Fire Management Plan

for the

National Park Service

El Morro National Monument

TABLE OF CONTENTS **PAGE**

LIST OF FIGURES and TABLES

LIST OF FIGURES **PAGE**

LIST OF TABLES

EXECUTIVE SUMMARY

The fire management policies of the National Park Service (NPS), Department of Interior, support agency resource management goals. An overriding resource goal is the restoration or maintenance of natural ecosystems while providing for firefighter and public safety, protection of natural and cultural resources, and protection of human developments from unwanted wildland fire.

This Fire Management Plan (referred to as "the Plan") for El Morro National Monument (N.M.) has the following program direction:

To guide decision-making processes, in which safety, social, political and resource values are evaluated and Appropriate Management Response strategies are identified for wildland fires.

- To provide a framework for hazard fuels management strategies and for restoring wildland fire back into fire-dependent ecosystems.

Program operations included in the Plan are preparedness, prevention, suppression, and fuels management. Applicable resource goals and objectives are taken from approved and management plans.

The Plan is organized to combine the latest scientific knowledge, including regional and local studies with a hierarchy of policy direction from Departmental and Agency, and the Federal Wildland and Prescribed Fire Management Policy (2001), to accomplish resource and fire management goals and objectives. It is written to be understood and implemented by NPS fire and resource management staffs and is primarily operational in nature.

Compliance requirements with the guidelines contained in the National Environmental Policy Act (NEPA) have been satisfied through development of a Categorical Exclusion Decision Memorandum, which is appended to this plan. These requirements ensure a prudent assessment of a federal action and any potential adverse effects of that action, leading to consensus between fire managers, agency resource specialists, and the public regarding the fire program. Any constraints or limitations imposed on the fire management program are also included.

1.0 INTRODUCTION

Agencies within the Department of Interior with vegetation capable of sustaining wildland fire are required to prepare fire management plans. El Morro National Monument has recognized and acted on this policy direction.

The Plan provides a framework for the management of wildland fire and prescribed fire as a tool to safely accomplish protection and resource management objectives. The lands include those administered by El Morro National Monument (N.M.) in western New Mexico (see Fig. 1, Vicinity Map) and encompass 1040 managed acres and 1280 legislated acres.

The Plan meets all requirements of the National Environmental Policy Act (NEPA), the Endangered Species Act, the Clean Air Act and Amendments, the Clean Water Act, and Section 106 of the National Historical Preservation Act (NHPA). Compliance with these laws is demonstrated through a Categorical Exclusion Decision Memorandum, where decision-making involves an interdisciplinary determination of level of compliance required, is based on best available scientific and technical information, and where analysis of impairment to resources is part of the overall environmental impact analysis process.

The Federal Wildland Fire Management Policy and Program Review (2001), *Managing Impacts of Wildfires on Communities and the Environment, and Protecting People and Sustaining Resources in Fire Adapted Ecosystems- A Cohesive Strategy (USDOI/USDA),* and *A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment: 10-Year Comprehensive Strategy Implementation Plan* provide the overall framework for agencies to build a program consistent with stated land and resource goals and objectives while ensuring firefighter and public safety. Authorities for implementing this Plan are found in Appendix M.

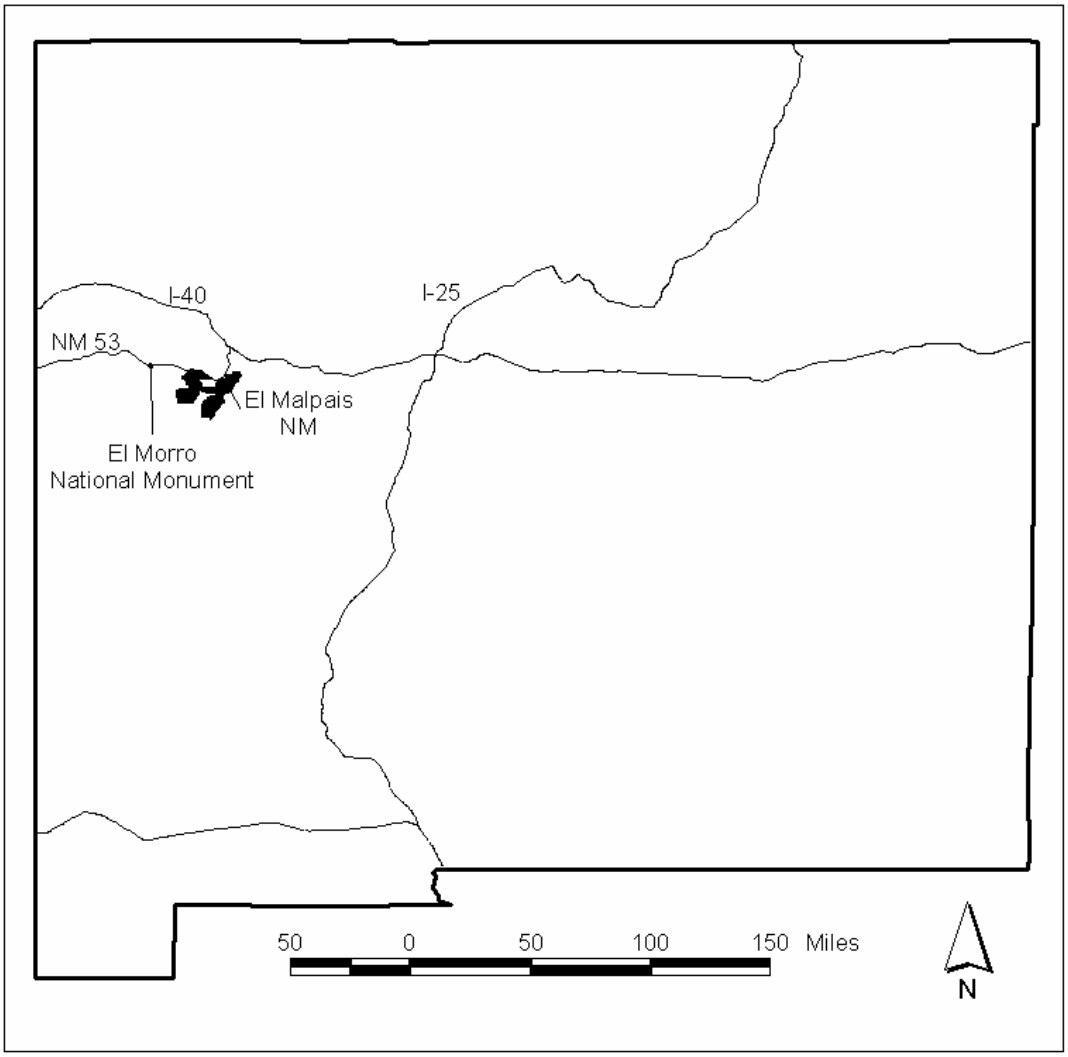

Figure 1. VICINITY MAP

2.0 RELATIONSHIP TO LAND MANAGEMENT PLANNING AND FIRE POLICY

Departmental Manual (DM) Part 910: Interior Emergency Operations (1996) and DM Part 620: Wildland Fire Management (1998) state[1]:

> Fire, as a critical natural process, will be integrated into land, natural, and cultural management plans and activities on a landscape scale, across bureau boundaries, and will be based upon best available science. All use of fire for natural and cultural resource management requires a formal prescription.
>
> Every area with burnable vegetation must have an approved fire management plan. Fire Management Plans (FMPs) 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 include the full range of wildland fire management actions.

Authority for the Plan is contained in legislation creating El Morro National Monument,[2] which states:

> El Morro National Monument was established by the Presidential Proclamation of December 8, 1906, and June 18, 1917 (appended), to protect "the rocks known as El Morro and Inscription Rock in the Territory of New Mexico…which are the greatest historical value" (December 1906); and to protect "certain lands within the state of New Mexico containing ruins of archeological value" (June 1917).

National Park Service Wildland Fire Policy[3] states:

> All fires burning in natural or landscaped vegetation in parks will be classified as either wildland fires or prescribed fires. All wildland fires will be effectively managed, considering resource values to be protected and firefighter and public safety, using the full range of strategic and tactical operations as described in an approved fire management plan.

National Park Service Management Policies[4]concerning restoration of natural systems states:

> The Service will re-establish natural functions and processes in human-disturbed natural systems in parks unless otherwise directed by Congress. The Service will use the best available technology… to restore the biological and physical components of these systems, accelerating both their recovery and the recovery of landscape and biological community structure and function.

Wildland fire-specific policy is found in:

- Federal Wildland Fire Policy[5] (2001)
  "Fire management planning, preparedness, prevention, suppression, fire use, restoration and rehabilitation, monitoring, research, and education will be conducted on an interagency basis with the involvement of cooperators and partners"
- Interagency Wildland and Prescribed Fire Management Policy Implementation Procedures Reference Guide (1998)
- Department of Interior Departmental Manual (910 DM)

[1] Department of Interior, Departmental Manual DM Part 620, 1.4.
[2] Presidential Proclamation 695, December 8, 1906 (34 Stat. 3264, appended)
[3] NPS DO-18, Section 3
[4] NPS Management Policies (2001)
[5] Review and Update of the 1995 Federal Wildland Fire Management Policy, January, 2001; Appendix D, pg. 45.

The Categorical Exclusion (C.E.) Decision Memorandum (Appendix D) serves as the documentation of the analyses of environmental impacts pursuant to proposed strategies detailed in the Plan, per the NEPA (1969). As such, the C.E. is programmatic in that it serves to satisfy the need for development of NEPA documentation for individual projects under this Plan. Conditions for use of the C.E. for fire management plans include[6]:

1. The potential effects of the fuels activities should be less than "measurable" (i.e. "minor") as determined by the park's interdisciplinary team.
2. Other cautions concerning the use of categorical exclusions found in Section 3.6 of the DO-12 Handbook should be considered.
3. Parks would need to do public involvement at the beginning of the planning process to scope the use of the C.E., and again before approving the FMP.
4. Hazardous fuels reduction activities using prescribed fire not to exceed 4,500 acres, and mechanical methods for crushing, piling, thinning, pruning, cutting, chipping, mulching, and mowing, not to exceed 1000 acres.
5. When applying the categorical exclusion for individual fuel reduction projects, parks must complete the standard Environmental Screening Form (ESF) and prepare a Decision Memorandum.

No General Management Plan (GMP) exists for the Monument, and the Resource Management Plan (1997) is out of date, however, management at the Monument has long recognized and has documented in Statements for Management (May 1992), that general resource objectives apply for effective management of the Monument and include:

1. To identify, inventory, protect, and interpret the natural resources of the Monument from an ecosystem orientation, and document critical resources for biophysical change, and modify management practices that have adverse effects on those resources based upon scientific research, assessment and monitoring, legal requirements, NPS policy, and sound management.

2. To identify, inventory, evaluate, monitor, interpret, protect and preserve the cultural resources of the Monument in a manner consistent with scientific knowledge, legal requirements, NPS policy, and sound management practice.

3. To encourage, administer, and coordinate sound scientific research of identified needs for the natural and cultural resources of the Monument.

4. To identify and ensure the special protection and management of all rare, threatened and endangered species and their critical habitats, and also of unique, sensitive, and endemic plant and animal associations/communities.

5. To identify and eliminate exotic species and to prevent the introduction of new species within the Monument.

6. To utilize prescribed fire and non-fire treatments to reduce hazardous fuels buildup while insuring public safety and protecting public and private property, in a manner that simulates the natural ecosystem function of fire as determined through fire ecology/history research.

7. To establish an active consultation program, and as necessary, cooperative agreements with agencies, Indian tribes, and local governments to protect and maintain Monument lands and resources.

[6] *Federal Register (*Vol. 68, No. 108, pages 33814-33824) June 5, 2003.

