National Park Service
U.S. Department of the Interior

Curecanti National Recreation Area
Black Canyon of the Gunnison National Park
Colorado

Fire Management Plan
Environmental Assessment /Assessment of Effect
August 2006

Fire Management Plan
Environmental Assessment/Assessment of Effect

Black Canyon of the Gunnison National Park / Curecanti National Recreation Area, Gunnison, Colorado

Summary

This Environmental Assessment (EA)/Assessment of Effect (AEF) evaluates three alternatives for implementation related to the creation and adoption of a Fire Management Plan (FMP) for Black Canyon of the Gunnison National Park (BLCA) and Curecanti National Recreation Area (CURE). Impacts to fourteen impact areas were evaluated for each alternative.

Alternative A evaluates existing fire management strategies and goals under No Action. In this case, No Action equates to current fire management practices, which includes full suppression and limited manual/mechanical fuel reduction to protect structures within BLCA and CURE boundaries only. This alternative is the current wildland fire management action at BLCA and CURE. Impacts to most of the affected environment evaluated in this EA were minor to moderate, and short-term in duration, although moderate and long-term effects could impact land use, species of special concern, such as wildlife and threatened and endangered species, unique or important vegetation communities such as mature pinyon-juniper forests, and the introduction of non-native species. These impacts would largely be due to the increased likelihood of large, intense fires resulting from long-term fire suppression and increased direct impacts from fire suppression actions.

Alternative B dictates that fire management that occurs within each Fire Management Unit (FMU) would be based on natural landscape conditions, rather than on agency or other land management or ownership boundaries. Fire and fire management prescriptions would be allowed to cross the BLCA and CURE boundaries with USFS and BLM lands when agreed by both parties, as well as some designated adjacent private lands, and, whenever possible, the NPS, BLM, and USFS would coordinate actions. Various prescribed fire and fuels management activities also would be permitted in appropriate areas within the parks, including manual/mechanical treatment and prescribed fire to reduce fuel loading in identified management units. In addition, wildland fire use (WFU) would be permitted in units identified for managed wildland fire. Impacts to affected environments would generally be localized and both short- and long-term, with adverse impacts ranging from negligible to moderate, and beneficial impacts ranging from minor to moderate. Alternative B is the National Park Service (NPS) Preferred Alternative.

Alternative C is the same as Alternative B, except that fire management activities would be permitted only within BLCA and CURE boundaries. No fire management activities, including prescribed fire and WFU fires, are permitted to extend into or out of adjacent public or private lands. Impacts to affected environments are similar with Alternative C, except that adverse effects may be more widespread near park boundaries for geology and soils, air quality, water quality, land use, and the increased introduction of non-native species.

Public Comment

The press release announcing the availability of the document for public review will be published in the Daily Sentinel and the Daily Press in Montrose, Colorado and the Gunnison County Times in Gunnison, Colorado. If you wish to comment on the EA, please mail comments to the name and address below. Comments also will be accepted via e-mail and fax. This document will be available for public review for 30 days from the date of the publication in newspapers. The document will be available for review on-line on the BLCA and CURE websites (www.nps.gov/blca/) and www.nps.gov/cure/), at park visitor centers, and at the Montrose, Delta, and Gunnison Public Libraries. Please note that names and addresses of people who comment become part of the public record. If you wish us to withhold your name and/or address, you must state this prominently at the beginning of your comment. We will make all submissions from organizations, businesses, and individuals identifying themselves as representatives or officials of organizations or businesses available for public inspection in their entirety.

William E. Wellman, Superintendent
Black Canyon of the Gunnison National Park/Curecanti National Recreation Area

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LIST OF ACRONYMS USED IN THIS DOCUMENT

AQRV	Air Quality Related Values
BAER	Bare Area Emergency Rehabilitation
BLCA	Black Canyon of the Gunnison National Park
BLM	Bureau of Land Management
CAA	Clean Air Act
CDOW	Colorado Division of Wildlife
CEQ	Council for Environmental Quality
CFR	Code of Federal Regulations
CSU	Colorado State University
CRSP	Colorado River Storage Project
CSFS	Colorado State Forest Service
CURE	Curecanti National Recreation Area
D&RG	Denver and Rio Grande
DO	Director's Order
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FMP	Fire Management Plan
FMU	Fire Management Unit
GIS	Geographic Information Systems
NRHP	National Register of Historic Places
IC	Incident Commander
ID Team	Interdisciplinary Team
LCS	List of Classified Structures
MGM	Money Generation Model
MIST	Minimum Impact Suppression Tactics
MWAC	Midwest Archeological Center
NAAQS	National Ambient Air Quality Standards
NCA	National Conservation Area
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NPS	National Park Service
ROW	Right of Way
SHPO	State Historic Preservation Office
THPO	Tribal Historic Preservation Office
TPI	Total Personal Income
USBR	United States Bureau of Reclamation
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
UVWUA	Uncompahgre Valley Water Users Association
UW	University of Wyoming
WAPA	Western Area Power Administration
WFU	Wildland Fire Use

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INTRODUCTION
PURPOSE AND NEED FOR ACTION

This Environmental Assessment (EA) and Assessment of Effect (AEF), hereinafter referred to in this document as the EA, evaluates strategies for the management of wildland fire and fuels within Black Canyon of the Gunnison National Park (BLCA) and Curecanti National Recreation Area (CURE). The associated alternatives were determined cooperatively by various federal, state, and local land managers, as well as private landowners and other public stakeholders in order to protect the resources and values of the parks and the adjacent lands.

It is desirable to design and implement a fire management plan (FMP) that will not only protect resources but will to the most practicable extent reintroduce fire as an ecological process on the landscape. The FMP process is intended to evaluate the current fire management situation and develop a cooperative and collaborative plan that is both beneficial as well as adaptive to the changing needs and conditions of the parks and adjacent lands. This document also satisfies Section 106 compliance regarding potential adverse effects to historical, cultural, and archaeological resources by evaluating the effects of implementation of the preferred alternative to said resources.

BLCA and CURE are administered by the National Park Service (NPS) and are subject to agency policies and guidelines that direct wildland fire management. NPS *Director's Order #18: Wildland Fire Management* (DO-18) states, "Each park with vegetation capable of burning will prepare a fire management plan to guide fire management that is responsive to the park's natural and cultural resource objectives and to safety considerations for Park visitors, employees, and developed facilities." This plan and associated environmental assessment will establish the future management direction for fire related activities at BLCA and CURE by analyzing a range of alternatives and strategies. Although the analysis area for this EA contains only lands within BLCA and CURE, cooperative efforts with adjacent federal and state agencies and landowners may result in joint projects.

BLCA is located in southwestern Colorado, approximately 15 miles east of Montrose, Colorado. BLCA was established as a National Monument in 1933, and designated a National Park in 1999. Approximately 15,000 acres of the park are designated as wilderness and managed as part of the National Wilderness Preservation System. CURE is located approximately 5 miles west of Gunnison, Colorado, and was established in 1965 to provide a variety of recreational opportunities to visitors.

Both BLCA and CURE are surrounded by U.S. National Forest Service (USFS) lands, Bureau of Land Management (BLM) lands, and Colorado Division of Wildlife (CDOW) lands, as well as substantial amounts of private land. BLCA and CURE are managed by a single, combined staff. NPS administers certain U.S. Bureau of Reclamation (USBR) lands within CURE, and USBR and Western Area Power Administration (WAPA) facilities and lands are located within and/or adjacent to both BLCA and CURE. CURE is managed under a 1965 Memorandum of Agreement between NPS and USBR. CURE's basic purpose is set forth in Section 8 of Public Law 485, Chapter 203 enacted in April 11, 1956 to: "operate and maintain (1) public recreational facilities . . . , to conserve the scenery, the natural historic and archaeological objects and the wildlife on said lands, and to provide for the public use and enjoyment of the same and the water areas created by

these said projects." The General Management Plan (GMP,1997) clarifies the purposes of CURE —"(1) To conserve the scenery, natural, historic, and archeological resources, and wildlife of Curecanti National Recreation Area; and (2) To provide for public use and enjoyment in such a way as to ensure visitor safety and resource preservation or conservation by establishing and maintaining facilities and providing protective and interpretive services."

The NPS also administers certain Gunnison National Forest lands under a 1966 Memorandum of Understanding between the NPS and the U.S. Forest Service, said lands being in the vicinity of Soap Creek Arm and the Crystal Creek area. The agreement requires the NPS to assume fire protection responsibilities for the lands covered under the agreement.

The National Park Service administers the Crystal Creek Trail, which leads to an overlook of Crystal Reservoir. NPS administers the trail under a Right-of-Way (ROW) permit issued by BLM. Many maps reference the land in this area as formally within the CURE boundary. Although BLM has agreed that it should be included within CURE, for the time being it is still BLM property. Therefore, BLM should make a final determination regarding how fire is managed on this parcel. The parcel in question consists of all the public land occurring in Section 34, T49N R6W (and specifically, lots 1 through 12).

Within BLCA, the NPS holds less-than-fee interest (conservation easements) on private lands within the National Park boundary. The terms and conditions within some of the conservation easements allow the NPS and the landowner to develop mutually agreed upon vegetation management plans to address vegetation management issues.

With the passage of Public Law 108-128, also known as the Black Canyon of the Gunnison Boundary Revision Act of 2003, certain private lands were included within the park boundary. These lands, in which NPS owns no interest, include 2,000 acres of the Canyon Rim Ranch, and 200 acres of the Bramlett Ranch. NPS has no authority to manage fire on these private lands, except through agreements that might be mutually agreed upon.

This fire management planning process, including this EA, is necessary to help the NPS make an informed decision about the management of wildland fire, protect and prevent impairment to park resources and values, allow for a safe and enjoyable visitor experience, and determine whether an Environmental Impact Statement (EIS) is required.

SCOPE OF THE PLAN

As described above, DO-18 and the need for action have defined the general scope of the FMP and related EA. BLCA and CURE do not have current FMPs and therefore operate under a full suppression strategy only. The scope of the plan was discussed at the kick-off meeting in October. Because BLCA and CURE are surrounded by BLM, USBR, WAPA, CDOW, and USFS land, as well as private land, it was agreed that all fire management documents should consider these boundary issues and every effort would be made to coordinate planning efforts that would satisfy NPS objectives, yet dovetail with management objectives of other surrounding land managers and owners.

This EA examines three alternatives. Alternative A (No Action/Current Management) is required by the National Environmental Policy Act of 1969 (NEPA) and describes the status quo. Under this alternative, the NPS would continue full suppression of all fires within the park units. Alternative B (Natural Landscape Unit) would allow for management of wildland fire based on natural landscape conditions rather than agency or other land management or ownership boundaries. Fire and fire management prescriptions would be allowed to cross the BLCA and CURE boundaries with USFS and BLM lands, as well as adjacent private lands where there are willing landowners. Alternative C (Park Boundary) is the same as Alternative B, except that fire management activities are limited to lands within BLCA and CURE boundaries.

FIRE AND FUELS MANAGEMENT AT BLCA AND CURE

Background

BLCA currently is operating without a FMP. An attempt to create a FMP was initiated in 1999. A draft FMP for BLCA and CURE was completed in 2000, but was never adopted. Currently, BLCA is operating under a "complete suppression" (or No Action) fire management approach. CURE is currently operating under an old FMP that was approved July 9, 1992. This outdated plan only outlines full suppression strategies in CURE. Because BLCA and CURE are adjacent lands and are administered by a single NPS facility, this EA and the associated FMP will provide programs and strategies to guide fire management for both parks. A five-year fuels treatment plan is attached to this document as Appendix

The following sections describe the fire regimes and ecology of the two primary vegetation communities found within BLCA and CURE - the pinyon-juniper forests, and mountain shrublands.

Fire Ecology of Pinyon-Juniper Forests of Southwestern Colorado

Vegetation Composition and Distribution

Pinyon-juniper vegetation covers a vast area in western North America, and exhibits a wide range of stand structures and dynamics (Wangler and Minnich 1996, Miller et al. 1999). Between 1666-2275 m elevations in Arizona, New Mexico, Colorado, and Utah, woodlands of *Pinus edulis* and *Juniperus osteosperma* (Colorado pinyon pine and Utah juniper) form the dominant vegetative community. Notably, the natural range of variability in disturbance regimes and post-disturbance recovery processes in pinyon-juniper communities is poorly understood (Baker and Shinneman 2004).

Precipitation patterns and landscape heterogeneity drive vegetation patterns in pinyon-juniper communities. The vegetation mosaic is largely determined by moisture availability, but is also dictated by the complex dissection of the region into canyons and mesas, hills and valleys, and south-facing and north-facing slopes. Generally, pinyon and juniper form an open woodland on drier sites, but can form a closed-canopy forest on more mesic sites.

Fire Ecology

Because their bark is thin and provides little insulation for the sensitive cambium, pinyon pines and junipers are easily killed by even relatively low-intensity fire. Their foliage also is very flammable and often low-hanging, such that flames from a fire burning on the ground may climb into the crowns of the trees and consume all of the needles and small twigs (Leopold 1924, Barney and Frischknecht 1974, Koniak 1985). After stand-replacing fire, pinyons and junipers can be very slow to reestablish (Erdman 1970). They do not re-sprout, so seeds must be transported by birds and mammals into the burned area, where they are buried in suitable growing locations. The young seedlings are vulnerable to spring drought, winter freezing and thawing, and herbivory by various wildlife species. A new pinyon or juniper tree takes many decades to grow to maturity, and a stand of pinyon-juniper woodland requires centuries to develop the old-growth structural characteristics.

In Southwestern Colorado, the most common "type" of pinyon-juniper community is known as the pinyon-juniper forest. This vegetation community has been described in scattered locations throughout the Colorado Plateau (Tress and Klopatek 1987, Floyd et al. 2000), the Great Basin (Tausch et al. 1981, Miller et al. 1999, Tausch and Nowak 1999), central Oregon (Waichler et al. 2001), the mountains of southern California (Wangler and Minnich 1996, Minnich and Everett 2001), and in central Arizona (Kruse and Perry 1995). Rather than being associated with a particular soil type and climatic regime, pinyon-juniper forest appears to be restricted to an unusual combination of soils and topographic conditions that may protect some stands from frequent fires. Soils are typically too shallow or too coarse-textured to support a continuous cover of grass or shrubs, so that fires tend to spread through a stand only under conditions of extreme drought and wind. The topography is often rugged and broken, with cliffs, bare slopes, or other natural barriers that tend to prevent fires from spreading into a stand except under conditions of extreme drought and wind. Thus, this kind of vegetation may escape fire for many centuries, and develop striking old-growth characteristics, including a dense, multi-storied canopy with very old living and dead trees. These characteristics have been documented in the old forests of Mesa Verde (Floyd 2003), where the fire rotation period is on the order of 400 years and some individual stands have not burned since abandonment of the area 700 years ago (Floyd 2000). Observations elsewhere suggest that ancient pinyon-juniper forests may be very widespread throughout southwestern Colorado, e.g., on the west side of the Uncompahgre Plateau (K. Eisenhardt and William Baker, personal communication), at the north end of the Uncompahgre Plateau (William H. Romme, personal observations), and on dry shale substrates near Durango and Ignacio (personal communication, Peter Brown, and William H. Romme, personal observations).

When fire does occur in old pinyon-juniper forest stands, it tends to be very severe and stand-replacing (Erdman 1970, Floyd et al. 2000). However, in dramatic contrast to the other two kinds of pinyon-juniper vegetation (pinyon-juniper grass savanna and pinyon-juniper shrub woodland), most of the pinyon-juniper forest type probably has *not* been substantially altered by fire exclusion in the last century, and probably is *not* outside its historic range of variability in stand structure, fire frequency, and fire behavior – at least in many of the places where it occurs (Floyd et al. 2000, Romme et al. 2003).

Fire Management and Restoration

There may be little that managers can do to reduce the threat of future wildland fires in many parts of Southwestern Colorado where pinyon-juniper forest is a dominant vegetation type. In Mesa Verde National Park, for example, despite a policy of complete fire suppression since 1906, the total area that burned within the park from 1951 – 2000 was equal to or greater than what burned from 1851 – 1900 when there was no attempt at fire control (Floyd et al. 2000). Pinyon-juniper and mountain shrubland communities burn relatively infrequently, but they burn ferociously under certain weather conditions. Even with modern fire fighting technologies, it appears that, in these vegetation types, we mainly put out fires that would have been relatively small anyway. One thing that managers can do is be very judicious in their use of prescribed fire. Prescribed fires, ignited by managers under low-severity weather conditions, have become an important tool for reducing fuel loads and restoring desirable ecological conditions in other vegetation types, notably ponderosa pine (*Pinus ponderosa*) forests and grasslands. However, prescribed burning in pinyon-juniper forests of the Colorado Plateau probably should be used carefully, with clear objectives, because of the slow regeneration of forests, and also because of the risk of invasion by non-native species (Romme et al. 2003, Floyd 2003).

Fire Ecology of Mountain Shrublands of Southwestern Colorado

Interspersed among pinyon-juniper and ponderosa pine forests of Colorado's Western Slope are extensive tracts of mountain shrubland or Petran chaparral (Erdman 1970, Keeley and Keeley 1988, Spence et al. 1995, Floyd et al. 2000). The shrublands are dominated by species such as mountain-mahogany (*Cercocarpus montanus*), Utah serviceberry (*Amelanchier utahensis*), and fendlerbush (*Fendlera rupicola*) on drier sites and at lower elevations, and by species such as Gambel oak (*Quercus gambelii*), and snowberry (*Symphoricaropos* spp) on wetter sites and at higher elevations. These shrublands are remarkably diverse in many places, and mountain shrublands cover a large area in western Colorado. They are especially prominent along the southern and western slopes of the San Juan Mountains, and on the Uncompahgre Plateau, and are an important vegetation type in and around BLCA. Despite the abundance of mountain shrub communities, they have received little research attention, and little is known about their historical composition and dynamics.

Overall floristic composition of the shrublands generally is very similar to composition of adjacent forests or woodlands – except that the tree component is absent or very sparse. This floristic similarity, coupled with the fact that the shrublands are not strongly associated with any particular elevational or topographical setting (i.e., they can be found across a very wide range of elevations and topographic conditions), suggests that the mountain shrublands are primarily a result of disturbance. The disturbance may be low-intensity but chronic (e.g. soil erosion and snow-creep), or high-intensity and acute (e.g. high-severity fire). It is stressed, however, that these are hypotheses, and that the exact reasons for the occurrence of shrubland in many places are simply not understood.

One place where there is some specific information on the history and long-term dynamics of mountain shrublands is in Mesa Verde National Park. Shrublands of Gambel oak and Utah serviceberry dominate the upper portions of the Mesa Verde cuesta (above about 1700 m),

while the lower portions of the cuesta are mostly pinyon-juniper forest. Floyd et al. (2000) determined that the fire turnover time in the shrublands (the time required to burn an area equal to the total extent of shrubland) was about 100 years, whereas the turnover time for the pinyon-juniper forest was about 400 years. Pinyon-juniper forest requires 300+ years to recover after fire (Erdman 1970), whereas burned shrublands recover within a decade or two (Floyd et al. 2000). Thus, it appears that the shrublands on Mesa Verde are maintained in large part by periodic fire. If fire were excluded for 300+ years, then the pinyon-juniper forest probably could expand into the areas now dominated by shrubland, since scattered pinyon and juniper trees do grow in this area today. However, such a long period without fire is highly unlikely. Indeed, Floyd et al. (2000) found that the cumulative area burned in Mesa Verde during the second half of the 20th century (when the policy was total fire suppression) was about the same as the cumulative area burned in the second half of the 19th century (when no fire suppression was attempted).

LAWS, PLANS, POLICIES AND AUTHORITIES

Existing Regulations, Guidance, and Plans

The following regulations and guidance documents related directly to completion of an FMP and EA for the parks:

- National Environmental Policy Act (NEPA) - The purpose of NEPA is to encourage productive and enjoyable harmony between man and his environment; to promote efforts that will prevent or eliminate damage to the environment and stimulate the health and welfare of mankind; and to enrich the understanding of the ecological systems and natural resources important to the Nation.

- Director's Order-12 (DO-12) - The NPS guidance for Conservation Planning, Environmental Impact Analysis, and Decision Making. DO-12 states the guidelines for implementing NEPA according to NPS regulations. DO-12 meets all Council on Environmental Quality (CEQ) regulations for implementing NEPA. In some cases, NPS has added requirements under DO-12 that exceed the CEQ regulations (e.g., completing an Environmental Screening Form or ESF).

- National Historic Preservation Act (NHPA 36CFR800) – Requires federal agencies to consider effects of their proposed action on cultural resources. It also addresses implementation regulations that go on to direct agencies to minimize or eliminate those impacts when possible. There also are guidelines for implementing projects that will damage or destroy cultural resources.

- NPS Organic Act of 1916 - Congress directed the U.S. Department of the Interior and NPS to manage units "to conserve the scenery and the 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" (16 U.S.C. § 1). Congress reiterated this mandate in the Redwood National Park Expansion Act of 1978 by stating that the National Park Service must conduct its actions in a manner that will ensure no "derogation of the values and purposes for which these various areas have been established, except as may have been or shall be directly and specifically provided by Congress" (16 U.S.C. § I a-1).

- Director's Order-18 (DO-18) - The NPS guidance for Wildland Fire Management states, "Every NPS unit with burnable vegetation must have an approved Fire Management Plan". DO-18 states what an approved FMP must include elements such as, "firefighter and public safety is the first priority" and the promotion of "an interagency approach to managing fires on an ecosystem basis across agency boundaries". Procedures for completion, review, approval, and required contents for FMPs are provided in Reference Manual-18 (RM-18). Until an FMP is approved, NPS units must take an aggressive suppression action on all wildland fires.

- Colorado River Storage Project Act (Public Law 84-485) – The Wayne N. Aspinall Unit, formerly known as the Curecanti Unit, was authorized by the Colorado River Storage Project Act of 1956, as amended. The Act initiated the comprehensive development of water resources of the Upper Colorado River Basin. The purposes of the Act include regulating the flow of the Colorado River; controlling floods; improving navigation; storing and delivering water for reclamation of land and other beneficial purposes; improving water quality; providing for public recreation; improving conditions for fish and wildlife; and generation and sale of electrical power. The USBR has overall responsibility for the project, and operates and maintains the dams, powerplants, and related facilities. Since 1977, WAPA has operated and maintained the power transmission system and has marketed the power generated at the Wayne N. Aspinall Unit. In 1965, the NPS entered into an agreement with USBR to construct and manage recreational facilities and to manage natural and cultural resources and recreation on and adjacent to the reservoirs. The area then became known as Curecanti National Recreation Area or NRA. The NRA is currently identified by an administrative boundary that has not been established by legislation.

- Memorandum of Agreement between the Bureau of Reclamation and National Park Service Relating to the Development and Administration of Recreation on the Curecanti Unit, Colorado River Storage Project (1965) – Under Article II, Functions of the National Park Service, the NPS shall be responsible for “10. Such other functions as are reasonably related to, or necessary for, its administration of the project area.”

- Black Canyon of the Gunnison National Park and Gunnison Gorge National Conservation Area Act of 1999 (Public Law 106-76), as amended by The Black Canyon of the Gunnison Boundary Revision Act of 2003 (Public Law 108-128) – Instructs that “The Secretary shall administer the park in accordance with this Act and laws generally applicable to units of the National Park System, including the Act entitled “An Act to establish a National Park Service, and for other purposes”, approved August 25, 1916 (16 U.S.C. 1, 2-4), and the Act entitled “An Act to provide for the preservation of historic American sites, buildings, objects, and antiquities of national significance, and for other purposes”, approved August 21, 1935 (16 U.S.C. 461 et seq.).

In addition to the regulations and orders listed above, other regulations and policies guide the assessment of impacts. These are listed below, by impact topic:

Air Quality

- Federal Clean Air Act (CAA) and CAA Amendments of 1990 – includes national ambient air quality criteria; states that federal land managers have an affirmative responsibility to protect air quality-related values from adverse impacts.

- NPS Management Policies (2001) – defines how the National Park Service will meet its park management responsibilities under the 1916 NPS Organic Act.

Soils

- NPS Management Policies (2001) – defines how the National Park Service will meet its park management responsibilities under the 1916 NPS Organic Act.

Unique or Important Vegetation Communities

- NPS Management Policies (2001) – defines how the National Park Service will meet its park management responsibilities under the 1916 NPS Organic Act.

Water Quality

- Clean Water Act/Regulations – provides national recommended ambient water quality criteria and calls for no degradation of the nation's surface waters.
- Colorado Water Quality regulations – includes designated uses and water quality standards for those uses, plus non-degradation standard.
- Wild and Scenic Rivers Act – provides for designation and protection of wild, scenic and recreational rivers.
- NPS Management Policies (2001) – defines how the National Park Service will meet its park management responsibilities under the 1916 NPS Organic Act.

Wetlands and Floodplains

- Executive Order 11990 – provides for the protection of wetlands.
- Executive Order 11988 – provides for the protection of floodplains.
- Rivers and Harbors Act – prohibits the unauthorized obstruction or alteration of any navigable waters of the United States.
- Clean Water Act and Section 404 regulations – provides for the protection of wetlands and waters of the U.S.
- NPS Management Policies (2001) – defines how the National Park Service will meet its park management responsibilities under the 1916 NPS Organic Act.

Species of Special Concern

- NPS Management Policies (2001) – defines how the National Park Service will meet its park management responsibilities under the 1916 NPS Organic Act.
- Colorado Department of Wildlife – maintains state list of endangered and threatened and sensitive species.

Threatened and Endangered Species

- Endangered Species Act/Section 7 – provides for listing and protection of endangered and threatened species and their critical habitat; requires consultation under Section 7 if any listed species may be affected.
- Colorado Department of Wildlife – maintains state list of endangered and threatened and sensitive species.

Cultural Resources

- National Historic Preservation Act/Section 106 – requires federal agencies to consider the effects of their proposed action on cultural resources.
- Archeological Resources Protection Act – provides for the protection of archeological resources on public lands.
- Executive Order 13007 – provides for the protection of Indian sacred sites.
- NPS Director's Order #28 – defines how the NPS will protect and manage cultural resources in its custody in accordance with the NPS Management Policies.
- NPS Management Policies (2001) – defines how the National Park Service will meet its park management responsibilities under the 1916 NPS Organic Act.

Recreation Resources/Visitor Use and Experience

- NPS Management Policies (2001) – defines how the National Park Service will meet its park management responsibilities under the 1916 NPS Organic Act.

Socioeconomics

- NPS Management Policies (2001) – defines how the National Park Service will meet its park management responsibilities under the 1916 NPS Organic Act.

Project's Relationship to Other Plans, Policies, and Actions

NPS Plans and Policies

Plans and policies that are already in effect within the parks must be considered in developing this FMP and EA. Consistency with these plans and policies must be ensured. BLCA and CURE are currently operating under a General Management Plan adopted in 1997. This plan provides a "long-range management program for the continued protection of the unique resources found with Black Canyon of the Gunnison National Park and Curecanti National Recreation Area." The FMP proposed in this EA would be consistent with this statement.

Other Plans, Policies, and Actions

Several other plans, policies, or actions may affect or be related to fire-related activities at the parks or the decision for the FMP and EA. These include existing and reasonably foreseeable actions for BLM and other agencies, or private actions. These actions were considered in developing the FMP and in conducting the cumulative impact analysis.

- The following plans were identified as being relevant to the development of this EA:
- The BLM has an existing *Fire Management Plan (2002)*, which provides a framework for wildland fire management based on site-specific conditions, and which will compliment the FMP for BLCA and CURE.
- The USFS has an existing *Fire Management Plan (2002)*, which provides a framework for wildland fire management based on site-specific conditions, and which will also compliment the FMP for BLCA and CURE.

OBJECTIVES OF FIRE MANAGEMENT AND PLANNING

The following terms will be used as defined below in all subsequent documents relating to the FMP and EA:

Goal- The end toward which effort is directed. The purpose of the plan.

Objectives- Specific, measurable statements of purpose that answer the question; "What must be accomplished for the project to have a high degree of success?" Each action alternative must meet the objectives for the project to a large degree. For example, to develop objectives, one must ask, "Given the Park's fire-related issues, enabling legislation, statement for management, purpose, and significance, what are the resource management objectives for fire?"

Strategy- How each objective and/or goal will be accomplished, including the specific steps that will be taken to accomplish the desired end result. The term "strategy" is synonymous with "action".

The following are goals, objectives and strategies introduced, discussed, and slightly modified at the December 2003 Interdisciplinary Team (ID Team) meeting:

Goal 1. Provide for firefighter and public safety.

Objective: To ensure safety both to the firefighters as well as the public by using safe and well planned tactics.

Strategies

1. Keep park visitors, NPS neighbors, including USBR and Uncompahgre Valley Water Users Association (UVWUA), WAPA, and local residents informed.
2. Impose NPS property closures.
3. Risk Management Process – Situational Awareness
4. Make sound and timely decisions.
5. Follow the Ten Standard Fire Orders.
6. Ensure LCES (Lookout, Communication, Escape Routes, Safety Zones) procedures are followed.
7. Ensure only qualified firefighters respond to wildland fires.
8. Identify hazard areas and restrict firefighting actions within these areas.

Goal 2. Protect public and private developments and natural and cultural resources.

Objective: To protect public and private developments and natural and cultural resources from undesirable fires using initial attack as the preferred appropriate management response. Use fire management practices that minimize damage to sensitive areas.

Strategies

1. Designate fire management units (FMUs) that allow fire to be managed across jurisdictional boundaries.
2. Identify resources that could be damaged by fire and develop strategies to address potential impacts.
3. Ensure that a park service employee who is knowledgeable of the park plan and surrounding areas is assigned to the fire as a Resource Advisor to the Incident Commander (IC).
4. Employ Minimum Impact Suppression Tactics (MIST).
5. Employ hazardous fuels reduction measures (prescribed fire, manual/mechanical, or chemical treatmenst) to manage hazard fuels.
6. Develop interagency rehabilitation plans.
7. Prioritize actions in the FMUs for budgeting purposes.

Goal 3. Create and maintain cooperative agreements both with government agencies and neighboring private landowners.

Objective: To establish interagency agreements which include annual meetings to review operating plans. To create a relationship with neighboring private landowners.

Strategies

1. Use interagency management for wildland fires across mutual boundaries with the BLM, USFS, USBR, Montrose and Gunnison County Sheriff's Office and Colorado State Forest Service (CSFS).
2. Create a database of neighboring private landowners, cataloging those who will allow a fire on their property and those who will not. If possible, identify possible goals and objectives of landowners that might complement or be compatible with park goals and objectives.
3. Conduct annual meetings with the participating interagency groups, which should be attended by appropriate management personnel.

Goal 4. Employ wildland fire use (WFU; wildland fire for resource benefits) and prescribed fire where and when appropriate as a tool to meet resource management objectives.

Objective: Use fire to maintain or restore, whenever possible, those ecological conditions and functions that would prevail if it were not for a history of immediate fire suppression.

Strategies

1. Employ WFU or prescribed fire to reduce woody vegetation encroachment, increase native plant diversity, reduce exotic species, and reduce surface fuel loading.

2. Implement fire management actions that result in mosaic patterns of vegetation, which protects the integrity of watersheds.
3. Monitor the effects of fire on the ecosystem to allow for adaptive management in developing prescribed fire prescriptions.

Goal 5. Employ post-fire rehabilitation strategies to protect resources.

Objective: Use appropriate stabilization and restoration techniques to mitigate negative impacts of wildland fire.

Strategies

1. Employ techniques that avoid the introduction of non-native and noxious species.
2. Employ a 'no action' strategy when appropriate.
3. Determine when impacts are either very minor or temporary in nature.
4. Develop interagency plans, including using the interagency rehabilitation handbook.

THE PLANNING PROCESS

Planning Team and Scoping

To develop the FMP and EA for BLCA and CURE, an ID Team was formed with participants from the NPS staff at BLCA and CURE, faculty, staff and students from the University of Wyoming (UW) and Colorado State University (CSU), and personnel from the BLM and USBR. This team represents a wide range of expertise, including forest and fire ecologists, numerous NPS resource specialists, archaeologists, Fire Management Officers (FMOs), and Geographic Information System (GIS) specialists.

An internal scoping meeting was held to discuss fire management options at BLCA and CURE in order to develop a FMP and associated NEPA document. The purpose of the meeting was to partially fulfill the requirements of NEPA and NPS Director's Order-12 (DO-12) by allowing NPS staff and other participants from UW, CSU, and the BLM to confirm the Purpose and Need for action; identify fire-related issues and concerns; complete the NEPA Environmental Screening Form; create objectives for taking action; and develop preliminary alternatives. Because BLCA and CURE are surrounded by other federal and private lands, a representative from the BLM was in attendance at the internal scoping meeting held on December 2, 2003, at the Elk Creek NPS facility near Gunnison, Colorado.

External scoping was also conducted through meetings and conversations with various private groups and agencies, including the U.S. Fish and Wildlife Service (USFWS), State Historic Preservation Office (SHPO), and local Native American tribal groups. In addition, a Public Scoping Brochure (Appendix E) and press release was distributed to the general public, providing notice that the EA and FMP document preparation process was beginning and inviting public comment on same. Response to the Public Scoping Brochure sent out to approximately 600 addresses is addressed in the Consultation/Coordination section of this EA.

Issues and Impact Topics Evaluated in the EA

An "issue" describes an environmental problem and the relationship between the resources and the actions. Nineteen critical issues associated with the development of a FMP for the parks were identified from a potential list of 28 contained in the Environmental Screening Form, and were discussed during the internal scoping meeting held by the ID Team during December, 2003. These 19 issues were revisited during a subsequent ID Team meeting in April, 2004 and were regrouped into 14 impact topics for inclusion in the EA document. These impact topics are listed below, followed by brief statements identified during the internal scoping session for each. Each of these topics is more completely discussed in the "Affected Environment" section, and all are analyzed in the "Environmental Consequences and Impact Analysis" section.

1. Geology, Soils, and Paleoentological Resources

Fires of varying intensity may affect vegetation and therefore result in increased streambed erosion. Fire suppression methods may also have undesirable effects; e.g., through the use of retardants. High-severity fires may have an adverse effect on soil properties and paleoentological resources.

2. Air Quality

The Black Canyon Wilderness is a Class I Air Quality Area. Emissions from fires may degrade air quality below federal, state, or local air quality standards and regulations, and may adversely impact visitor enjoyment. Also, exhaust from combustion of gasoline and diesel-powered fire-fighting equipment may temporarily impact visitor enjoyment.

3. Water Quality

Increases in overland flow and the subsequent increase in water quantity may be a result of a reduction in vegetation. Also, increased water flow could affect hanging gardens, springs, and seeps.

4. Floodplains and Wetlands

Burning and removal of vegetation, which often serves to absorb the energy of floodwaters, may result in changes in streamflow characteristics.

5. Land Use

Grazing allotments, USBR and/or WAPA facilities may be impacted by fire, or by suppression efforts. Current and future housing development on adjacent lands also could be impacted by fire management.

6. Species of Special Concern - Wildlife

Several species of special concern exist within the boundaries of the parks, such as sage-grouse (*Centrocercus minimus*) and cutthroat trout (*Oncorhynchus clarki pleuriticus*). Elevated noise from fire-fighting operations could have an effect on these species, as well as direct removal of habitat.

7. Species of Special Concern – Threatened, Endangered, and Candidate Species

Several threatened, endangered, and candidate species exist within the boundaries of the parks. Elevated noise from fire-fighting operations, and changes to habitat as a result of wildland fire, prescribed fires, or fuels reduction activities could have an effect on these species.

8. Unique or Important Vegetation Communities

Many vegetation communities within BLCA and CURE are considered to be either unique or important habitat. Examples include hanging gardens, mature and old-growth pinyon-juniper forests, and reintroduction sites for native Colorado cutthroat trout. In addition, the Black Canyon hosts Gold Medal Fishery waters. Fire management activities may result in a loss or alteration of unique vegetation communities affecting species composition, wildlife habitat, and erosion.

9. Introduce or Promote Non-Native Species

Disturbance or removal of native vegetation could lead to unintentional spread and establishment of non-native plant species already in the area as well as those transported in or on fire-fighting equipment or brought on site during rehabilitation efforts.

10. Recreation Resources / Visitor Use and Experience

Visitor use may be impacted by fire or fire management actions. Economic impacts on neighboring communities could also occur. Trail closures and other closures up to and including park closure due to fire activities may be required.

11. Cultural Resources

Some late pre-historic and early historic wood structures may be impacted by any type of fire and smoke. Other resources such as surface artifact scatters and hearths may be affected by fire suppression activities. Loss of vegetation creates increased visibility, which may lead to increased loss of resource. Surface and ground fires involving heavy fuels may cause damage to subsurface artifacts.

12. Socioeconomics

This topic includes both positive and negative impacts on local economies. For example, during a large fire, crews may use lodging and restaurants in nearby towns, providing revenue. Loss of tourist revenue may be offset by fire activity. Impacts to public health

and safety are also included. However, impacts are likely to be temporary and relatively minor. Impacts of traffic on local communities, including closing highways, may occur.

13. Energy Resources and Other Agency or Tribal Land Use Plans or Policies

Hydroelectric facilities locations, along with irrigation facilities or other facilities related to USBR energy resources will influence respective FMU prescriptions. Wildland fire impacts should also be considered. Policies and plans from the BLM, USFS, USBR, WAPA, CDOW, and the Ute Mountain Ute Tribe will be considered during fire planning and implementation. In addition, private landowners may also be consulted during fire planning and implementation. The ID Team is already working with the BLM to assure that the fire planning process is complementary and does not conflict at area boundaries. In some cases, agreements may be made with private landowners during the planning process and/or implementation phase.

14. Wilderness and Soundscapes

The BLCA and the bordering Gunnison Gorge National Conservation Area (NCA) both contain designated Wilderness Areas. CURE has never had a Wilderness Suitability Study. However, there is presently a legislative proposal that, if enacted, would expand the West Elk Wilderness to include land within CURE. Any WFU or prescribed fire in Wilderness Areas will be subject to the minimum tool requirement of The Wilderness Act. Vehicles and aircraft used during fire suppression activities may impact the "quietness" of the parks, especially in the Black Canyon Wilderness. Potential impacts on adjacent landowners must also be considered.

Issues and Impact Topics Considered but not further Addressed in this EA

Several issues and impact topics were considered during the initial ID Team internal scoping meeting, but were eliminated from further analysis in the EA. Some issues were subsequently combined with other issues. The following issues were discussed and dismissed, either because they do not apply or because they were combined with other topics:

- **Geohazards** – No issues pertaining to geohazards in the parks were identified that would be of sufficient concern to warrant inclusion in the EA.

- **Streamflow characteristics** – This is addressed in the section on Floodplains and Wetlands.

- **Unique ecosystems, biosphere reserves, World Heritage sites** – Unique or important ecosystems are addressed elsewhere in the EA. There are no biosphere reserves or World Heritage sites in BLCA or CURE.

- **Minority and Low Income Populations** - Executive Order 12898, "General Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," requires all federal agencies to incorporate environmental justice into their missions by identifying and addressing disproportionately high and adverse human health or

environmental effects of their programs and policies on minorities and low-income populations and communities. The proposed action would not have disproportionately high or adverse health or environmental effects on minorities or low-income populations or communities as defined in the U.S. Environmental Protection Agency's (EPA's) Environmental Justice Guidance (1998). Therefore, environmental justice and minority and low income populations were dismissed as an impact topic in this EA."

- **Urban quality, gateway communities, etc.** – Impacts are addressed under other sections, such as air quality.

- **Pollution prevention (greening the parks)** – This topic is addressed elsewhere, specifically under air quality and water quality.

- **Prime and Unique Farmlands** - In August 1980, the Council on Environmental Quality (CEQ) directed that federal agencies must assess the effects of their actions on farmland soils classified by the U.S. Department of Agriculture's Natural Resources Conservation Service as prime or unique. Prime or unique farmland is defined as soil that particularly produces general crops such as common foods, forage, fiber, and oil seed; unique farmland is defined as soil that produces specialty crops such as fruits, vegetables, and nuts. There were no prime or unique farmlands located in or near the project site; therefore, the topic of prime and unique farmlands was dismissed as an impact topic in this EA.

- **Indian Trust Resources** – There were no Indian Trust Resources located in or near the project site; therefore, this topic was dismissed as an impact topic in this EA.

- **Sustainability and Long-Term Management -** The proposed action would not have an impact on sustainability or long-term management of the parks, therefore this topic was dismissed as an impact topic in this EA.

- **Ethnographic Resources, Cultural Landscapes, and Museum Objects** –After a review of historical information and consultation with the Cultural Resource Specialist, as well as with local tribes, ethnographic resources and cultural landscapes are not known to exist within BLCA or CURE, and are therefore not included in this analysis.
    - Museum objects will not be affected by any of the analyzed alternatives, and therefore will not be considered in this EA/AEF.

ALTERNATIVES

All alternatives considered for analysis must be consistent with the parks' purposes and objectives as stated in the GMP, and must meet the purpose and need for action, as well as the project's objectives. These alternatives must also be considered "reasonable", as defined by DO-12, Section 2.7, B, i.e., "...alternatives ... that are economically and technically feasible, and that show evidence of common sense." These considerations, along with input from ID Team members formed the basis of six alternatives that were developed for implementing a FMP for BLCA and CURE. Three of the alternatives were selected for analysis in this EA and are described below. The other three alternatives were discussed and dismissed; a description of these alternatives, along with the reasons for their dismissal, is also found below.

ALTERNATIVES CARRIED FORWARD

Alternative A – No Action Alternative

This alternative includes full suppression and limited manual/mechanical fuel reduction to protect structures within BLCA and CURE boundaries only. This alternative is the current wildland fire management action at BLCA and CURE.

Alternative B – Natural Landscape Unit Alternative

Under this alternative, fire management within each FMU would be based on natural landscape conditions, rather than agency or other land management or ownership boundaries. Fire and fire management prescriptions would be allowed to cross the BLCA and CURE boundaries with USFS and BLM lands when agreed by both parties, as well as some designated adjacent private lands, and, whenever possible, the NPS, BLM, and USFS would coordinate actions. Various prescribed fire and fuels management activities would also be permitted in appropriate areas within the parks, including manual/mechanical treatment and prescribed fire to reduce fuel loading in identified management units. In addition, WFU would be permitted in units identified for managed wildland fire. This alternative was developed to allow for flexibility in selecting the types of fire-related activities used at BLCA and CURE, in addition to meeting the objective of developing an interagency plan that addresses fire management on all NPS, BLM, USFS, BOR, and CDOW lands. The two main components of this alternative include the following:

(1) Naturally ignited fires would either be suppressed or allowed to burn under a plan for WFU that will be detailed in the FMP for BLCA and CURE. Local fire and drought conditions, resources and funding, public safety, and smoke conditions would be considered in deciding whether or not to allow WFU. *All* unplanned human-caused fires would be suppressed.

(2) Fuels reduction methods would be used as appropriate throughout the parks, including use of prescribed fire and manual/mechanical thinning.

The intent of any fuel reduction effort is to reduce the intensity of wildland fires to levels that enable fires to burn without damaging important park resources and values, and to reduce the hazard to firefighting resources involved in fire management activities. The fuels management treatments would include, but not be limited to, manual/mechanical vegetation cutting and removal from sensitive areas, pile burning, and selective, low-intensity prescribed fire.

Under this alternative, manual/mechanical thinning, prescribed fire, and WFU would be used in the following areas and situations:

(1) Manual/mechanical fuel reduction (thinning) – this prescription would be used in areas that have heavy fuels accumulation and cultural resources and/or other values that could be adversely affected by prescribed burns or wildland fire. This prescription would include hand clearing of brush, and hand cutting or limbing of selected trees with chainsaws. Vegetation would be disposed of in select areas by chipping with a mechanical chipper, scattering of smaller brush and trees on site away from sensitive resources, pile burning of slash, and/or hauling from the site for disposal outside the parks. Manual thinning could be prescribed in the following areas:

- High Point piñon-juniper woodlands – several mature trees in the High Point area have become infested with bark beetles and mortality of many trees has occurred. These standing dead and dying trees create unusually heavy fuel loads and manual thinning in these areas could be appropriate.
- In or around sites where important archaeological resources have been identified.
- In or around park facilities such as South Rim Visitor Center, Housing, Office space and Maintenance area, and North Rim Ranger Station.

(2) Selective prescribed fire – this prescription would be used only in areas of the park containing fewer values at risk and lower fuel loading, or in areas where satisfactory fuels treatments have already been completed. In all cases, a site-specific prescribed fire plan would be completed, and coordination with the BLM, USFS, USBR and WAPA personnel would occur.

(3) Wildland fire use for resource benefit – WFU may be considered in appropriate management units, assuming that park values at risk are adequately protected from damage from the fire or fire management activities. These activities would be in coordination with and approved by the NPS.

Alternative C – Park Boundary Alternative

This is the same as Alternative B, except that fire management activities are permitted only within BLCA and CURE boundaries. No fire management activities, including prescribed fire and FMP, are permitted to extend into or out of adjacent public or private lands.

ALTERNATIVES CONSIDERED BUT DISMISSED

The following three alternatives were dismissed from further consideration because they did not meet the Purpose and Need for the project; were not feasible; resulted in substantial environmental or health and safety impacts; or did not meet the objectives for the project, particularly the objective of interagency coordination between the NPS and the BLM.

Alternative D – No Management Alternative

This alternative would not permit any fire management activities within BLCA and CURE boundaries, including fuels reduction, WFU, prescribed fires, or any other fire-related management techniques. Wildland fires would not be suppressed, but allowed to burn until they extinguish naturally or approach the park boundaries, where they would be suppressed before extending onto adjacent public or private lands. This alternative does not meet the park objectives as outlined in the GMP, nor does it provide for public and firefighter safety.

Alternative E – Park Boundary Mechanical Treatment Alternative

This is the same as Alternative C, except that the only type of fire-management activity allowed would be manual or mechanical treatment of vegetation to reduce fuel. No prescribed fires would be permitted and all wildland fires would be aggressively suppressed. This activity would only be allowed within BLCA and CURE boundaries and not allowed to cross into or out of adjacent public or private lands. This alternative does not meet the park objectives as outlined in the GMP. Aggressive fire suppression tactics increase the risk to firefighters. This alternative is also in contradiction to mandates contained within the National Fire Plan that encourage interagency cooperation.

Alternative F – Use of Herbicidal Treatment for Fuels Reduction Alternative

This is the same as Alternative E, except that the only type of fire management activity allowed would be the application of herbicides to reduce the growth of vegetation that would eventually accumulate as fuel. This activity would only be allowed within BLCA and CURE boundaries and not allowed to cross into or out of adjacent public or private lands. This alternative does not meet the park objectives as outlined in the GMP, specifically Goal #4, preservation of natural resources.

MITIGATION INCLUDED IN THE ALTERNATIVES CARRIED FORWARD

All three alternatives considered in this analysis would be implemented using all appropriate mitigation and best management practices in order to minimize impacts to natural, cultural, and human resources. The following measures would be followed in

implementing the alternatives carried forward and should be considered as part of the alternatives for purposes of impact analysis.

Mitigation Included in Alternative A - No Action Alternative

In conducting full suppression activities under the No Action alternative, these measures would be followed to provide for protection of resources and human health:

Natural Resources

- Use necessary and appropriate erosion control measures to prevent erosion of disturbed soils.
- Keep fire lines to a minimum width necessary to allow burnout or backfiring, or creation of a safe blackline.
- Whenever possible, use natural barriers to avoid unnecessary fire line construction.
- If adequate water and pumps are available, use wet lines instead of hand line construction.
- Rehabilitate and restore all fire lines, camps, and other disturbances.

Cultural Resources

- Educate fire personnel about cultural resources in general and the need to protect any cultural resources encountered. This would include instructions for notifying appropriate personnel if human remains or previously unidentified cultural resources were discovered.
- Use protective tactics in areas identified by the Cultural Resource Specialist as having cultural significance, either archaeological or historical.
- Locate and isolate sites that are vulnerable to fire or to fire suppression activities, and flag known sites for avoidance.
- Do not use retardant unless approved by the Superintendent.
- Minimize ground disturbance when possible.
- A Resource Advisor will be assigned to every fire.
- Conduct post-fire cultural resources surveys to identify and evaluate newly discovered sites and/or document damage to known sites as funding allows.
- Develop a plan to ensure stabilization or information retrieval from cultural resources in burned areas.

Mitigation Included in Alternative B - Natural Landscape Unit Alternative, and Alternative C - Park Boundary Alternative

In conducting suppression, WFU, prescribed fire and thinning activities under Alternative B and C, these measures would be followed (in addition to those listed under Alternative A) to provide for protection of resources and human health. Mitigation measures that address cross-boundary issues would not be relevant for Alternative C; however, all other measures are deemed appropriate.

Natural Resources

- Follow smoke management reporting procedures for burning in Colorado for all prescribed fire operations and WFU.
- Employ MIST when firefighter safety is not compromised.
- Do not allow use of heavy equipment unless approved by the Superintendent.
- Use refueling stations with ground protection for refueling firefighting equipment to minimize chances of gasoline spills, and do not conduct equipment maintenance or fueling in wetlands.
- Do not use retardant unless approved by the Superintendent.
- Do not move slash from upland sites into a wetland or place slash in open water.
- Implement any fuels management programs outside the breeding seasons of threatened, endangered or sensitive species. Where the presence of any listed endangered or threatened species is suspected, the NPS Resource Management Specialist would be consulted as to the need for surveys to determine species occupancy. If species are found, steps would be taken to reduce impacts, including avoidance of breeding or nesting seasons. USFWS would be contacted to ensure that appropriate and effective mitigation is provided.

Cultural Resources

- Brief work crews about the need to protect any cultural resources encountered, and instruct them regarding the illegality of collecting artifacts on federal lands. This would include instructions for notifying appropriate personnel if previously unrecorded cultural resources were discovered.
- Prior to prescribed burns or mechanical thinning, conduct an inventory of any previously unsurveyed areas using an archaeologist who meets the Secretary of the Interior's standards.
- Follow protection and mitigation measures for known cultural resource sites, especially those vulnerable to fire and situated in or near the project area, before a prescribed fire project is initiated.
- Use or have available an archaeologist as a resource advisor in the implementation of all projects where cultural resources are involved.
- Do not use retardant unless approved by the Superintendent.
- Cut heavy fuels (stumps) that could not be removed from cultural sites flush with the ground.
- Define work limits in the vicinity of important cultural resources.
- Monitor fire management activities, and halt work, when possible, if previously unknown resources are located.
- Protect and record newly discovered resources.
- Identify suitable slash disposal areas lacking cultural resources.
- Avoid ground-disturbing activities in areas containing cultural sites.
- Use non-sensitive routes for vehicle access, and conduct cultural resources work in consultation with the Colorado SHPO on a project-by-project level.

Socioeconomics Resources

- Consider safety of personnel and the public as the highest priority for all fire management activities.
- Do not initiate any fire management operations until all personnel involved receive a safety briefing describing known hazards and mitigating actions, current fire season conditions, and current and predicted fire weather and behavior.
- Notify park neighbors, park visitors, and local residents of all planned and unplanned fire management activities that have the potential to impact them.

ENVIRONMENTALLY PREFERRED ALTERNATIVE

The environmentally preferred alternative is the alternative that will promote the national environmental policy as expressed by NEPA. This includes alternatives that:

(4) fulfill the responsibilities of each generation as trustee of the environment for succeeding generations

(5) assure for all generations safe, healthful, productive, and esthetically and culturally pleasing surroundings

(6) attain the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences

(7) preserve important historic, cultural and natural aspects of our national heritage and maintain, wherever possible, an environment that supports diversity and variety of individual choice

(8) achieve a balance between population and resource use that will permit high standards of living and a wide sharing of life's amenities

(9) enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources

Environmentally preferable is defined as "the alternative that will promote the national environmental policy as expressed in the NEPA's §101. Ordinarily, this means the alternative that causes the least damage to the biological and physical environment; it also means the alternative which best protects, preserves, and enhances historic, cultural, and natural resources" (CEQ 1978).

Alternative A represents the current fire management direction for BLCA and CURE. It is based on a policy of suppression of all fires, and limited fuels reduction is performed only within the boundaries of BLCA and CURE. Because Alternative A does not include a broader approach to fuel reduction, and therefore does not provide for protection against catastrophic wildland fire, provisions 1, 2, 3, and 4 of the NEPA goals are not fully realized. Although Alternative A would provide some degree of protection of cultural resources, particularly historic and park structures, this alternative would not result in the same continued level of protection over time. Also, catastrophic wildland fire that would be more likely under Alternative A would endanger the quality of the renewable resources of BLCA and CURE (provision 6).

The environmentally preferable alternative is satisfied by Alternative B, because this alternative surpasses Alternative A in realizing the full range of national environmental policy goals as stated in §101 of the NEPA, and surpasses Alternative C because of the cross-boundary, broader-scale, more multi-jurisdictional approach . Although Alternative A may achieve greater immediate levels of protection for cultural resources, natural resources, or visitor experiences, Alternative B (1) provides a high level of protection of

natural and cultural resources for the long-term; (2) maintains an environment that supports diversity and variety of individual choice; and (3) integrates resource protection with an appropriate range of visitor uses. It fulfills the responsibility of each generation to protect the environment for future generations (provision 1) and the actions included in Alternative B help to better assure safe and productive surroundings (provision 2) and the quality of renewable resources (provision 6).

SUMMARIES OF ALTERNATIVES

The following tables provide comparative summaries of the features of the alternatives (Table 1), and how well they meet the project objectives (Table 2).

Table 1 - Comparison of Alternatives

Component	Alternative A: No Action	Alternative B: Natural Landscape Unit	Alternative C: Park Boundary
• Wildland Fire Use	• Not permitted – all fires are suppressed.	• Permitted in accordance with BLCA/CURE FMP and for some fuel reduction purposes, if appropriate.	• Permitted in accordance with BLCA/CURE FMP and for some fuel reduction purposes if appropriate; within NPS boundaries only.
• Prescribed Fire	• Not permitted.	• Permitted in limited situations for fuel reduction or other ecological prescriptions.	• Permitted in limited situations for fuel reduction or other ecological prescriptions; within NPS boundaries only.
• Fuel Reduction – manual thinning, including slash disposal or pile burning	• Limited.	• Thinning would be done in areas with sensitive natural or cultural resources and/or prior to prescribed burns in areas of heavy fuel load.	• Thinning would be done in areas with sensitive natural or cultural resources and/or prior to prescribed burns in areas of heavy fuel load, within NPS boundaries only.
• Fire allowed to cross monument/ wilderness boundary	• No.	• Yes, with interagency coordination and any required NEPA compliance.	• No.

