FIRE MANAGEMENT PLAN

for

MOUNT RUSHMORE NATIONAL MEMORIAL

United States Department of the Interior
National Park Service
Mount Rushmore National Memorial
Keystone, South Dakota

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MOUNT RUSHMORE NATIONAL MEMORIAL

Prepared by: _Northern Great Plains Area Fire Office with contractor

Reviewed by: __/s/ Doug Alexander_____ __3/25/03_____
Doug Alexander, Fire Management Officer Date
Northern Great Plains Fire Management Office

Concurred by: _/s/ Fred Bird_____ _ 3/18/03_____
Fred Bird, Fire Management Officer Date
Midwest Regional Office, National Park Service

Approved by: _/s/ Don Striker_____ __3/29/03_____
Superintendent Date
Mount Rushmore National Memorial

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I. INTRODUCTION

A. REQUIREMENTS

The Fire Management Plan (FMP) is an addendum to Mount Rushmore National Memorial's Resource Management Plan. This plan outlines a detailed program of actions to be taken by Mount Rushmore National Memorial to meet the fire management goals for the area.

The plan is guided by Director's Order-18 (DO-18) (http://www.nifc.nps.gov/fire/policy/do18/do18.htm) which requires that all National Park Service (NPS) units with vegetation capable of sustaining fire develop a FMP. Until a FMP is approved, the Memorial will aggressively suppress all wildland fires, taking into account the safety of firefighting personnel, the visiting public and protection of all resources at risk on the unit.

B. GOALS AND OBJECTIVES TO ACHIEVE

Overall resource management objectives for the Memorial guide the FMP. Resource management objectives determine whether fire may be used as a tool to manipulate vegetation and how it will be managed.

1. Unit Objectives

Mount Rushmore National Memorial management objectives that relate to wildland fire management follow:

- Develop a comprehensive fire management plan addressing resource management strategies for fuel modification and hazardous fuel reduction.
- Utilize prescribed fire management to achieve specific resource management objectives.
- Protection of the Sculptor's Studio located in the historic zone of the Memorial.
- Maintenance of the landscape vista around the sculptures in as nearly a presettlement condition as possible

2. National Fire Plan Goals

In addition to existing planning document objectives, there are 4 goals in the National Fire Plan (NFP) (http://www.fireplan.gov/) that are addressed in unit fire management plans.

Goal 1. Improve Prevention and Suppression – Improvements in cooperative efforts with local units of government and other Federal agencies will result from direction in this plan.

Goal 2. Reduce Hazardous Fuels – Projects proposed in this plan, both mechanical and prescribed fire will assist meeting this goal at Mount Rushmore.

Goal 3. Restore Fire Adapted Communities – Projects proposed for Goal 2 will be a starting point for the restoration of fire to the vegetative community at the Memorial.

Goal 4. Promote Community Assistance – Through the Rural Fire Assistance Program, funding has been provided to the Keystone VFD for wildland equipment. A potential exists for additional VFD support as well as technical assistance to the community for risk reduction in the wildland urban interface.

C. NEPA AND OTHER COMPLIANCE

An Environmental Assessment (EA) guides the FMP and complies with National Environmental Policy Act (NEPA) (http://www4.law.cornell.edu/uscode/42/ch55.html#PC55) requirements and National Park Service (NPS) policy. The completed EA analyzes environmental impacts of the operations detailed in this plan.

The FMP will implement activities in accordance with the regulations and directions governing the protection of historic and cultural properties as outlined in the Department of Interior Manual, Part 519 (519 DM), and Code of Federal Regulations (36 CFR 800). The National Historic Preservation Act of 1966 (NHPA), as amended, Section 106, (http://www4.law.cornell.edu/uscode/16/470.html) sets the requirements for the protection of the cultural resources found on the unit.

The mountain lion (*Puma concolor*) is an occasional visitor on the unit. Other threatened or endangered species may be occasional visitors. An Endangered Species Act, Section 7 consultation will be requested from the U.S. Fish and Wildlife Service to ensure actions under this plan do not jeopardize species or critical habitat.

The EA, State Historic Preservation Officer concurrence and Section 7 consultation results are found in Appendix D.

D. AUTHORITY FOR IMPLEMENTATION

The legal authority for the operation of the fire management program is found in 16 U.S.C. Chapters 1 and 3. The specific authorities can be found in 620 DM 1.1, (http://elips.doi.gov/elips/release/3203.htm). The Organic Act of the National Park Service (August 25, 1916, Section 102) provides the authority for implementation of this plan.

The authority for FIREPRO funding (Normal Fire Year Programming) and all emergency fire accounts is found in the following authorities:

1. Section 102

Section 102 of the General Provisions of the Department of the Interior's annual Appropriations Bill provides the authority under which appropriated monies can be expended or transferred to fund expenditures arising from the emergency prevention and suppression of wildland fire.

2. Public Law 101-121

Department of the Interior and Related Agencies Appropriation Act of 1990 established the funding mechanism for normal year expenditures of funds for fire management purposes.

3. 31 USC 665 (E) (1) (B)

This section of the US Code provides the authority to exceed appropriations due to wildland fire management activities involving the safety of human life and protection of property.

II. COMPLIANCE WITH POLICY AND RELATION TO OTHER PLANS

A. NPS AND 2001 FEDERAL FIRE MANAGEMENT POLICY

This FMP is prepared to meet the policy requirements of Director's Order 18, Wildland Fire Management dated November 17, 1998. The primary NPS policy consideration from DO 18 is: "Wildland fire may contribute to or hinder the achievement of park objectives. Therefore, park fire management programs will be designed to meet resource management objectives prescribed for various areas of the park and ensure that firefighter and public safety are not compromised." In addition, preparation of this plan meets the requirements set forth in Department of Interior Manual 620 (620 DM) and the requirements of the Federal Fire Policy update of 2001.

The goals of the NPS wildland fire management program are to:

- Conduct a vigorous and safe wildland fire management program with the highest professional and technological standards.
- Identify the type of wildland fire that is most appropriate to specific situations and areas.
- Efficiently accomplish resource management objectives through the application and management of prescribed and wildland fires.
- Continually evaluate the wildland fire program operations and accomplishments to better meet program goals by refining treatment and monitoring methods, and by integrating applicable technical and scientific advancements.

The 2001 Federal Fire Management Policy update addresses 17 distinct items, the foremost being safety; all Fire Management Plans and activities must reflect this commitment. The full text of the policy, Secretarial Transmittals, and Appendices may be found at (http://www.nps.gov/fire/fire/policy/rm18/index.htm).

The four goals of the National Fire Plan are also addressed is this plan (see Section I.B.2.)

B. RELATION TO ESTABLISHING LEGISLATION

Also considered policy to guide the development of the FMP are the following legal authorities:

1. Establishment

Legislation authorizing the carving and established the purpose of what was to become Mount Rushmore National Memorial. The busts of four presidents – George Washington, Thomas Jefferson, Abraham Lincoln, and Theodore Roosevelt – were sculpted on the southeastern granite face of Mount Rushmore as "…a memorial…commemorative of our national history and progress…" (Act of March 3, 1925).

2. Jurisdiction

By Executive Order, on June 10, 1933, President Franklin D. Roosevelt placed Mount Rushmore under the jurisdiction of the National Park Service.

3. Responsibilities

The Act of July 3, 1941 transferred all responsibilities to the National Park Service from the Mount Rushmore National Memorial Commission.

4. Administration

Mount Rushmore National Memorial is administered under the Organic Act of August 25, 1916, which established the National Park Service. This act states the purpose of the National Park Service is, "…to conserve the scenery and natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations."

5. Threatened and Endangered (T&E) Species

Mount Rushmore National Memorial does not contain any known resident threatened or endangered species as listed under the Endangered Species Act of 1973 (http://endangered.fws.gov/esa.html). The mountain lion is an occasional visitor on the Memorial. Implementation of the Memorial's fire management program will not jeopardize the continued existence of any threatened or endangered species or result in the destruction or adverse modification of critical habitat. Fire management operations will consider appropriate actions to identify and protect from adverse effects any rare, threatened or endangered species subsequently located within the Memorial.

An Endangered Species Act, Section 7 consultation with the U.S. Fish and Wildlife Service will be requested to insure that no actions under this FMP will adversely affect the species.

C. OBJECTIVES OF GENERAL MANAGEMENT PLAN RELATED TO FIRE MANAGEMENT

The Mount Rushmore National Memorial 1980 General Management Plan objectives include management of the vegetative cover and adjacent environs to maintain the historical integrity and natural setting of the Memorial. There have been few fires since 1931 allowing a buildup of flammable material in the vegetative cover. These hazard fuels pose a threat to visitor safety, expensive facilities, the forest setting and to a lesser degree the carvings themselves. The use of prescribed fire to reduce fuel loads is recommended in this plan.

Unwanted wildland fire is a management issue. Historically, ponderosa pine (*Pinus ponderosa*) forests of the Black Hills were much more open as a result of periodic fires. Suppression of wildland fire since the early years of the 20th century has resulted in an unnatural fuel buildup (Progulske, 1974).

D. OBJECTIVES OF RESOURCE MANAGEMENT PLAN RELATED TO FIRE MANAGEMENT

Two Resource Management Plan objectives are related directly to fire management.

1. Develop Fire Management Plan

Develop a comprehensive fire management plan addressing resource management strategies for fuel modification and hazardous fuel reduction.

2. Utilize Prescribed Fire

Utilize prescribed fire management to achieve specific resource management objectives.

3. Protection of Sculptor's Studio

Protection of the Sculptor's Studio located in the historic zone of the Memorial.

4. Maintenance of Landscape Vista

Maintenance of the landscape vista around the sculptures in as nearly a presettlement condition as possible

E. ACHIEVING GMP AND RMP OBJECTIVES THROUGH THE FMP

Fire can be used to enhance and maintain a natural setting for the sculpture. With proper planning and execution, prescribed fire can manipulate vegetation to produce a healthier forest, less prone to stand replacing-crown fire, as a background for the sculpture. At the same time, fuel management using both mechanical means and prescribed fire can reduce the risk to the historic resources in the unit including the Sculptor's Studio, Visitor Center and other NPS facilities.