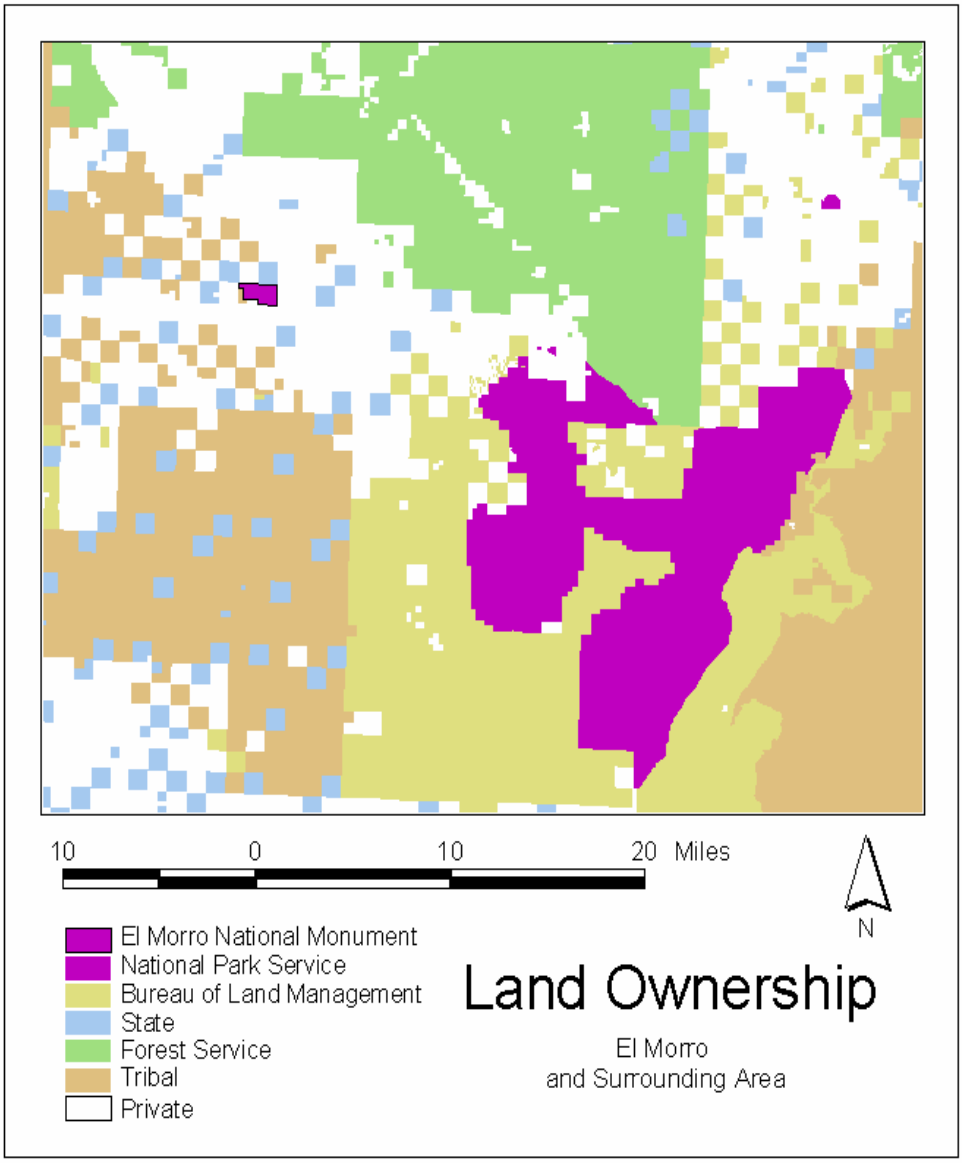

FIGURE 2 LAND OWNERSHIP

3.0 WILDLAND FIRE MANAGEMENT STRATEGIES

3.1 General Management Considerations

The primary goals of the wildland fire management program at El Morro National Monument are to protect human health and safety, protect property, protect natural and cultural resources, diminish risk and consequences of severe wildland fires, and to the extent possible, increase health of the ecosystem.

To accomplish these goals, human-caused wildland fires will be suppressed, prescribed fire will be introduced where appropriate, and hazard fuel reduction projects will focus on Wildland Urban Interface areas. Fire managers will balance the potential impacts of wildland fire with the potential resource impacts of fire suppression activities in choosing the Appropriate Management Response (AMR).

El Morro National Monument contains significant natural and cultural resource values. Human presence at the Monument covers the range from the 1100s to the present. Significant archeological sites and cultural landscapes can be found within the Monument boundaries. An abundance of wildlife calls the Monument home.

Values to be protected and their susceptibility to damage or loss by fire are discussed in more depth in the descriptions of the Fire Management Units (Section 3.4.2 of this plan).

Pre-planned decisions based on historical fire behavior indices will be considered in selecting appropriate management responses for suppression. Further research on the role of fire in the area ecosystem is needed.

Wildland fires at the Monument are managed with the support of local community fire departments and federal land management agencies, as well as Tribal firefighting organizations at Ramah Agency and the Zuni Agency Department of Forestry. This community-based approach to wildland fire management involves partnership, cooperation and collaboration between the Monument and the Ramah, El Morro Ranches, and Candy Kitchen volunteer fire departments (Land Ownership map, page 10).

The Monument's fire staff, located at El Malpais/El Morro National Monument in Grants, provides technical assistance on all fire management matters, including fire management programs such as the Weather Information Management System (WIMS), the NPS Wildland Fire Computer System, the National Fire Danger Rating System (NFDRS), the Resource Ordering System (ROSS), the Incident Qualification and Certification System (IQCS), Fire Program Analysis (FPA), and FIREPRO budgeting. The Fire Management Officer (FMO) also assists the units of the Four Winds Group (El Malpais N.M., El Morro N.M., Petrified Forest N.P., Salinas Pueblo Missions N.M., and Petroglyph N.M.), with wildland fire qualification and certification programs, coordination of fire training and mobilizations, development of agreements with local and state agencies, administration of Rural Fire Assistance Program grants to local rural fire departments, fuel reduction activities, prescribed burning, and developing fire prevention, preparedness, and suppression operational plans.

The Monument, in accordance with NPS policy, uses Minimum Impact Suppression Tactics (MIST) in all fire management activities. MIST is defined as the application of techniques that effectively accomplish wildland fire management objectives while minimizing the impacts to cultural and natural resources commensurate with ensuring public and firefighter safety and effective wildland fire control. Examples of MIST include using existing natural or constructed barriers to contain wildland fires, mowing firebreaks in grassland, and using pumps and hoses to apply water to suppress fire activity and reduce fire spread. See Appendix E-5 for MIST Guidelines.

3.2 Wildland Fire Management Goals

Goal: Ensure firefighter and public safety.

Objectives:

1. All fire personnel will comply with the National Wildfire Coordinating Group (NWCG) and NPS fitness and personal protective equipment appropriate to the job or assignment.
2. Establish qualifications and promote staff experience necessary to accomplish fire management program objectives in a safe manner.
3. All safety standards and guidelines identified within the Interagency Incident Business Management Handbook will be followed.
4. The Job Hazard Analysis (JHA) process will be used for all potentially hazardous fire management activities.

Goal: Reduce wildland fire hazard around developed[7] areas and around identified cultural sites.

Objectives:

1. Create defensible space around identified improvements within the FMU.
2. Apply mechanical fuel reduction and prescribed fire where applicable around vulnerable prehistoric and historic resources to reduce damage from wildland fire.

Goal: Prevent human-caused wildland fires on Monument lands.

Objectives:

1. Integrate existing and revised agency prevention plans to the degree possible.
2. Utilize fire management websites that contains appropriate safety messages[8].

Goal: Suppress all wildland fires with minimum cost, utilizing an appropriate suppression response, while protecting values at risk.

Objectives:

1. Manage a wildland suppression program that works to prevent unacceptable loss from fire.
2. All wildland fires will be suppressed.

Goal: Establish or update agreements to maximize coordination with cooperators.

Objectives:

1. Annually review all existing agreements, updating or changing as necessary to promote full cooperation in mutual fire management.
2. Collaborate with New Mexico State Forestry, US Forest Service, BLM, Zuni and Ramah Navajo Agency's Departments of Forestry, local governments, and homeowners' associations to maximize human and resource protection.

[7] Includes Monument lands adjacent to wildland-urban intermix and private property.

[8] Inside NPS, NPS Fire Management Program and Southwest Area Wildland Fire Operations websites.

Goal: Use surrogate fire treatments to restore and maintain primary natural resources and their processes where applicable.[9]

Objectives:

1. Pinyon-juniper woodland:
   Establish and maintain a vegetative composition, structure and mosaic within the natural range of variability for southwestern pinyon-juniper woodlands as determined from fire ecology and historical research, and prevent unwanted crown fire.
2. Grasslands:
   Restore fire as a keystone natural process that encourages native grassland ecosystems.
3. All vegetative types:
   Reduce established noxious and non-native plant cover.
4. Improve wildlife habitat and watershed values.

Goal: Foster public awareness and support of the fire management program.

Objectives:

1. Develop and support an informal network of key local and area contacts and coordinate interagency fire information in a timely and accurate manner.
2. Develop, or utilize an existing, website to display relevant fire materials, latest research, and program updates[10].

Goal: Protect air quality-related values across all affected airsheds in the area.

Objectives:

1. Include mitigation measures to protect air quality values in all prescribed fire burn plans.
2. Consider air quality impacts for all wildland and prescribed fires within Go/No-Go decisions

Goal: In a cumulative manner, develop a body of scientific knowledge of the role of fire in ecosystems for the purpose of public education and adaptive fire management.

Objectives:

1. Monitor, evaluate, and report on the effects of fire (and non-fire) treatments on biotic systems, air and water quality, cultural resources, and to quantify overall effectiveness of these activities to improve the program.
2. Facilitate/continue a practical, management-oriented scientific investigation on the role of fire in Monument.

3.3 Wildland Fire Management Options

Resource management objectives drive strategies that aim toward the restoration and maintenance of naturally functioning ecosystems within the planning area. This section describes operational guidelines whereby the Monument can integrate a total program involving application of strategies that accomplish mutually identified resource management and protection objectives.

[9] Objectives 1 and 2 are from approved NPS FMH-4 objectives for El Malpais/El Morro National Monument (see Appendix H-4).
[10] Inside NPS, NPS Fire Management Program website

All strategies and Fire Management Units identified below are in compliance with The Federal Wildland Fire Management Policy (2001) and the Wildland and Prescribed Fire Policy Implementation Procedures Reference Guide (1998).

This sub-section highlights the program of action allowed under policy described above that promotes concurrent use of available management strategies so that a range of objectives can be accomplished. Specifically, this program of action does not favor one strategy over another without analysis of specific area and resource information, objectives, values to be protected, safety, risk, complexity, and other considerations.

3.3.1 Wildland Fire

A "wildland fire" is defined as any non-structure fire, other than prescribed fire, that occurs in the wildland. This term encompasses fires previously called both wildfires and prescribed natural fires.

3.3.2 Wildland Fire Suppression

"Wildland fire suppression" is defined as an Appropriate Management Response to wildland fire that results in curtailment of fire spread and eliminates all identified threats from the direct and indirect effects of the fire and/or management actions. All wildland fire suppression activities provide for firefighter and public safety as the highest consideration while minimizing loss of resource values, economic expenditures, and/or the use of firefighting resources[11].

An Appropriate Management Response refers to a specific action taken on a wildland fire, regardless of ignition source or location, to implement protection objectives for a specific Fire Management Unit. Management responses, therefore, can vary by fire; specific and direct action can be taken along the perimeter to check spread locally, or suppression intensity can be maximized across the entire perimeter.

3.3.3 Prescribed Fire

For purposes of the Plan and as defined by policy, prescribed fire is any fire ignited by management actions to meet specific objectives. A written, approved prescribed fire plan must exist prior to ignition. As the Plan integrates the strategy of prescribed fire across the Fire Management Unit (FMU), it is imperative that the Monument follows approved resource and fire management objectives stated in this Plan.

For the foreseeable future, the prescribed fire program under the Plan will be aimed at restoring fire as a natural ecological process, however, for some areas the immediate emphasis is reducing hazard fuels concentrations (see below). Many areas subject to first entry treatment may require subsequent treatment(s) in order to achieve hazard fuels reduction objectives, rather than attempting to meet all objectives on the first treatment and risk costly escape and/or unacceptable resource damage.

3.3.4 Hazard Fuel Reduction

Hazard fuels reduction objectives may be met through a well-planned series of projects where a combination of non-fire treatment and prescribed fire treatment is employed.

Specific, pre-approved non-fire treatment strategies are used for accomplishing operational project objectives and, as are prescribed fire projects, tied to site-specific project plans.

The beneficial outcome is that through hazard fuels reduction activities, firefighter and public safety is enhanced, real property, natural and cultural resources are protected, potential suppression costs are significantly reduced, as well as initiating the restoration of fire into fire-adapted landscapes.

[11] From Wildland and Prescribed Fire Management Policy, Implementation Procedures Reference Guide, 1998, pg.13.

Non-fire treatment may include, but is not limited to; pruning, thinning, lop/scatter, piling and burning, chipping/mulching, and fuel-wood removal by the public where authorized. A primary objective of this technique is prescribed fire unit preparation, such as control lines, clearing around values at risk, or treatment of selective areas that may threaten control lines or result in unwanted crown fire. A hazard fuels map has been prepared and included in the Plan that illustrates the fuels concentrations to be treated.

3.3.5 Ecosystem Management

According to the Federal Fire Management Policy[12] the "…full range of fire management activities will be used to achieve ecosystem sustainability including its interrelated ecological, economic, and social components…" Under this policy, fuels management activities will be designed to support ecological and socio-economic sustainability.