Table 2 - How Each Alternative Meets Project Objectives

Objective	Alternative A: No Action	Alternative B: Natural Landscape Unit	Alternative C: Park Boundary
To ensure safety both to the firefighters as well as the public by using safe and well planned tactics.	• Meets objective to some degree, but does not preclude occurrence of catastrophic wildfire and potential major health and safety impacts.	• Meets objective; includes fuels management program to lessen the possibility of catastrophic wildfire.	• Meets objective to some degree; includes fuels management program to lessen the possibility of catastrophic wildfire, but only within NPS boundaries.
To protect public and private developments from undesirable fires using initial attack as the preferred appropriate management response. Use fire management practices that minimize damage to sensitive areas.	• Does not meet objective; does not allow fires or post-fire rehabilitation efforts to be managed across jurisdictional boundaries; does not allow for prescribed fires and fuel reduction activities.	• Meets objective; includes fuels management program and cross boundary management and decision making for fires and post-fire rehabilitation.	• Meets objective to some degree but does not include cross boundary management and decision making.
To establish interagency agreements which include annual meetings to review operating plans. To create a relationship with neighboring private land owners.	• Does not meet objective to a large degree; would continue current level of interagency and public cooperation but would not provide for planning and activities across jurisdictional boundaries.	• Meets objective; provides for interagency agreements and establishment of cooperation with neighboring landowners.	• Does not meet objective to a large degree; does not provide for cross boundary management and decision making.
Use fire to maintain or restore, whenever possible, those ecological conditions and functions that would prevail if it were not for a history of immediate fire suppression.	• Does not meet objective to large degree because all fires are suppressed.	• Meets objective; provides for prescribed fires and opportunity for some wildland fires to be allowed to burn.	• Meets objective to a large degree but does not allow prescribed fires or other treatments to extend into or out of NPS boundaries.
Use appropriate stabilization and restoration techniques to mitigate negative impacts of wildland fire.	• Does not meet objective to large degree because no interagency cooperation or planning.	• Meets objective; provides for avoidance of non-native species introductions; develops interagency plans using BAER protocols.	• Partially meets objective, however no interagency cooperation or planning is possible.

Table 3 – Comparative Summary of Impacts

Impact Topic	Alternative A, No Action	Alternative B, Proposed Action	Alternative C, Proposed Action
Geology, Soils, and Paleontological Resources	Under Alternative A, minor to moderate, short-term and long-term, direct and indirect adverse effects would occur to soil resources from both suppression activities and higher severity wildland fires that would be more likely to occur. Cumulative impacts expected from Alternative A, would result in short- and long-term, minor to moderate, direct and indirect impacts to geological resources.	Under Alternative B there would be negligible to minor, adverse effects to soils, geological, and paleontological resources in the short term, with potential long-term benefits to soil chemistry and stability. Cumulative impacts of other actions in the parks, added to the adverse effects and benefits expected from Alternative B, would result in short- and long-term, minor, direct and indirect impacts to geological resources.	Alternative C could, depending upon local soil characteristics, lead to increases in erosion and therefore short-term, minor adverse changes in soil chemistry. Cumulative impacts would result in short- and long-term, minor to moderate, direct and indirect impacts to geological resources.
Air Quality	Alternative A would result in short-term, minor to moderate, indirect, adverse impacts to air quality and air quality-related values. Cumulative impacts of from Alternative A, would result in short-term, minor to moderate, direct and indirect impacts to air quality.	Under Alternative B, adverse impacts on air quality in BLCA, CURE and nearby areas would range from minor to moderate, but would be short-term and localized. However, fuel reduction efforts would help decrease the chance of a major or extensive wildfire, resulting in long-term beneficial effects that would offset the moderate, short-term, adverse effects to air quality. Cumulative from Alternative B, would result in short-term, minor to moderate, direct and indirect, adverse impacts to air quality, but could produce long-term, beneficial effects that would offset adverse affects.	Under Alternative C, adverse impacts on air quality in BLCA, CURE and nearby areas would range from minor to moderate, but would be short-term and localized near park boundaries. Fuel reduction efforts would help decrease the chance of a major or extensive wildfire, resulting in long-term beneficial effects that would offset the moderate, short-term, adverse effects to air quality. Cumulative from Alternative C, would result in short-term, minor to moderate, direct and indirect, adverse impacts to air quality, but could produce long-term, beneficial effects that would offset adverse affects.
Water Quality	Most adverse effects to water	Fuel reduction, WFU, and	Alternative C would also result in

	quality would be minor to moderate and short term, largely due to delayed impacts such as erosion, sediment deposition, and turbidity from runoff. Cumulative effects could result in minor to moderate direct and indirect adverse effects, depending on the extent and location of other activities in the area and whether or not these occurred at the same time.	prescribed fire activities would produce minor to moderate, adverse, short-term impacts to water quality. These activities would be planned to minimize erosion and sedimentation. These effects would cumulatively result in minor to moderate direct and indirect adverse effects, depending on the extent and location of other activities in the area and whether or not these occurred at the same time as WFU fires or other fire management activities.	short-term, minor to moderate adverse impacts to water quality and quantity through short-term increases in erosion and sedimentation. Cumulative impacts of other actions in the parks, added to the adverse effects and benefits expected from Alternative C, would result in short- and long-term, minor to moderate, direct and indirect impacts to water quality.
Floodplains and Wetlands	Alternative A continues suppression of all fires and no fuel reduction, creating an increased possibility for severe or extensive wildfires. Alternative A would result in short- and long-term, negligible to moderate adverse impacts to floodplains and wetlands, including changes in streamflow characteristics due to removing vegetation that absorbs the energy of flood waters. Cumulative impacts include short- and long-term, minor to moderate, direct and indirect impacts to floodplains and wetlands such as fluctuations in water level from dam regulation.	Under Alternative B, fuel reduction and prescribed fire activities would produce minor short-term impacts such as temporary reductions in herbaceous vegetation; however, these would be mitigated to minimize direct impacts by buffering wetland and riparian areas. Cumulative impacts of other actions in the parks, added to the adverse effects and benefits expected from Alternative B, would result in short- and long-term, minor to moderate, direct and indirect impacts to floodplains and wetlands.	Similar to Alternative B, under Alternative C, fuel reduction and prescribed fire activities would produce minor short-term, adverse impacts. The wetland and riparian areas would be buffered, and the overall affected area would be smaller in many cases because no activities would extend outside the NPS boundaries. Cumulative impacts of other actions in the parks, added to the adverse effects and benefits expected from Alternative C, would result in short- and long-term, minor to moderate, direct and indirect impacts to floodplains and wetlands.
Land Use	Under Alternative A, minor to moderate, short-term and long-term, adverse effects may occur to grazing resources from suppression activities and higher severity wildland fires that would be more likely to occur. Full fire suppression,	Alternative B may result in a short-term minor to moderate adverse effect through the removal of forage and other forms of vegetation, but can also result in a long-term, minor to moderate improvement in the quantity and quality of vegetation in	The impacts of Alternative C, would be similar to Alternative B, except that any harmful short-term effects of vegetation removal or beneficial long-term effects on forage quality would be restricted to lands within the park boundaries. Cumulative

	as would be implemented under Alternative A, could result in a long-term decrease in the quantity and quality of forage for grazing. Complete removal of fire may also reduce genetic diversity within plant populations by decreasing the opportunities for genetic recombinations that often occur during revegetation. Increased housing and industrial development near park boundaries will also impact land use.	subsequent years.	impacts of other actions in the parks would result in short- and long-term, minor to moderate, direct and indirect impacts to land uses, and would generally be localized near developed areas and areas of fire suppression activity near park boundaries.
Species of Special Concern – Wildlife	Alternative A would result in short-term, minor to moderate adverse impacts to wildlife. Increased fire suppression activities would likely result in more frequent displacement of wildlife. Also, extended periods of drought could affect forage or habitat areas for some species, and this condition could be exacerbated by wildland fire or fire suppression activities. These effects would cumulatively result in minor to moderate direct and indirect adverse effects on wildlife.	Under Alternative B, effects would be similar to those described for Alternative A except that in areas where wildland fires and prescribed fires are allowed to burn under Alternative B, there would be fewer effects from fire suppression activities. Cumulative impacts of other actions in the parks, added to the adverse effects and benefits expected from Alternative B, would result in short- and long-term, minor to moderate, direct and indirect impacts to wildlife, and would generally be localized near areas of fire use or fire management activity.	Alternative C would result in minor to moderate short-term impacts on big game, birds, fisheries, amphibians and snakes due to unavoidable effects of WFU, prescribed fires, and fuel reduction efforts. Mitigation would reduce many of the adverse impacts. Short- and long-term, minor to moderate, beneficial effects would result from habitat improvements following prescribed fire and non-fire treatments. Cumulative impacts of other actions in the parks, added to the adverse effects expected from Alternative C would result in short- and long-term, minor to moderate, direct and indirect impacts to wildlife, and would generally be localized near areas of fire suppression activity.
Species of Special Concern– Threatened, Endangered, and	Alternative A would result in short-term, minor to moderate adverse impacts to threatened, endangered, or candidate species. Cumulative	Alternative B would result in minor to moderate short-term adverse impacts to threatened, endangered, and candidate species, due to the	Alternative C would result in short-term, minor to moderate adverse impacts to threatened, endangered, and candidate species. For some

Candidate Species	impacts of other actions in the parks, added to the adverse effects expected from Alternative A, would result in short-term, minor to moderate, direct and indirect impacts to threatened and endangered species, and would generally be localized near areas of fire suppression activity.	unavoidable effects of WFU, prescribed fire, and fuel reduction activities. For some species, these prescriptions would result in short- and long-term beneficial habitat improvements. Long-term impacts from WFU can be beneficial for habitat improvement for many species, but could also displace some species during breeding or nesting seasons. Impacts from prescribed fires or fuel reduction efforts, however, would be minimized by spacing out these actions and coordinating them with other USFS or BLM actions, so as to avoid areas known to be important to any of the species whenever possible.	species, these prescriptions would result in short- and long-term beneficial habitat improvements. Cumulative impacts of other actions in the parks, added to the adverse effects and benefits expected from Alternative C, would result in short- and long-term, minor to moderate, direct and indirect impacts to threatened and endangered species, and would generally be localized near park boundaries and areas of fire use and fire suppression activity.
Unique or Important Vegetation Communities	Minor to moderate short-term and long-term adverse effects to some vegetation such as pinyon-juniper woodlands would occur under Alternative A, with continued fire suppression activities within the park boundaries. Cumulative impacts of other actions in the parks, added to the adverse effects expected from Alternative A, would result in short- and long-term, negligible to moderate, direct and indirect impacts to vegetation communities.	Under Alternative B, the short-term, direct, adverse impacts to vegetation would be minor and localized, but there would be short- and long-term beneficial impacts to vegetation in sagebrush shrublands and cottonwood galleries through re-introduction of fire into the system. Over time, use of wildland fire in all areas would result in both direct and indirect beneficial impacts to the vegetation communities in the area.	Under Alternative C, increased fire suppression activities along park boundaries, along with a reduction in effects from WFU, may result in short-term, minor to moderate adverse impacts on vegetative communities. In particular, sagebrush shrublands that are near the park boundaries may become more homogeneous over time if fires that start near park boundaries are not allowed to spread into or out of the parks. Cumulative impacts of other actions in the parks, added to the adverse effects expected from Alternative C, would result in short- and long-term, minor to moderate, direct and indirect impacts to vegetation communities.

Introduce or Promote Non-native Species	Alternative A, which suppresses all fires that occur inside park boundaries, would result in a short- and long-term increase in the promotion of non-native plant species. Fire suppression efforts may cause disturbed areas that are conducive to invasion by non-native plant species. Over time, continued fire suppression efforts could result in an increase in the spatial area inhabited by non-native species.	Alternative B will likely result in a minor, short-term increase in non-native plant species that will likely be replaced by native plants in a relatively short time. A decrease in fire suppression activities will result in fewer areas disturbed by fire fighting activities and machinery, which can destroy seed banks and other plant residuals. Cumulative impacts of other actions in the parks such as periodic road maintenance, added to the adverse effects and benefits expected from Alternative B, would result in short- and long-term, minor to moderate, direct and indirect increase in the introduction and establishment of non-native species, but would generally be localized near developed areas and areas of fire suppression activity.	Alternative C would be intermediate to Alternatives A and B, and could reduce the opportunities for establishment or spread of non-native plants, but increased fire suppression efforts could, near park boundaries, increase invasion by non-native plants. However, the increase in non-native plants would not be as severe as with Alternative A. Cumulative impacts of other actions in the parks such as periodic road maintenance, added to the adverse effects and benefits expected from Alternative C, would result in short- and long-term, minor to moderate, direct and indirect increase in the introduction and establishment of non-native species, but would generally be localized near developed areas and areas of fire suppression activity near park boundaries.
Recreation Resources/Visitor Use and Experience	Minor to moderate, short-term, direct impacts to recreational resources and visitor experiences would be expected under Alternative A because of the increased likelihood of fire management related activities while under a full suppression fire management approach. Alternative A could also result in minor to moderate, short-term, indirect, adverse effects to recreational resources and visitor experience. An increase in the frequency and intensity of wildland	Minor to moderate, short-term impacts to recreational resources and visitor experiences would be expected under Alternative B because of the increased likelihood of fire management related activities while suppressing some wildland fires and using prescribed fires. Adverse cumulative impacts under Alternative B could be less than under Alternative A, since remote WFU fires that are allowed to burn may not directly impact recreational resources or visitor experiences in	Minor to moderate, short-term impacts to recreational resources and visitor experiences would be expected under Alternative C because of the increased likelihood of fire management related activities while suppressing some wildland fires that originate outside the park boundaries. Cumulative impacts of other actions in the parks, added to the adverse effects expected from Alternative C, would result in short- and long-term, minor to moderate, direct and indirect impacts to

	fires could increase the potential for both direct and indirect impacts on visitor use and experiences within the parks.	the same way as fire fighting and other fire management activities.	recreational resources and visitor use and experience, and would generally be localized near park boundaries and areas of fire suppression activity.
Cultural Resources	Impacts to cultural resources under Alternative A are expected to be negligible to minor in the short term. However, a large, severe, uncontrollable fire is almost certain to occur eventually under this alternative, and such a fire may produce minor to moderate damage to *historic* cultural resources. Cumulative impacts of other actions in the parks, added to the adverse effects expected from Alternative A, would result in short- and long-term, minor to moderate, direct and indirect impacts to cultural resources	Under Alternative B, the short-term impact would be more frequent fires, but negligible to minor damage to cultural resources resulting from these fires. The long-term, beneficial impact would be a reduced hazard of large, severe, uncontrollable fires damaging cultural resources during extreme fire weather conditions.	Minor to moderate, short-term adverse impacts to cultural resources would be expected under Alternative C, because of the increased occurrence of wildland fires and prescribed fires within park boundaries, and the continued aggressive suppression of fires near boundaries. Cumulative impacts of other actions in the parks, added to the adverse effects expected from Alternative A, would result in short- and long-term, minor to moderate, direct and indirect impacts to cultural resources, and would generally be localized near park boundaries and areas of fire suppression activity.
Socioeconomics	Minor, short-term, adverse impacts to socioeconomic conditions would be expected under Alternative A, especially within park boundaries, because of the increased likelihood of fire management related activities while under a full suppression fire management approach. Long-term, minor to moderate adverse effects to socioeconomics could occur under this alternative if incidence of high severity wildfires increases. However, negligible to minor, beneficial impacts are likely in surrounding communities because	Some minor, short-term impacts to socioeconomic conditions would also be expected under Alternative B; however, these impacts would likely be less than those expected under Alternative A because of the decrease in fire fighting activities and the associated reduction in park revenues.	Some minor short- and long-term impacts to socioeconomic conditions would also be expected under Alternative C; however, these impacts could be slightly higher than those expected under Alternative B because of the increase in fire fighting activities and the associated reduction in park revenues encountered when fires attempt to cross park boundaries.

	of offsetting expenditures from fire fighting activities.		
Energy Resources and other Agency Land use Plans or Policies	Alternative A would result in no measurable impacts to energy resources within the parks. No long-term, cumulative effects on hydroelectric facilities or transmission lines and agency/tribal land use plans or policies are expected under this management approach.	Alternative B would not result in any measurable impacts on hydroelectric facilities, but could have a short-term, minor to moderate impact on electrical transmission lines, based on the location of the wildland fire. No long-term, cumulative effects on hydroelectric facilities or transmission lines and agency/tribal land use plans or policies are expected under this management approach.	Alternative C would not result in any measurable impacts on hydroelectric facilities, but could have a short-term, minor to moderate impact on electrical transmission lines, based on the location of the wildland fire. No long-term, cumulative effects on hydroelectric facilities or transmission lines and agency/tribal land use plans or policies are expected under this management approach.
Wilderness and Soundscapes	Alternative A would result in short-term, minor to moderate adverse impacts to normal soundscapes and related values. Some fire suppression activities such as hand line building could have minor to moderate, short-term adverse effects to some vegetation communities within wilderness areas. Cumulative impacts of other actions in the parks, added to the adverse effects expected from Alternative A, would result in short- and long-term, minor to moderate, direct and indirect impacts to wilderness areas and soundscapes, and would generally be localized near developed areas and areas of fire suppression activity.	Manual fuel reduction activities and vehicle and aircraft use related to prescribed fire and WFU activity would produce adverse impacts that would be minor to moderate and short term. Prescribed fire, and particularly WFU fires, if restored to their original ecological role, could result in short- and long-term beneficial effects to wilderness areas as normal successional processes are allowed to proceed. Cumulative impacts of other actions in the parks, added to the adverse effects expected from Alternative B, would result in short- and long-term, minor to moderate, direct and indirect impacts to wilderness areas and soundscapes.	Adverse impacts would be expected to be similar to Alternative B except that the area involved would be smaller and impacts would be of shorter duration in some cases because management activities or wildland fires would not be allowed to extend outside the park boundaries. Cumulative effects would be similar to Alternative B except that the area of prescribed fires and WFU could be smaller.

AFFECTED ENVIRONMENT

GEOLOGY, SOILS, AND PALEONTOLOGICAL RESOURCES

Much of the rock exposed along the walls of the Black Canyon dates back to the Precambrian period and is composed largely of metamorphic and igneous rocks, although some sedimentary rocks are also present. Geologists believe the origin of the metamorphic rock, which has been buried and transformed by the earth's inner heat, is sand, mud and volcanic debris that have accumulated on the floor of ancient seas from 1.7 to 1.9 billion years ago.

The igneous rocks in the Black Canyon are intrusive, meaning they are composed of magma that cooled inside the earth. Some examples of igneous rocks that can be found in the Canyon include quartz monzonite, pegmatite, and similar granites that consist of quartz, feldspar, and mica.

The area that makes up CURE was sculpted over 2 million years ago by the erosive Gunnison River. The geology of CURE mainly consists of sandstones, limestones, and shales shaped by wind and water. Some of the geology in the area is fossil rich, such as the Morrison formation of reddish-green shale that lines the lakeshore. Quartz monzonite is also found in CURE. Many of the sedimentary rocks are overlain by volcanic materials in CURE, which are the result of past volcanic activity from the West Elk Mountains to the San Juan Mountains. Areas of particular geological interest include the spires and towers formed 30 million years ago from West Elk breccias, which are made up of cemented lava, rock, and mud. The Dillon Pinnacles, located at the northern shore of Blue Mesa's Sapinero Basin, are of geologic and scenic significance. The discovery of fossils, including dinosaurs such as the apatosaur discovered along the shoreline of Blue Mesa Reservoir, is also of great importance.

AIR QUALITY

BLCA is classified as a Class I Air Quality Area under the Clean Air Act (CAA, Section 162 (a)). Under this designation the park receives special protection from air pollution. This protection is designed to protect the health of Air Quality Related Values (AQRV) which includes humans, plants, the natural environment, and preservation of the scenic views.

The experience of viewing one of the world's foremost wild canyons at BLCA is unique and panoramic. These views could be threatened by human-caused or natural events that lead to the formation of a haze. The designation of a Class I Air Quality Area is intended to protect and preserve these views.

The air quality standards limit increases over baseline concentrations of ambient air pollutants including sulfur dioxide, carbon monoxide, nitrogen oxides, and particulate matter. Increases in these levels can lead to a non-attainment of the National Ambient Air Quality Standards (NAAQS). Sources of pollution inside the park include emissions from vehicular traffic such as nitrogen oxides, dust from unpaved roads, as well as smoke from prescribed or wildland fires.

CURE is a Class II Air Quality Area. CURE also provides scenic views that require protection by air quality regulations. Views of the pinnacles and spires mentioned previously are important to visitor experiences.

The park and recreation area are situated in the Upper Gunnison Basin which is often affected by inversions or the settling of air into the basin. This not only leads to colder temperature in the wintertime but it can also trap haze caused by pollution, wildland fires, and dust.

Wildland fires can contribute to a short-term increase in haze that can violate air quality standards. Fires usually increase the concentrations of particulates, carbon monoxide, and other gases into the air throughout the duration of the fire. These increases, although short-term, can adversely affect the health of firefighters, visitors, staff, and wildlife.

Fire management activities conducted in the parks that result in the discharge of air pollutants are subject to, and must comply with all applicable federal, state and local air pollution control requirements. This includes the requirement of a permit for prescribed burns.

There are currently several air quality monitors within BLCA and CURE. There is an ozone monitoring station in BLCA, and PM_{10} monitoring sites located in Gunnison, Delta, Crested Butte, and Mount Crested Butte.

WATER QUALITY

The Gunnison River flows through both BLCA and CURE. The Gunnison is dammed in four locations within CURE. Three of these dams create the Blue Mesa Reservoir, Morrow Point Reservoir, and Crystal Reservoir. These reservoirs make up the Wayne N. Aspinall Storage Unit, which is one of four storage units in USBR's Upper Colorado River Storage Project (CRSP). The Aspinall Unit supplies hydroelectric power to many western states. The fourth dam is a small diversion dam near CURE's westernmost boundary, and is a component of the Uncompahgre Valley Project, which diverts water through the Gunnison Tunnel to irrigation canals in the Uncompahgre Valley.

The first reservoir in the three-reservoir sequence is Blue Mesa Reservoir. This is the largest body of water in Colorado, containing over 96 miles of shoreline and covering over 20 miles in length. The next reservoir is Morrow Point Reservoir, followed by Crystal Reservoir. The river is then released and, after passing over the Gunnison Diversion Dam, flows through the BLCA on its way to the Colorado River.

Three major tributaries and 17 minor tributaries are at least partially located within CURE. The major tributaries include the Lake Fork of the Gunnison River, Cebolla Creek, and the Cimarron River. Urban housing, resort development and agriculture along drainages and canyons are potential threats to future water quality.

CURE currently has 21 water quality monitoring sites located on the reservoirs and adjacent tributaries. The park is currently gathering data from which to characterize the water quality within the park boundaries to determine the feasibility of acquiring an Outstanding Natural Resource Waters recognition, while complying with the Clean Water Act and NPS guidelines.

The three reservoirs in the park have been designated by the Colorado Department of Public Health and the Environment Water Quality Control Commission as Class 1, Cold Water Aquatic Life; class 1a, Recreation (Primary Contact); Water Supply; and Agriculture as 1) capable of sustaining a wide variety of cold water biota including sensitive species, 2) suitable for recreation activities, 3) suitable for potable water supplies, and 4) suitable for irrigation of crops.

FLOODPLAINS AND WETLANDS

Most natural floodplains of the Gunnison River occur towards the extreme eastern end of CURE, where effects of the three dams are minimal. No data currently exist for exact acreages for these floodplains. While wetland areas do exist throughout the parks, National Wetlands Inventory data are very coarse, therefore the exact location and extent of these communities is not completely known. Notable species that are present within wetlands in BLCA and CURE include Geyer's Willow *(Salix geyeriana)*, Rocky Mountain Iris *(Iris missouriensis)*, Baltic Rush *(Juncus balticus)*, Beaked Sedge *(Carex utriculata)*, and Panicle Bulrush *(Scirpus microcarpus)*.

LAND USE

Because of the overall management objectives of both BLCA and CURE, it is unlikely that an increase in developed areas or settlements will occur within the boundaries of the parks. However, because much of CURE is surrounded by private lands, development on adjacent private land will likely continue into the foreseeable future, unless conservation measures are adopted. Data on housing density are currently unavailable. Some lands within CURE and BLCA, as well as adjacent BLM and USFS lands provide grazing allotments to private ranchers. USBR and WAPA also operate hydroelectric and irrigation facilities, including dams and other buildings and irrigation structures within the parks.

SPECIES OF SPECIAL CONCERN - WILDLIFE

Large Mammals

Important habitat for large mammal species is located in portions of BLCA, CURE and surrounding areas. Severe winter range for elk (*Cervus elephus*) and mule deer (*Dama hemionus hemionus*), winter range for pronghorn (*Antilocapra Americana*), and overall range for bighorn sheep (*Ovis Canadensis*) exists in the area. Habitat for elk consists of semi-open forests or forest edges adjacent to parks, meadows, and alpine tundra. Elk are both grazers and browsers with a diet that consists of shrubs, forbs, and grasses (Fitzgerald et al. 1994). In the Rocky Mountain region, elk typically migrate between high elevation areas in spring and summer to lower, warmer areas in the fall and winter. In the Upper Gunnison Basin region, summer range for elk is widespread and includes BLCA, CURE, and the surrounding area. Mule deer occupy all ecosystems in Colorado from grasslands to alpine tundra. They reach their greatest densities in shrublands on rough, broken terrain, with abundant browse and cover. Winter diets of mule deer consist of browse from a variety of trees and shrubs (74 percent) and forbs (15 percent). Summer diets are 50 percent browse, and forb consumption increases to 46 percent (NDIS 2004). As with elk, winter habitats are often at lower elevations and winter concentration and severe winter range is located within and adjacent to BLCA and CURE.

Historically, bighorn sheep ranged throughout the canyons of the Gunnison River and the surrounding mountainous regions. However, populations declined throughout the 1900s due to habitat conversion, competition and disease. Beginning in the 1970s, the CDOW reestablished a bighorn population in the area by transplanting animals. Sheep have been transplanted into various areas including Dillon Mesa, Lake Fork, and the Gunnison Gorge. The most recent release was to the Dillon Mesa herd in late 1995. Area herds did well until a particularly severe winter in 1978 resulted in high mortality. Since 1978, the total local population count has fluctuated between 25 and 35 animals (CPCESU 2004). Suitable habitat (overall range) for bighorn sheep is widespread in the area.
Pronghorn habitat consists of grasslands and semi-desert shrublands in areas with topography that supports good visibility. They are most abundant in shortgrass or mixed grass prairies and least common in xeric habitats, such as those surrounding CURE and BLCA. The pronghorn predominately reside on BLM lands south of the recreation area, and occasional pronghorn presence is sometimes documented, through sightings, along the south boundary of CURE, between Iola and Cebolla Creek. Pronghorn diet consists of a variety of forbs and grasses, and they sometimes consume and tolerate species that are hazardous to livestock.

Birds

There are approximately 225 species of birds documented in the area of BLCA and CURE (Hyde and Cook 1980). Common birds include the horned lark (*Eremophila alpestris*), black-capped chickadee (*Poecile atricapillus*), white-breasted nuthatch (*Sitta carolinensis*), dipper (*Cinclus mexicanus*), American robin (*Turdus migratorius*), mountain bluebird (*Sialia currucoides*), hermit thrush (*Catharus guttatus*), warbling vireo (*Vireo gilvus*), western meadowlark (*Sturnella neglecta*), red-winged blackbird (*Agelaius phoeniceus*), pine siskin (*Carduelis pinus*), black-billed magpie (*Pica hudsonia*), common raven (*Corvus corax*), and various jays, warblers, juncos, sparrows, finches, woodpeckers, and towhees.

Many species of waterfowl and shorebirds migrate through the Gunnison Basin region or remain as summer residents. Common water and shorebirds found in the area include the spotted sandpiper (*Actitis macularia*), ring-billed gull (*Larus delawarensis*), and green-winged teal (*Anas crecca*). Nesting areas are more likely to be found in inland areas and along the main stem Gunnison River and reservoir tributaries. Waterfowl and shorebirds that nest in these areas include killdeer (*Charadrius vociferus*), common snipe (*Gallinago gallinago*), mallard (*Anas platyrhnchos*) and common merganser (*Mergus merganser*). In addition, great blue herons (*Ardea herodias*) wade along the shoreline in these narrow reservoir arm areas. A heron rookery is located in the Cooper Ranch/Neversink area in the eastern portion of CURE.

Common raptors at BLCA and CURE include the red-tailed hawk (*Buteo jamaicensis*), Swainson's hawk (*Buteo swainsoni*), golden eagle (*Aquila chrysaetos*), bald eagle (*Haliaeetus leucocephalus*), and American kestrel (*Falco sparverius*). Great horned owls (*Bubo virginianus*) nest in the area and are common year-round, while flammulated owls (*Otus flammeolus*) are common in the summer months. Gunnison sage-grouse, a unique species native to the region, are prevalent in the sagebrush communities within BLCA, CURE, and adjacent lands.

Of the birds recorded in CURE, four are federally or state listed as regionally threatened, endangered, or candidate species, including bald eagle, whooping crane (*Grus americana*), and yellow-billed cuckoo (*Coccyzus americanus occidentalis*). The Gunnison

sage-grouse was designated as a federal candidate species for listing under the Endangered Species Act (ESA) on December 28, 2000. In addition, the greater Sandhill crane (*Grus canadensis*), peregrine falcon (*Falco peregrinus*), Gunnison sage-grouse, and long-billed curlew (*Numenius americanus*) are listed as state special concern species. Special status species are discussed later in this chapter.

Fisheries

Construction of the dams along the Gunnison River has altered the fisheries of the area through inundation of riparian areas, alteration of flows and water temperatures, and alteration of spawning habitat. However, both BLCA and CURE provide some of the best cold-water fishing opportunities in the nation. The Gunnison River is classified by the Colorado Division of Wildlife as a Gold Medal fishery for trout in the Black Canyon, and CURE is known as a premier fishing destination due primarily to Kokanee salmon in Blue Mesa Reservoir. Other game fish common to the Gunnison River and Blue Mesa Reservoir include lake trout (Mackinaw trout) (*Salvelinus namaycush*), brook trout (*Salvelinus fontinalis*), rainbow trout (*Oncorhynchus mykiss*), and brown trout (*Salmo trutta*). Unique and important fish or fish habitat may also have lasting impacts in the BLCA. Locations in the park and/or the recreation area have been identified as potential reintroduction sites for native Colorado cutthroat trout (addressed under Section 3.11). Notably, BLCA hosts Gold Medal Fishery waters.

Amphibians and Reptiles

Snakes common to BLCA and CURE include the smooth green snake (*Liochlorophis vernalis*), Great Basin gopher snake (*Pituophis catenifer*), garter snake (*Thamnophis elegans*), and striped whipsnake (*Masticophis taeniatus*). Sightings have occurred near the Gunnison River (Hammerson 2004). Gopher snakes likely occur near the lowest elevations of CURE. A variety of lizards (collared lizards (*Crotaphytus collaris*) and striped plateau lizards (*Aspidoscelis velox* or *Cnemidophorus velox*)) and salamanders are also found within the parks. Amphibians are more likely to occur in the wetlands near the eastern end of CURE (Hammerson 2004).

SPECIES OF SPECIAL CONCERN – THREATENED, ENDANGERED, AND CANDIDATE SPECIES

Threatened & Endangered Species

Species protected by the ESA are listed by the USFWS as federally threatened or endangered. In addition, the USFWS lists candidate species that are considered for listing at a later date. While not protected under the ESA, candidate species are considered when analyzing impacts of actions that may potentially affect them. In the BLCA/CURE area, there are six federally endangered species – bonytail (*Gila elegans*), Colorado pikeminnow (*Ptychocheilus lucius*), humpback chub (*Gila cypha*), razorback sucker (*Xyrauchen texanus*), Uncompahgre fritillary butterfly (*Boloria acrocnema*), and clay-loving wild-buckwheat (*Eriogonum pelinophilum*); four federally threatened species - bald eagle, Mexican spotted owl (*Strix occidentalis lucida*), Canada lynx (*Lynx canadensis*), and Uintah Basin hookless cactus (*Sclerocactus glaucus*); and three candidate species, - Gunnison sage-grouse, yellow-billed cuckoo, and boreal toad (*Bufo boreas*)(USFWS 2004).

Federally-listed Species

The bonytail, Colorado pikeminnow, and humpback chub are all members of the minnow family that are endemic to the Colorado River Basin. The razorback sucker is a large sucker that is also endemic to the Colorado River system. The alteration of the river system by damming and water development activities has changed the flow regime, temperature, and sedimentation qualities of the river system, making much of the former range of these species uninhabitable. In addition, the introduction of many non-native fish and other aquatic animals, plants, pathogens, parasites, and chemical contaminants have affected the river system's ecosystem (Mueller and Marsh 1995). Of these species, only the Colorado pikeminnow and razorback sucker (stocked) are known to inhabit the Gunnison River.

Suitable foraging and winter habitat for bald eagles exists along the entire length of CURE, as the reservoir provides an ample food source for bald eagles in the area. Winter eagle activity is concentrated around the Gunnison River and the shorelines at CURE. Typically, nesting bald eagles in the Western Slope region of Colorado tend to nest in large trees along rivers. Within the area, there is a general lack of sizeable trees along the shoreline of the river and reservoirs, with the exception of the riparian vegetation community in the Neversink/Cooper Ranch area. Nesting by bald eagles could potentially occur in this area, and foraging individuals are likely to be active throughout the remainder of the Park.

The Mexican spotted owl nests in closed canopy forests and narrow rocky canyons in remaining habitat in the southwestern United States. The species is not known to exist nor is suitable habitat present within the area.

Canada lynx occur at elevations of 9,000 to 14,500 feet in forests, meadow, or tundra environments. Northern coniferous forests are the preferred habitat of the lynx. Snowshoe hare is the primary prey of lynx. Other prey includes squirrels, beavers, muskrats, and even deer, caribou, and moose (Fitzgerald et al. 1994). Lynx potentially could occupy higher elevation areas surrounding BLCA and CURE, but no sightings of the species have been recorded in these areas or within the parks. Therefore, this species will not be specifically addressed in the Impact Analysis sections.

Distribution of the boreal toad in Colorado is restricted to areas with suitable breeding habitat at elevations of 7,000 to 12,000 feet. This includes lakes, marshes, ponds, bogs or other wet areas within spruce-fir forests and alpine meadows with sunny exposure (CDOW 2003). Suitable habitat is found in the general area, but the toad is not known to exist within the parks. Therefore, this species will not be specifically addressed in the Impact Analysis sections.

The Gunnison sage-grouse is a federal candidate species with important habitat located within CURE and surrounding areas. This native to the Gunnison Basin was recognized as a distinct species in 2000 because of its different morphological characteristics and mating rituals than the Northern sage-grouse. The breeding population size is small, totaling only 4,000 individuals, with up to 3,000 of those believed to reside in Saguache and Gunnison counties, Colorado (BLM 2001). The birds nest in big sagebrush dominated communities from April to July.

In the western United States, yellow-billed cuckoo habitat consists of old growth riparian woodlands with dense understories, while in other portions of the country more open woodlands are adequate (Kingery 1998). In the area, the locations of potential occurrence for this species would be in the riparian corridors such as those along the Gunnison River or its tributaries. The yellow-billed cuckoo is designated as a non-game species within Colorado. As that designation applies, it is not legal to take, harass, or threaten the species. Although recorded historically in CURE, the yellow-billed cuckoo is not known to exist within the parks. Therefore, this species will not be specifically addressed in the Impact Analysis sections.

The Uncompahgre fritillary butterfly has no habitat within BLCA or CURE. While potential suitable habitat for the clay-loving wild-buckwheat and the Uintah Basin hookless cactus may exist, neither has been found within the parks.

State Listed Species

The American peregrine falcon has been federally de-listed, but it remains a state species of concern. The falcon occupies a variety of habitats at elevations of 3,000 to 10,000 feet and usually nests in high cliff ledges. Peregrines are known to occur in BLCA and CURE, especially near the Painted Wall and Curecanti Needle area. They are less common elsewhere in the area. Although de-listed federally peregrines are still monitored under the federal recovery plan (USFWS 2003).

The greater Sandhill crane, also a state species of concern, occupies a variety of habitats including crops, grasslands, mudflats and riparian areas at 3,000 to 10,000 feet in elevation. The area along CURE and the Gunnison River is considered to be suitable habitat for the species during migration, primarily in spring, but is not a known breeding area for the species (Andrews and Righter 1992, Kingery 1998).

Habitat of the long-billed curlew, which is a Colorado state species of concern, includes croplands, grasslands, shrublands, and wetland and riparian areas at elevations of 3,000 to 5,000 feet. They are known to occur as springtime migrants throughout Gunnison County, including within the vicinity of BLCA and CURE (Andrews and Righter 1992). However, there is no evidence that they breed throughout most of western Colorado, including within Gunnison County (Kingery 1998). In Colorado, the long-billed curlew is primarily an eastern plains species.

Another state species of concern, the Colorado River cutthroat trout, historically occupied portions of the Colorado River drainage in Wyoming, Colorado, Utah, Arizona, and New Mexico (GMUG 2001). Populations of the species have dramatically declined due to competition and hybridization with non-native salmonids, and current populations of the species occur primarily in headwater streams and lakes (CRCT Task Force 2001, GMUG 2001). The Colorado River cutthroat trout is known to occur in the Gunnison River below Crystal Reservoir as well as in the Black Canyon.

Six state-listed rare plants occur in BLCA and CURE. Most of the populations that have been identified in the parks appear relatively stable, but more information needs to be obtained in future monitoring. Two species are found in BLCA: the Black Canyon gilia (*Gilia penstemonoides*) is found in cracks, narrow ledges, and cliffs in the canyon, and the hanging garden Sullivantia (*Sullivantia hapemanii* var*. purpusii*) is found on cliffs that are made wet by seeps and springs running down canyon walls. Two species of milkvetch are found in CURE (Skiff's milkvetch (*Astragalus microcymbus*) and Gunnison milkvetch

(*Astragalus anisus*)). The milkvetch species and Rollin's twinpod (*Physaria rollinsii*) are found in low sagebrush communities in CURE and surrounding areas. Adobe thistle (*Cirsium perplexans*) also is found in mixed shrublands in CURE.

Park Sensitive Species

Curecanti contains a variety of species that park staff considers to be native species of concern. These include Gunnison sage-grouse (discussed above), great blue heron, bighorn sheep (discussed with large mammal species), and Gunnison's prairie dog (*Cynomys gunnisoni*). The park has not yet completed a comprehensive identification and evaluation of all native species of concern.
The great blue heron is a summer resident of CURE, and nesting locations are located within the park and on adjacent lands. The Gunnison River supports important habitat and this nesting location is one of only two heronries in Gunnison County (Bio-Environs 2001). Great blue heron nesting occurs in narrowleaf cottonwoods in the Neversink/Cooper Ranch area within the park, as well as on adjacent private lands. The nesting colony is an important resource of CURE and monitoring has taken place since 1987. Management for maintenance and establishment of future generations of riparian vegetation community is important to the success of the colony. Planned projects would avoid this area.
Gunnison's prairie dogs live in habitats characterized by short- to medium-height grass prairies and plateaus at moderate to high elevations. The Gunnison's prairie dog is generally found around the Four Corners area. As with all prairie dog species, populations are much smaller than they were historically due to eradication, habitat loss, and disease.

UNIQUE OR IMPORTANT VEGETATION COMMUNITIES

Vegetation varies greatly within BLCA. The upper plateaus are dominated by pinyon pine and juniper forests. The park is part of the Colorado Plateau, which is known for its deep canyons and high deserts dominated by pygmy forests (pinyon pine and juniper). Pinyon-juniper-oak are the typical species found at elevations ranging from 5,000 to 7,000 feet.

Pinyon pine is the most common tree species in the area and is small in stature, typically growing to heights between 20-40 feet. They normally dominate dry south slopes with an understory of grasses. Junipers in the area are thriving as well. There are six species of juniper that exist on the plateau, but the most common is the *Juniperus osteoperma*.

Oak flats of Gambel oak are also thriving along the plateau, especially along the canyons rims. Lignotubers, a tuber-like root that is embedded in the trunk beneath the bark just below the soil, allow the deciduous Gambel oak to grow in dense thickets. Growing underneath or adjacent to the oak, serviceberry bushes and smaller shrubs intertwine with the oak to create excellent wildlife habitat and food sources. Also, ponderosa pine (*Pinus ponderosa*) stands are often found mixed with oak thickets, many of which are considered old growth, especially within the Soap Creek drainage, east to Red Creek in CURE.

In the inner canyons vegetation includes rock gardens bursting with wildflowers that are deeply etched into the walls at very high elevations. Pockets of Douglas fir (*Pseudotsuga menziesii*) and aspen (*Populus tremuloides*) trees grow in areas where the snow lingers in the spring. The south wall is steeper and sparsely vegetated while the north wall is in some places thick with vegetation. This difference is caused by erosion resulting from water, wind, and sun. Closer to the Gunnison River you find water loving plants such as

the chokecherry (*Prunus virginiana*), boxelder (*Acer negundo*), narrowleaf cottonwoods (*Populus angustifolia*), and willows (*Salix* spp.).

CURE is best described as a semi-arid shrubland. The upland area of the park is dominated by big sagebrush (*Artemisia tridentata*) and rabbitbrush (*Chrysothamnus nauseosus*). Tall cottonwood trees and lush undergrowth are found in the riparian areas. Cottonwoods provide shade for understory species and their deep roots help to stabilize the riverbank. Juniper, Gambel oak and other shrubs such as serviceberry (*Amelanchier canadensis*) dominate the intermittent drainages. In the higher elevations ponderosa pine, Douglas fir, and spruce trees (*Picea pungens*) are common. On the eastern portion of the Recreation Area the landscape includes areas of human-altered pasture land.

INTRODUCE OR PROMOTE NON-NATIVE SPECIES

While the introduction of non-native plant species through fire management activities could have measurable impacts, the issue is addressed in the mitigation section, which goes through to the plan itself. Introduction of non-native species could indirectly impact natural and beneficial functions, uses, and values of native species.

Current species of concern include black henbane (*Hyoscayamus niger*), bull thistle (*Cirsium vulgare*), Canada thistle (*Cirsium arvense*), diffuse knapweed (*Centaurea diffusa*) and Russian knapweed (*Centaurrea repens*). Tamarisk (*Tamarix ramosissima*), yellow toadflax (*Linaria vulgaris*), and oxeye daisy (*Chrysanthemum leucanthemum*) also are of concern and a focus of recent mapping efforts to gather more information. Many of these species are spread by human activities such as hiking or vehicle transportation. Cheatgrass (*Bromus tectorum*) is also a species of concern and is very widespread, although no mapping of this species has been done.

RECREATION RESOURCES / VISITOR USE AND EXPERIENCE

Over 1 million visitors use the facilities of BLCA and CURE annually. The peak season is from Memorial Day to Labor Day, with activities focusing on sight seeing, hiking, fishing, water-based recreation, and camping. While both the national park and national recreation area are open year-round, due to their high altitude setting, approximately half of the visits occur in June, July and August.

Annual Visitor Use

Annual recreation visitor data for BLCA from 1995 to 2002 indicate that visitation has slightly declined (Table 4). Annual visitor numbers first reached over two hundred thousand in 1968, and have been fairly steady since then.

TABLE 4

ANNUAL TOTAL VISITATION AT BLACK CANYON OF THE GUNNISON NATIONAL PARK, 1995–2002

Year	South Rim	North Rim	Total
1995	196,096	25,017	221,113
1996	179,264	20,861	200,125
1997	174,689	35,174	209,863

1998	158,630	34,821	193,451
1999	181,139	19,003	200,142
2000	174,011	17,495	191,506
2001	169,762	11,256	181,018
2002	154,993	18,695	173,691
2003	155,630	11,616	167,246

(NPS 2003 Annual Visitor Statistics)

Annual recreation visitor data for CURE from 1995 to 2002 indicate that visitation has varied slightly (Table 5). Annual visitor numbers first reached over one million in 1983, and except for a drop in visitor numbers in 2001 and 2002, have been between 960,000 and 1,125,000 yearly since then.

TABLE 5

AVERAGE ANNUAL VISITATION AT CURECANTI NATIONAL RECREATION AREA, 1995–2002

Year	Number of Visitors	% Change from Previous Year
1995	996,522	--
1996	1,017,256	2.00%
1997	967,118	-4.90%
1998	973,652	0.60%
1999	1,044,523	7.20%
2000	1,022,320	-2.10%
2001	879,804	-13.90%
2002	732,722	-16.70%
Average	954,238	--

(NPS 2003 Annual Visitor Statistics)

Both park units are en route for many people who tour the National Parks in the region (e.g., Mesa Verde National Park, Rocky Mountain National Park, Canyonlands National Park, Arches National Park, etc.). Based on ranger observation, most visitors to CURE are from Colorado.

Based on the available data, no dramatic increase in park visitation is anticipated over the next 10 years. However, population in surrounding cities and counties is projected to increase at a rate of 2.0% per year, and an increase in regional population could mean an increase in visitor numbers. Gunnison County has a large number of summer residents and second home owners who visit both the national park and recreation area on a regular basis.

Monthly Visitor Use

At BLCA, approximately 53 percent of the 2003 annual visitation occurred during the months of June, July, and August. By far, the most popular time for park visits is during the summer season (Table 6).

TABLE 6

VISITATION BY MONTH AT BLACK CANYON OF THE GUNNISON NATIONAL PARK, 1995–2004

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1995	**2,537**	**1,999**	**5,042**	**6,858**	**19,919**	**34,624**	**48,386**	**42,794**	**31,517**	**15,930**	**4,393**	**7,114**	**221,113**
1996	**2,033**	**2,188**	**4,082**	**7,843**	**21,959**	**33,278**	**43,159**	**41,779**	**29,041**	**10,628**	**2,526**	**1,609**	**200,125**

1997	**2,512**	**2,043**	**4,990**	**5,476**	**18,455**	**32,105**	**48,905**	**45,887**	**27,433**	**12,589**	**3,691**	**2,352**	**206,438**
1998	**2,731**	**2,411**	**3,791**	**5,462**	**19,016**	**30,114**	**41,065**	**37,754**	**31,015**	**13,974**	**3,700**	**2,418**	**193,451**
1999	**5,787**	**2,444**	**4,875**	**5,290**	**16,589**	**32,819**	**43,484**	**35,456**	**28,557**	**16,821**	**5,369**	**2,651**	**200,142**
2000	**2,842**	**2,847**	**3,782**	**7,073**	**18,998**	**31,537**	**45,885**	**31,358**	**28,612**	**10,916**	**3,833**	**2,443**	**191,506**
2001	**2,468**	**2,153**	**3,944**	**6,319**	**17,649**	**29,964**	**42,156**	**30,943**	**26,981**	**12,585**	**4,845**	**1,011**	**181,018**
2002	**3,208**	**2,790**	**5,042**	**6,635**	**9,170**	**46,508**	**32,125**	**30,033**	**20,400**	**11,414**	**3,543**	**2,823**	**173,691**
2003	**3,237**	**2,133**	**3,695**	**5,797**	**22,880**	**26,180**	**35,192**	**27,187**	**20,640**	**12,236**	**4,183**	**3,595**	**167,246**

(source: NPS Monthly Visitation Statistics)

At CURE, approximately 53 percent of the 2003 annual visitation occurred during the months of June, July, and August. As with neighboring BLCA the most popular time for park visitation is during the summer months (Table 7).

TABLE 7

VISITATION BY MONTH AT CURECANTI NATIONAL RECREATION AREA, 1995–2003

MO/YR	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	TOTAL
1995	15,807	14,217	16,191	34,415	92,150	162,620	218,832	180,711	136,528	71,024	37,362	16,665	996,522
1996	20,554	17,629	15,725	35,028	100,031	143,441	212,879	223,104	115,036	83,948	37,036	12,845	1,017,256
1997	15,714	13,900	19,235	35,444	97,499	143,309	221,565	175,852	114,145	78,698	34,408	17,349	967,118
1998	16,388	16,309	22,374	41,355	99,263	134,719	218,487	161,449	139,818	74,084	32,753	16,653	973,652
1999	15,018	18,859	29,859	41,964	92,240	137,463	227,325	221,650	138,143	73,875	32,617	15,510	1,044,523
2000	16,252	15,767	22,457	47,055	123,239	152,220	212,582	186,951	132,026	65,275	32,553	15,943	1,022,320
2001	16,627	14,273	20,180	32,103	82,353	141,263	124,447	189,450	111,863	72,758	57,452	17,035	879,804
2002	16,907	16,165	16,587	36,934	49,164	132,878	167,033	114,360	98,160	61,734	13,544	9,256	732,722
2003	11,570	8,543	10,546	21,638	63,966	90,051	149,387	141,791	32,747	53,349	N/A	N/A	967,871

(source: NPS Monthly Visitation Statistics)

CULTURAL RESOURCES

Pre-historical and Historical Background

As early as 10,000 years ago, the BLCA/CURE area appears to have supported a series of human adaptations to desert, plateau, and mountain conditions. Paleo-Indian Tradition dated from pre-9,000 B.C. to 6,400 B.C. In about 6,400 B.C. there was a dual emphasis with the addition of gathering plant foods. This coupling of food gathering and hunting successfully continued in the Upper Gunnison Basin until Native American and Euro-American contact (NPS 1994).

The Archaic period with its hunting adaptation is represented in the park's archeological record from approximately 6,400 B.C. through A.D. 1. There also appears to be considerable evidence of aboriginal occupation dating from approximately A.D. 400–1600. The first evidence of an Indian group in the Upper Gunnison Basin, which was recognized and named by Euro-Americans, is that of the Utes who migrated in to the Colorado area from the Great Basin at A.D. 1200–1300 (NPS 1994).

Artifacts and radiocarbon dates collected from the area of the parks range from 8,100 B.C. (± 830) until about A.D. 1,500 and appear to document essentially continuous intermittent use of the Upper Gunnison Basin since the end of the Pleistocene. The historic period for Native Americans in western Colorado begins with first written account of contact with Ute groups and ends in approximately 1881 with their movement to reservations. The parks also contain many unrecorded sites reflecting late 19th century Euro-American activity including small-scale ranching, mining, and logging as well as construction camps that supported expansion of the railroad (NPS 1994).

The prehistoric and historic stories of human culture in the BLCA/CURE area are recorded in the traces and tracks left by Native Americans, miners, railroaders and ranchers. These document the human struggle to survive as well as how changing human value systems, economic, social, and technological changes and the importance of water have shaped the use and character of the land and its people. Cultural history contains archeological examples of some of the oldest villages found in North America (predating the building of the pyramids). The narrow-gauge railroad exhibited in Cimarron graphically portrays the story of technology's effects of shaping people and using land; the agony and difficulties of building track in narrow canyons in winter with little benefit of sun.

Archeological Resources

The earliest occupants of North America, the big game hunters, were probably present in the BLCA area by at least 10,000 BC. A few Paleo-Indian sites have been found within the parks boundaries, suggesting early hunters used the area. Reed (1984) has suggested that the concentration of Paleoindian finds along the Gunnison River from Gunnison to Cerro Summit may represent use of the river as a travel corridor.

It appears that the Archaic stage for the BLCA area begins by at least 5,500 BC and possibly earlier. At the beginning of the Archaic stage, subsistence activities became more diversified in response to a changing environment. A variety of stone tools characterize this stage in the BLCA area. Archaic stage sites in the BLCA area are found in rock shelters or open lithic scatters, and cultural materials bear resemblance to the materials of the Desert Archaic (Jennings 1968). Archaic sites occur more frequently in this area than any other type of site (Reed 1984), and the Archaic stage represents the longest period of prehistoric occupation. Based on projectile-point typology, many sites recorded by Breternitz et al. (1974) in the National Park may date to the Archaic stage (Carpenter and Stiger 1975). Two Duncan-Hanna points were found during the Breternitz et al. (1974) survey indicating Archaic occupation of the BLCA (Carpenter and Stiger 1975). At least four sites within the National Park boundary may date to the late Archaic stage, although such a designation is based solely on typology of projectile points found on the surface and is tentative at best.

Other Archaic sites in the area include those excavated by Buckles (1971) and Wormington and Lister (1956) on the Uncompahgre Plateau and possibly 17 dated sites in CURE (Jones 1982, 1986; Mueller and Stiger 1981). Several sites in CURE have been dated to the mid-5,000 BC period and include associated Archaic-tradition materials (Jones 1986).

Defining an end to the Archaic stage for the BLCA area is difficult, but there was a definite change in Archaic assemblages during the Coal Creek phase (AD 700-1300). The Coal Creek phase may represent the transition between the Archaic tradition in the area and a period of increasing Anasazi/Fremont influence, culminating in Ute occupation.
Despite extensive work on the Uncompahgre Plateau, the prehistory of the Ute Indians in the BLCA area remains unclear. Though several researchers (Goss 1968; Gunnerson 1962) have suggested Ute migration into the area around AD 1600, others (Stewart 1966) have argued for a long period of prehistoric Ute occupation. The question still remains unclear as to whether the Ute Indians migrated into the area in the 1600's or migrated earlier (between 1200-1400 as suggested by Reed [1984]), or whether they represent in situ development from indigenous Archaic groups. The archaeological record in the area provides no answers. The earliest radiocarbon date from a definite Ute site in the area is from 5GN41 in CURE. The site, which contains Uncompahgre Brown Ware, dates to 460+/- 70 BP (Jones 1986). Three sites in Black Canyon N.P. were thought to be occupied by Ute Indians (Breternitz et al. 1974; Stiger and Carpenter 1980), but such designations are tentative as they are based solely on surface evidence. Ethnographic evidence places Ute Indians in the west-central Colorado region as early as 1626 (Schroeder 1953).
Archeological research in CURE area began as early as the 1930s, and has been far more rigorous than that done in BLCA. The first systematic research was prompted in 1962 by USBR plans to construct the three dams along the Gunnison River. Surveys in the area of Blue Mesa Reservoir identified ten sites with eight below the proposed high water line behind the Blue Mesa Dam that were believed to reflect short term occupations by nomadic Indian groups. Under Executive Order 11593 surveys were undertaken in 1976 with the University of Colorado that identified another 130 archeological sites, most within the vicinity of Blue Mesa Reservoir. Examinations in the late 1970s with both University of Colorado and NPS staff from the Midwest Archeological Center (MWAC) uncovered additional features including the remains of an isolated hearth that generated a radiocarbon date of approximately 8,000 BC. In 1981, the Curecanti Archeological District was nominated to the National Register of Historic Places. Between 1980 and 1984 MWAC undertook five seasons of construction-related research. Construction-related research projects were undertaken between 1991 and 1992 by MWAC as well as by Powers Elevation Company and Alpine Archeological Consultants. A mix of new sites, isolated finds, and previously recorded sites were inventoried. Two formerly unrecorded sites were added to the Curecanti Archeological District nomination (NPS 1994).

Historic Structures and Resources

Five structures are currently listed on the fiscal year (FY) 1999 National Park Service List of Classified Structures (LCS) for BLCA and CURE (See Appendix B). Railroad features evident near Gateview include encampments, foundations, ovens, and railroad grade features as well as archeological resources.