F. FMP PROGRAM STATEMENT

The FMP is a detailed description of the actions necessary to carry out fire management policies and achieve unit management objectives. Legal mandates related to the unit's establishment are also supported by the FMP. Initiation of a prescribed fire program will assist in reducing levels of hazardous fuels, thereby reducing the risk of large, catastrophic, fires and providing increased defensibility of NPS infrastructure on the Memorial.

III. SCOPE OF WILDLAND FIRE MANAGEMENT PROGRAM

A. MEMORIAL FIRE MANAGEMENT GOALS

The primary goals for the Memorial's fire management program are:

- To promote a program that ensures firefighter and public safety.
- A reduction in human-caused fires.
- Ensure appropriate suppression response capability to meet expected fire complexity.
- Increase use of prescribed fire for restoration of fire dependent ecosystems.

B. WILDLAND FIRE MANAGEMENT ELEMENTS

1. Wildland Fire

a. Suppression – All wildfires will receive an appropriate suppression response. The Memorial has a limited number of staff, Memorial personnel will be encouraged to qualify for and maintain fire qualifications. If resource needs exceed the Memorial's ability, local resources from cooperating agencies will be requested. Additional resources from other Northern Great Plains Area parks and through the Custer Interagency Zone Dispatch Center may be requested.

Suppression strategies will seek to control the spread of wildland fires through either direct or indirect attack. Modes of attack will be determined by the on site Incident Commander with consideration given to various fire parameters and an assessment of values at risk including firefighter safety and protection of the visiting public.

b. Wildland Fire Use – All fires not classified as prescribed fires are unwanted wildland fires and will be appropriately suppressed. Wildland fires will not be used for resource benefits. Mount Rushmore National Memorial has limited acreage and allowing unwanted wildland fires to burn could result in catastrophic fires that could escape the Memorial boundary. Prescribed fire will be introduced to accomplish resource benefits.

2. Fuels Management

a. Prescribed Fire – To date there have been no prescribed fires within the Memorial boundary. Planning is underway to establish a prescribed fire program to reduce fuel loads throughout the Memorial. Under this FMP, treated acres should increase in an effort to restore fire to the ponderosa pine ecosystem as described in the early 20th century.

Prescribed fire will be a part of the management process to restore and maintain the Memorial's scenic vistas. In addition, fire will be used to thin and maintain the remaining forest in a condition similar to that present in the early 20th century.

b. Non-Fire Applications – A mechanical hazard fuel reduction program was established in 1990. The program included thinning forest stands and stacking debris along road corridors. Table 1 documents that activity. Additional mechanical treatment is planned through 2007 in conjunction with prescribed fire.

Table 1 – Hazard Fuel Management History

Mount Rushmore National Memorial Hazard Fuel Management History 1990-1997	
YEAR	**Acres Treated**
1990	10.4
1991	27.4
1992	13.4
1993	8.1
1994	50.1
1995	33.7
1996	42.4
1997	5.7

C. DESCRIPTION OF FIRE MANAGEMENT UNIT (FMU)

Mount Rushmore National Memorial is located on the central slope of the Black Hills of western South Dakota, in Pennington County. Access through the Memorial's 1,238.45 acres is via South Dakota State Highway 244. Nearby communities include Rapid City, 23 miles to the northeast, Hill City, 12 miles to the northwest and Keystone adjacent to the northeast boundary of the Memorial.

Federal, state, and private land surround the Memorial. It is adjacent to the Black Elk Wilderness area, the Peter Norbeck Wildlife Preserve, and the Pactola Ranger District of the Black Hills National Forest. Due to the adjacent lands and relative small size of the Memorial, Mount Rushmore is, and will be, affected by land management practices including fire and forest management on surrounding National Forest lands. The northeast corner of the Memorial is bordered by the town of Keystone with a year round population of 300 and an increased seasonal population from April through September.

1. Characteristics

a. Geology – The area is an outstanding example of geologic processes representing 2.5 billion years of geologic history. Composed primarily of metamorphic and igneous rock, the central Black Hill's rugged topography consists of granite core as the dominant geologic feature. Other rock resources include mica, schist, feldspar and quartz.

Soils generally consist of a one to two foot layer of mixed organic matter and decomposed granite resting on bedrock. In the lower elevations, soils are deeper and of a finer texture, allowing hardwood growth and grasses. Increased development of visitor use facilities and social trail development from back country activities such as recreational rock climbing plus the steep slopes have resulted in soil compaction, erosion, and loss of vegetative cover. Some erosion could result from the construction of fire lines and other ground disturbing activity connected with suppression and the use of prescribed fire.

b. Hydrology – Surface water at the Memorial consists of intermittent streams that run after thunderstorms, heavy snowmelt or after rare, high precipitation seasons. No floodplain exists in the Memorial. A small portion of the Memorial contains wetlands, primarily beaver created, in Starling Basin in the southwest part of the Memorial. Grizzly Creek intersects the Memorial boundary for approximately 51 meters in the southeast portion. In 2001, a Montana Cooperative Fishery Research Unit, Montana State University, inventory and monitoring crew conducted a fish survey of the Memorial's wetlands. The survey found limited numbers of transient brook trout (*Salvelinus fontinalis*) and longnose dace (*Rhinichthys cataractae*) in the portion of Grizzly Creek located within the Memorial's boundary.

c. Fauna – Animal inhabitants of the forests and grasslands on the unit include: ungulates, small mammals, birds, reptiles, amphibians and invertebrates. Common larger species include mule deer (*Odocoileus hemionus*), Rocky Mountain bighorn sheep (*Ovis canadensis canadensis*), elk (*Cervus elaphus*) and coyotes (*Canis latrans*). Also found in the Memorial are mountain goats (*Oreamnos americanus*), an exotic species introduced into the Black Hills in the 1920s. Smaller native species include pine squirrels (*Tamiasciurus hudsonicus*) and other rodents. Fauna species lists are found in Appendix C.

d. Flora – The dominant plant of the vegetative community in the Memorial is ponderosa pine of varying age. One area within the unit contains the one of the largest stands of old growth ponderosa pine in the Black Hills. Located in Starling Basin, in the southern part of the Memorial it has been described as an example of a habitat rare in the Black Hills, and worth protecting. Fire would be one tool to maintain this important vegetative community. Other tree species found in the Memorial include Black Hills (White) Spruce (*Picea glauca*), Aspen (*Populus tremuloides*), White Birch (*Betula papyrifera*), Bur Oak (*Quercus macrocarpa*), and Rocky Mountain Juniper (*Juniperus scopulorum*). Other vegetation includes shrubs and ground cover including Chokecherry (*Prunus virginiana*), Pin Cherry (*Prunus pensylvanica*), Kinnikinnick or Bearberry (*Arctostaphylos uva-ursi*), various grasses and sedges. A plant species list is found in Appendix C.

e. Air Quality – Under the provisions of the Clean Air Act (PL 88-206, as amended), (http://www.epa.gov/oar/oaq_caa.html) Mount Rushmore National Memorial is classified as a Class II Area. Under State of South Dakota regulations this classification is one of non-degradation or maintenance of the present air quality (http://www.state.sd.us/denr/DES/AirQuality/openburn.htm). Short term adverse conditions may exist during periods of prescribed burning or wildland fire both on and off the Memorial. Due to heavy visitation, any visibility impairment has the potential to affect tourism related business in surrounding communities.

f. Threatened and Endangered Species – The mountain lion is an occasional visitor on the Memorial. An Endangered Species Act, Section 7 consultation with the U.S. Fish and Wildlife Service will be requested to insure that no actions under this FMP will adversely affect the species.

g. Cultural Resources

(1). Archeological Sites – There are no known archeological sites on the unit.

(2). Historic Resources – Structures of concern include: The sculpture itself, Residence II, the Sculptor's Studio, the unfinished Hall of Records, the Borglum View Terrace and other affiliated facilities from the time of the creation of the sculpture.

(3). Unit Infrastructure – There are numerous facilities that are potentially at risk from wildland fire on the Memorial. Table 2 below lists the real property and estimated value.

Table 2 – Real Property List

Facility	Number of Units	Value
Administration Building	1	1,613,571
Amphitheatre Complex	1	2,991,829
Blower House	1	672,321
Borglum View Terrace	1	134,464
Chemical Building	1	20,170
Comfort Stations	2	1,613,571
Compressor Building	1	26,893
Concession Dormitory	1	2,991,829
Concession Energy Center	1	1,680,803
Concession Gift Shop/Restaurant/Offices	1	13,446,421
Entrance Booth Complex	1	672,321
Information Center	1	1,344,642
Interpretive Center	1	6,723,211
Kiosk	1	13,446
Laboratory/Pump Building	1	672,321
Lift Station	1	20,170
Maintenance Building/Garage	1	268,928
Maintenance Storage Building	1	134,464
Museum Storage	1	134,464
NPS Signs	2	121,018
Parking Ramps	2	17,480,348
Pergola	1	672,321
Presidential Trail	1	672,321
Pump House	1	268,928
Residential Area Garage	1	53,786
Residential Houses for Staff	5	1,344,642
Sculptor's Studio (Historic Building)	1	3,361,605
Sculptor's Residence/Curatorial Storage (Historic Building)	1	672,321
Seasonal Apartment Building (10 units)	1	1,008,482
Small Storage Building	1	134,464
Utility Building	1	806,785
Utility/Power lines	1	1,210,178

Facility	Number of Units	Value
Wastewater Treatment Facility	1	1,344,642
Water Treatment Facility	1	672,320
Total	41	65,000,000

2. Fire Management Objectives

a. Contain 95% of all wildland fires at less than 5 acres to protect Memorial resources.

b. Use appropriate methods of fuel management around 20% of buildings (NPS infrastructure) annually to reduce risk of damage in future wildland fires.

c. Increase the use of prescribed fire on 50% of the Memorial to maintain reduced fuel loads in areas away from infrastructure.

d. Increase public awareness of the role of fire in natural processes and the use of fire to manage wildland fuels through interpretative displays.

e. Protect the visiting public from all wildland fire while continuing to provide services traditionally found on the unit.