Under the Prescribed Fire Schedule, burn objectives will reflect specific environmental conditions to be achieved for the fuel type involved. Ignition and burn patterns should vary temporally and spatially across the landscape in order to ensure diversity in vegetative structure and composition. With a disciplined monitoring program and repeated entries utilizing a pre-determined fuels treatment schedule, management can then begin to adjust structure and successional dynamics to a natural range of variability.

3.4 Description of Wildland Fire Management Strategies by Fire Management Unit

A "Fire Management Unit" (FMU) is any land management area definable by common objectives, land features, access, values to be protected, political boundaries, fuel types, and fire regimes. The FMU will have fire management strategies, including possible constraints assigned, that will accomplish stated objectives for the unit.

The Fire Management Unit described below is definable primarily by a major fire management strategy that corresponds to values to be protected and fire regimes. It is the only FMU for the Monument.

3.4.1 Physical and Biotic Characteristics and Cultural Resources

El Morro National Monument is near the southern edge of the Zuni Mountains of northwestern New Mexico. It consists of 2 square miles of land adjacent to New Mexico 53, approximately 12 miles east of the community of Ramah. The Monument is in the western portion of Cibola County, in the Third Congressional District.

Inscription Rock (El Morro) rises 200 feet above the surrounding terrain. At the base of the rock, in a cove, is a natural catchment basin that was a source of water for Native Americans and travelers in the vicinity. Inscription Rock transitions to a cuesta towards the west and south. On top of the mesa are prehistoric pueblo ruins. The mesa itself has clearly visible geologic strata and interesting erosional features. A box canyon has consumed much of the mesa, and is of geologic and scenic interest. It provides an unusual ecosystem due to its steep walls and narrow floor.

President Theodore Roosevelt established El Morro National Monument on December 8, 1906, in order to preserve its unique array of prehistoric and historic inscriptions. One of three national monuments created on that day, the historic resources of El Morro were the first in the nation to be protected by presidential proclamation under the authority of the Antiquities Act of 1906. President Woodrow Wilson then expanded the monument in 1917 in order to preserve the archaeological sites associated with El Morro. A testament to its importance, national monument status for El Morro predates both the entry of New Mexico into the Union and the beginning of the National Park Service.

Primarily due to the presence of the reliable water at the base of Inscription Rock, El Morro is as densely packed with significant cultural resources as any place in the United States. One hundred sixty

[12] Federal Wildland Fire Policy, January 2001, Appendix D, pg. 43.

archaeological sites are known within the roughly two square miles encompassing the Monument. Over 60 percent of these sites are prehistoric (pre-AD 1539). These sites range from Pueblo ruins to petroglyphs, pictographs, hand-and-toe-hold trails, and rock shelters. Several large ruins dating to the thirteenth and fourteenth centuries are found on top of Inscription Rock, comprising hundreds of rooms in massive, multiple-story structures. This area is still important to many Indian tribes, including the Pueblos of Zuni, Acoma, and Laguna, and the Navajo Nation.

Over 30 percent of the archaeological sites date to the historic period (post-AD 1539). This period saw countless people pass by El Morro, many of whom left their mark on Inscription Rock, including officials of the Spanish Crown, bishops, members of the first wagon train through this part of the country, U.S. military expeditions, and many others.

It should be noted, too, that El Morro contains important cultural landscapes. These landscapes include layers of prehistoric and historic vernacular landscapes and the more recent designed landscape associated with the efforts to meet the mission of the National Park Service.

Climatic extremes result in a complex variety of vegetation, and therefore animal distributions, where water availability varies from sparse to relatively abundant over the course of a year. Precipitation and temperature averages and extremes for the planning area are listed below.

	Average	High	Low
PRECIPITATION, in.	12.0 (annual)	2.5 (August)	0.38 (April–May)
TEMPERATURE, °F	70 (summer)	93	32 (January)

3.4.2 Fire Management Units

3.4.2.1 The FMU: Minimize Wildland Fire Presence

This Unit, the only one at the Monument, is one where all fires will be suppressed utilizing a response where fire presence will be minimized. In 2001, a Wildland Urban Interface project treated selected areas along the Monument boundary and established a fuel break in pinyon/juniper on the east side of the Monument. Features that define this Unit are largely human-developments, cultural resources, scenic values and other structures that require protection from wildland fire of any ignition source. The following features areas are within the FMU (from Fire Prevention Plan, Appendix I):

- Employee housing area, administrative offices and visitor center, and maintenance facilities.
- Monument road, picnic area, campground, wayside exhibits and paved trail.
- Well, water tank and sewage lagoon.
- Pueblo ruins and trail system on the mesa.

3.4.2.2Management Goals, Strategies, and Constraints

Goals for the FMU:

- Suppress all wildland fires using an aggressive suppression strategy that minimizes loss of structures, property, cultural resources, and other identified values at risk, while ensuring firefighter and public safety.
- Reduce wildland fire hazard around developed areas, along interface boundary areas and around identified cultural sites and features.

Strategies for the FMU:

- Establish fire protection agreements and partnerships that are developed, approved, and promoted to clarify responsibilities and to provide for pre-fire hazard and risk mitigation and suppression preparedness.
- Apply mechanical hazard reduction to create defensible space and reduce potential intensities of wildland fires.
- Use prescribed fire to consume accumulated debris from mechanical fuels reduction treatments where applicable and implement landscape-scale prescribed burns.

Constraints for the FMU:

- All fire management related activities will be based on safety of personnel and the public as the highest priority.
- Apply best available management measures when mitigating for smoke impacts from prescribed fire (see Air Quality section 4.4.3).
- Dozers are allowed (following notification of Superintendent) with a resource advisor on-site when life or property is at risk.
- Protection mitigation measures for all known cultural resources, and human-constructed features (government or privately owned) must be in place prior to any fuels reduction project or suppression action.
- A Cultural Resource Specialist should be assigned to project(s) where on-site mitigation may be required.
- Low-level aircraft use, including application of retardant, will be employed only for protection of life and property.
- All fire suppression personnel operating within Unit will be briefed regarding known hazards, LCES (Lookouts, Communications, Escape routes, Safety zones), current and predicted weather and current fire behavior by the Incident Commander or designee.
- MIST (Minimum Impact Suppression Tactics) will be employed to ensure protection of cultural sites and features. A map of "special areas of concern" will be made readily available in the resource offices for use of suppression resources.

Management intent regarding all wildland fires is clear. All wildland fires, regardless of ignition source, will receive prompt suppression action commensurate with human safety in all instances.

3.4.3 Historic Role of Fire

This landscape supports a complex pattern of open areas, ponderosa pine stands, pinyon-juniper woodlands, and grasslands.

From existing resource documents from El Malpais/El Morro N.M., general vegetation types or associations are listed below as they pertain to El Morro N.M.

- Ponderosa pine/native grassland.
- Blue gramma grassland (grass or grass/shrub, Great Basin grassland).
- Pinyon-juniper woodland.

Most of the early fire-adapted vegetative communities have become altered from combinations of human use, early fire suppression, and climate change. Species compositions, such as the more open grasslands that occurred before the 1900s have changed to grass-shrub communities and pinyon-juniper woodland with understories of non-native exotics. This is especially noticeable on the east side of the Monument where many young trees appear with older ones and progressively smaller junipers. The spread of pinyon and juniper is accompanied by big sagebrush, another grass competitor[13].

[13] El Morro N.M., National Park Service Cultural Landscape Inventory 2002

The pre-settlement fire regime (before 1880), where naturally recurring fire disturbances kept surface fuel loadings low and trees open with grassy understories, became severely disrupted with the onset of 20th century fire suppression policies. The repeated, historic low-intensity surface fires that served to drive important ecological processes, including maintenance of native plant communities, were abruptly ended before the turn of the 20th century (Bennett 1974, Dieterich 1983, Swetnam and Baisan 1994, Wolf and Nast 1998).

Henri Grissino-Mayer, reporting in a dissertation titled *Tree-Ring Reconstructions of Climate and Fire History at El Malpais National Monument, New Mexico*, reports that wildfire was a common phenomenon in malpais forests since at least AD 1350. At the site level, fires (before 1880) occurred approximately once every 5 to 12 years. Given the proximity of El Morro N.M. to El Malpais N.M., and the similarity of vegetative types and structure, inference can be drawn that the Monument's fire regime and return interval is the same as that found at El Malpais N.M. Minimal intervals ranged between 1 and 3 years, whereas maximum intervals ranged between 12 and 55 years. At the regional level, Grissino-Mayer reports that fires occurred somewhere within the study boundaries approximately once every 2 years.

Fire regimes are dynamic systems that respond, over time, to a variety of factors such as fuel types and amounts and climatic and human factors. Grissino-Mayer (1995) suggests that for maximizing the natural fire regime within the range of variability described, the parameters of reconstructed regimes during the 1795–1880 period should be followed. This is largely based on similar climatic conditions in the 20th century.

Grissino-Mayer (1995) reports that there was a major change in fire regimes in the malpais region *ca.* 1940, which is thought to reflect intensive and successful fire suppression efforts by land agencies. Fire suppression at El Morro N.M. began in 1906. Early grazing practices, that ended in the 1920s, may have affected fire-carrying grasses, resulting in minimal fire spread. In addition, woody fuels and litter began to accumulate after the practice of fuel wood removal was curtailed. Consequently, many of today's fires behave much more erratically and more intensely, particularly following above-average precipitation years when surface herbaceous and shrub densities increase. Often these fires destroy overstory, midstory, and understory vegetation, surface plant cover, stored seed and reproductive components, and soil microorganisms. Firefighters, attempting to protect resource and human values by attempting aggressive suppression action, are often placed at risk of injury and/or loss of life.

3.4.4 Historic Weather Analysis

A comprehensive climatic trend analysis is found in Grissino-Mayer's (1995) thorough dissertation, in which he notes the following periods in history (covering 2,129 years) that relate to the pattern of early fire across the malpais landscape. Given the proximity to El Malpais study area, the following can be said to be generally true for El Morro N.M.:

- The wettest short-term period occurred between AD 570 – 608, averaging 16.65 inches
- The "Great Drought" occurred between 1271 – 1297
- A 43-year period of below normal rainfall (AD 1566 – 1608); 12.86 inches per year average
- A short-term drought between AD 1727 – 1742
- A short-term drought between 1899 – 1904
- The highest average precipitation of any short term period was 17.66 inches, AD 1975 – 1992

Grissino-Mayer's work skillfully relates these "cyclic" events to large-scale wildland fire events in history, giving managers a framework from which to develop fire treatment and preparedness strategies.

Weather patterns in the Monument are typical of the semi-arid southwest. Variations in precipitation and temperature are wide, and precipitation varies from 9 to 18 inches per year (USDI NPS 1992). Winter precipitation, usually in the form of snow, normally occurs between November and March. However, much of this is dry and lacking in appreciable moisture within the planning area. Spring and summer rains often contribute to the majority of annual precipitation, and thus fire danger. Spring rains, from March through May, significantly contribute to the severity of the summer fire season. The climatic patterns of El Niño and La Niña events have been found to be highly influential on southwestern weather, where the former produces above-average precipitation and the latter produces more severe fire seasons. Lightning events may begin as early as April, with sporadic "dry" thunderstorms occurring into the "monsoon" season (July and August), when storms are often violent with heavy local precipitation.

Winds are the highest during March, April, and May, when wind speeds exceeding 30–40 mph are not uncommon.

3.4.5 Fire Season

According to NPS FIREPRO III Base Analysis for El Malpais National Monument, the composite "statistical" fire season can be defined by occurrence of wildfires. From this analysis, an early, mid and late season is defined, with an embedded "core" season where annual base funding is derived. The core season is thus defined as 10 June to 18 August (USDI NPS 2000). El Morro N.M.'s fire history has not been well documented, but will correspond to that established for El Malpais N.M. and by neighboring fire management organizations.

Beginning generally early May, and depending on early spring precipitation, fire starts will build to a peak in late June. Activity generally remains moderate to high through July and into August where monsoon establishment results in a sudden drop in fire size although starts from lightning remain moderate. Early September marks a tapering off of activity.

3.4.6 Fuel Characteristics and Fire Behavior

The Monument supports a variety of fuel types, including grass, pinyon/juniper, oakbrush/grass, and ponderosa pine. The following table represents best available information on fuels complexes within the joint planning area.

Table 1. Fuel Groups and Models, Area (in Acres and Per Cent of Total).

FUEL GROUP	FUEL MODEL(S) – FBPS[14]	AREA (ACRES)/PERCENT OF TOTAL
PONDEROSA PINE w/ LITTER	9	22 acres
		2 %
PINYON/JUNIPER	6	816 acres
		78%
GRASS	1	144 acres
		14%
UNCLASSIFIED (ROCK)	N/A	58 acres
		6%
TOTAL		1040 acres

[14] Fire Behavior Prediction System.