Built in 1881, the Denver and Rio Grande Railroad (D& RG) operated passenger service until 1940 and freight trains until 1949. Given the rugged terrain, narrow 3' gauge rail rather than the standard 4', 8 ½" gauge was used to save time and money. The D&RG was the most successful narrow gauge railroad to cross the Rocky Mountains connecting the mining areas near Crested Butte to Montrose, Grand Junction, and further into Salt Lake City. After the railroad line was abandoned in 1949, the railroad route in the Black Canyon was used as a public road until construction of the Blue Mesa Dam in the 1960s. The historic town site of Cimarron is home to an old railroad car display that includes Locomotive #278, its coal tender, a boxcar, and caboose which resides on the D&RG

Narrow Gauge Trestle in the Cimarron tributary to the Black Canyon of the Gunnison. Built by Baldwin Locomotive Works in Philadelphia in 1882, Locomotive #278 served as a mainline freight and helper engine on the Crested Butte Branch and this section of the D&RG's main line for over 70 years. The city of Montrose leased the locomotive, tender, and caboose to the NPS in 1989 for 99 years. The trestle or steel deck span bridge was built in 1895 and was listed on the National Register of Historic Places in 1976 as the last remaining structure representing the narrow gauge railroad. Reconstructed telegraph lines extend from the south side ties.

SOCIOECONOMICS

Population

The Gunnison County population increased approximately 3.1% annually from 1990 to 2000 resulting in a 36% change over the 10-year period (Table 8). Montrose County population rose approximately 3.2 % annually between 1990 and 2000, resulting in the same 36% growth rate as Gunnison. Annual growth rates have been above the annual 2.71 % rate of the state. Since 2000, Gunnison County growth has been only slight (less than 1%), where as Montrose County continues to show annual growth between 2 and 3%. By 2020, population in Gunnison and Montrose Counties is expected to reach approximately 20,346 and 50,530 persons, respectively (Colorado Department of Local Affairs 2002). The town of Montrose has sustained similar growth rates to Montrose County, whereas the town of Gunnison has experienced a slightly lower growth rate between 1990 and 2000 than its home county.

TABLE 8 - POPULATION ESTIMATES

Town or County	1990	2000	2002
Gunnison County	10,273	13,956	13,999
Montrose County	24,432	33,432	35,435
Town of Gunnison	4,636	5,409	5,217
Town of Montrose	8,854	12,344	14,153

Source: Colorado Department of Local Affairs, Colorado Demography Section, 2002

Economic Conditions

In Gunnison and Montrose Counties, approximately 75% of jobs are in wage and salary positions where people work for someone else. The remaining jobs (25%) are individuals that are self-employed. Unemployment averaged 6.4% for Gunnison County and 4.8% for Montrose County in November 2003. Unemployment in Colorado was 5.6 % during the same period. (Colorado Labor force information on web.) Wage rates are below the average wage when compared to the statewide averages.

Employment by industry in Gunnison County has remained relatively unchanged since 1985, except for some decline in sectors such as mining. In 2000, the largest employment sectors included Wholesale/Retail (26%) and Services (27%) followed by Government (15%), Construction (10%), Financial/Insurance/Real Estate (7%). The remaining sectors such as agriculture and mining were 5% or less (Gunnison County, 2001). In Montrose County, the employment distribution is similar. The Service (25%) and Wholesale/Retail sectors (24%) are largest, followed by Government (13%), Manufacturing (10%), Construction (10%) and Agriculture (8%) (Montrose County, 2001). In both counties, the Service sectors not only provide the most jobs, but have demonstrated the most new job growth from 1970 to 1997. The largest component of the Service sector in Gunnison County relates to recreation, whereas in Montrose County it is health services (Wilderness Society 2000). Tourism is a major industry for the region, with visitors coming year-round to enjoy such activities such as skiing, rafting, fishing, kayaking, camping, hiking and sightseeing.

Non-labor income is the largest component of Total Personal Income (TPI) in both Gunnison and Montrose Counties. Non-labor income includes income sources such as dividends, interest, rent and transfer payments such as social security and other pension programs. Non-labor income represented 28% of TPI in both Gunnison and Montrose Counties in 1970. In 1997, non-labor income remained at 28% of TPI in Gunnison County, whereas it grew to 40% of TPI in Montrose County. Both figures are indicative of a growing retirement community and households with investment income. The Service industries have also accounted for between 13% and 20% of income growth in counties within the same time period (Wilderness Society 2000).

Park Contribution To Regional Economy

Visitors to BLCA, CURE, park staff, and their households are integral to the regional economic and social structure. Some key dimensions of the park role within the region are described below.

BLCA provides economic stimulus with ongoing operating and capital expenditures. The BLCA budget for fiscal year 2004 is $1,024,000. The CURE budget for fiscal year 2004 is $2,955,000. Salaries for interpretation, law enforcement, and search and rescue activities comprise the largest share of the appropriate budgets. The remaining funds are allocated for activities such as facility operations and maintenance, and resource protection and management services. Portions of the parks' annual expenditures circulate through the regional economy in the form of consumer and business purchases, yielding indirect economic impacts.

In addition to the direct stimulus attributable to the parks, spending by visitors to the parks contributes to the local economy. A recent economic analysis commissioned by the NPS in 2002 developed updated spending profiles for CURE visitors using the Money Generation Model (MGM), a regional economic model developed by the NPS. These profiles indicate that the average party of visitors to a national park spends $36.74 per day for a local day user to $52.90 for a non-local user to $172.48 for visitors staying in a motel outside the park.

ENERGY RESOURCES AND OTHER AGENCY LAND USE PLANS OR POLICIES

USBR and WAPA hydroelectric facility locations such as dams and transmission lines will influence FMU prescriptions. Wildfire impacts should consider BLM, USFS, USBR, WAPA, CDOW, tribal concerns, and private landowners. The ID team is already working with BLM to assure that the fire planning process is complementary and does not conflict at the boundaries. In some cases, agreements may be made with private landowners during the planning process and agreements will be sought both during and after the plan is implemented. Private landowner attitudes and issues will be assessed during external scoping.

WILDERNESS AND SOUNDSCAPES

The BLCA and the Gunnison Gorge NCA both contain designated Wilderness areas. CURE has never had a Wilderness Suitability Study. However, there is presently a legislative proposal that if enacted, would expand the West Elk Wilderness to include land within CURE. Currently, 6,313 hectares (15,599 acres) of BLCA is designated wilderness. Most of the wilderness is located below the rim of the canyon, however, toward the park's western boundary, some upland areas are designated wilderness. Lands adjacent to the park's designated wilderness are predominately BLM, with lesser amounts of private ownership in some areas. Any WFU use or prescribed fire in Wilderness Areas will be subject to the minimum tool requirement of the Wilderness. In addition, Minimum Impact Suppression Tactics (MIST) tactics would likely be employed for any fire management actions within wilderness areas.

Solitude and quietness are valuable resources in both BLCA and CURE, particularly in the Black Canyon Wilderness. High value soundscapes occur primarily in the BLCA wilderness. The next gradation would be throughout the BLCA back-country, followed by the rest of BLCA and the CURE back-country. The final gradation would be the remainder of CURE.

Current soundscape conditions would follow a similar gradation, with the BLCA wilderness being less impacted by auditory intrusions (mostly limited to aircraft), then the BLCA back-country seeing more auditory intrusion (aircraft and some vehicular traffic, mostly from the park road or dirt roads outside the park boundary), with more auditory intrusion on BLCA front-country areas (mostly from visitor and park vehicular traffic) and CURE back-country area (aircraft, motorboats, and some vehicular traffic, mostly from dirt roads outside the park boundary), with auditory intrusions peaking in the CURE front-country areas (aircraft and US Highway 50 traffic).

ENVIRONMENTAL CONSEQUENCES

IMPACT ASSESSMENT METHODS

General Methodology

This chapter describes the environmental consequences, or potential impacts, on the natural, cultural and human environment at BLCA and CURE from implementation of the three alternatives considered in this EA. The topics discussed are the same as those described in the previous Affected Environment section.
For each topic, the regulations and policies that guide impact assessment were identified and specific impact thresholds for intensity of impacts were developed. Impacts were then identified and assessed based on these definitions and criteria, a review of relevant scientific literature, previously prepared environmental documents, and the best professional judgment of ID Team resource specialists.
Impacts are described in general terms and are qualified as short-term and long-term, adverse or beneficial, as appropriate. Impacts may also be described as direct or indirect. Direct impacts are caused by an action and occur at the same time and place as the action. Indirect impacts are caused by an action and occur later in time or farther removed from the area, but are reasonably foreseeable. Cumulative impacts are also discussed and the specific method used for cumulative impact assessment is described below.

Compliance with Section 106 of the National Historic Preservation Act

In accordance with the Advisory Council on Historic Preservation's regulations implementing Section 106 of the NHPA (36 CFR Part 800, *Protection of Historic Properties*), impacts to cultural resources and the cultural landscape will be identified and evaluated by (1) determining the area of potential effects, (2) identifying cultural resources present in the area of potential effects that were either listed in or eligible to be listed in the National Register of Historic Places, (3) applying the criteria of adverse effect to affected cultural resources which are unevaluated, listed in, or eligible to be listed in the National Register, and (4) considering ways to avoid, minimize, or mitigate adverse effects.

CEQ regulations and the NPS's *Conservation Planning, Environmental Impact Analysis and Decision-making* (Director's Order #12) also call for a discussion of the appropriateness of mitigation, as well as an analysis of how effective the mitigation would be in reducing the intensity of a potential impact, for example, reducing the intensity of an impact from major to moderate or minor. However, any reduction in intensity of impact resulting from mitigation is an estimate of the effectiveness of mitigation under NEPA only. It does not suggest that the level of effect as defined by Section 106 is similarly reduced.

Under the Advisory Council's regulations, a determination of either *adverse effect* or *no adverse effect* also must be made for affected National Register-eligible cultural resources. An *adverse effect* occurs whenever an impact alters, directly or indirectly, any characteristic of a cultural resource that qualifies it for inclusion in the National Register, e.g., diminishing the integrity of the resource's location, design, setting, materials, workmanship, feeling, or association. Adverse effects also include reasonably foreseeable effects caused by an alternative that would occur later in time, be farther removed in distance or be cumulative (36 CFR Part 800.5, *Assessment of Adverse Effects*). A determination of *no adverse effect* means there is an effect, but the effect would not diminish in any way the characteristics of the cultural resource that qualify it for inclusion in the National Register.

A Section 106 summary will be included for the preferred alternative in the impact analysis section for cultural resources. The Section 106 summary is intended to meet the requirements of Section 106 and is an assessment of the effect of the undertaking

(implementation of the alternative) on cultural resources, based upon the criterion of effect and criteria of adverse effect found in the Advisory Council's regulations.

Cumulative Effects Analysis

The CEQ regulations for implementing the NEPA require assessment of cumulative effects in the decision-making process for federal projects. Cumulative effects are defined as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions" (40 CFR 1508.7). Cumulative effects are considered for both the No Action and proposed action alternatives.

Cumulative effects were determined by combining the effects of the alternative with other past, present, and reasonably foreseeable future actions at BLCA and CURE and in the surrounding region. In addition to those listed in the Purpose and Need discussion, the following actions were considered:

- Dickerson Pit – an extension of permitted mining operations for the existing Dickerson Pit mine located near the eastern end of CURE on NPS land
- Weed management activities

Where appropriate these will be addressed in the impact analysis section.

Impairment Analysis

"NPS *Management Policies* (NPS 2001) requires analysis of potential effects to determine whether or not actions would impair park resources or values."

The fundamental purpose of the NPS, established by the Organic Act and reaffirmed by the General Authorities Act, as amended, begins with a mandate to conserve park resources and values. NPS managers must always seek ways to avoid, or to minimize to the greatest degree practicable, actions that would adversely affect park resources and values. These laws give the NPS the management discretion to allow impacts to park resources and values when necessary and appropriate to fulfill the purposes of a park, as long as the impact does not constitute impairment of the affected resources and values. Although Congress has given the NPS the management discretion to allow certain impacts within parks, that discretion is limited by the statutory requirement that the NPS must leave park resources and values unimpaired, unless a particular law directly and specifically provides otherwise.
The prohibited impairment is an impact that, in the professional judgment of NPS personnel, would harm the integrity of park resources or values, including the opportunities that otherwise would be present for the enjoyment of those resources or values. An impact to any park resource or value may constitute impairment. Impairment may result from NPS activities in managing the park, from visitor activities, or from activities undertaken by concessionaires, contractors, and others operating in the park. An impact would be more likely to constitute an impairment to the extent that it has a major or severe adverse effect upon a resource or value whose conservation is:

- necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park;

- key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or
- identified as a goal in the park's general management plan or other relevant NPS planning documents.

A determination on impairment is included in the impact analysis section for all impact topics relating to park resources and values.

GEOLOGY, SOILS, AND PALEOENTOLOGICAL RESOURCES

Methodology

The assessment of impacts uses the general methodology described above and the resource specific information provided below. Available information was obtained through interdisciplinary team meetings and relevant literature. The intensity of effects and impact duration are described in the analysis below using the following criteria.

Negligible- An action that could result in a change to geology and soils, but the change would be so small that it would not be of any measurable or perceptible consequence.

Minor- An action that could result in a change to geology and soils, but the change would be small and of little consequence.

Moderate- An action that could result in a noticeable change to the geology and soils; the change would be measurable and of consequence. Reclamation to offset these impacts would likely be successful.

Major- An action that would result in a noticeable change to geology and soils; the change would be measurable and result in a severely adverse or major beneficial impact. The success of reclamation to offset these impacts cannot be guaranteed.

Impact Duration Definitions:

Short-term - Recovers in less than three years from fire or other action.

Long-term - Takes more than three years to recover from fire or other action.

Impacts of Alternative A (No Action)

Impact Analysis

Under Alternative A, all wildland fires would be suppressed and limited fuel reduction would occur. Potential effects to soils related to fire suppression include erosion, particularly streambed erosion, and use of retardants, which may temporarily elevate levels of some chemical compounds such as nitrite and nitrate. Activities and equipment related to fire suppression such as use of bulldozers, tractors, wildland fire engines, and fire line construction would also have direct adverse effects on soils due to soil compaction and

disruption, resulting in some decrease in both productivity and infiltration. Mitigation, such as hand line building where possible, use of water bars to prevent erosion of disturbed soils, and other protective actions noted in the Mitigation section, and rehabilitation actions following firefighting activities, would be necessary and could reduce impacts to negligible to minor levels.

Although it is not anticipated that soils productivity and overall stability would be adversely affected in the short term, long-term adverse impacts to soils may occur with the increased risk of high intensity wildfires under Alternative A. Direct adverse effects are generally short-term and localized, but accelerated erosion and increased sedimentation may impact the area over the long term depending on soil types and fire severity. Erosion resulting from decreased vegetative cover after very intense fires, particularly on steep slopes or following heavy rainfall events, would result in both short-term and long-term minor to moderate indirect adverse impacts to soil stability.

Impacts to geological resources would likely be minor unless a wildland fire occurred near known fossil areas or on steep slopes, in which cases extra precautions in locating equipment and fire lines and post-fire rehabilitation may help to mitigate some impacts to paleontological resources. There are five major slide areas in Crystal and Morrow Point Reservoirs that are currently monitored. Fire and post-fire erosion above or near these slides could have short-term impacts on slope stability and water quality

Cumulative Effects

Cumulative impacts include the effects from fire and fire suppression activities in BLCA and CURE and on adjacent USFS and BLM lands, plus effects from other unplanned projects underway in the area (e.g., road maintenance) and from visitor activities. Higher severity fires are more probable under the No Action alternative and would likely result in more severe impacts to soils. For example, large areas denuded of vegetation by large, severe fires could become more susceptible to soil losses and erosion over time. This condition could be exacerbated by episodic heavy rainfall events, or localized road and/or trail maintenance. Overall, cumulative impacts of other actions in the parks, added to the adverse effects expected from Alternative A, would result in short- and long-term, minor to moderate, direct and indirect impacts to geological resources, and would generally be localized near developed areas and areas of fire suppression activity.

Conclusion

Under Alternative A, minor to moderate, short-term and long-term, direct and indirect adverse effects would occur to soil resources from both suppression activities and higher severity wildland fires that would be more likely to occur.
Alternative A would not produce any major adverse impacts or impairment of geological or soil resources or values whose conservation is necessary to the purpose of the establishment of BLCA and CURE or that are key to the natural or cultural integrity of the parks, or that are actions identified as a management goal of either unit.

Impacts of Alternative B – Natural Landscape Units

Impact Analysis

Under Alternative B, the adverse impacts of prescribed fire and wildland fire on soils and geological resources would be less severe than impacts from intensive fire suppression discussed under Alternative A. Prescribed fire and fuels reduction activities would be

planned to avoid areas of geological importance or vulnerability such as known fossil areas, steep slopes, or slides in the area of Crystal and Morrow Point Reservoirs, and hanging gardens. Prescribed fire and fuels reduction would result in fewer severe fires and would help protect soils, though there would be short-term disturbance in areas where fuels are being treated due to the presence of staff, vehicles, the removal of slash, and prescribed burning. Also, a higher number of small, less severe fires may occur across the landscape, which could result in a temporary increase in exposed soils in a few areas that might be prone to increases in erosion. Protective actions described in the Mitigation section would help mitigate the adverse effects of fuels reduction and any direct impacts would be very localized, short-term, and minor.

Prescribed fire can also lead to increased nutrient input to soils from the creation of ash in the immediate vicinity of the burn. Such increases may provide favorable conditions for many plant species, nitrogen-fixing microbes, and nitrifying bacteria. Soil and microclimatic conditions following prescribed fire or WFU would favor establishment and growth of native herbaceous and shrub species. Overall, Alternative B would result in negligible to minor, short-term adverse impacts to soils.

If wildland fires and prescribed fires are kept to lower severity on the ground surface, it is anticipated that long-term benefits to soils and soil chemistry would result. Also, with fewer large wildfires, unplanned use of heavy equipment on the landscape would be reduced, resulting in a long-term benefit to soils.

Cumulative Effects

Cumulative impacts under Alternative B include minor soil compaction from fuels reduction projects combined with recreation users and some limited vehicle use. As fire is restored to a more natural role in the landscape over the long term, vehicle use for fuels management and related WFU projects would decline and help offset impacts from non-fire related activities. Therefore, cumulative adverse effects to soils are predicted to be reduced, and should remain minor and relatively localized, with reclamation and revegetation of burned areas providing beneficial effects over time. Overall, cumulative impacts of other actions in the parks, added to the adverse effects and benefits expected from Alternative B, would result in short- and long-term, minor, direct and indirect impacts to geological resources, and would generally be localized near developed areas and areas of fire management activity.

Conclusion

Under Alternative B there would be negligible to minor, adverse effects to soils, geological, and paleontological resources in the short term, with potential long-term benefits to soil chemistry and stability.

Alternative B would not produce any major adverse impacts or impairment of soils or geological resources or values whose conservation is necessary to the purpose of the establishment of BLCA and CURE, or that are key to the natural or cultural integrity of these areas, or that are actions identified as a management goal of BLCA or CURE.

Impacts of Alternative C – Natural Landscape Units only within Park Boundary

Impact Analysis

This alternative is the same as Alternative B except that fire management activities are permitted only within BLCA and CURE boundaries. No fire management activities,

including prescribed fire and WFU, are permitted to extend into or out of adjacent public or private lands.

Impacts would be expected to be similar to Alternative B except that the area involved would be smaller in some cases because management activities or wildland fires would not be allowed to extend outside the park boundaries. This alternative could result in increased fire suppression activities near park boundaries, which could, depending upon local soil characteristics, lead to increases in erosion and therefore short-term, minor adverse changes in soil chemistry.

Cumulative Effects

Cumulative effects would be similar to Alternative B except that the area involved would be smaller in some cases, due to the fact that under this alternative, no fire management activities, including prescribed fire and WFU, are permitted to extend into or out of adjacent public or private lands. Overall, cumulative impacts of other actions in the parks, added to the adverse effects expected from Alternative C, would result in short- and long-term, minor to moderate, direct and indirect impacts to geological resources, and would generally be localized near developed areas and areas of fire suppression activity and other fire management actions.

Conclusion

Under Alternative C there would be minor adverse effects to soils, geological, and paleontological resources in the short term, with potential long-term benefits to soil chemistry and stability.

Alternative C would not produce any major adverse impacts or impairment of soils or geological resources or values whose conservation is necessary to the purpose of the establishment of BLCA and CURE, or that are key to the natural or cultural integrity of these areas, or that are actions identified as a management goal of BLCA or CURE.

AIR QUALITY

Methodology

The assessment of impacts uses the general methodology described above and the resource specific information provided below. Available information was obtained through ID Team meetings and relevant literature. The area of analysis for this topic included BLCA and CURE and the Black Canyon Wilderness and local communities. Possible impacts are considered for the Class I Air Quality Area in the Black Canyon Wilderness, West Elk Wilderness and La Garita Wilderness, impacts to surrounding areas including Class II Air Quality Areas and locations of known sensitive receptors, and to visitor enjoyment. The intensity of effects and impact duration are described in the analysis below using the following criteria and definitions.

Negligible- No changes would occur or changes in air quality would be below or at the level of detection, and if detected, would have effects that would be considered slight and short-term.

Minor- Changes in air quality would be measurable, although the changes would be small, short-term, and the effects would be localized. No air quality mitigation measures would be necessary.

Moderate- Changes in air quality would be measurable, although the effect would be relatively local. Air quality mitigation measures would be necessary and the measures would likely be successful.

Major- Changes in air quality would be measurable, although the effect would be regional. Air quality mitigation measures would be necessary and the measures would likely be successful.

Impact Duration Definitions:

Short-term Effects occur only during the fire or other fire management related actions.

Long-term Effects continue to occur after the fire or other fire management related actions have ceased.

Impacts of Alternative A (No Action)

Impact Analysis

Under Alternative A, all wildland fires would be fully suppressed. In addition to smoke from wildland fires, vehicle use on and off paved roads, and exhaust from combustion of gasoline and diesel-powered vehicles and equipment used for fire fighting and fire prevention could increase emissions of particulate matter, carbon dioxide (CO_2) and nitrous oxide (NOx), which could affect air quality, including visibility, in the general vicinity. These emissions of air pollutants would result in short-term, minor to moderate indirect adverse impacts to public health and visibility on an intermittent basis and would result in the short-term, minor to moderate direct adverse impacts on air quality as some localized standards such as particulates are exceeded. On a regional basis, effects to air quality would generally include minor to moderate short-term adverse impacts as large quantities of pollutants, primarily particulates, are released to the atmosphere. Indirect effects from these air emissions would include reduced visibility along roadways, reductions in recreation values due to visibility limitations, smoke and odors, and possible health effects to sensitive residents and visitors.

Cumulative Effects

Cumulative effects under Alternative A would include smoke from other wildfires originating in the surrounding USFS, BLM or private lands, regional haze, and the potential for increased recreational and private development in the area. Also, should regional drought continue in the region, windstorms could raise dust more frequently than under more normal conditions. Also, the Dickerson Pit expansion in CURE could lead to increased dust particulates in the Cooper Ranch/Neversink areas in the eastern portion of CURE over time. Smoke from nearby fires could add to this problem, but could be mitigated by planning fires on days when the pit may not be operating. These effects would cumulatively result in minor to moderate direct and indirect adverse effects to air quality, visibility, and plant or human health. The severity and duration of impacts would largely depend on the extent of fires in the area and whether or not these occurred at the same

time. Overall, cumulative impacts of other actions in the parks, added to the adverse effects expected from Alternative A, would result in short-term, minor to moderate, direct and indirect impacts to air quality.

Conclusion

Alternative A would result in short-term, minor to moderate, indirect, adverse impacts to air quality and air quality-related values.

Alternative A would not produce any major adverse impacts or impairment of air quality resources or values whose conservation is necessary to the purpose of the establishment of the parks that are key to the natural or cultural integrity of the parks; or that are actions identified as a management goal of the parks.

Impacts of Alternative B – Natural Landscape Units

Impact Analysis

Under this alternative, fire management activities would be permitted in appropriate fire management polygons within BLCA and CURE, including manual/mechanical treatment and prescribed fire to reduce fuel loading and to restore a more natural role for fire in appropriate management units. Under some conditions wildland fire would be permitted in units identified for WFU. Fire and fire management prescriptions would be allowed to cross BLCA and CURE boundaries with USFS and BLM lands, as well as some designated adjacent private lands, with interagency coordination whenever possible. All human-caused unplanned fires would be suppressed.

In the short term, air quality could be adversely affected when wildland fires, that in the past would have been suppressed, are permitted to burn under specific conditions, creating more smoke than would have occurred if the fires were suppressed. Also local air quality would be adversely affected for short periods of time during prescribed burns, with air quality returning to previous levels following the completion of burning. Particulate matter would be the primary pollutant with localized short-term, minor adverse effects; therefore, no significant long-term health impacts are expected. The effect of particulate matter and visibility on park visitors and nearby communities can be lessened by the proper use of smoke management and public notification.

All prescribed fire activities will comply with federal and state air quality regulations and before undertaking any prescribed fire, a permit application would be obtained for the Air Pollution Control Division in the Colorado Department of Public Health and Environment. Federal agencies including the NPS fall under the Colorado Air Quality Control Commission Regulation No. 9 and the Colorado Smoke Management Memorandum of Understanding.

The Class I Air Quality Areas the Black Canyon and other nearby wilderness areas receive the highest level of protection under the Clean Air Act. While degradation of air quality in these areas by human activities is strictly regulated, smoke from a natural-caused wildland fire is not considered a human-caused activity. Smoke impacts will occur as WFU are allowed to burn, under specific conditions, instead of being suppressed. These smoke impacts could be greater than under Alternative A, as WFU fires will tend to burn more area than a wildland fire that would be suppressed.

Cumulative Effects

Cumulative effects to local and regional air quality would range from minor to moderate adverse direct and indirect impacts, depending on timing and extent of other emissions that coincide with fire events within the parks. Industrial development in western Colorado and eastern Utah, along with construction of fossil fuel plants could increase background levels of air pollutants. Also, regional drought in the region could result in an increase in windstorms that could raise dust more frequently than normal. Drier fuel conditions could cause WFU fires to become more severe, creating greater amounts of smoke during each fire event, but would be short term in their impact. Also, the Dickerson Pit expansion in CURE could lead to increased dust particulates in the Cooper Ranch/Neversink areas in the eastern portion of CURE over time. Smoke from nearby fires could add to this problem, but could be mitigated by planning fires on days when the pit may not be operating. Cooperative efforts under Alternative B would help to plan and localize smoke impacts from one larger fire versus several smaller fires burning in many areas. However, fire management activities in the surrounding area, emissions from local development and automobiles, and management activities in the parks, when viewed together, would result in minor to moderate short-term adverse impacts on air quality. Overall, cumulative impacts of other actions in the parks, added to the adverse effects expected from Alternative B, would result in short-term, minor to moderate, direct and indirect, adverse impacts to air quality, but could produce long-term, beneficial effects that would offset adverse affects.

Conclusion

Under Alternative B, adverse impacts on air quality in BLCA, CURE and nearby areas would range from minor to moderate, but would be short-term and localized. Prescribed burning would cause some adverse, direct, short-term, localized smoke and particulate matter emissions. However, prescribed burns and fuel reduction efforts would help decrease the chance of a major or extensive wildfire, resulting in long-term beneficial effects that would offset the moderate, short-term, adverse effects to air quality. Alternative B would not produce any major adverse impacts or impairment of air quality resources or values whose conservation is necessary to the purpose of the establishment of BLCA and CURE, or that are key to the natural or cultural integrity of these areas, or that are actions identified as a management goal of BLCA or CURE.

Impacts of Alternative C – Natural Landscape Units only within Park Boundary

Impact Analysis

This alternative is the same as Alternative B except that fire management activities are permitted only within BLCA and CURE boundaries. No fire management activities, including prescribed fire and WFU, are permitted to extend into or out of adjacent public or private lands.

Impacts would be expected to be similar to Alternative B except that the area involved would be smaller in some cases because management activities or wildland fires would not be allowed to extend outside the park boundaries. For example, air quality could be adversely affected when wildland fires, that in the past would have been suppressed, are permitted to burn under specific conditions, creating more smoke than would have occurred if the fires were suppressed. Also local air quality would be adversely affected for short periods of time during prescribed burns, with air quality returning to previous levels

following the completion of burning. Particulate matter would be the primary pollutant with localized short-term, minor adverse effects; therefore, no significant long-term health impacts are expected.

Cumulative Effects

Cumulative effects would be similar to Alternative B except that the area of prescribed and wildland fires could be smaller, because of limitations from park boundaries. Fire suppression activities near park boundaries could actually reduce smoke and haze during fire events. Also, the Dickerson Pit expansion in CURE could lead to increased dust particulates in the Cooper Ranch/Neversink areas in the eastern portion of CURE over time. Smoke from nearby fires could add to this problem, but could be mitigated by planning fires on days when the pit may not be operating. Overall, cumulative impacts of other actions in the parks, added to the adverse effects and benefits expected from Alternative C, would result in short-term, minor to moderate, direct and indirect impacts to air quality.

Conclusion

Under Alternative C, adverse impacts on air quality in BLCA, CURE and nearby areas would range from minor to moderate, but would be short-term and localized near park boundaries. Prescribed burning would cause some adverse, direct, short-term, localized smoke and particulate matter emissions. Prescribed burns and fuel reduction efforts would help decrease the chance of a major or extensive wildfire, resulting in long-term beneficial effects that would offset the moderate, short-term, adverse effects to air quality. Alternative C would not produce any major adverse impacts or impairment of air quality resources or values whose conservation is necessary to the purpose of the establishment of BLCA and CURE, or that are key to the natural or cultural integrity of these areas, or that are actions identified as a management goal of BLCA or CURE.

WATER QUALITY

Methodology

The assessment of impacts uses the general methodology described above and the resource specific information provided below. Available information was obtained through interdisciplinary team meetings and review of relevant literature. The area of analysis included the surface waters within BLCA and CURE.

The intensity of effects and impact duration are described in the analysis below using the following criteria and definitions.

Negligible- An action that could result in a change to water quality, but the change would be so small that it would not be of any measurable or perceptible consequence.

Minor- An action that could result in a change to the water quality, but the change would be of small and of little consequence.

Moderate- An action that could result in a change to water quality, the change would be measurable and of consequence.

Major- An action that would result in a noticeable change to water quality; the change would be measurable and result in a severely adverse or major beneficial impact.

Impact Duration Definitions:

Short-term - Recovers in less than one year from fire or other action.

Long-term - Takes more than one year to recover from fire or other action.

Impacts of Alternative A (No Action)

Impact Analysis

With suppression of all fires and no fuel reduction, there is an increased possibility for severe or extensive wildfires. Impacts would vary with the intensity and extent of the burned area and with the slope, gradient, geology and soil depth in the burned area. Potential immediate impacts include physical and chemical changes from increased water temperature and from use of fire-fighting chemicals. Delayed impacts include erosion, sediment deposition, and turbidity from runoff. Increased water flow could provide benefits to hanging gardens, springs, and seeps. Given that large, high intensity fires are historically infrequent in this type of pinyon-juniper forest, it is likely that most adverse effects to water quality would be minor to moderate, and short term.

Cumulative Effects

Sources of cumulative impacts to water quality would include recreational activities within BLCA and CURE (such as motorized recreation on the reservoirs), fire-fighting, road/bridge/trail building, or other projects in BLCA or CURE that might temporarily increase erosion and runoff. Airborne pollutants could, over time, also result in minor impacts to water quality. Increased fire suppression activities, as would be expected with Alternative A, could exacerbate erosion and sedimentation due to suppression actions such as building fire lines. These effects would cumulatively result in minor to moderate direct and indirect adverse effects, depending on the extent and location of other activities in the area and whether or not these occurred at the same time. Overall, cumulative impacts of other actions in the parks, added to the adverse effects and benefits expected from Alternative A, would result in short- and long-term, minor to moderate, direct and indirect impacts to water quality.

Conclusion

Alternative A would result in short-term, minor to moderate adverse impacts to water quality.
Alternative A would not produce any major adverse impacts or impairment of water resources or values whose conservation is necessary to the purpose of the establishment of the parks that are key to the natural or cultural integrity of the parks; or that are actions identified as a management goal of the parks.

Impacts of Alternative B – Natural Landscape Units

Impact Analysis

Fuel reduction, WFU fire use, and prescribed fire activities would produce minor to moderate, adverse, short-term impacts to water quality. These would be mitigated using measures noted in the Mitigation Section, and would be planned to minimize erosion and sedimentation.

Cumulative Effects

Similar to Alternative A, sources of cumulative impacts to water quality would include recreational activities within BLCA and CURE, fire-fighting, road/bridge/trail building, or maintenance activities in the surrounding upland USFS or BLM lands that might temporarily increase erosion and runoff. By increasing the use of WFU fires under Alternative B, such fires could also result in short-term increases in erosion and sedimentation. These effects would cumulatively result in minor to moderate direct and indirect adverse effects, depending on the extent and location of other activities in the area and whether or not these occurred at the same time as WFU fires or other fire management activities. Overall, cumulative impacts of other actions in the parks, added to the adverse effects and benefits expected from Alternative B, would result in short- and long-term, minor to moderate, direct and indirect impacts to water quality.

Conclusion

Alternative B would result in short-term, minor to moderate adverse impacts to water quality through short-term increases in erosion and sedimentation.
Alternative B would not produce any major adverse impacts or impairment of water resources or values whose conservation is necessary to the purpose of the establishment of the parks that are key to the natural or cultural integrity of the parks; or that are actions identified as a management goal of the parks.

Impacts of Alternative C – Natural Landscape Units only within Park Boundary

Impact Analysis

Impacts would be similar to Alternative B except that the overall area for prescribed burns and fuel reduction activities would be smaller in many cases since no projects would extend outside the NPS boundaries. Fuel reduction, WFU fire use, and prescribed fire activities would produce minor to moderate, adverse, short-term impacts to water quality.

Cumulative Effects

Cumulative effects would be similar to Alternative B except that the area of WFU fires and fuel reduction activities could be smaller. However, under Alternative C, increased fire suppression actions near park boundaries could additively increase erosion and runoff due to mechanized fire suppression activities or fuel reduction projects. Overall, cumulative impacts of other actions in the parks, added to the adverse effects and benefits expected from Alternative C, would result in short- and long-term, minor to moderate, direct and indirect impacts to water quality.

Conclusion

Alternative C would also result in short-term, minor to moderate adverse impacts to water quality through short-term increases in erosion and sedimentation.
Alternative C would not produce any major adverse impacts or impairment of water resources or values whose conservation is necessary to the purpose of the establishment of the parks that are key to the natural or cultural integrity of the parks; or that are actions identified as a management goal of the parks.

FLOODPLAINS AND WETLANDS

Methodology

The assessment of impacts uses the general methodology described above and the resource specific information provided below. Available information was obtained through ID Team meetings and review of relevant literature. The area of analysis included floodplains and wetlands within BLCA and CURE, particularly in the Neversink and Cooper Ranch areas.

The intensity of effects and impact duration are described in the analysis below using the following criteria and definitions.

Negligible- An action that could result in a change to floodplains or wetlands, but the change would be so small that it would not be of any measurable or perceptible consequence.

Minor- An action that could result in a change to the floodplains or wetlands, but the change would be of small and of little consequence.

Moderate- An action that could result in a change to floodplains or wetlands, the change would be measurable and of consequence.

Major- An action that would result in a noticeable change to floodplains or wetlands; the change would be measurable and result in a severely adverse or major beneficial impact.

Impact Duration Definitions:

Short-term - Recovers in less than three years from fire or other action.

Long-term - Takes more than three years to recover from fire or other action.

Impacts of Alternative A (No Action)

Impact Analysis

With suppression of all fires and no fuel reduction, there is an increased possibility for severe or extensive wildfires. Possible effects include changes in streamflow characteristics due to removing vegetation that absorbs the energy of flood waters. Surface and subsurface water flow could be affected. Loss of the riparian gallery forest in the Cooper Ranch area would have longer-term effects while the woody vegetation,

including cottonwood trees, recovers. Regeneration is relatively rapid (1-2 years) in wetland areas so adverse effects would likely be relatively short-term and negligible.

Cumulative Effects

Impacts from grazing practices and from visitor activities could result in minor to moderate direct and indirect adverse cumulative effects to floodplains and wetlands. In addition, fluctuations in water level from dam regulation may also impact floodplains and wetlands over long periods of time, particularly with respect to changes in shoreline plant communities and their ecosystem services. Should severe, extensive wildfires occur under Alternative A, due to cumulative effects of fire suppression, large areas near wetlands or floodplains could result in changes to plant communities and their dynamics, and could also lead to increases in erosion and runoff. Overall, cumulative impacts of other actions in the parks, added to the adverse effects expected from Alternative A, would result in short- and long-term, minor to moderate, direct and indirect impacts to floodplains and wetlands.

Conclusion

Alternative A would result in short- and long-term, negligible to moderate adverse impacts to floodplains and wetlands.
Alternative A would not produce any major adverse impacts or impairment of floodplain or wetland resources or values whose conservation is necessary to the purpose of the establishment of the parks that are key to the natural or cultural integrity of the parks; or that are actions identified as a management goal of the parks.

Impacts of Alternative B – Natural Landscape Units

Impact Analysis

Fuel reduction and prescribed fire activities would produce minor short-term impacts such as temporary reductions in herbaceous vegetation. These would be mitigated using measured noted in the Mitigation Section, and would be planned to minimize direct impacts by buffering wetland and riparian areas. In addition, as the Gunnison River enters BLCA, the river cuts through the Black Canyon and direct or indirect impacts to floodplains as a result of fires or fire suppression activities are short-term and negligible.

Cumulative Effects

Impacts from grazing practices and from visitor activities could result in minor to moderate direct and indirect adverse effects to floodplains and wetlands. Further, changes to water release patterns from water impoundments such as the three reservoirs, could result in minor, but short-term alterations to vegetation. Infrequent severe fires, which could occur under Alternative B, could also cause short-term changes to vegetative communities, but these are expected under normal successional processes. Overall, cumulative impacts of other actions in the parks, added to the adverse effects and benefits expected from Alternative B, would result in short- and long-term, minor to moderate, direct and indirect impacts to floodplains and wetlands.

Conclusion

Alternative B would result in short-term, minor to moderate, direct and indirect adverse impacts to floodplains and wetlands.
Alternative B would not produce any major adverse impacts or impairment of floodplain and wetland resources or values whose conservation is necessary to the purpose of the

establishment of the parks that are key to the natural or cultural integrity of the parks; or that are actions identified as a management goal of the parks.

Impacts of Alternative C – Natural Landscape Units only within Park Boundary

Impact Analysis

Similar to Alternative B, fuel reduction and prescribed fire activities would produce minor short-term, adverse impacts. The wetland and riparian areas would be buffered, and the overall affected area would be smaller in many cases because no activities would extend outside the NPS boundaries.

Cumulative Effects

Impacts from grazing practices and from visitor activities could result in minor to moderate direct and indirect adverse effects to floodplains and wetlands. Further, changes to water release patterns from water impoundments such as the three reservoirs, could result in minor, but short-term alterations to vegetation. Fire suppression actions under Alternative C would likely be higher near park boundaries. Since many of the wetlands and floodplain areas occur near the eastern end of CURE, this could result in more moderate effects to vegetation and hydrological dynamics in and near wetlands. Overall, cumulative impacts of other actions in the parks, added to the adverse effects and benefits expected from Alternative C, would result in short- and long-term, minor to moderate, direct and indirect impacts to wetlands and floodplains.

Conclusion

Alternative C would result in short-term, minor, direct and indirect adverse impacts to floodplains and wetlands.
Alternative C would not produce any major adverse impacts or impairment of floodplain and wetland resources or values whose conservation is necessary to the purpose of the establishment of the parks that are key to the natural or cultural integrity of the parks; or that are actions identified as a management goal of the parks.

LAND USE

Methodology

The assessment of impacts includes the use the general methodology described above and the resource specific information provided below. Available information was obtained through ID Team meetings, including a representative from the BLM. The area of the analysis for recreation resources includes BLCA and CURE, along with the immediately surrounding BLM, USFS, USBR, WAPA, and private lands adjacent to the two NPS units, as well as surrounding communities. Key issues relating to land use in BLCA and CURE are 1) grazing, particularly private grazing allotments, 2) recreation, which is addressed in a following section on “Recreation Resources / Visitor Use and Experience”, and 3) housing on private in-holdings within park boundaries and adjacent private lands surrounding the parks. The intensity of effects and impact durations are discussed in the analysis below using the following criteria and definitions.

Impact Intensity Threshold Criteria:

Negligible- An action that could result in an impact on land uses, but the change would be so small that it would not be of any measurable or perceptible consequence.

Minor- An action that could result in an impact on land uses, but the change would be of small and of little consequence.

Moderate- An action that could result in an impact on land uses, and the change would be measurable and of consequence.

Major- An action that would result in an impact on land uses and the change would be measurable and result in a severely adverse or major beneficial impact.

Impact Duration Definitions:

Short-term - Recovers in less than three years from fire or other action.

Long-term - Takes more than three years to recover from fire or other action.

Impacts of Alternative A (No Action)

Impact Analysis

Under Alternative A, complete removal of fire through aggressive fire suppression may result in a conservation of grazing forage for any given year, but may, over time, result in a decrease in quality of forage. Disturbance to grazing allotments as a result of fire fighting equipment such as large trucks or tracked machinery may also cause more severe impacts than fire itself, and these impacts to vegetation may take longer to recover than if an area burns. Prescribed fire is also known to be effective in improving forage, but this option is not available under Alternative A. Impacts of fire on adjacent, private lands would likely be minimized under Alternative A, where no fires are allowed to burn, or to cross park boundaries. Both short- and long-term, minor to moderate, direct and indirect adverse effects on land use are expected with this alternative.

Cumulative Effects

Full fire suppression, as would be implemented under Alternative A, could result in a long-term decrease in the quantity and quality of forage for grazing. Surface fires, while reducing or removing current year vegetation, may also release important nutrients to the soil, resulting in increased quality of forage, and increased vigor and growth rate (Whelan 1995; Singh 1993). Complete removal of fire may also reduce genetic diversity within plant populations by decreasing the opportunities for genetic recombinations that often occur during revegetation. Increased housing and industrial development near park boundaries will also impact land use issues in BLCA and CURE, although these effects are not specific for, or unique to, Alternative A. Overall, cumulative impacts of other actions in the parks,

added to the adverse effects expected from Alternative A, would result in short- and long-term, minor to moderate, direct and indirect impacts to land use, and would generally be localized near developed areas and areas of fire suppression activity.

Conclusion

Under Alternative A, minor to moderate, short-term and long-term, adverse effects may occur to grazing resources from suppression activities and higher severity wildland fires that would be more likely to occur. Negligible to minor, short-term adverse or beneficial effects may occur to vegetation on private lands, both inside and outside the parks, as a result of fire suppression activities of wildland fires.

Alternative A would not produce any major adverse impacts or impairment of land uses such as grazing or adjacent housing whose conservation is necessary to the purpose of the establishment of BLCA and CURE or that are key to the natural or cultural integrity of the park and recreation area, or that are actions identified as a management goal of either unit.

Impacts of Alternative B – Natural Landscape Units Alternative

Impact Analysis

Alternative B, which utilizes both prescribed fire and WFU, may result in a short-term minor to moderate effect through the removal of forage and other forms of vegetation, but can improve the quantity and quality of vegetation in subsequent years. Timing of prescribed burning may reduce the impacts on current year vegetation, yet still result in an increase in forage quality the following year. Alternative B allows for fires, under certain circumstances, to cross park boundaries either out of the parks onto adjacent public or private land, or into the parks from adjacent lands. This would provide similar short- and long-term, direct, beneficial impacts to surrounding lands. For example, vegetation quality and quantity could be improved on adjacent BLM grazing lands should a fire be allowed to burn and cross the park boundary. Also, minor, short-term adverse effects of manual/mechanical fuel reduction could affect vegetation; however, some of these effects could be beneficial to grazing.

Cumulative Effects

The use of prescribed fire and WFU may result in a long-term increase in quality and quantity of vegetation and forage for grazing. This can also reduce fuel loadings and reduce the likelihood of severe fires in the future. Also, increased development of private or commercial properties, either within, or in surrounding areas, may affect vegetation dynamics, or therefore affect fire behavior or suppression activities, although these effects are not specific for, or unique to, Alternative B. However, Alternative B provides for the protection from increased development through the increased use of manual/mechanical and prescribed fire treatments. Overall, cumulative impacts of other actions in the parks, added to the slight adverse effects expected from Alternative B, would result in short- and long-term, minor to moderate, direct and indirect impacts to land use, and would generally be localized near developed areas and areas of fire suppression activity. Expected long-term benefits resulting from Alternative B would be more widespread, dependent upon timing and location of WFU fires and prescribed fire use.

Conclusion

Under Alternative B, minor to moderate, short-term detrimental, yet long-term, beneficial effects may occur to grazing resources from the use of prescribed fire and WFU.
Negligible to minor, short-term adverse or beneficial effects may occur to vegetation on private lands, both inside and outside the parks, as a result of fire suppression activities or wildland fires.
Alternative B would not produce any major adverse impacts or impairment of land uses such as grazing or adjacent housing whose conservation is necessary to the purpose of the establishment of BLCA and CURE or that are key to the natural or cultural integrity of the park and recreation area, or that are actions identified as a management goal of either unit.

Impacts of Alternative C – Natural Landscape Units only within Park Boundary

Impact Analysis

The impacts of Alternative C, which also utilizes prescribed fire and WFU, would be similar to Alternative B, except that any harmful short-term effects of vegetation removal or beneficial long-term effects on forage quality would be restricted to lands within the park boundaries. However, firefighting efforts along park boundaries may result in harmful impacts to vegetation through mechanical scarring as a result of road building and other fire suppression techniques.

Cumulative Effects

The use of prescribed fire and WFU may result in a long-term increase in quality and quantity of vegetation and forage for grazing, but only within park boundaries. This can also reduce fuel loadings and reduce the likelihood of severe fires in the future within BLCA and CURE. Also, increased development of private or commercial properties, either within, or in surrounding areas, may affect vegetation dynamics, or therefore affect fire behavior or suppression activities, although these effects are not specific for, or unique to, Alternative C. Overall, cumulative impacts of other actions in the parks, added to the adverse effects and benefits expected from Alternative C, would result in short- and long-term, minor to moderate, direct and indirect impacts to land uses, and would generally be localized near developed areas and areas of fire suppression activity near park boundaries.

Conclusion

Under Alternative C, minor to moderate, short-term detrimental, yet long-term, beneficial effects may occur to grazing resources from the use of prescribed fire and WFU, but only within park boundaries. Negligible to minor, short-term adverse or beneficial effects may occur to vegetation on private lands, both inside and outside the parks, as a result of fire suppression activities or wildland fires.

Alternative C would not produce any major adverse impacts or impairment of land uses such as grazing or adjacent housing, but could result in short-term to long-term damage to vegetation along park boundaries as a result of fire suppression efforts. Alternative C would not produce any major adverse impacts of land use resources or values whose conservation is necessary to the purpose of the establishment of BLCA and CURE or that are key to the natural or cultural integrity of the park and recreation area, or that are actions identified as a management goal of either unit.

SPECIES OF SPECIAL CONCERN: WILDLIFE

Methodology

The assessment of impacts uses the general methodology described above and the resource specific information provided below. Available information was obtained through ID Team meetings and review of relevant literature. As more data become available and the FMP is updated, this information will become more specific. The area of analysis includes lands within BLCA and CURE.

The analysis is divided into two sections: wildlife including big game, birds, fisheries, amphibians and snakes; and Threatened, Endangered and Candidate Species (federal and state listings), and Park Sensitive Species.

The intensity of effects and impact duration are described in the analysis below using the following criteria and definitions.

Negligible- An action that could result in a change to an individual wildlife species, population, or habitat; but the change would be so small that it would not be of any measurable or perceptible consequence.

Minor- An action that could result in a change to an individual wildlife species, population or habitat. The change would be small and of little consequence.

Moderate- An action that could result in a change to an individual wildlife species, population or habitat. The change would be measurable and of consequence to the species or resource.

Major- An action that would have a noticeable change to an individual wildlife species or population, or habitat. The change would be measurable and result in a severely adverse or major beneficial impact, or possible permanent consequence, upon wildlife individual species, population, or habitat.

Impact Duration Definitions:

Short-term - Recovers in less than three years from fire or other action.

Long-term - Takes more than three years to recover from fire or other action.

Impacts of Alternative A – No Action

Impact Analysis

With suppression of all fires and no fuel reduction, there is an increased possibility for severe or extensive wildfires with adverse or beneficial effects to wildlife as follows.

Large Mammals

BLCA and CURE contain summer range and severe winter range for elk and mule deer. Suitable habitat for bighorn sheep is widespread and a bighorn population has been reestablished with transplanted animals. Pronghorn are not common. Severe or extensive wildfires could impact these animals directly, though most are able to escape fires, and indirectly through habitat changes or loss. In many areas fires have beneficial effects as the new vegetative growth is attractive to grazers and browsers. Short-term impacts from fire and suppression activities would range from minor to moderate for these species depending on the season, magnitude and location of the fire and the suppression effort.

Birds

Bird mortality from wildland fires depends on the severity and uniformity of the burn, and the season. Adult birds are usually able to escape fires but eggs and young birds are often killed, especially among ground-nesting species. Some birds will re-nest following the loss of their eggs. Some birds, such as raptors or woodpeckers, are attracted to burned areas and receive short-term foraging benefits. Overall impacts to birds from fires and suppression activities, including nestling mortality and nest destruction, would likely be moderate and short term.

Fisheries

BLCA hosts Gold Medal Fishery waters. There are possible impacts from fire retardant or foam in run-off or off-target drops. If fire-caused erosion and sedimentation coincides with spawning, there could be immediate and lasting effects. Overall, most impacts would be minor to moderate and short term.

Amphibians and Reptiles

Some amphibians or snakes may be killed by fire but many are able to escape. Changes to the plant species composition and habitat structure resulting from fires would influence on amphibian and snake populations. Effects may be detrimental for species that thrive in the more densely vegetated areas, or beneficial for species attracted to more open areas. Impacts would likely be minor to moderate and short term.

Cumulative Effects

Sources of cumulative impacts to wildlife include recreational activities within BLCA and CURE, and other projects such as road building that cause disturbances. Wildlife near areas of fire suppression activities could be displaced to other areas within the parks, at least for the duration of the activity. If regional drought continues, fire suppression activities would likely increase and could result in more frequent displacement of wildlife. Also, extended periods of drought could affect forage or habitat areas for some species, and this condition could be exacerbated by wildland fire or fire suppression activities. In addition, activities at the Dickerson Pit, and its planned expansion, could create additional noise and disturbance above and beyond that created by fire management activities, particularly fire suppression activities. These effects would cumulatively result in minor to moderate direct and indirect adverse effects, depending on the extent and location of other activities in the area and whether or not these occurred at the same time. Overall, cumulative impacts of other actions in the parks, added to the adverse effects expected from Alternative A, would result in short- and long-term, minor to moderate, direct and

indirect impacts to wildlife, and would generally be localized near areas of fire suppression activity.

Conclusion

Alternative A would result in short-term, minor to moderate adverse impacts to wildlife. Alternative A would not produce any major adverse impacts or impairment of wildlife or related values whose conservation is necessary to the purpose of the establishment of the parks that are key to the natural or cultural integrity of the parks; or that are actions identified as a management goal of the parks.

Impacts of Alternative B – Natural Landscape Units

Impact Analysis

Overall, in areas where wildland fires and prescribed fires are allowed to burn under Alternative B, there would be fewer effects from fire suppression activities. Prescribed fires would be scheduled to avoid breeding and rearing seasons for most species, and would be less intense and extensive. WFU fires and prescribed fires could result in more, less severe fires across the landscape, which could affect more wildlife habitat at any given time. This could result in the temporary displacement of more individuals of a species, which could require advance planning and mitigation. Further, following recovery of the vegetation, some species may overuse the burned areas in the absence of other nearby suitable habitat. Cooperative efforts among agencies and planning across boundaries is a key positive impact of Alternative B, so that larger and more areas may be treated over the landscape, leading eventually to more benefits over the range of species over time.

WFU and prescribed fire, in combination with mechanical fuel reduction and careful application of mitigation measures would result in long-term beneficial impacts to habitats.

Large Mammals

Short-term impacts to some wildlife species include minor disturbances from human activity and equipment during wildland, prescribed fire, or fuel reduction operations. These impacts can be mitigated, such as by planning operations to avoid spring birthing areas. Re-growth of vegetation would moderately enhance habitat conditions for many species. Access to springs or seeps would be improved where thinning occurred and where surface fuels were reduced from fire or a combination of fire and mechanical thinning.

Birds

Possible short-term impacts to some bird species include negligible to minor disturbances from human activity and equipment during wildland, prescribed fire, or fuel reduction operations. Planned fire or fuel reduction operations would be scheduled to avoid breeding and nesting seasons whenever possible.

Fisheries

Because many impacts from this Alternative would result from planned activities (prescribed fires or fuel reduction), effects on fisheries could be reduced by scheduling these activities to avoid spring runoff or times when rains are often heavy, avoiding riparian areas, and not piling and burning slash in ephemeral drainages that lead to the river or the reservoirs. Measures described in the Mitigation Section would also help reduce adverse impacts.

Amphibians and Reptiles

Possible impacts to amphibians and reptiles include disturbances from human activity and equipment during wildland, prescribed fire, or fuel reduction operations. These impacts

would likely be minor and short term. Prescribed fire or fuel reduction activities would be planned to avoid breeding habitat and seasons whenever possible.

Cumulative Effects

Similar to Alternative A, sources of cumulative impacts to wildlife include recreational activities within BLCA and CURE, and other projects such as road or structure building. Wildlife near areas of WFU fire or prescribed fire activities could be displaced to other areas within the parks, at least for the duration of the activity. If regional drought continues, fire suppression activities may increase to reduce the severity of wildland fires, and could result in more frequent displacement of wildlife. Also, extended periods of drought could affect forage or habitat areas for some species, and this condition could be exacerbated by WFU or fire suppression activities. Impacts from prescribed fires or fuel reduction efforts would be minimized by spreading out the actions over time and coordinating them with other WFU decisions made by the USFS or BLM, to avoid affecting widespread areas at any one time.

These effects would cumulatively result in minor to moderate direct and indirect adverse effects, depending on the extent and location of other activities in the area and whether or not these occurred at the same time. Overall, cumulative impacts of other actions in the parks, added to the adverse effects and benefits expected from Alternative B, would result in short- and long-term, minor to moderate, direct and indirect impacts to wildlife, and would generally be localized near areas of fire use or fire management activity.

Conclusion

Alternative B would result in minor to moderate short-term impacts on big game, birds, fisheries, amphibians and snakes due to unavoidable effects of WFU, prescribed fires, and fuel reduction efforts. Mitigation would reduce many of the impacts. Minor to moderate, short- and long-term beneficial effects would result from habitat improvements following prescribed fire and non-fire treatments.
Alternative B would not produce any major adverse impacts or impairment of wildlife or related values whose conservation is necessary to the purpose of the establishment of the parks that are key to the natural or cultural integrity of the parks; or that are actions identified as a management goal of the parks.