3. Management Considerations

a. Protect water resources on the Memorial.

b. Earth moving equipment such as tractors, graders, bulldozers or other tracked vehicles will not be used for fire suppression (if special circumstances warrant extreme measures to ensure protection, the Superintendent can authorize the use of heavy equipment).

c. Fireline location will be outside of highly erosive areas, steep slopes, and other sensitive areas. Following fire suppression activities, firelines will be re-contoured and water-barred.

d. All appropriate cultural and archeological clearances will be obtained as part of the planning process for prescribed fires.

e. Prescribed fire operations will not occur during county-wide or state established burn restrictions.

f. Maintain Class II air quality standard.

g. Helicopters may be used to transport personnel, supplies or equipment. Improvement of landing sites shall be kept to a minimum. Landing sites will be rehabilitated to pre-fire conditions, to the extent reasonably possible.

h Incident Command Posts and camps will be located outside of the back country.

4. Historic Role of Fire

A specific fire history study has not been conducted at Mount Rushmore National

Memorial. Samples from trees dating to the 1500's indicate that, until about 1900, fire likely burned in the central Black Hills at approximately 20 year intervals, with a fire regime of 11-74 years (Brown et al., 2000). The longest period with no widespread fire was from 1890 to 1994 (year of data collection). This study also indicates that most fires occurred during the later part of the growing season, probably during late July through September.

Early explorers to the Black Hills region described the forest as being open and with little understory, with groves of ponderosa pine on rolling hills and rocky ridges. Grasslands predominated, and horse and wagon travel was easy. Accounts of natural fires during this period portray them as creeping along the surface for several days to weeks, eliminating the scant understory and litter, but rarely harming mature trees. These recurring surface fires encouraged herbaceous growth by recycling vital nutrients and improving the penetration of precipitation and sunlight to the forest floor (Progulske, 1974).

With the establishment of the Black Hills Forest Reserve in 1898 a fire suppression policy was adopted and wildland fire frequency decreased. Since that time fuels have accumulated, pine has invaded adjacent grasslands, forest density has increased, and wildlife forage species have declined. As a result, the potential for wildfires to develop into costly conflagrations increased. In August of 2000 the results of the vegetative changes became apparent. The Jasper Fire, human caused, burned over 83,500 acres of the Black Hills about 30 miles west of the Memorial.

To date prescribed fire has not been used within the Memorial boundary. Implementation of this plan will begin to reduce fuel loads in an effort to restore vegetation to conditions described in the early 20th century.

Records of wildland fire occurrence at Mount Rushmore are limited. Since 1982 fire reports have been entered into the Department of Interior Shared Applications Computer System in Boise, ID. The data for Mount Rushmore are displayed in Table 3 below. Fires with no acres reported are those adjacent to the Memorial boundary where initial attack was made by the Memorial under the cooperative agreement (Appendix E) with the Black Hills National Forest.

July 4th fireworks were introduced in 1998. Seventeen individual ignitions were caused by the fallout from the fireworks in 2000. Because several burned together, only 2 are reported in the table below. Seven separate ignitions occurred during the 2001 fireworks but are all listed on one fire report. It is anticipated that this source of ignition will exist as long as the display continues. Management of the risk resulting from fireworks will be treated in a separate document.

Table 3 – Wildland Fire Occurrence

Mount Rushmore National Memorial Wildland Fire Occurrence History 1982-2001			
Year	Month	Number of Fires	Number of Acres
1983	August	1	
1984	July	1	
1985	August	1	
1988	August	1	
1989	June	1	
1991	April	1	
	August	2	
1993	December	1	
1998	December	1	
1999	July	1	
	September	1	
2000	March	2	
	July	2	
	October	1	
2001	July	1	
	September	1	
Total		19	

5. Wildland Fire Management Situation

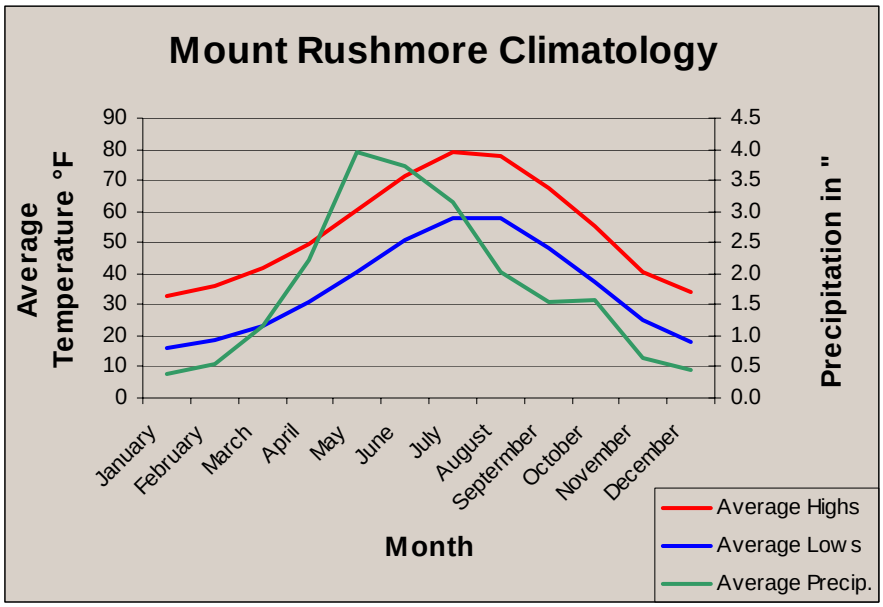
a. Climate – Based on National Weather Service records from 1971 through 2000 maintained at Mount Rushmore, the average annual precipitation is 21.4 inches with frequent, brief electrical storms occurring during the summer months. Moderate snow cover is the rule from late October through April with the annual average snowfall being nearly 52 inches. Average high temperatures range from 33°F in January to 79°F in July. Average lows range from 16°F in January to 58°F in July and August. Temperature and rainfall patterns are illustrated in Figure 1, below.

b. Fire Season – The normal fire season in the Black Hills extends for approximately 200 days, from mid-April through October. Effects of weather on fuels drive the severity of the season. Fire danger is expected to be at the highest level during the summer months. The combination of high daytime temperatures, relatively warm overnight temperatures and reduced cloud cover act to keep fuel moistures low and fuel temperatures high. In addition, numerous lightning storms occur during this period with many of them “dry”, that is with little or no rain accompanying the

lightning. USFS records indicate that approximately 74% of wildland fires on the adjoining Black Hills National Forest are lightning caused.

For National Fire Danger Rating System (NFDRS) indices, Mount Rushmore utilizes information provided by the weather station (#393505, Elk Mountain) at Wind Cave National Park, approximately 25 miles south of the Memorial. Fuels, topography and weather conditions on the Memorial are similar to that station. Weather information is archived in the Weather Information Management System (WIMS) and available for Memorial use.

Figure 1 – Mount Rushmore Climatology



c. Fuel Characteristics – The predominant fuel type at Mount Rushmore National Memorial is National Fire Danger Rating System (NFDRS) Fuel Model U, Western long needled pine. This fuel model is used for fire danger index generation. Northern Forest Fire Laboratory (NFFL) Model 9, described as hardwood litter is used for fire behavior predictions. This model, although designed for hardwoods, closely approximates actual fire behavior conditions on the Memorial.

Fuel Model U may be characterized as closed stands of ponderosa pine. Ground fuels are primarily ground litter and small branchwood with grass and shrubs precluded by the dense canopy. Ladder fuels may be present in the form of dense young thickets of ponderosa pine. The percentage of this fuel model has increased on the Memorial and adjoining lands over the last century as a result of the active suppression of wildland fires.

As shown in Figure 1, rainfall peaks in May while the average temperature peaks in August. After May, drying conditions exist until snowfall, usually in October. All fuel classes show a decrease in moisture into the fall. This seasonal change reflects conclusions drawn by Brown and Sieg, 1996 regarding seasonal distribution of a majority of fires in their dendrochronology study at Jewel Cave.

Expected average and extreme fire behavior estimates are shown in the tables

below. Calculations were made using the BEHAVE Fire Behavior Prediction System software, Version 4.4. Input values were derived from observations by Northern Great Plains Area Fire Management staff on site. It is logical to think that the average fire behavior and extreme fire behavior should have different inputs for fuel moisture. In data analysis by NGPA staff, the primary factor affecting expected behavior was wind speed, not fuel moisture.

Table 4 – Fuel Model 9 – Average Fire Behavior

Inputs		Outputs	
Fuel Model	9	Rate of Spread (chains/hour)	12
1 hour fuel moisture	6	Heat/Unit Area (BTU/ft²)	370
10 hour fuel moisture	7	Fireline Intensity (BTU/ft/s)	80
100 hour fuel moisture	11	Flame Length (feet)	3.4
Mid-Flame Wind Speed (mph)	6		
Slope (%)	10		

Table 5 – Fuel Model 9 – Extreme Fire Behavior

Inputs		Outputs	
Fuel Model	9	Rate of Spread (chains/hour)	66
1 hour fuel moisture	6	Heat/Unit Area (BTU/ft²)	370
10 hour fuel moisture	7	Fireline Intensity (BTU/ft/s)	450
100 hour fuel moisture	11	Flame Length (feet)	7.5
Mid-Flame Wind Speed (mph)	17		
Slope (%)	20		

Expected Fire Effects

(1.) Cultural Objects – Based on the BEHAVE runs, only historic objects on the surface are expected to be affected by wildland fire passing over them. Those effects would vary depending on the composition of the article and soil temperature, soil moisture and other factors. It is generally believed that fire, historically, has passed over the landscape numerous times with minimal effect. More damage is likely to be done to artifacts during suppression operations than by the fire itself.

(2.) Vegetation – In general, effects on vegetation are not expected to be significant. The exception would be a crown fire which would have a significant effect on forest stands. Otherwise, some mortality of understory shrubs, seedlings and small trees is possible. Grasses and forbs will not normally be affected as resprouting from roots and rhizomes is normal and most species found on the Memorial are fire adapted.

(3.) Wildlife Resources – Wildlife populations will be affected slightly by both fire and smoke. The effects will be temporary, lasting for perhaps 6-24 hours after the passage of the flame front. Large animals are not expected to show mortality. Some small mammals such as field mice may be caught by the flame front but mortality is not expected to be heavy. Regeneration of vegetation provides an excellent habitat for these small species and natural reproduction will quickly repopulate the area.

Ground dwelling reptile and insect populations are not expected to be affected.

(4.) Visual Resources – Other than a temporary reduction in visibility by smoke, the sculpture itself is not expected to be affected by wildland fire. Fuel loads are not significant in the areas below and immediately adjacent to the sculpture.

d. Fire Regime Alteration – A study conducted in the mid 1990's at Jewel Cave National Monument (Brown and Sieg, 1996) provides additional insight into the fire regime and effects on ponderosa pine vegetation in the Black Hills and at Mount Rushmore. Details are found in Section III.C.4 above.