Table 1 represents an overall view of fuels on an area-wide basis. Overall inventory of fuel loads by FBPS model has yet to be completed for the planning area.

For the Monument, those areas that were once open grass savanna have experienced an increase in pinyon-juniper density. Many of these areas have passed the threshold where there is no longer enough fine fuel (herbaceous material) to move fire across the landscape. Grassland composition has also changed. Where once blue gramma composed 70% of herbaceous species composition, now it is significantly less due to increase in shrub types and competition from the non-native cheatgrass. Once densities of overstory pinyon-juniper are thinned, the additional sunlight created on the ground surface will contribute to stimulating herbaceous cover, which will in turn increase the ability of these savannas to become fire-maintained in the long-term by surrogate prescribed fire treatment.

The best available fire management information for purposes of fuels treatments addressed in the Plan is found in the Monitoring Type Description Sheets (FMH-4) developed for El Malpais National Monument, some of which apply to the fuels of El Morro N.M. The National Park Service Fire Effects Monitoring Program describes major cover types as "Monitoring Types", and includes for each type resource goals and fire treatment objectives, target conditions (or desired future condition), burn prescriptions and monitoring type variables. This information is detailed in Appendix H-5. The following monitoring types have been established for El Malpais National Monument, and generally have application to El Morro N.M. lands. Typical fire behavior characteristics are listed for comparison, represented by the two monitoring types given below.

Fuel Model	Rate of Spread, chains/hour	Flame Lengths, ft.	Fire Characteristics[15]
Pinyon-Juniper Woodland (Timber/Litter Fuel Group); Code FJUMO1T06			
FBPS 8	2 – 5	0.9 – 1.9	Only under low wind conditions
FBPS 6	28 – 83	4.7 – 10	Only closed-canopy conditions under high wind speeds
Grasslands (Grass Fuel Group); Code FBOGR1T02			
FBPS 1	0 – 311	0 – 8.4	Fires burn out quickly
FBPS 2	0 – 103	0 – 11	Continuous and rapid spread under high wind conditions

The critical fuel loads and stand density, and thus potential control problems, lie in the area of the east and northwest sides of the Monument, where due to heavier surface loads, (largely high density pinyon and juniper), large fires are of the highest probability to occur. Another area containing residual activity fuels occurs on the cuesta south of Atsinna ruin. In this area, considerable pinyon pine die-off has occurred leading to heavy standing dead and dead and down fuels.

3.4.7 Fire Environment: Regimes, Fire Behavior, and Fire Effects

[15] Assumptions: 0 – 25% slope; midflame wind 8 mph; live fuel moisture 95% (FBPS model 2 only)

The planning area consists of a forested box canyon, micro-environments of ponderosa pine in shaded areas and seasonal drainages, pinyon/juniper woodland, and grass and shurblands with inter-connected historical fire regimes. The vegetative type which supports the shortest return interval with historically a low-intensity fire behavior regime is the ponderosa pine type, but the lack of continuous fuel and the sheltered aspect where this type is found, result in low ignition potential. Ponderosa pine is a highly fire-adapted species, given its characteristic protective bark layer, high pruning ability, and open-growing patterns of uneven-aged patches. Typically, a high annual needle-cast in ponderosa pine can result in increasingly higher fire intensity. Considerable torching and short-range spotting can occur from fires encountering heavy down and dead fuel concentrations. During hot and dry periods, this torching and spotting fire behavior can become more common. Following onset of monsoons, however, herbaceous cover plants (warm season grasses) rapidly green-up and provide a degree of resistance to fire spread. Crown fire behavior is relatively uncommon except under the most extreme conditions of wind events, critical surface fuel loading, and adequate crown closure (USDI, NPS 1992).

Fire effects from the low to moderate intensity wildland fires are generally positive. Nitrogen recycling resulting from volatilization of nitrogen inhibiting terpenes contained in needle litter can occur with burns under ponderosa canopy at moderate or low intensities. Other critical chemicals (phosphorus, ammonium, potassium, etc.) become available for cycling back into nutrient-poor soils under low intensity burns. Biomass is reduced, surface vegetative matter and percent canopy cover all can be reduced to allow sunlight on soil surfaces. Following fire, vegetation that requires increased sunlight flourishes.

The resilience to fire of individual woody species in the pinyon-juniper woodland community is extremely variable. Fletcher (1998) reports that juniper and oak can readily sprout when top-killed by fire, but pinyon generally succumbs to relatively light surface fires. The age of pinyon, percentage of oak in the woodland, and presence of juniper mixed with ponderosa pine are among the determinants of the historic fire regime. Much of this complexity can be interpreted from existing conditions on an individual site basis. Where the pinyon-juniper component is predominant, fire behavior may vary from low intensity underburning and creeping, to extreme behavior with frequent torching and intermittent to sustained running crown fire under high wind conditions.

The reintroduction of fire into the present day forest has the potential to change the frequency and distribution of key wildlife habitat components such as snags (for cavity nesting birds), downed logs (for small mammals), and old trees (roost sites) (Randall-Parker and Miller 1999).

For those fire-evolved ecosystems that historically supported high frequency, low intensity fire regimes, periodic fire of between 7 – 15 years (average) is required to maintain sustainability, species diversity, adequate nutrient-cycling pathways, and eventual resistance to sustained and destructive crown fire.

The issue of alien (non-native) species poses a significant threat to protected lands by directly and indirectly impacting native species. Of more concern is the effect of alien plants on compromising the genetic integrity of native species. These patterns across the landscape have been brought about by early fire suppression and livestock management practices. Generally, the exotic (alien) plants found in the planning area are opportunistic; that is, these plants can easily occupy a localized site that has been disturbed. These areas, once occupied by native cover species and maintained by periodic surface fire, are now supporting exotic plants (i.e. chaetgrass) that have slowly displaced many native species. In some cases, the invading exotic plants cannot carry fire adequately, while in other areas fire can be used to encourage native plant re-establishment. This subject needs further research.

Restoring fire in the once high-frequency, low-intensity forest ecosystems that now contain large fuel accumulations, requires careful planning and implementation to minimize risk to property, the public, and resource values[16].

[16] From Cole and Landres (1996), *Threats to Wilderness Ecosystems: Impacts and Research Needs.*

4.0 WILDLAND FIRE MANAGEMENT PROGRAM COMPONENTS

This section addresses the primary components of the wildland fire management program, suppression, with program elements that pertain to that component. Historically, all wildland fires have been suppressed at the Monument. Under this Plan, the Monument will continue to suppress all wildland fires using the most Appropriate Management Response (AMR). Determination of the AMR will consider human safety, threat and potential damage to property, resources, and cost effectiveness.

4.1 General Implementation Procedures

The generalized decision process is based on the *Policy Implementation Procedures Reference Guide* and *Interagency Standards for Fire and Fire Aviation Operations*.

Implementation of the components of the wildland fire management program at the Monument is consistent with the Monument's fire management capabilities and will consider the current and predicted conditions affecting fire behavior. When possible, pre-planned decisions, based on historical fire behavior indices will be considered in *Stage 1 Wildland Fire Implementation Plan* (WFIP) development to select the AMR.

A WFIP will be initiated for all wildland fires. The Plan provides the framework for determining the AMR. Since the Plan requires suppression of all wildland fires, the requirement for a Decision Checklist as a part of the Stage I analysis can be considered met. Subsequently, Stage I analysis may be satisfied at the programmatic level in the Plan through determinations made by combinations of values to be protected and/or fire behavior thresholds.

The Initial Decision Process:
This stage involves collection of necessary information with which to select an AMR strategy. The process shall include at least the following:

Initial Assessment and Strategy Selection – <u>STAGE I</u>.

Responsibility: FMO
Referencing Table 2, (Stage I Decision-making), the tasks are the following:

- **Initial Assessment (Table 2)**
  The data on the **Fire Situation Form**[17] are routinely collected by the Initial Attack Incident Commander on-site as soon as possible following ignition. This information will be recorded and can be transferred, as needed, to later planning stages or to the Wildland Fire Situation Analysis.

- **Go/No-Go Decision and Strategy Selection (Table 2)**
  The "Go-No Go" decision process for all wildland fires is based on completion of responses on a **Decision Criteria Checklist**[18]**.** The FMO completes this list in consultation with the Superintendent or designee and resource staff.

1. Assessment of <u>degree of risk</u> of identified threats to life, property, and resources.

2. Relate <u>potential effects</u> on cultural and natural resources to the range of acceptable effects; consult with appropriate agency resource specialist(s) to determine specific effects and identify mitigating measures.

3. Are the <u>risk assessment results</u> unacceptable? A qualitative assessment chart (**Wildland Fire Relative Risk Rating Chart**[19]**)** provides the FMO and Superintendent or designee with a picture of risk relative to time of season, fire danger, fire size, and potential complexity.

[17] Refer to Wildland and Prescribed Fire Management Policy, Implementation Procedures Reference Guide, Chapter 4, pages 33-35; or Interagency Standards Fire and Fire Aviation Operations Guide, Chapter 10.
[18] See above, pages 35-39.
[19] Implementation Procedures Reference Guide, page 37, Figure 5. Reproducible form in Appendix and electronic format online; see also Appendix H-7.

4. The "Potential Complexity" assessment portion of the Chart originates with the **Complexity Rating Worksheet** [20] that assesses 12 elements, each with a weighting factor and complexity value that yields a point value. Note: Potential Complexity can be estimated for purposes of the Chart if time does not allow for completion of the Complexity Rating Worksheet.

5. The "Fire Danger Indicator" portion of the Chart (from daily NFDRS readouts).

6. Proximate fire activity – Are Monument or other available resources capable of safely managing current fire activity with appropriate skill positions and local resources? Consider availability of Zone resources.

   Once the **Decision Criteria Checklist** is complete, the FMO can determine how to initiate a suppression response ("No-Go"). This checklist (Record of Decision) is signed by the Superintendent or designee and dated. This completes Stage I.

   A two-hour time period is allowed from the fire size-up initiation point to the initial decision process. Expeditious and accurate information exchange is critical during Stage I.

Table 2. Stage I Decision-Making.

COMPONENT	*INPUTS*	*COMPLETION TIMEFRAME*	*REQUIRED OUTPUT (MINIMUM)*
INITIAL ASSESSMENT	**FIRE SITUATION FORM**	**ASAP FOLLOWING IGNITION**	**COMPLETED FORM BY INITIAL RESPONSE IC**
DECISION CRITERIA CHECKLIST	• **DEGREE OF RISK ASSESSMENT** • **POTENTIAL EFFECTS ON RESOURCES** • **RELATIVE RISK RATING CHART** • **PROXIMATE FIRE ACTIVITY** • **SUPERINTENDENT DISCRETION**		**COMPLETED CHECKLIST BY THE FMO FOLLOWING CONSULTATIONS WITH THE SUPERINTENDENT AND INTERDISIPLINART TEAM** **SIGNED BY THE SUPERINTENDENT OR DESIGNEE**
"GO/NO-GO" DECISION	**(FROM ABOVE)**	**2 HOURS FOLLOWING INITIATION OF SIZE-UP (AERIAL OR GROUND)**	**(SEE ABOVE)**

The Wildland Fire Situation Analysis (WFSA)

Responsibility: Superintendent

The WFSA[21] is a decision making process in which the Superintendent (or designee) describes the situation, compares strategy alternatives, evaluates expected effects of each alternative, establishes objectives and management constraints, selects the preferred alternative, and documents the decision. It serves as a contingency to undesirable outcomes. If the selected alternative does not accomplish objectives, the WFSA can be amended.

A WFSA is developed when conditions in Table 3 are met.

The Superintendent (or designee) and the FMO and/or Incident Commander prepare the WFSA.

[20] See above, pages 43-44.
[21] Implementation Procedures Reference Guide, pages 71-73.

Required elements to be addressed in the WFSA:

- Current Situation
- Evaluation Criteria
- Alternatives
- Analysis of Effects
- Record of Decision
- Review/Evaluation/Update
- Probability of Success
- Consequences of Failure

Refer to *Interagency Standards for Fire and Fire Aviation Operations*, Chapter 10, F-4 for additional detail.

Table 3. Wildland Fire Situations and WFSA Preparation Considerations

SITUATION	WFSA CONSIDERATIONS	
	Protection	**Protection +** *Resource Benefits*
Human-caused fire (unwanted fire).	X	
Fire exceeds extended suppression action (unwanted fire).	X	
Fire exceeds WFIP, completely breaches established MMA (unwanted fire).	X	
Fire exceeds the prescribed burn plan prescription or escape containment lines (unwanted fire).	X	

The format for the WFSA can be found in the Appendix of the Wildland Fire Implementation Reference Guide, or accessed online at the NPS Wildland Fire Website (http://www.nps.gov/fire).

