responsibility.  c) Responsibilities of each agency for providing building maintenance, IRM support with computers, phones, radios, towers, grounds keeping etc.  d) Delegations of Authority that address all center operations.		
3.	Center manager or supervisor is in place and advising all agency FMOs of center activities.		
4.	All operational MOUs and operating plans are current, approved and accessible.		
5.	Extended staffing and specific action plans are approved.		
6.	Center has copies of all emergency rental agreements and blanket purchase agreements, and they are complete, current, organized and accessible.		
7.	IDPs and training records are established for each staff member.		
8.	Local dispatch orientation training is completed per agency standards.		
9.	Current Standard Operating Procedures are established and utilized in center operations as per agency standards.		
10.	Staff understands and follows the policies and procedures outlined in SOPs and other individual		

Key Code: E = Exceeds Standard M = Meets Standard NI = Needs Improvement NR = Not Reviewed			
Description		Code	Remarks
	plans implemented by the dispatch center.		
11.	System of decision points is established to determine staffing levels for: a) Fire behavior analyst activation.  b) Safety officer activation.  c) Resource advisor activation.  d) Requesting resources after closest forces have been exhausted using mob guide criteria.  e) Activation of non-fire personnel.  f) Call-out of other fire specialists.  g) Fire information procedures for officer call-out.		
<b>Weather</b>			
12.	Procedure is identified for contacting the Fire Weather Forecast Office when special forecasts are needed.		
13.	Spot Weather Forecasts: a) Procedures for requested spot weather forecasts are outlined in the standard operating plan.  b) Trigger points are established showing situations needing spot weather forecasts.		
14.	An individual is identified who knows the location and conditions of the fire weather stations. A current weather Station catalog available.		
15.	The center has a person trained in NFDRS assigned to data quality assurance responsibilities.		
16.	Seasonal inputs are maintained including: a) Vegetative state.  b) Fuel moisture values.  c) Daily state of the weather observations.  d) Updated breakpoints.		
17.	Weather data is being archived daily in WIMS.		
18.	Weather information and observations are broadcasted and transmitted electronically daily and confirmation of receipt by resources is documented.		
19.	Reference material appropriate to mission is available and current, including but not limited to: a) <i>Interagency Incident Business Management Handbook</i> .  b) Local, geographic and national mobilization		

**Key Code: E = Exceeds Standard M = Meets Standard NI = Needs Improvement NR = Not Reviewed**

Description	Code	Remarks
<p>guides.</p> <p>c) WIMS user guide.</p> <p>d) <i>310-1 &amp; NWCG Fire Qualifications Guide.</i></p> <p>e) <i>Interagency Helicopter Operations Guide.</i></p> <p>f) NFES Catalog.</p> <p>g) PC, email guide.</p> <p>h) <i>North American Emergency Response Guidebook (DOT).</i></p> <p>i) Service/support plan.</p> <p>j) Detailer guide.</p> <p>k) Airspace Management Guide.</p> <p>l) Incident management team contacts and call-out procedures.</p> <p>m) Information Officer Contacts.</p> <p>n) Source list for Material Safety Data Sheets.</p> <p>o) Local/area MAC group contacts and notification procedures.</p> <p>p) Agency policy manuals.</p> <p>q) Agency safety and health handbooks.</p> <p>r) <i>Airtanker Base Directory.</i></p> <p>s) <i>National IHC Operations Guide.</i></p> <p>t) List of burn centers identified with coordination complete.</p> <p>u) <i>Aircraft, Crash, Search and Rescue Guide.</i></p> <p>v) <i>Interagency Standards for Fire and Fire Aviation Operations.</i></p> <p>w) <i>Aircraft Identification Guide.</i></p> <p>x) Specific Action and Preparedness Guide.</p> <p>y) Temporary flight restriction (TFR) procedures.</p> <p>z) Hazardous materials inventories.</p>		