Impacts of Alternative C – Natural Landscape Units only within Park Boundary

Impact Analysis

Impacts to big game, birds, fisheries, amphibians and reptiles would be similar to those discussed for Alternative B except that the area involved would be smaller in some cases since planned activities would not extend outside NPS boundaries. Minor to moderate short-term impacts on big game, birds, fisheries, amphibians and snakes due to unavoidable effects of WFU, prescribed fires, and fuel reduction efforts would likely occur. Mitigation would reduce many of the impacts. Short- and long-term, minor to moderate, beneficial effects would result from habitat improvements following prescribed fire and non-fire treatments.

Cumulative Effects

Similar to Alternatives A and B, sources of cumulative impacts to wildlife include recreational activities within BLCA and CURE, and planned maintenance or other projects that cause temporary disturbances. Wildlife near areas of fire use or fire suppression activities could be displaced to other areas within the parks, at least for the duration of the activity. If regional drought continues, fire suppression activities would likely increase and could result in more frequent displacement of wildlife. Also, extended periods of drought could affect forage or habitat areas for some species, and this condition could be exacerbated by WFU or fire suppression activities. These effects would cumulatively result in minor to moderate direct and indirect adverse effects, depending on the extent and location of other activities in the area and whether or not these occurred at the same time. Overall, cumulative impacts of other actions in the parks, added to the adverse effects expected from Alternative C would result in short- and long-term, minor to moderate, direct and indirect impacts to wildlife, and would generally be localized near areas of fire suppression activity.

Conclusion

Alternative C would result in minor to moderate short-term impacts on big game, birds, fisheries, amphibians and snakes due to unavoidable effects of WFU, prescribed fires, and fuel reduction efforts. Mitigation would reduce many of the adverse impacts. Short- and long-term, minor to moderate, beneficial effects would result from habitat improvements following prescribed fire and non-fire treatments.
Alternative C would not produce any major adverse impacts or impairment of wildlife or related values whose conservation is necessary to the purpose of the establishment of the parks that are key to the natural or cultural integrity of the parks; or that are actions identified as a management goal of the parks.

SPECIES OF SPECIAL CONCERN: THREATENED, ENDANGERED AND CANDIDATE SPECIES

Methodology

Impact Criteria

The Endangered Species Act (ESA) terminology used to assess impacts to listed species is as follows:

No effect: When a proposed action would not affect a listed species or designated critical habitat.

May affect/not likely to adversely affect: When effects on special status species or designated critical habitat are discountable or completely beneficial.

May affect/likely to adversely affect: When an adverse effect to a listed species or designated critical habitat may occur as a direct or indirect result of proposed actions and the effect is either completely beneficial or may adversely affect a listed species or designated critical habitat.

Is likely to jeopardize proposed species/adversely modify proposed critical habitat: When the NPS or the USFWS identifies situations where fire operations could jeopardize the

continued existence of a proposed species or adversely modify critical habitat to a species within or outside park boundaries.

The intensity of effects and impact duration are described in the analysis below using the following criteria and definitions.

Negligible- No state and/or federally listed species would be affected or the alternative would affect an individual of a listed species or its critical habitat, but the change would be so small that it would not be measurable or perceptible consequence to the protected individual or its population. A negligible effect would equate to a "no effect" determination by the USFWS.

Minor- The alterative would affect an individual(s) of a listed species or its critical habitat, but the change would be small. A minor effect would equate to a "may affect" determination by the USFWS and would be accompanied by a statement of "not likely to adversely affect the species."

Moderate- An individual or population of a listed species, or its critical habitat would be noticeably affected. The effect could have some long-term consequence to the individual, population, or critical habitat. A moderate effect would equate to a "may affect" determination by the USFWS and would be accompanied by a statement of "likely to adversely affect" the species.

Major- An individual or population of a listed species, or its critical habitat, would be noticeably affected with long-term, vital consequences to the individual, population or critical habitat. A major effect would equate to a "may affect" determination by the USFWS accompanied by a statement of "likely to adversely affect" the species or critical habitat.

Impact Duration Definitions:

Short-term - Recovers in less than three years from fire or other action.

Long-term - Takes more than three years to recover from fire or other action.

Impacts of Alternative A (No Action)

Impact Analysis

Federally-listed species

Willow flycatcher habitat is found in BLCA and CURE in riparian areas but it is not yet known if the listed subspecies, Southwestern willow flycatcher, occurs in the area. Studies are underway to determine which subspecies occurs in the region. Since riparian habitat is not extensive, adverse effects from Alternative A would be minor and short-term.

Colorado pikeminnow and razorback sucker are two listed fish species found in the Gunnison River. Fire and fire-fighting impacts to surface water such as increased temperature, sedimentation from ash and soil runoff, and influx of chemical retardants would indirectly affect these and other fish. Most fish would swim away from the affected area. If fire occurred during or before spawning, however, minor to moderate, short-term, direct adverse effects to spawning beds could occur from deposition of ash and sediment.

Bald eagles occur in the area and suitable foraging and winter habitat exists along the river and the reservoirs, as well as potential nesting habitat in the Neversink/Cooper Ranch area. Fires and fire-suppression activities are not likely to affect bald eagles since they can easily leave disturbed areas and use nearby areas for feeding, perching, and resting. Adverse effects from Alternative A would be short-term and minor.

Gunnison sage-grouse live and nest in big sagebrush communities such as those found in CURE. Fire may be beneficial or detrimental depending on the timing, extent and intensity of the burn. Sage-grouse use different successional stages of the vegetation for breeding, nesting, and wintering; low-intensity patchy fires may be beneficial by creating new openings and fresh vegetative growth. Extensive open areas are not optimal, nor are extensive dense sagebrush stands. Threats to Gunnison sage-grouse include degradation of habitat, habitat loss or fragmentation, and physical disturbance, especially during critical mating, nesting, or brooding periods. Habitat degradation or loss has resulted from land treatments that convert sagebrush landscapes to developed or fragmented areas. Roads, utility and energy development, and urban or agricultural development are examples of activities that can threaten Gunnison sage-grouse habitat. Physical disturbance to the species may occur through hunting, off-highway vehicle use, and harassment by scientific studies or bird watching.

State listed species

The American peregrine falcon is known to occur in BLCA and suitable nesting habitat is found on the canyon cliffs. It is unlikely that fires or fire-suppression activities would affect these areas and thus adverse impacts to this species, or its prey, would be short-term and negligible.

Greater Sandhill cranes can find suitable habitat in BLCA and CURE during spring migration but they are not known to breed in the area. They would likely avoid or escape from fires or fire-suppression activities with short-term, minor impact.

Similarly, long-billed curlews are springtime migrants in the area but are not known to breed in western Colorado. Direct impacts from fires or fire-suppression activities would be negligible.

Colorado River cutthroat trout occur in the Gunnison River below Crystal Reservoir and in BLCA. Potential sites for re-introducing the species exist in BLCA and CURE. Impacts from fire and fire-suppression efforts likely would be minor and short term, or moderate and longer term if spawning areas were affected. Mitigation measures would be especially important in known spawning areas.

The Black Canyon gilia is found in cracks, narrow ledges, and cliffs in the canyon, and the hanging garden Sullivantia is found on cliffs that are made wet by seeps and springs running down canyon walls. Because of the habitat requirements for these species, no measurable effects of fire management activities are expected. Skiff's milkvetch and

Gunnison milkvetch and Rollin's twinpod are found in low sagebrush communities in CURE and surrounding areas. Impacts to these species from fire suppression would be neglible to minor, as they would be for Adobe thistle.

Park sensitive species

Gunnison sage-grouse and bighorn sheep are discussed in sections above.

A great blue heron rookery is found in cottonwoods in the Neversink/Cooper Ranch area. This important nesting location would suffer moderate impacts if a high-intensity crown fire swept through the cottonwood forest; however, this type of event is highly unlikely. Planned projects would avoid this area.

Gunnison's prairie dogs are found in the area. Impacts from fire and fire-suppression efforts on this species are likely to be minor to moderate and short term especially with mitigation efforts.

Cumulative Effects

Sources of cumulative impacts to these sensitive species include recreational activities, fire-fighting, road/bridge/trail building, or maintenance activities in the surrounding USFS or BLM lands. Alternative A requires all fires to be actively suppressed, which could temporarily displace some species from their normal habitat. These effects would cumulatively result in minor to moderate direct and indirect adverse effects, depending on the extent and location of other activities in the area and whether or not these occurred at the same time. In addition, activities at the Dickerson Pit, and its planned expansion, could create additional noise and disturbance above and beyond that created by fire management activities, particularly fire suppression activities. This could affect the great blue heron rookery in the Cooper Ranch/Neversink area in the eastern portion of CURE. Some impacts can be avoided with careful planning of the timing and location of activities, so as to avoid areas known to be important to any of the species whenever possible. Overall, cumulative impacts of other actions in the parks, added to the adverse effects expected from Alternative A, would result in short-term, minor to moderate, direct and indirect impacts to threatened and endangered species, and would generally be localized near areas of fire suppression activity.

Conclusion

Alternative A would result in short-term, minor to moderate adverse impacts to the above-listed sensitive species.
Alternative A would not produce any major adverse impacts or impairment of these sensitive species or related values whose conservation is necessary to the purpose of the establishment of the parks that are key to the natural or cultural integrity of the parks; or that are actions identified as a management goal of the parks.

Impacts of Alternative B – Natural Landscape Units

Impact Analysis

Impacts to selected species would be similar to those noted above for Alternative A if wildfire occurred or WFU extended into sensitive areas. WFU fires and prescribed fires could result in more, less severe fires across the landscape, which could affect more wildlife habitat at any given time. This could result in the temporary displacement of more

individuals of a species, which could require advance planning and mitigation. Further, following recovery of the vegetation, some species may overuse the burned areas in the absence of other nearby suitable habitat. Cooperative efforts among agencies and planning across boundaries is a key positive impact of Alternative B, so that larger and more areas may be treated over the landscape, leading eventually to more benefits over the range of species over time. As noted in the Mitigation Section, the NPS Resource Management Specialist would be consulted on the need for surveys to determine occupancy of the following sensitive species prior to any prescribed fires or fuel reduction efforts. If species are found, steps would be taken to reduce impacts, including avoidance of breeding or nesting seasons. The USFWS would be contacted to ensure that appropriate and effective mitigation is provided. Wildland fires could be prevented or buffered from burning into areas known to be habitat for any of these species.

Federal species

Riparian habitat is not extensive and prescribed fires and fuel reduction efforts could be planned to avoid such areas, thus if Southwestern willow flycatcher is found to be present, effects of Alternative B on this subspecies likely would be minor.

Similarly, impacts of prescribed fires and fuel reduction efforts on Colorado pikeminnow and razorback sucker could be mitigated through careful planning to avoid spawning periods, spring runoff or times when rains are often heavy, and by ensuring no piling and burning of slash in ephemeral drainages that lead to the river or the reservoirs.

Prescribed fires and fuel reduction activities are not likely to affect bald eagles since they can easily leave disturbed areas and use nearby areas for feeding, perching, and resting. During breeding and brood rearing seasons, buffers from prescribed fires could be maintained around nesting areas until young birds have fledged.

Prescribed fire and fuel reduction can be tools for thinning dense sagebrush stands and improving habitat conditions for Gunnison sage-grouse. The timing of fires and other activities is critical, however, to avoid breeding and nesting areas and key wintering areas.

State listed species

American peregrine falcons, greater Sandhill cranes, and long-billed curlews are not likely to be adversely affected by carefully planned prescribed fires or fuel reduction activities and impacts to these species from Alternative B would be minor and short term.

Impacts to Colorado River cutthroat trout from prescribed fire and fuel reduction efforts likely would be minor and short term. Planning and mitigation measures to avoid erosion and runoff into streams would be especially important in known spawning areas.

Park sensitive species

Prescribed fires would be planned to avoid the great blue heron rookery located in cottonwoods in the Neversink/Cooper Ranch area. Fuel reduction activities in the area would be conducted outside of the heron's nesting season.

Similarly, prescribed fire and fuel reduction efforts would be planned to avoid the breeding and rearing seasons for Gunnison's prairie dogs are impacts are likely to be minor and short term.

Cumulative Effects

Similar to Alternative A, sources of cumulative impacts to these species under Alternative B include recreational, fire-fighting, road/bridge/trail building, or maintenance activities in the surrounding national forest or BLM lands. Long-term impacts from WFU can be beneficial for habitat improvement for many species, but could also displace some species during breeding or nesting seasons. Impacts from prescribed fires or fuel reduction efforts, however, would be minimized by spacing out these actions and coordinating them with other USFS or BLM actions. Impacts can be avoided or mitigated with careful planning of the timing and location of activities, so as to avoid areas known to be important to any of the species whenever possible. Overall, cumulative impacts would be reduced through the mitigation included in Alternative B. Cumulative impacts of other actions in the parks, added to the adverse effects and benefits expected from Alternative B, would result in short- and long-term, minor to moderate, direct and indirect impacts to threatened and endangered species, and would generally be localized near areas of fire use and fire suppression activity.

Conclusion

Alternative B would result in minor to moderate short-term adverse impacts to the above-listed sensitive species due to the unavoidable effects of WFU, prescribed fire, and fuel reduction activities. For some species, these prescriptions would result in short- and long-term beneficial habitat improvements.

Alternative B would not produce any major adverse impacts or impairment of these sensitive species or related values whose conservation is necessary to the purpose of the establishment of the parks that are key to the natural or cultural integrity of the parks; or that are actions identified as a management goal of the parks.

Impacts of Alternative C – Natural Landscape Units only within Park Boundary

Impact Analysis

Impacts to these species would be similar to those discussed for Alternative B except that the area involved would be smaller in some cases since planned activities would not extend outside NPS boundaries.

Cumulative Effects

Sources of cumulative impacts to these species under Alternative C are similar to Alternative B and include recreational activities, fire-fighting, road/bridge/trail building, or maintenance activities in the surrounding USFS or BLM lands. These effects would cumulatively result in minor to moderate direct and indirect adverse effects, depending on the extent and location of other activities in the area and whether or not these occurred at the same time. Some impacts can be avoided with careful planning of the timing and location of activities, so as to avoid areas known to be important to any of the species whenever possible. Overall, cumulative impacts of other actions in the parks, added to the adverse effects and benefits expected from Alternative C, would result in short- and long-term, minor to moderate, direct and indirect impacts to threatened and endangered species, and would generally be localized near park boundaries and areas of fire use and fire suppression activity.

Conclusion

Alternative C would result in short-term, minor to moderate adverse impacts to the above-listed sensitive species. For some species, these prescriptions would result in short- and long-term beneficial habitat improvements.

Alternative C would not produce any major adverse impacts or impairment of these sensitive species or related values whose conservation is necessary to the purpose of the establishment of the parks that are key to the natural or cultural integrity of the parks; or that are actions identified as a management goal of the parks.

UNIQUE OR IMPORTANT VEGETATION COMMUNITIES

Methodology

The assessment of impacts includes the use the general methodology described above and the resource specific information provided below. Available information was obtained through ID Team meetings, including a representative from the BLM. The area of the analysis for vegetation communities includes BLCA and CURE, along with the immediately surrounding BLM, USFS, and private lands adjacent to the two NPS units. The intensity of effects and impact durations are discussed in the analysis below using the following criteria and definitions.

Impact Intensity Threshold Criteria:

Negligible- Changes in vegetative communities would not be measurable, with no effect on native species populations. Any effects would be small scale, and no species of special concern would be affected.

Minor- Changes in vegetative communities or species populations would be measurable, with small and localized effects to a relatively minor portion of any species population.

Moderate- Changes in vegetative communities or species populations would be readily apparent, with effects to a sizeable segment of the species' population over a relatively large area.

Major- Changes to vegetative communities on species populations would have a considerable long-term effect and affect a relatively large area in and out of the park. Species of special concern could be affected. Reclamation success could not be guaranteed.

Impact Duration Definitions:

Short-term - Recovers in less than three years from fire or other action.

Long-term - Takes more than three years to recover from fire or other action.

Impacts of Alternative A (No Action)

Impact Analysis

Alternative A would continue fire exclusion and suppression of all ignitions. Fuel loading within the parks and along the boundaries would probably continue to increase as a result of fire suppression, at least in the short term. Continued suppression would lead to a reduction in frequent, but less intense wildfires, and an increase in severe wildfires would be likely. The vegetation communities would experience both direct and indirect adverse and beneficial impacts and reactions to this management approach. For example, mature pinyon-juniper woodlands and forests would become more susceptible to intense fires as fuels continue to accumulate, which decreases the chance of tree survival in extreme fires and creates fuel ladders that can allow development of more severe crown fires. Fire suppression may be beneficial to Gunnison sage-grouse habitat since surface fires may remove the sagebrush dominated vegetation in some areas that serve as critical nesting habitat. However, the hanging gardens within the steep canyons would likely show little effect from this alternative because of the low fire occurrence within the canyons. Finally, cottonwood galleries in the Cooper Ranch area may become decadent as fire suppression reduces the establishment of new trees through sprouting.

Cumulative Effects

The cumulative impacts of previous and potential future fire suppression operations (e.g., soil compaction due to vehicle use, fire line construction, etc.) and the limited mechanical fuels reduction that occurs would result in negligible to minor adverse impacts, as suppression actions become more frequent with increasing fuels across the landscape. Other management activities or uses would add to the overall impacts on vegetation over time, resulting in long-term minor to moderate impacts to vegetation, depending on the extent and severity of fires and the nature and location of the projects. Overall, cumulative impacts of other actions in the parks, added to the adverse effects expected from Alternative A, would result in short- and long-term, negligible to moderate, direct and indirect impacts to vegetation communities.

Conclusion

Minor to moderate short-term and long-term adverse effects to some vegetation such as pinyon-juniper woodlands would occur under Alternative A, with continued fire suppression activities within the park boundaries.
Alternative A would not produce any major adverse impacts or impairment of vegetation resources or values whose conservation is necessary to the purpose of the establishment of the parks that are key to the natural or cultural integrity of the parks; or that are actions identified as a management goal of the parks.

Impacts of Alternative B – Natural Landscape Units

Impact Analysis

Alternative B supports WFU for resource benefit, manual/mechanical treatment and prescribed fire application, all of which could result in minor loss of individual plants through normal mortality. Most native plant associations are adapted to the effects of periodic surface fires, and prescribed fire could produce short- and long-term, minor to moderate beneficial impacts in these communities. Disturbance from the action of work crews, slash

pile burning, removal of individual trees, and hard thinning/limbing would result in localized, direct, negligible to minor effects to plant communities. However, thinning is often desirable to promote reduction of overstocked understory trees and shrubs, and slash pile burning would result in some beneficial effects as nutrients are released into the soil. Fuels reduction in mature pinyon-juniper forests could reduce the likelihood of intense, stand-replacing fires in the future.

Some prescribed burning could facilitate resprouting of cottonwood trees in the Neversink/Cooper Ranch area. In addition, wildland fire or prescribed fire in sagebrush shrublands may create a mosaic of vegetation across the landscape that is beneficial to Gunnison sage-grouse or other ground nesting birds or grazing ungulates. Also, both prescribed fire and WFU fires could improve important summer/fall forage-response of shrubs with berries, which can be an important source of forage for black bears. Manual/mechanical treatments and/or prescribed fire may also reduce the threat to isolated old-growth stands of ponderosa pine by removing young juniper and other brush ladder fuels that have accumulated beneath the trees. Alternative B is not expected to have any direct or indirect effects on the hanging garden vegetative communities in BLCA. Cooperative efforts among agencies and planning across boundaries is a key positive impact of Alternative B, so that larger and more areas may be treated over the landscape, leading eventually to more enhancement of vegetative communities and more positive impacts to herbivores over the range of species over time.

Cumulative Effects

Previous and potential future fire suppression operations (e.g., soil compaction, fireline construction, etc.) and manual/mechanical fuels reduction and prescribed fire activities would result in negligible to minor adverse impacts as suppression actions become less frequent with decreasing fuels across the landscape. Over time, use of wildland fire in all areas would result in both direct and indirect beneficial impacts to the vegetation communities in the area, e.g., fire could be used to minimize the impacts of tree and vegetation damaging insects. Overall, cumulative impacts of other actions in the parks, added to the adverse effects and benefits expected from Alternative B, would result in short- and long-term, negligible to moderate, direct and indirect impacts to vegetation communities.

Conclusion

Under Alternative B, the short-term, direct, adverse impacts to vegetation would be minor and localized, but there would be short- and long-term beneficial impacts to vegetation in sagebrush shrublands and cottonwood galleries through re-introduction of fire into the system. This would decrease fuel loading and the potential for more severe wildfires, and increase landscape heterogeneity and enhance regeneration. Hanging gardens are a special environment in BLCA but generally they are not expected to be directly impacted by fire because of their location on canyon walls above the vegetation in the canyon.

Alternative B would not produce any major adverse impacts or impairment of vegetation resources or values whose conservation is necessary to the purpose of the establishment of the parks; that are key to the natural or cultural integrity of the parks; or that are actions identified as a management goal of the parks.

Impacts of Alternative C – Natural Landscape Units only within Park Boundary

Impact Analysis

Impacts of Alternative C are expected to be similar to Alternative B, with the exception of areas near the boundaries of the parks. In these places, increased fire suppression activities, along with a reduction in effects from WFU, may result in short-term, minor to moderate adverse impacts on vegetative communities. In particular, sagebrush shrublands that are near the park boundaries may become more homogeneous over time if fires that start near park boundaries are not allowed to spread into or out of the parks.

Cumulative Effects

Cumulative effects of Alternative C would be similar to Alternative B, but could include the homogenization of sagebrush shrublands in areas around the park boundaries as wildland fires are suppressed. Overall, cumulative impacts of other actions in the parks, added to the adverse effects expected from Alternative C, would result in short- and long-term, minor to moderate, direct and indirect impacts to vegetation communities.

Conclusion

Under Alternative C, the short-term, direct, adverse impacts to vegetation would be minor and localized, but there would be long-term beneficial impacts to vegetation in sagebrush shrublands and cottonwood galleries through re-introduction of fire into the system. This would decrease fuel loading and the potential for more severe wildfires, and increase landscape heterogeneity and enhance regeneration.

Alternative C would not produce any major adverse impacts or impairment of vegetation resources or values whose conservation is necessary to the purpose of the establishment of the parks; that are key to the natural or cultural integrity of the parks; or that are actions identified as a management goal of the parks.

INTRODUCE OR PROMOTE NON-NATIVE SPECIES

Methodology

The assessment of impacts includes the use the general methodology described above and the resource specific information provided below. Available information was obtained through ID Team meetings, including a representative from the BLM. The area of the analysis for impacts of non-native species includes BLCA and CURE, along with the immediately surrounding BLM, USFS, and private lands adjacent to the two NPS units. The intensity of effects and impact durations are discussed in the analysis below using the following criteria and definitions.

Impact Intensity Threshold Criteria:

Negligible- Increases in non-native species would not be measurable, with no effect on native species populations. Any effects would be small scale, and no species of special concern would be affected.

Minor- Increases in non-native species would be measurable, but with only small and localized effects to a relatively minor portion of any species population.

Moderate- Increases in non-native species would be readily apparent, with effects to a sizeable segment of the native species' population over a relatively large area.

Major- Increases in non-native species would have a considerable long-term effect and affect a relatively large area in and out of the park. Species of special concern could be affected. Reclamation success could not be guaranteed.

Impact Duration Definitions:

Short-term - Recovers in less than three years from fire or other action.

Long-term - Takes more than three years to recover from fire or other action.

Impacts of Alternative A (No Action)

Impact Analysis

Alternative A, which suppresses all fires that occur inside park boundaries, would result in an increase in the promotion of non-native plant species. Fire suppression efforts cause disturbance to native vegetation through road building and handline building. These disturbed areas are conducive to invasion by non-native plant species. Also, seeds and other plant residuals may be transported into BLCA or CURE via firefighters themselves or on equipment that may have been used in other regions, and was not properly washed to reduce the spread of non-native seeds. While disturbed areas caused by fire also may experience some establishment of non-native plant species, this is typically short-term, although some species such as cheatgrass (*Bromus tectorum*) may persist for several years. Notably, native plant residuals are usually not destroyed by fire and will recolonize such areas over time.

Cumulative Effects

Over time, continued fire suppression efforts could result in an increase in the spatial area inhabited by non-native species. As populations of non-native plants establish, increased dispersal by seed is likely, therefore increasing the number and extent of the non-native plants. Also, the opportunity for introduction of non-native species through fire suppression activities increases under Alternative A. Introduction of such species via visitor activities also could be a cumulative impact to the parks. In addition, activities at the Dickerson Pit, and its planned expansion, could increase weed spread above and beyond that created by fire management activities, particularly fire suppression activities. Also, routine maintenance of roadsides and trails, which is a constant disturbance, seems to lead to increased non-native expansion along roadways and trails, as well as away from these areas. Overall, cumulative impacts of other actions in the parks, added to the adverse effects expected from Alternative A, would result in short- and long-term, minor to moderate, direct and indirect increase in the introduction and establishment of non-native species, and would generally be localized near developed areas and areas of fire suppression activity, but would, over time become more widespread across the parks.

Conclusion

Alternative A would result in a short- and long-term, minor to moderate increase in the number and extent of non-native plant species, largely through fire suppression efforts.

Alternative A would not produce any major adverse impacts or impairment of native or non-native plants or values whose conservation is necessary to the purpose of the establishment of the parks; that are key to the natural or cultural integrity of the parks; or that are actions identified as a management goal of the parks.

Impacts of Alternative B – Natural Landscape Units

Impact Analysis

Prescribed fire and WFU may create suitable habitat for the establishment of non-native plant species, however, these areas typically retain plant seeds or other plant residuals such as bulbs, tubers, or rhizomes that promote the reestablishment of native plants that occupied the disturbed areas. Non-native plants that are able to colonize burned areas are normally unable to compete with native plants over the long term, and are therefore transient in their existence in the disturbed areas. One exception to this is cheatgrass, which may colonize following fires, and may persist as a dominant monoculture. Frequent fires may help increase the occurrence of cheatgrass. In addition, large areas occupied by cheatgrass may burn vigorously and potentially spread into other vegetation types.

Therefore, Alternative B will likely result in a minor, short-term increase in non-native plant species that will likely be replaced by native plants in a relatively short time. Further, a decrease in fire suppression activities will result in fewer areas disturbed by fire fighting activities and machinery, which can destroy seed banks and other plant residuals. Also, non-native plant seeds that are transported via firefighters or equipment would also be fewer if fire suppression activities are reduced and some wildland fires are allowed to burn. Mitigation to reduce the invasion and persistence of cheatgrass could include attempting to ensure that fire return intervals are lengthened to help perennial vegetation recover, and eventually return to dominance on the site. Also, avoiding prescribed fires in the spring and summer periods, when native vegetation is most susceptible, may mitigate the spread of cheatgrass.

Cumulative Effects

A long-term reduction in fire suppression activities would likely result in a reduction in the invasion and establishment of non-native plant species. Over time, fewer firefighters, fewer pieces of firefighting equipment, and fewer severely disturbed areas will result in a smaller seed source for non-native plants, and a smaller area for colonization. Introduction of such species via visitor activities, however, could be a cumulative impact to the parks. Also, routine maintenance of roadsides and trails, which is a constant disturbance, seems to lead to increased non-native expansion along roadways and trails, as well as away from these areas. However, prescribed fire and manual/mechanical fuel reduction projects could be planned with other weed management efforts in areas prone to weed invasion (e.g., burning followed by spraying target weed that resprouts, followed by restoration of surrounding bare areas). This integration would be cost effective and would increase the effectiveness of all treatments, leading to a direct benefit to these areas. Overall, cumulative impacts of other actions in the parks such as periodic road maintenance, added to the adverse effects and benefits expected from Alternative B, would result in short- and long-term, minor to moderate, direct and indirect increase in the introduction and

establishment of non-native species, but would generally be localized near developed areas and areas of fire suppression activity.

Conclusion

Alternative B would result in a short-term, minor increase in establishment of non-native plant species in areas that burn, but these species would eventually be replaced, over time, with native plants, largely due to the persistence of seed banks and other plant residuals in areas that burn.

Alternative B would not produce any major adverse impacts or impairment of native or non-native plants or values whose conservation is necessary to the purpose of the establishment of the parks; that are key to the natural or cultural integrity of the parks; or that are actions identified as a management goal of the parks.

Impacts of Alternative C – Natural Landscape Units only within Park Boundary

Impact Analysis

Impacts on native and non-native plant communities as a result of implementation of Alternative C would likely be intermediate to Alternatives A and B. Specifically, the use of prescribed fire and WFU could reduce the opportunities for establishment or spread of non-native plants, but increased fire suppression efforts that result in ground disturbance could, near park boundaries, likely increase invasion by non-native plants. However, the increase in non-native plants would not be as severe as with Alternative A.

Cumulative Effects

Again, the cumulative effects of Alternative C would be intermediate to Alternatives A and B. The long-term reduction in fire suppression activities near park boundaries would likely result in a reduction in the invasion and establishment of non-native plant species. As with Alternative B, over time, fewer firefighters, fewer pieces of firefighting equipment, and fewer severely disturbed areas will result in a smaller seed source for non-native plants, and a smaller area for colonization. However, increased fire suppression efforts near park boundaries would result in an increase in non-native species over time. Introduction of such species via visitor activities also could be a cumulative impact to the parks, particularly along trails and near developed areas. Also, routine maintenance of roadsides and trails, which is a constant disturbance, seems to lead to increased non-native expansion along roadways and trails, as well as away from these areas. Overall, cumulative impacts of other actions in the parks such as periodic road maintenance, added to the adverse effects and benefits expected from Alternative C, would result in short- and long-term, minor to moderate, direct and indirect increase in the introduction and establishment of non-native species, but would generally be localized near developed areas and areas of fire suppression activity near park boundaries.

Conclusion

Alternative C would result in a short-term, minor increase in establishment of non-native plant species in areas that burn, but these species would eventually be replaced, over time, with native plants, largely due to the persistence of seed banks and other plant residuals in

areas that burn. Alternative C would likely result in a short- to long-term, minor to moderate increase in non-native plant species near park boundaries.

Alternative C would not produce any major adverse impacts or impairment of native or non-native plants or values whose conservation is necessary to the purpose of the establishment of the parks; that are key to the natural or cultural integrity of the parks; or that are actions identified as a management goal of the parks.

RECREATION RESOURCES / VISITOR USE AND EXPERIENCE

Methodology

The assessment of impacts includes the use the general methodology described above and the resource specific information provided below. Available information was obtained through ID Team meetings, including a representative from the BLM. The area of the analysis for recreation resources includes BLCA and CURE, along with the immediately surrounding BLM, USFS, and private lands adjacent to the two NPS units. The intensity of effects and impact durations are discussed in the analysis below using the following criteria and definitions.

Impact Intensity Threshold Criteria:

Negligible- Changes in visitor use and/or experience would be below or at the level of detection. The visitor would not likely be aware of the effects associated with the alternative.

Minor- Changes in visitor use and/or experience would be detectable, although the changes would be small. The visitor would be aware of the effects associated with the alternative, but the effects would be slight and would not disrupt the visitor experience such that the park's values and facilities could not be enjoyed.

Moderate- Changes in visitor use and/or experience would be readily apparent and the visitor would be aware of the effects, which would degrade or limit the visitor's enjoyment of the park's values and/or facilities.

Major- Changes in visitor use and/or experience would be readily apparent and have important consequences. The visitor would be aware of the effects, which would result in the visitor not being able to fully experience the enjoyment of park values and/or facilities. Mitigation would not be possible or very successful.

Impact Duration Definitions:

Short-term Effects occur only during the fire or other fire management related actions.

Long-term Effects continue to occur after the fire or other fire management related actions have ceased.

Impacts of Alternative A (No Action)

Impact Analysis

Under Alternative A, all wildland fires would be fully suppressed, increasing the likelihood that visitor experiences would be affected through fire management related activities. Direct impacts could include trail and facilities damage and closures and other closures up to and including park closure due to fire activities. As an example, the Warner Fire, which burned during August of 1996, resulted in the closure of BLCA for three full days during the peak tourism season. This resulted in a short term, adverse impact on park revenues, as well as a short term, adverse impact on visitor number and experiences.

Indirect impacts may include broader effects on visitor experiences. For example, a full suppression fire management policy may deny the opportunity for public and visitor education, as fires can provide interpretive and educational opportunities. This means that impacts to aesthetic resources and visitor experiences may be positive for some and negative for others. Access to park trails and facilities must be balanced between providing for visitor enjoyment and protection. Indirect negative impacts may be minor to moderate, and may also extend to the visitor experience in neighboring communities should lodging and restaurants become full with fire fighting personnel.

Cumulative Effects

If regional drought continues, this could result in an increase in the frequency and intensity of wildland fires, thus increasing the potential for both direct and indirect impacts on visitor use and experiences within the parks. Public response, positive or negative, to any fire activity, fire management activity, or result of either, is a significant driver of national fire policy. Should fire frequency and intensity increase within BLCA or CURE, as might be expected with the implementation of Alternative A, this could result in changes in national fire policies that could include mandates for total fire suppression on federal lands. Notably, activities at the Dickerson Pit, and its planned expansion, could increase smoke, dust, and noise in the eastern areas of CURE, which could negatively impact visitor experiences in these areas. Overall, cumulative impacts of other actions in the parks, added to the adverse effects expected from Alternative A, would result in short- and long-term, minor to moderate, direct and indirect impacts to recreational resources and visitor use and experience.

Conclusion

Minor to moderate, short-term, direct impacts to recreational resources and visitor experiences would be expected under Alternative A because of the increased likelihood of fire management related activities while under a full suppression fire management approach. Alternative A could also result in minor to moderate, short-term, indirect, adverse effects to recreational resources and visitor experience.

Impacts of Alternative B – Natural Landscape Units Alternative

Impact Analysis

Under Alternative B, some wildland fires may be allowed to burn, within selected fire management units and under appropriate conditions where no human safety is at risk, or where no natural or cultural resources are in danger. Consequently, some direct impacts could occur to recreational resources and visitor experiences, although, in both cases,

these impacts could be either positive or negative. Alternative B also allows for prescribed burning to be used as a fuel reduction or habitat improvement strategy, which could increase the likelihood that fire management activities could directly impact recreational resources or visitor experiences. However, the timing of prescribed fire activities would take visitation patterns into consideration, which should mitigate the direct impacts on the resource or visitor experience. Indirect impacts under Alternative B would be similar to those discussed for Alternative A, although by allowing some fires to burn, a reduction in indirect impacts is possible because of a decrease in fire management and fire fighting activities.

Alternative B permits fires and fire management prescriptions to cross the BLCA and CURE boundaries, as well as allowing some fires that originate outside park boundaries to cross into BLCA or CURE. This could result in an increase in both direct and indirect impacts to recreational resources and visitor experiences by simply increasing the number of fires that may occur within BLCA or CURE boundaries.

Cumulative Effects

Adverse cumulative impacts under Alternative B could be less than under Alternative A, since remote WFU fires that are allowed to burn may not directly impact recreational resources or visitor experiences in the same way as fire fighting and other fire management activities. Overall, cumulative impacts of other actions in the parks, added to the adverse effects and benefits expected from Alternative B, would result in short- and long-term, minor to moderate, direct and indirect impacts to recreational resources and visitor use and experience.

Conclusion

Minor to moderate, short-term impacts to recreational resources and visitor experiences would be expected under Alternative B because of the increased likelihood of fire management related activities while suppressing some wildland fires and using prescribed fires; however, appropriate timing of prescribed fire use could minimize the direct and indirect adverse impacts on recreational resources and visitor experiences.

Impacts of Alternative C – Natural Landscape Units only within Park Boundary

Impact Analysis

Under Alternative C, fire management activities, including WFU, are only permitted within the BLCA and CURE boundaries. Consequently, both direct and indirect impacts to recreational resources and visitor experiences would likely be similar, but less than under Alternative A (No Action), because of a likely reduction in fire fighting activities. In addition, both direct and indirect impacts may be similar, but possibly more than Alternative B, because of increased fire fighting activity related to fires that originate outside the park boundaries and are attempting to spread or cross into BLCA or CURE.

Cumulative Effects

For reasons similar to those stated under the Impact Analysis section above, adverse cumulative impacts under Alternative C could be less than under Alternative A, since remote WFU fires that are allowed to burn within the parks may not directly impact recreational resources or visitor experiences in the same way as fire fighting and other fire

management activities, but could be more than Alternative B, because of the increase of fire management activities related to fires that originate outside the park boundaries. Overall, cumulative impacts of other actions in the parks, added to the adverse effects expected from Alternative C, would result in short- and long-term, minor to moderate, direct and indirect impacts to recreational resources and visitor use and experience, and would generally be localized near park boundaries and areas of fire suppression activity.

Conclusion

Minor to moderate, short-term impacts to recreational resources and visitor experiences would be expected under Alternative C because of the increased likelihood of fire management related activities while suppressing some wildland fires that originate outside the park boundaries, and using prescribed fires; however, appropriate timing of prescribed fire use could minimize the direct and indirect adverse impacts on recreational resources and visitor experiences.

CULTURAL RESOURCES

Methodology

The assessment of impacts includes the use the general methodology described above and the resource specific information provided below. Available information was obtained through ID Team meetings, including a representative from the BLM. The area of the analysis for cultural resources includes BLCA and CURE, along with the immediately surrounding BLM, USFS, and private lands adjacent to the two NPS units. The intensity of effects and impact durations are discussed in the analysis below using the following criteria and definitions.

Impact Intensity Threshold Criteria:

Negligible- Impacts to archeological resources or historic properties, either beneficial or adverse, which are at the lowest levels of detection, barely perceptible and not measurable. For purposes of Section 106, the determination of effect would be no adverse effect.

Minor- The impact affects an archaeological or historic site or feature with little data potential. The historic context of the affected site(s) would be local. The impact would not affect the contributing elements of a structure eligible for, or listed on the National Register of Historic Places. For purposes of Section 106, the determination of effect would be no adverse effect.

Moderate- The impact affects an archaeological or historic site with modest data potential. The historic context of the affected site(s) would be state. For a National Register eligible site, the adverse impact would affect some of the contributing elements of the site but would not diminish the integrity of the resource and jeopardize its National Register eligibility. For purposes of Section 106, the determination of effect would be adverse effect.

Major- The impact affects an archaeological or historic site with high data potential. The historic context of the affected site(s) would be national. For a National Register eligible or listed site, the impact would affect the contributing

elements of the site by diminishing the integrity to the extent that it is no longer eligible for listing on the National Register. For purposes of Section 106, the determination of effect would be adverse effect.

Impact Duration Definitions:

Short-term Short-term refers to a transitory effect, one that largely disappears over a period of days or months.

Long-term The duration of long-term effects is essentially permanent.

Impacts of Alternative A (No Action)

Impact Analysis

Under Alternative A, all wildland fires would be fully suppressed, or attempted to be suppressed. Direct impacts could occur either from those fires that cannot be suppressed, or from the suppression efforts themselves. It is important to note that not all fires can be suppressed, even with modern fire-fighting technology, especially under conditions of extreme drought, high temperatures, and high winds. This fact was demonstrated by the recent Hayman and Missionary Ridge fires in Colorado, both of which were fought aggressively from the beginning but could not be controlled until weather conditions moderated several days later.

The potential impacts of high-severity fires and of fire suppression activities are different for *historic* and *prehistoric* cultural resources (Romme et al. 1993). Fires burning under extreme weather conditions are likely to be of high intensity, and can severely damage or destroy *historic* structures and resources. These vulnerable structures and resources include artifacts associated with the historic D&RG railroad facilities (foundations, ovens, railroad grade features, and encampments), as well as the locomotive, tender, boxcar, caboose, steel trestle, and associated historic buildings at the Cimarron town site. In contrast to these highly vulnerable *historic* resources, *prehistoric* cultural resources are not as vulnerable but still may be impacted or damaged from fire. An exception to this generalization that *prehistoric* artifacts are not very vulnerable to fire would be wooden structures such as lodges or wickiups. Logs on the ground can, under high heat conditions, impact buried features such as hearths. In most cases, fires will generally pass over most sites without much damage to buried features; however, some situations may exist, e.g. some areas of the north rim at BLCA, where there are numerous downed trees and logs that could impact features such as hearths, and their associated dating and paleobotanical potential.

Irrespective of direct fire effects, the fire suppression activities themselves may damage cultural resources, depending on the type and intensity of the suppression activity and the type of cultural resource involved. Identified *Historic* structures probably would not be damaged by fire suppression activities, because their locations are well documented, many are obvious and conspicuous, and suppression activities would be consciously designed to avoid damaging these features. Fire suppression activities could impact unidentified historic resources. In contrast, *prehistoric* cultural resources may be very vulnerable to damage from fire suppression activities, because they are inconspicuous and the locations of many or most are unknown. The most damaging kind of suppression activity for any

kind of *prehistoric* cultural resource would be use of bulldozers to create fire-lines. Even less intensive hand line construction could disturb surface features such as lithic scatters. Manual/mechanical cutting of trees, brush, or dead wood, along with spike and ICP camps, helibases/helispots, and other staging areas probably could impact *prehistoric* cultural artifacts.

Indirect impacts of losing *historic* cultural resources to uncontrollable fire, or *prehistoric* cultural resources to fire suppression activities, relate to loss of opportunities to understand and appreciate our cultural heritage. Although *historic* narrow gauge railroads operated in nearly all the mountains and river valleys of western Colorado during the late 1800s and early 1900s, and represent a major chapter in Colorado history, only a handful of engines, trestles, and other features of the narrow gauge era remain intact throughout the region (Ormes 1975). Regarding *prehistoric* cultural resources, the pre-history of the Utes, the major indigenous group in this part of Colorado at the time of European contact, is very poorly known, in part because of a paucity of sites. The lands within and surrounding BLCA and CURE may contain key sites that would provide important insights into prehistory of this region, but adequate surveys of potential archaeological sites in this area have not yet been conducted. Potential loss of prehistoric artifacts may be even more serious in BLCA than in CURE, because even less previous archaeological research has been done in the former area. Alternative A could result in negligible to minor adverse effects in the short-term, however, long-term, minor to moderate adverse effects to cultural resources could also occur.

Cumulative Effects

If regional drought continues, this could result in an increase in the frequency and intensity of wildland fires, including uncontrollable, high-intensity fires burning under extreme weather conditions, such as Hayman and Missionary Ridge. Although few large, severe fires have occurred in BLCA and CURE during the historic period, longer-term fire history studies in the region clearly indicate that such fires are possible and probably inevitable at some time in the future. Fire history studies also indicate that many fires in this area occur under relatively moderate fire weather conditions. Such fires can reduce fuel mass and continuity across the landscape, without causing the degree of damage associated with fires under extreme weather conditions. Thus, prescribed fires and wildland fires burning under moderate fire weather conditions can reduce the extent, severity, and difficulty of control of future fires burning under extreme fire weather conditions. These more moderate fires also are the ones that can be, and have been more consistently suppressed. Thus, by attempting to suppress all fires, including those burning under moderate weather conditions, we may actually increase the potential for resource damage from fires that will eventually occur during extreme weather conditions, or from aggressive suppression efforts during times of extreme fire weather and fire behavior. Overall, cumulative impacts of other actions in the parks, added to the adverse effects expected from Alternative A, would result in short- and long-term, minor to moderate, direct and indirect impacts to cultural resources, and would generally be localized near areas of fire suppression activity.

Conclusion

Impacts to cultural resources under Alternative A are expected to be negligible to minor in the short term, perhaps for many years or even decades, assuming that no large fires are ignited under extreme fire weather conditions. However, a large, severe, uncontrollable fire is almost certain to occur eventually, and such a fire may produce minor to moderate

damage to *historic* cultural resources, depending on exactly where it burns. A large intense fire probably will not seriously damage most of the *prehistoric* cultural resources in this area, but attempts to suppress such a fire may cause damage to undocumented *prehistoric* cultural artifacts. Thus, Alternative A would not produce any major adverse impacts or impairment of cultural resources for many years or even decades, but minor to moderate adverse impacts to both *prehistoric* and *historic* cultural resources is likely to occur eventually under this alternative.

Alternative A would not produce any major adverse impacts or impairment of archeological resources or values whose conservation is necessary to the purpose of the establishment of BLCA and CURE or that are key to the natural or cultural integrity of the park and recreation area, or that are actions identified as a management goal of either unit.

Impacts of Alternative B – Natural Landscape Units Alternative

Impact Analysis

Under Alternative B, some wildland fires may be allowed to burn, within selected fire management units and under appropriate conditions where no human safety is at risk, or where no natural or cultural resources are in danger. Alternative B also allows for prescribed burning to be used as a fuel reduction or habitat improvement strategy. Such fires would be permitted only under moderate weather conditions, when the risk is low that a fire would grow excessively large or uncontrollable. Wildland fires and prescribed fires burning under moderate fire weather conditions would have negligible to minor impacts on either *prehistoric* or *historic* cultural resources, but would reduce fuel mass and continuity across the landscape. The short-term impact would be more frequent fires than have been seen in BLCA and CURE during the past century, but negligible to minor damage to cultural resources resulting from these fires. The long-term, beneficial impact would be a reduced hazard of large, severe, uncontrollable fires damaging cultural resources during extreme fire weather conditions.

Alternative B permits fires and fire management prescriptions to cross the BLCA and CURE boundaries, as well as allowing some fires that originate outside park boundaries to cross into BLCA or CURE. This would allow desirable fires to burn in relatively natural patterns, shaped by variation in vegetation and topography, and to modify fuel conditions across an area larger than just the park units, thereby enhancing the beneficial ecological effects of fires burning under moderate fire weather conditions. The short-term impact would be more frequent fires than have been seen in BLCA and CURE and surrounding lands during the past century, but a reduced hazard of large, severe, uncontrollable fires damaging cultural resources during extreme fire weather conditions.

Cumulative Effects

Adverse cumulative impacts would likely be less under Alternative B than under Alternative A, because small fires burning under moderate fire weather conditions could reduce the extent and severity of subsequent fires and suppression efforts during extreme fire weather conditions. However, no management strategy can completely eliminate the possibility that a large, severe fire will damage cultural resources in BLCA and CURE. If WFU fires increase, localized increases in erosion or sedimentation could expose previously hidden cultural resources, which could, in some cases, increase the susceptibility to damage or theft. However, overall cumulative impacts of other actions in the parks, added to the

adverse effects and benefits expected from Alternative B, would likely result in short- and long-term, negligible to minor, direct and indirect impacts to cultural resources.

Conclusion

Negligible to minor short-term impacts to cultural resources would be expected under Alternative B because of the increased occurrence of wildland fires and prescribed fires. Over the long term, Alternative B could reduce the potential for damage to cultural resources from uncontrollable, high-severity wildfires and associated suppression activities, but no management strategy can completely eliminate the risk of damage from high-severity wildfire. In addition, after applying the Advisory Council on Historic Preservation's criteria of adverse effects (36 CRF 800.5), Assessment of Adverse Effects), the NPS concludes that implementation of the preferred alternative, Alternative B, would have no adverse affect on the cultural resources of BLCA/CURE.

Section 106 Summary

Historic properties likely to occur in BLCA/CURE were determined by reviewing past survey work and previously recorded sites, and in consultation with affected Indian tribes. The Advisory Council on Historic Preservation's criteria of adverse effect (36 CFR Part 800.5, Assessment of Adverse Effects) were applied to those predicted resource types. The National Park Service concludes that with proposed mitigation, implementation of the preferred alternative would have no adverse effect on cultural resources at BLCA/CURE. Project specific consultation would be completed with the Colorado SHPO prior to implementation of any prescribed burn or manual or mechanical fuel reduction projects. In addition, a copy of the authorization from Colorado SHPO for combining Section 106 with this document is included in Appendix D.

Alternative B would not produce any major adverse impacts or impairment of archeological resources or values whose conservation is necessary to the purpose of the establishment of BLCA and CURE or that are key to the natural or cultural integrity of the park and recreation area, or that are actions identified as a management goal of either unit.

Impacts of Alternative C – Natural Landscape Units only within Park Boundary

Impact Analysis

Under Alternative C, fire management activities, including WFU, are permitted only within the BLCA and CURE boundaries. Likely impacts to cultural resources likely would be intermediate between Alternatives A and B. Greater adverse impact (minor to moderate) on *prehistoric* cultural resources would be expected with Alternative C than with Alternative B, because of potential damage from aggressive fire fighting activity along park boundaries associated with Alternative C. However, Alternative C would be expected to have less adverse impact on *prehistoric* cultural resources than Alternative A, because not all fires would be vigorously suppressed within park boundaries. Vulnerable *historic* resources would receive less long-term protection from high-intensity fires, as a result of smaller fires reducing fuel mass and continuity, with Alternative C than with Alternative B, because large, severe fires are influenced by vegetation and topographic features at a larger spatial scale than what is encompassed by park boundaries. However, Alternative C would provide more long-term protection to vulnerable *historic* cultural resources than Alternative A, because Alternative C would allow some fuel reduction via prescribed fire and WFU within park boundaries.

Cumulative Effects

For reasons similar to those stated under the Impact Analysis section above, adverse cumulative impacts under Alternative C would be intermediate between Alternatives A and B. Overall, cumulative impacts of other actions in the parks, added to the adverse effects expected from Alternative A, would result in short- and long-term, minor to moderate, direct and indirect impacts to cultural resources, and would generally be localized near park boundaries and areas of fire suppression activity.

Conclusion

Minor to moderate, short-term adverse impacts to cultural resources would be expected under Alternative C, because of the increased occurrence of wildland fires and prescribed fires within park boundaries, and the continued aggressive suppression of fires near boundaries. Over the long term, Alternative C could reduce the potential for damage to prehistoric and historic cultural resources from uncontrollable, high-severity wildfires and associated suppression activities, but no management strategy can completely eliminate the risk of damage from high-severity wildfire.

Alternative C would not produce any major adverse impacts or impairment of archeological resources or values whose conservation is necessary to the purpose of the establishment of BLCA and CURE or that are key to the natural or cultural integrity of the park and recreation area, or that are actions identified as a management goal of either unit.

SOCIOECONOMICS

Methodology

The assessment of impacts uses the general methodology described earlier, and the resource specific information provided below. Available information was obtained through ID Team meetings, including a representative from the BLM, and relevant literature. The area of analysis for this topic included the two parks plus surrounding area, to include the local communities of Montrose and Gunnison and other nearby communities. The intensity of effects and impact duration are described in the analysis below using the following criteria and definitions.

Impact Intensity Threshold Criteria:

Negligible- Changes to local socioeconomic conditions would be below or at the level of detection. Effects would be slight and no long-term effects to socioeconomic conditions would occur.

Minor- Changes to socioeconomic conditions would be detectable, but small, with consequences that cause no major disruption to local community socioeconomics.

Moderate- Changes to socioeconomic conditions would be readily apparent, with sufficient consequences to cause disruption to local community socioeconomics.

Major- Changes to socioeconomic conditions would be readily apparent and would cause substantial changes to socioeconomic conditions both locally and in the region.

Impact Duration Definitions:

Short-term Effects occur only during the fire or other fire management related actions.

Long-term Effects continue to occur after the fire or other fire management related actions have ceased.

Impacts of Alternative A (No Action)

Impact Analysis

Under Alternative A, all fires would be suppressed, which could result in short-term, indirect, impacts to the local economy, both adverse and beneficial, as a result of firefighting activities. For example, the influx of firefighters could result in the need for lodging at local hotels and motels, and the additional purchases of food and other supplies from local merchants, which is a beneficial impact. However, the park and surrounding areas could close or access could become limited during intense fires, which would result in fewer visitors to the local communities and the associated services. This loss of tourism and recreation revenue would result in a minor, indirect, short-term adverse impact on local socioeconomics. For example, the Warner Fire, which burned during August of 1996, resulted in the closure of BLCA for three full days during the peak tourism season. Park revenue losses for this time period were estimated at $5000 - $7000; however the economic impact to the local community was comparatively insignificant. In fact, it is believed that the decrease in local business due to the decline in tourism was offset by an increase in business from the fire-fighting crews, as suggested above.

The length and severity of impacts of this type would depend on the timing, duration, and severity of a given fire, and whether or not the fire damaged park recreational resources such as campgrounds or visitor centers. Extensive wildland fires are more likely to occur during the dry summer months, when visitation would normally be highest and the impacts of the lack of income from decreased visitation would be most severe. A large wildland fire would create some short-term, negligible to minor benefits to the local economy due to the needs of the temporary crews. However, such a fire would result in more consequential, long-term, minor to moderate adverse impacts, because visitation would decrease not just during the fire event, but after the event as well, until the park and surroundings reopened and visitors returned to the area. Additionally, other costs could accrue that are associated with firefighter and public health and safety.

Cumulative Effects

In addition to the relatively short-term impacts mentioned above, the actual cost of fighting any fire, especially extensive wildfires, can be great and result in decreased public resources and support for other initiatives in and around the park and surrounding federal lands. Over time, this could have a minor, yet long-term adverse impact to the local economy and other regional economies if projects that would have enhanced area tourism are cancelled due to lack of funds because of firefighting related expenditures. Also, should regional drought continue, lower water levels in CURE reservoirs could result in

decreased visitor use and expenditures over time. Overall, cumulative impacts of other actions in the parks, added to the adverse effects expected from Alternative A, would result in short- and long-term, minor to moderate, direct and indirect impacts to socioeconomics in BLCA and CURE.

Conclusion

Minor, short-term, adverse impacts to socioeconomic conditions would be expected under Alternative A, especially within park boundaries, because of the increased likelihood of fire management related activities while under a full suppression fire management approach. Long-term, minor to moderate adverse effects to socioeconomics could occur under this alternative if incidence of high severity wildfires increases. However, negligible to minor, beneficial impacts are likely in surrounding communities because of offsetting expenditures from fire fighting activities. Alternative A would not produce any major adverse impacts to socioeconomic conditions.

Impacts of Alternative B – Natural Landscape Units Alternative

Impact Analysis

Under Alternative B, some wildland fires may be allowed to burn, within selected fire management units and under appropriate conditions where no property or human safety is at risk, or where natural or cultural resources are in danger. Since most naturally occurring fires are quite small (less than 1 acre in extent), the likelihood of park closure is small, therefore reducing the direct impacts on park revenues, or those of surrounding communities. An exception to this was the Warner Fire of 1996, as described above. Should a given fire become large or intense, or both, socioeconomic impacts could be similar to those described for Alternative A above, including a short-term, minor reduction of park revenues, with lesser, or even beneficial effects in surrounding communities.

Cumulative Effects

In addition to possible long-term effects as described above for Alternative A, the use of prescribed fire and WFU under alternative B could result in improved vegetation and habitat conditions, reduced fuel loading conditions, and therefore increased aesthetic value for the parks, which could, in turn, result in a minor to moderate long-term beneficial impact to socioeconomic factors within the parks and surrounding communities. Also, should regional drought continue, lower water levels in CURE reservoirs could result in decreased visitor use and expenditures over time. Overall, cumulative impacts of other actions in the parks, added to the adverse effects and benefits expected from Alternative B, would result in short- and long-term, minor to moderate, direct and indirect impacts to socioeconomics in BLCA and CURE.