4.2 Wildland Fire Suppression

Wildland fire suppression is a term that is defined as "…an appropriate management response to wildland fire that results in curtailment of fire spread and eliminates all identified threats from the particular fire." (USDA, USDI 1998). The following sub-sections discuss all aspects of a suppression program, ranging from preparedness actions through rehabilitation of wildland fires.

4.2.1 Range Of Potential Fire Behavior

All of the wildland fuels complexes represented on Monument lands display a range of fire behavior, described below:

- Creeping ground fires in heavy needle/leaf litter and underlying duff under higher surface fuel, duff, and soil moistures (normally during the off-season periods, late winter-early spring and late fall-winter).
- Surface fire spread with active flame front generally occurs during periods of lowering fuel moistures such as early in the fire season or early fall with little or no wind.
- Active surface fire spread with torching, short range spotting (usually with higher frontal winds and/or lower humidity in mid-April, May, June, early July).

- Running surface fire with torching, intermittent or sustained crown fire, short and long-range spotting under high winds, low humidity, low foliar and surface fuel moistures, and following drought periods where indices are over the 90th percentile.

Wildland fires that occur under conditions described in the latter two ranges may receive a more aggressive suppression response, depending on location and fuels ahead of potential spread.

4.2.2 Preparedness Actions

The term “preparedness” refers to activities that lead to a safe, efficient and cost-effective fire management program in support of land and resource management objectives through appropriate planning and coordination.

This section establishes a base program necessary to meet wildland fire suppression, fire use, and prescribed fire workloads. The fire organizations are described in Section 5.1.

An Inter-disciplinary Team will be formed after the Plan is approved. They will use the following as a "tickler list" to develop action items for each planning level (see Step-up/Staffing Plan, Appendix E-7) Prepare pre-season risk assessment and pre-season WFSA, and prepare a severity needs analysis for the coming fire season when conditions exceed those of a normal fire year (consider: pre-positioning of suppression resources; augmentation and support outside local organization needed).

- Review new policies, roles and responsibilities.
- Review and update as necessary all delegations of authority and Superintendent Briefing Package.
- Identify safety issues and mitigating actions required.
- Clarify criteria for team transitions, managing multiple fire activity at El Malpais and El Morro N.M.
- Develop action items to implement staffing levels (Ref: Step-up Plan).
- Identify strategies to communicate fire program principles to cooperators and publics (Red Flag alerts, restrictions, etc).
- Agree on standards to evaluate performance of the fire management organization in implementing the Plan.
- Perform Pre-Season Risk Analysis.

The Team will develop any proposed addendum, omissions, or clarifications in policy or procedures that require Superintendent approval. Once appropriate review and approval is obtained, the new addition(s) will be appended to the Plan.

4.2.2.1 Fire Prevention

Prevention objectives for the planning area will constitute the foundation for the Prevention Plan (Appendix I). They are:

- Reduce the number of human-caused wildland fires.
- Integrate fire prevention messages into a variety of programs, ranger activities, and local media, to be targeting the community, the public, schools, visitors, and landowners.
- Coordinate fire prevention efforts with all cooperators and affected landowners.
- Implement the hazard reduction fuels management program.
- Prepare and deploy prevention-related signs and messages.

4.2.2.2 Training and Fire Readiness

The purpose of wildland and prescribed fire training is to promote safe and effective individual performance in accomplishing fire management goals and objectives.

All wildland fire personnel will be qualified and certified for the position(s) assigned, according to the *Wildland and Prescribed Fire Qualifications System Guide* (PMS 310-1). The *Interagency Standards for Fire and Fire Aviation Operations, Chapter 2*, "Requirements for Fire Management Positions" and *Wildland Fire Management Reference Manual (RM)-18* (11/2002), and *Director's Order #18: Wildland Fire Management* details additional requirements for fire positions.

All employees involved in wildland fire and prescribed fire operations will have their qualification records entered into and maintained annually in the Incident Qualification and Certification System (IQCS) and the Resource Ordering and Status System (ROSS).

The Monument will cooperate with the Albuquerque Zone Training Board in developing an annual training schedule. The Training Needs Assessment annual updates are the responsibility of the FMO. Refresher courses (firefighter safety, helicopter operations, etc.) and other required annual training will be coordinated by qualified staff as assigned by the FMO.

Readiness actions (in addition to those listed above) are described below.

- The fire cache and equipment will be inspected and documented for completeness and serviceability as directed by the FMO or designee on a pre-season and fire season basis.
- Ensure timely follow-up actions to preparedness inspections.
- El Malpais/El Morro N.M. will maintain supplies, materials, and equipment at the Fire Cache on Hwy. 53 to meet normal fire-year requirements for a 20-person hand crew.
- Ensure 2-Type 6 engines at the fire cache and slip-on unit at El Morro N.M. are stocked per *Interagency Standards for Fire and Fire Operations* guidelines.

The following preparedness activity schedule will be followed annually as appropriate:

» February 15 – April 30: All fire line qualified permanent personnel will take the Work Capacity Test; seasonal personnel will be tested upon entering on duty.

» February 15: Fire Training and Experience Records will be entered in IQCS for all Red Carded employees.

» Year-round: NFDRS Weather Station (#293301) online, monitor and post indices.

» March 31: Contractual documents for support services completed; funding provisions under existing agreements in place.

» March 1 – 15: Red Cards signed by FMO and distributed to employees.

» April 1 – 15: All engines and support equipment serviced and fire-ready; Pre-attack Plan reviewed and updated; daily situation reporting to Albuquerque Zone.

» May 1 – 15: Training for all seasonal employees completed, including mandatory refresher for all carded employees.

» May 1 – end of season: Roster of all fire qualified personnel maintained, with PPE/initial attack gear/Red pack ready for two-hour callout.

» October 31: Equipment winterized, cache inventoried post-season reviews and reports completed.

» Annually: Local Preparedness Review.

» Every 3 years: Regional Preparedness Review (RM-18).

Table 4. Preseason Risk Analysis Criteria, Current Level and Historic Average.

FACTOR	CURRENT LEVEL	HISTORIC AVERAGE
• Temperature Levels		73
• Precipitation Levels		0.12
• Humidity Levels		21%
• Palmer Drought Index		Not used
• Keech-Byram Drought Index		50
• Energy Release Component Or Burning Index		12
• 1000-Hr Time lag fuel model		12-13
• Fuel Moisture Levels For: Live And Curing (Herbaceous)		65
• Fire Activity To Date		
• Unusual Wind/ Weather Events		

The FMO and fire staff should analyze applicable factors from this table as early as conditions warrant before fire season. Severity funding requests, if indicated from the risk analysis, should also be prepared and finalized in coordination with cooperators statewide through Zone Boards. Submissions will move through NPS fire channels to NIFC. Refer *to Interagency Standards for Fire and Fire Aviation Operations*, Chapter 9, and/or RM-18, Chapter 18.

4.2.2.3 Fire Weather and Fire Danger

4.2.2.3.1 Weather Stations

El Morro National Monument will accesses data from the BLM RAWS site located near the west boundary of El Malpais N.M. The station is located in pinyon/juniper woodland with a grass understory. Indices will generally over predict fire behavior in higher elevation fuel types associated with the Monument. The station is cataloged in the Weather Information Management System (WIMS) as number 293301.

4.2.2.3.2 National Fire Danger Rating System (NFDRS)

Analysis used NFDRS Model C, Slope Class 1 (0-25 percent), perennial herbs, and Climate Class of 1 (semi-arid). Condition thresholds for management activities are found in Table 4. The Southwest Coordination Center Predictive Services Group monitors, analyses and predicts fire weather, fire danger and fire management resource impacts across the Southwest Area. Red Flag Warnings are issued to warn of an impending or unusually severe fire weather event. A warning is issued when the following combination of conditions is occurring or expected within 24 hours:

- 20 ft. wind speeds sustained > 20 mph or gusting consistently above 35 mph.
- Relative humidity < 15%
- NFDRS adjective fire danger ratings of “high” or higher.

Fire managers can use the NFDRS for computing daily and forecasted fire danger. Local thresholds documented on Fire Danger Pocket Cards that shout “Watch Out” are: 20 foot wind speeds of 15 mph, Rh less than 20% and temperature over 90 degrees. The pocket card also uses the Energy Release Component (ERC) of above the 90^{th} percentile as a key indicator of increased fire activity.

4.2.2.4 Step-Up Plan

The Step-Up Plan describes a series of escalating management responses which are intended to supplement normal wildland fire capabilities for short periods (i.e., normally one burn period). This policy-compliant plan is in table format and is located in Appendix E-7.

4.2.3 Pre-Attack Plan

The Pre-Attack Plan includes a compilation of essential fire management information, for which fire staff can utilize for quick reference as incidents occur. The Plan contents generally include the following section headings.

- Command
- Logistics
- Operations
- Planning

A Pre-Attack Planning Checklist is included in the Wildland Fire Management Reference Manual (RM-18). The Pre-Attack plan outline is located in Appendix G. The complete plan is located at the ELMA/ELMO Fire Management office.

4.2.4 Initial Attack

Initial Attack is an aggressive suppression action consistent with firefighter and public safety and values to be protected. This strategy is applied as the result of WFIP Stage 1 analysis under the Appropriate Management Response (AMR) process.

4.2.4.1 Initial Attack Priorities

All wildfires in the FMU will receive a suppression response based on safety, weather, fuel conditions, threats and values to be protected, and cost effectiveness. All these factors will determine an AMR that will define specific actions that will be taken to implement protection objectives.

4.2.4.2 Appropriate Management Response (AMR)

The AMR will be based on objectives, relative risk, external influences and management boundary defensibility, and may include one or some combinations of the following:

Initial Attack.

- Action where an initial response is taken to suppress wildland fires, consistent with firefighter and public safety and values to be protected. Resources taking initial action on a fire must be qualified and have a designated qualified Initial Attack Incident Commander. At the earliest opportunity after arrival on an incident, the Initial Attack Incident Commander will perform a size-up of the fire and relay the information to Albuquerque Zone Dispatch, and continue to keep them informed of any significant changes and progress on the fire.

Control and extinguishment

- Actions taken on a fire using direct or indirect attack. Sufficient resources are assigned to achieve control of the fire with a minimum of acres burned.[22]

Confinement.

- Actions taken when fires are not likely to have resource benefit and an analysis of strategic alternatives indicates threats from the fire do not require costly deployment or large numbers of suppression resources for mitigation or suppression. Typically these fires will have little to no on-ground activity and fire movement remains confined within a pre-determined area bounded by natural barriers or fuel continuity. This action will be used as a tactic combined with control and extinguishment.

Large fire suppression with multiple strategies.

- This action categorizes fires where a combination of tactics such as direct attack, indirect attack, and confinement by natural barriers are utilized to accomplish protection objectives as directed in a WFSA. In this case, the assumption is that the initial attack response was unsuccessful during the first operational period.

4.2.4.3 Fire Response Time Frames

[22] Interagency Standards for Fire and Fire Aviation Operations, 2004 (revised annually).

Due to the remote location of fire suppression resources and limited number of roads in certain areas of the FMU, fire response time frames may be long. The Monument slip-on engine may be used in response, but may be of limited value due to limited water capacity and access to the fire. Once suppression resources reach the Monument, they will have a short hike to reach the fire. Rural fire departments at Ramah, El Morro Ranches and Candy Kitchen, fire crews at Ramah and Zuni and the fire crew stationed at the El Malpais fire cache on Highway 53 will respond with a minimum drive time of 30 minutes. The Monument is in the Initial Attack Zone of the Ramah Navajo Agency, Department of Forestry.

4.2.4.4 Restrictions and Special Concerns

- In the FMU, tracked equipment and plows will only be used to protect human life and property and only with approval of the Superintendent.
- Fire line retardant may not be dropped within the Monument boundary. Single Engine Air Tankers (SEATs) with a capacity of 800 gallons may be used if the I.C. orders drops containing only water.

4.2.5 Extended Attack and Large Fire Suppression

The Incident Command System (ICS) provides for a management/organizational structure on incidents that evolve in complexity or increase in size, whether within a few hours or over several days. While the criteria for incident complexity vary by local conditions, a fire that has escaped initial attack is considered in extended attack when it:

1. Has not been contained by the initial attack resources dispatched to the fire.
2. Will not have been contained within management objectives established for that unit or area.
3. Has not been contained within the first operational period and there is no estimate of confinement or control.
4. Has escaped containment/control within the Monument boundary.

When complexity levels exceed initial attack capabilities, the appropriate ICS positions should be added commensurate with the complexity of the incident. The Incident Complexity Analysis and the WFSA assist the Superintendent in determining the appropriate management structure to provide for safe and efficient fire suppression operations. A unified command structure will be a consideration in all multi-jurisdictional incidents.

