

N1621

August 15, 1995

Memorandum

To: State Supervisor, U. S. Fish and Wildlife Service,
Ecological Services, Albuquerque, New Mexico

From: Superintendent, Southwest System Support Office

Subject: Biological Assessment for Fire Management Plan,
Bandelier National Monument, New Mexico

Enclosed is our biological assessment for the implementation of the Fire Management Plan for Bandelier National Monument, Los Alamos and Sandoval Counties, New Mexico.

Based on the considerations included in the attached Biological Assessment, we find that the implementation of the Fire Management Plan **is not likely to adversely affect** proposed, threatened, or endangered species within Bandelier National Monument. We believe the reintroduction of fire to fire dependent ecosystems will have significant long term, beneficial effects for these ecosystems and their organisms. This assessment is provided to advise you of our proposed management actions and an ecological rationale for these actions. We are enclosing a convenient response form which may facilitate your communications with us.

You may reply directly to Nancy Skinner at the Southwest System Support Office, P.O. Box 728, Santa Fe, NM 87504. If you have any questions please contact Ms. Skinner at (505) 988-6859 or Brian Jacobs (Bandelier National Monument) at (505) 672-3861 x545.

Jerry Rogers
Superintendent, Southwest System Support Office, National Park Service

Enclosure

SOUTHWEST SYSTEM SUPPORT OFFICE
NATIONAL PARK SERVICE
SECTION 7 BIOLOGICAL ASSESSMENT FORM

 X INFORMAL

 FORMAL

1. **CLUSTER:** Southwest Cluster, National Park Service.
2. **PARK:** Bandelier National Monument.
3. **LOCATION:** Los Alamos and Sandoval Counties, New Mexico.
4. **MANAGEMENT ACTION PLANNED:** Implement Fire Management Plan. Please see attached draft Fire Management Plan and draft Environmental Assessment.
5. **MANAGEMENT OBJECTIVES:** Manage fire dependent ecosystems through the implementation of the following objectives: 1) reduce hazardous fuels, 2) restore and maintain fire dependent ecosystems, and 3) protect life, property and park resource values.
6. **ALTERNATIVES TO PROPOSED ACTIONS:** Please see attached draft Environmental Assessment.
7. **OCCURRENCES OF SENSITIVE SPECIES IN OR NEAR THE ACTION AREA:** Based on information received from the U.S. Fish & Wildlife Service and the New Mexico Energy, Minerals and Natural Resources Department, the following species (federally listed or candidate and state sensitive) potentially occur at Bandelier National Monument. Additional park sensitive species are also considered:

FEDERAL ENDANGERED OR THREATENED SPECIES:

Birds: American peregrine falcon, Falco peregrinus anatum
Southern bald eagle, Haliaeetus leucocephalus
Mexican spotted owl, Strix occidentalis lucida
Whooping crane, Grus americana
Southwestern willow flycatcher, Empidonax traillii extimus

Mammals: none listed

Reptiles/amphibians: none listed

Fish: none listed

Invertebrates: none listed

Plants: none listed

FEDERAL PROPOSED ENDANGERED SPECIES:

none listed

FEDERAL CATEGORY 1 OR 2 SPECIES:

Mammals: New Mexican jumping mouse, Zapus hudsonius luteus

Spotted bat, Euderma maculatum

Occult little brown bat, Myotis lucifugus occultus

Small-footed myotis, Myotis ciliolabrum

Long-eared myotis, Myotis evotis

Fringed myotis, Myotis thysanodes

Long-legged myotis, Myotis volans

Yuma myotis, Myotis yumanensis

Townsend's big-eared bat, Plecotus townsendii

Swift fox, Vulpes velox

Northern goshawk, Accipiter gentilis

Ferruginous hawk, Buteo regalis

Reptiles/amphibians:

Jemez Mountain salamander, Plethodon neomexicanus

Plants: Gramma grass cactus, Pediocactus papyracanthus

Birds: none listed

Fish: none listed

Invertebrates: none listed

NEW MEXICO STATE SENSITIVE SPECIES (in addition to federal):

Birds: Gray vireo, Vireo vicinior

Mammals: no additional listings

Reptiles/amphibians: no additional listings

Fish: no additional listings

Invertebrates: no additional listings

Plants: no additional listings

BANDELIER PARK SENSITIVE SPECIES (in addition to federal/state):
Birds: Zone-tailed hawk, Buteo albonotatus

Mammals: no additional listings

Reptiles/amphibians: no additional listings

Fish: no additional listings

Invertebrates: no additional listings

Plants: Yellow lady slipper, Cypripedium calceolus
Grape fern, Botrychium virginianum
Wood lily, Lilium umbellatum

8. RELEVANT BIOLOGICAL INFORMATION:

Overview

The Jemez Mountains including Bandelier National Monument (BNM) in northcentral New Mexico, were the subject of recent fire history studies by researchers from the Tree Ring Lab at the University of Arizona (Tom Swetnam et al) in collaboration with Craig Allen of the National Biological Survey. Reconstructed tree ring chronologies dating to the 1500's revealed regular fire events at all sampled sites through the late 1800's. Historic fire intervals averaged ten to eleven years at most forested sites. Fire intensities and acres consumed varied widely as individual fires worked their way across diverse pre-settlement landscapes. At least in ponderosa pine forest communities, fire scar records suggest crown fires were unknown. After 1880, when cattle grazing and fire suppression activities became prevalent, widespread fires were effectively suppressed in forests of the Jemez Mountains for nearly 100 years. This pattern ended in 1977 as excessive fuel loads and high stand densities resulted in the catastrophic La Mesa fire which burned some 10,000 acres and nearly one-third of BNM.

Rather than wait for additional catastrophic fire events, BNM instituted a fire management program designed to manage fire as a beneficial natural disturbance in the context of an ecosystem management approach. Many of the goals of ecosystem management, such as biodiversity, are obtainable through an aggressive fire management program. A major component of this program is the use of prescribed fire to manage fire dependent systems. Prescribed fires are used to reduce hazardous fuel loads, restore normal forest stand densities, maintain grassland and savanna communities and enhance fire dependent ecosystem health and productivity.

Prescribed fires are either artificially ignited by park management under favorable conditions or a natural ignition is allowed to spread under close supervision. Definitive burn unit boundaries are established for each prescribed fire event and weather conditions are monitored to ensure the fire stays within 'prescription'. This 'prescription' is a set of pre-established environmental parameters (i.e., weather conditions, fire behavior, resource availability, etc.) under which a fire is allowed to continue burning. Fire intensities can be managed to some extent through the selection of ignition patterns, including the use of lower intensity backing fires for example.

A fire effects monitoring program is in place at BNM to assess whether the vegetative response to a particular fire event meets the desired objectives; pre- and post-burn data are collected from permanent plots established within prescribed burn units.

The absence of fire can have less obvious effects on subtle

processes such as nutrient cycling. Limitations in nutrient availability as a result of long term fire suppression can have far reaching negative effects on forest health and productivity. The habitat and prey base of most sensitive species at BNM will derive long term benefits from periodic fire events which mimic historic natural burns and help to maintain natural processes at optimal levels. Absence of fire ultimately disrupts natural processes and threatens sensitive species with gradual habitat change, degradation or catastrophic loss.

Two plant communities, the montane meadow and piñon-juniper savanna, have experienced tree invasion in response to historic overgrazing and fire suppression efforts. Many of the invading trees are now too large and dispersed to be killed through prescribed burning efforts alone; their removal and the restoration of these plant communities requires the use mechanical reduction before fire can be effective.