Conclusion

Some minor, short-term impacts to socioeconomic conditions would also be expected under Alternative B; however, these impacts would likely be less than those expected under Alternative A because of the decrease in fire fighting activities and the associated reduction in park revenues. Alternative B would not produce any major adverse impacts to socioeconomic conditions.

Impacts of Alternative C – Natural Landscape Units only within Park Boundary

Impact Analysis

Socioeconomic impacts under Alternative C would be similar to Alternative B. However, because Alternative C requires that no fires be allowed to burn into or out of BLCA or CURE from surrounding areas, this alternative could result in increased fire fighting activities compared to Alternative B, which could cause a minor, short- and long-term, adverse effect on the quality of visitor experiences, and therefore park revenues. Impacts to surrounding communities would be negligible.

Cumulative Effects

Cumulative effects for Alternative C would likely be similar to those described for Alternative B, except that the minor to moderate long-term beneficial economic impacts might be less in surrounding areas than within park boundaries because fires are not permitted to extend into or out of park boundaries. Also, should regional drought continue, lower water levels in CURE reservoirs could result in decreased visitor use and expenditures over time. Overall, cumulative impacts of other actions in the parks, added to the adverse effects expected from Alternative B, would result in short- and long-term, minor to moderate, direct and indirect impacts to socioeconomics in BLCA and CURE.

Conclusion

Some minor short- and long-term impacts to socioeconomic conditions would also be expected under Alternative C; however, these impacts could be slightly higher than those expected under Alternative B because of the increase in fire fighting activities and the associated reduction in park revenues encountered when fires attempt to cross park boundaries. Alternative C would not produce any major adverse impacts to socioeconomic conditions.

ENERGY RESOURCES AND OTHER AGENCY LAND USE PLANS OR POLICIES

Methodology

The assessment of impacts includes the use the general methodology described above and the resource specific information provided below. Available information was obtained through ID Team meetings, including a representative from the BLM. The area of the analysis for energy resources and land use plans includes BLCA and CURE, along with the immediately surrounding BLM, USFS, and private lands adjacent to the two NPS units, as well as surrounding communities. The intensity of effects and impact durations are discussed in the analysis below using the following criteria and definitions.

Impact Intensity Threshold Criteria:

Negligible- Changes to energy resources would be below or at the level of detection. Effects would be slight and no long-term effects to these resources would occur.

Minor- Changes to energy resources would be detectable, but small, with consequences that cause no major disruption to local energy services.

Moderate- Changes to energy resources would be readily apparent, with sufficient consequences to cause disruption to local energy services.

Major- Changes to energy resources would be readily apparent and would cause substantial changes to energy services, both locally and in the region.

Impact Duration Definitions:

Short-term Effects occur only during the fire or other fire management related actions.

Long-term Effects continue to occur after the fire or other fire management related actions have ceased.

Impacts of Alternative A (No Action)

Impact Analysis

Under Alternative A, hydroelectric energy resources would not be impacted as a result of fire suppression. Other energy resources, such as electrical transmission lines, should not be impacted as a result of fire management activities. Alternative A would result in no measurable impacts to energy resources within the parks.

Cumulative Effects

No long-term, cumulative effects on hydroelectric facilities or transmission lines and agency/tribal land use plans or policies are expected under this management approach. Overall, cumulative impacts of other actions in the parks, added to the negligible effects expected from Alternative A, would result negligible impacts to energy resources within the parks.

Conclusion

Alternative A would not result in any measurable impacts on hydroelectric facilities or electrical transmission lines and land use plans.

Alternative A would not produce any major adverse impacts on energy resources or values and agency/tribal land use plans or policies whose conservation is necessary to the purpose of the establishment of the parks; that are key to the natural or cultural integrity of the parks; or that are actions identified as a management goal of the parks.

Impacts of Alternative B – Natural Landscape Units Alternative

Impact Analysis

Wildland fire or uncontrolled prescribed fire could have a minor to moderate, short-term effect on high-voltage, electric transmission lines, should the fire burn and/or damage the poles or towers that support the transmission lines. Some damage to dams or irrigation

facilities could occur as a result of floating logs that have been transported into the reservoirs as a result of increased runoff or erosion. However, only localized impacts are expected, primarily with wildland fire. The electric transmission lines, along with other USBR facilities such as the dams, access to the dams, and the East Portal area, will strongly influence the designation of fire management unit polygons, and no prescribed fires or WFU fires will be allowed to burn near these electric transmission lines, and wildland fires will receive aggressive fire suppression action. Prescribed fire and WFU fires would be coordinated with other agencies and/or tribes and therefore would have no adverse impacts on their land use plans or policies.

Cumulative Effects

No long-term, cumulative effects on hydroelectric facilities or transmission lines and agency/tribal land use plans or policies are expected under this management approach. The interagency cooperation and planning that is a part of Alternative B should be considered a positive impact of this alternative. Overall, cumulative impacts of other actions in the parks, added to the negligible to minor effects expected from Alternative B, would result in short- and long-term, negligible to minor, direct and indirect impacts to energy resources, and would generally be localized near areas of wildland fires and fire suppression activity.

Conclusion

Alternative B would not result in any measurable impacts on hydroelectric facilities, but could have a short-term, minor to moderate impact on electrical transmission lines, based on the location of the wildland fire. Prescribed fire and WFU fire coordination would eliminate any adverse impacts on agency/tribal land use plans or policies.

Alternative B would not produce any major adverse impacts on energy resources or values and agency/tribal land us plans and policies whose conservation is necessary to the purpose of the establishment of the parks; that are key to the natural or cultural integrity of the parks; or that are actions identified as a management goal of the parks.

Impacts of Alternative C – Natural Landscape Units only within Park Boundary

Impact Analysis

As with Alternative B, wildland fire or uncontrolled prescribed fire could have a minor to moderate, short-term effect on high-voltage, electric transmission lines, should the fire burn and/or damage the poles or towers that support the transmission lines. However, only localized impacts are expected, primarily with wildland fire. No prescribed fires and no wildland fire use fires will be allowed to burn within these units. And, any wildland fires will receive aggressive suppression. Increased fire suppression activities near park boundaries should not have a measurable effect on any energy resources or other agency/tribal land use plans.

Cumulative Effects

No long-term, cumulative effects on hydroelectric facilities or transmission lines and land use plans are expected under this management approach. Overall, cumulative impacts of other actions in the parks, added to the adverse effects expected from Alternative C with respect to localized effects near areas of wildland fires, would result in short- and long-

term, minor to moderate, direct and indirect impacts to energy resources, and would generally be localized near areas of wildland fire activity.

Conclusion
Alternative C would not result in any measurable impacts on hydroelectric facilities, but could have a short-term, minor to moderate impact on electrical transmission lines, based on the location of the wildland fire. No measurable impacts to agency/tribal land use plans would occur since fire management activities would occur within park boundaries.

Alternative C would not produce any major adverse impacts on energy resources or values and agency/tribal land use plans or policies whose conservation is necessary to the purpose of the establishment of the parks; that are key to the natural or cultural integrity of the parks; or that are actions identified as a management goal of the parks.

WILDERNESS AND SOUNDSCAPES

Methodology

The assessment of impacts uses the general methodology described above and the resource specific information provided below. Available information was obtained through ID Team meetings and relevant literature. The area of analysis for this topic includes BLCA and CURE and the Black Canyon Wilderness; however, because of the planned expansion of the West Elk Wilderness Area into portions of CURE, this area will also be considered. The normal soundscape is considered to be natural ambient sound levels plus human-caused sounds related to everyday activities in BLCA and CURE. Overall, natural quiet is an important resource and value in BLCA and CURE, particularly in the Black Canyon wilderness area. Motorized recreation is permitted on the reservoirs in CURE, but natural quiet is still an important part of the visitor experience.
The intensity of effects and impact duration are described in the analysis below using the following criteria and definitions.

Negligible- An action that could result in a change to the wilderness area or soundscape but the change would be so small that it would not be of any measurable or perceptible consequence.

Minor- An action that could result in a change to the wilderness area or soundscape, but the change would be small, short duration, and of little consequence.

Moderate- An action that could result in a noticeable change to the wilderness area or soundscape; the change would be measurable and of consequence.

Major- An action that would result in a noticeable change to the wilderness area or soundscape; the change would be measurable and result in serious, adverse impacts.

Impact Duration Definitions:

Short-term Effects occur only during the fire or other fire management related actions.

Long-term Effects continue to occur after the fire or other fire management related actions have ceased.

Impacts of Alternative A (No Action)

Impact Analysis

Under Alternative A, all wildland fires would be fully suppressed. Vehicles, aircraft, and equipment such as chainsaws used in fire suppression would have direct effects on the normal soundscape of BLCA and CURE and the Black Canyon Wilderness. These adverse effects would be short term, minor to moderate in the fire area. Some fire suppression activities such as hand line building, could have minor to moderate, short-term adverse effects to some vegetation communities within wilderness areas.

Cumulative Effects

Cumulative effects would include noise from management activities in the surrounding USFS or BLM lands, nearby private land activities, and the potential for increased recreational and private development in the area. These effects would cumulatively result in minor to moderate direct and indirect adverse effects on the normal soundscape and visitor experience. The severity and duration of impacts would largely depend on the extent and noise levels from other activities in the area and whether or not these occurred at the same time. . Also, if the expansion of the West Elk Wilderness into portions of CURE occurs as planned, Alternative B could result in increased noise and smoke from fire suppression activities near the wilderness area. Also, increased activity from the Dickerson Pit, near the eastern end of CURE, could result in increases in dust and noise within the expanded areas of the West Elk Wilderness. Overall, cumulative impacts of other actions in the parks, added to the adverse effects expected from Alternative A, would result in short- and long-term, minor to moderate, direct and indirect impacts to wilderness areas and soundscapes, and would generally be localized near developed areas and areas of fire suppression activity.

Conclusion

Alternative A would result in short-term, minor to moderate adverse impacts to normal soundscapes, wilderness areas, and related values.
Alternative A would not produce any major adverse impacts or impairment of wilderness and soundscape resources or values whose conservation is necessary to the purpose of the establishment of the parks that are key to the natural or cultural integrity of the parks; or that are actions identified as a management goal of the parks.

Impacts of Alternative B – Natural Landscape Units

Impact Analysis

Manual fuel reduction activities (e.g., with chainsaws, brush cutters) and vehicle and aircraft use related to prescribed fire and WFU activity would produce noise impacting nearby visitor use facilities or the natural quiet. These adverse impacts would be minor to moderate and short term. Planning for prescribed fires and fuel reduction activities would include public notice and management of visitor access to nearby areas to reduce impacts to visitors. Prescribed fire, and particularly WFU fires, if restored to their original ecological

role, could result in short- and long-term beneficial effects to wilderness areas as normal successional processes are allowed to proceed.

Cumulative Effects

Similar to Alternative A, cumulative effects under Alternative B would include noise from management activities in the surrounding USFS or BLM lands, nearby private land activities, and the potential for increased recreational and private development in the area. These effects would cumulatively result in minor to moderate direct and indirect adverse effects on the normal soundscape and visitor experience. Should regional drought continue, wildland fire incidence and, consequently, WFU fire use could increase, resulting in periodic, short-term changes to vegetation communities. The severity and duration of impacts would largely depend on the extent and noise levels from other activities in the area and whether or not these occurred at the same time. Also, if the expansion of the West Elk Wilderness into portions of CURE occurs as planned, Alternative B could result in increased acreage burned through WFU fires that cross into the wilderness area. In addition, increased activity from the Dickerson Pit, near the eastern end of CURE, could result in increases in dust and noise within the expanded areas of the West Elk Wilderness. Overall, cumulative impacts of other actions in the parks, added to the adverse effects expected from Alternative B, would result in short- and long-term, minor to moderate, direct and indirect impacts to wilderness areas and soundscapes.

Conclusion

Alternative B would result in short-term, minor to moderate, adverse impacts to normal soundscapes and related values. However, prescribed fire, and particularly WFU fires, if restored to their original ecological role, could result in short- and long-term beneficial effects to wilderness areas as normal successional processes are allowed to proceed. Alternative B would not produce any major adverse impacts or impairment of wilderness and soundscape resources or values whose conservation is necessary to the purpose of the establishment of the parks that are key to the natural or cultural integrity of the parks; or that are actions identified as a management goal of the parks.

Impacts of Alternative C – Natural Landscape Units only within Park Boundary

Impact Analysis

This alternative is the same as Alternative B except that fire management activities are permitted only within BLCA and CURE boundaries. No fire management activities, including prescribed fire and WFU, are permitted to extend into or out of adjacent public or private lands.

Adverse impacts would be expected to be similar to Alternative B except that the area involved would be smaller and impacts would be of shorter duration in some cases because management activities or wildland fires would not be allowed to extend outside the park boundaries.

Cumulative Effects

Cumulative effects would be similar to Alternative B except that the area of prescribed fires and WFU could be smaller. Should regional drought continue, wildland fire incidence and, consequently, WFU fire use could increase, resulting in periodic, short-term changes to

vegetation communities. The severity and duration of impacts would largely depend on the extent and noise levels from other activities in the area and whether or not these occurred at the same time. Also, increased activity from the Dickerson Pit, near the eastern end of CURE, could result in increases in dust and noise within the expanded areas of the West Elk Wilderness. Overall, cumulative impacts of other actions in the parks, added to the adverse effects expected from Alternative B, would result in short- and long-term, minor to moderate, direct and indirect impacts to wilderness areas and soundscapes, and could be more severe near park boundaries.

Conclusion

Alternative C would result in short-term, minor to moderate, adverse impacts to normal soundscapes and related values.

Alternative C would not produce any major adverse impacts or impairment of wilderness and soundscape resources or values whose conservation is necessary to the purpose of the establishment of the parks that are key to the natural or cultural integrity of the parks; or that are actions identified as a management goal of the parks.

CONSULTATION/COORDINATION

In March 2004, the NPS mailed a public scoping brochure (Appendix E) to approximately 600 individuals, organizations, tribes, and government agencies and posted it on the BLCA and CURE websites. The brochure announced the beginning of the scoping process for the Fire Management Plan Environmental Assessment. The public scoping brochure and website requested public participation. This brochure is on file at the NPS Headquarters office in CURE. A press release was sent to the Daily Sentinel in Montrose, Colorado and to the Gunnison County Times in Gunnison, Colorado. The press releases provide information about the project and requested scoping comments. The formal public scoping period was from March 5 to April 5, 2004.

Twenty comment letters were received during the formal public scoping period. Eleven were received from individuals, one from a state agency (Colorado Department of Transportation), two from federal agencies (Bureau of Land Management, Western Area Power Administration), two from county government (Montrose County), one from city government (Town of Hotchkiss), two from a tribe (Southern Ute Tribe), and one from an organization (Gunnison-Crested Butte Tourism Association).

The comments received by the NPS during formal public scoping were related to: (1) impacts to transportation corridors and infrastructure; (2) impacts to vegetation and potential impacts to tree damaging insects; (3) impacts to local emergency services resources, recreation, and socioeconomics; (4) impacts to wildlife and wildlife habitat; (5) impacts of past and present fire suppression practices; (6) impacts to electric power facilities and infrastructure; and (7) the support of “cross-boundary” fire management with adjacent public agency lands.

Tribal consultation on cultural resources was initiated by sending a letter to the chairman or chairwoman of the Northern Ute, Southern Ute, and Ute Mountain Ute tribes. One telephone response was received from the Southern Ute Tribe Chairman. The mailing list, a copy of the consultation letter sent, and the telephone conversation log are included in Appendix B.

ESA consultation was also initiated by sending a letter to the USFWS and follow-up contacts to renew consultation every 90 days. A copy of the consultation letter, the

USFWS response memorandum, and the most recent update "memorandum-to-files" is included in Appendix C.
Additional consultation on cultural resources with SHPO was initiated by a letter sent on September 24, 2004. A copy of the letter and response are included in Appendix D.
A Notice of Availability for the FMP and EA will be published in the *Daily Sentinel* in Montrose, Colorado and in the *Gunnison Country Times* in Gunnison, Colorado, announcing the availability of these documents for a 30-day public review.
Following the 30-day public review period, the NPS will consider all comments received. Additional mitigation measures resulting from the public involvement process may be applied by the NPS as conditions of approval of the FMP, as necessary.

Individuals and Agencies Contacted
Persons and agencies contacted for information, or that assisted identifying important issues, developing alternatives, or analyzing impacts are listed below:

Linda Alick, Chief Ranger, Black Canyon of the Gunnison National Park/Curecanti National Recreation Area, Gunnison, Colorado
Marianne August, GIS Specialist, Black Canyon of the Gunnison National Park/Curecanti National Recreation Area, Gunnison, Colorado
Danguole Bockus, Ecologist, Black Canyon of the Gunnison National Park/Curecanti National Recreation Area, Gunnison, Colorado
Myron Chase, Resource Management Specialist, Black Canyon of the Gunnison National Park/Curecanti National Recreation Area, Gunnison, Colorado
Jerry Chonka, Fire Management Officer, U.S. Forest Service, Gunnison, Colorado
L. Dean Clark, Wildland Fire Specialist, National Park Service, Intermountain Region, Lakewood, Colorado
Amanda Clements, Ecologist, Bureau of Land Management, Uncompahgre Field Office, Montrose, Colorado
Michael Dale, Hydrologist, Black Canyon of the Gunnison National Park/Curecanti National Recreation Area, Gunnison, Colorado
Laurie Domler, NEPA/106 Specialist, National Park Service, Office of Environmental Quality, Intermountain Region, Denver, Colorado
Jim Ferguson, Biologist, Bureau of Land Management, Uncompahgre Field Office, Montrose, Colorado
Forest Frost, Cultural Resource Specialist, Black Canyon of the Gunnison National Park/Curecanti National Recreation Area, Gunnison, Colorado
Lisa Hanson, NEPA/106 Specialist, National Park Service, Office of Environmental Quality, Intermountain Region, Denver, Colorado
Dan Huisjen, Fire Ecologist, Bureau of Land Management, Uncompahgre Field Office, Montrose, Colorado
Dave Kinateder, Wildlife Biologist, Bureau of Land Management, Gunnison Field Office, Gunnison, Colorado
John Kleopfer, Ecologist, U.S. Fish and Wildlife Service, Grand Junction, Colorado
Eva Long, NEPA/106 Specialist, National Park Service, Office of Environmental Quality, Intermountain Region, Denver, Colorado
Matt Malick, Aquatic Ecologist, Black Canyon of the Gunnison National Park/Curecanti National Recreation Area, Gunnison, Colorado
Maggie McCaffrey, Fire Information and Education Specialist, Bureau of Land Management, Uncompahgre Field Office, Montrose, Colorado
Rick Oberheu, Fire Management Officer, U.S. Forest Service, Delta, Colorado

Steve Penny, Fuels Specialist, National Park Service, Dinosaur National Monument, Dinosaur, Colorado
Dave Roberts, Management Assistant, Black Canyon of the Gunnison National Park/Curecanti National Recreation Area, Gunnison, Colorado
Mark Rosenthal, Fire Management Officer, National Park Service, Dinosaur National Monument, Dinosaur, Colorado
Alan Schroeder, Natural Resource Specialist, U.S. Bureau of Reclamation, Grand Junction, Colorado
Susan Starcevich, Realty Specialist, Western Area Power Administration, Denver, Colorado
Ken Stahlnecker, Chief of Resource Stewardship and Science, Black Canyon of the Gunnison National Park/Curecanti National Recreation Area, Gunnison, Colorado
Ron Turley, Project Manager, Western Area Power Administration, Montrose, Colorado
Joe Vinyard, Fuels Specialist, Bureau of Land Management, Gunnison Field Office, Gunnison, Colorado
Bill Wellman, Superintendent, Black Canyon of the Gunnison National Park/Curecanti National Recreation Area, Gunnison, Colorado
Steve Winlsow, District Ranger, Black Canyon of the Gunnison National Park/Curecanti National Recreation Area, Gunnison, Colorado
Paul Zaenger, Interpretation Specialist, Black Canyon of the Gunnison National Park/Curecanti National Recreation Area, Gunnison, Colorado

List of Document Recipients

City Government
City of Gunnison, Mark Collins, City Manager
City of Montrose, John Schneiger, City Manager

Colleges
Western State College, Jay Helman

Congressional Delegation
Senator Ben Nighthorse Campbell
Senator-elect Ken Salazar
Senator Wayne Allard
Congressman Scott McInnis
Congressman-elect John Salazar

County Government
Gunnison County Board of County Commissioners
Montrose County Board of County Commissioners

Federal Agencies
National Park Service:
Intermountain Region Director, Steve Martin
Colorado State Director, Ron Everhart
Intermountain Region Environmental Quality Division, Chris Turk
Intermountain Region Fire Management Division, Len Dems
BLCA/CURE Superintendent, Bill Wellman
U.S. Bureau of Land Management, Barry Tollefson, Barbara Sharrow
U.S. Bureau of Reclamation, Carol DeAngelis

U.S. Fish and Wildlife Service, Allan Pfister
U.S.D.A. Forest Service, Jim Dawson
U.S.D.A. National Resources Conservation Service, John Scott
Western Area Power Administration, Ron Turley

Media
Gunnison Country Times
Montrose Daily Sentinel

Organizations
Club 20, Reeves Brown
Colorado Environmental Coalition
Gunnison Chamber of Commerce, Tammy Scott
Gunnison County REA
Gunnison-Crested Butte Tourism Association
High Country Citizens Alliance, Wendy McDermott
Montrose Chamber of Commerce
National Parks & Conservation Association, Thomas Keirnan
The Access Fund, Jason Keith
The Nature Conservancy, David Gann
Western Colorado Congress, Bill Patterson
Western Slope Environmental Resource Council

State Government
Colorado Department of Transportation
Colorado Division of Wildlife
Colorado Historical Society, Georgianna Contiguglia
Governor Bill Owens
State Senator Lewis Entz
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GLOSSARY OF FIRE MANAGEMENT TERMS USED IN THIS DOCUMENT

Crown Fire – fire that involves the canopy trees in the forest; can spread rapidly.

Fire Line – a break in fuel made by cutting, scraping, or digging vegetation and surface litter to stop the progress of fire; needs to be wide enough to prevent smoldering, burning, or spotting across the line.

Fire Management Plan – a strategic plan that defines a program to manage wildland and prescribed fires and provide for fuels reduction as needed.

Fire Regime – the frequency of occurrence, size, and intensity of fires that occur within a given area. Includes low-severity, non-stand replacing (one fire every 5-25 years), mixed severity (one fire every 5-67 years), and stand replacement (one fire every 70-120+ years) regimes.

Fuels (Surface/Ladder) – wood, foliage or grass that can burn. Surface fuels are grasses, duff, herbaceous cover/litter; ladder fuels include understory branches, trees, or shrubs that can allow a fire to ascend into the canopy.

Fuels Reduction – removal of excess fuels through thinning, limbing, slash pile burning, or other methods to reduce the potential for severe wildfires.

Limbing – removal of tree limbs to reduce fuel load and the potential for crown fires.

Pile Burning – controlled burning of slash (trees, brush, branches) removed during thinning.

Prescribed Fire – any fire ignited by management actions to meet specific objectives. A written approved prescribed fire plan must be completed and appropriate NEPA requirements followed prior to ignition. This term replaces the term “management ignited prescribed fire.”

Prescribed Natural Fire – A term previously used; has been replaced by “Wildland Fire Use.”

Start – Any new fire.

Suppression – a response to wildland fire that results in curtailment of fire spread and elimination of all identified threats from the fire.

Thinning – removal of trees, branches, or shrubs to reduce fuel loads.

Wildland Fire – any non-structure fire, other than prescribed fire, that occurs in the wildland. This term encompasses fires previously referred to as both wildfires and prescribed natural fires.

Wildland Fire Use – the management of naturally ignited wildland fires to accomplish specific pre-state resource management objectives in pre-defined geographic areas.

APPENDICES

Appendix A –

BLACK CANYON / CURECANTI 6 YEAR FUELS PLAN

		FIRE REGIME					COND. CLASS			YEAR - ACRES				
TYPE	NAME OF PROJECT	FR I	FR II	FR III	FR IV	FR V	CC1	CC2	CC3	07	08	09	10	11
Mechanical	CULTURAL SITES FUEL REDUCTION			30%		70%		40%	60%	5				
Rx	BEAVER SOAP I BROADCAST			100%					100%		90			
Mechanical	BEAVER SOAP I MECHANICAL			100%					100%	10				
Rx	GREEN GRIZZLY BROADCAST			100%				100%				80		
Cut, Pile and Burn	GREEN GRIZZLY CUT AND PILE			100%				100%			20			
Rx	SOUTH BLUE MESA			100%					100%				100	
Rx	BEAVER SOAP II BROADCAST			100%					100%					80
Cut, Pile and Burn	BEAVER SOAP II CUT AND PILE			100%					100%				20	
Manual	SOAP CREEK I MANUAL	100%						100%		40				
Rx	SOAP CREEK I BROADCAST	100%						100%			40			

Appendix B – Matrix of Historic and Prehistoric Cultural Resources at BLCA/CURE.

CONTEXT	RESOURCE TYPE	ELEMENTS OR ATTRIBUTES AT RISK	VALUES AT RISK	RISK CONDIDTIONS OR ACTIVITIES	MANAGEMENT OBJECTIVES	TREATMENT ALTERNATIVE/OPTIONS
Historic	Cabins	Wooden Structures	Vernacular Architecture	Impact by Fire-consumption	Preserve *in situ*	Fuel reduction around structures, Documentation, Wrap structures, black line around structures.
	Railroad Trestle	Wooden Components	Structural Integrity	Impact by Fire	Preserve *in situ*	Trestle is in defendable location, wrap structure to protect from ember blizzard.
	Cemetery	Stone Components	Cultural Property	Spalling of Gravestones.	Preserve *in situ*	Allow to burn and restore any damage.
	CCC Structures	Wooden structures, Wooden components of other structures	Vernacular Architecture	Impact by Fire-Burnup	Preserve *in situ*	Fuel reduction around structures, Documentation, Wrap structures.
	Wood cutting or herding camp	Glass, tin cans, ceramics	Data from artifacts.	Impact by fire and suppression activities.	Preserve *in situ*	Educated firefighters to identify site type. Avoid during suppression activities.

CONTEXT	RESOURCE TYPE	ELEMENTS OR ATTRIBUTES AT RISK	VALUES AT RISK	RISK CONDIDTIONS OR ACTIVITIES	MANAGEMENT OBJECTIVES	TREATMENT ALTERNATIVE/OPTIONS
Prehistoric/ Historic Ute	Brush structures, lean-tos	Wooden components	Structural Integrity, Traditional Property	Impact by Fire	Preserve *in situ*	Fuel reduction around structures, Documentation, Wrap structures.
	Hunting Blind	Traditional Property	Data from artifacts	Impact by Suppression Activities	Preserve *in situ*	Educate firefighter to identify site type. Avoid during suppression activities
	Artifact/Lithic Scatter	Surface Artifacts, High intensity fires may damage subsurface features.	Data from artifacts, Potential traditional property	Impact by Suppression Activities	Preserve *in situ*	For NRHP eligible sites: Avoid during suppression activities with 100-foot buffer. Otherwise avoid site area during suppression activities.
	Culturally Modified Trees	Modified tree.	Data, Traditional Property	Impact by fire/suppression	Preserve *in situ*	Educate fire crew, avoid or protect during suppression activities.
Archaic	Hunting Blind		Data		Preserve *in situ*	
	Artifact/Lithic Scatter	High intensity	Data from artifacts	Impact by Suppression Activities		For NRHP eligible sites: Avoid during suppression activities with 100-foot buffer. Otherwise avoid site area during Suppression activities.
	Isolated Finds	Lithic materials	None	None	None	None
Paleo-Indian	Lithic Scatter	Surface Artifacts	Data from artifacts	Impact by Suppression Activities	Preserve *in situ*	For NRHP eligible sites: Avoid during suppression activities with 100-foot buffer. Otherwise avoid site area during Suppression activities.
	Isolated Finds	Lithic materials	None	None	None	None

Appendix C – Tribal Consultation for Cultural Resources

(Page 1 of 3 for Appendix C)

Maxine Natchees, Chairwoman
Uintah & Ouray Tribal Business Committee
Northern Ute Tribe
P. O. Box 190
Ft. Duchesne, UT. 84026

CC:
Betsy Chapoose
Director, Cultural Rights and Protection
P.O. Box 190
Fort Duchesne, UT 84026

Howard Richards, Chairman
Southern Ute Tribe
P. O. Box 737
Ignacio, CO 81137

CC:
Neil Cloud
Southern Ute Tribe
P.O. Box 737
Ignacio, CO 81137

James Jefferson
Southern Ute Tribe
P.O. Box 737
Ignacio, CO 81137

Harold Cuthair, Chairman
Ute Mountain Ute Tribe
General Delivery
Towaoc, CO 81334

CC:
Terry Knight
Ute Mountain Ute Tribe
P.O. Box 53
Towaoc, CO 81334

Appendix C, cont'.

United States Department of the Interior

NATIONAL PARK SERVICE
Black Canyon of the Gunnison National Park
Curecanti National Recreation Area
102 Elk Creek
Gunnison, Colorado 81230

IN REPLY REFER TO:

H24

December 2, 2003

Howard Richards, Chairman
Southern Ute Tribe
P.O. Box 737
Ignacio, CO 81137

Dear Mr. Richards:

The staff of Black Canyon of the Gunnison National Park and Curecanti National Recreational Area is in the process of developing a Fire Management Plan for those properties. This plan will address such issues as fuel reduction methods, the use of fire in prescribed burns, and under what conditions fires will be allowed to burn. We would like to initiate government to government consultation for the purpose of discussing concerns of mutual interests related to the development of the Management Plan.

Archaeologists from both the National Park Service and the Bureau of Land Management have identified sites in the area related to recent Ute history. Of specific concern to the National Park Service are wooden structures (lean-to's, brush structures, and a possible corral/sheep trap) on lands administered by the NPS or on lands immediately adjacent. Other resources may exist that have not been identified by the NPS cultural resources staff.

The NPS Archaeologist, Forest Frost, will be coordinating the consultation effort. You or your representatives can contact him at the address at the top of this letter or by telephone at 970-641-2337 ext. 250.

Sincerely,

Linda Alick
Acting Superintendent

Appendix C, cont'.

Phone Conversation Log

Parties included: Neil Cloud , Southern Ute Tribe, Forest Frost, NPS
Date: 18 December, 2003

Topics Discussed: Consultation for Fire Management Plan

Notes of conversation: Mr. Cloud expressed an interest in the preservation of several Proto-historic/Historic wooden structures recorded either on NPS property or on lands adjacent. He mentioned his past experience with an agency partnership in Delta that helped preserve several standing prehistoric structures. He sees this going in a similar direction. He has also attended the JAME weed control meetings in the past and has a basic understanding of the geography of the area. I asked if he would be interested in attending the next meeting of the ID team as part of our consultation efforts. He said he would. He said he would require a letter of comformation (invitation) and a schedule with the meeting dates for his travel authorization. I asked if 2 weeks notice would be enough time and he said it would.

Appendix D - Consultation letter, USFWS response memorandum, and update "memorandum-to-files" letter.

(Page 1 of 3 for Appendix D)

United States Department of the Interior

NATIONAL PARK SERVICE
Black Canyon of the Gunnison National Park
Curecanti National Recreation Area
102 Elk Creek
Gunnison, Colorado 81230

IN REPLY REFER TO:

N1621

December 19, 2003

Mr. John Kleopfer
U.S. Fish and Wildlife Service
764 Horizon Dr., Bldg. B
Grand Junction, CO 81506

Dear Mr. Kleopfer:

We would like to request a list of Federal threatened, endangered, proposed, and candidate species and designated critical habitats that may be present in Black Canyon of the Gunnison National Park and Curecanti National Recreation Area. These areas are located within Montrose and Gunnison Counties, Colorado. Black Canyon of the Gunnison National Park is located in Township 49N through 51N, Range 7W through 9W, New Mexico Principal Meridian. Curecanti National Recreation Area is located in Township 48N through 49N, Range 1W through 7W, New Mexico Principal Meridian.

We will use this list for a variety of projects we are currently working on, which include a Wildland Fire Management Plan for both park areas and the expansion of a mineral extraction pit within Curecanti National Recreation Area. Once we receive the lists, we will be sure to ask you for updates every 90 days as necessary for these and other projects within these National Park Service units. We will also be in contact with your office to continue our consultation responsibilities once we review the species list and develop management alternatives.

Thank you for your assistance in this matter. If you have additional questions or need additional information, you may contact Myron Chase, Resource Management Specialist, at 970-249-1914 ext. 426, or myself at 970-641-2337 ext. 225.

Sincerely,

Ken Stahlnecker

Ken Stahlnecker
Chief of Resource Stewardship and Science

Appendix D, cont'.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ecological Services
764 Horizon Drive, Building B
Grand Junction, Colorado 81506-3946

IN REPLY REFER TO:
ES/CO:NPS
MS 65412 GJ

RECEIVED
JAN 29 2003
CURE/BLCA

January 27, 2004

Memorandum

To: Chief of Resource Stewardship and Science, Black Canyon of the Gunnison National Park, Gunnison, Colorado

From: Western Colorado Supervisor, Fish and Wildlife Service, Ecological Services, Grand Junction, Colorado Allan R. Pfister

Subject: Threatened and Endangered Species List for Wildland Fire Management Plan

We have received your December 19, 2003, correspondence requesting a list of federally threatened (FT), endangered (FE), and candidate (FC) species potentially affected by the Wildland Fire Management Plan for the Black Canyon of the Gunnison National Park located in Montrose and Gunnison counties of Colorado.

We would like to bring to your attention species which are candidates for official listing as threatened or endangered species [67 FR, Vol. 67, No. 114 (June 13, 2002)]. While these species presently have no legal protection under the Endangered Species Act, it is within the spirit of the Act to consider project impacts to potentially sensitive candidate species. Additionally, we wish to make you aware of the presence of Federal candidates should any be proposed or listed prior to the time that all Federal actions related to the project are completed.

Please be aware that endangered and threatened species lists should be updated every 90 days by telephone or in writing. If water depletions are or become part of your project, you will need to formally consult for the endangered fishes of the Colorado River.

Federally Listed Species for the Black Canyon of the Gunnison National Park

Bald Eagle (FT)	*Haliaeetus leucocephalus*
Yellow-billed cuckoo (FC)	*Coccyzus americanus*
Canada lynx (FT)	*Lynx canadensis*
Boreal toad (FC)	*Bufo boreas boreas*
Gunnison sage-grouse (FC)	*Centrocercus minimus*
Uncompahgre fritillary butterfly (FE)	*Boloria acrocnema*
Mexican spotted owl (FT)	*Strix occidentalis lucida*
Eriogonum pelinophilum (FE)	Clay-loving wild-buckwheat
Sclerocactus glaucus (FT)	Uinta Basin hookless cactus

If the Service can be of further assistance, please contact John Kleopfer at the letterhead address or (970) 245-3920, extension. 39.

JKleopfer:NPSBlackCanyonGunnisonWildlandFireManagementPlanSpcLst.doc:012704

Per telephone conversation with John Kleopfer, this list also applies for fire management purposes, to Curecanti NRA, and the list is current as of 17 Feb 04.
KES

Appendix D, cont'.

Memorandum to Files: September 24, 2004

This memo serves to update the U.S. Fish and Wildlife Service threatened and endangered species consultation letter as per a telephone conversation with John Kleopfer held on September 24, 2004. The memorandum and species list dated January 27, 2004 is current for fire management planning purposes as of September 24, 2004 and will remain current for 90 days.

/s/ Ken Stahlnecker
Chief, Resource Stewardship and Science

Appendix E – USFWS Comments and Concurrence Letter.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ecological Services
764 Horizon Drive, Building B
Grand Junction, Colorado 81506-3946

IN REPLY REFER TO:
ES/CO:NPS/BlackCanyon
TAILS 65413-2006-I-0052

June 28, 2006

Memorandum

To: Acting Superintendent, National Park Service, Black Canyon of the Gunnison National Park and Curecanti National Recreation Area, Gunnison, Colorado

From: Western Colorado Supervisor, Fish and Wildlife Service, Ecological Services, Grand Junction, Colorado Allan R Pfister

Subject: Comments on the Biological Assessment for the Fire Management Plan

The U.S. Fish and Wildlife Service (Service) has reviewed the updated Biological Assessment (BA) for the proposed Black Canyon of the Gunnison National Park and Curecanti National Recreation Area Fire Management Plan (FMP). The BA was received by electronic mail from the National Park Service (NPS) on May 12, 2006. The NPS letter accompanying an earlier version of the BA, dated February 24, 2006, requests Service concurrence with determinations for the Uncompahgre fritillary butterfly (*Boloria acrocnema*), clay-loving wild buckwheat (*Eriogonum pelinophilum*), Uinta Basin hookless cactus (*Sclerocactus glaucus*), Mexican spotted owl (*Strix occidentalis lucida*), bald eagle (*Haliaeetus leucocephalus*), and Canada lynx (*Lynx canadensis*). Your letter notes that "may affect, likely to adversely affect" determinations for the bonytail (*Gila elegans*), Colorado pikeminnow (*Ptychocheilus lucius*), humpback chub (*Gila cypha*), and razorback sucker (*Xyrauchen texanus*) would occur in instances of water withdrawals related to fire management activities. However, you are not requesting formal consultation on these withdrawals due to a 1994 Programmatic Biological Opinion that requires reporting of water withdrawals to the Bureau of Land Management.

The BA also includes assessments for two Federal candidate species, the yellow-billed cuckoo (*Coccyzus americanus*) and Gunnison sage-grouse (*Centrocercus minimus*). While Federal candidates for listing as threatened or endangered have no legal protection under the Endangered Species Act of 1973, as amended (ESA), it is within the spirit of the ESA to consider project impacts to these potentially sensitive species; the Service appreciates the attention the NPS has given to the yellow-billed cuckoo and Gunnison sage-grouse. In a final determination for the Gunnison sage-grouse on April 18, 2006, the Service found that listing this species as threatened or endangered is not warranted; therefore, the Gunnison sage-grouse is no longer considered a candidate species for ESA listing. However, we agree with the intent of the FMP to follow the protection and enhancement guidelines in the Gunnison sage-grouse Rangewide Conservation Plan, including those for fire and fuels management.

Current fire management within the Black Canyon of the Gunnison National Park and Curecanti National Recreation Area is a full suppression strategy. Therefore, ESA consultation is currently required in all cases where fire suppression activities potentially affect listed species. The FMP outlines goals, objectives, and strategies that apply to potential, future fire suppression activities, and also to additional fire management activities including wild land fire uses, prescribed fire fuels treatments, non-fire (i.e. mechanical) fuels treatments, and post-fire restoration actions. Consultation on the FMP is therefore programmatic in nature, addressing multiple actions on a regional or program basis. For the Service to concur with the NPS findings regarding ESA listed species, the FMP must describe the various potential activities that could occur in sufficient detail, describe the potential effects of the proposed fire-related actions on the listed species, and propose adequate conservation measures to accompany the various activities.

Uncompahgre fritillary butterfly:
In the BA, you determine that suitable habitat for the Uncompahgre fritillary butterfly does not occur in the parks acreage, and therefore the implementation of the FMP will have "no effect" on this species. The basis for your finding is that habitat for this species occurs in moist alpine slopes above 12,000 feet, with extensive snow willow patches, and these are habitat types that do not occur in the action area. Because the NPS determined that the proposed action would not affect the Uncompahgre fritillary butterfly, consultation and concurrence are not necessary on this species.

Bald Eagle:
This species occurs in the parks where winter foraging, perching, roosting, and potential nesting habitats exist. The potential nesting habitat exists in the Curecanti National Recreation Area, but no nests are currently documented. Occurrences of bald eagles will overlap with early spring and late fall fire management activities in the action area. As a conservation measure, potential disturbance effects will be reduced by suspending project activities if eagles are within 1 mile. Thinning projects to protect large cottonwood trees will be conducted only after surveys have been conducted to determine that there is no nesting activity. The Service understands that if retardant is used for fire suppression, it will not be applied in or near stream or riparian systems. The NPS will assist private landowners to implement projects that protect roost trees on their land. With implementation of these conservation measures, the Service concurs with the NPS determination of "may affect, not likely to adversely affect" for the bald eagle.

Uinta Basin hookless cactus:
Surveys conducted in 2004 by University of Colorado botanists did not detect the presence of the Uinta Basin hookless cactus within the parks. The BA estimates approximately 80 acres of potential habitat for this species exists within the Black Canyon of the Gunnison National Park, in desert shrub and in lower elevation, pinyon-juniper habitat along the western boundary with the Gunnison Gorge National Conservation Area. No habitat for the cactus is known on non-Federal lands within the parks. However, the species has been documented in 2 locations adjacent to the Black Canyon of the Gunnison National Park, within the Black Canyon Fire Management Unit on lands managed by the Bureau of Land Management (BLM). Wild land fire in the Black Canyon of the Gunnison National Park could burn across the boundary and affect occurrences or habitats of this species. If this occurs, the Service understands that fire suppression management will occur. Proposed conservation measures for wild land fire suppression include: using retardant, foam, water, engines/wet lines, etc., in known habitat for

this species, constructing fire lines outside the perimeter of known cactus populations, avoiding off-road use of motorized vehicles and mechanical equipment within known cactus populations, conducting vegetative treatments outside cactus populations, and preventing the spread of cheatgrass in cactus habitat. With implementation of these conservation measures, the Service concurs with the NPS determination of "may affect, not likely to adversely affect" for the Uinta Basin hookless cactus. However, the BA acknowledges that the location and extent of potential, future suppression activities may not be adequately quantified in all cases due to the nature of wild land fires in these areas. Therefore, if the NPS determines that fire suppression activities are likely to adversely impact cactus populations, emergency consultation will be required.

Clay-loving wild buckwheat:
Surveys conducted in 2004 did not detect the presence of the clay-loving wild buckwheat within the parks, but the species occurs in the nearby Gunnison Gorge National Conservation Area (on lands managed by the Bureau of Land Management). Likely suitable or potential habitat exists on approximately 80 acres within the Black Canyon of the Gunnison National Park, in desert shrub along the western boundary with the Gunnison Gorge National Conservation Area. Buckwheat habitats have not been identified for prescribed fire, wild land fire use, or non-fire fuels treatments. There is a small risk that fire suppression activities could adversely impact the species, but the BA asserts this rarely occurs because fire in these habitats does not carry far enough to require suppression. The Service concurs with the NPS determination of "may affect, not likely to adversely affect" for the clay-loving wild buckwheat. However, if site-specific suppression activities arise that could adversely affect the species, emergency consultation will be required.

Mexican spotted owl:
A 1991 survey within the Curecanti National Recreation Area, including the canyons of Crystal and Morrow Point Reservoirs, did not detect the presence of this species. A general avian inventory of the Black Canyon of the Gunnison National Park and Curecanti National Recreation Area in 2002 and 2003 found no spotted owls. However, canyon and steep slope terrain that is potential spotted owl habitat exists within the parks. Human-caused fires and their associated suppression activities could adversely affect spotted owls and/or their habitat. Surveys following currently accepted protocol have not been completed, but are to begin in 2006; they will be conducted in the main canyon and side canyons within the Black Canyon of the Gunnison National Park including Red Rock Canyon, and in the Curecanti National Recreation Area including the Soap Creek and Lake Fork arms of Blue Mesa Reservoir, and areas near Morrow Point and Crystal Reservoirs. While the surveys are in progress, the BA commits to the assumption that owls may be present in the forested and canyon portions of the action area, and therefore only fire suppression activities will occur in these areas. The BA also contains discussion and proposed conservation measures for wild land fire use, in the case where surveys verify the absence of spotted owls in the action area. More consultation will be required on this point, when adequate survey results are obtained and reviewed. At this time, the Service concurs with the BA determination of "may affect, but not likely to adversely affect" assuming that only fire suppression management activities will occur in potential owl habitat and that proposed conservation measures for suppression are implemented. Should fire occur in potential owl habitat, and fire suppression activities occur that are not consistent with conservation measures outlined in the BA, emergency consultation with the Service should be initiated.

Canada lynx:
Potential habitat for lynx and their prey does not occur in the parks, but suitable habitat exists on lands that can be accessed through the parks. Studies by the Colorado Division of Wildlife indicate lynx pass through the action area. The BA found these dispersals could occur through any habitat types that could experience fire management activities, but determined no direct effects would occur and indirect effects (e.g. displacement) would be short-term. Long-term effects would likely be beneficial, as prescribed fire and mechanical thinning projects could improve habitat for the prey species of the Canada lynx. The BA determined that implementation of the FMP "may affect, but is not likely to adversely affect" the Canada lynx. The Service concurs with your determination.

As discussed above, subsequent consultations will be necessary to assess the effects of fire management activities where they could not be fully analyzed in the hypothetical sense in the BA, and where specific conservation measures were not developed. The FMP and associated documents will act as a guide for future consultations prior to the implementation of planned activities (e.g., prescribed fire, non-fire fuels treatments, post-fire restoration, etc.), and during emergency consultations when fire suppression actions, wild land fire uses, or other unplanned activities could adversely affect listed species. The FMP should act to facilitate and streamline these consultations, and the Service expects that adaptive management will guide future changes and revisions to this and other guidance documents.

If the Service can be of further assistance, please contact Larry Thompson at the letterhead address or (970) 243-2778, extension 39.

LThompson:NPSBlackCanyonGunnisonWildlandFireManagementPlanBACL.doc:062806

Appendix F - Consultation on cultural resources with the State Historic Preservation Office.

United States Department of the Interior

NATIONAL PARK SERVICE
Black Canyon of the Gunnison National Park
Curecanti National Recreation Area
102 Elk Creek
Gunnison, Colorado 81230

IN REPLY REFER TO:

September 24, 2004

Georgianna Contiguglia
State Historic Preservation Officer
Colorado Historical Society
Office of Archaeology & Historic Preservation
1300 Broadway
Denver, CO 80203

Re: §106 Compliance, Curecanti National Recreation Area/Black Canyon of the Gunnison National Park, Environmental Assessment for Fire Management Plan

Dear Ms. Contiguglia:

The staff of Curecanti National Recreation Area and Black Canyon of the Gunnison National Park is currently preparing a Fire Management Plan for both National Park Service units, and the associated Environmental Assessment. It is our intent to address both National Environmental Policy Act and National Historic Preservation Act requirements in a combined document. The document shall include an Assessment of Effects that we are using as consultation under §106 of the National Historic Preservation Act.

If you have concerns regarding this approach, please direct your questions to Forest Frost at (970) 641-2337 x 250 or via his e-mail at Forest_Frost@nps.gov.

William E. Wellman
Superintendent

Appendix F, continued.

COLORADO
HISTORICAL
SOCIETY

The Colorado History Museum 1300 Broadway Denver, Colorado 80203-2137

October 5, 2004

William E. Wellman
Superintendent
Black Canyon of the Gunnison National Park
Curecanti National Recreation Area
102 Elk Creek
Gunnison, CO 81230

Re: Section 106 Compliance, Curecanti National Recreation Area/Black Canyon of the Gunnison National Park, Environmental Assessment for Fire Management Plan. (CHS #44111)

Dear Mr. Wellman,

Thank you for your correspondence dated September 24, 2004 and received by our office on October 1, 2004 regarding the above-mentioned project.

After review of the submitted material, we concur with your proposal to merge Section 106 of the National Historic Preservation Act and the National Environmental Policy Act (NEPA). We would like to request a copy the merge schedule. We also would like to request additional information on how the consulting parties and the public will be included in each stage of the merged process, such as in the identification process, the potential effects assessment process, and discussion of possible mitigation measures, as stipulated in 36 CFR 800.8.

If we may be of further assistance, please contact Amy Pallante, our Section 106 Compliance Coordinator, at (303) 866-4678.

Sincerely,

Mark Wolfe

For Georgianna Contiguglia
State Historic Preservation Officer

cc: Forest Frost/NPS

Appendix G – Public Scoping Brochure

(Page 1 of 5 for Appendix G)

National Park Service

U.S. Department of the Interior

Black Canyon of the Gunnison National Park

Curecanti National Recreation Area

Colorado

Public Scoping Brochure

Fire Management Plan

Environmental Assessment

The National Park Service (NPS) is preparing an Environmental Assessment (EA) for the development of the Fire Management Plan for Black Canyon of the Gunnison National Park and Curecanti National Recreation Area, Colorado.

Public involvement is a key component in preparing the EA. This public scoping brochure provides information on the environmental analysis process and schedule, and how you can be involved.

I invite you to participate in this process.

William E. Wellman
Superintendent

Background

National Park Service guidance for Wildland Fire Management states, "Each park with vegetation capable of burning will prepare a Fire Management Plan to guide fire management that is responsive to the park's natural and cultural resource objectives and to safety considerations for Park visitors, employees, and developed facilities." Black Canyon of the Gunnison NP does not currently have a completed Fire Management Plan (FMP) in place and Curecanti's plan was written in 1992. Therefore, both parks currently operate under a "complete suppression" approach with interagency cooperation. Current "complete suppression" fire management strategies do not include the use of fire to accomplish resource management goals in appropriate areas.

To fill these gaps in park planning, the NPS has recently initiated the process to gather information necessary to complete a Fire Management Plan and Environmental Assessment.

The Environmental Analysis Process

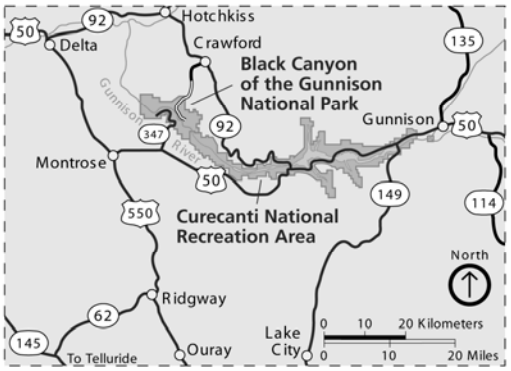
An NPS interdisciplinary team developed the following framework for preparing the EA. We hope it provides you with sufficient information to contribute comments and suggestions.

Project Purpose and Need

The purpose of the FMP is to evaluate strategies for the management of fire and fuels within and adjacent to the parks, as determined cooperatively by various state, federal, and local land managers, as well as private land owners and public stakeholders. It is desirable to design and implement a plan that will not only protect resources and values, but will to the most practicable extent, reintroduce fire as an ecological process on the landscape. The need for action is to develop a FMP for two park units that do not have current plans in compliance with national wildland fire directives, and to establish future management direction for fire related activities that would protect both NPS and adjacent lands.

Objectives of the Environmental Assessment

- Develop alternatives that would provide for fire management activities that assist in furthering the purposes of Black Canyon of the Gunnison NP and Curecanti NRA.
- Analyze potential impacts to cultural resources on or eligible for listing on the National Register of Historic Places; natural; and socioeconomic resources.
- Develop measures to avoid, minimize, or mitigate adverse impacts to park resources and values; and prevent impairment.
- Involve the public in the environmental process.



Location of Black Canyon of the Gunnison NP and Curecanti National Recreation Area.

Preliminary List of Resources and Concerns that Could be Affected by Fire Management Plan Activities	
Air Quality • smoke management in Class 1 air quality area **Geologic Resources** • soils • streambed erosion **Water Resources and Floodplains** • water quality and quantity **Wetlands** **Vegetation** • fire-dependant plant communities • rare or unusual vegetation • introduction and spread of non-native species **Soundscapes** • fire operations vehicle and aircraft noise **Land Use** • wildland-urban interface • grazing, ranching **Energy Resources** • hydroelectric facilities and infrastructure	**Fish and Wildlife** • deer, elk, bighorn sheep, resident and migratory birds • winter range, breeding range, migration routes **Species of Management Concern** • Gunnison sage grouse • Canada lynx • Colorado cutthroat trout • State rare plants: Gunnison and skiff milkvetch, Black Canyon gilia, hanging garden Sullivantia **Cultural Resources** • archeological resources • ethnographic resources • historic resources **Visitor Use and Experience** • human health and safety • natural scenery, wilderness • effects of noise • recreational use **Socioeconomics**

Preliminary Range of Alternatives

Alternative A, No-Action
- Full suppression and limited mechanical fuel reduction to protect structures within park boundaries only. This alternative is the current management action for fire at the parks.

Alternative B, Natural Landscape
- Some suppression in units that are not mandated for fire; fuel reduction including manual/mechanical treatment and prescribed fire to reduce fuel loading in mandated units; and wildland fire use in units identified for wildland fire use. These fire management activities are permitted to fluctuate across park lands to/from adjacent lands in cooperation with public land managers and private land owners.

Alternatives C, Park Boundary
- The same as Alternative B, except that fire management activities are permitted only within the park boundaries. No fire management activities are permitted to extend into or out of adjacent public or private lands.

Steps in the Planning Process

1. Public Scoping March 5 – April 5, 2004
2. Data Collection October 2003 – April 2004
3. Preparation of EA Spring 2004
4. Public Review of EA Summer 2004

The National Park Service Wants Your Participation

Your input is important in developing the Environmental Assessment. The National Park Service is interested in receiving your comments to the following questions:

1. Do you agree with the list of resources and concerns that could be affected by the proposed Fire Management Plan? Are there other resources and concerns the NPS should address in the EA?