An Incident Complexity Analysis (WFIP Stage II) will be used as a guide for IC's, fire managers and agency administrators to evaluate emerging fires in order to determine the level of management organization required to meet agency objectives. This will assist in identifying resource, safety, and strategic issues that will require mitigation.

The WFSA is a decision making process in which the Superintendent or designee describes the situation, compares multiple strategic wildland fire management alternatives, establishes objectives and constraints for the management of the fire, selects the preferred alternative, and documents the decision. The format and level of detail required depends on the specific incident and its complexity. A WFSA is completed whenever a fire escapes initial attack and can not be controlled within the first operational period.[23]

4.2.6 Exceeding Existing WFIP

When a wildland fire cannot be controlled during the initial suppression response action or where the AMR has not been successful, or a prescribed fire is unsuccessful, a WFSA will be initiated and a new strategy selected.

4.2.7 Minimum Impact Suppression Tactics

[23] Interagency Standards for Fire and Fire Aviation Operations (2004, revised annually).

Responsible land stewardship ethics especially apply to the area of fire management. MIST guidelines were developed to ensure that the impacts resulting from fire management actions do not exceed those of the fires. These guidelines will be communicated via instructions that are clear, measurable, and understandable both verbally and in writing. They will relate to Section 10.0, Protection of Sensitive Resources. The guidelines will apply from the Superintendent down through Incident Management Teams to firefighters on scene.

All suppression tactics and support actions will be selected commensurate with potential fire behavior and minimizing impacts to values to be protected. These decisions must be informed and based on interdisciplinary inputs to the extent possible, with respect to conditions on the ground. MIST guidelines included in the Plan are in Appendix E-5.

4.2.8 Rehabilitation Guidelines and Procedures

Often the impacts of suppression and other management actions require some form and level of rehabilitation. Short and long term impact mitigation measures are outlined in Reference Manual RM-18 (NPS), DOI Burned Area Emergency Rehabilitation (BAER) Handbook, and Director's Order #18 (NPS). The Burned Area Emergency Stabilization and Rehabilitation Plan is located in Appendix K.

Guidelines to be followed include:

- Minimum requirements shall guide actions to mitigate actual or potential damage from wildland fire.
- Mitigation of suppression damage will be specified in Incident Action Plans (I.A.P.s).
- Burned Area Emergency Rehabilitation (BAER) plans will be prepared as necessary to specify long term mitigating actions, submitted to the Intermountain Region Fire Management Officer within five (5) calendar days following control of a wildland fire.
- Generally, burn areas will not be seeded or re-vegetated; dependent on specific local impacts.
- Water bars will be hand-placed, no mechanical equipment will be used.

4.2.9 Records and Reports

Quality, long-term documentation records for all actions taken on a wildland fire is critical. The Monument is to follow internal policy with respect to records. All decision documents, monitoring data, supporting documentation, and operational documents (I.A.P.s, maps, unit logs, etc.) will be assembled and organized during and following a wildland fire management action.

Specifically, the fire report and file should contain:

- Any written policies, guidelines or authority statements signed by the Superintendent.
- Copy of the complete WFIP.
- Copy of the WFSA.
- ICS-209's (Incident Status Report) for fires over 100 acres in Timber or over 300 acres in Grass.
- Copies of purchase orders, personnel request orders, etc. associated with the fire.
- All situation maps.
- Personnel rosters.
- Press releases, clippings, videotapes.
- Accident reports.
- All monitoring data, spot weather forecasts, internet printouts
- Documentation of financial charges made against the assigned account number
- Narratives and unit logs
- Rehabilitation plan

It is particularly important to include IC narratives (see above) regarding effectiveness of planned strategies, trigger points, holding actions, and other pertinent factors encountered during the fire.

In case of wildland fires that cross the Monument boundary, copies will be made of the entire package for each affected agency.

Documents will be maintained as per collection standards established for the Monument.

4.3 Wildland Fire Use

Wildland Fire Use (WFU) is not a program element at El Morro N.M. due to the small size of the Monument and the density of culturally significant resources.

4.4 Prescribed Fire

Requirements set forth in RM-18[24] will be followed, and any additional unit level operational procedures will be identified in Appendix H-4.

The following is a list of action items to be considered when developing project-level plans involving prescribed fire and/or mechanical fuels treatment.

- Develop project objectives and site-specific treatment methods to accomplish objectives.
- Preparation of a 5-year treatment plan, revised annually, and entered into the National Fire Plan Reporting System (NFPORS). The list of treatments and activities identifies projects in priority order, and is submitted to the Superintendent for distribution to El Malpais/El Morro N.M. staff in the current year and for one year in advance of the planned treatment.
- Archeological field surveys will be conducted based on individual project plans in accordance with Section 106 NHPA (National Historic Preservation Act) and agency policy.
- Upon completion of project surveys and clearances, submit written documentation to the New Mexico State Historic Preservation Office (SHPO) including any mitigation action(s) required for protection of cultural resources.
- Following mitigating actions, the original copy of burn plan will be routed with attached clearances by the FMO/Burn Boss through routing protocol to the Superintendent or designee for approval.

Other annual actions that should be considered by the FMO or assigned Burn Boss in implementing a project prescribed fire program are the following:

- Reconnaissance (GPS) and burn unit layout and compliance (involve resources staff as needed to identify values to be protected, etc).
- On-site documentation, fire effects monitoring plot layout, Job Hazard Assessment (JHA) elements, logistics, and identified mitigation work; complete complexity rating.
- Analyze potential ignition patterns with prescriptions, weather, fuels, and topography.
- Coordinate all burns with Albuquerque Zone, cooperators, and the media.
- Smoke management considerations, monitoring, modeling, and consultation with New Mexico Environment Department Air Quality Bureau.
- Personnel management, fiscal analyses.
- Pre-burn notifications.
- Briefings, logistics, contingencies.

[24] Chapter 10, page 1.

- Go/No-Go decision process.
- Organization, implementation plans.
- Follow-up coordination, evaluations, cost summaries, record keeping, reporting requirements (a DI-1202 will be completed for each burn and submitted within 10 working days after declared out date).
- Submit data for GIS addition to prescribed fire thematic map.

Prescribed fire units and extended schedule is located in Appendix H-1

4.4.1 Planning and Documentation

4.4.1.1 Annual Activities

Annual activities are based on the Monument's fire regime and condition class and the number of prescribed burn units to be treated. A 5-year treatment plan will be updated annually as target units are burned. Activities will be entered into NFPORS by March 15th each year for the following fiscal year.

4.4.1.2 Long-Term Strategy

The long-term strategy for the prescribed fire program is to employ prescribed fire as a tool to reduce hazardous fuel buildups while ensuring public safety and protection of property and resource values. The Monument fire staff will implement prescribed fire treatments in a manner that simulates the natural ecosystem function of fire as determined through fire ecology and historic research to restore fire as a keystone natural process.

4.4.1.3 Personnel

All fire personnel assigned to prescribed fires will meet the Incident Qualification and Certification System (IQCS) requirements. The Burn Boss assigned to prescribed fires will be certified according to complexity and in the fuel type proposed to treat. Additionally, all prescribed fire personnel assigned to prescribed fires will meet all national requirements for training and experience.

4.4.1.4 Fire Behavior And Fire Effects Monitoring

Before the burn, fuels characteristics such as live and dead fuel moisture contents will be established to check prescription parameters and fire behavior calculations. Prior to ignition, a Spot Weather Forecast will be submitted and the results analyzed by the Fire Effects Monitor and the Burn Boss as a factor of the Go/No-Go decision making process. During ignition, on a timetable agreed upon by the Fire Effects Monitor and the Burn Boss, but not to exceed one hour, on-site weather, smoke, and fire behavior observations will be recorded on forms found in the Western Region Fire Monitoring Handbook.

The Bandelier Fire Effects Monitoring Crew will establish plots in a representative number of prescribed burn units. After the burns, on a schedule established by monitoring protocols, the crew will visit the Monument and record post-fire data and submit annual reports to the fire staff and resources department for evaluation of burn effectiveness.

4.4.1.5 Critiques

All prescribed fires will be reviewed and critiqued by the Burn Boss or FMO and an Interdisciplinary Team (IDT). Reviews may be convened by the NPS Superintendent (authority *DO-18*) as directed by agency policies.

4.4.1.6 Reporting and Documentation

Documentation of prescribed fire projects will be prepared and filed in accordance with NPS policy. All prescribed fires will be documented with the following information, stored in an individual fire folder and maintained in the Monument's files according to collection protocols.

- Original signed Prescribed Burn Plan.
- Checklist of pre-Burn prescribed fire activities.
- All reviewer comments.
- All maps.
- Notification checklist.
- Permits such as burn, smoke, etc.
- Monitoring data.
- Weather forecasts.
- Superintendent Go/No-Go pre-ignition approval.
- Operational Go/No-Go checklist.
- Incident Action Plans.
- Unit logs, Daily Validation or other unit leader documentation.
- Press releases, public comments, and complaints.
- Smoke dispersal information.
- Post fire analysis.
- Fire Occurrence report (DI-1202) report (must also be entered in SACS).
- NFPORS entry.

4.4.1.7 Prescribed Burn Plan Elements

Each plan shall include as a minimum, the following elements:

- Signature page.
- Executive summary.
- Description of prescribed fire area.
- Goals and objectives.
- Risk management.
- Project complexity.
- Organization
- Cost.
- Scheduling.
- Pre-burn considerations.
- Prescription.
- Ignition and holding actions.
- Wildland fire transition plan.
- Protection of sensitive features.
- Public and firefighter safety.
- Smoke management.
- Interagency coordination and public information.
- Monitoring.
- Post-fire rehabilitation.
- Post-fire reports.
- Appendices.

4.4.2 Exceeding Existing Prescribed Burn Plan

If prescription parameters are exceeded during project execution, the Burn Boss will terminate ignition operations at a safe and appropriate location based on fire behavior, fuels, topography and weather conditions. If the project area comes back into prescription based on current and forecasted weather, ignition operations may continue. If not, the project area is put into a mop-up or patrol status. Holding actions will maintain control of the fire until a decision to continue, postpone or extinguish the prescribed fire is made and the Superintendent or designee is notified. This decision making process will be articulated in the prescribed burn plan.

If the prescribed fire exceeds project boundaries and/or slop-overs and spot fires are not contained within one burning period, suppression actions will be taken and the entire prescribed fire project will be declared a wildfire.

If at any time the prescribed fire poses a threat to life, property, or high value resources, beyond those mitigated in the plan, suppression actions will be taken and the fire will be declared a wildland fire.

Once the prescribed fire is declared a wildland fire, all subsequent actions (i.e. operational needs, notification, strategies, resource orders, etc.) will be defined under a wildland fire transition plan, which is part of the prescribed fire plan until an initial Wildland Fire Situation Analysis (WFSA) is completed.

4.4.3 Air Quality and Smoke Management

Visibility and clean air are primary natural resource values in all NPS units. The protection of these resources must be given full consideration in fire management planning and operations.

The Federal Government has ceded responsibility and authority to establish air quality standards and regulations to the states (RM 18-Chapter 14). Therefore, all NPS areas are required to comply with state laws regardless of the type of legal jurisdiction that applies to other activities within the NPS unit.

The New Mexico Environment Department's Air Quality Bureau (A.Q.B.) developed the state Smoke Management Program (SMP) to protect the health and welfare of New Mexicans resulting from impacts of smoke from all management-related fire activities. In addition, the SMP meets the requirements of the Clean Air Act and the Regional Haze Rule (40 CFR 51.309). The SMP is applicable to all of New Mexico, except for tribal lands and Bernalillo County, which are separate air quality jurisdictions. Burners must also comply with all city and county ordinances relating to smoke management and vegetation burning. There are three components of the SMP: Open Burning, SMP-1 and SMP-2.

Open burning requires no permit, but is limited to burning 10 acres or less or less than 1000 cubic foot of piled material per day. The only requirement for open burning is to contact the local fire authority.

Another part of the program is a SMP I permit. NPS units may fill out forms for a SMP 1 permit online or print copies and then mail or fax to A.Q.B. A SMP 1 permit limits burning from 10 to 23 acres of forest material or under 5000 cu. ft. of piled material per day. Smoke dispersion values issued by the National Weather Service (NWS) must be at "Good" or "Better" although a waiver may be obtained from A.Q.B. to burn at "Fair" or "Poor" conditions. Smoke monitoring requirements consist of visual monitoring and documentation if the source is within 1 mile of a population. A population varies from 1 residence to 100 or more residences. Public notice is required and can be determined by the agency conducting the burn. Public notice may be in the form of press releases, telephone calls, local television and/or radio station announcements, and notices in public use areas. A notification to the A.Q.B. must be sent 24 hours before ignition takes place. The permittee must submit a smoke tracking form to the A.Q.B. within two weeks after the burn is declared out.