A number of human influences have affected the fire regime. Among the primary influences are forest product removal and grazing. Federal fire suppression policies instituted in the early 1900's also resulted in a strong protection ethic that allowed a buildup of fuel volumes resulting in fewer, but generally more severe fires such as the Jasper Fire in 2000 which affected 83,500 acres approximately 30 west of Mount Rushmore.

One objective of this plan is the restoration of fire to its rightful place in the environment. There is no commercial use of lands within the Memorial so restoration of fire to the ecosystem will not affect any local economy.

e. Control Problems – Control problems can be expected with fires burning in the peak fire season. The small size of the Memorial and the heavy fuel loads due to the lack of fire over the last century contribute to the potential for control problems. Summer brings hot, dry and windy conditions to this high elevation resulting in rapid rates of spread creating control and firefighter safety problems. Areas of the Memorial present hazardous firefighting conditions including steep slopes, sheer cliff faces, large rock outcroppings, densely wooded draws, and continuous fuels. Firefighter safety is of utmost concern and dictate that suppression activities in these areas be well planned and safely carried out.

Continuing efforts to reduce hazard fuels with prescribed fire and mechanical means are essential to reduce control problems during future wildland fires.

One potential ignition source for wildland fires along the north side of the Memorial is the 1880 Train. It is a seasonal tourist attraction that runs from Keystone along the canyon bottom towards Hill City. The Memorial boundary is upslope from the canyon and vulnerable to significant fire behavior should ignition occur.

f. Values at Risk – There are no known archeological sites on the unit. Several historic structures are found on the Memorial including: the sculpture itself, Residence II, the Sculptor's Studio, the unfinished Hall of Records, the Borglum View Terrace and other facilities affiliated with the creation of the sculpture. In addition, there are

numerous support facilities potentially at risk from unwanted wildland fire on the Memorial. These facilities are listed in Table 2. Current value of all facilities is placed at around $65 million.

One area within the unit contains one of the largest stands, approximately 40 acres, of old growth ponderosa pine in the Black Hills. Located in Starling Basin, in the southern part of the Memorial, the stand has been described as an example of a habitat rare in the Black Hills, and worth protecting.

An effort is also being made to maintain the historic landscape vista that occurs on the unit as well as the vista presented as visitors approach the Memorial from different routes.

IV. WILDLAND FIRE MANAGEMENT

A. GENERAL MANAGEMENT CONSIDERATIONS

1. GMP Direction

Due to the small size of the Memorial, all wildland fires will be suppressed. This management response is appropriate given the volume of visitation (over 1.8 million visits in 2001, MORU staff), the wildland-urban interface area adjoining the northeast corner of the Memorial, and the west boundary abutting a portion of the Black Elk Wilderness area and the Peter Norbeck Wildlife Preserve.

There have been few fires since establishment allowing a buildup of flammable material in the vegetative cover. These hazard fuels pose a threat to visitor safety, high value facilities, the forest setting and to a lesser degree the carvings themselves. All wildland fires reported on the Memorial are to be considered a threat to the integrity of the unit.

2. Implementation Procedures

A Wildland Fire Implementation Plan (WFIP) will not be required as a general rule as no wildland fire use is considered under this plan. The exception would be in the case of multiple starts where priorities for suppression become necessary. If multiple starts occur, a WFIP Stage I Initial Fire Assessment will be completed for each incident, with the results used to determine initial attack priorities until adequate suppression forces can be placed on the line.

B. WILDLAND FIRE USE

Because the unit is only 1,238 acres in size, has a relatively small staff and is surrounded by Black Hills National Forest, a designated Federal wilderness and a wildland-urban interface area, Wildland Fire Use is not considered feasible and will not be implemented in this plan.

C. WILDLAND FIRE SUPPRESSION

1. Fire Behavior

Expected average and extreme fire behavior estimates are shown in Tables 4 and 5. Table input values were derived from observations by Northern Great Plains Area Fire Management staff on site at MORU. It is logical to think that the average fire behavior and extreme fire behavior should have different inputs for fuel moisture. In the data analysis, wind speed, not fuel moisture, drive the predicted values. NFFL Fuel Model 9 reflects observed fire behavior even though it is primarily a hardwood litter fuel model.

2. Preparedness Actions

a. Prevention – Fire prevention activities include all activities designed to reduce the number of human-caused wildfires that could occur within the Memorial. These include prevention discussions with Memorial employees, posting signs in high visitation areas in times of high or extreme fire danger, and prevention patrols during high and extreme fire danger (Staffing Classes 4 and 5).

During staff meetings before fire season, staff will be made aware of the potential dangers of the coming season and of the appropriate responses to be taken relating both to wildfire and prescribed fire.

The entire Black Hills area is a No Open Fire Zone, so additional warnings will be posted in the Memorial only under extreme conditions. No smoking bans will be put in place within the boundaries of the Memorial during extreme fire danger, applying to both visitors and employees.

There is no Fire Prevention Plan in place on the Memorial, upon completion it will be found in Appendix J.

b. Annual Training/Fitness Testing – Eight hours of annual refresher training emphasizing safety will be required for red-carded Memorial staff. Fitness testing using the current approved physical testing regimen will be completed prior to the start of fire season for all personnel that are to carry a Fire Qualification (Red) Card.

In addition, each year the Memorial's Fire Coordinator and NGPA FMO will assess current qualifications of the unit's fire qualified personnel. From this assessment, current and future training needs for both the Memorial and individuals will be determined. Training will be obtained through services of the NGPA Fire Management Office or through interagency training courses. All firefighting personnel will meet the training, experience and physical standards for their fire position as found in Wildland and Prescribed Fire Qualification System Guide PMS 310-1.

c. Readiness – Each year prior to and after the fire season, the Fire Coordinator will conduct an inventory of the Memorial fire cache. Any needed supplies or equipment will be requested through the NGPA Fire Management Office. The Fire Coordinator will also be responsible for ensuring that the Memorial's fire tools and engine are maintained in a state of readiness, especially during the fire season. A listing of Normal Unit Strength cache stocking is found in Appendix E, 2. Preparedness Inventory.

d. Fire Weather and Fire Danger

(1). Weather Stations – Mount Rushmore has an automated weather station (392603) installed in 2001. Current NFDRS indices are calculated from readings at Wind Cave National Park, station 393505, Elk Mountain. Fuels, topography and weather conditions on the Memorial are similar to that station. Weather information is archived in the Weather Information Management System (WIMS) When sufficient local data is archived in WIMS indices will be calculated using data collected locally.

(2). NFDRS – MORU uses NFDRS Model E, Burning Index (BI) as the trend monitoring index and fire danger prediction scale. The Step-up Plan in Appendix H shows the break points for each individual staffing class along with the actions, both preparedness and prevention, required in each class.

(3). Monthly Risk Analysis – When weather and fuels appear to be outside the expected parameters, a monthly risk analysis will be conducted by the Northern

Great Plains FMO as needed. Items considered will include those in the following table. Results should be passed on to the regional FMO for compilation and use for requesting additional funds and/or resources for wildland fire suppression.

Table 6 – Monthly Risk Analysis

Monthly Risk Analysis		
Factor	**Current Level**	**Historic Average**
Temperature Levels (Highs)		
Temperature Levels (Lows)		
Precipitation Levels		
Keetch-Byram Drought Index		
1000 hour Fuel Moistures		
Live Fuel Moistures		
Unusual Weather Events Ice storms, hard freezes		None
Unusual fire load		
30-90 day temperature forecast		None
30-90 day precipitation forecast		None

e. Step-up Staffing Plan – The Step-up Plan contains preparedness and prevention actions to be taken as fire danger increases.

Weather observations will be taken at the fire weather station at Wind Cave daily via the automated weather station until sufficient data is archived for Mount Rushmore #392603. NFDRS fuel model E will be used as the primary model for rating fire danger. Weather observations and fuel measurements will be taken each burning period, and the NFDRS BI computed. Specific actions and trigger points are listed in the Step-up Plan in Appendix H.

3. Pre-Attack Plan

This is basically a checklist of items to be considered prior to wildland fire occurrence. The table is divided into four parts that correspond to four of the functions found in the Incident Command System and is found in Appendix G. Items that are available at Mount Rushmore are marked accordingly.

4. Initial Attack

Initial attack at Mount Rushmore includes response within the one mile wide zone adjacent to the Memorial. The dispatch agreement with the Black Hills National Forest relies on Memorial personnel to take initial attack action on National Forest lands in the zone.

a. Initial Attack Priorities – Setting initial attack priorities involves determining the risk of fire to visiting public and firefighters, resources at risk, existing fires and threat to adjoining property. With multiple ignitions, priorities are: public and firefighter safety, cultural resources, NPS infrastructure, and natural habitats. All fires will be aggressively suppressed with due consideration of firefighter and public safety.

Maps of developed areas, and cultural resources are available in the Memorial office.

b. Initial Attack Crews – Normally initial attack crews will be comprised of at least two persons fully equipped with personal protective equipment. A radio and tools such as rakes, back-pack pumps, etc., will be carried in all patrol vehicles. Additional gear may be provided by back-up personnel as needed.

   Small fires will be controlled, if possible, by an initial attack handcrew. An initial attack crew on a larger fire will be reinforced by additional firefighters. If additional personnel or equipment are needed on the fire, the Incident Commander will notify the Park Fire Coordinator who will arrange for additional suppression forces and/or personnel to be available for initial dispatch.

c. Confinement as an Initial Attack Suppression Strategy – Confinement strategies may be used at Mount Rushmore, if, in the opinion of the Initial Attack Incident Commander, direct suppression would put firefighters at risk due to terrain considerations, lack of adequate IA staffing or other safety issues.