The information presented below represents a summary of the current state of knowledge for sensitive species at BNM and the anticipated response of these species and their habitats to implementation of the fire management program. The information is derived from published and unpublished reports based cataloging a variety of research and survey efforts as well as from incidental staff/visitor wildlife observations. As additional information becomes available, the park will continue to reassess potential effects on sensitive species in consultation with the USFWS. Critical dates are listed for selected sensitive species; these restrict park and visitor activities within the identified sensitive areas during these time periods.

FEDERAL LISTED THREATENED OR ENDANGERED

Birds

American peregrine falcon, Falco peregrinus anatum

This species has been reported for BNM and suitable habitat has been identified. Terry Johnson, contract raptor biologist has monitored the status of this species in our area regularly since 1979. His survey results are documented in various unpublished reports to the funding agencies; these reports are on file at BNM. A habitat management plan for this species in BNM was prepared by Terry Johnson. This species nests on selected cliffs parkwide and prefers canyons for foraging. Critical dates are between March 1 and August 15. See attached copy of the peregrine habitat management plan for additional details.

Southern bald eagle, Haliaeetus leucocephalus

This species has been reported for BNM and suitable habitat has been identified parkwide. Terry Johnson has monitored the status of this species in this area annually since 1979. His survey results are documented in various unpublished reports to the funding agencies; a complete set of these reports are on file at BNM. Roost habitat is located in tributary canyons of the Rio Grande; foraging habitat includes White Rock Canyon, Cochiti Lake and mesas near the Rio Grande. Critical dates are between November 1 and March 31.

Mexican spotted owl, Strix occidentalis lucida

This species has been reported for BNM and suitable nesting and roosting habitat have been identified. A survey was conducted in portions of the upper Frijoles watershed in 1988 by Jennifer and Terry Johnson and suitable habitat was identified. Most recently, T. Johnson completed a contract with BNM to identify all suitable nest / roost habitat parkwide and to assess occupancy during the 1994 season. His 1994 survey reports and habitat maps (see attached), along with earlier documentation, will provide essential pre-burn baseline information for BNM. T. and J. Johnson have also conducted surveys throughout the Jemez Mountains (including adjacent U.S. Forest Service lands) since 1985. Their survey results are documented in various unpublished reports to the funding agencies; a complete set of these reports are on file at BNM.

At BNM, this species nests and roosts in mature canyon bottom forests (of uneven age structure and with well developed understories), often in proximity to cliff faces. All of the major canyons within BNM are thought to provide some potential nesting and / or roosting habitat. Foraging habitat includes mature forest as well as adjacent open areas of an earlier successional stage parkwide; T. Johnson observed owls at night on

mesas burned by the La Mesa fire (1977) where they were presumably foraging. Critical dates are between February 1 and August 31.

Whooping crane, Grus americana

Individuals of this species are occasionally sighted in the spring and fall with migrating flocks of sandhill cranes. These individuals are accidental migrants through BNM along the Rio Grande flyway.

Southwestern willow flycatcher, Empidonax traillii extimus

This species is known to breed in suitable riparian habitat along the Rio Grande, north and south of BNM. Surveys were conducted along the Rio Grande in BNM by park staff during the spring of 1994 who detected individuals of the species; however, the identification of subspecies 'extimus' could not be verified. USFWS have been provided recordings of vocalizations for analysis. Suitable and potential habitat exists in BNM along the Rio Grande near the mouths of Alamo and Lummis canyons; however, this habitat is subject to periodic inundation by flood waters backed up behind Cochiti Dam.

FEDERAL CATEGORY 1 OR 2 SPECIES

Birds

Northern goshawk, Accipiter gentilis

This species has been reported for BNM and suitable foraging and nesting/ roost habitat exist. Nesting areas are typically in mature forest stands similar to those preferred by Strix sp. Within a home range there are usually two to four alternative nest areas. When hunting, the northern goshawk usually observes its prey while perched in a snag, and then pursues the prey animal. Fire suppression activities in coniferous forests have often resulted in dense, single-story forests with few openings. Heavy fuel (ie, down & dead woody debris) accumulations can result in catastrophic, stand-replacing fires which destroy large blocks of northern goshawk habitat.