Burns larger than 24 acres or more than 5000 cu. ft. of piled material require a SMP II permit. A SMP II permit requires everything of a SMP I, but includes identifying alternatives to burning for 3 years, identifying actions to minimize emissions, evaluating smoke dispersal and public notification within 15

miles of the burn. A.B.Q. does not require photographic and visual smoke tracking records, but if taken on the burn, these will be included in the final documentation package of the burn plan.

Wildland fires under 100 acres do not require reporting. For wildland fires over 100 acres, the Monument must submit a tracking form 6 weeks after the fire is declared out. Documentation will include total blackened acres.

Personnel responsible for submitting smoke management forms are required by the A.Q.B to have Rx450 (Smoke Management Techniques) and training from the A.Q.B.

El Morro National Monument is a Class II air shed and is not near a Class 1 air shed or non-attainment area. Smoke management issues are less complex and generally the Monument has good smoke dispersion days. Local smoke management issues include possible impacts to state roads, highways, the City of Grants, local Tribal reservations and pueblos, and nearby residences. Coordination with adjoining agencies is mandatory. An interagency Zone Smoke Operations Plan has been approved to prevent smoke conflicts and coordinate smoke production on agency prescribed fire projects to minimize impacts on specific air sheds.

4.5 Non-Fire Treatment Applications

Mechanical treatment methods will be a primary tool for management to reduce [hazardous] fuels continuity and create defensible space around values at risk. Prescribed fire follow-up treatments may or may not be employed. A Non-fire Treatment plan is located in Appendix L.

The Monument will follow RM-18 and the requirements to prepare a Hazard Fuels Project Plan that includes specified elements for all mechanical treatments and the *Interagency Standards for Fire and Fire Aviation Operations*, Chapter 6.[25]

Fuel break construction should be identified on an appropriate Geographic Information System (GIS)-compatible project location map (exact locations using GPS).

Fuel break planning will consider the following guidelines (see also mitigation measures below):

- Some green-stripping to mask the thinning in areas used by visitors.
- Canopy thinned and feathered (or gradually opened) toward the area being defended against, with spacing necessary to prevent crown fire and/or "wind tunnel" effect.
- Retain a reasonable level of surface forbs and other plants to discourage exotic invasion.
- Fuel-break width is dependent on fuels conditions and other considerations.
- Consider key photo-points installed to monitor vegetative recovery, exotic invasion, etc. All burn preparations involving pre treatment with mechanical techniques will be outlined in a burn plan and given review by appropriate resource staff as necessary. This may include but is not limited to:
    - Snag felling, bucking in and around perimeter.
    - Reducing tree densities along perimeter.
    - Pruning individual trees and brush along perimeter.
    - Bucking and removal of logs near the control line only (through bucking into short lengths, piling and burning on site).

Specific mitigation techniques may include:

[25] 2004, revised annually.

- Utilize existing or planned right-of-way construction lanes for fuel-breaks.
- Consider a contracted/leased chipping unit for woody debris generated where fuelwooding is not feasible.
- Consider lop-and-scatter techniques.

4.5.1 Annual Activities

Areas of hazardous fuels that require treatment will be assessed factoring effectiveness of treatment and cost. Wildland Urban Interface, infrastructure and developed areas will receive priority when determining areas to be treated. Removal of bug infested trees is an option to be considered when assessing treatment options.

4.5.2 Equipment And Seasonal Use Restrictions

Project equipment will be selected for effectiveness and potential impact to resources. Mechanical cutting and chipping equipment will be considered as well as low-impact equipment currently available through contractors. Equipment selection will be determined by an Inter-disciplinary Team and approved by the Superintendent.

4.5.3 Effects Monitoring

All treatments will be evaluated for effectiveness in reducing control problems during a wildland fire. Treated areas will be monitored for tree species regeneration and introduction of exotic species.

4.5.4 Cost Accounting

Planned activities will be entered into the National Fire Plan Operations and Reporting System (NFPORS) and tracked in AFS3 as funds are allocated. Completed projects will also be reported in NFPORS.

4.5.5 Reporting and Documentation

Documentation of prescribed fire projects and non-fire treatments will be prepared and filed in accordance with agency policy.

4.5.6 Annual Planned Projects

Mechanical treatments will be included in the Monument's 5-Year Treatment Plan.

4.6 Emergency Rehabilitation and Restoration

Often the impacts of suppression and other management actions require some form and level of rehabilitation. Short and long term impact mitigation measures are outlined in Reference Manual RM-18, DOI BAER (Burned Area Emergency Rehabilitation) Handbook, and Director's Order #18 (NPS). A complete Burned Area Rehabilitation and Stabilization Plan is located in Appendix K.

Guidelines to be followed include:

- Minimum requirements shall guide actions to mitigate actual or potential damage from wildland fire.
- Mitigation of suppression damage will be specified in incident action plans.
- BAER plans will be prepared as necessary to specify long term mitigating actions, submitted to the Denver Support Office, Intermountain Region, within five (5) calendar days following control of a wildland fire.

- Generally, burn areas will not be seeded or re-vegetated (dependant on specific local impacts).
- Water bars will be hand-placed, no mechanical equipment will be used.

5.0 ORGANIZATION AND BUDGETARY PARAMETERS

5.1 Organizational Structure, Roles and Responsibilities

The fire management Organizational Chart for El Malpais/El Morro National Monument[26](Appendix E-9) outlines the current structure for the Monument.

The overall fire program responsibility rests with the Chief, Resource Management and Visitor Protection (RM & VP). This position reports to the Superintendent, who retains ultimate responsibility for all Monument programs. A Fire Management Officer supervises the daily operations and reports directly to the Chief, RM and VP. A Fire Program Management Assistant supports the administrative needs of the fire program. Refer to the Organizational Chart for additional fire management positions for the Monument.

Individual Position Roles and Responsibilities:

Monument Superintendent

1. Ensures safe implementation of wildland fire management program at the Monument.
2. Ensures program supports Service-wide initiatives.
3. Approves wildland fire management plan and updates, interagency agreements and operating plans, delegations of authority, prescribed burn plans, and management of wildland fire use incidents, through daily updates of WFIP or WFSA.
4. Ensures compliance of Section 106 of NEPA, the Organic Act and other relevant laws and policy.

Chief, Division of Resource Management and Visitor Protection

1. Contributes to protection-based fire management program objectives.
2. Monitors the effectiveness of wildland fire management plan effectiveness.
3. Assists the wildland fire program with fire investigation and enforcement.
4. Participates on Wildland Fire Analysis Team as needed. Provides input to WFIP and WFSA.
5. Reviews and implements fire restrictions, trail and area closures, and evacuations.
6. Reviews fire management plan updates and prescribed burn plans.
7. Ensures coordination and training of field rangers in fire readiness and initial response.
8. Contributes to resource-based fire management program objectives.
9. Supports development of multi-year treatment plans and individual project plans.
10. Manages and coordinates NEPA/106 compliance to accomplish compliance as needed.
11. Makes resource advisors and specialists available to incident/project teams as needed.

Fire Management Officer

1. Develops and updates park fire management plans, including annual appendix updates.
2. Ensures the monument has the capability and skills to safely implement wildland fire programs as identified in the fire management plans for NPS units in the Four Winds Group.
3. Monitors fire danger and recommends fire restrictions in concert with neighboring agencies.
4. Participates as the NPS representative on Albuquerque Zone Board, which reports directly to interagency land managers.
5. Monitors actions taken on wildland fires, and ensures proper and adequate documentation.
6. Approves DI-1202 for support actions and ICT-3/4 fires.
7. Initiates task books for wildland fire positions and certifies completion.
8. Oversees management of budget for allocated and emergency FIREPRO accounts.
9. Calls Wildland Fire Analysis Team to meet as needed. Prepares WFIPs and WFSAs.
10. Reviews all burns plans for prescribed fires in the Four Winds Group.
11. Reviews procedures for off-monument dispatches of park personnel.
12. Sets goals and objectives for Group wildland fire program, including staff supervision.
13. Represents NPS on various interagency working groups.

[26] Revised 11/01/04

Prescribed Fire Specialist
1. Writes complete prescribed burn plans.
2. Provides input into five-year treatment plans.
3. Implements prescribed burns as Burn Boss.
4. Coordinates prescribed fire and hazard fuel operations for the Four Winds Group.
5. Serves as Incident Commander on wildland fires and Fire Use Manager on moderate complexity Fire Use fires.
6. Assist Group FMO in developing fire management plans for units in the Four Winds Group.
7. Manages readiness operations for wildfire response at ELMA/ELMO to include annual refresher training.
8. Serves as acting FMO as needed.

Engine Foreman
1. Ensures personnel and equipment readiness and capability for safe initial response.
2. Ensures 2-Type 6 engines are maintained in a state of readiness.
3. Participates in annual refresher training.
4. Leads monument fire crews in daily readiness activities, including fire safety briefings.
5. Supervises temporary fire technicians.
6. Implements signing and fire prevention activities.
7. Issues taskbooks for Firefighter type 1 and 2 and Engine Operator positions.

Fire Program Management Assistant
1. Serves as payroll, personnel, and travel administrator for the fire program.
2. Maintains payroll, procurement, inventory, travel and other records as needed.
3. Ensures accurate fire reports are entered into SACS, DI-1202 are signed and filed.
4. Maintains/updates employee fire qualifications records for ELMA/ELMO and Four Winds Group.
5. Updates list of employee fire qualifications in IQCS.
6. Maintains and updates fire program budget and tracks expenditures in AFS3.
7. Retrieves daily fire weather forecasts.
8. Tracks capitalized equipment and sensitive items assigned to fire management program.

5.2 FIREPRO Funding

The Fire Management Program Center (FMPC), National Interagency Fire Center, will issue an annual budget structure and allocation report. Allocated amounts will be entered in the Federal Finance System (FFS) at the allocation (ALCT) level by the FMPC for the following activities: Preparedness, Burned Area Rehabilitation, Hazardous Fuels Reduction, Wildland Urban Interface, and Rural Fire Assistance. The Monument will stay within the line item spending authority for each activity until additional funding is requested and approved.

The WASO Budget Office covers Emergency Suppression, Wildland Fire Use and Emergency Stabilization obligations and expenditures at the regional allotment (ALOT) level at year-end. Expenditures in the Emergency Suppression and the Burned Area Rehabilitation Activities will be tracked through unique project accounts, using the Fire Code guidelines.

5.3 Interagency Cooperation

Key local interagency contacts for the fire management program :

- FMO, Ramah Agency, Branch of Forestry
- FMO, Zuni Agency, Branch of Forestry
- Fire Chief, Rural Fire Departments of El Morro Ranches, Ramah and Candy Kitchen

5.4 Interagency Contacts

Key contacts within the Albuquerque Zone for the fire management program consist of individual counterparts and specialists in the other federal, tribal, state and local agencies. Those contacts are:

FMO: Ramah Agency
FMO: Southern Pueblos Agency
FMO: Zuni Agency
FMO: BLM Albuquerque Field Office
FMO: Cibola NF, Mt. Taylor RD
FMO: USFWS Southwestern Regional Office
FMO: New Mexico State Forestry Division, Bernalillo District
Fire Staff Officer, Cibola NF
Southwest Coordination Center
Albuquerque Zone Coordination Center
National Weather Service Forecast Office, Albuquerque.
New Mexico Smoke Management, Air Quality

5.5 Interagency Agreements

Joint Powers Agreement
This blanket agreement between the State of New Mexico and cooperating federal fire agencies (BIA, BLM, FWS, NPS, and USFS) provides for mutual wildland fire suppression assistance. Copies are on file with the Fire Management Officer.

Albuquerque Zone Operating Plan.

Under the Joint Powers Agreement between all wildland agencies, the Albuquerque Zone Operating Plan provides specific direction for implementing the Joint Powers Agreement. This document identifies areas of initial attack responsibility as well as reporting requirements, notification procedures, and reimbursement guidelines for any wildland fires that escape initial attack on State and private lands. A copy of the plan is located in Appendix E-3.

Albuquerque Zone Management Board Memorandum of Understanding (MOU)

This MOU establishes a board consisting of representatives of all agencies within the Albuquerque Zone. The Board's mission is to actively manage operations of the Albuquerque Zone Coordination Center (AQZ), which includes the safe, timely, and cost-effective coordination of interagency suppression resources requested by participating agencies and the Southwest Coordination Center (SWCC).

5.6 Records and Reports

Table 5. Records and Reports.