   If a confinement strategy is considered, it should be supported by completion of a Wildland Fire Implementation Plan (WFIP).

d. Response Times – For most fires, response time by NPS equipment and personnel will run up to 30 minutes depending on location of fire and responding personnel.

e. Management Constraints – The preferred suppression tactics to be used at Mount Rushmore include use of water or foam firelines in conjunction with natural barriers to reduce damage potential from suppression actions. Water will normally be supplied by engines operating from established roads and/or trails. Other restrictions/constraints are listed below.
   - Whenever consistent with safe, effective suppression techniques, natural barriers will be used as extensively as possible. The use of backfire techniques, burnout, line improvement, and wetting agents (ground and airborne) is authorized. Approved aerial retardant and Class A foam may be used virtually anywhere in the unit, however, neither should not be used within 200' of streams.
   - All extended attack and project fire operations will have a Memorial employee designated and available to assist suppression forces in the capacity of Resource Advisor.
   - Stream crossings will be limited to set locations.
   - Except for spot maintenance to remove obstructions, no improvements will be made to intermittent or perennial waterways, springs or seeps, trails, or clearings in forested areas. Log jams or debris in streams should be left in place to protect fish and aquatic insect habitat. All sites where improvements are made or obstructions removed will be rehabilitated to pre-fire conditions, to the extent reasonably possible.
   - Earth moving equipment such as tractors, graders, bulldozers or other tracked vehicles will not be used for fire suppression (if special circumstances warrant extreme measures to ensure protection, the Superintendent may authorize the use of heavy equipment).
   - Fireline location will be outside of highly erosive areas, steep slopes, and other sensitive areas. Following fire suppression activities, firelines will be re-contoured and water-barred.
   - Generally, natural seeding will restore vegetation following a fire. Artificial

restoration would be used if it is determined that seeding with native species is necessary in order to protect life and property, for example if severe erosion or landslides above a populated area presented a hazard.

- Off road vehicle travel is discouraged and will be minimized as much as feasible. Approval from the Type III IC, Chief Ranger or Supervisory Park Ranger, FMO, or Superintendent is required in order to drive off the road to suppress a fire.
- Maintain Class II air quality standard when possible.
- Additional constraints applicable to back country areas include:
  - Helicopters may be used to transport personnel, supplies or equipment. Improvement of landing sites shall be kept to a minimum. Landing sites will be rehabilitated to pre-fire conditions, to the extent reasonably possible.
  - When handline construction is required, construction standards will be issued requiring the handline to be built with minimum impact. Use of power chain saws is authorized although such use should be kept to a minimum. Handlines constructed by exposing mineral soil will be rehabilitated and erosion control methods used on slopes exceeding 10%.
  - Incident Command Posts and camps will be located outside of the back country.

f. Local Issues – Close communication with local units of government and the USFS should keep wildland fire controversy to a minimum. There are no tribal issues.

5. Extended Attack and Large Fire Suppression

a. Extended Attack Needs – Based on the fire history from 1983, few fires will remain uncontrolled past the first burning period. The largest fire since 1983 covered approximately 2 acres in 2000. Historically, most fires have been adjacent to roads in the area, easily accessed and quickly suppressed.

Should additional assistance be required, support will come first from the Black Hills National Forest. An Memoranda of Understanding with the Forest and several nearby parks is included in Appendix E.

The Custer Zone Dispatch Center in Custer, SD is informed of any fire activity at the park and is the requestor for NPS initial attack in the protection zone adjacent to the Memorial boundary. The Center also processes requests for additional resources.

b. Implementation Plan Requirements – A Wildland Fire Implementation Plan will not be required on initial attack fires as full suppression is established as the Appropriate Management Response. WFSA development will be required at the point where the second burning period will not see control of fire spread. At this point a WFSA will be completed each day until the fire is surrounded by firelines or natural or other barriers that will stop fire spread.

c. Complexity Decision – When a WFSA has been completed for use during the operations on a second burning period, the fire will be considered to be an extended attack fire.

d. Delegation of Authority – A sample limited delegation of authority to an incident commander is included in Appendix E.

6. Exceeding Existing WFIP

If the periodic reassessment of a WFIP indicates that a change in strategy is needed, the following actions will be taken:

a. If the fire is the result of an escaped prescribed fire, A Wildland Fire Situation Analysis will be completed and a new strategy selected based on the results.

b. If the initial attack appropriate management response was a confinement strategy and operations continue into a second operational period, a WFSA will be completed and new strategy selected as appropriate.

7. Minimum Impact Suppression Tactics (MIST)

Minimum Impact Suppression Tactics (MIST) – Director's Order #18 states that: "Methods used to suppress wildland fires should minimize impacts of the suppression action and the fire, commensurate with effective control and resource values to be protected." There are three primary management constraints that support MIST operations:

- Bulldozers will generally not be used in suppression or prescribed fire operations. However, their use may be authorized by the superintendent during extreme wildland fire conditions.
- Engines will be restricted from areas identified as potentially affected by vehicle traffic where rutting, soil compaction or other habitat damage could occur.
- Handlines will be constructed only in areas where damage to cultural resources is not likely to occur.

8. Fire Rehabilitation

Possible rehabilitation needs include those associated with fireline construction, snag felling, road repair, fence replacement, and mop-up activities. Proper placement of hand constructed firelines should reduce the need for major work. Areas with handlines will be restored to their pre-fire condition as soon as possible. The nature of fires on the Memorial indicates that long term rehabilitation should not normally be necessary. If a Burned Area Emergency Rehabilitation (BAER) Team is required on the Memorial an archeologist or cultural resource specialist will be part of the team.

9. Records and Reports

The Superintendent is ultimately responsible for fire reporting and fiscal accounting. Individual report assignments may be made by the Superintendent. Table 7, below is a checklist of possible wildland fire documents and the individual usually responsible for completing them.

Table 7 – Wildland Fire Reporting Checklist

Checklist of Wildland Fire Documents and Reports		
Document	**Revision or Preparation Frequency**	**Responsible Party**
DI-1202	Each incident	Incident Commander
WFSA	As needed	Superintendent, IC
Fire Weather	Daily in season	FMO
Fire Situation Report	Daily in season	FMO
Fire Danger	Daily in season	FMO
Fire Complexity Analysis	Per Incident as Needed	Incident Commander
Monthly Risk Analysis	Monthly	FMO, Fire Coordinator
Pre-Attack Plan	Annually	FMO, Fire Coordinator
Wildland Fire Critique	Each Incident	Suppression staff on the individual fire

V. FUELS MANAGEMENT

A. LONG-TERM FUELS MANAGEMENT

To date there have been no prescribed fires within the Memorial boundary. Planning is underway to establish a prescribed fire program to reduce fuel loads throughout the Memorial. Under this FMP, treated acres should increase in an effort to restore the vegetation to the open, park-like condition described in historical documents from the early 20th century. As fire is applied, implementation of the wildland and prescribed fire monitoring plan will track results to ensure desired outcomes are achieved.

A mechanical hazard fuel reduction program was established in 1990. This included thinning and stacking of debris along road corridors and infrastructures. In an effort to quickly reduce volumes of standing fuels in areas close to visitor use, concessionaire facilities and NPS buildings, an additional set of projects has been proposed to occur over the next 5-7 years.

Because of the topography near some of the improvements, it is likely that a mechanical hazard fuel reduction program will be required indefinitely on a cyclic basis. Treatment intervals would be about ½ of the fire return interval for the remaining areas to be treated with prescribed fire.

B. PRESCRIBED FIRE

1. Annual Preparation

A schedule of proposed burns will be developed and reviewed annually. The annual review will determine if fuel conditions are such that burn implementation can take place. As part of the review, past burn areas will be examined to determine if the burn objectives over the long term are being achieved. Adjustments to return intervals, and prescription parameters will also be reviewed.

A prescription will be prepared, signed by the Superintendent, and approved by the Fire Management Officer. Prescribed Fire plans will be written by a qualified Prescribed Fire Manager (RXMI or RXM2) or a Prescribed Fire Burn Boss (RXB1 or RXB2).

2. Long-term Prescribed Fire Relation to FMU

Only one FMU exists on the Memorial. A map of existing burn units is found in Appendix I. As shown in the table in Appendix I, each burn unit has two years work scheduled. Due to current fuel loads, mechanical fuel reduction will be accomplished in the first year with prescribed fire to follow in the second year. Most of the scheduled areas contain either NPS infrastructure (Dormitory, Housing, Sculpture) or are adjacent to off Memorial urban-interface zones (Lafferty).

3. Personnel Requirements

A qualified Prescribed Fire Burn Boss will conduct all prescribed fires with qualified support personnel present to accomplish the objectives agreed to in the individual prescribed fire unit plan. Qualified personnel will monitor fire behavior and fire effects, control hot spots and spot fires, support ignition needs, and complete initial attack on any

escaped fires.
As part of the Northern Great Plains Group, the Black Hills Fire Use Module is expected to be the primary fire personnel source. Other fire qualified personnel from group units may be asked to assist on an ad hoc basis. The term "qualified" as used here means the individual meets the standards in the Wildland and Prescribed Fire Qualifications System Guide, 310-1.

4. Fire Behavior and Fire Effects Monitoring

A Monitoring Plan is in the development stage and will be included as Appendix F when complete. Fire weather data used in development of prescriptions is available in the Weather Information Management System (WIMS). This information provides some of the inputs for the BEHAVE modeling tool. An on-site monitor will take and record weather and fire behavior observations during the execution of the burn. When combined with the information reported on fire effects, a reasonably complete view of the success or failure of the operation should emerge.

5. Critique of Prescribed Fire Operation

The following items, as a minimum, will be reviewed following each prescribed fire operation.

- Were any unsafe acts noted?
- Were burn objectives met within an acceptable range of results? :
- What should be done differently to obtain desired results or get better results?
- Was there any deviation from plan? If so, why?
- Was prescription appropriate?
- Were weather changes a factor in accomplishing burn?
- Problems and general comments:

6. Documentation and Reporting

The following table lists the reports and other documents required for prescribed fire operations project records.