No systematic survey of this species or its habitat have been conducted within BNM. Information on this species in the local area is available from unpublished reports prepared for various funding agencies by Patricia Kennedy. Several of these reports are on file at BNM. Critical dates are between March 1 and August 15.

Ferruginous hawk, Buteo regalis

This species has been reported for BNM, but primarily as a winter migrant. Primary foraging habitats are prairie dog

towns, which currently do not exist within BNM. Suitable secondary foraging habitat may exist, but no systematic surveys for this species or its habitat have been conducted at BNM. Casual observations of this species at BNM indicate a preference for roosting on prominent snags on canyon slopes, rims and mesas in ponderosa and piñon-juniper vegetation types (Source: BNM Wildlife Observations database).

Mammals

New Mexican jumping mouse, Zapus hudsonius luteus
Occult little brown bat, Myotis lucifugus occultus

No reported occurrences of these two species at BNM, but suitable habitat may exist.

Spotted bat, Euderma maculatum
Small-footed myotis, Myotis ciliolabrum
Long-eared myotis, Myotis evotis
Fringed myotis, Myotis thysanodes
Long-legged myotis, Myotis volans
Yuma myotis, Myotis yumanensis
Townsend's big-eared bat, Plecotus townsendii

All seven of these species have been reported for Bandelier (Source: Guthrie and Large (1980) and NPS/NBS surveys), but little information is available on the roosting preferences of these species in the park. The National Biological Survey (NBS) is currently conducting radio telemetry work to determine roosting preferences of bats in our area; many of these species have the potential to roost in dead snags or living trees which possess suitable cracks or cavities.

Swift fox, Vulpes velox

This species has been reported for BNM and suitable habitat likely exists within BNM, but has not been identified. All five reported sightings occurred between 1985-90 in the developed area of Frijoles Canyon (Source: BNM Wildlife Observations database).

Reptiles/amphibians

Jemez Mountain salamander, Plethodon neomexicanus
This species has been reported for BNM and suitable habitat exists. This species prefers the cool, moist understory of mature mixed coniferous woods in canyons and on mountain slopes. Numerous localities have been documented (in BNM and the Jemez Mountains) and several locations within BNM are monitored annually by park staff. Locality information

and annual survey documentation are on file at BNM. The species is most active during the summer rainy season and is commonly found under rocks and logs. Its prey base includes surface dwelling arthropods which in turn feed on soil organisms. Research is underway by Craig Allen (National Biological Survey), Carl White (University of New Mexico) and BNM staff to document the effects of fire on populations of surface dwelling arthropods and indirectly on populations of Jemez Mountain Salamanders.

Plants

Gramma grass cactus, Pediocactus papyracanthus
This species has been reported for BNM and suitable habitat has been identified. Habitat for this species is characterized by relatively open, grassy Piñon-Juniper woodlands of gentle slope and usually in proximity to basaltic canyon rims.

No systematic survey for this species has been conducted within BNM, but Foxx of Los Alamos National Lab and Jacobs of BNM have conducted general plant inventories within BNM and noted the presence/absence of this species at various locations. A systematic survey (of portions of the BNM Tsankawi unit) for this species was conducted in March of 1994 by park staff with negative results.

In 1989 Foxx salvaged several hundred Gramma Grass cacti from Los Alamos County lands slated for development. One hundred of these individuals were transplanted onto the Tsankawi Unit, but by 1993, all but six of the transplants had either died or could not be relocated. The surviving six were all non-reproductive and not very robust.

NEW MEXICO STATE SENSITIVE SPECIES

Birds

Gray vireo, Vireo vicinior
This species may occur in the BNM area but no definitive reports exist; there are several unconfirmed sightings of this species along the Rio Grande (Source: BNM Wildlife Observations database).