Key Code: E = Exceeds Standard M = Meets Standard NI = Needs Improvement NR = Not Reviewed		
Description	Code	Remarks
aa) Local airports and heliports locations. bb) Vehicle/structure fire protocols. cc) Request procedures for fires, EMS, SAR. dd) Military flight restrictions. ee) Aircraft availability, ordering and authorities. ff) Airtanker use procedures and use restrictions. gg) Law Enforcement notification/dispatching procedures.		
20. Plans maintained by dispatch include: a) Expanded Dispatch Plan. b) Standard operating procedures for office. c) Law Enforcement Plan. d) Fire Danger Operating Plan. e) Accident reporting/notification. f) Incident position certification/qualifications. g) Local preparedness plan. h) The Fire Weather Operating Plan. i) Medical evacuation plan. j) Aviation plan. k) Wilderness plans. l) Fire Management Plan. m) Plans for non-fire emergencies. n) Crash rescue plan.		
21. Operational area maps are current and accessible and include: a) Jurisdictional boundaries. b) Aviation/flight hazards. c) Lat/long/legal descriptions. d) Fire management zones. e) Military operating areas.		

Key Code: E = Exceeds Standard M = Meets Standard NI = Needs Improvement NR = Not Reviewed		
Description	Code	Remarks
<b>FACILITIES AND EQUIPMENT</b>		
22.	Emergency plan for local dispatchers is implemented to cover the following: a) Building evacuation.  b) Building security.  c) Continuanuce of Operations (COOP) requirements.  d) Law Enforcement Plan.	
23.	Facilities meet the needs of personnel, equipment, and mission responsibilities	
24.	Radio communication system and equipment meets operational needs: a) Adequate number of frequencies.  b) Tactical frequency recording capability.  c) Alert tones available.	
25.	Telephone system meets operational needs and includes directories, FAX, and teleconferencing capabilities.	
26.	Computer systems/GIS meet operational needs for quantities and capabilities. Software is compatible with IRM and agency requirements.	
27.	Copy and fax capability meets operational needs.	

## Appendix B: Daily Morning Briefing Checklist

### Mountain Longleaf National Wildlife Refuge Morning Briefing

Date: \_\_\_\_\_

Briefing given by: \_\_\_\_\_

Name:		Topic:	Summary:
		Fire Weather	
		Fire Behavior	
		Personnel Status	
		Equipment Status	
		Projects	
		<u>Fire Situation(local)</u>	
		<u>MISC.</u>	
		<b><u>6 min. for Safety</u></b>	

## Appendix C: Preventive Maintenance and Engine Inventory Checklists

## VEHICLE PREVENTIVE MAINTANENCE PRE-BURN INSPECTION/CHECKLIST

**VEHICLE: (CIRCLE ONE)**    Engine 601        Engine 602        Lowboy Roll Back  
**INSPECTED BY:** \_\_\_\_\_  
**MILEAGE:** \_\_\_\_\_  
**NEXT SERVICE DUE:** \_\_\_\_\_  
**ASSIGNED OPERATOR:** \_\_\_\_\_

<b>X=OK R=REPAIR NEEDED</b>	<b>SUN</b>	<b>MON</b>	<b>TUES</b>	<b>WED</b>	<b>THURS</b>	<b>FRI</b>	<b>SAT</b>
<b>UNDERHOOD INSPECTION</b>							
Oil Level							
Power Steering Fluid Level							
Radiator/Coolant Level							
Radiator Hoses							
Hydraulic Fluid Level/Clutch							
Windshield Washer Fluid Level							
Fan Belts							
Air Filter							
Steering Mechanisms							
Battery/Connections							
<b>EXTERIOR INSPECTION</b>							
Vehicle appearance							
Tires/Rims/Lugs/Mud Flaps/Spare							
Mirrors							
Emergency Lights/Sirens							
Turn Signals/Head Lights/Tail Lights							
Brake Lights/Emergency Flashers							
Back Up lights/Back Up Alarm							
Spot Lights/All other External Lights							
<b>UNDERCARRIAGE INSPECTION</b>							
Fluid Leaks							
Suspension/Springs/Shocks/Steering							
Transmission/Transfer Case/Drive Lines							
Differentials/Axles							
Exhaust System							
Brakes							
<b>INTERIOR INSPECTION</b>							
Fuel Level (Fill if Below ¾)							
Cleanliness							
Gauges							