2. Do you agree with the range of alternatives proposed? Do you have additional suggestions for the NPS to consider?

3. Do you have other comments and suggestions for the National Park Service to address in the EA?

Please send comments to: **Ken Stahlnecker, Chief, Resource Stewardship and Science**
Black Canyon of the Gunnison National Park
Curecanti National Recreation Area
102 Elk Creek
Gunnison, Colorado 81230

Black Canyon of the Gunnison National Park
Curecanti National Recreation Area
102 Elk Creek
Gunnison, Colorado 81230

Appendix H - Public Scoping Mailing List

CATEGORY	NAME	NAME	TITLE	C/O	ADDRESS
Federal Govt					
	Bill	Endriss	Area Representative	Congressman Scott McInnis	225 N 5th St #702
	George	Rossman	District Director	Senator Ben Nighthorse Campbell	Federal Bldg 400 Rood Rm 213
	Derek	Wagner	Area Representative	Senator Wayne Allard	215 Federal Bldg 400 Rood Ave
				Advisory Council on Hist Preservation	1100 Penn Ave NW Ste 809
	Barbara	Sharrow	UFO Manager	Bureau of Land Management	2505 S Townsend
	Barry	Tollefson	Area Manager	Bureau of Land Management	216 N Colorado St
	Carol	DeAngelis	Manager	Bureau of Reclamation	2764 Compass Dr Ste 101
	Steve	Martin	Regional Director	National Park Service	PO Box 25287
	Bill	Wellman	Superintendent	National Park Service BLCA/CURE	102 Elk Creek
	John	Scott		Natural Resources Conservation Service	216 N Colorado St
	Al	Pfister		US Fish & Wildlife Service	764 Horizon Dr Bldg. B
	Jim	Dawson	District Ranger	US Forest Service	216 N Colorado
	Ron	Turley		Western Area Power Administration	1800 S Rio Grande Ave
Organizations					
	Wendy	McDermott	Executive Director	High Country Citizens Alliance	PO Box 1066
	Reeves	Brown	President	Club 20	PO Box 550
				Colorado Environmental Coalition	1000 N 9th St #29
				Gunnison County REA	PO Box 180
	Thomas	Kiernan	President	National Parks & Conservation Assoc	1300 19th St NW Ste 300
	David	Gann	Program Manager	The Nature Conservancy	525 N 5th St
	Pamela	Eaton	Regional Director	The Wilderness Society	7475 Dakin St Ste 410
	Bill	Patterson		Western Colorado Congress	PO Box 472
				Western Slope Env Res Council	PO Box 1612
Colleges					
	Jay	Helman	President	Western State College	
Tribal Govt					
	Maxine	Natchees	Chairperson	Northern Ute Tribe	PO Box 190
	Howard	Richards Sr.	Chairperson	Southern Ute Tribe	PO Box 737
	Selwyn	Whiteskunk	Chairperson	Ute Mountain Ute Tribe	General Delivery
State Govt					
	Susan	Spackman	Botanist	CNHP CSU College of Nat Resources	254 General Services Bldg
	Ray	David		CO Dept of Transportation	2424 N Townsend Ave
	Peter	Barth	District Forester	CO State Forest Service	102 Par Place Ste 3
	J	Wenum	Area Manager	Colorado Division of Wildlife	300 W New York
	Georgianna	Contiguglia	SHPO	Colorado History Museum	1300 Broadway
	Brian	Ayers		Colorado State Forest Service	PO Box 1390

	Lewis	Entz	State Senator District 5	Colorado State Capitol	200 E Colfax
	Gregg	Rippy	State Rep. District 57	Colorado State Capitol	200 E Colfax
	Bill	Owens	Governor	State Capitol	200 E Colfax
Media				Montrose Daily Sentinel	12 South Cascade
				Montrose Daily Press	535 South First Street
				Gunnison Country Times	218 North Wisconson Street
County Govt					
		Gunnison Co	Board of Co. Commis.	Gunnison County	200 E Virginia
	Joanne	Williams	County Planner	Gunnison County	200 East Virginia Ave
	Marlene	Crosby	Director	Gunnison County Public Works	811 Rio Grande
	Rick	Gibbons	County Planner	Montrose County	PO Box 1289
		Montrose Co	Board of Co. Commis.	Montrose County	PO Box 1289

Appendix I – Biological Assessment

BIOLOGICAL ASSESSMENT FOR THE BLACK CANYON OF THE GUNNISON NATIONAL PARK AND CURECANTI NATIONAL RECREATION AREA FIRE MANAGEMENT PLAN AND ENVIRONMENTAL ASSESSMENT

Prepared by:

Danguole Bockus **Ecologist**	**Date**
Ken Stahlnecker **Chief, Resource Stewardship and Science**	**Date**

National Park Service
Black Canyon of the Gunnison National Park/
Curecanti National Recreation Area
102 Elk Creek
Gunnison, Colorado 81230

I. INTRODUCTION

The information presented by the National Park Service (NPS) in this document, along with the information found in the draft *Environmental Assessment/Assessment of Effect for the Fire Management Plan for Black Canyon of the Gunnison National Park and Curecanti National Recreation Area* (EA), serves as our Biological Assessment. The documents analyze the effects of implementing the Fire Management Plan (FMP) within the park and National Recreation Area (NRA) on twelve (12) threatened, endangered, and candidate species. Effects to these species are analyzed in terms of the effects of implementing the proposed action; Alternative B – Natural Landscape Alternative, described in Section II. of this Assessment.

This Assessment is prepared in accordance with legal requirements set forth under Section 7 of the Endangered Species Act (16 U.S.C. 1536 (c)), and follows the standards established in the National Park Service's National Environmental Policy Act (NEPA) guidance (NPS Director's Order 12) and NPS policy regarding endangered and threatened species (NPS Management Policies, 2001, Section 4.4.2.3).

Species protected by the Endangered Species Act (ESA) are listed by the U.S. Fish and Wildlife Service (USFWS) as federally threatened or endangered. In addition, the USFWS lists candidate species that are considered for listing at a later date. While not protected under the ESA, candidate species are considered when analyzing impacts of actions that may potentially affect them. While this FMP proposes the management of fire across boundaries with other agencies and adjacent private lands whenever possible, specifics as to the management of wildland and prescribed fires and their use are limited to lands within the boundaries of Black Canyon of the Gunnison National Park (BLCA) and Curecanti National Recreation Area (CURE). Therefore, for the purposes of this analysis and further analyses within the EA, the action area is defined as the area within the legal boundaries of BLCA and CURE.

BLCA is located in southwestern Colorado, approximately 15 miles east of Montrose, Colorado. BLCA was established as a National Monument in 1933, and designated a National Park in 1999. Approximately 15,000 acres of the park are designated as wilderness and managed as part of the National Wilderness Preservation System. CURE is located approximately 5 miles west of Gunnison, Colorado, and was established in 1965 to provide a variety of recreational opportunities to visitors. BLCA and CURE consist of 73,828 acres located in Montrose, Gunnison, and Delta Counties.

BLCA and CURE do not have current FMPs and therefore operate under a full suppression strategy only. The scope of the plan was discussed at the kick-off meeting in October 2003. Because BLCA and CURE are surrounded by Bureau of Land Management (BLM), US Bureau of Reclamation (BOR), Western Area Power Administration (WAPA), Colorado Division of Wildlife (CDOW), and US Forest Service (USFS) land, as well as private land, it was agreed that all fire management documents should consider these boundary issues and every effort would be made to coordinate planning efforts that would satisfy NPS objectives, yet dovetail with management objectives of other surrounding land managers and owners.

The associated EA examines three alternatives. Alternative A (No Action/Current Management) is required by the National Environmental Policy Act of 1969 (NEPA) and describes the status quo. Under this alternative, the NPS would continue full suppression of all fires within the park

units. Alternative B (Natural Landscape Unit) would allow for management of wildland fire based on natural landscape conditions rather than agency or other land management or ownership boundaries. Fire and fire management prescriptions would be allowed to cross the BLCA and CURE boundaries with USFS and BLM lands, as well as adjacent private lands where there are willing landowners. Alternative C (Park Boundary) is the same as Alternative B, except that fire management activities are limited to lands within BLCA and CURE boundaries.

Following is the list of federally threatened, endangered, and candidate species included in this analysis:

Common Name	Scientific Name	Federal Status
Uncompahgre fritillary butterfly	*Boloria acrocnema*	Endangered
Clay-loving wild-buckwheat	*Eriogonum pelinophilum*	Endangered
Humpback chub	*Gila cypha*	Endangered
Bonytail chub	*Gila elegans*	Endangered
Colorado pikeminnow	*Ptychocheilus lucius*	Endangered
Razorback sucker	*Xyrauchen texanus*	Endangered
Bald eagle	*Haliaeetus leucocephalus*	Threatened
Mexican spotted owl	*Strix occidentalis lucida*	Threatened
Canada lynx	*Lynx canadensis*	Threatened
Uintah Basin hookless cactus	*Sclerocactus glaucus*	Threatened
Yellow-billed cuckoo	*Coccyzus americanus*	Candidate
Boreal toad*	*Bufo boreas*	None
Gunnison sage-grouse**	*Centrocercus minimus*	None

* Since the receipt of the species list, this species has been removed from the candidate list. This change in species status was discussed during an informal consultation conference call with FWS and NPS staff on January 23, 2006. As a result, this species will be dropped from any further discussion through the remainder of this document.
** On April 18, 2006, this species was removed from the candidate list; however, all evaluations and determinations regarding this species are retained in the document.

II. PROJECT DESCRIPTION

The preferred alternative, Alternative B – Natural Landscape Alternative dictates that fire management activities within each Fire Management Unit (FMU) would be based on natural landscape conditions, rather than agency or other land management or ownership boundaries. Fire and fire management prescriptions will be allowed to cross the BLCA and CURE boundaries with USFS and BLM lands when agreed by both parties, as well as some designated adjacent private lands, and, whenever possible, the NPS, BLM, and USFS would coordinate actions.

Appendix A contains the FMU map, descriptions, objectives, and parameters for fire management activities. The BLCA/CURE park lands or action areas are contained within these FMUs. This information is currently in the June 2005 draft FMP. BLCA/CURE lands are found in two of the FMUs, the Black Canyon and Gunnison Basin, delineated in the Montrose Interagency Fire Planning Unit. The park acreage constitutes 73,828 acres (11.3%) of the 655,342 acres within these two FMUs.

Various prescribed fire and fuels management activities will be permitted in appropriate areas within the parks, including manual/mechanical treatment and prescribed fire to reduce fuel loading in identified management units. In addition, wildland fire use (WFU) will be permitted in units identified for managed wildland fire (e.g., Black Canyon Wilderness Area). This alternative was developed to allow for flexibility in selecting the types of fire-related activities used at BLCA and CURE, in addition to meeting the objective of developing an interagency plan that addresses fire management on all NPS, BLM, USFS, BOR, and CDOW lands. The two main components of this alternative include the following:

(10) Naturally ignited fires will either be suppressed or allowed to burn under a plan for WFU that is detailed in the FMP for BLCA and CURE. Local fire and drought conditions, resources and funding, public safety, important park resources and values, and smoke conditions will be considered in deciding whether or not to allow WFU. All unplanned human-caused fires will be suppressed.

(11) Fuels reduction methods will be used as appropriate throughout the parks, including use of prescribed fire and manual/mechanical thinning.

The intent of any fuel reduction effort is to reduce the intensity of wildland fires to levels that enable fires to burn without damaging important park resources and values, and to reduce the hazard to firefighting resources involved in fire management activities. The fuels management treatments will include, but not be limited to, manual/mechanical vegetation cutting and removal from sensitive areas, pile burning, and selective, low-intensity prescribed fire.

Under this alternative, manual/mechanical thinning, prescribed fire, and WFU will be used in the following areas and situations:

(12) Manual/mechanical fuel reduction (thinning) – this prescription will be used in areas that have heavy fuels accumulation and cultural resources and/or other values that could be adversely affected by prescribed burns or wildland fire. This prescription will include hand clearing of brush, and hand cutting or limbing of selected trees with chainsaws. Vegetation will be disposed of in select areas by chipping with a mechanical chipper, scattering of smaller brush and trees on site away from sensitive resources, pile burning of slash, and/or hauling from the site for disposal outside the parks. Manual thinning may be prescribed in the following areas:

   High Point piñon-juniper (*Pinus edulis-Juniperus communis*) woodlands on the South Rim of BLCA – many mature trees in the High Point area have become infested with bark beetles and mortality of many trees has occurred. These standing dead and dying trees create unusually heavy fuel loads and manual thinning in these areas could be appropriate.

   In or around sites where important archaeological resources have been identified.

   In or around park facilities such as South Rim Visitor Center, Housing, Office space and Maintenance area, and North Rim Ranger Station.

(13) Selective prescribed fire – this prescription will be used to improve resource conditions in areas of the park containing fewer values at risk and lower fuel loading, or in areas where satisfactory fuels treatments have already been completed. In all

cases, a site-specific prescribed fire plan will be completed, and coordination with the BLM, USFS, BOR, and Western Area Power Administration (WAPA) personnel will occur.

(14) Wildland fire use for resource benefit – WFU may be considered in appropriate management units, assuming that park values at risk (e.g., structures, threatened and endangered species, cultural resources, etc.) are adequately protected from damage from the fire or fire management activities. These activities will be in coordination with and approved by the NPS.

III. SPECIES ACCOUNTS and STATUS

The **Uncompahgre fritillary butterfly (*Boloria acrocnema*)** is listed as federally endangered across its entire range which is restricted to isolated alpine habitats in the San Juan Mountains of southwestern Colorado. This species is not yet listed by the State of Colorado. There are probably fewer than 20 populations of this species surviving, with activities such as over-collection, livestock use, recreation, and climate change cited as threats to the butterfly and/or its habitat. Unverified reports of this species from the Sawatch Range of southcentral Colorado could slightly expand the known range. Habitat for the butterfly is moist alpine slopes above 12,000 feet with extensive snow willow (*Salix nivalis*) patches which serve as the larval foodplant. Elevations within the parks range from approximately 5,400 to 9,500 feet. Based on elevation, suitable habitat for this species does not occur in the parks.

The **clay-loving wild-buckwheat (*Eriogonum pelinophilum*)** is federally and state listed as endangered, and found where the Mancos Shale, a saline, calcareous, Cretaceous deposit, outcrops to form nearly barren adobe (clay) hills in the area from approximately Montrose to Delta, Colorado. Species habitat consists of barren, grey clay hills and adjacent toe slopes and run-off plains of the Mancos Shale badlands. The clay-loving wild-buckwheat occupies swales and bottoms in the salt desert shrub community where the competition for water is somewhat less severe. It occurs on all aspects at elevations from 5,200 to 6,400 feet.

The species is found in the Gunnison Gorge National Conservation Area (NCA) located west of the BLCA boundary in the Uncompahgre Valley FMU (BLM inventory data, various years). Here it is found in Peach Valley on Mancos Shale soils with mat saltbush (*Atriplex corrugata*), shadscale (*Atriplex wolfii*), black sage (*Artemisia novum*), and woody aster (*Aster* spp.) (BLM 1999, page 41). The species favors specific microsites that are not easily identifiable, and designated critical habitat is located on private land near Austin, CO (BLM 1999, page 41). Fire probably never played an important role in the ecology of this species because the habitat sites where it is found do not contain enough vegetation to carry a fire (BLM 1999, page 41). BLM staff monitor buckwheat populations as part of the Clay-Loving Wild-Buckwheat Recovery Plan (USFWS 1988).

Likely suitable or potential habitat is limited in BLCA to approximately 80 acres of desert shrub at 6,400 feet in elevation on the western edge of the park boundary with the NCA. University of Colorado Herbarium botanists conducted an intensive vegetation survey of this area over 3 days (5-person days) in May and June of 2004. These surveys did not detect the presence of clay-loving wild buckwheat within the park boundary (action area).

The humpback chub (*Gila cypha*) is federally listed as endangered throughout its range, and is listed as threatened by the State of Colorado. This fish is found only in large rivers. Historically, the humpback chub occurred in great numbers throughout the Colorado River system, from the Green River in Wyoming to the Gulf of California in Mexico. Today, this species can be found in deep, canyon-bound portions of the Colorado River system such as Black Rocks and Westwater canyons on the Colorado River and Yampa Canyon inside Dinosaur National Monument (CDOW 2005a). However, possible water depletions due to fire management activities on park lands may affect downstream fish populations. These effects are analyzed in detail in the 1994 "Programmatic Biological Opinion for Minor Water Depletions in the Upper Colorado River Basin in Colorado" (USFWS, 1994).

The bonytail chub (***Gila elegans***) is federally listed as endangered throughout its range, and listed as endangered by the State of Colorado. Historically, this fish probably occurred throughout the Colorado River drainage. However, in recent years bonytail have only been taken from the Green River in Utah and lakes Havasu and Mohave (NDIS 2005a). Suitable habitat for this species does not occur in the parks. However, possible water depletions due to fire management activities on park lands may affect downstream fish populations. These effects are analyzed in detail in the 1994 "Programmatic Biological Opinion for Minor Water Depletions in the Upper Colorado River Basin in Colorado" (USFWS, 1994).

The Colorado pikeminnow (***Ptychocheilus lucius***) is federally listed as endangered throughout its entire range with the exception of the Salt and Verde River drainages in Arizona, and is listed as threatened by the State of Colorado. Previously known as the Colorado squawfish, this is the largest North American minnow with sizes of up to six feet in length and 80 pounds in weight having been recorded (CDOW 2005b). The Colorado pikeminnow thrives in swift-flowing, muddy, medium- to large-sized rivers with quiet, warm backwaters. Historically, the pikeminnow occurred in great numbers throughout the Colorado River system from the Green River in Wyoming to the Gulf of California in Mexico. In Colorado, they are currently found in the Green, Yampa, White, Colorado, Gunnison, San Juan and Dolores rivers (CDOW 2005b). Suitable habitat for this species does not occur in the parks. However, possible water depletions due to fire management activities on park lands may affect downstream fish populations. These effects are analyzed in detail in the 1994 "Programmatic Biological Opinion for Minor Water Depletions in the Upper Colorado River Basin in Colorado" (USFWS, 1994).

The razorback sucker (*Xyrauchen texanus*) is listed as federally endangered throughout its entire range, and is state listed as endangered in Colorado. This fish is a large river species that is not found in tributaries and smaller streams (NDIS 2005b). Although its geographic range includes Colorado, and this species was found historically throughout the Colorado River drainage, this fish has become very rare above the Grand Canyon, with recent specimens from Colorado being taken only from the lower, main stem Colorado, Gunnison, lower Yampa and Green rivers (USFWS 2005a, NDIS 2005b). Suitable habitat for this species does not occur in the parks. However, possible water depletions due to fire management activities on park lands may affect downstream fish populations. These effects are analyzed in detail in the 1994 "Programmatic Biological Opinion for Minor Water Depletions in the Upper Colorado River Basin in Colorado" (USFWS, 1994).

Bald eagles (*Haliaeetus leucocephalus)* are federally and state-listed as threatened, and are frequent winter residents and migrants in the parks. They are known to winter along the

Gunnison River and the shorelines of CURE. Suitable foraging habitat for bald eagles exists along the entire length of CURE, as the reservoir provides an ample food source for eagles (waterfowl and winter-killed ungulates) in the area. Wintering bald eagles are generally present in the parks from mid-November to February. Large mature cottonwood (*Populus angustifolia*), ponderosa pine (*Pinus ponderosa*), and Douglas-fir (*Pseudotsuga menzii*) trees, and snags are used as roosting and perching sites.

In addition to managing for wintering populations of eagles, the recovery work has emphasized protection of eagle nesting. Typically, bald eagles in the Western Slope region of Colorado nest in large trees within 1 to 2 miles of rivers. Within the parks, there is a general lack of sizeable trees for nesting along the shoreline of the river and reservoirs, with the exception of the riparian vegetation community in the Neversink/Cooper Ranch area. Bald eagles could potentially nest in this area, but such nesting has not been observed. Given the conspicuous nature of bald eagles, it is unlikely that establishment of nest territories would go unnoticed. Ongoing mid-winter bald eagle counts throughout CURE, using National Wildlife Federation Midwinter Bald Eagle Survey protocol, annual long-term bird point-count monitoring conducted in August in the Neversink (since 1996) and Cooper Ranch (since 1994) areas using Rocky Mountain Bird Observatory protocol (NPS Long-term Bird Monitoring Files 1994-2004), and a general avian inventory conducted in 2002 and 2003 by the Rocky Mountain Bird Observatory (Giroir 2004), have found no bald eagle nests within the action area.

The **Mexican spotted owl (*Strix occidentalis lucida*)** is listed as threatened at both the federal and state levels. It nests in closed canopy forests and narrow rocky canyons in remaining habitat in the southwestern United States. A subspecies of the spotted owl, the Mexican spotted owl in Colorado lives at the bottom of deep, sheer-walled canyons where they nest and forage in uncut mixed-conifer forests. Uneven-aged stands with high basal area and many snags and downed logs are most favorable (NatureServe 2005). In Utah and Colorado, most nests are in caves or on cliff ledges in steep-walled canyons (USFWS 1995, Seamans and Gutierrez 1995). NatureServe distribution records indicate no records for this species in Montrose, Gunnison or Delta counties (NatureServe 2005).

The Uncompahgre Field Office Fire Management Plan EA refers to Mexican spotted owl surveys conducted during the nesting season in San Miguel Canyon and its tributaries, Roubideau Canyon, Rock Canyon, and other locations (BLM 1999, page 40 – 41). These surveys did not locate Mexican spotted owls. USFS staff and contractors have conducted Mexican spotted owl surveys in canyons on the Uncompahgre Plateau and the Naturita area west of BLCA/CURE in 1990, 1991, 1993, 1994, 1997, 1998, 1999, 2001 and 2002 (Carol Howe, USFS Biologist, Pers. Comm.).

A Mexican spotted owl survey was conducted within CURE from April through August of 1991 using techniques and procedures described in USDA Forest Service, Southwest Region Interim Directive #2 – section c-8, issued June 26, 1990. During the survey period, the canyons of Crystal and Morrow Point Reservoirs were surveyed and no spotted owls were detected. Furthermore, the general avian inventory of BLCA and CURE, conducted in 2002 and 2003 by the Rocky Mountain Bird Observatory, found no spotted owls within the parks (Giroir 2004).

Canada lynx (*Lynx canadensis*) lives in northern coniferous forests and is listed as threatened by the USFWS and endangered by the State of Colorado. The preferred habitat of the lynx is

uneven-aged stands with relatively open canopies and well-developed understories, within the elevational range of 9,000 to 14,500 feet (Quinn and Parker 1987; NDIS 2005e). Lower montane forests are likely to be important for lynx movement and dispersal. Snowshoe hare (*Lepus americanus*) is the primary prey of lynx. Other prey includes squirrels, beavers, muskrats, and deer (Fitzgerald et al. 1994). The species' dependence on snowshoe hares and other forest prey reduces the likelihood that the parks can contribute much to the maintenance of a lynx breeding population; very little acreage in the parks would be suitable for lynx prey or denning. However, the CDOW radio-telemetry of reintroduced lynx has demonstrated that the cats travel through BLCA and CURE in their dispersal movements (CDOW 2005e). No sightings of lynx in the parks have been reported, but the telemetry data indicates attention to lynx dispersal is appropriate.

The USFS has divided the Grand Mesa, Uncompahgre, and Gunnison National Forests (GMUG) into lynx analysis units (LAUs) (Figure 1). The Black Mesa LAU is located north of Morrow Point Reservoir and is the only USFS LAU that shares a boundary with park land. This LAU consists of 52,253 acres which are analyzed as: 33% (17,157 acres) non-lynx, 28% (14,776 acres) denning, 31% (16,171) other, 1% (563 acres) unsuitable, and 7% (3,585 acres) winter foraging. A description of plant communities and habitat within these LAU categories is summarized below (Carol Howe, USFS Biologist, Pers. Comm.):

- Non-lynx: bareground, grass-forb, piñon-juniper/oakbrush woodlands
- Denning: Old dense, mature spruce-fir forest
- Other: Open aspen (*Populus tremuloides*), ponderosa and lodgepole (*Pinus latifolia*) pine forest; corridor habitat
- Unsuitable: Habitat altered by management activities, but may succeed into lynx habitat
- Winter foraging: Younger, uneven-aged spruce-fir forest

GMUG land in this LAU is 8,200-9,800 feet in elevation with plant communities ranging from open aspen, ponderosa, and lodgepole pine forests to mature spruce-fir forests. In contrast, elevation on nearby park land ranges from 7,000 to 8,400 feet and consists primarily of grasses, forbs, and piñon-juniper/oakbrush woodlands on canyon rims and steep canyon walls with scattered Douglas-fir and aspen stands down to Morrow Point Reservoir.

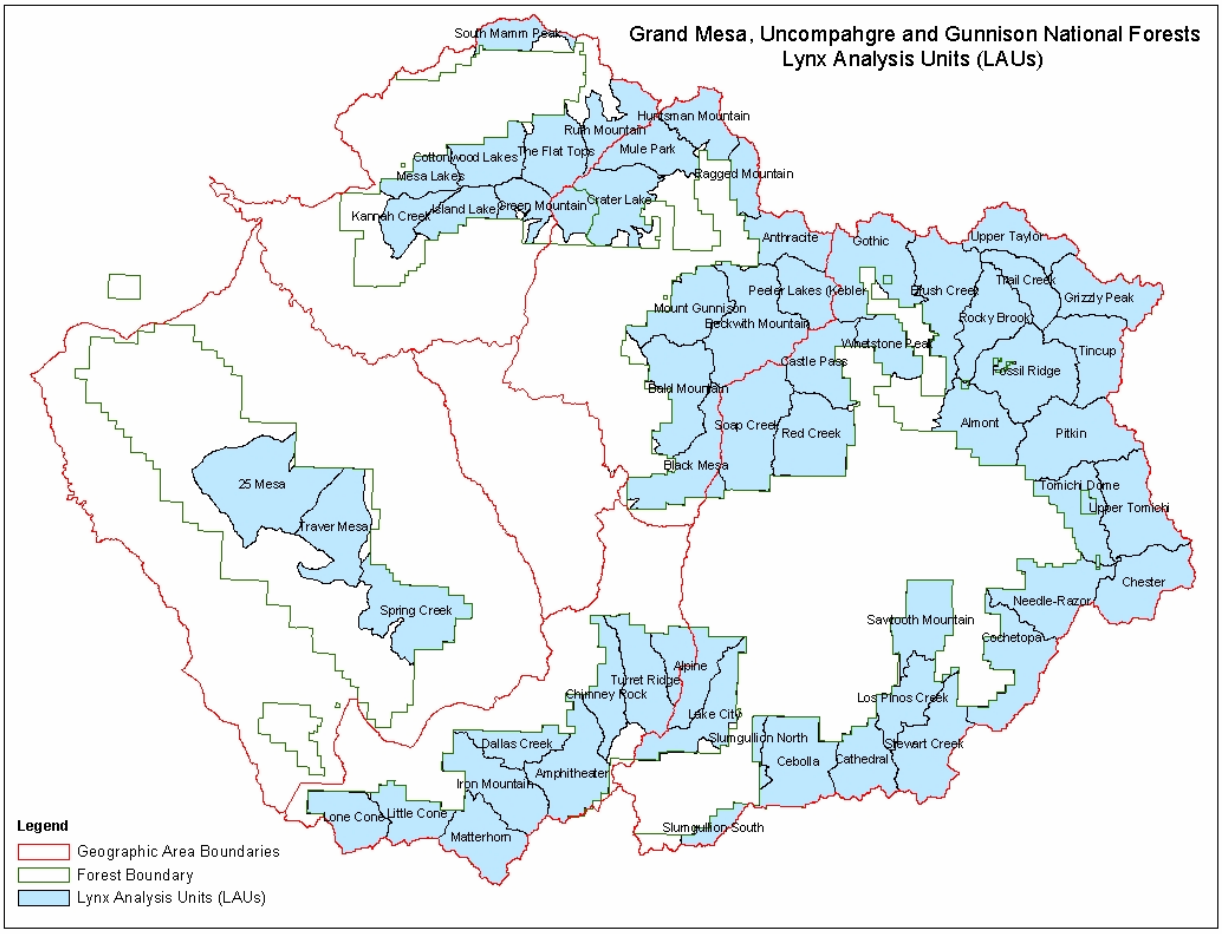


Figure 1. USFS Lynx Analysis Units (LAUs) in Grand Mesa, Uncompahgre, and Gunnison National Forests.

The BLM has also analyzed lynx habitat in LAUs adjacent to park lands (BLM 2002). BLM/USDAFS LAUs adjacent to park lands are shown in Figure 2 below and include the following types of lynx habitat mapped for BLM (regardless of ownership):

- Black Mesa LAU: 13 acres denning, 1,571 acres winter, 3,120 acres other, 0 acres unsuitable, 18,379 acres non-lynx
- Soap Creek LAU: 0 acres denning, 266 acres winter, 524 acres other, 0 acres unsuitable, 7,976 acres non-lynx
- Red Creek LAU: 887 acres denning, 2,277 acres winter, 4,521 acres other, 0 acres unsuitable, 39,153 acres non-lynx
- Castle Pass LAU: 279 acres denning, 1,114 acres winter, 1,824 acres other, 0 acres unsuitable, 10,840 acres non-lynx
- Almont LAU: 0 acres denning, 144 acres winter, 544 acres other, 0 acres unsuitable, 8,971 acres non-lynx

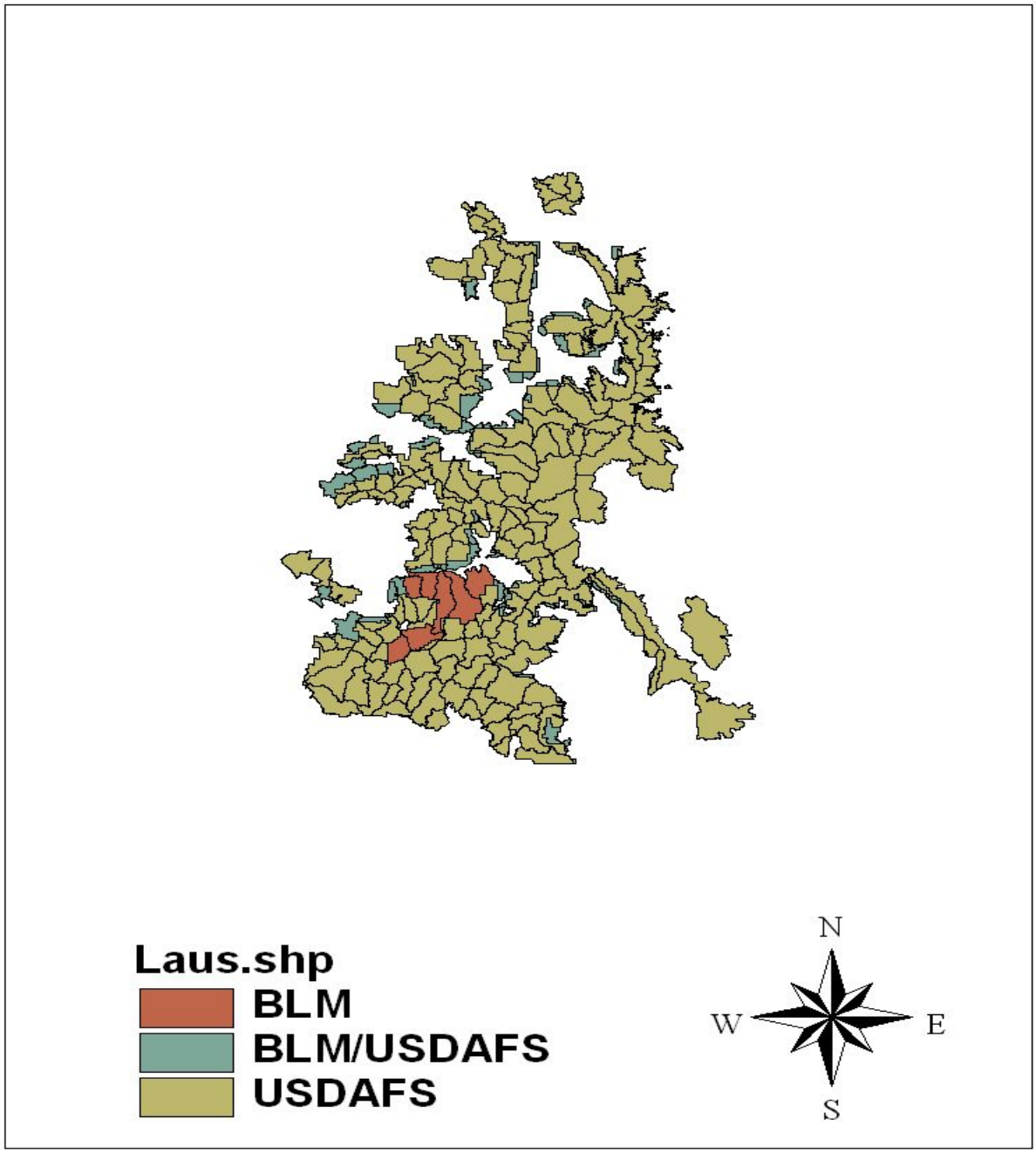


Figure 2. BLM Lynx Analysis Units (LAUs) for Gunnison and Uncompahgre Field Offices.

The BLM LAUs adjacent to park lands also are shown in Figure 2 and include the following types of lynx habitat:

- Little Cimarron LAU: 4,978 acres denning, 5,538 acres winter, 6,628 acres other, 0 acres unsuitable, 33,550 acres non-lynx
- Blue Creek/Pine Creek LAU: 3,752 acres denning, 11,600 acres winter, 16,471 acres other, 0 acres unsuitable, 34,362 acres non-habitat
- Lake Fork LAU: 20,671 acres denning, 9,794 acres winter, 18,719 acres other, 0 acres unsuitable, 71,032 acres non-lynx
- Cebolla Creek LAU: 30,723 acres denning, 13,377 acres winter, 20,957 acres other, 0 acres unsuitable, 90,004 acres non-lynx
- South Beaver Creek LAU: 4,063 acres denning, 6,525, acres winter, 11,605 acres other, 0 acres unsuitable, 74,104 acres non-lynx

BLM land in these LAUs ranges from 8,400 to 9,400 feet in elevation. Plant communities consist of sagebrush shrublands with scattered oakbrush and piñon-juniper, with open aspen and lodgepole pine forests as elevation increases, and mixed spruce-fir forests at highest elevations.

The **Uintah Basin hookless cactus (*Sclerocactus glaucus*)** is federally listed as threatened and considered vulnerable in the state ranking codes (Spackman *et al.* 1997). The cactus occurs in western Colorado and eastern Utah on alluvial river terraces above the flood plain and, specifically, on gravelly or rocky soils of dry alkaline hills and mesas. The cactus rarely grows in clay soils or deep riparian alluvium. It is found on varying exposures; at elevations ranging from 4000-5800 ft. with slopes typically between 5-30%.

This species has 2 known occurrences on BLM lands in the Black Canyon FMU. Both locations are on the west rim of the Gunnison Gorge; one off the Ute Trail Road in a desert shrub plant community that is not prone to fire, and the other across from Smith Fork (a tributary of the Gunnison River) in sparse piñon-juniper woodland (BLM inventory data, various years). Most individuals are located in salt desert shrub communities that are dominated by salt bush and grass (BLM 1999). BLM staff monitor cactus populations as part of the Uintah Basin Hookless Cactus Recovery Plan (USFWS 1990).

Likely suitable or potential habitat within BLCA would include approximately 80 acres of desert shrub at 6,400 feet in elevation and other low-elevation, sparse piñon-juniper habitat located along the western edge of the park boundary with the NCA. University of Colorado Herbarium botanists conducted an intensive vegetation survey of this area over 3 days (5-person days) in May and June of 2004. These surveys did not detect the presence of Uintah Basin hookless cactus within the park boundary.

The **Gunnison sage-grouse (*Centrocercus minimus*)** is a park species of concern with important habitat located within BLCA/CURE and surrounding areas. This native to the Gunnison Basin was recognized as a distinct species in 2000 because of its different morphological characteristics and mating rituals than the greater sage-grouse (*Centrocercus urophasianus*). The current breeding population size for the species is relatively small, totaling about 3,200 individuals, with up to 2,400 of those believed to reside in Saguache and Gunnison counties, Colorado (RSC 2005). This species uses sagebrush habitats of varying ages and

successional stages for breeding, nesting, and wintering; all these habitats are found within and surrounding the park acreage. Important life history needs are: protection of habitat around lek sites, maintenance of adequate nesting cover within a mile or so of leks, protection of springs and seeps used as brooding habitat, and maintenance of sufficient large sage plants to protrude above snow to provide winter food and cover. The birds nest in big sagebrush (*Artemisia tridentata)* dominated communities from April to July.

There are 3 Gunnison sage-grouse populations in and/or adjacent to BLCA/CURE and the Black Canyon and Gunnison Basin FMUs. Additional maps and detailed descriptions of these populations can be found in the Gunnison Sage-grouse Rangewide Conservation Plan (RCP) (Gunnison Sage-grouse Rangewide Steering Committee [RSC] 2005, pages 56 - 80) available at http://wildlife.state.co.us.

The Cerro Summit – Cimarron – Sims Mesa population is actually 2 small subpopulations located in Montrose County (Figure 3, RSC 2005). The Cerro Summit - Cimarron subpopulation exists on approximately 31,900 acres of fragmented sagebrush on mostly private lands (81%), 12% is CDOW, 7% is BLM and 0.1% is NPS (RSC 2005). Land use is primarily livestock grazing, hay production, and recreation with large relatively undisturbed tracts managed as working ranches. However, portions of the area (less than 5% of the occupied range), especially those with level terrain, are being subdivided for residential development (RSC 2005, page 56). Lands within CURE, where the Cimarron River enters the recreation area, comprise approximately 40 acres that are considered occupied sage-grouse habitat for this subpopulation (RSC 2005). These lands consist of and are immediately adjacent to developed facilities including a campground, visitor center and parking area, as well as adjacent private residences, a motel, and a store. Habitat consists of riparian corridors along the Cimarron River and Squaw Creek and mature sagebrush with a limited understory grass and forb component. Some noxious and invasive weed infestations are found in the area.

Lands on the northwestern edge of Bostwick Park within the southern boundary of BLCA comprise approximately 160 acres considered potential sage-grouse habitat for this subpopulation (RSC 2005). These are private lands within the park boundary for which the NPS has purchased a conservation easement. These are irrigated lands that are currently grazed and hayed. Habitat consists of wet meadow grasses.

The Sims Mesa subpopulation is located on approximately 5,300 acres about 7 miles south of Montrose, Colorado and is more than 10 miles from the parks.

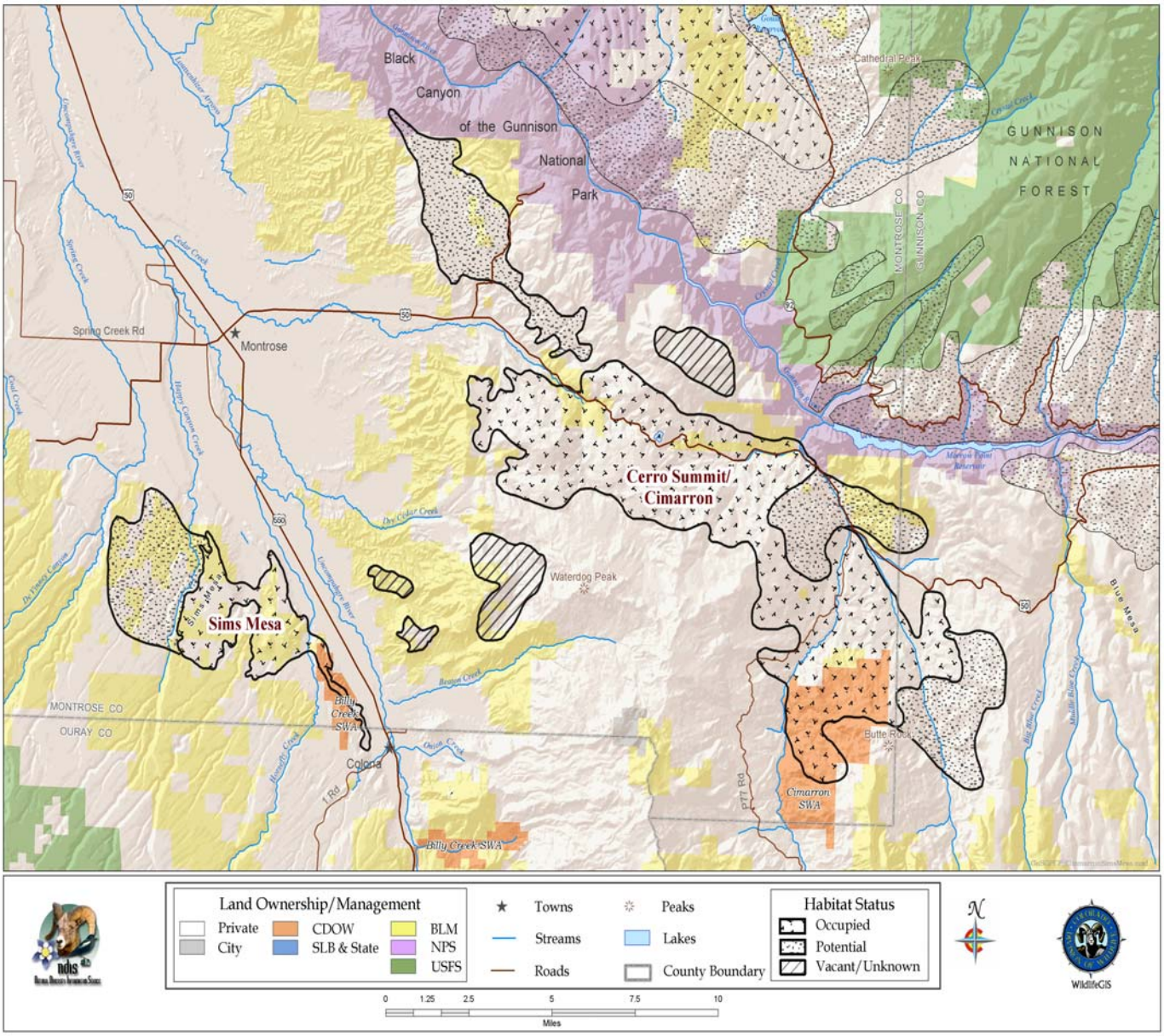


Figure 3. Land and habitat status of Cerro Summit-Cimarron-Sims Mesa sage-grouse populations (RSC 2005).

The Crawford population is found on approximately 35,000 acres in Montrose County, Colorado, about 8 miles southwest of Crawford, Colorado and north of the Gunnison River (Figure 4, RSC 2005). This habitat is characterized by diverse topography with rocky drainages covered by piñon-juniper woodlands, rolling uplands dominated by big sagebrush (*Artemisia tridentata*) and mountain big sagebrush (*Artemisia tridentata vaseyana*), and gentle slopes with hay meadows, saltbush, and wheatgrass (RSC 2005). Sixty-three percent of this area is managed by BLM, 13% is managed by NPS, and 24% is privately owned with rural housing and townsites, as well as agricultural developments (especially orchards) (RSC 2005).

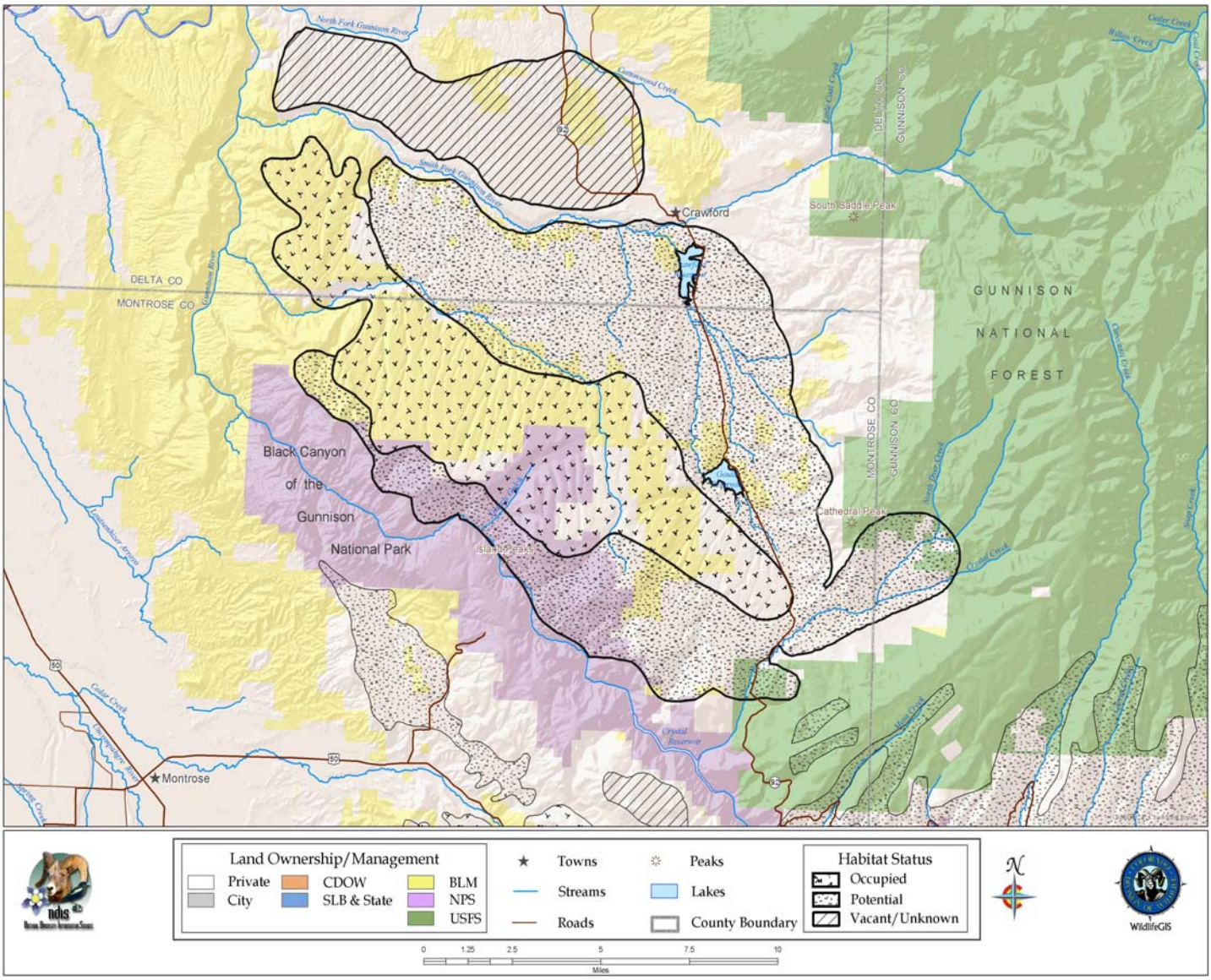


Figure 4. Land and habitat status for Crawford sage-grouse population (RSC 2005).

Approximately 4,600 acres, primarily along both sides of Grizzly Gulch within the northern boundary of BLCA, are considered occupied sage-grouse habitat (RSC 2005). These lands currently see some livestock grazing. Habitat consists of mature sagebrush with a limited understory grass and forb component and areas of piñon-juniper encroachment as well as late seral serviceberry (*Amelanchier* spp.) and oakbrush shrub encroachment.

An additional 7,900 acres, comprising much of the remaining lands on the North Rim located east of Green Mountain within BLCA, are classed as potential sage-grouse habitat for the Crawford population (RSC 2005). Grazing also occurs on these lands, but it is scheduled to be

discontinued after 2007. Habitat is similar to that mentioned in the previous paragraph but with more severe examples of limited grass and forb understory and late seral stage shrub encroachment.

The third population is the largest occupied block of habitat in the Gunnison Basin; it includes parts of Gunnison and Saguache Counties, Colorado, and is roughly centered around the town of Gunnison, Colorado (Figure 5, RSC 2005). This area covers approximately 593,000 acres in elevations ranging from 7,500 to 9,500 feet, with uplands dominated by big sagebrush on moderately to steep rolling hills dissected by permanent and intermittent streams (RSC 2005). Approximately 51% of this area is managed by BLM, 14% by the USFS, 2% by the NPS, 2% by the CDOW, 1% by the Colorado State Land Board, and 31% is privately owned. Land use is primarily livestock ranching and hay production, but residential subdivision development has been expanding out from Gunnison in the past 25 years (RSC 2005).

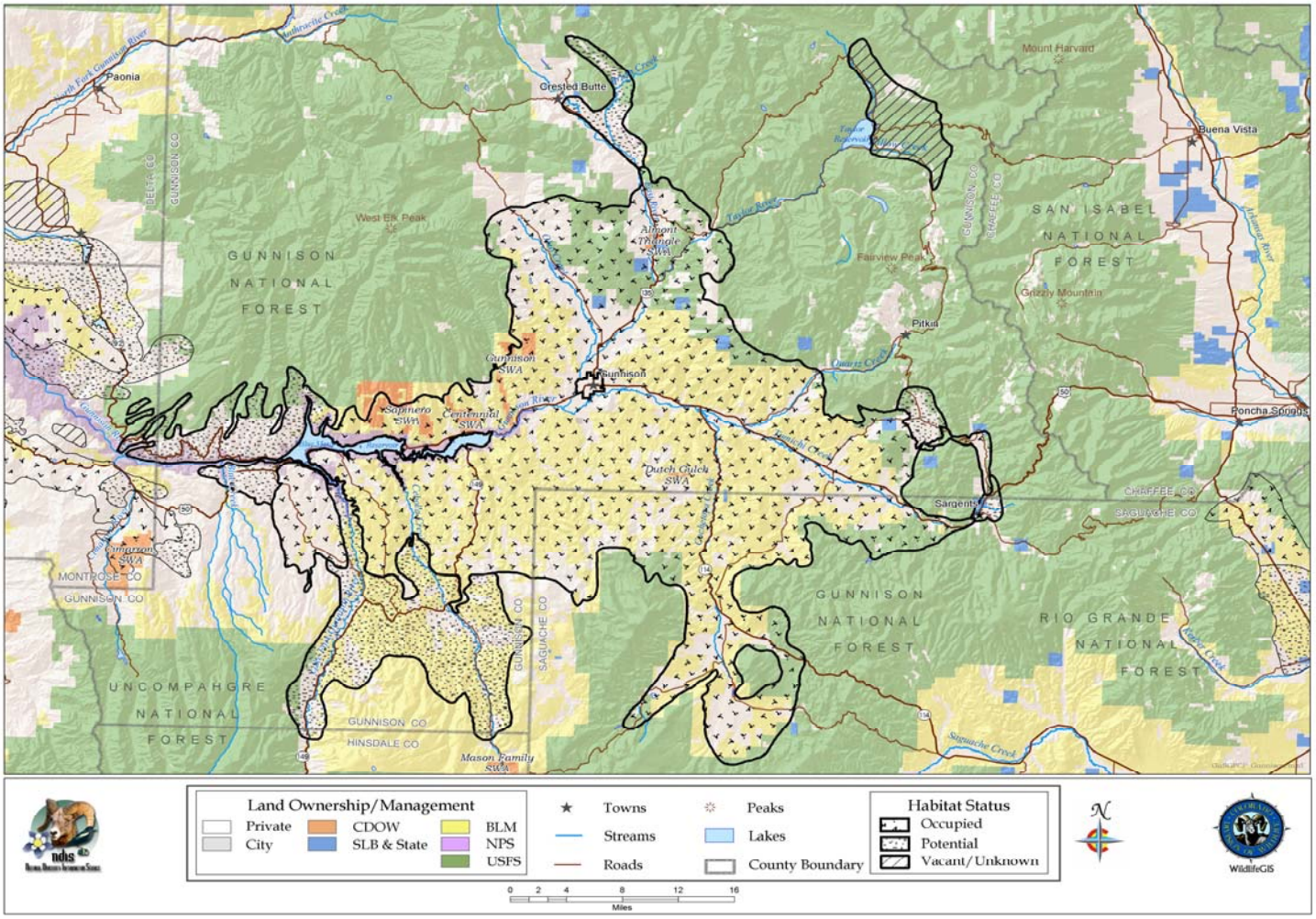


Figure 5. Land and habitat status for Gunnison Basin sage-grouse population (RSC 2005).

Lands within CURE, from Blue Mesa Dam east, comprise approximately 12,400 acres of occupied sage-grouse habitat (RSC 2005). These lands are adjacent to Blue Mesa Reservoir

and are characterized by shoreline slopes covered with grasses, big sagebrush, rabbitbrush (*Chrysothamnus nauseosus*), and Gambel oak (*Quercus gambelii*) bordered by steep bluffs and high mesas. The mesa tops are characteristically covered with high desert vegetation; however, there are intermittent pockets of Douglas-fir, quaking aspen, and spruce. Separating the mesa tops are north-south running canyons that contain lush riparian flora. Habitat consists of mature sagebrush with a limited understory grass and forb component and areas of noxious and invasive weed infestations.

An additional 9,200 acres within the recreation area, mostly west of Blue Mesa Dam and along the north rim of Morrow Point Reservoir, are considered potential sage-grouse habitat for the Gunnison Basin population (RSC 2005). Shrubs and conifers cover the slopes and canyon rim in this area. Habitat consists of late seral serviceberry and oakbrush shrub encroachment.

Threats to sage-grouse identified in the RCP include disease and parasites, fire and fuels management, genetics, grazing, hunting, lek viewing, mining, energy development, and human community infrastructure, noxious and invasive weeds, pesticides, predation, recreational activity, and weather/drought (RSC 2005). Many of these threats lead to degradation of habitat, habitat loss or fragmentation, and physical disturbance, especially during critical mating, nesting, or brooding periods. Habitat degradation or loss has resulted from land treatments that convert sagebrush landscapes to developed or fragmented areas. Roads, utility and energy development, and urban or agricultural development are examples of activities that can threaten sage-grouse habitat. Physical disturbance to the species may occur through hunting, off-highway vehicle use, and harassment by other human activities. Such disturbance causes the grouse to interrupt their normal behaviors, and commonly, move to another area. Importantly, these responses by the birds reduce their ability to acquire food and shelter, disrupts their breeding behavior, (and may reduce overall breeding success of the population), and can cause death of young grouse if they are separated from the hens or disrupted from acquiring sufficient food.

The **yellow-billed cuckoo (*Coccyzus americanus*)** is currently a candidate for federal listing under the ESA. In the western United States, yellow-billed cuckoo habitat consists of older age riparian woodlands with dense understories, while in other portions of the country more open woodlands are adequate (Kingery 1998). The western subspecies (*Coccyzus americanus occidentalis*) nests in tall cottonwood and willow riparian woodlands, and appears to require patches of at least 25 acres of dense riparian forest with a canopy cover of at least 50 percent in both the understory and overstory (Biosystems Analysis 1989). This species is a rare spring and fall migrant, and summer resident on the eastern plains of Colorado, west to Morgan and Otero counties, and rare west to the foothills. It is an uncommon local summer resident in western valleys, primarily from Mesa County southward (NDIS 2005c).

In the parks, the locations of potential occurrence for this species would be in the riparian corridors such as those along the Gunnison River or its tributaries. Although an historic observation has been recorded in CURE, annual long-term point count surveys, conducted intensively from 1994 to present in potential habitat using Rocky Mountain Bird Observatory protocol (NPS Long-term Bird Monitoring Files 1994-2004), and a general avian inventory conducted in 2002 and 2003 by the Rocky Mountain Bird Observatory, have resulted in no detection of yellow-billed cuckoos (Giroir 2004). Management of the park acreage for this species will consist of maintenance and protection of riparian shrub and tree communities.

IV. ANALYSIS of EFFECTS

The intent of the FMP is to return the area to fire regimes more representative of the historic fire conditions within a variety of plant communities on park lands. Long-term benefits to the ecosystem and to individual species are expected. Cooperative efforts among agencies and planning across boundaries are key factors of the FMP, so that larger treatments and more treatments may be placed across the landscape. This larger-scale pattern of treatments is more representative of natural fire behavior and will lead to broader benefits over the FMP area. For the ESA-listed species, WFU fires and prescribed fires will result in more acreage of less-severe fires across the landscape. This will contrast to the current situation where fewer, more catastrophic fires could affect habitat.

In the context of the large scale intent of the FMP, this Assessment covers the proposed FMP management of wildland and prescribed fires on the park acreage. It also discusses fuel treatments where appropriate. The effects of wildland suppression fires, and the suppression activities associated with them, cannot be quantified sufficiently to analyze at this time; subsequent Section 7 consultation will occur as emergency consultations if warranted.

The NPS Resource Advisor at BLCA/CURE will be consulted on the need for surveys to determine occupancy of any threatened, endangered or otherwise sensitive species prior to any prescribed fires or fuel reduction efforts. If species are found, steps would be taken to reduce impacts, including avoidance of breeding or nesting seasons. The USFWS will be contacted to ensure that appropriate and effective mitigation is provided. In addition, wildland fires will be prevented or buffered from burning into areas known to be habitat for any listed species.