FORM/REPORT	RESPONSIBLE PARTY	DISTRIBUTION	FREQUENCY
DI-1202 Fire Report	NPS Superintendent	Copy (1202 only) to Archives (SACS) within 10 work-days	Per Incident
Interagency Fire Qualification Form and Card (Red Card)	Fire Program Management Assistant (FPMA) Signed by FMO	Affected Personnel	Annually
Situation Report (daily May 15 – September 30)	Forestry Tech (cache) FPO or FPMA	Bulletin Boards, electronic	Daily during season
Fire Weather/Indices (daily; see dates above)	FPMA or Fire Crew	Staffing levels (BI) received	Daily
Daily Cost Accounting	IC or Burn Boss	To FPMA	Daily
WFSA	Superintendent	To fire file	Per Incident

6.0 MONITORING AND EVALUATION

The fire effects monitoring program supports agency objectives of the fire management program.

Goals of the monitoring program are as follows:

- Verify that prescribed fire program objectives are being met through documentation and analysis of fire effects.
- Increase knowledge of fire behavior and effects on ecosystems.
- Document basic information for all prescribed fires and keep all monitoring information organized and properly archived.
- Adhere to standardized data collection techniques for Fire Monitoring Handbook (FMH) plots.
- Use data to help develop information for the public.
- Identify areas in which research should be initiated.
- Provide adequate training opportunities to crewmembers to further their career development.
- Follow trends in plant communities as related to fire effects.

Appendix H-5 documents FMH-4 (Monitoring Type Descriptions), including statements of desired future conditions, for the major monitoring types occurring in El Malpais/El Morro National Monument. Additional monitoring types and descriptions may be developed in the future. The Bandelier NM fire effects monitoring crew is responsible for implementing the monitoring program for El Malpais/El Morro N.M.

Each prescribed burn plan, Wildland Fire Implementation Plan, or other project plan which involves fire treatment will contain monitoring objectives that are designed around the resource/fire treatment objectives. The monitoring objectives detail the immediate, short term and long term information necessary to adequately quantify and later assess fire effects. Evaluation of monitoring data is a responsibility of Bandelier NM.

The Monument will follow the Fire Monitoring Handbook guidelines.

In addition to fire effects monitoring, the Monument will monitor the effectiveness of fuel treatments in mitigating the spread or containment of wildland fires.

The Monument will conduct pre and post-burn site-specific evaluations of archeological sites in order to recommend treatments for protection and evaluate the effectiveness of the proposed treatments.

6.0 FIRE RESEARCH

The objective of fire-related research is to add cumulatively to scientific understanding and knowledge of the role of fire in the ecosystem, so that adaptive management practices are continually evolving. It is important that studies be conducted in conjunction with implementation of the Fire Management Plan.

Fire managers need sound, management-oriented science information with which to determine fire management objectives and strategies, natural ranges of variability for vegetation types, fire frequencies, fire effects, and historic fire intensities.

Specifically, the following outlines general areas for fire-related scientific investigation:

- Increase understanding of paleo fire history.
- Assess the effects of prescribed fir on old growth ponderosa pine and alligator juniper.
- Assess ranges of fuels accumulations rates for various forest fuels.
- Understand the evolution of pinyon-juniper woodlands and the role of disturbance regimes such as fire in shaping this cover type; define a desired future condition for same.

8.0 PUBLIC SAFETY

Managing a total fire program is among the highest risk operations that any land management agency can undertake. The first priority consideration in any fire management action is firefighter and public safety. Many human safety-related issues focus on the altered vegetative communities in the Monument and NCA. One consequence of the current high levels of hazard fuels resulting from years of fire exclusion is related to the potential for uncontrollable crown fire behavior. The prescribed fire program is part of the mitigating action, particularly in developed areas. Creation of defensible space as a safety-related action requires careful planning along with prudent applications of mechanical fuel reduction and debris burning. The same can be said for the fuels management program on agency wildlands where firefighter safety may be compromised during severity years when resistance to control is high to extreme.

8.1 Issues and Concerns

- Conditions that pose an immediate threat to human life.
  Hazardous fuels accumulations around developed sites and visitor-use areas, combined with steep slopes, narrow access roads, and distance from mutual aid resources constitute a continuing threat to residents, visitors, and employees.
- Management of wildland fires and prescribed fires is becoming increasingly hazardous.
  Given fuels conditions described elsewhere in this Plan, minimizing personnel exposure to hazards associated with suppression and other fire management operations requires training, effective communications, and on-site hazard analysis and mitigation measures.

8.2 Mitigating Actions

The following program elements will be followed, with the intention of mitigating concerns stated above.

- Implement, or continue implementation, of approved project-level plans designed to create fuels conditions that support defensible space and public safety protection objectives in and around Monument lands.
- All fire personnel shall meet appropriate qualifications, including physical fitness and medical requirements, for all fire assignments (per NPS *RM-18, DO-18*, the *Federal Interagency Wildland Firefighter Medical Qualification Standards*, and *Interagency Standards for Fire and Fire Aviation Operations*).
- Fire personnel will be equipped with personal protective equipment appropriate to their incident assignments.
- All fire personnel and cooperators will comply with NWCG and NPS fitness and personal protective equipment standards while assigned to fire incidents.
- Fire personnel assigned to fire line operations will complete a minimum of 32 hours of basic wildland fire training, including modules on basic firefighting, basic fire behavior, and standards for survival; and a minimum of 16 hours of refresher (FFT1 and above) and 8 hours refresher for FFT2 and non-operations personnel likely to be on the fire line.
- All wildland fire incidents that result in human entrapment, fatalities, or serious injuries, or result in incidents with potential for the above, will be reported and investigated.
- All safety standards and guidelines identified within the Interagency Incident Business Management Handbook and Southwest Coordination Center (SWCC) guidelines will be followed.
- Management of all wildland fire incidents will comply with interagency risk management standards.
- The Job Hazard Analysis (JHA) will be used for projects which present potential hazardous activities and for jobs which require employee use of out-of-the-ordinary personal protective equipment (PPE); refer to RM-18 or *Interagency Standards for Fire and Fire Aviation Operations* for JHA process and format.
- Safety meetings will be conducted and documented as needed under the supervision of the Suppression Manager/Specialist, Prescribed Fire Manager/Specialist or Engine Foreman.

- Accidents will be reviewed to determine areas needing improvement, not as a punitive measure; normally held between the supervisor and the employee.
- The Interagency Helicopter Operations Guide (IHOG) is utilized for all helicopter operations.

9.0 PUBLIC INFORMATION AND EDUCATION

Public information and education is the cornerstone of a successful fire management program. An informed and supportive agency staff, local and visiting public, recreationists, partner organizations, and youth will contribute greatly to the success of the fire program and the resources that it is designed to benefit.

Strategies for the public information and education program are:

- Establish a network of contacts and develop a proactive process that disseminates current and accurate fire information to the agency staffs, community, general public, media, etc.
- Incorporate the principles of fire's role in the El Morro N.M. ecosystem and the importance of fire as a resource management tool into Monument interpretive programs, exhibits, video, interpretive trails through old burns, and periodicals, brochures, civic group presentations.
- Forward all fire-related press releases to the Superintendent or Public Information Officer (PIO) and keep members of the administrative staffs well informed of fire activity.
- Display fire restriction notices on Monument bulletin boards.
- Develop public information programs that promote the benefits of Firewise community planning, defensible space, and mechanical fuel reduction
- Establish a rapport with local press and media representatives and accommodate all interview requests that will benefit the joint agency planning area by promoting the fire program.
- Outreach to American Indian Tribes with adjacent lands and/or traditional cultural concerns, through tribal and chapter governments.

The purpose of the step-up configuration is to provide a logical sequence of actions to initiate in response to changing levels of fire danger or active fire status. The step-up plan (Table 6) is outlined below.

Table 6. Public Information "Step-up" Plan.

PRE-FIRE ACTIONS	WILDLAND/PRESCRIBED FIRE: ON-GOING
• Include fire information on NPS fire website • Assist Monument public contact personnel with fire. management exhibits, visitor program information, etc. • Prepare and distribute flyers with appropriate messages to Monument neighbors. • Forward to the Superintendent all press releases/media information for review and approval. • Use local radio and public-access channel (Gallup) for briefing and updating prescribed fire information as needed. • Tribal consultations as appropriate.	In addition to Pre-Fire Actions listed on left side, consider: • Placing appropriate notification signs along roadways and overlooks, recreation sites, trail registers, etc. • Prepare information briefs on fires and update regularly. • Answer calls and other public inquiries as directed by PIO/Superintendent. • Respond to directions of FMO as required • Provide current fire information for Monument personnel to disseminate as necessary.

10.0PROTECTION OF SENSITIVE RESOURCES

It is important that wildland and prescribed fire personnel establish and maintain close coordination with relevant resource staff when managing for the protection of sensitive resource values. These values may include but are not limited to threatened and endangered species, cultural resources, historic sites, scenic values, and administrative facilities. The close involvement of American Indian tribes and local governments with interests in El Morro National Monument is also critical.

10.1 Archeological/Cultural/Historic Resources

El Morro National Monument's cultural resources are irreplaceable and non-renewable, therefore, any potential negative impacts and/or adverse effects would be cumulative and permanent.

All projects conducted under the Plan, including post-fire treatment projects, will be preceded by appropriate cultural resources inventories, by consultations with interested American Indian tribes, and by project-specific compliance with the National Historic Preservation Act. If historic properties are present, mitigation measures will be developed by staff cultural resource specialists in consultation with SHPO and/or American Indian tribes. In wildland fire situations, staff Cultural Resource Specialists acting as Resource Advisors will recommend mitigating measures consistent with this Plan.

Approved mitigation strategies may involve one or more of the following.

- Isolate sites or features that are deemed vulnerable to fire.
- Avoid sites or features vulnerable to surface disturbance.
- Remove heavy fuels that cause long-duration heating.
- Brief overhead and fire crews on specific protective measures for cultural sites.
- Flush-cut trees and covering stumps to prevent subsurface burning.

10.2 Natural Resources

Species locations and/or preferred habitats should be obtained during the planning phase of project work. This should be accomplished in consultation with the Chief, Resources Management and Visitor Protection.

10.3 Developments, Infrastructure, Inholdings and Other Improvements

Interface mitigation techniques should be employed to prevent or reduce any potential negative impacts to modern facilities, developments, or other values on Monument land.

11.0FIRE CRITIQUES AND ANNUAL PLAN REVIEW

The Plan is subject to informal review annually and formal plan and NEPA compliance review every five years. The review will be documented and forwarded to the Intermountain Region FMO.

Appendix N will contain a compendium of policy or other official procedural changes as they become approved and distributed.

For incidents lasting no longer than one operational period, a review will be conducted within three workdays after the fire has been declared out. Incident personnel involved will participate in the review, facilitated by the Incident Commander or Burn Boss.

Critiques will be accomplished using the following guidelines:

- All fires occurring on Monument lands will receive a review to evaluate successes and problem areas such as: initial response, "hotline" review, control strategies employed, safety concerns, and need for equipment replacement.
- Reviews will be conducted by one of the following: Incident Commander, Burn Boss, FMO or as assigned by the Superintendent.
- Incidents lasting longer than a single operational period will be reviewed within three working days after the fire has been declared out.
- Incident Management Teams (IMT) will participate in a close-out session to identify any areas of concern or of particular success and take care of unfinished business prior to transition to a local organization (refer to NPS *RM-18*, Chap. 13 or *Interagency Standards for Fire and Fire Aviation Operations*, Chap. 11).

A regional or national review may be indicated if one of the following occurs:

- Fire crosses the Monument boundary onto another jurisdiction.
- Fire resulted in adverse public or media attention.
- Fire involved serious injury or fatality, significant property damage.
- Fire results in controversy involving another agency or ownership.

All entrapments and shelter deployments will be reported and investigated and investigated through the use of interagency investigation teams[27] as soon as possible following the incident. Follow National Interagency Fire Center (NIFC) guidelines and RM-18, Chapter 13, for this administrative action.

[27] *Investigation of Serious Wildland Fire-Related Accidents, M.O.U. DOI and USFS, 1995.*

12.0CONSULTATION AND COORDINATION

The following agencies were consulted.

- U.S. Department of Agriculture, Forest Service, Cibola National Forest
- New Mexico State Forestry
- New Mexico State Environmental Improvement Division
- Ramah Navajo Chapter, Navajo Nation
- Acoma Pueblo
- Cibola County
- Zuni Pueblo
- NM Office of Culture Affairs, Historic Preservation Division
- USFNS, NM Ecological Services Field Office

**********THIS WAS THE CONSULTATION DOCUMENTED IN THE 2001 NPS/BLM FMP. ANY SUGGESTIONS FOR WHAT TO PUT IN THIS ONE?**

WE COULD ADD THIS SECTION AFTER THE PLAN HAS BEEN REVIEWED