Table 8 – Prescribed Fire Document Checklist

Checklist of Prescribed Fire Documents and Reports		
Document	**Revision or Preparation Frequency**	**Responsible Party**
FirePro Project Submission	Annual	FMO
Original Signed Prescribed Fire Plan	Each Project	Regional Director
Checklist of Pre-Burn Prescribed Fire Activities (no specific form)	Each Project	Prescribed Fire Burn Boss
All Reviewer Comments	Each Project	Reviewers
All Maps	Each Project	FMO\Prescribed Fire Burn Boss
Notification Checklist	Each Project	Prescribed Fire Burn Boss
Permits such as burn, smoke, etc.	Each Project	FMO\Prescribed Fire Burn Boss
Monitoring data	Each Project	Prescribed Fire Monitor
Weather forecasts	Each Project	FMO\Prescribed Fire Burn Boss
Agency Administrator Go/No-Go Pre-Ignition Approval	Each Project	Superintendent
Operational Go/No-Go Checklist	Each Project	Prescribed Fire Burn Boss
Incident Action Plan(s)	Each Project	FMO\Prescribed Fire Burn Boss

Checklist of Prescribed Fire Documents and Reports		
Document	**Revision or Preparation Frequency**	**Responsible Party**
Unit logs, Daily Validation or other unit leader documentation	Each Project	FMO\Prescribed Fire Burn Boss
Press Releases, Public Comments, and Complaints	Each Project	Local Park Staff
Smoke dispersal information	Each Project	FMO\Prescribed Fire Burn Boss
Post fire analysis (Critique)	Each Project	All Participants in Operation
Fire Occurrence (DI-1202) report (Must also be reported in SACS)	Each Project	Prescribed Fire Burn Boss

Time and filing deadlines are associated with each of these reports and will control scheduling and response times.

7. Historic Fuel Treatment

The map depicting historic treatments will be a part of the GIS, annual treatment information will be added as completed. A map with the most recent treatments will also be added to Appendix E.

C. PRESCRIBED FIRE BURN PLAN

Prescribed fire plan requirements at Mount Rushmore National Memorial are similar to the requirements at other NPS units. A detailed outline and discussion is found in RM-18, Chapter 10, pages 9-13 (http://www.nps.gov/fire/fire/policy/rm18/index.htm). MORU plans have the following specific requirements:

- Signature Page
- Executive Summary
- Description of Area
- Goals and Objectives
- Risk Management
- Project Complexity
- Organization
- Cost
- Scheduling
- Pre-burn Considerations
- 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
- Reporting Needs
- Appendices
  - Reviewer Comments
  - Technical Reviewer Checklist and Comments
  - Project Map
  - Prescribed Fire Complexity Rating Worksheet
  - Fire Modeling Outputs
  - Holding Resources Worksheet

- Agency Administrator GO/NO-GO Pre-ignition Approval
- Prescribed Fire Operations GO/NO-GO Checklist

D. EXCEEDING PRESCRIBED FIRE PLAN

In instances where the Wildland Fire Transition Plan is implemented, a WFSA will be completed and an appropriate management response will be initiated based on the WFSA.

E. AIR QUALITY AND SMOKE MANAGEMENT

1. Air Quality Issues

Under the provisions of the Clean Air Act (PL 88-206, as amended), (http://www.epa.gov/oar/oaq_caa.html) Mount Rushmore National Memorial is classified as a Class II Area. Under State of South Dakota regulations this classification is one of non-degradation or maintenance of the present air quality (http://www.state.sd.us/denr/DES/AirQuality/openburn.htm). Short term adverse conditions may exist during periods of prescribed burning or wildland fire.

Because the unit is small, it is likely that smoke generated off site will have a greater effect on visibility in the Memorial than NPS based smoke.

2. Smoke Management

a. Class I Airsheds – There no Class I airsheds within 50 miles of Mount Rushmore. The Black Elk Wilderness, on the Black Hills National Forest, is a Class II area adjacent to the southwest boundary of the Memorial.

b. Smoke Sensitive Areas – The primary sensitive area at Mount Rushmore is the sculpture. Of secondary consideration is South Dakota Highway 244 through the Memorial. The town of Keystone adjoining the Memorial on the northeast corner is another sensitive area.

c. Local/Regional Smoke Management Restrictions – An understanding of local meteorological conditions is essential to fire managers if adequate smoke dispersal is to be accomplished. Prescribed fire managers at Mount Rushmore will consult with meteorologists before any prescribed fire activities are initiated. Careful observation of fuel moisture and other fire behavior factors can also assist in mitigating smoke problems. Other management actions including mop-up of heavy fuels can also reduce smoke production.

All federal and state air quality and smoke dispersal regulations will be adhered to during the implementation of a prescribed fire. Temporary closures or warnings may be implemented to assist visitors in areas of heavy smoke. Smoke dispersal is a concern as it could affect the areas adjacent to the Memorial. The Air Quality-Smoke Management Guidelines outlined in RM-18 will be complied with as well as Clean Air Act requirements.

d. Mitigation Strategies

(1). Planned prescribed fires – Fires to improve resource values will have a smoke dispersion component in the prescription. If smoke creates a prolonged hazard or significant nuisance, appropriate actions will be taken to mitigate the condition

causing the problem or the fire will be suppressed.

(2). Suppression – Suppress or mop up smoldering fuels when they are likely to generate smoke management "problems."

(3). Ignition – Ignite smoldering fuels to get them to burn with an active flame, which generates less emissions. Flaming combustion also generates convection columns, which raise smoke above ground level.

(4). Types of Fires – Use backing fires when possible.

(5). Dispersion – Recognize poor dispersion conditions that will last several days, such as the predicted passage of a slow-moving warm front; a lingering high pressure system with stable atmosphere; or high humidity conditions, and adjust burning strategies as necessary.

(6). Residual Smoke – When a fire has burned for an extended period of time and generated a lot of residual smoke, the NPS will consider appropriate actions to minimize additional smoke production.

(7). Firefighter Safety – During high smoke production phases of a prescribed fire operation, crews will be rotated out of high smoke areas.

(8). Sensitive Areas – Planned prescribed fire ignitions in sensitive areas will be done either when visitation is low, or the Superintendent will restrict entry to areas potentially impacted by smoke.

e. Guidelines – Following are the smoke management guidelines for all phases of the fire management program.
- No prescribed fires will be ignited during air pollution alerts, temperatures inversions or when a burn ban has been established by any level of government
- Fire weather forecasts will be used to predict smoke dispersal.
- Burning will be done only when conditions result in rapid smoke dispersal.
- Proper firing techniques to lower smoke production will be utilized.
- Smoke projection maps will be prepared to assist in projecting smoke dispersal patterns.
- Federal Clean Air Act standards will not be violated by any prescribed fires.
- The local Federal Aviation Administration office will be advised of prescribed fires and make sightseeing pilots aware of possible visibility impairments.

F. NON-FIRE APPLICATIONS

Mechanical treatments of hazard fuels are currently planned through 2007. Due to the small size of the unit, heavy visitation and fuel and topography considerations, mechanical fuel treatments are appropriate to reduce vertical fuel continuity in preparation for prescribed fire application. Most mechanical projects would involve use of chainsaws and other small tools and would be in the vicinity of NPS infrastructure.

A detailed outline and discussion of Non-fire Project Plan contents is found in RM-18, Chapter 10, pages 18-19 (http://www.nps.gov/fire/fire/policy/rm18/index.htm). MORU plans have the following specific requirements:

- Signature Page
- Executive Summary
- Description of Area
- Goals and Objectives
- Cost
- Statement of Work
- Protection of Sensitive Features
- Public and Personnel Safety
- Interagency Coordination and Public Information
- Monitoring
- Post Project Rehabilitation
- Post Project Reports
- Appendices
  - Maps
  - Reviewer Comments

1. Annual Activities

Each approved project will require the presence either local employees or possibly members of a fire use module to cut and remove fuels from the project area. A request will be made during the prior year for funding to cover project costs.

2. Seasonal Restrictions

Because of the noise associated with chainsaw work, an off-season timing would be preferred to limit impacts on visitor use and enjoyment.

3. Monitoring

Short and long-term monitoring will concentrate on measurements of acres treated and stems removed. As prescribed fire is applied to the treated areas monitoring will be conducted as described in the Fire Effects Monitoring Plan (Appendix F).

4. Critique of Project

The following items, as a minimum, will be reviewed following each mechanical treatment.

- Were any unsafe acts noted?
- Were treatment objectives met within an acceptable range of results? :
- What should be done differently to obtain desired results or get better results?
- Was there any deviation from plan? If so, why?
- Were weather changes a factor in completing treatment?
- Problems and general comments:

5. Cost Accounting

Records of costs associated with the project will be kept by the unit administrative assistant.

6. Documentation and Reporting

The following table lists the reports and other documents required for non-fire fuel

treatment operations.

Table 9 – Mechanical Treatment Reporting Checklist

Checklist of Mechanical Fuel Treatment Documents and Reports		
Document	**Revision or Preparation Frequency**	**Responsible Party**
FirePro Project Submission	Annual	FMO
Signed Project Plan	Each Project	Superintendent
Project Maps	Each Project	FMO\Project Manager
Notification Checklist	Each Project	Local Staff\Project Manager
Permits	Each Project	Local Staff
On-Site Effects Reporting	Each Project	Monitor
Unit Logs or Other Documentation	Each Project	Local\Project Staff
Contracts	Each Project	Local\Project Staff
Project Critique	Each Project	Project Staff

Time and filing deadlines are associated with each of these reports and will control scheduling and response times.

7. Annual Project List

When fuel conditions indicate a need to apply mechanical treatment, the schedule will be inserted into Appendix I.

VI. FIRE MANAGEMENT ORGANIZATION AND RESPONSIBILITIES

A. ORGANIZATIONAL STRUCTURE

1. Superintendent or designee

Is the agency administrator and is responsible for overall operation and management of the Memorial and ensures that Department, Service, and memorial policies are maintained and followed. Responsible for implementation of the Fire Management Plan and individual prescribed fire plans. In consultation with the Chief Ranger and Fire Management Officer, approves all final decisions to manage suppression of wildland fires, planning and ignition of prescribed fires. Ensures all Memorial divisions support the team effort required to maintain a fire management program.

2. Fire Management Officer

Fire Management Officer (FMO), Northern Great Plains Area (NGPA) – Coordinates fire management activities within the NGPA, providing assistance and advice as needed. Reviews and advises the Superintendent on requests for fire emergency assistance, operational activities required for the implementation of the Fire Management Plan, and completeness and accuracy of all final fire reports.

Coordinates all prevention, pre-suppression, suppression, monitoring, and post fire activities at the Memorial. Coordinates, prioritizes, and submits all FIREPRO funding requests for fire program activities. Reviews all prescribed burn plans to insure policy requirements are met. Also maintains qualification records for all personnel involved in suppression and prescribed fire activities. Coordinates the implementation of Fire Management Plan with other agencies on adjacent land and develops cooperative fire agreements with other federal, state, and local agencies. The FMO is the primary interagency fire management contact.