Conservation Measures to Eliminate or Minimize Effects to Listed Species

For some of the projects anticipated on park acreage, conservation measures will be used to minimize effects to listed species. During planning and implementation of the proposed action under the preferred alternative, NPS will use the following conservation measures:

- Fuels management activities in the parks, and in habitat potentially suitable for listed species, will be conducted at the time of year when the species is absent or least likely to be disturbed by the activity. Where the presence of any listed species is a potential, the NPS Resource Advisor will determine the need for surveys to determine species occupancy. If species are found, steps would be taken to reduce or eliminate project effects to the species. These steps could include avoidance of breeding or wintering seasons, redesign of the project to retain habitat components important for the species (and thus retain habitat suitability), or abandonment of the project. USFWS would be contacted to ensure that appropriate and effective mitigation is being applied.
- Implement any fuels management programs outside the breeding seasons of threatened, endangered or sensitive species. Where the presence of any listed endangered or threatened species is suspected, the NPS Resource Advisor would be consulted as to the need for surveys to determine species occupancy. If species are found, steps would be taken to reduce impacts, including avoidance of breeding or nesting seasons.

USFWS would be contacted to ensure that appropriate and effective mitigation is provided.
Species surveys will be continued as needed to further analyze fire management actions in occupied areas.
Use necessary and appropriate erosion control measures to prevent erosion of disturbed soils.
Whenever possible, use natural barriers to avoid unnecessary fire line construction.
If adequate water and pumps are available, use wet lines instead of hand line construction.
Rehabilitate and restore all fire lines, camps, and other disturbances.
Employ Minimum Impact Suppression Tactics (MIST) when firefighter safety is not compromised.
Do not allow use of heavy equipment unless approved by the Superintendent.
Use refueling stations with ground protection for refueling firefighting equipment to minimize chances of gasoline spills, and do not conduct equipment maintenance or fueling in wetlands.
Do not use retardant unless approved by the Superintendent.
If retardant is used, it will not be applied in or near stream or riparian systems.
Do not move slash from upland sites into a wetland or place slash in open water.

Impact Criteria:

The Federal agencies use the following terminology to describe impacts (effects) to listed species:

No effect: When a proposed action would not affect a listed species or designated critical habitat.

May affect/not likely to adversely affect: When effects on ESA-listed species or designated critical habitat are negligible, discountable or completely beneficial.

May affect/likely to adversely affect: When an adverse effect to an ESA-listed species or designated critical habitat may occur as a result of proposed actions.

Is likely to jeopardize proposed species/adversely modify proposed critical habitat: When the proposed action could jeopardize the continued existence of a proposed species or adversely modify proposed critical habitat.

Species Effects

Uncompahgre Fritillary Butterfly:

Suitable habitat for the Uncompahgre fritillary butterfly does not occur in the park acreage. The nearest suitable habitat is in isolated alpine environments of the San Juan Mountains. The Forest Service will consider this species' presence during their implementation of the FMP and will perform Section 7 compliance, as necessary. Implementation of the FMP on the park

acreage will not impact butterfly habitat. Therefore, it has been dismissed from detailed analysis in this document.

Clay-Loving Wild-Buckwheat:

In the park acreage, which is the focus of this BA, potential habitat for the buckwheat occurs on approximately 80 acres of desert scrub on the western edge of the park, adjoining the BLM. This acreage is not identified for treatment with prescribed burns, wildland fire use, nor fuels treatment. Wildland suppression fires are the only possibility of FMP activity on this acreage. Such suppression fires are anticipated to be rare; fire frequency in the Peach Valley desert shrub habitat is very low (BLM fire history data, various years). In the last 10 years, there have been 4 wildland fires in the Peach Valley area, all less than an acre in size. Two of these were ignited by lightning, 1 was human-caused and the last ignition source unknown (Personal communication with Becky Jossart, BLM Engine Module Leader, 2005).

Implementation of the FMP is not expected to have direct or indirect impacts on the clay-loving wild-buckwheat on either the parks acreage or the adjacent BLM lands since the desert shrub habitat does not readily carry fire and the fire ignitions are very infrequent. In summary, no fire management activities are planned in the Mancos shale environments and fire suppression activities are limited since these sites are unlikely to carry a fire beyond an individual plant (BLM 1999). Suppression fires are the only risk to the area, and they will be addressed in emergency consultation, as necessary

The Humpback Chub:

Suitable habitat for the humpback chub does not occur in the park acreage. The nearest suitable habitat occurs west of the parks on the Colorado-Utah border in the main stem of the Colorado River. The humpback chub requires spawning water temperatures from 57° to 75°F (USFWS 1995). Water temperatures in the Gunnison River within BLCA average 48°F.

Since NPS fire management operations will involve the Montrose Interagency Dispatch Center, minor water depletions in park water bodies due to the implementation of the FMP on the park acreage will be covered under the statewide Programmatic Biological Opinion for Minor Water Depletions in the Upper Colorado River Basin in Colorado (USFWS 1994). Water depletions from fire management activities are discussed in detail in this Biological Opinion and tracked and reported by BLM to the USFWS on an annual basis. The interagency cooperative fire management practices allow the NPS to rely upon this BLM/UFWS consultation as the avenue to document any depletions needed for NPS fire activities. For the purposes of this BA, the NPS is using the existing Section 7 consultation between BLM and UFWS as the documentation to support our fire management. Any water depletions which occur for NPS fire management actions will be reported by the BLM under the implementation process for their existing Programmatic Biological Opinion (Jay Thompson, BLM State Office, Pers. Comm.).

The Bonytail Chub:

Suitable habitat for the humpback chub does not occur in the park acreage. This fish has recently been documented only in the Green River in Utah and in lakes Havasu and Mohave.

The bonytail chub requires spawning water temperatures above 65°F (USFWS 1995). Water temperatures in the Gunnison River within BLCA average 48°F.

Since NPS fire management operations will involve the Montrose Interagency Dispatch Center, minor water depletions in park water bodies due to the implementation of the FMP on the park acreage will be covered under the statewide Programmatic Biological Opinion for Minor Water Depletions in the Upper Colorado River Basin in Colorado (USFWS 1994). Water depletions from fire management activities are discussed in detail in this Biological Opinion and tracked and reported to the USFWS on an annual basis. The interagency cooperative fire management practices allow the NPS to rely upon this BLM/UFWS consultation as the avenue to document any depletions needed for NPS fire activities. For the purposes of this BA, the NPS is using the existing Section 7 consultation between BLM and UFWS as the documentation to support our fire management. Any water depletions which occur for NPS fire management actions will be reported by the BLM under the implementation process for their existing Programmatic Biological Opinion (Jay Thompson, BLM State Office, Pers. Comm.).

The Colorado Pikeminnow:

Suitable habitat for the pikeminnow does not occur in the park acreage. In Colorado, they are currently found in the Green, Yampa, White, Colorado, Gunnison, San Juan and Dolores rivers (CDOW 2005b). The closest habitat may be below Delta, Colorado (approximately 30 miles downstream) where historical accounts confirm the presence of pikeminnow. Because of temperature requirements for spawning (63°-75°F) (USFWS (1995), it is unlikely that the pikeminnow can live in the Gunnison river above Delta, much less within the boundaries of BLCA where the average water temperature is 48°F.

Since NPS fire management operations will involve the Montrose Interagency Dispatch Center, minor water depletions in park water bodies due to the implementation of the FMP on the park acreage will be covered under the statewide Programmatic Biological Opinion for Minor Water Depletions in the Upper Colorado River Basin in Colorado (USFWS 1994). Water depletions from fire management activities are discussed in detail in this Biological Opinion and tracked and reported to the USFWS on an annual basis. The interagency cooperative fire management practices allow the NPS to rely upon this BLM/UFWS consultation as the avenue to document any depletions needed for NPS fire activities. For the purposes of this BA, the NPS is using the existing Section 7 consultation between BLM and UFWS as the documentation to support our fire management. Any water depletions which occur for NPS fire management actions will be reported by the BLM under the implementation process for their existing Programmatic Biological Opinion (Jay Thompson, BLM State Office, Pers. Comm.).

The Razorback Sucker:

Suitable habitat for the razorback sucker does not occur in the park acreage. This is most likely due to 48°F average water temperatures in the Gunnison River in BLCA. The razorback sucker spawns in water temperatures between 52° to 68°F with 100% embryo mortality occurring in water temperatures below 50°F (USWFS 1995). Although its geographic range includes Colorado, and this species was found historically throughout the Colorado River drainage, this fish has become very rare above the Grand Canyon, with recent specimens from Colorado

being taken only from the lower, main stem Colorado, Gunnison, lower Yampa and Green rivers (USFWS 2005a, NDIS 2005b).

Since NPS fire management operations will involve the Montrose Interagency Dispatch Center, minor water depletions in park water bodies due to the implementation of the FMP on the park acreage will be covered under the statewide Programmatic Biological Opinion for Minor Water Depletions in the Upper Colorado River Basin in Colorado (USFWS 1994). Water depletions from fire management activities are discussed in detail in this Biological Opinion and tracked and reported to the USFWS on an annual basis. The interagency cooperative fire management practices allow the NPS to rely upon this BLM/UFWS consultation as the avenue to document any depletions needed for NPS fire activities. For the purposes of this BA, the NPS is using the existing Section 7 consultation between BLM and UFWS as the documentation to support our fire management. Any water depletions which occur for NPS fire management actions will be reported by the BLM under the implementation process for their existing Programmatic Biological Opinion (Jay Thompson, BLM State Office, Pers. Comm.).

Bald Eagle:

Bald eagles are known to occur in the parks where suitable winter foraging and roosting habitat occurs along the river and the reservoirs. Potential nesting habitat exists in the Neversink/Cooper Ranch area in CURE, but no nests have been documented. Bald eagles are only in the park during winter months and their presence would only overlap with early spring and late fall fire management activities.

While the possibility exists for direct effects to the eagle from the FMP implementation, mostly through the disturbance of eagles from their normal behaviors if fire management activities occurred nearby, this potential will be mitigated through Conservation Measures. First, the eagle's use of the park acreage in the winter months does not coincide with the season of WFU or wildland fire suppression activities. In the unexpected instance of wildland fire activity during the wintering period, effects from the fire and related suppression activities would be addressed in an emergency consultation. Second, the fire fuels and the prescribed fire treatments are NPS activities that can be deferred to another time if eagles should be in the area and there would be a possibility of disturbance to the birds. This latter point would result in a decision to apply a Conservation Measure and would be made at the time of the activity. Thinning projects to protect large cottonwood trees (potential future eagle nesting trees) will be conducted only after surveys have been conducted to determine that there is no nesting activity.

Also, indirect effects to habitat conditions could occur if the FMP activities did not adequately address the need to maintain roost trees. Under the proposed alternative, fire management activities may occur throughout the park April through October dependent upon weather conditions, however documented eagle roost trees and other large trees with the potential to become roost trees would be protected under all activities. Indirect effects from fire management activities would be long-term beneficial effects from the protection of existing large trees from wildland fires. Also, the management attention to recruitment of future large trees will be a long-term beneficial effect which may take decades due to slow growth of the trees.

Mexican Spotted Owl:

The Mexican spotted owl is threatened, in part because of the rising risk to its habitat from stand-replacing wildfires. Mexican spotted owls typically nest and roost in structurally-complex, diverse forests with a variety of age and size classes, often with many snags and downed logs and relatively high basal areas and canopy closure. They are also closely associated with canyon and steep slope terrain. Where this terrain occurs with tree canopy, there is a greater likelihood of owls occupying the site. Although potential habitat may occur in the area, the Mexican spotted owl has not been found within the parks, nor on adjacent federal lands.

Owl surveys will be conducted in the parks over the next few years beginning in 2006 to determine the presence or absence of owls using the currently accepted protocol. Surveys to detect if owls move into the area will be conducted periodically throughout the life of the FMP. Survey areas in BLCA will include portions of the main canyon and some side canyons such as Red Rock Canyon. Survey areas in CURE will include canyons along the Soap Creek and Lake Fork arms of Blue Mesa Reservoir, and areas around Morrow Point and Crystal Reservoirs.

For the purposes of this analysis, we assume that owls may be present in the forested and canyon portions of the parks, and the FMP implementation is limited to suppression-only activities until owl surveys verify the presence or absence of Mexican spotted owls. During this survey phase (Phase 1), suppression activities will be employed with the following Conservation Measures:

- Where the presence of any listed endangered or threatened species is suspected, the NPS Resource Advisor would be consulted as to the need for additional surveys to determine owl occupancy. If owls are found, steps would be taken to avoid impacts to owl habitat. USFWS would be contacted to ensure that appropriate and effective mitigation is provided.
- Use necessary and appropriate erosion control measures to prevent erosion of disturbed soils.
- Where firefighter safety is not compromised, construct fire line outside the perimeter of known owl habitat.
- Whenever possible, use natural barriers to avoid unnecessary fire line construction.
- If adequate water and pumps are available, use wet lines instead of hand line construction.
- Rehabilitate and restore all fire lines, camps, and other disturbances.
- Employ Minimum Impact Suppression Tactics (MIST) when firefighter safety is not compromised.
- Do not allow use of heavy equipment unless approved by the Superintendent.
- Use refueling stations with ground protection for refueling firefighting equipment to minimize chances of gasoline spills, and do not conduct equipment maintenance or fueling in wetlands.
- Do not use retardant unless approved by the Superintendent.
- If retardant is used, it will not be applied in or near stream or riparian systems.
- Do not move slash from upland sites into a wetland or place slash in open water.
- Owl surveys will be continued as needed to further analyze fire management actions in occupied areas.

Fire can affect the owl's forest habitat components by destroying them, as is typical in a stand-replacing fire. In these types of fires the forest canopy is removed. For decades after such an event the location would not provide the thermal moderation of temperatures, nor the protective cover of tree canopy which the spotted owls require. For a shorter period of time (less than ten years), the location would not provide habitat conditions needed by owl prey.

Wildfire can also enhance the owl's habitat by creating snags and thinning densely packed stands through low to moderate severity fires. Such fires also affect the owl habitat components by temporarily reducing fuel loads and thereby reducing the likelihood of subsequent stand-replacing fires.

According to FMP guidelines, all human-caused fires will be suppressed as long as firefighter safety is not compromised. It is anticipated that human-caused fires, while extremely rare, will account for the vast majority of fires that may occur in potential spotted owl habitat within the parks.

If owl surveys verify the absence of spotted owls, natural wildland fires occurring in the forested canyons of the parks although highly unlikely, may be managed with either confine/contain suppression strategies or as WFU fires, depending upon the situation. Importantly, Phase 2 of the FMP implementation in forested acreage of the parks may include wildland fire use to improve the likelihood of future low to moderate severity fires in these areas. During Phase 2 activities WFU fires would be managed with the following Conservation Measures employed:

- WFU activities in the parks, and in habitat potentially suitable for listed species, will be conducted with guidance from the NPS Resource Advisor. The Resource Advisor would provide input into the WFU project that may redesign the project to retain habitat components important for the species (and thus retain habitat suitability), or abandonment of the project. USFWS would be contacted to ensure that appropriate and effective mitigation is being applied.
- Use necessary and appropriate erosion control measures to prevent erosion of disturbed soils.
- Where firefighter safety is not compromised, construct fire line outside the perimeter of known owl habitat.
- Whenever possible, use natural barriers to avoid unnecessary fire line construction.
- If adequate water and pumps are available, use wet lines instead of hand line construction.
- Rehabilitate and restore all fire lines, camps, and other disturbances.
- Employ Minimum Impact Suppression Tactics (MIST) when firefighter safety is not compromised.
- Do not allow use of heavy equipment unless approved by the Superintendent.
- Use refueling stations with ground protection for refueling firefighting equipment to minimize chances of gasoline spills, and do not conduct equipment maintenance or fueling in wetlands.
- Do not use retardant unless approved by the Superintendent.
- If retardant is used, it will not be applied in or near stream or riparian systems.
- Do not move slash from upland sites into a wetland or place slash in open water.
- Owl surveys will be continued as needed to further analyze fire management actions in occupied areas.

Below are excerpts from the FMP that refer to suppression and WFU strategies, either of which would be employed in these areas:

Initial Attack

An initial attack (IA) unit is ordered, through Montrose Interagency Dispatch Center (MIDC), within five minutes of fire detection. The initial attack Incident Commander (IC) will provide the information for the Stage 1 Wildland Fire Implementation Plan (WFIP). A "Go-No-Go" decision will be made by the Superintendent. If additional forces are requested based on the selected Appropriate Management Response (AMR), they will be ordered through MIDC. If necessary, cooperator assistance will be requested from MIDC as well.

Initial Attack Priorities

The following information will be used to set IA priorities:

- Wildlife habitat maps including peregrine falcon nesting sites, sage-grouse, spotted owl, and habitat of other species of concern.
- Vegetation maps.
- Cultural and historic site maps.
- Maps indicating less than fee simple park lands.
- BLCA and CURE facility maps that include BOR and WAPA facilities.
- Maps displaying private structures within ½ mile of NPS boundaries.

The following criteria will be used to choose the appropriate IA response consistent with GMP/RMP objectives:

- Public and firefighter safety.
- Protection of cultural, historic, and natural resources.
- Protection of improvements and private property.
- Use of MIST.
- Available suppression resources and response times.
- Fire danger as determined by National Fire Danger Rating System (NFDRS) rating.

Confinement as an Initial Attack Strategy

A confinement strategy may be selected as an IA action as long as it is not being used solely to meet resource objectives. Resource benefits may be a by-product, but the strategy must be based upon the criteria listed above. A confinement strategy may also be selected in the Wildland Fire Situational Analysis (WFSA) process when IA has failed to contain a wildland fire. Confinement can be used as a strategy to maximize firefighter safety and to manage suppression costs effectively.

Wildland Fire Use

One of the strategies available to BLCA and CURE managers is wildland fire managed for resource benefits (WFU). WFU is a strategy for allowing naturally ignited wildland fires to burn as long as the fire meets pre-stated resource management objectives and prescriptions. A Maximum Manageable Area (MMA) will be established in Stage III of the WFIP to ensure there is a clear and common understanding of the authorized size and location of the fire among the various layers of NPS managers and cooperators, and designates the ultimate acceptable size for a given WFU. The MMA provides for a closely directed fire management application in a

specific area defined by resource objectives, fire and weather prescription elements, social needs, political considerations, and management capability. An ongoing or potential WFU fire that does not meet predetermined prescriptive elements or fails to meet resource management objectives will have a WFSA completed and an AMR implemented.

The resource management objectives promote management techniques that will maintain desired natural systems within BLCA and CURE. Wildland fire is a component of the ecosystem that is a suitable tool for managing natural resources. Wildland fire will produce the full spectrum of fire intensity and severity and result in natural mosaics of vegetative composition and age classes across the landscape. The resulting diversity of plant and animal species will reflect a more viable and sustainable ecosystem.

Objectives of Wildland Fire Use

The objective of the WFU program is to allow natural fire to play its ecological role on a fire dependent landscape. Topography and natural barriers will be used, where appropriate, as management boundaries.

Only naturally ignited wildland fires can be managed to accomplish resource management objectives. All human-caused wildland fires will receive a suppression response commensurate with values-to-be-protected, firefighter and public safety, and cost efficiency. Human-caused wildland fires will also include an investigation phase for possible legal recourse.

The potential negative impacts of implementing a WFU program should be minimal. The topography and fuels of the area will not normally support large fire growth or long-term extreme fire behavior. Extensive natural barriers to fire spread exist over much of the parks. As such, the threat of fires breaching well thought out MMAs is not great.

These 2 FMP strategies could have indirect effects to spotted owls by potentially opening up closed canopies in piñon-juniper woodlands. Other indirect effects may include the short-term displacement of spotted owl prey populations in response to the reduced vegetative cover. Long-term beneficial impacts include the creation of better habitat for prey species, protection of potential Mexican spotted owl habitat by reducing the continuity of fuels on the landscape, and return of the fire regime to conditions in which the owl evolved.

Canada Lynx:

Potential Canada lynx habitat, as defined by the presence of spruce-fir forest with sufficient numbers of snowshoe hares or other prey, does not exist within the park acreage. However, CDOW studies indicate that lynx move through park lands, so attention to lynx dispersal habitat is appropriate in this analysis. The movement of lynx through park acreage could occur through any of the habitat types, and therefore, through any of the areas for planned FMP activities areas. Fire management activities are not expected to have any direct impacts on the way in which lynx use the park boundaries. An indirect effect may result in short-term displacement of lynx prey species from human activities associated with fire suppression. Long-term beneficial effects for lynx are expected from prescribed fire and thinning, as those treatments will create better habitat for prey species such as snowshoe hare.

Uintah Basin Hookless Cactus:

Implementation of the planned FMP activities will have no direct effect on the cactus because it is found in salt desert shrub and sparse piñon-juniper habitats where no FMP activities other than the suppression of wildland fire is planned on park lands. However, a wildland fire could begin on park lands and spread to adjacent BLM lands where populations or habitats of the cactus occur. Suppression activities such as the use of heavy equipment and constructing fire lines that disturb the soil surface may impact cactus habitat in sparse piñon-juniper that is now partly occupied by cheatgrass (*Bromus tectorum*), which readily carries a fire. Post-fire vegetative treatments such as seeding with native grasses and forbs to rehabilitate the area may have indirect effects on cactus from trampling and/or disturbing soil in a manner that could result in the increase of cheatgrass. Therefore, emergency consultation may be necessary for suppression activities in the future. The location and extent of these suppression activities cannot be quantified due to the nature of wildland fires in these areas.

Fire frequency is currently quite low in cactus habitat (BLM fire history data, various years). In the last 10 years, there have been 4 wildland fires in the Peach Valley desert shrub habitat, all less than an acre in size. Two of these were ignited by lightning, 1 was human-caused and spread into sparse piñon-juniper habitat, and the last ignition source was unknown (Becky Jossart, BLM Engine Module Leader, Pers. Comm.). However, the continued spread of cheatgrass has altered the fire frequency and intensity in some habitats that were not particularly prone to fire in the past.

To reduce the direct and indirect effects to Unitah Basin hookless cactus from wildland fire suppression activities and post-fire vegetative treatments, the following mandatory mitigation measures will be followed within identified cactus habitat:

- Minimize surface disturbance by using retardant, foam, water, engines/wet lines, etc., in known habitat for this species.
- Where firefighter safety is not compromised, construct fire line outside the perimeter of known cactus populations.
- Avoid off-road use of motorized vehicles and mechanical equipment within known cactus populations.
- Vegetative treatments will avoid known cactus populations.
- Vegetative treatments will be designed to limit soil erosion and the spread of cheatgrass and to enhance cactus habitat.

Indirect effects of fire suppression to potential cactus habitat in sparse piñon-juniper woodlands also occupied by cheatgrass will likely be beneficial by minimizing the potential for large catastrophic fires. In those instances where wildland fire does occur in cactus habitat, post-fire vegetative treatments could be employed to limit the spread of cheatgrass. Techniques such as broadcast seeding with native grasses and forbs would limit the amount of soil disturbance in cheatgrass infested areas.

Gunnison Sage-grouse:

Gunnison sage-grouse use habitats of varying successional stages for breeding, nesting, and wintering. Extensive open areas (without sagebrush) are not optimal for the grouse, nor are

extensive stands of excessively dense sagebrush. When applied at the right time and place, prescribed fire and fuel reduction are beneficial tools for thinning dense sagebrush stands, increasing understory grass cover, preventing piñon-juniper, serviceberry, and oakbrush encroachment, and improving overall habitat conditions for the grouse. Low-intensity, patchy fires are considered beneficial to the grouse by creating openings in the sagebrush cover and stimulating fresh vegetative growth. WFU will result in a long term benefit to sage-grouse, as all fire activity occurring within grouse habitat will be managed to improve the long-term condition of sagebrush and decrease piñon-juniper, serviceberry, and oakbrush encroachment. Prescribed fire and mechanical fuel reduction will be implemented in a manner that benefits the sage-grouse by creating a mosaic habitat of different successional stages of vegetation used by the species at different stages of its life cycle, thereby benefiting the sage-grouse.

These fire management objectives, strategies and prescriptive parameters have been developed by an interagency team of ecologists, biologists, and fire management specialists familiar with sage-grouse habitat and populations within the Gunnison Basin area. Some of these experts are also on the Gunnison sage-grouse RSC and developed these sage-grouse guidelines in the FMP to accomplish the fire management objectives stated in the RCP.

The Gunnison sage-grouse RCP defines one objective for fire and fuels management in sage-grouse habitat: "Objective 1: Manage wildfire, prescribed burns and fuel treatments to minimize detrimental effects on Gunnison sage-grouse populations and to improve sage-grouse habitat" (RSC 2005, page 207). The RCP further lists specific strategies for fire management that include 1) manage habitat mosaics and fuels in sage-grouse areas to minimize the possibility of damaging wildfires, and 2) use prescribed burning at a small scale, when appropriate, to improve the quality and quantity of sage-grouse habitat. The RCP also identifies an objective for habitat enhancement, for which fire management actions could play a significant role (e.g. Objective 2: Conduct and monitor restoration techniques for improvement of the vegetation structure requirements necessary for productive breeding, summer-fall, and winter sage-grouse habitats). Fire historically maintained habitats important to this species by preventing encroachment of piñon and juniper trees. Over the long-term, implementation of the FMP will protect and enhance sage-grouse habitat. The timing, extent and intensity of WFU fires will be managed in a manner that is beneficial to sage-grouse.

Specific objectives and strategies for suppression, WFU, prescribed fire and non-fire fuel treatments are outlined in the FMP (NPS 2005) and included herein as follows: .

PIH-504. BLCA Gunnison Sage-grouse Overall Range

Management Concern

Gunnison sage-grouse habitat areas throughout the FPU. These are predominately sagebrush sites that have had extensive vegetation treatments and/or are being invaded by pinyon and juniper at lower elevations, with some areas of oak brush and serviceberry at the higher elevations.

Objectives

Management Emphasis – Improve habitat for Gunnison sage-grouse.

Desired Mosaic – The desired vegetation condition is a fine-grained mosaic with patches of 5-100 acres in a matrix of early-mid seral sagebrush. The late seral vegetation confined to draws and the upper elevation part of the unit, also in mainly medium size patches. Within sagebrush stands, create scattering of small (1-5 acre) open grassy areas within much larger (>10 acre) patches of intermixed sagebrush, grass, and forbs with little or no taller vegetation. Some extensive stands of sagebrush (>100 acres) needed for winter habitat.

Suppression - Fire size should be limited to 350 acres in sagebrush with pinyon-juniper encroachment and to 100 acres in sagebrush stands with no tree encroachment.

Prescribed fire and Non-fire fuel Treatments – Where mule deer and elk winter concentration areas overlap this unit, sage-grouse habitat improvement should be designed to be compatible with big game needs.

Wildland Fire Use – Allow sites with pinyon/juniper encroachment to burn up to 350 acres per incident, with seeding of grass, forbs, and sagebrush to follow as needed. In mountain sagebrush (*Artemisia vaseyanum*) stands allow fire to consume up to 100 acres per incident.

Prescribed Fire – Use prescribed fire in these areas to create desired mosaics within sagebrush stands of small patches of 1-5 acres of open grassy areas with much larger (>10 acre) patches of intermixed sagebrush, grass, and forbs with little or no taller vegetation. Prescribed burns may be followed by seeding of grasses, forbs, and sagebrush as appropriate.

Strategies

Suppression Constraints – In sagebrush stands with suitable sage-grouse habitat (e.g., mesa tops, basin big and black sagebrush areas), pursue active suppression of natural ignitions in stands with no pinyon/juniper encroachment. Allow no more than 10% of the area to burn in any year.

Wildland Fire Use –Two projects per year totaling 350 acres. Treat up to 1,750 acres of sagebrush over a 5-year period to create a mosaic of age classes for big sagebrush.

Prescribed Fire – Use prescribed fire to create desired mosaics with no more than 10% of the project area burned, followed by seeding of grasses, forbs, and sagebrush as needed.

Non-fire fuels Treatments – Use manual/mechanical means to reduce fuel hazards.

Prescriptive Criteria (Fuel Model T):

- ERC < 50
- 1000 hr. measured fuel moisture = >8%
- Live measured fuel moisture >100%

Written Description of Unit: Sagebrush sites that have had extensive vegetation treatments and are being invaded by pinyon at lower elevations. Some areas with oak brush and serviceberry at higher elevations.
Likely Presuppression Fire Regime and Mosaic: Varied - dependent on locations.
Current Management Emphasis: Improve habitat for sage-grouse. Where mule deer and elk winter concentration areas overlap this unit, sage-grouse habitat improvement should be designed to be compatible with big game needs.
Desired Mosaic: A fine-grained mosaic with patches of 5-100 acres in a matrix of early-mid seral sagebrush. The late seral vegetation confined to draws and the upper elevation part of the unit, also in

mostly medium size patches.				
patch size	**early** mainly grass and forbs may have a small % of shrubs	**early-mid** mainly sagebrush some grass and forbs	**late-mid** mature sagebrush with some young pinyon-juniper	**late/old growth** mature pinyon-juniper with small percent of deciduous shrubs
% of unit	10-15	60-70	10-15	10-20
0-5 acres	0-5%	0-5%	0-5%	0-5%
5-20 acres	10-30%	30-40%	30-40%	20-30%
20-100 ac.	60-80%	30-40%	30-40%	60-70%

PIH-504. CURE Gunnison Sage-grouse Overall Range

Management Concern

Gunnison sage-grouse habitat areas throughout the FPU. Big sagebrush is the dominate shrub species throughout the uplands of this area. Its growth form is highly variable depending on site conditions and use. Sage-grouse are dependent on sagebrush, primarily the subspecies of big sagebrush. Therefore, sage-grouse do not occur throughout the year in areas where an abundance of this shrub is absent.

The area also includes other vegetation communities that are important to sage-grouse such as riparian areas and other shrub community types made up of serviceberry, mountain-mahogany (*Cercocarpus montanus*), and bitterbrush (*Purshia tridentata*). Riparian areas occur as drainages, springs, and meadows within the larger upland sagebrush community types.

Many of the big sagebrush communities are lacking in structure and productivity.

Objectives

Management Emphasis – Increase community diversity, structure, and productivity, especially of herbaceous vegetation. Representation by a mosaic of plant community types will improve current habitat conditions for sage-grouse.

Desired Condition – Create small, round or linear-shaped patches of community types within larger big sagebrush upland habitat. New community types should consider boundaries that coincide with natural patch edges.

Suppression - Fires other than prescribed fires would not be allowed to burn more than 1/4 mile linear distance of a riparian area associated with drainages for each incident. Buffers (unburned areas) of at least 50 feet would be maintained adjacent to stream riparian areas as well as springs and seeps.

Wildland Fire Use – Natural fires managed for resource benefit can burn no more than 160 acres per square mile per incident, not to exceed a total of 3 incidents per year. Recurrence of natural fires

managed for resource benefit or prescribed fire in previously burned areas in big sagebrush community types should be limited to 20 year intervals.

Prescribed fire and Non-fire fuel Treatments – Prescribed fires can burn more than 160 acres, depending upon the objectives. The details of the fire prescriptions/resource constraints should be developed during the Environmental Assessment and Prescribed Burn Plan process. Prescribed fire and/or non-fire fuel treatments should be designed to meet specific habitat objectives.

Strategies

Suppression Constraints – Less aggressive control actions can be considered in this polygon if prescriptive criteria are met and resource management objectives are within limits. During suppression activities, riparian areas could be used as a control feature. For example, in a situation where a wildland fire was backing down a slope, the edge of the riparian area closest to the fire could be burned as a control method. This would be an infrequent occurrence. No mechanized equipment, retardant drops, or foam use within 300 feet of riparian areas.

Wildland Fire Use – WFU prescriptions will be based on the Gunnison Sage-grouse Conservation Plan.

Prescribed Fire – Burning will be done in compliance with the Gunnison Sage-grouse Conservation Plan.

Non-fire fuels Treatments – Emphasize brush mowing and understory thinning treatments in small isolated ponderosa pine and Douglas fir stands on north and east-facing slopes. Treatments should be designed to improve and protect habitat for sage-grouse and big game winter range and to prepare these areas for future WFU. Treat 1,000 acres over the next 5 years.

Prescriptive Criteria (Fuel Model T):

- Area not in precipitation deficit
- Gunnison Basin wide ERC < 60
- Live measured fuel moisture >120%
- Probability of ignition <60%

PIH-502. Important Sage-grouse Habitat

Management Concern

These polygons are from Dr. Jerry Hupp's work during the very deep snow winter of 1983-84. They represent areas where sage-grouse were observed feeding and roosting on the only sagebrush that is available during deep snow winters. These areas are critical for the winter survival of sage-grouse. The Gunnison Sage-grouse Conservation Plan describes these areas where "fragmentation and/or permanent loss of critical winter habitat would not occur." The important sage-grouse winter range represents only 6% of the overall sage-grouse range.

Drainages and slopes with southerly or westerly aspects (136-315 degrees) that are greater that 5 degrees are important winter range as they contain tall, vigorous sagebrush that is consistently available during winters of deep snow. Other important winter range areas are mesa and ridge tops with slopes of 5 degrees or less and flat, low sites with slopes of 5 degrees or less.

Objectives

Management Emphasis – Prevent loss of sagebrush structure in important winter habitat. Without these areas, sage-grouse survival would be reduced.

Desired Condition – For slopes with southerly or westerly aspects, the desired condition is big sagebrush with an average height of 12 inches and canopy cover of 15% minimum. In drainages, the desired condition is big sagebrush with an average height of 20 inches and canopy cover of 30% minimum. For the low, flat terrain sage-grouse use during winter, the desired condition is big sagebrush with an average height of 16 inches and canopy cover of 25% minimum. Scattered throughout the winter habitat are small areas that are important feeding areas which have big sagebrush with greater than average height and canopy cover. In these areas on south and west aspects, the desired condition is big sagebrush with an average height of 16 inches and a canopy cover of 30-40%.

Suppression - Do not allow any fire in these areas.

Strategies

Suppression Constraints – Do not use heavy equipment in these areas. To protect critical winter range on NPS lands, the use of retardant or foam 300 feet away from waterways may be pre-authorized by the Superintendent.

Wildland Fire Use – No.

Prescribed Fire – None planned at this time.

Non-fire fuels Treatments – Mechanical treatments, such as mowing should be implemented on NW to SE perimeters of these areas to protect them from wildland fire and WFU events in adjacent polygons.

PIH-503. Gunnison Sage-grouse Leks

Management Concern

These are display grounds for mating which are scattered throughout the Gunnison Basin. They are characterized by low vegetation with sparse shrubs often surrounded by big sagebrush-dominated plant communities.

Objectives

Management Emphasis – Prevent loss of sagebrush around leks. Used for resting, feeding, and escape from lek areas**.**

Desired Condition – The desired future condition of the low, open vegetation in the display ground areas is similar to present conditions, unless it is determined that such open areas need to be expanded or modified to enhance the value of these areas for sage-grouse. The desired condition for the big sagebrush areas within 400 yards of the display areas is big sagebrush with an average height of at least 12 inches and a canopy cover of 20% minimum and a grass canopy cover of at least 25%. Grass leaf height, except for blue grama (*Bouteloua gracilis*), should average 6 inches (previous year's residue or new growth) between March 20 and May 15.

Suppression – Do not allow wildland fire or WFU fires to burn sage-grouse leks or areas within a ¼ mile buffer around leks.

Strategies

Suppression Constraints – Establish a ¼ mile buffer around all known leks where fire is not desired. Heavy equipment may not be used in the buffered lek areas, but may be used to protect the leks from wildland fires.

Wildland Fire Use – No.

Prescribed Fire – None planned at this time.

Non-fire fuels Treatments – None planned at this time.

In the short-term, there will be a potential for negative impacts to individual sage-grouse. Over the course of the next 6 years, the FMP calls for the application of prescribed fire on 350 acres of existing overall sage-grouse habitat within BLCA and CURE in a manner that meets habitat improvement objectives. This includes initiating 4 projects ranging in size from 80 – 100 acres. Prescribed fire will be implemented in these areas to create mosaics within sagebrush stands of small patches of 1 – 5 acres of open, grassy areas with much larger (>10 acre) patches of intermixed sagebrush, grass, and forbs with little or no taller vegetation in order to thin dense sagebrush stands, increase understory grass cover, and reduce woody vegetation encroachment. Such burns would have the possibility of disturbing, injuring, or killing grouse, though timing of these burns will be such that the potential for direct impacts to grouse will be minimized. These potential impacts were considered by the developers of the Gunnison Sage-grouse Rangewide Conservation Plan. It was their conclusion that the short-term potential impacts to individuals were necessary in order to achieve the long-term benefits to grouse habitat. Prescribed burns, WFU or suppressed wildland fires may be followed by seeding of grasses, forbs, and sagebrush as appropriate.

Yellow-billed Cuckoo:

The yellow-billed cuckoo is not well-documented as existing in BLCA and CURE; the preferred riparian habitat occurs as limited acreage in the parks. Suitable habitat may be present along portions of the Gunnison River within the interagency planning area. However, following 10 years of intensive point count monitoring, no yellow-billed cuckoos have been documented in the park boundaries.

The preferred alternative specifies that fire management activities in mature cottonwood/willow galleries within the action area would be related to improving conditions for the regeneration of cottonwood and willows (EA, page 85-89). The use of mechanical treatments, prescribed fire or WFU is not planned in these riparian corridors. If a wildland suppression fire should impact this habitat, the effect to yellow-billed cuckoo would be addressed in the emergency consultation associated with that fire.

Cumulative Effects

Cumulative effects are those effects of future state or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation (50 CFR §402.02). The subject of this consultation is NPS implementation of the FMP within the park acreages. The park boundaries include in-holdings of private land which would be the subject of the following cumulative effects discussion. Those private lands are currently being managed for livestock grazing (including captive elk herds) and recreation. As has occurred on federal lands, fire suppression in the region over the years has led to higher than natural fuel conditions, which can alter the intensity and extent of fires, and therefore cause environmental effects different than what would be expected. The fuels reduction activities proposed for park lands could also potentially occur on private lands within the park boundaries. Such treatments on private lands would occur only after agreements have been reached with the landowners and the environmental effects are evaluated.

Uncompahgre Fritillary Butterfly:

Suitable habitat for Uncompahgre fritillary butterfly does not occur in the area of the parks, including the private in-holdings. There would be no cumulative effects to the butterfly or it's habitat as a result of implementing the FMP within the park boundaries.

Clay-Loving Wild-Buckwheat:

Fire-related cumulative effects to the clay-loving wild-buckwheat are likely to be minor because this species is found in plant communities that do not contain enough vegetation to carry a fire. Non-fire related cumulative effects could include direct loss of individual plants and long-term impact to habitat resulting from recreational off-road vehicle activity, invasive weeds, grazing, and development outside of park and protected NCA boundaries. However, this species benefits from designated critical habitat on nearby non-Federal private land.

Humpback Chub:

There is no humpback chub habitat found on non-Federal lands within the park boundaries. In the long-term, land use activities such as ranching and development on unprotected lands outside of nearby park and NCA boundaries may affect water quality and quantity downstream, but these impacts are unknown at this time.

Bonytail Chub:

There is no bonytail chub habitat found on non-Federal lands within the park boundaries. In the long-term, land use activities such as ranching and development outside of nearby park boundaries may affect water quality and quantity downstream, but these impacts are unknown at this time.

Colorado Pikeminnow Chub:

There is no Colorado pikeminnow habitat found on non-Federal lands within the park boundaries. In the long-term, land use activities such as ranching and development outside of nearby park boundaries may affect water quality and quantity downstream, but these impacts are unknown at this time.

Razorback Sucker:

There is no razorback sucker habitat found on non-Federal lands within the park boundaries. In the long-term, land use activities such as ranching and development outside of nearby park boundaries may affect water quality and quantity downstream, but these impacts are unknown at this time.

Bald Eagle:

In the long-term, the appropriate use of wildland fire on nearby non-Federal lands will help to limit adverse impacts from catastrophic wildland fires, and provide improved soil and canopy conditions for increased undergrowth that would support prey species in treated areas. Many large eagle roost trees are located along waterways on adjacent private lands that are routinely burned by landowners to keep the water flowing. This practice removes understory vegetation and protects large cottonwood trees that are commonly used by roosting eagles. Prescribed and WFU fires for resource benefit implemented on private lands through the FMP would require the use of conservation measures to protect existing and potential roost trees. Conservation measures to protect bald eagles include avoiding fire management activities during the winter roosting period and assisting private landowners to implement projects that protect roost trees on their land. On adjacent lands such as the Gunnison State Wildlife Area, CDOW is taking the appropriate steps to maintain and improve riparian habitat with large roost trees used by bald eagles.

Non-fire related cumulative effects could include short-term disturbance of eagles, resulting from recreational activity or ranching operations. Also, private lands that may not include roost trees, may benefit eagles through cattle and elk calving activities that create feeding opportunities for bald eagles in some months.

Mexican Spotted Owl:

In the long-term, the appropriate use of wildland fire on nearby non-Federal lands will provide beneficial cumulative effects to Mexican spotted owl habitat by reducing fuel loads and thereby reducing the chance for stand-replacing fires on the landscape scale. Non-fire related cumulative effects could include short-term displacement resulting from recreational activity.

Canada Lynx:

Continued development around the parks may contribute to overall habitat loss. Non-fire related cumulative effects could include short-term displacement resulting from recreational activity. However, in the long-term, the appropriate use of wildland fire associated with FMP implementation on nearby non-Federal lands will benefit Canada lynx by employing

conservation measures, minimizing the potential for large catastrophic fires and by improving and maintaining the diversity of habitats necessary for lynx and their prey species.

Uintah Basin Hookless Cactus:

There is no cactus habitat found on non-Federal lands within the park boundaries. In the long-term, appropriate fire management responses associated with FMP implementation in nearby non-Federal lands will help to limit adverse impacts from suppression and catastrophic wildland fires by employing conservation measures that minimize impacts to soil and vegetation.

Gunnison Sage-Grouse:

Cumulative effects include the short-term disturbance of grouse due to recreational activity. Such disturbance could limit available nesting habitat and decrease the survival of young chicks where they occur on non-federal lands. The long-term appropriate use or suppression of wildland fire associated with FMP implementation on in-holdings and adjacent non-Federal lands will help to protect and enhance sage-grouse habitat by thinning dense sagebrush stands, increasing understory grass cover and creating a mosaic of different successional stages of vegetation. These effects will improve overall habitat conditions for the grouse.

Yellow Billed Cuckoo:

In the long-term, the appropriate use of wildland fire associated with FMP implementation and additional fuel reduction activities on nearby non-Federal lands, would help to limit adverse impacts from catastrophic wildland fires and provide improved riparian conditions for increased potential habitat. Non-fire related cumulative effects could include impacts from loss of riparian zones due to development or grazing and short-term displacement resulting from recreational activity. However, state and local agencies and private land owners are taking the appropriate steps to maintain and improve such habitats such as those in the Gunnison State Wildlife Area adjacent to CURE.

V. CONCLUSION

Determinations of effects from the proposed implementation of the FMP are summarized below and in Table 1. (page 38-39).

Uncompahgre Fritillary Butterfly:

Determination of effect:

Suitable habitat for Uncompahgre fritillary butterfly does not occur in the park acreage. **Therefore, the implementation of the FMP on park lands will have "no effect" on the Uncompahgre fritillary butterfly.**

The Humpback Chub:

Determination of effect:

Suitable habitat for humpback chub does not occur in the park acreage. Upstream water depletions for fire management activities are covered under the Programmatic Biological Opinion for Minor Water Depletions in the Upper Colorado River Basin in Colorado (USFWS 1994) and reported to the USFWS on an annual basis. **Therefore, the implementation of the FMP on park lands may affect/likely to adversely affect humpback chub.**

The Bonytail Chub:

Determination of effect:

Suitable habitat for bonytail chub does not occur in the park acreage. Upstream water depletions for fire management activities are covered under the Programmatic Biological Opinion for Minor Water Depletions in the Upper Colorado River Basin in Colorado (USFWS 1994) and reported to the USFWS on an annual basis. **Therefore, the implementation of the FMP on park lands may affect/likely to adversely affect bonytail chub.**

The Colorado Pikeminnow:

Determination of effect:

Suitable habitat for Colorado pikeminnow does not occur in the park acreage. Upstream water depletions for fire management activities are covered under the Programmatic Biological Opinion for Minor Water Depletions in the Upper Colorado River Basin in Colorado (USFWS 1994) and reported to the USFWS on an annual basis. **Therefore, the implementation of the FMP on park lands may affect/likely to adversely affect Colorado pikeminnow.**

The Razorback Sucker:

Determination of effect:

Suitable habitat for razorback sucker does not occur in the park acreage. Upstream water depletions for fire management activities are covered under the Programmatic Biological Opinion for Minor Water Depletions in the Upper Colorado River Basin in Colorado (USFWS 1994) and reported to the USFWS on an annual basis. **Therefore, the implementation of the FMP on park lands may affect/likely to adversely affect razorback sucker.**

Clay-Loving Wild-Buckwheat:

Determination of effect:

Implementation of the FMP will be beneficial to habitat potentially occupied by clay-loving buckwheat. **Therefore, the implementation of the FMP on park lands "may affect, but is not likely to adversely affect" the clay-loving wild-buckwheat.**

Bald Eagle:

Determination of effect:

There is potential for short-term direct effects to bald eagles through disturbance of the birds from their normal wintering behavior if projects should be conducted in proximity of the birds. This potential effect will be ameliorated by the Conservation Measure of suspending project activities if eagles are within 1 mile. Any indirect effects to eagle habitat will be beneficial in the long-term, as the intent is to perpetuate several age classes of cottonwoods and other large trees in proximity to waterbodies. Such long-term management of trees will provide winter roosting trees and nesting structures into the future. **With the Conservation Measures, the implementation of the FMP on park lands "may affect, but is not likely to adversely affect" the bald eagle.**

Mexican Spotted Owl:

Determination of effect:

Direct effects may occur to the spotted owl if a WFU fire should enter occupied owl habitat. Conducting owl surveys prior to making decisions of where and when to allow WFU will address this effect. There is potential for short-term indirect effects to owl habitat as a result of fire entry into the canyon forested areas. Long-term indirect effects will likely benefit the species. **Therefore, the implementation of the FMP on park lands "may affect, but is not likely to adversely affect" the Mexican spotted owl.**

Canada Lynx:

Determination of effect:

There is little possibility of a direct effect to lynx from implementing the FMP on the park acreage due to the nature of the habitat in the parks and the lynx's expected transient use of that habitat. Long-term indirect effects will likely benefit the species. **Therefore, the implementation of the FMP on the park acreage "may affect, but is not likely to adversely affect" the Canada lynx.**

Uintah Basin Hookless Cactus:

Determination of effect:

Direct and indirect effects to the hookless cactus will not occur, as potential habitat is very limited within the parks and the use of non-fire fuel treatments, prescribed fire or WFU is not planned in this habitat. **Therefore, the implementation of the FMP on park lands "may affect, but is not likely to adversely affect" the Uintah Basin hookless cactus.**

Gunnison Sage-Grouse:

Determination of effect:

Implementation of the FMP will be beneficial to sage-grouse habitat. **Therefore, the implementation of the FMP on park lands "may affect, but is not likely to adversely affect" the Gunnison sage-grouse.**

Yellow-billed Cuckoo:

Determination of effect:

Direct and indirect effects to the cuckoo will not occur, as potential habitat is very limited within the parks and the use of mechanical treatments, prescribed fire or WFU is not planned in the habitats preferred by the yellow-billed cuckoo. **Therefore, the implementation of the FMP on park lands will have "no effect" on the yellow-billed cuckoo**.

Table 1. Summary of federally listed and candidate species potentially found in BLCA/CURE including determination of effect.

Common Name	Habitat	Notes	
Uncompahgre fritillary butterfly	Endemic to alpine meadows in the San Juan Mountains above 13,000 ft in elevation.	Suitable habitat does not exist. Not found on park lands.	No
Clay-loving wild-buckwheat	Run-off plains of Mancos Shale, and adobe hills in salt desert shrub. Elev. 4,000-5,800 ft.	Not found in 2004 floristic survey of park lands.	Ma
Humpback chub	Large river species. Deep, canyon-bound portions of the Colorado River (Black Rocks and Westwater canyons) and Yampa River inside Dinosaur NM.	Suitable habitat and species not found in parks; water withdrawals for fire fighting have potential downstream effects and are covered under existing BO for BLM activities.	Ma cov
Bonytail chub	Currently found in the Green River in Utah and lakes Havasu and Mohave.	Suitable habitat and species not found in parks; water withdrawals for fire fighting have potential downstream effects and are covered under existing BO for BLM activities.	Ma cov
Colorado pikeminnow	Swift-flowing, muddy, medium-large size rivers with quiet, warm backwaters. Currently found in the Green, Yampa, White, Colorado, Gunnison, San Juan, and Dolores rivers.	Suitable habitat and species not found in parks; water withdrawals for fire fighting have potential downstream effects and are covered under existing BO for BLM activities.	Ma cov
Razorback sucker	Large river species. Lower main stem Colorado, Gunnison, lower Yampa and Green rivers. Very rare above Grand Canyon.	Suitable habitat and species not found in parks; water withdrawals for fire fighting have potential downstream effects and are covered under existing BO for BLM activities.	Ma cov
Bald eagle	Wintering and nesting in large trees	Wintering eagles roost and perch in	Ma

	along rivers on Colorado's Western Slope.	large trees on the Gunnison River and Blue Mesa. No nests have been found within the park boundaries.	
Mexican spotted owl	Uncut mixed conifer forests in deep, sheer-walled canyons in Colorado. Uneven-aged stands with high basal area and many downed logs and snags favored. Nests in caves and on cliff ledges.	May have potential habitat, but species not known to exist within the park boundaries. Surveys beginning in 2006 will determine species presence or absence.	Ma
Canada lynx	Uneven-aged stands with relatively open canopies and well-developed understories in subalpine and upper montane forests from 9,000 to 14,500 ft. in elevation.	Travel through BLCA and CURE, but no sightings have been recorded. Proposed actions may be beneficial.	Ma
Uintah basin hookless cactus	Rocky hills, mesa slopes, and alluvial benches in desert shrub and sparse piñon-juniper. Elev. 4,000-5,800 ft.	Not found in 2004 floristic survey of park lands.	Ma
Gunnison sage-grouse	Native to sagebrush habitats of varying ages and successional stages in the Gunnison Basin.	Proposed fire management actions will likely be beneficial.	Ma
Yellow-billed cuckoo	Older age riparian woodlands with dense understories. Riparian cottonwood-willow galleries.	Not known to exist on park lands. Surveys in potential habitat conducted from 1995 to present.	No

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Appendix A. FMU Map and Descriptions

This Appendix was extracted from the draft Montrose Interagency Fire Management Plan. These excerpts contain information on the Black Canyon and Gunnison FMUs, which are the two FMUs in which the parks lie.

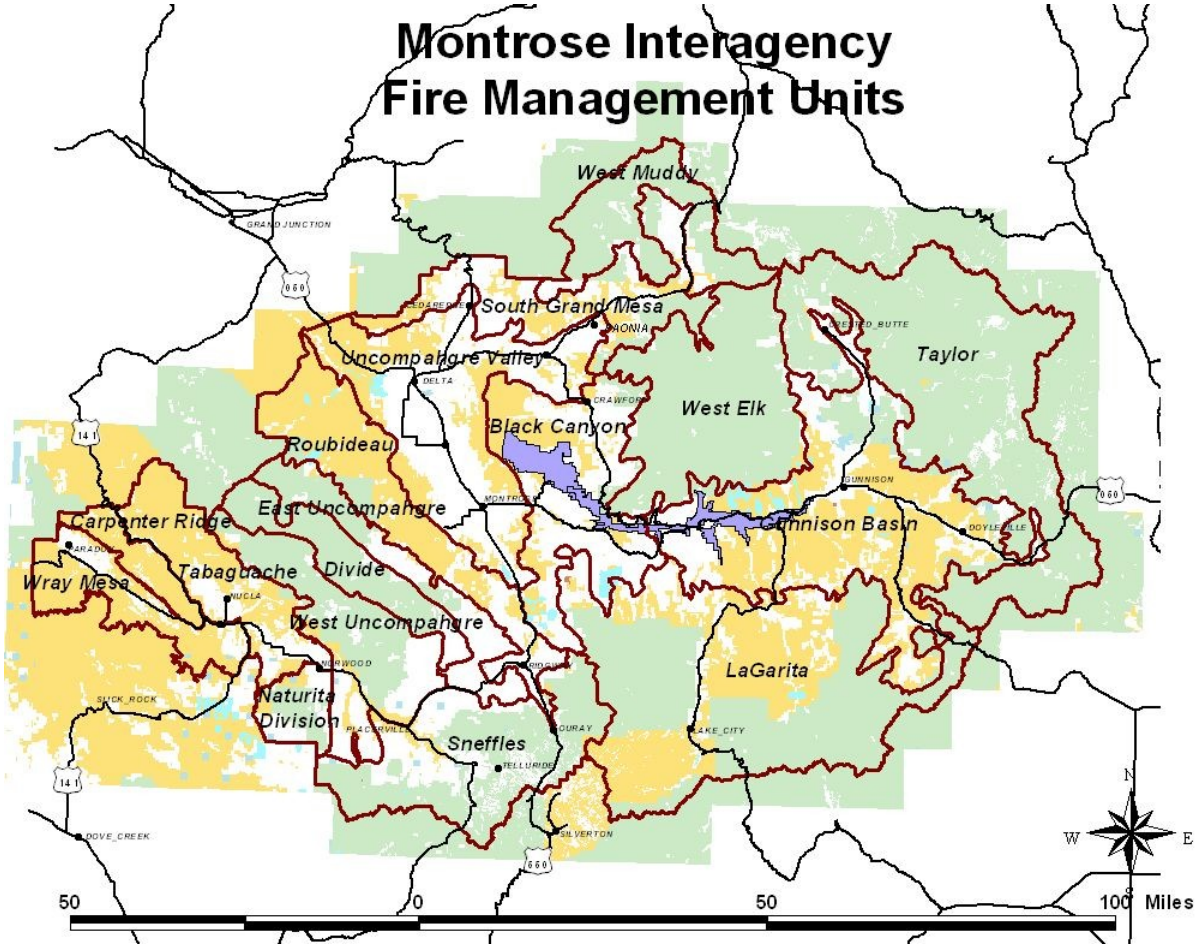

Figure 4. Fire Management Units within the Montrose Interagency Fire Planning Unit.

FMU - Management Tables

Black Canyon FMU – Description

Location **-** This FMU is in the very center of the planning unit, and is comprised primarily of the foothills and ridges around the Gunnison Gorge, Crawford, Paonia, and Cimarron areas that skirt the western and southern rim of the West Elk Mountains. It extends down toward the North Fork Valley and Uncompahgre Valley, and includes the areas around the Black Canyon of the Gunnison National Park, Fruitland Mesa, Black Mesa, and Cimarron. There is a total of 358,726 acres within the boundary of the FMU. It consists of 97,595 acres of BLM land (27%),

21,318 acres of USFS land (6%), 28,720 acres of NPS land (8%), 10,070 acres of State land (3%), and 201,022 acres of Private (56%).
Characteristics - The topography is varied, being comprised of lower elevation Mancos shale badlands, to mid-elevation mesas dissected by steep-sided canyon drainages, and occasional mountain peaks. The elevation ranges from 5,100 feet in the northern portions of the FMU to over 10,000 feet on some of the higher peaks. The average land slope of the unit is 31%. Several steep-sided canyons, including the Black Canyon of the Gunnison contribute to the high land slope value.