BANDELIER PARK SENSITIVE SPECIES

Birds

Zone-tailed hawk, Buteo albonotatus
This species has been reported for BNM and suitable nesting and foraging habitat has been identified. Information on this species in the local area is derived primarily from

unpublished reports prepared for various funding agencies by Patricia Kennedy. Several of these reports are on file at BNM. This species nests and roosts in prominent trees in canyons and forages along adjacent canyon rims and mesas. This species is restricted to the Jemez Mountains in northern New Mexico, where it reaches the northern limits of its range. Critical dates are between March 1 and August 15.

Plants

Yellow lady slipper, Cypripedium calceolus

This species has been reported for BNM and suitable habitat exists. This species prefers moist, and somewhat open, grassy understories in mixed coniferous forests of watered canyon bottoms. Maintenance of this open, grassy habitat would appear to require periodic fire events.

Grape fern, Botrychium virginianum

This species has been reported for BNM and suitable habitat exists. This species prefers moist, and somewhat open understories in mixed coniferous forests of watered canyon bottoms. Maintenance of this somewhat open habitat would appear to require periodic fire events.

Wood lily, Lilium umbellatum

This species has been reported for BNM and suitable habitat exists. This species prefers moist, and somewhat open, grassy understories in mixed coniferous forests of watered canyon bottoms. Maintenance of this open, grassy habitat would appear to require periodic fire events.

9. CONSIDERATIONS:

General Considerations:

Fire is a defining disturbance in fire dependent ecosystems; these systems evolved with periodic fire (fire regime) and in its absence they progress beyond the communities normal 'fire climax'. Fire plays a major role in the maintenance of stand structure, density, serial stage and diversity in communities as diverse as grasslands and forests. It cycles nutrients from dead biomass (i.e., fuel load) back into the soil, keeping these systems healthy and productive, increasing the prey base for many sensitive species, and reducing opportunities for catastrophic events. These healthy systems in turn can more easily tolerate stresses introduced by climatic extremes, diseases, insects and pathogens.

One-third of the BNM landscape was significantly altered by the unnaturally high intensity La Mesa crown fire in 1977; a direct result of nearly 100 years of fire suppression activities. Additional fire events such as La Mesa are inevitable at BNM without an active, well-planned fire management program to reduce excessive fuel loads and return normal stand densities.

Montane meadows and piñon-juniper savannas have sustained significant tree invasion in part due to the absence of fire. Mechanical reduction of the invading trees is now required before fire can be fully successful in maintaining the significant herbaceous component of these communities.

BNM manages its lands as a natural preserve, allows no consumptive resource extraction and treats all suitable or potential sensitive species habitat as if occupied (by a sensitive species). Where sensitive species live within fire dependent systems, we can safely assume that these species derive long term benefits from periodic fires which maintain their habitat. While the short term effects of individual fire events can potentially cause random mortality of individuals and negatively affect pockets of suitable habitat for some sensitive species; proper long term management of all suitable and potential habitat parkwide (i.e., managed as if occupied) will ensure a continuing supply of high quality habitat for sensitive species.

FEDERAL ENDANGERED OR THREATENED SPECIES

Birds

American peregrine falcon, Falco peregrinus anatum
Implementation of the FMP should not degrade and would likely enhance habitat for this species. T. Johnson and R. Wauer recently presented data suggesting that the prey base for this species could potentially increase as a result of fire management activities. In accordance with the peregrine site management plan recently developed by T. Johnson, in consultation with park staff, all prescribed fire management activities will be restricted in sensitive zones during critical time frames (see peregrine habitat management plan). Wildfire suppression activities will continue as necessary, but under more restrictive conditions within sensitive zones.

Southern bald eagle, Haliaeetus leucocephalus
Implementation of the FMP should not degrade and would likely enhance habitat for this species. Prey base could be expected to increase as a result of fire management activities. As with peregrines, all fire management activities will be restricted in sensitive zones during critical time frames. Sensitive zones and critical time frames for this species have been delineated at BNM by T. Johnson.