3. Assistant Fire Management Officer (AFMO), Prescribed Fire

In cooperation with the Memorial's Fire Coordinator and the FMO, coordinates the development and execution of short and long range plans for prescribed fires, as well as Prescribed Fire Plans for individual projects.

4. Assistant Fire Management Officer (AFMO), Suppression and Training

Coordinates suppression-related activities in cooperation with the Memorial's Fire Coordinator. Reviews and approves Fire Reports (DI-1202). Issues Task Books for red carded personnel, coordinates fire dispatching and fire training activities within the NGPA, providing assistance and advice as needed. Reviews and advises the Superintendent on requests for fire emergency assistance, operational activities required for the implementation of the Fire Management Plan, and completeness and accuracy of all final fire reports.

Coordinates all prevention, pre-suppression, suppression, monitoring, and post fire activities at the Memorial. Also maintains qualification records for all personnel involved in suppression and prescribed fire activities. Coordinates the implementation of Fire Management Plan with other agencies on adjacent land and develops cooperative fire

agreements with other federal, state, and local agencies. The FMO is the primary interagency fire management contact.

5. Fire Ecologist

Analyzes fire effects data and communicates findings to fire staff and Memorial resource management staff, coordinates research, provides advice to resource managers, assists in writing various plans and compliance documents. Presents fire effects data to resource and fire managers in a format that supports the decision-making process. Assists writing prescribed fire objectives and prescriptions for burning that will achieve the desired future conditions for the Memorial's vegetation.

6. Lead Fire Effects Monitor

Assigned to NGPA Fire Management Office and is responsible for designing and carrying out the Fire Effects Monitoring Plan and descriptions of monitoring types. Also responsible for all standard (NPS Fire Monitoring Handbook 2001) fire effects monitoring activities in the Memorial coordinating activities with the Memorial Fire Coordinator.

7. Fire Program Assistant

Assigned to NGPA and provides technical and administrative support for the Area Fire Management Officer and all parks within the NGPA. Also assists with dispatching and mobilization activities. Collects and records daily fire weather observations and enters data into Weather Information Management System (WIMS).

8. Fire Coordinator

Has overall supervisory responsibility for the integration of fire management activities with other operations in the Memorial. Coordinates, with the Fire Management Officer, fire prevention activities, wildfire suppression, and post-fire activities occurring within the Memorial. Maintains a fire cache adequate to undertake initial attack actions on fires occurring on lands within the Memorial, ensures that all equipment and supplies are in good working condition. Determines fire qualifications and training needs of all Memorial personnel who are to be made available for fire duties and informs the FMO of this information.

B. FIREPRO FUNDING

FirePro funding is available for approved equipment needs and prescribed fire operations. Project proposals, for prescribed fire and mechanical projects, are submitted through normal channels for approval. No staffing is funded by FirePro.

C. FIRE ORGANIZATION STRUCTURE RELATED TO PARK ORGANIZATION

1. Superintendent or Designee

Responsible for the overall program direction. Has final decision making authority for management operations. Approves and signs Interagency Agreements pertaining to the unit. Approves WFSAs for escaped wildland fires or prescribed fires.

2. Fire Management Officer

The Fire Management Officer will oversee all suppression operations and planned prescribed fires at the Memorial level. Coordinates operations with MORU Fire Coordinator.

3. Memorial Fire Coordinator

During any fire operations, wildland fire suppression, or planned prescribed fires, will act as liaison between NPS personnel, other agencies and general public.

4. Fire Ecologist

Works with Natural Resource Staff to accomplish monitoring and evaluation of prescribed fire effects. Individual is assigned to NGPA and serves several locations

D. INTERAGENCY COORDINATION AND AGREEMENTS

A statewide Mutual Aid Agreement exists to coordinate wildland fire suppression activities. The agreement includes the National Park Service, US Forest Service, and local fire departments including the Keystone Volunteer Fire Department. Topics in the agreement include reimbursement rates and procedures.

The Memorial maintains a good working relationship with the Black Hills National Forest and other NPS units in the Northern Great Plains Area. Assistance is available through the Custer Zone Dispatch Office. The dispatch office is managed by the Black Hills National Forest and can be contacted for assistance at any time circumstances dictate. This contact will bring any resources necessary to the assistance of the park. The office is located in Custer, SD.

Cooperative fire agreements involving the Memorial are found in Appendix E.

E. KEY INTERAGENCY CONTACTS

Custer Zone Dispatch, (605) 673-9200
Pactola District Ranger, Black Hills National Forest, (605) 343-3530
Keystone VFD, Chief, (605) 666-4428

Details are found in Appendix E.

F. FIRE-RELATED AGREEMENTS

Two agreements exist for cooperative fire operations between Federal agencies. One is with the Black Hills National Forest and defines responsibilities, initial attack zones and dispatch criteria. The second is an intra-agency agreement between NPS units in the Northern Great Plains area.

An additional agreement is with the Keystone VFD. Copies of the agreements are found in Appendix E.

VII. FIRE RESEARCH

A. PREVIOUS AND ONGOING FIRE RELATED RESEARCH

There has been no significant fire related research at the Memorial.

B. FIRE RESEARCH NEEDS

Fire research and monitoring needs will be addressed in the memorial's Resource Management Plan. Included will be long term research on fire effects on the Memorial's habitat. The results will be used to redefine the prescribed fire program and to guide future management actions. Specific items are listed below.

- The effects of fire on invasive species.
- Historic fire frequency on the unit.
- Impacts on cultural resources.
- Effects on vegetation diversity.
- Determine how ponderosa pine regeneration is affected by burn severity.

VIII. MONITORING

A program to monitor fire effects is in development. The complete program will become Appendix F to this plan.

Fire monitoring includes the systematic collection and recording of information during any fire. This information may include fuels, fire behavior, temperatures, spot weather, air quality, weather conditions, topography, and smoke dispersal data. The National Park Service Fire Monitoring Handbook (2001), outlines the procedures that will be followed. The Northern Great Plains Fire Monitoring Team, headquartered at Wind Cave National Park, will conduct all monitoring activities using the assistance of unit staff as necessary. Data will be collected before, during and immediately after a fire event. If possible, data will be collected up to ten years after an event. Information will be collected using plots, vegetation transects, and photo points. This will assist in documentation of burn results. The results will be archived and reviewed to assist with future prescriptions and to improve the prescribed fire program.

Short and long term plant, animal, and cultural resource monitoring in a specific burn area will be identified in the Prescribed Fire Plan. Data collected will be attached to the fire report and added to the files along with narrative written by prescribed fire monitors.

A. SHORT TERM MONITORING

Short term monitoring efforts will include gathering data during specific events, both pre- and post fire.

Pre-fire includes monitoring of variables prior to a prescribed fire event. These include: fire location and size, fuel and vegetation type, anticipated fire behavior and fire spread, current and forecasted weather, potential resource or safety threats and constraints, and smoke volume and dispersal.

During fire events, either a prescribed fire or wildland fire, data will be collected regarding current fire conditions consistent with the variables listed for pre-fire monitoring. Additional monitoring will be triggered when prescribed or wildland fire actions threaten resource values at risk.

Post fire data collection will include information on changes in fuel load, vegetative response, wildlife response and other variables defined in the prescribed fire plan.

B. LONG TERM MONITORING

Long-term monitoring requires collecting information on resource changes over time in a managed ecosystem. Once information is collected, data can be compared to desired condition and/or objectives and methods can be adjusted as necessary.

IX. PUBLIC SAFETY

A. ISSUES AND CONCERNS

Mount Rushmore National Memorial is dedicated to ensuring the safety of all visitors, residents and employees within the Memorial. There is an added responsibility to protect property and people adjacent to the Memorial boundary. Assuring this safety takes priority over all other activities occurring within the Memorial.

Limited access to and through the Memorial coupled with the heavy visitation (25,000-30,000 visitors daily in the summer) creates a potential safety problem in case of wildland fire.

1. Fireworks

The recent (1998) establishment of a fireworks display on July 3rd creates an additional public safety concern. Firebrands are a part of the display with the potential of starting wildland fires. The display is witnessed by approximately the same number of visitors at night as see the sculpture during the day. A separate Fireworks Plan will be developed to address the safety issues associated with the fireworks show.

2. Visitor Safety

As hazards exist in both wildland and prescribed fires, safety will always be the highest priority. Smoke and reduced visibility that affects South Dakota Highway 244 is a safety issue to the visiting public, particularly with emergency vehicles using the same road. The flaming front of a fire can, potentially, put unsuspecting members of the visiting public at risk. For this reason, areas affected by fire of any cause may be closed to the public.

B. MITIGATION

In order to make NPS employees and the general public aware of such hazards, the following mitigation measures will be considered:

- General public will be made aware of unwanted wildland fires and prescribed fires through press releases and general interpretive presentations.
- The general public will not be allowed access to any areas that have active fire or unmitigated safety hazards.
- Safety briefings will be conducted for NPS personnel prior to any participation in wildland suppression or prescribed fire operations.
- Appropriate regulatory and/or enforcement agencies will be notified prior to any prescribed fires to assist in safely managing vehicular traffic. Warning signs will be posted along roadways as necessary.
- All fire personnel will be reminded of the "Watch Out Situations" and will be expected to comply with the "Fire Orders". The general public will not be allowed access to any areas affected by fire.
- Finding safety zones and escape routes within the established unit facilities. This will include buildings, developed trails, highways plus any additional sites that prove to be reasonable.
- Accurate fire information will be distributed to Memorial visitors at the Visitor Center, Information Center, and the parking facilities.
- All necessary means will be used to evacuate and warn visitors and employees when

public safety is at risk. Adjacent landowners will also be warned and if necessary provided assistance to evacuate the area.

X. PUBLIC INFORMATION AND EDUCATION

A. CAPABILITY AND NEEDS

Because most visitors pass through the parking facility entrance gates, an excellent opportunity is available for fire information dissemination. To further public information and education, the following guidelines will be followed:

- Timely and accurate information will be provided to the media and Memorial visitors regarding the status of fire actions and suppression efforts on and adjacent to the Memorial.
- Informational handouts explaining the fire management program will be prepared and updated as necessary. During periods when prescribed fires are burning, these handouts will be available to Memorial visitors.
- The prescribed fire program will be discussed in informal contacts with Memorial personnel and visitors.
- Unit personnel living on the Memorial will be notified when fire, particularly unwanted wildland fire, is a threat to Memorial residential areas.