Radios (AM/FM, Communications)							
Heater/AC							
Horn/Wipers							
Vehicle Log/Map Book							
Credit Card							

**Deficiencies/Remarks:**

## Gulf Coast Refuge Complex Fire Engine Inventory

Engine # \_\_\_\_\_ GVW \_\_\_\_\_ Engine leader \_\_\_\_\_ Date \_\_\_\_\_

CATEGORY	ITEM DESCRIPTION	BIN#	NFES#	REQ	HAVE	NEED
<b>FIRE TOOLS &amp; EQUIPMENT</b>	Council Rake	cage	1807	1		
	Pulaski	cage	0146	2		
	Shovel	cage	0171	2		
	Flap	cage	1868	2		
	Combination Tool	cage	1180	1		
	Fusees (case)	1A	0105	1		
	Foam, concentrate, (5-Gal)	REAR	1145	1		
	Chain Saw and 2 Chaps	1B		1		
	Chain Saw tool Kit/dolmar	1B	0342	1		
	Drip Torches	REAR	0241	3		
	Bladder Bags	3A	1149	2		
<b>MEDICAL</b>	First Aid Belt Kit	1A	1143	1		
	Burn Kit	1A		1		
	Body Fluids Barrier Kit	1A	0640	1		
<b>GENERAL SUPPLIES</b>	Batteries (carton)	1A	0030	1		
	P-Cord/rope (feet)	1A	0533	50		
	Belt Weather Kit	1A	1050	1		
	Water (gallon per person)	CAGE		5		
	Winch kit w/ Block	CAB		1		
	Tape/Duct	1A	0071	1		
	Tape/filament(roll)	1A	0222	2		
	Bolt Cutters	2	1113	1		
	Toilet Paper (rolls for 48hrs)	1A	0142	2		
	Cooler or Ice Chest	CAGE	0557	1		

<b>CATEGORY</b>	<b>ITEM DESCRIPTION</b>	<b>BIN#</b>	<b>NFES#</b>	<b>REQ</b>	<b>HAVE</b>	<b>NEED</b>
<b>SAFETY</b>	Fire Extinguisher (5lb)	REAR	2143	1		
	Fuel Safety Can (5-gallon)	REAR	0265	3		
	Emergency Roadside Kit	2		1		
	Flagging, Blue	1A	0455	5		
	Flagging, Red	1A	0456	5		
	Flagging, Green	1A		5		
<b>VEHICLE &amp; PUMP SUPPORT</b>	Tool Kit	2		1		
	Grease Gun	2		1		
	Oil, Engine, 10w-30 (quart)	4		1		
	Oil, BB-4 SAE-30 (quart)	4		1		
	Lubricant, WD-40 (can)	4		1		
	Oil, Front and Rear Differential,90-w (qt)	4		1		
	Brake Fluid (pint)	4		1		
	Filter, gas, for BB-4	4		1		
	Filter, air, Engine	4		1		
	Power Steering Fluid (quart)	4		1		
	Filter, oil, for BB-4	4		1		
	Fan Belts	4		1		
	Spark plugs, for BB-4	4		1		
	Fuses (set)	4	0105	2		
	Tire Pressure Gauge	2		1		
	Jumper Cables	2		1		
	Tape, electrical, plastic	1A	0619	2		
	Tape, Teflon	1A		1		