Mexican spotted owl, Strix occidentalis lucida
Implementation of the FMP should not degrade and would likely enhance suitable habitat for this species long term. Small scale, short term, adverse effects on habitat may occur, but these would be limited to the loss of small pockets where heavy fuel accumulations or high stand densities result in the removal of the overstory component. Abundant suitable and potential habitat exists for this species and only a small percentage would potentially be consumed in any single prescribed burn. Preferred nesting and roosting habitat tends to be located within cool, moist pockets of forest less likely to burn hot. The majority of suitable habitat would be enhanced through increased productivity and health of the forest ecosystem. The potential for uncontrolled, high intensity crownfire as a result of heavy fuel loads and unnaturally high stand densities would be reduced as well.

Several restrictions on the amount and frequency of fire in relation to owl habitat are proposed to mitigate any potential short term adverse effects on individual nest / roost sites. No more than 25% of the total available nesting or roosting habitat in the park (as identified by T. Johnson in 1994) will be subjected

to fire (management ignited, prescribed natural or wildfire) in any one year. At least 75% of all identified suitable habitat parkwide (as determined by T. Johnson in 1994) must still be available and suitable for occupancy prior to management ignition of an additional prescribed fire or a decision to allow a natural ignition to spread. Nesting and roosting habitat in and adjacent to burn areas will be informally monitored (per T. Johnson's protocols) for spotted owl occupancy and reproduction for two years prior to a planned prescribed burn. Fire effects on owls and owl habitat will be assessed through informal monitoring (per T. Johnson's protocols) of occupancy and reproduction during the two years following a prescribed fire or wildfire. These measures will ensure that managed fire is introduced into owl habitat in a measured fashion, by linking amount and suitability of owl habitat with permission to ignite additional prescribed fire(s) or permission to allow natural ignitions to spread within an approved plan for prescribed natural fires (PNF).

T. Johnson recently completed a contract with BNM to identify all suitable spotted owl (Strix occidentalis) habitat for parkwide; current occupancy of all suitable habitat was assessed for the 1994 season as well. In addition, T. Johnson compiled a baseline of information on S. occidentalis at BNM based on survey results (1985-present) and historic records. All information is summarized in the attached reports. Maps detailing the locations of suitable habitat were prepared as well (see attached). These maps will be used by the Fire Management Officer in managing fire activities within identified sensitive zones.

In addition to the restrictions on prescribed burn activities proposed above, additional recommendations made by T. Johnson (see attached report: Fire Management in Spotted Owl Habitat in Bandelier National Monument) will also be incorporated into BNM fire management procedures within identified sensitive zones. For example all management ignited prescribed fires within sensitive habitat will be conducted in the fall, except as noted, and fire intensities will be managed so as to minimize potential for loss of nest / roost habitat. Natural ignitions (PNF) will be allowed to spread through sensitive habitat at any time of the year, so long as the fire remains within prescription.

Whooping crane, Grus americana

Implementation of the FMP at BNM would probably be of no consequence for this species, since it typically is only flying through the area several days a year.

Southwestern willow flycatcher, Empidonax traillii
extimus

Implementation of the FMP should have little effect on this species since its riparian habitat is not within a prescribed burn unit and is relatively inflammable much of the year. This habitat type is unlikely to experience a widespread burn as a result of wildfire, since it consists of numerous widely spaced willow thickets along a narrow river corridor. Adequate fuels to support a fire would probably only be available during seasons when the migratory willow flycatcher was not in the area.

FEDERAL CATEGORY 1 OR 2 SPECIES

Birds

Northern goshawk, Accipiter gentilis

Implementation of the FMP should not degrade and would likely enhance suitable habitat, including prey base, for this species.