As most visitors spend some time in the Visitor Center, it is highly recommended that some sort of map display be set up to show areas of the Memorial where prescribed fire is being used with slides showing the before and after conditions of the treated areas. With current technology, this type of display could also be available on the unit's website.

B. RESPONSE TO INCREASING FIRE ACTIVITIES

When the Staffing Class is at SC-4 or SC-5, (see Appendix H) information will be prominently displayed in the Visitor Center. Patrol activity on the unit may be increased to detect potential fires and to monitor visitor activity. At SC-5 it may become necessary to close the facility to protect the public.

XI. PROTECTION OF SENSITIVE RESOURCES

A. ARCHEOLOGICAL/CULTURAL/HISTORIC RESOURCES

1. Archeological Resources

There are no known prehistoric archeological sites on the Memorial. To the greatest extent possible, wildland suppression actions will avoid any suspected sites. Appropriate Memorial staff should provide a map of suspected sites to assist suppression personnel in avoiding those sites.

If Native American human remains and/or objects are found during fire operations, the site will be evaluated by staff or regional archeologists in accordance with Sec. 3, Native American Grave Protection and Repatriation Act (NAGPRA) (http://archnet.asu.edu/archnet/topical/crm/usdocs/nagpra14.htm).

2. Historic resources

Included are the Sculptor's Studio and Residence 2. Both are irreplaceable.

3. Mitigation

Personnel taking part in suppression actions as well as prescribed fires will be briefed on the potential for disturbance of cultural resources. Any and all control actions undertaken will minimize the impact on such resources; wet line and foam are the preferred minimum impact suppression techniques. Handline construction will be avoided during prescribed fire operations in identified archeological sites.

B. NATURAL RESOURCES

1. Resources

The vegetative resources are, for the most part, fire adapted and require no specific protection. Most wildlife species in the vicinity of the Memorial will be minimally affected by fire. The exception would be during a catastrophic fire where small mammals are generally more affected by fire. However, the rejuvenation of vegetation and the strong breeding instinct of small mammals usually results in repopulation of affected areas within one to two years after fire occurrence.

2. Mitigation

Prescribed fires will be planned to do the least amount of damage to the soil so that water quality remains high and potential erosion is minimized. Smoke management planning will attempt to minimize smoke impacts to visitors to the Memorial.

C. INFRASTRUCTURE

1. Unit Infrastructure

There are 34 buildings on the unit valued in excess of $65 million. There are no

inholdings in the Memorial and most of the surrounding land is under the jurisdiction of the USFS except the town of Keystone on the east side of the Memorial.

2. Mitigation

Most of the unit's facilities are located in wooded areas and extensive hazard reduction operations have been conducted to protect them. Continued thinning and prescribed fire will be used to maintain a reduced risk of wildland fire damaging the Memorial's infrastructure.

XII. FIRE CRITIQUES AND ANNUAL PLAN REVIEW

A. INTRODUCTION

1. Scope

All wildland fires and fire-related incidents will be reviewed. All prescribed fires will be reviewed.

2. Reviews

Reviews are conducted for one or more of the following purposes:

a. To examine the progress of an on-going fire incident and to confirm effective decisions or correct deficiencies.

b. To identify new or improved procedures, techniques or tactics.

c. To compile consistent and complete information to improve or refine park, regional or national fire management programs.

d. To examine anomalous fire-related incidents in order to determine cause(s), contributing factors, and where applicable, recommends corrective actions. If negligence is indicated, the circumstances will be reported and investigated in accordance with applicable regulations, policies or guidelines.

e. To determine the cost effectiveness of a fire operation.

3. Authority

The authority to convene a fire review rests with the park superintendent, regional director, or the Associate Director, Park Operations and Education. It is the clear responsibility of the superintendent to call for a review, to insure timely completion, and to implement recommended actions. The regional director has responsibility to follow-up with the superintendent: that reviews are established and completed in a timely manner, and that recommended actions are completed. The superintendent may request technical support from Fire Management Program Center, regional, Memorial or interagency personnel with the appropriate expertise.

4. Incident Types

All wildland fire incidents which result in human entrapment, fatalities, or serious injuries, or result in incidents with potential, will be investigated and reviewed.

5. Associate Director

The Associate Director, Park Operations and Education, will convene an ad-hoc team to review Service-wide fire management programs subsequent to the occurrence of any significant, controversial or unusual wildland fire management activities.

6. Purpose

All reviews will be conducted as constructive critiques aimed at determining the facts related to the specific fire or fire management program. They will identify commendable actions, techniques and decisions as well as areas which need improvement. Reviews are intended to resolve operational issues, not impose punitive actions.

B. FIRE REVIEWS

1. "Hotline" Review

The purpose of the hotline review is to examine the progress of an on-going fire incident, regardless of size. The review will provide a confirmation of the decisions being made daily in the Wildland Fire Situation Analysis or determine where the decision process has been faulty and corrective actions are needed.

The "hotline" review is normally conducted by the park's fire management officer (or an official who has designated fire program management responsibilities) in conjunction with the incident commander on the fire.

These reviews require no special reporting. Documentation of "hotline" reviews should be included in the normal fire report narrative.

2. Incident Management Team (IMT) Closeout and Review

The park superintendent will conduct a closeout review with the IMT prior to their release from the fire incident. The purpose of this review is to ensure complete transition of the incident management back to the unit and to evaluate the status of any incomplete fire business. RM 18, Chapter 13, Exhibit 1 (http://www.nps.gov/fire/fire/policy/rm18/index.htm) contains a sample Close-Out Review with Incident Management Team.

3. Unit Level Review

The superintendent or his/her designated representative should conduct the unit level review. The superintendent will appoint other qualified persons, including the unit fire management officer (or an official who has designated fire program management responsibilities) to be a part of the review. The purpose of this review is to provide the superintendent with information to recognize commendable actions and to take needed corrective action(s). Costs associated with the review will be charged to the account assigned to the fire with the approval of the regional fire management officer. A copy of the complete report will be sent to the regional fire management officer, who will review it and, if appropriate, forward a copy to the Fire Management Program Center.

4. Regional Level Review

A regional level review may be conducted for any fire that:

a. Crosses a park's boundary into another jurisdiction without the approval of an interagency agreement.

b. Results in adverse media attention.

c. Involves serious injury to less than 3 personnel, significant property damage, or an incident with potential.

d. Results in controversy involving another agency.

The regional level review normally will be conducted at the unit where the fire occurred. The regional fire management officer or his/her designated representative will convene the review. Attendees will include the superintendent of the unit, unit fire management officer (or the official who has designated fire program management responsibilities), the incident commander(s) for the fire, and other individuals agreed upon by the regional director and superintendent. If possible, the review team should visit the actual fire site as part of the review. A copy of the review report will be sent to the Fire Management Program Center. Costs associated with the review will be charged to the account assigned to the fire.

5. National Level Review

A national level review may be conducted for any fire that involves Service wide or national issues, including:

a. Significant adverse media or political interest.

b. Multi-regional resource response.

c. A substantial loss of equipment or property.

d. A fatality, or multiple, serious fire-related injuries (three or more personnel).

e. Any other fires that the Associate Director, Park Operations and Education, wants reviewed.

A national level review normally will be conducted at the unit where the fire occurred. The National Fire Management Officer or his/her designated representative will convene it. It will be attended by the superintendent of the unit, the fire management officer (or an official who has designated fire program management responsibilities), the regional fire management officer, the incident commander(s) for the fire, and other individuals agreed upon by the National Fire Management Officer, the regional director and the superintendent. If possible, the review team should visit the actual site of the fire as part of the review. All costs associated with the review will be charged to the account assigned to the fire.

RM 18, Chapter 13, Exhibit 2 (http://www.nps.gov/fire/fire/policy/rm18/index.htm) provides an outline for final reports of fire reviews. RM 18, Chapter 13, Exhibit 3 (http://www.nps.gov/fire/fire/policy/rm18/index.htm) provides a checklist of sample questions, which might be asked during a fire review. These two documents should be used for unit, regional and national level reviews.

6. Entrapment and Fire Shelter Deployment Review

Fire shelter deployment is defined as the use of a fire shelter for its intended purpose in any situation other than training. Use of the terms "precautionary deployment", "practice deployment" and "entrapment deployment" are not acceptable or recognized.

Entrapments and fire shelter deployments will be reviewed in order to gather complete and accurate information to determine the reasons for the deployment. Corrective recommendations will be developed to minimize future situations which might lead to other shelter deployments. All entrapments and fire shelter deployments will be reported to the regional fire management officer, who will be responsible for developing the review team in cooperation with the Fire Management Program Center. The team leader will contact the superintendent for reporting information. See RM 18, Chapter 3 (http://www.nps.gov/fire/fire/policy/rm18/index.htm) for investigation and reporting requirements.

All entrapments and fire shelter deployments will be investigated as soon as possible after the deployment incident. RM 18, Chapter 13, Exhibit 4 (http://www.nps.gov/fire/fire/policy/rm18/index.htm) provides specific directions for conducting an entrapment or shelter deployment review. RM 18, Chapter 13, Exhibit 5 (http://www.nps.gov/fire/fire/policy/rm18/index.htm) provides an outline format for final reports on entrapment and fire shelter deployment reviews.

C. PROGRAM REVIEWS

1. Operations Evaluations

Operations evaluations of NPS units and regions may include review of fire management programs to assure compliance with established Service standards.

2. Annual Fire Program Review

The superintendent will convene an ad-hoc team to review park fire activity during any year in which significant, unusual or controversial fire activity occurs. This review team should analyze the reports from any reviews to determine what, if any, operational changes should be initiated. The review team will develop findings and recommendations and establish priorities for action.

3. FIREPRO Review

Annually, the FMO will conduct a FIREPRO audit and review of the park values at risk, research, equipment and project needs. This review will be completed on the schedule set by the Fire Management Program Center.

4. Fire Readiness Review

Fire readiness or preparedness reviews, utilizing the Interagency Fire Readiness Review Guide as adapted for park-specific needs, should be conducted annually prior to the established fire season by park fire management staff.

XIII. CONSULTATION AND COORDINATION

The following individuals and groups were consulted during the preparation of this plan.

Cal Gale, Natural Resource Consultant, Baldwin, WI 54002

Webb Smith, Mangi Environmental Group

Additional contributors and reviewers names will be added by the Memorial