CATEGORY	ITEM DESCRIPTION	BIN#	NFES#	REQ	HAVE	NEED	
<b>EXTRA PPE FOR 1 PERSON</b>	Fire Pants	2		1			
	Head Lamp w/AA batteries	2	0713	1			
	Hard Hat	2	0109	1			
	Goggles	2	1024	1			
	Gloves	2	1295/1296	1			
	First Aid Kit, Individual	2	0067	1			
	Fire Shirt	2	0578/0579	1			
	Ear Plugs (pair)	2	1027	2			
	IA pack w/shelter and canteens	2		1			
	Spare Fire Shelter	2	0169	1			
<b>HOSE</b>	Booster (feet)	REAR	1220	200			
	1.5" Suction (feet)	REAR	1808	16			
	1" NPSH (Feet)	3B	0966	300			
	1.5" NH (Feet)	3B	0967	300			
	3/4" NH, garden (Feet)	3B	1016	500			
<b>NOZZLE</b>	Forester, 1" NPSH	3A	0024	2			
	Adjustable, 1" NPSH	3A	0138	4			
	Adjustable, 1.5" NH	3A	0137	2			
	Adjustable, 3/4" NH	3A	0136	2			
	Foam, Low Expansion 3/4"	3A	0627	1			
	Foam, Medium Exp. 1" NPSH	3A	0628	1			
	Mop-up Wand	3A	0720	1			
	Tip, Mop-up Wand	3A	0735	2			

<b>CATEGORY</b>	<b>ITEM DESCRIPTION</b>	<b>BIN#</b>	<b>NFES#</b>	<b>REQ</b>	<b>HAVE</b>	<b>NEED</b>
<b>WYE</b>	1" NPSH, Two-Way, Gated	3A	0259	1		
	1.5" NH, Two-Way, Gated	3A	0231	1		
	3/4" NH, Two -Way, Gated	3A	0739	4		
<b>ADAPTER</b>	1"NPSH-F to 1" NH-M	3A	0003	1		
	1" NH-F to 1" NPSH-M	3A	0004	1		
	1.5" NPSH-F to 1.5"NH-M	3A	0007	1		
	1.5" NH-F to 1.5" NPSH- M	3A	0006	1		
<b>INCREASER</b>	1" NPSH-F to 1.5" NH-M	3A	0416	1		
	3/4" NH-F to 1" NPSH -M	3A	2235	1		
<b>COUPLING</b>	1.5" NH Double Female	3A	0857	1		
	1.5" NH Double Male	3A	0856	1		
<b>REDUCER</b>	1"NPSH-F to 3/4" NH-M	3A	0733	4		
	1.5" NH-F to 1" NPSH-M	3A	0010	4		
	2.5" NH-F to 1.5" NH-M	3A	2230	1		
<b>TEE</b>	1" NPSH-F x (2) 1"NPSH-M	3A	2240	2		
	1.5" NH-F x (2) 1.5" NH-M	3A	0731	2		
<b>VALVE</b>	1.5" NH Check and Bleeder	3A	0228	1		
	3/4" NH, Shut off	3A	0738	4		
	1" NPSH, Shut off	3A	1201	1		
	1.5" NH, Shut off	3A	1207	1		
	Foot, w/strainer	3A	0212	1		
<b>RADIO</b>	Mobile			1		

<b>CATEGORY</b>	<b>ITEM DESCRIPTION</b>	<b>BIN#</b>	<b>NFES#</b>	<b>REQ</b>	<b>HAVE</b>	<b>NEED</b>
<b>MISC HARDWARE</b>	Wrench, Hydrant 8"	3A	0688	1		
	Hose Clamps	3A	0046	2		
	Wrench, Pipe 14"	2	0934	1		
	Wrench, Pipe 20"	2		1		
	Wrench, Spanner 5"	0234	0234	2		
	Wrench, Spanner 11"	0235	0235	1		
	Hand Primer, 1.5" NH	3A	0145	1		
	Gaskets (Set)	3A	0743/025 4	1		
	Pail, Collapsible	3A	0141	1		
	Hose Reel Crank	3A		1		
<b>ICT4 FORMS &amp; ENGINE BOSS KIT</b>	Hazardous Materials Ref. Book	CAB		1		
	ICT4 Forms Binder	CAB		1		
	Map Case	CAB		1		
	Fireline Handbook	CAB		1		
	Vehicle Log Book, (Safety inspection and Preventative Maintenance Form, Engine inventory	CAB		1		