As with S. Occidentalis, the majority of suitable habitat would likely be enhanced through increased productivity and health of the forest ecosystem. This species utilizes a wide range of successional forest conditions for foraging and may find an increased prey base as a result of fire management activities. As with other sensitive raptor species, all fire management activities, including mechanical reduction of trees invading the montane meadow areas, will be restricted in sensitive zones during critical time frames.

Ferruginous hawk, Buteo regalis

Implementation of the FMP should not degrade and would likely enhance suitable habitat, including prey base, for this species.

Mammals

New Mexican jumping mouse, Zapus hudsonius luteus

Occult little brown bat, Myotis lucifugus occultus

Spotted bat, Euderma maculatum

Small-footed myotis, Myotis ciliolabrum

Long-eared myotis, Myotis evotis

Fringed myotis, Myotis thysanodes

Long-legged myotis, Myotis volans

Yuma myotis, Myotis yumanensis
Townsend's big-eared bat, Plecotus townsendii

Swift fox, Vulpes velox

Implementation of the FMP should not degrade and would likely enhance suitable habitat for all of these species. While some impacts may occur to bat roost trees and the tree cavity dwellers themselves, if the tree is consumed during a fire event; it is difficult to assess potential impacts because it is not known to what extent these species 1) utilize snags or trees, 2) have alternative roost sites, or 3) can relocate to an alternate roost site during a fire event. Fire events will likely create at least as many new suitable roost trees as it consumes.

Reptiles/amphibians

Jemez Mountain salamander, Plethodon neomexicanus
Implementation of the FMP would likely enhance suitable habitat for this species long term. Small scale, short term, adverse effects might occur, but would probably be limited to small pockets where heavy fuel accumulations or high stand densities result in the baking of soil or the removal of overstory; mortality of the individuals at these locations and under either of these conditions might be expected. However, abundant suitable and potential habitat exists for this species and only a small percentage would likely be consumed in any single prescribed fire. The majority of suitable habitat would undoubtedly be enhanced through a reinvigoration of stalled nutrient cycling processes; available nutrients and soil microbial activity typically increase post burn, benefiting ground dwelling arthropods which are the primary food prey for the Jemez salamander. Pre and post fire monitoring will be conducted for all prescribed burns located within identified sensitive zones. Two known or suitable localities will be monitored within each planned burn unit for two years prior to the burn and two years following. Survey protocols will be developed in cooperation with the New Mexico State Endemic Salamander Assessment Team and the USFWS.

All fire management activities will be restricted in sensitive zones during critical time frames. Fire line will not be constructed through suitable habitat unless deemed absolutely necessary by a resource advisor during a wildfire situation. In the instance where it is deemed necessary to construct fire line through suitable habitat, natural barriers would be utilized as a first option in delimiting the burn unit; minimal

line construction techniques (i.e., removal of duff layer only) would be used as a last resort or as needed to link natural barriers. All fire line will be rehabilitated (i.e., by pulling the duff back onto the line) immediately after the fire is declared out.

Plants

Gramma grass cactus, Pediocactus papyracanthus
Implementation of the FMP should not degrade and would likely enhance any suitable or potential habitat for this species. This cactus occurs on piñon-juniper woodland sites where fire is now a rarity due to a lack of surface fuels. Major restoration efforts would be required on most piñon-juniper woodland sites before sufficient surface fuels were available to carry a fire. However, fire was previously an important factor in maintaining low tree densities and good herbaceous cover in these areas. Where fire is still possible, it may cause random mortality of individuals of this species, but it would more importantly rehabilitate existing and potential habitat for local populations. Pre and post fire monitoring will be conducted for all prescribed burns located within identified sensitive zones. Known localities will be monitored within each planned prescribed fire unit for two years prior to the ignition and two years following.

NEW MEXICO STATE SENSITIVE SPECIES (in addition to federal)

Birds

Gray vireo, Vireo vicinior
Implementation of the FMP should not degrade and would likely enhance suitable habitat for this species.

BANDELIER PARK SENSITIVE SPECIES (in addition to federal/state)

Birds

Zone-tailed hawk, Buteo albonotatus
Implementation of the FMP should not degrade and would likely enhance suitable habitat, including prey base, for this species. All nest trees will be protected from prescribed fire treatment through preventive removal of fuels from around the base of the trees. As with other sensitive raptor species, all fire management activities will be restricted in sensitive zones during critical time frames.

Plants

Yellow lady slipper, Cypripedium calceolus
Grape fern, Botrychium virginianum
Implementation of the FMP should not degrade and would likely enhance the suitable and potential habitat for

these species. Every precaution would be taken within sensitive zones to ensure fire intensity does not exceed established thresholds. No ground disturbing activities of any kind are permitted within known populations of these species. All fire management activities will be restricted in sensitive zones during critical time frames. Pre and post fire monitoring will be conducted for all prescribed fires located within identified sensitive zones. All known localities for each species will be monitored within each planned prescribed fire unit for two years prior to ignition and two years following.

Wood lily, Lilium umbellatum

Implementation of the FMP should not degrade and would likely enhance the suitable and potential habitat for this species. Every precaution would be taken within sensitive zones to ensure fire intensity does not exceed established thresholds. Pre and post fire monitoring will be conducted for all prescribed fires located within identified sensitive zones. Two known localities will be monitored within each planned prescribed fire unit for two years prior to ignition and two years following.

Ground disturbing activities within known populations of this species would be limited to essential trail maintenance activities. All fire management activities will be restricted in sensitive zones during critical time frames. Fire line will be not be constructed through suitable habitat unless deemed absolutely necessary by a resource advisor during a wildfire situation. In the instance where it is deemed necessary to construct fire line through suitable habitat, natural barriers would be utilized as a first option in delimiting the burn unit; minimal line construction techniques (i.e., removal of duff layer only) would be used as a last resort or as needed to link natural barriers. All fire line will be rehabilitated (i.e., by pulling the duff back onto the line) immediately after the fire is declared out.

10. ANALYSIS OF IMPACTS/ACTIONS ON ENDANGERED/THREATENED SPECIES:

Based on the considerations included in the attached Biological Assessment, we find that the implementation of the Fire Management Plan **will not likely adversely affect** proposed, threatened, or endangered species within Bandelier National Monument. We believe the reintroduction of fire to fire dependent ecosystems will have significant long term, beneficial effects for sensitive organisms and their habitats.

11. CONCLUSION:

X IS NOT LIKELY TO ADVERSELY AFFECT

_____MAY AFFECT (Requires Formal USF&WS Consultation)

12. RECOMMENDATION: Implement the attached Fire Management Plan per the constraints detailed under each species. In addition, orient fire personnel to sensitive species/ habitat concerns (without release of specific sensitive species information) Assign a resource advisor to every fire (management ignited, prescribed natural or wildfire) that is in, near or approaching any potentially sensitive species areas in order to mitigate any potential negative impacts on sensitive species and/ or habitat. Finally, require oversight of site rehabilitation activities within sensitive species areas by the resource advisor in consultation with park natural resource specialists.

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Date of report preparation: August 15, 1995.

CONCURRENCE FORM FOR SOUTHWEST SYSTEM SUPPORT OFFICE, NPS
ENDANGERED SPECIES BIOLOGICAL ASSESSMENT

We have reviewed your informal/formal Biological Assessment for the implementation of the Fire Management Plan for Bandelier National Monument, Los Alamos and Sandoval Counties, New Mexico.

_____ We concur with your findings that the above proposed National Park Service action **is not likely to adversely affect** listed or sensitive species and suitable habitat.

_____ We do not concur with your Biological Assessment and believe additional informal/formal consultation may be necessary in this matter.

EXPLANATIONS (if necessary):

Signature _____

Title _____

Office _____

Date _____