Annual precipitation varies from 8 inches at the lower elevations to more than 30 inches at the higher elevations. From 25 to 40% of the annual precipitation falls as snow during the colder months, depending on elevation. Most of the precipitation outside of the mid-to late summer season occurs from frontal type storm systems, which are typically regional in size. Precipitation from frontal events occurs over a relatively long duration but at low intensity rates. In contrast, summer precipitation is commonly associated with the southwest monsoon air flow pattern, which can produce localized, short duration, and intense precipitation events.

The major drainages receiving runoff from this FMU are the Gunnison, North Fork of the Gunnison, and Uncompahgre Rivers. Both the Gunnison and North Fork of the Gunnison Rivers potentially support a cold water fishery, and are classified by the Colorado State Water Quality Control Commission as “Aquatic Life Cold 1”, defined in part, as waters capable of supporting a wide variety of cold water biota. Most of the stream segments in the FMU are classified by the state as suitable or intended to become suitable for potable water supplies. The entire drainage area in this FMU serves as a source water area for domestic water diversion points downstream.

The Uncompahgre (and selected tributaries) and North Fork of the Gunnison Rivers are on the Colorado State 2002, 303(d) list for potentially excessive concentrations of selenium. Additionally, the Lower Gunnison and Uncompahgre Rivers are on the Colorado State Monitoring and Evaluation List for suspected water quality impairment from excessive sediment concentrations.

Soils in the FMU are highly varied but mostly derived from sedimentary rock. In the higher elevations, soils are mostly loams and fine sandy loams derived from the Dakota and Morrison formations. These soils range from shallow to moderately deep depending on topographic position. Much of the steeper topography is dominated by rock outcrop and poorly developed soils. Many of the lower elevation soils are derived from the Mancos shale, a marine deposited evaporite. Consequently, these soils are fine-textured, highly erodible, and contain high levels of salinity and selenium. These soils receive very little precipitation and may be difficult to revegetate before invasive species become established on large disturbances.

The area includes low elevation grasslands and shrublands which transition to aspen at the higher elevations in the northeastern corner. The dominant vegetation in the northern portion of this FMU, around the Black Canyon and Black Mesa areas, includes sagebrush/grassland (30%), sagebrush/mountain shrub vegetation (30%), pinyon-juniper (30%), and aspen (10%). The specific community types include saltbush (6%), grass-forb rangeland (9%), sagebrush/grass mix (15%), sagebrush (28%), sagebrush-Gambel oak mix (5%), pinyon-juniper/sagebrush mix (8%), pinyon-juniper/mountain shrub mix (4%), pinyon-juniper woodland (17%), and aspen (8%).

In the southern portion of the FMU around the Kinnikin and Cimarron area, the dominant vegetation includes sagebrush/grasslands (10%), sagebrush/mountain shrub vegetation (20%), pinyon-juniper (60%), and other (10%). The specific community types include grass-forb rangeland (4%), sagebrush/grass mix (7%), sagebrush community (11%), sagebrush-mesic mountain shrub mix (2%), mesic mountain shrub mix (5%), Gambel oak (2%), pinyon-

juniper/sagebrush mix (19%), pinyon-juniper/mountain shrub mix (21%), pinyon-juniper/oak mix (4%), and pinyon-juniper (16%).

Recent Fire History – Lightning caused fires account for 86% of all unplanned ignitions in the Black Canyon FMU; the remainder are human caused. Predominant fire size classes are A-B (.01 – 9.9 acres), with occasional C through F (10 – 4.999 acres) size classes. In the period between 1982 and 2002, on BLM lands there were 178 fires for a total of 3,165 acres. Of these fires, 153 were lightning caused, and 25 were human caused. Campfires and debris/field burning account for the vast majority of human-caused fires. On the USFS lands, there were 5 fires, all lightning caused. Most fires occur during the months of May, June, July, and August.

Over the past 10 years, from 1994 through 2002 fire size has increased, with several 100-500 acre fires occurring during that time period in the Crawford area (1994 Missouri ~300 acres, 1999 Fruitland ~500 acres, 2003 Spring Creek ~100, 2003 Crystal Creek ~100, 2004 Saddle ~300 acres).

Table 2. Historical Fire Data for the Black Canyon FMU from 1982-2002

Period 1982-2002	Total Starts	Total Acres	% of Total Fire Starts By Cause	
			Lightning	Human Caused
NPS	**54**	**1,546**	**46%**	**54%**
BLM	**178**	**3,165**	**86%**	**14%**
USFS	**5**	**0**	**100%**	**0%**
TOTAL			**86%**	**14%**

Historic Fire Occurrence **-** Prior to European settlement, the following are the estimated return interval and intensity levels for the major community types within the FMU:

- *Aspen* – 60 to 90 year return interval, high intensity, stand replacing fires where fire kills the overstory so that suckering occurs to create new stands.
- *Pinyon-Juniper* – 10-30 years return interval, small stand replacing fires, with larger stand-replacing fires (2,000-5,000 acres) every 150-450 years.
- *Mountain Shrub* – 15-30 year interval, small stand replacement fires, where the dominant shrubs quickly resprout and return to shrub cover.
- *Sagebrush/grassland* – 40-80 year interval, stand replacement and some mixed severity fires.

Prior to European settlement, fires (both natural and human ignited) in this FMU probably were more frequent and large, creating a mosaic of seral stages in the all of the fuel model except for the aspen model. Fires in this area probably started somewhere in the lower to mid-elevation in dense stands of grass/sage/mountain shrub and every 10 to 50 years under dry and windy conditions would make runs into the pinyon-juniper. Every 60 – 90 years, under drought conditions, fires would have burned into the aspen stands at the higher elevations.

Prior to fire suppression, numerous lightning ignitions probably occurred with most fires staying small due to low burning conditions. Natural firebreaks would have limited the size and distribution of these fires. The resulting effect would be larger landscape diversity within the FMU and at various succession stages. North of the Gunnison Gorge up to the Paonia area, there was probably a high percentage of the area in early seral stages, with small patch sizes

and low intensity fires due to aspect and prevailing winds. Most likely very few fires grew to any size, moving upslope or being driven by wind events for 1 or 2 burn periods. South and east of the Gunnison Gorge, there was probably a higher percentage of late seral stages and larger patch sizes, with more high intensity fires. Across the FMU, the mosaic could have been more diverse both with community types and age classes, with patches ranging from 1-2 acres in size up to several hundred acres in size.

During the past century, the sagebrush/grasslands, and mountain shrub and pinyon-juniper types in this FMU have been influenced by management practices such as livestock grazing, fire suppression, and most recently by heavy recreational use, prescribed fire, and mechanical treatments. In addition, developments such as irrigation ditches, roads, utility corridors and fences have contributed to fragmentation of fuel coverage. In combination with fire suppression, these post-settlement human uses have generally prevented fire from playing its ecological role on the landscape.

Modeled Historic Range of Seral Conditions – Tables 2-5 and 2-6 at the end of this section depict the seral stages and timeline for the major fuel types in this FMU. The stable plant community that establishes in the absence of any disturbances (e.g. fire, insect/pathogen mortality, windthrow, drought, harvest) is called the climax plant community. The area where a given climax plant community can grow is classified as a Potential Natural Vegetation (PNV) type, and is named for the climax plant community. Historically, for any given PNV type, natural disturbances (e.g. fires, insect outbreaks) occurred at characteristic intervals and intensities, called regimes. When a disturbance was intense enough to change the existing plant community, the remaining vegetation followed a natural progression, or succession, of plant communities that changed over time. If no further disturbances occurred, an area eventually returned to the climax plant community. The Vegetation Dynamics Development Tool (VDDT) (Beukema et. al. 2003) was used to model the expected range of seral conditions that would have existed under historic disturbance regimes for forest, woodland and shrub PNV types on USFS lands. The table also provides a comparison of this VDDT modeled historic range of seral conditions to the current seral conditions to identify areas of significant departure.

The Fire Management Situation

1) *Weather patterns influencing fire behavior and historic weather analysis*. Winters in this FMU range from the mild, low moisture at lower elevations to moderate moisture and temperatures at upper elevations of the FMU. The FMU has not had normal temperatures and moisture for the past 3-5 years, and this has had some effect on the fire behavior in most of the fuel types. The fire season generally starts in mid-May and peaks in late June or early July with on the onset of the monsoon rains. The monsoons normally start in early July and last until mid to late July.

   In general, the weather events are out of the south-southwest and move to the northeast to east. The prevailing winds are also south-southwest. Upslope, upvalley winds are a dominant factor in fire behavior in the western portion of the FMU. The east portion of the FMU (eastside of the Black Canyon) will have the same weather and wind patterns as the west side. Given the topography, these wind patterns will cause the fires to burn down slope, down valley.

2) *Fire Season Determination.* The ERC curves for the Black Canyon FMU usually peak in the last part of June just before the onset of the summer monsoon rains. Depending on the year, there may be another smaller peak in late August to early September. Most live fuel moistures of lower elevation grasses and sages will bottom out in late May to mid June and then increase in live moisture for the remainder of the fire season.

3) *Fuel conditions in the FMU likely to influence fire behavior.* The fire behavior fuel models for the Black Canyon FMU are as follows: These fuel models have been altered due to the lack of fire in the last 60-80 years. There is the potential for large, stand replacing fires in nearly all of the fuel models.

   - Fuel Model 2 (Grass/Sage) 30%
   - Fuel Model 6 (Pinyon-juniper) 20%
   - Fuel Model 5 (Oak/Brush) 40%
   - Fuel Model 8 (Aspen) 10%

   The lack of fire in the last 100 years in this FMU has resulted in an increase in fuel loading and fire susceptibility in the mountain shrub, pinyon-juniper, and to a lesser extent in aspen fuel types. Grazing and fire suppression, in particular, have resulted in fire exclusion to a large degree in the sagebrush/grasslands. The resulting mosaic is now dominated by woody species in many places, including sagebrush, young pinyon-juniper, and some mountain shrub communities.

   Aspen stands become susceptible to cankers and root rots as they mature. Since much of the aspen is in the 80-120 year old range, they are prime for mortality from fungal agents. The oak and mixed shrub cover types have less patchiness and structural stage diversity than would have occurred historically. The current conditions are more susceptible to higher intensity fires that may affect larger areas than would have occurred in the past.

4) *Fire Regime Alteration.* Most community types have seen significant alteration in condition class within the Black Canyon FMU. Mountain shrub and pinyon-juniper communities have seen fire regime alteration due to fire suppression over the past 50-100 years, and they have a high risk of losing key plant community components, whereas aspen communities are at moderate risk.

5) *Control problems and dominant topographic features.* Most of the control problems in this FMU are going to be associated with steep slopes and canyons.

6) *Other elements of the fire environment affecting management.* The Black Canyon FMU contains the following attributes:

***Protection Attributes*:** These are either renewable or non-renewable values or attributes in the FMU that could be damaged or destroyed by fire. They are listed below in the order in which they are weighted for FPA.

Wildland Urban Interface – There is a total of 72,104 acres of WUI within this FMU (all landowners), which includes 17 Communities at Risk (CAR). The FMU contains the Black Canyon of the Gunnison National Park and the Crawford State Recreation Area, which have multiple facilities and developed recreation sites. There are also four communication sites and multiple high voltage transmission lines within the FMU. Significant development is occurring in this FMU, with houses being built in patches of dense vegetation. In addition, cheatgrass is becoming established in many locations, primarily in previous disturbances and treatments but also more recently under standing, untreated pinyon-juniper. These two issues both increase the potential impacts of wildfires and make fire management more complex. To locate the Federal Register CAR see the following website**:** **http://www.fireplan.gov/communities_at_risk.cfm.**

High Public Use Areas – There is a total of 4,835 acres of High Public use within the FMU, mostly associated with the trailheads and undeveloped campgrounds in the Black Canyon of the Gunnison National Park, Gunnison Gorge National Conservation Area, Crawford State Recreation Area, and West Elk Wilderness area. There is fairly intensive recreational use throughout the FMU.

Sensitive Watersheds – There is a total of 11,079 acres of sensitive watershed in the south and east portions of the FMU.

Important Habitat – There is a total of 33,173 acres in the FMU that have been identified as important habitat. One of the key management species in this FMU is the Gunnison sage grouse. The Fruitland Mesa, Black Ridge area within the sagebrush and mountain shrub communities is the most important area occupied by this species. Other areas with some activity include Cimarron and the Bostwick Park areas. Wintering bald eagles are heavily concentrated within the inner Gunnison Gorge, but there are no known active nests or communal roosts for this species. There is one known occurrence of the Uinta Basin hookless cactus at the northern end of this unit, and some potential for the presence of the clay-loving wild buckwheat.

BLM sensitive species with potential to occur in the FMU include, the Townsend's big-eared bat, spotted bat, Yuma myotis, fringed myotis, big free-tailed bat, northern goshawk, ferruginous hawk (migrant only), Gunnison sage grouse, sharp-tailed grouse, white-faced ibis, long-billed curlew, roundtail chub, flannelmouth sucker, bluehead sucker, Colorado River cutthroat trout, midget faded rattlesnake, northern leopard frog, Montrose bladderpod, Rocky Mountain thistle, and Colorado desert parsley.

Cultural Areas - There is a total of 9 acres of cultural/historical sites within the FMU. The western portion of the FMU has been identified as an area with high potential for cultural sites.

Special Management Areas - These is a total of 2,245 acres of special management areas along the northwestern boundary of the FMU.

Suitable Timber - There is a total of 2,245 acres in the FMU that are identified in the current GMUG Forest Plan as being suitable for timber production.

Enhancement Attributes - These are renewable values or attributes in the FMU that could be enhanced by fire. They are listed below in the order in which they are weighted for FPA. The determination to allow WFU as an appropriate management response in these areas is based on current agency fire management policy. For those areas that occur on BLM or NPS lands, WFU is allowed, when the fire can be managed within the established parameters. For those areas that occur on USFS lands, WFU is currently not a management option.

Wildlife Habitat - There are 119,652 acres in the FMU that are big game habitat areas that would be enhanced by fire. This unit provides substantial amounts of crucial winter range for mule deer and elk, especially in the Fruitaland Mesa, Black Ridge, and on the slopes of the Cimarron Ridge. Some Rocky Mountain bighorn sheep habitat is located in the inner Gunnison Gorge and in the oakbrush and mountain meadow areas near Cow Creek and Ouray. There are some populations of Gunnison's prairie dog in the lower elevation salt desert shrub areas of this unit. Other species commonly found include coyotes, black bear, mountain lion, golden eagle, red-tailed hawk, Canada geese, mallard, and other waterfowl.

Wilderness - There is a total of 34,591 acres of designated wilderness, mostly associated with the Gunnison Gorge NCA, which contains the Gunnison Gorge Wilderness. The Black Canyon Wilderness is within NPS boundaries, and there is a small portion of the West Elk Wilderness in the northeast corner of the FMU

Black Canyon – Objectives

Management Emphasis – The emphasis for management in the Black Canyon FMU include:

1. Protect communities at risk and other WUI.
2. Provide for high quality sensitive watersheds.
3. Provide high quality Gunnison sage grouse habitat.
4. Restore fire, where possible, in the remaining mountain shrub and sagebrush communities.

Suppression –

1. Suppress all fires in sensitive watershed areas.
2. In desert shrub/grasslands, prevent repeated fires on the same site (more than 2 fires on the same site in 5 years) to minimize the potential of cheatgrass establishment.
3. Until the new Forest Plan is completed (18 to 36 months), only appropriate suppression strategies will be employed on all fires. Therefore, appropriate suppression strategies will be used on all fires. Control 90% or more of all unplanned and unwanted wildfires during initial attack, with the additional goal of keeping the fire size to less than 50 acres.
4. Average desired acreage burned/year under different fire intensity levels is 6 acres at FIL 1-2, 120 acres at FIL 3-4, and 25 acres at FIL 5-6. (This is based on 151 acres/year average over 20 years).

Wildland Fire Use –

5. Natural ignitions managed for WFU in the mountain shrub can burn no more than 2,000 acres per incident.
6. Until the new Forest Plan is completed (18 to 36 months), no WFU will be employed on US Forest Service lands.

Prescribed Fire –

1. Conduct 100 % of all prescribed burns in a manner consistent with all federal, state, tribal, and local smoke management requirements.
2. Using the successional tables as a guide, convert 10% per year of Condition Class 3 acres to a Condition Class 1, where appropriate.
3. The primary goal of WUI prescribed fire treatments is to change the vegetation to minimize risk and make it easier to fight fires, so these treatments may not be designed to improve vegetation conditions.

Community Protection/Community Assistance Objectives –

1. Over next 2 years, work with CSFS and Montrose and Ouray Counties to complete the County Fire Management Plans/Community Wildfire Protection Plans with accompanying risk assessment maps, identify and prioritize communities at risk, and identify areas for fuel reduction treatments.

Black Canyon - Strategies

Suppression Constraints –

1. No mechanized equipment or retardant drops in riparian areas.
2. Unknown cultural sites may exit. Possibility of wooden cultural structures in the woodland sites. Consult with cultural advisor before using heavy equipment.
3. In desert shrub/grass-lands, no heavy equipment is allowed.

Wildland Fire Use –

2. Natural ignitions managed for WFU in the mountain shrub can burn no more than 2,000 acres per incident.
3. Prevent repeated fires on the same site (more than 2 fires on the same site in 5 years) to minimize the potential of cheatgrass establishment.

Prescribed Fire –

1. Do not violate air quality NAAQS.
2. Do not violate Colorado Department of Health Smoke Permit requirements.
3. Ensure that there are no unacceptable impacts to cultural resources or threatened and endangered species.
4. Ensure socio-political and economic impacts are considered, including WUI.
5. One 500-acre project every 3 years to achieve desired mosaic. East of the Uncompahgre River, burns will require prior cultural approval.

Non-fire fuels Treatments (include by-products utilized) –

1. Design treatments to improve and protect Gunnison sage-grouse habitat
2. Design treatments to improve and protect big game habitat on BLM lands and prepare these areas for future WFU or prescribed fire.
3. Use stewardship contracting to reduce treatment costs.
4. Mechanically treat up to 100 acres every 3 years for construction of control lines.

Post Fire Rehabilitation and/or actions needed for Restoration –

1. Consider seeding and watershed restoration in sensitive watershed areas.
2. Fires in this area will likely require reseeding to reestablish a healthy plant community.
3. Any surface disturbance requires rehab and reseeding.

Community Protection/Community Assistance –

1. Continue to work with CSFS, Montrose and Delta Counties to complete risk assessments and hazard mitigation plans for high priority WUI areas.

Black Canyon – Prescriptive Parameters for WFU on BLM Lands:

ERC < 50
1000 Hr. Fuel moisture = >8%
C area - Live fuel moisture >100%
D area - Live fuel moisture >75%

Black Canyon – Mosaics:

Table 2-5. Succession (Seral Stages) in Aspen PNV Type

	Early	Early-Mid	Late-Mid	Late
Seral Stage Descriptions*	New stand of aspen seedlings/suckers with grass and forb understory lasting 10 to 20 years	Dense pole-sized aspen, grass and forb understory, lasting 50 to 80 years	Mature aspen overstory, aspen regeneration in the understory where overstory gaps results from individual tree mortality, lasting up to 80 years	Stable multi-storied, multi-aged aspen stand, predominantly forb understory.Lasts until next stand replacing disturbance
VDDT Modeled Range of Seral Conditions	8-14%	23-26%	17-24%	23-43%
Current Seral Conditions	5%	58%	36% (Limited age data makes it difficult to differentiate between late-mid and late seral conditions.)	

*Romme et al, 2003

Table 2-6 Succession (Seral Stages) in Piñon-Juniper-Oak-Serviceberry PNV Type

	Early	Mid	Late
Seral Stage Descriptions*	Dominant shrubs re-sprout and form dense cover. Grasses and forbs occur in the understory. Persists from 50-70 years	Shrubs still dominate site but young piñon pine and juniper trees become established. Persists from 100 to 150 years.	Dominated by mature, often dense piñon and/or juniper trees, some shrubs present in the understory. Persists until next stand replacing disturbance.
VDDT Modeled Range of Seral Conditions	28-51%	39-43%	9-29%
Current Seral Conditions	3%	2%	95%

*Romme et al, 2003

Black Canyon

Description of unit: This FMU is in the very center of the planning unit, and is comprised primarily of the foothills and ridges around the Gunnison Gorge, Crawford, Paonia, and Cimarron areas that skirt the western and southern rim of the West Elk Mountains. The dominant vegetation in the northern portion of this FMU includes sagebrush/grasslands (30%), sagebrush/mountain shrub (30%), pinyon-juniper (30%), and aspen (10%). In the southern portion of the FMU, the dominant vegetation is made up of the following community types: sagebrush/grasslands (10%), sagebrush/mountain shrub (20%), pinyon-juniper (60%), and other (10%).
Likely Presuppression Fire Regime: North of the Gunnison Gorge up to the Paonia area, a high percentage of the area was probably in early seral stages with small patch sizes created by low intensity fires. South and east of the Gunnison Gorge, a higher percentage of the area was probably in late seral stages, with larger patch sizes created by more high intensity fires.
Management Emphasis: Develop a landscape pattern that will be largely sustained by naturally occurring, mixed severity type fires that burn like the earlier fire regime, and thereby achieve diverse, productive, and desired plant communities with high vegetative basal area cover in the uplands. Manage riparian areas for desired plant communities which contribute to stability and

productivity. **Desired Mosaic**: Area north of Gunnison Gorge up to Paonia area; the desired mosaic is a high percent of the area in grass and shrub dominated types, occurring in small patches with scattered patches of woodland. South and east of the Gunnison gorge; the desired mosaic is dominantly woodland, with occasional large patches of shrub-grass types.				
patch size	**early** mainly grass and forbs	**early-mid** grass and shrub	**late-mid** dense young-mature pinyon-juniper, remnant sage, some deciduous shrubs	**late/old growth** mature pinyon-juniper with small percent of deciduous shrubs
% of unit	20%	30%	20% MATRIX on east side	30% MATRIX on east side
small 0-10 acres	50%	50%	50% west side	50% west side
medium 10-50ac.	30%	30%	30% west side	30% west side
large >50 acres	20%	20%	20% west side	20% west side

Gunnison Basin FMU – Description

Location - The FMU is the whole eastern half of the planning unit under 9,200 ft. in elevation, and contains all the valley bottoms of the upper Gunnison Basin, including the Cochetopa Creek and Ohio Creek drainages (see map XX). There is a total of 682,258 acres within the boundary of the FMU. It consists of 296,616 acres of BLM land (43%), 34,113 acres of NPS land (5%), 91,794 acres of USFS land (13%), 11,490 acres of CDOW land (2%), 5,593 acres of State land (1%), 152 acres of City of Gunnison land (<.001%), and 242,500 acres of private land (36%).

Characteristics – This FMU comprises the lower elevation lands adjacent to the higher order streams and rivers in the Upper Gunnison Basin. The topography is varied and includes gently sloping mesas, steep-sided canyons, some mountainous terrain, and undulating foothills. The average land slope of the unit is 19%, with no dominant aspect. The elevation ranges from 7,000 at the Gunnison River on the western FMU boundary to over 11,000 on the highest mountain peaks. The mean elevation is 9,750 feet.

Annual precipitation varies from 10 inches on the lower elevation sites and Cochetopa Park, to more than 30 inches at the higher elevations. The areas of low precipitation in this unit are largely a result of a rain shadow effect created by the high elevation terrain to the west. From 40 to 60% of the annual precipitation falls as snow during the colder months, depending on elevation. Most of the precipitation outside of the mid-to late summer season occurs from frontal type storm systems, which are typically regional in size. Precipitation from frontal events occurs over a relatively long duration but at low intensity rates. In contrast, summer precipitation is commonly associated with the southwest monsoon air flow pattern, which can produce localized, short duration, and intense precipitation events.

Storms are often intensified by the high topographic relief, which can result in rapid orographic lifting of moist air masses. Several of the tributary drainages to Tomichi Creek east of Gunnison commonly experience flooding from this effect.

Invasion of this FMU with cheat grass is increasing. High risk areas for invasion are sagebrush sites and disturbed soils, such as burned areas, below 8,500 feet. Cheat grass, being an annual, invasive plant serves as poor and unreliable watershed cover/protection. Consequently, the hydrologic response of cheatgrass-invaded watersheds is often higher flood peaks and sediment yields.

The major drainages receiving runoff from this FMU are the Gunnison, Tomichi, East, Cochetopa, and Lake Fork of the Gunnison Rivers. Most of the perennially flowing drainages in this FMU support a cold water fishery, and are classified by the Colorado State Water Quality Control Commission as "Aquatic Life Cold 1", defined in part, as waters capable of supporting a wide variety of cold water biota. Additionally, most of the stream segments in this FMU are classified by the state as suitable or intended to become suitable for potable water supplies. The entire drainage area in this FMU serves as a source water area for domestic water diversions both within the FMU and points downstream.

The only stream segment in the FMU not meeting water quality standards is Coal Creek and its tributaries from the Crested Butte water supply intake to the confluence with the Slate River, which are on the Colorado State 2002 303(d) for excessive zinc concentrations.

Soils in this area are generally characterized by deep and moderately deep, well drained channery loams and gravelly sandy loams on hills, mountains, ridges and benches. The soils have formed with influence from many geologic situations, from old Precambrian granites, some metamorphic schists and gneisses, to marine shales.

The area between Ohio Creek and Slate River is underlain by Mancos shale. This area has fine textured soils of clay loams and clays. This area has many landslide features and large scale disturbances could activate slope movements. The area around Flat Top is actually a basalt cap situation very similar to Grand Mesa. This area has large basalt stones and boulders scattered on the soil surface and throughout the soil profile.

This area is dominated by big sagebrush with black sagebrush dominating in shallow clay soils. In addition, many riparian areas are now dominated by big sagebrush. Areas with greater moisture accumulation due to snowpack have Utah serviceberry and a variety of other shrubs. This foothill semi-desert shrub zone is largely non-forested, although there are islands of Douglas-fir and/or aspen on some north and east facing slopes. The fringes of some more contiguous timber stands are also captured in the northern portion of this FMU.

This area is an intermix of two large ecoregions. It is the southern extent of lodgepole pine coming down from the Southern Rockies, and the northern extent of Limber pine coming up from New Mexico (pinus flexilis).

The dominant vegetation in this FMU includes grass/sagebrush (83%), brush (5%), and Douglas-fir/lodgepole (12%). Little sagebrush remains on the private lands in the valley bottom, as much of this land has been converted to hay fields or housing developments. On the side slopes, big sagebrush and Wyoming big sagebrush dominates at the lower elevations, in swales with deeper soils. Big sagebrush communities usually include antelope bitterbrush. Many riparian areas have been degraded from human use and are now also dominated by big sagebrush. Black sagebrush dominates the ridges and steeper slopes where there are shallow clay soils. Areas with greater moisture accumulation due to snow pack have Utah serviceberry and a variety of other shrubs.

Recent Fire History - Lightning caused fires account for 46% of all unplanned ignitions in the Gunnison FMU. The remainder are human caused. Predominant fire size classes are A-B (.01 – 9.9 acres), with occasional C through F (10 – 4.999 acres) size classes. In the period between 1982 and 2002, there were a total of XX fires for XX acres. Of these fires, XX were

lightning caused, and XX were human caused, mostly due to campfires and debris/field burning. The average is XX fires per year for XX acres per year. Most fires occur during the months of April, May, June, July, and August.

Table XX. Historical Fire Data for the Gunnison FMU from 1982-2002

Period 1982-2002	Total Starts	Total Acres	% of Total Fire Starts By Cause	
			Lightning	Human Caused
NPS	**54**	**1,546**	**46%**	**54%**
BLM				
USFS				
TOTAL				

***Historic Fire Occurrence* -** Prior to European settlement, the following are the estimated return interval and intensity levels for the major community types within the FMU:

- *Sagebrush* - 40 to 80 year return interval with stand replacement and some mixed severity.
- *Douglas-fir* - 60 to 100 year fire return interval with surface fire and some mixed severity fire on wetter, more productive sites.
- *Low elevation aspen* on the south portion of the FMU - 8 to 20 year return interval, where surface fire maintained aspen that had a heavy fuel loading of grass such as Thurber fescue (*Festuca therberi*) dominate.

Historically, fires (both natural and human ignited) in this FMU were probably more frequent and larger, creating a mosaic of seral stages in the sagebrush types. Fires in this area probably started in small isolated timber stands in the lowlands or larger timber stands in the highlands. These fires would then make runs into the adjacent sagebrush dominated communities under dry and windy conditions. These fires would be higher intensity stand replacing events that occurred every 40 to 60 years. Riparian areas probably burned with similar frequency as the surrounding landscape but may have had greater intensity due to the higher productivity and biomass accumulation of these areas. As these fires burned through isolated timber stands they probably triggered the regeneration of aspen and limited the spread of Douglas-fir. Natural fire breaks and weather would have limited the size and distribution of these fires. The resulting mosaic may have been one of greater landscape diversity with large blocks of the landscape at various successional stages including open grasslands and early to late successional stages of shrub communities.

The FMU was inhabited by the Ute Tribe, who used the area for seasonal hunting and gathering. The Native Americans in the Gunnison Basin used fire as a tool for survival; however, with the permanent removal of the Native American in 1881, the frequency and coverage of fire was greatly reduced. European settlement began in the 1870's with the discovery of gold, silver, and coal. With the arrival of the railroad, the Douglas-fir in the southern half of this FMU was heavily logged for railroad ties, bridge timbers, telephone poles, mine props, and lumber. There was a surge of acres burned in the 1880's through the early 1900's associated with the construction of railroads, mining activity, timber harvest, and sheep grazing. Since the 1930's, there have been fewer fires in the Gunnison Basin than before this period of development.

During the past century, the sagebrush types in the Gunnison Basin have been influenced by management practices, including livestock grazing, past spraying to reduce shrub cover and increase grass and forb production, reseeding, fire suppression, and most recently, prescribed burning. These activities have contributed to a change in the composition and loading of the sagebrush and the associated grasses and forbs. In addition, developments such as irrigation ditches, roads, utility corridors, and fences have contributed to fragmentation of fuel coverages. Currently, there are sixteen grazing allotments within the FMU. In combination with fire suppression, these post-settlement human uses have effectively excluded fire from the lower Gunnison Basin.

Modeled Historic Range of Seral Conditions – Tables 3-5 and 3-6 at the end of this section depict the seral stages and timeline for the major fuel types in this FMU. The stable plant community that establishes in the absence of any disturbances (e.g. fire, insect/pathogen mortality, windthrow, drought, harvest) is called the climax plant community. The area where a given climax plant community can grow is classified as a Potential Natural Vegetation (PNV) type, and is named for the climax plant community. Historically, for any given PNV type, natural disturbances (e.g. fires, insect outbreaks) occurred at characteristic intervals and intensities, called regimes. When a disturbance was intense enough to change the existing plant community, the remaining vegetation followed a natural progression, or succession, of plant communities that changed over time. If no further disturbances occurred, an area eventually returned to the climax plant community. The Vegetation Dynamics Development Tool (VDDT) (Beukema et. al. 2003) was used to model the expected range of seral conditions that would have existed under historic disturbance regimes for forest, woodland and shrub PNV types on USFS lands. The table also provides a comparison of this VDDT modeled historic range of seral conditions to the current seral conditions to identify areas of significant departure.

The Fire Management Situation

1) *Weather patterns influencing fire behavior and historic weather analysis.* Winters are cold in the Gunnison FMU (-60 F at Taylor Park Reservoir), and inversions are common. By the first part of May, most of the valley bottoms and side slopes are snow free and seasonal drying begins. The past several years have been quite dry with less than normal snow fall, and peak burning was reached by late May in some years. Summers are mild, with monsoonal rains beginning in early July and lasting until late August.

   Fire activity in June is generally light until the last week of June. Activity increases through the middle of July with lightning fires at the beginning of the monsoon season. Depending on rainfall amounts, lightning fires will begin to decrease by early August, then pick up again as the monsoon flow weakens in late August. September through mid-October is quite often dry, but there is little lightning activity. Dry cold fronts in September through October can produce extreme fire conditions, but these are usually short-lived. A season ending event (snow) usually occurs late October to mid-November.
   In general, the weather events are drawn up the Gunnison valley moving from west to east. The prevailing winds are from the west and southwest. Upslope, upvalley winds are also a dominant factor in fire behavior. The Gunnison FMU has few unusual weather events. However, wind is generally a significant control factor on larger fires.
2) *Fire Season determination.* The ERC curves for the Gunnison Basin FMU usually peak in the first two weeks of July and then there is a smaller peak in the fall associated with the drying from wind events. Live fuel moistures are lowest in late May or early June then peak out in late July. Large dead fuels begin drying out after snow melt, have some recovery during the monsoon season, and are lowest in mid-October just before snowfall. Fine fuels begin green-up in mid-May and stay green in a normal year until early September when a frost killing event occurs. Fire season generally begins in mid-May and ends in late October
3) *Fuel conditions in the FMU likely to influence fire behavior.* The Fire Behavior Fuel Models in the Gunnison FMU are as follows:

   - Fuel Model 2 (Grass/Sage) 83%

- Fuel Model 5 (Brush) 05%
- Fuel Model 8 (Ponderosa Pine/Douglas-fir) 12%

There is no question that the lack of fire in the last 100-120 years has altered fuel characteristics in this FMU. There is the potential for large, stand replacing fires in nearly all fuel types in the future, possibly much larger than fires that burned prior to European settlement.

4) *Fire regime alteration.* Most community types have seen an alteration in condition class within the Gunnison FMU. Lodgepole pine below 10,000 feet, aspen, and sagebrush have a high risk of losing key plant community components. Communities at moderate risk are grasslands and riparian areas.

5) *Control problems and dominant topographic features.* Most of the control problems in this FMU will be associated with steep slopes and/or canyons and wind events.

6) *Other elements of the fire environment affecting management.* The Gunnison FMU contains the following attributes:

***Protection Attributes*:** These are either renewable or non-renewable values or attributes in the FMU that could be damaged or destroyed by fire. They are listed below in the order in which they are weighted for FPA.

Wildland Urban Interface **–** There is a total of 261,978 acres of WUI in this FMU, which includes 48 CARs. Continued development is anticipated throughout this area. There are multiple federal facilities and developed recreation sites associated with the NPS Elk Creek Visitor Center. In addition, there are six (6) communication sites and XX major utility lines within the FMU. To locate the Federal Register communities at risk see the following website**: http://www.fireplan.gov/communities_at_risk.cfm.**

High Public Use Areas – There is a total of 3,225 acres of high public use areas in the FMU, mostly associated with trailheads and undeveloped campgrounds in Curecanti Recreation Area.

Sensitive Watersheds – There is a total of 14,678 acres in the FMU that have been identified as sensitive watershed areas.

Important Habitat – There is a total of 383,998 in the FMU that have been identified as important habitat. Special status species within this area include the Gunnison sage grouse, a federal candidate for listing under the Endangered Species Act, and the Colorado cutthroat trout, a BLM sensitive species. This FMU captures virtually all of the Gunnison sage grouse overall range in the Gunnison Basin. Colorado cutthroat trout can be found in West Antelope and East Beaver Creeks.

Cultural Areas - There are 32 cultural sites that may be affected by fire within the FMU for a total of 64 acres. There is also a high probably of cultural sites on public lands all along the southern and western borders of the FMU.

Special Management Areas - There are 31,977 acres in the FMU that have been identified as special management areas because of concerns with noxious weeds.

Suitable Timber - There is a total of 22,035 acres in the FMU that are identified in the current GMUG Forest Plan as being suitable for timber production.

***Enhancement Attributes* -** These are renewable values or attributes in the FMU that could be enhanced by fire. They are listed below in the order in which they are weighted for FPA. The determination to allow WFU as an appropriate management response in these areas is based on current agency fire management policy. For those areas that occur on BLM or NPS lands,

WFU is allowed, when the fire can be managed within the established parameters. For those areas that occur on USFS lands, WFU is currently not a management option.

Wildlife Habitat - There is a total of 283,128 acres in the FMU that are big game habitat areas that would be enhanced by fire.

Wilderness - There is a total of 2,267 acres of the West Elk Wilderness in this FMU.

Gunnison – Objectives

Management Emphasis – The emphasis for management in the Gunnison FMU includes:

1. Protect communities at risk.
2. Provide for high quality Gunnison sage grouse habitat.
3. Restore fire, where possible, in the remaining sagebrush areas.
4. Slow or reverse the invasion of cheatgrass.

Suppression –

1. Suppress all fires in critical sage-grouse winter range.
2. Until the new Forest Plan is completed (18 to 36 months), the only appropriate strategy is suppression on USFS lands. Control 90% or more of all unplanned unwanted wildfires during initial attack, with the additional goal of keeping the fire size to less than 30 acres.

Wildland Fire Use –

1. Natural ignitions on BLM and NPS lands managed for WFU can burn no more than 160 acres per square mile per incident, not to exceed a total of 3 incidents per year.
2. Recurrence on WFU fires or prescribed fire in previously burned area in big sagebrush community types should be limited to 20 year intervals.

Prescribed Fire –

1. Conduct 100% of all prescribed burns in a manner consistent withal federal, tribal, state, and local smoke management requirements.
2. Using the successional tables as a guide, convert 10% per year of Condition Class 3 acres to a Condition Class 1, where appropriate.
3. The goal of WUI prescribed fire treatments is to change the vegetation to minimize risk and make it easier to fight fires. These treatments may not be designed to improve vegetation conditions.

Community Protection/Community Assistance Objectives –

1. Over the next 2 years, work with CSFS and Gunnison County to complete County Fire Management Plans/Community Wildfire Protection Plans, with accompanying risk assessment maps, and identify areas for fuel reduction treatments.
2. Of the planned prescribed fire and mechanical treatments within the FMU, 60% of the acres treated will be within WUI.
3. Implement WUI projects described under the Indian Creek, Gold Basin, and West Antelope plans.

Gunnison - Strategies

Suppression Constraints –

1. Less aggressive control actions can be considered in this FMU if prescriptive criteria are met and resource management objectives are within limits.
2. No mechanized equipment or retardant drops in riparian areas.

Wildland Fire Use –

1. Prescriptions for natural ignitions in big sagebrush community types should be managed for low intensity burns (flame lengths less than 12-16 feet).

Prescribed Fire –

2. Conduct prescribed fires in sage-grouse habitat in compliance with the Gunnison Sage Grouse Conservation Plan.
3. Implement prescribed fire as described in the West Antelope, Gold Basin and Indian Creek and Douglas-fir Thinning and Aspen Regeneration Plans. Under these plans up to 300 acres of prescribed fire may be implemented annually.
4. Do not violate air quality NAAQS.
5. Do not violate Colorado Department of Health Smoke Permit requirements.
6. Ensure that there are no unacceptable impacts to cultural resources or threatened and endangered species.
7. Ensure socio-political and economic impacts are considered, including WUI.

Non-fire fuels Treatments (include by-products utilized) –

1. Emphasize brush mowing and understory thinning treatments in small isolated ponderosa pine and Douglas-fir stands on north and east-facing slopes.
2. Design treatments to improve and protect habitat for sage-grouse and big game winter range on BLM lands and to prepare these areas for future WFU.
3. Use stewardship contracting to reduce treatment costs.
4. Implement mechanical treatments as described in the West Antelope, Gold Basin and Indian Creek and Douglas-fir Thinning and Aspen Regeneration Plans. Under these plans 200 acres of mechanical treatments may be implemented annually.

Post Fire Rehabilitation and/or actions needed for Restoration –

1. Avoid seeding sagebrush areas that previously had a strong to moderate native plant understory to avoid the introduction of invasive plant species.
2. Consider seeding and contour-falling in isolated Douglas-fir stands after stand replacing fires.

Community Protection/Community Assistance –

1. Continue to work with CSFS and Gunnison County to complete risk assessments and hazard mitigation plans for high priority WUI areas.

Priority Rankings:

- Suppression: High
- Prevention: High
- Mitigation: High

Prescriptive Criteria for WFU on BLM lands:

Treated:

- MMA is within or at edge of treated area
- Up to 30% of area may be untreated
- Area not in precipitation deficit
- Gunnison Basin Wide ERC < 70
- 1000 hr. Fuel moisture >8%
- Live fuel moisture >105%
- Probability of Ignition <80%
- Spotting Distance <.3 miles

Untreated:

- Area not in precipitation deficit
- Gunnison Basin Wide ERC < 50
- 1000 hr. Fuel moisture >12%
- Live fuel moisture >120%
- Probability of Ignition <50%
- Spotting Distance <.1 miles

Gunnison Basin – Mosaics:

Table XX. Succession (Seral Stages) in Douglas-fir PNV Type

Early	Early-Mid	Late-Mid		Late
Seral Stage Descriptions*	New stand of aspen and/or lodgepole pine seedlings/suckers with grass and forb understory lasting 30-50 years	Dense pole-sized aspen and/or lodgepole pine, grass and forb understory, lasting up to 100 years	Mature aspen/lodgepole pine overstory with Douglas-fir trees growing in the understory. May take 100 to 200 years for Douglas-fir to dominate stand.	Mature Douglas-fir, scattered mature aspen/lodgepole pine in overstory. New trees can become established in gaps in canopy. Lasts until next stand replacing disturbance
VDDT Modeled Range of Seral Conditions	14-20%	19-20%	15-17%	58%
Current Seral Conditions	2%	63%	35% (Limited age data makes it difficult to differentiate between late-mid and late seral conditions.)	

*Komarkova et al, 1988, Johnston et al 2001

Table 2-6 Succession (Seral Stages) in Piñon-Juniper-Oak-Serviceberry PNV Type

	Early	Mid	Late
Seral Stage Descriptions*	Dominant shrubs re-sprout and form dense cover. Grasses and forbs occur in the understory. Persists from 50-70 years	Shrubs still dominate site but young piñon pine and juniper trees become established. Persists from 100 to 150 years.	Dominated by mature, often dense piñon and/or juniper trees, some shrubs present in the understory. Persists until next stand replacing disturbance.
VDDT Modeled Range of Seral Conditions	28-51%	39-43%	9-29%
Current Seral Conditions	3%	2%	95%

*Romme et al, 2003

Table XX. Succession (Seral Stages) in Sagebrush PNV Type

	Early	Early-Mid	Mid	Late	Old-Growth
Seral Stage Description	Grass – Lasting 0-10 years	Shrub and Forb – Lasting 10-50 years	Shrub and Forb – Lasting 50-100 years	Tree, shrub and grass – Lasting 150 – 350 years	Tree infilling – Lasting 350 + years
VDDT Modeled Range of Seral Conditions	5%	30%	50%	20%	
Small = 0-5 acres	70	25	25	M	M
Med = 51-500 acres	20	50	50	M	M
Large = 501+ acres	20	50	50	M	M
Current Seral Conditions	5%	10%	25%	25%	25%

*Komarkova et al, 1988, Johnston et al 2001

Appendix J - Finding of No Significant Impact

FINDING OF NO SIGNIFICANT IMPACT

Fire Management Plan

Black Canyon of the Gunnison National Park and Curecanti National Recreation Area

Montrose and Gunnison Counties, Colorado

SUMMARY

The National Park Service (NPS) at Black Canyon of the Gunnison National Park (BLCA) and Curecanti National Recreation Area (CURE) will implement "Alternative B (Preferred): Natural Landscape Units" as analyzed in the "Fire Management Plan; Environmental Assessment/Assessment of Effect; December, 2004." Public review of the Environmental Assessment was completed in January 2005 and review of the Biological Assessment prepared to further address impacts on threatened and endangered species was completed by the U.S. Fish and Wildlife Service in June 2006.

PURPOSE AND NEED

BLCA and CURE are administered by the NPS and are subject to agency policies and guidelines that direct wildland fire management. NPS *Director's Order #18: Wildland Fire Management* (DO-18) states, "Each park with vegetation capable of burning will prepare a Fire Management Plan (FMP) to guide fire management that is responsive to the park's natural and cultural resource objectives and to safety considerations for Park visitors, employees, and developed facilities." As part of the environmental analysis related to the development of the FMP, an Environmental Assessment/Assessment of Effect (referred to as the "EA") and Biological Assessment (BA) was prepared. The FMP and associated EA and BA will establish the future management direction for fire related activities at BLCA and CURE.

The FMP will not only protect resources but will to the most practicable extent reintroduce fire as an ecological process on the landscape. During the FMP planning process, the current fire management situation was evaluated, and a cooperative and collaborative fire management scenario was developed that is both beneficial as well as adaptive to the changing needs and conditions of the parks and adjacent lands.

PROPOSED ACTION
ALTERNATIVE B (PREFERRED):

NATURAL LANDSCAPE UNITS

Under this alternative, fire management within each fire management unit will be based on natural landscape conditions, rather than agency or other land management or ownership boundaries. Fire and fire management prescriptions will be allowed to cross the BLCA and CURE boundaries with U.S. Forest Service (USFS) and Bureau of Land Management (BLM) lands when agreed by both parties, as well as some designated adjacent private lands, and, whenever possible, the NPS, BLM, and USFS will coordinate actions. Various prescribed fire and fuels management activities will also be permitted in designated areas within the parks, including manual/mechanical treatment and prescribed fire to reduce fuel loading in identified management units. In addition, wildland fire use (WFU) will be permitted in units identified for wildland fire. This alternative was developed to allow for flexibility in selecting the types of fire-related activities used at BLCA and CURE, in addition to meeting the objective of developing an interagency plan that addresses fire management on all NPS, BLM, USFS, Bureau of Reclamation (BOR), and Colorado Department of Wildlife (CDOW) lands. The two main components of this alternative include the following:

(15) Naturally ignited fires will receive an appropriate management response, including full suppression, confine/contain, or WFU that will be detailed in the FMP for BLCA and CURE. Local fire and drought conditions, current weather, resources and funding, public safety, and smoke conditions would be considered in deciding whether or not to allow WFU. *All* unplanned human-caused fires would be suppressed.

(16) Fuels reduction methods will be used as appropriate throughout the parks, including use of prescribed fire and manual/mechanical thinning projects.

Fuels management treatments will include, but not be limited to, manual/mechanical vegetation cutting and removal from sensitive areas, pile burning, and selective, low-intensity prescribed fire.

Under this alternative, manual/mechanical thinning, prescribed fire, and WFU will be used in the following areas and situations:

(17) Manual/mechanical fuel reduction (thinning) – This prescription will be used in areas that have heavy fuels accumulation and cultural resources and/or other values that could be adversely affected by prescribed burns or wildland fire. This prescription will include hand clearing of brush, and hand cutting or limbing of selected trees with chainsaws. Vegetation will be disposed of in select areas by chipping with a mechanical chipper, scattering of smaller brush and trees on site away from sensitive resources, pile burning of slash, and/or hauling from the site for disposal outside the parks. Manual thinning would be prescribed in the following areas:

- High Point pinyon-juniper woodlands – several mature trees in the High Point area have become infested with bark beetles and mortality of many trees has occurred. These standing dead and dying trees create unusually heavy fuel loads and manual thinning in these areas could be appropriate.
- In or around sites where important archaeological resources have been identified.
- In or around park facilities such as South Rim Visitor Center, Housing, Office space and Maintenance area, and North Rim Ranger Station.

(18) Selective prescribed fire – This prescription will be used only in areas of the park containing fewer values at risk and lower fuel loading, or in areas where satisfactory fuels treatments have already been completed. In all cases, a site-specific prescribed fire plan will be completed, and coordination with the BLM, USFS, BOR, and Western Area Power Administration personnel will occur.

(19) Wildland fire use for resource benefit – WFU will be considered in appropriate management units, assuming that park values at risk are adequately protected from damage from the fire or fire management activities. These activities will be in coordination with and approved by the NPS.

(20) 6-Year Fuels Plan – This plan lists potential manual/mechanical thinning and prescribed fire projects over the next 6 years (EA, Appendix A).

Mitigating measures will be:

In conducting suppression, WFU, prescribed fire and thinning activities under Alternative B, these measures would be followed (in addition to those listed under Alternative A) to provide for protection of resources and human health.

Natural Resources

- Use necessary and appropriate erosion control measures to prevent erosion of disturbed soils.
- Keep fire lines to a minimum width necessary to allow burnout of backfiring, or creation of a safe black line.
- Whenever possible, use natural barriers to avoid unnecessary fire line construction.
- If adequate water and pumps are available, use wet lines instead of hand line construction.
- Rehabilitate and restore all fire lines, camps, and other disturbances.
- Follow smoke management reporting procedures for burning in Colorado for all prescribed fire operations and WFU.
- Employ MIST when firefighter safety is not compromised.
- Do not allow use of heavy equipment unless approved by the Superintendent.
- Use refueling stations with ground protection for refueling firefighting equipment to minimize chances of gasoline spills, and do not conduct equipment maintenance or fueling in wetlands.
- Do not use retardant unless approved by the Superintendent.

- Do not move slash from upland sites into a wetland or place slash in open water.
- Implement any fuels management programs outside the breeding seasons of threatened, endangered or sensitive species. Where the presence of any listed endangered or threatened species is suspected, the NPS Resource Management Specialist would be consulted as to the need for surveys to determine species occupancy. If species are found, steps would be taken to reduce impacts, including avoidance of breeding or nesting seasons. USFWS would be contacted to ensure that appropriate and effective mitigation is provided.

Cultural Resources

- Brief work crews about the need to protect any cultural resources encountered, and instruct them regarding the illegality of collecting artifacts on federal lands. This would include instructions for notifying appropriate personnel if previously unrecorded cultural resources were discovered.
- Prior to prescribed burns or mechanical thinning, conduct an inventory of any previously unsurveyed areas using an archaeologist who meets the Secretary of the Interior's standards.
- Follow protection and mitigation measures for known cultural resource sites, especially those vulnerable to fire and situated in or near the project area, before a prescribed fire project is initiated.
- Use or have available an archaeologist as a resource advisor in the implementation of all projects where cultural resources are involved.
- Do not use retardant unless approved by the Superintendent.
- Cut heavy fuels (stumps) that could not be removed from cultural sites flush with the ground.
- Define work limits in the vicinity of important cultural resources.
- Monitor fire management activities, and halt work, when possible, if previously unknown resources are located.
- Protect and record newly discovered resources.
- Identify suitable slash disposal areas lacking cultural resources.
- Avoid ground-disturbing activities in areas containing cultural sites.
- Use non-sensitive routes for vehicle access, and conduct cultural resources work in consultation with the Colorado State Historical Preservation Office (SHPO) on a project-by-project level.
- Conduct post-fire cultural resources surveys to identify and evaluate newly discovered sites and/or document damage to known sites, as funding allows.
- Develop a plan to ensure stabilization or information retrieval from cultural resources in burned areas.

Socioeconomics Resources

- Consider safety of personnel and the public as the highest priority for all fire management activities.

- Do not initiate any fire management operations until all personnel involved receive a safety briefing describing known hazards and mitigating actions, current fire season conditions, and current and predicted fire weather and behavior.
- Notify park neighbors, park visitors, and local residents of all planned and unplanned fire management activities that have the potential to impact them.

ALTERNATIVES CONSIDERED BUT NOT SELECTED

Alternative A, the No Action alternative, was analyzed in the EA. This alternative was not selected because, to varying degrees, it was not as effective as the preferred alternative at protecting cultural resources in the long-term; maintaining long-term stability and diversity of natural resources; discouraging the introduction and proliferation of invasive non-native species; and reducing the level of hazard fuels. In addition, this alternative did not adequately meet the Purpose and Need and objectives for the project.

Alternative C, the Park Boundary Alternative, is similar to the preferred alternative except that fire management activities would be within BLCA and CURE boundaries only. No fire management activities would be permitted to extend into or out of adjacent public or private lands. This alternative was not selected because, to varying degrees, it was not as effective as the preferred alternative at protecting cultural resources in the long-term; maintaining long-term stability and diversity of natural resources; discouraging the introduction and proliferation of invasive non-native species; and reducing the level of hazard fuels. In addition, this alternative did not adequately meet the Purpose and Need and objectives for the project, particularly the objective of interagency coordination between the NPS and neighboring public and private landowners.

Three additional alternatives were identified in the scoping process but were not analyzed in the EA. These alternatives are listed below; they were dismissed from further consideration because they either did not meet the Purpose and Need for the project; were not feasible; resulted in substantial environmental or health and safety impacts; or did not meet the objectives for the project, particularly the objective of interagency coordination between the NPS and the BLM.

Alternative D – No Management Alternative

This alternative would not permit any fire management activities within BLCA and CURE boundaries, including fuels reduction, WFU, prescribed fires, or any other fire-related management techniques. Wildland fires would not be suppressed, but allowed to burn until they extinguish naturally or approach the park boundaries, where they would be suppressed before extending onto adjacent public or private lands. This alternative does not meet the park objectives as outlined in the GMP, nor does it provide for public and firefighter safety.

Alternative E – Park Boundary Mechanical Treatment Alternative

This is the same as Alternative C, except that the only type of fire-management activity allowed would be manual or mechanical treatment of vegetation to reduce fuel. No prescribed fires would be permitted and all wildland fires would be aggressively suppressed. This activity would only be allowed within BLCA and CURE boundaries and not allowed to cross into or out of adjacent public or private lands. This alternative does not meet the park objectives as outlined in the GMP. Aggressive fire suppression tactics increase the risk to firefighters. This alternative is also in contradiction to mandates contained within the National Fire Plan that encourage interagency cooperation.

Alternative F – Use of Herbicidal Treatment for Fuels Reduction Alternative

This is the same as Alternative E, except that the only type of fire management activity allowed would be the application of herbicides to reduce the growth of vegetation that would eventually accumulate as fuel. This activity would only be allowed within BLCA and CURE boundaries and not allowed to cross into or out of adjacent public or private lands. This alternative does not meet the park objectives as outlined in the GMP, specifically Goal #4, the preservation of natural resources.

ENVIRONMENTALLY PREFERRED ALTERNATIVE

The environmentally preferred alternative is determined by applying the criteria suggested in the National Environmental Policy Act of 1969 (NEPA), which is guided by the Council on Environmental Quality (CEQ). The CEQ provides direction that "the environmentally preferable alternative is the alternative that will promote the national environmental policy as expressed in NEPA Section 101:

- fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;
- assure for all generations safe, healthful, productive, and esthetically and culturally pleasing surroundings;
- attain the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences;
- preserve important historic, cultural and natural aspects of our national heritage and maintain, wherever possible, an environment that supports diversity and variety of individual choice;
- achieve a balance between population and resource use that will permit high standards of living and a wide sharing of life's amenities; and
- enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

Alternative A represents the current fire management direction for BLCA and CURE. It is based on a policy of suppression of all fires, and limited fuels reduction is performed only within the boundaries of BLCA and CURE. Because Alternative A does not include a broader approach to fuel reduction, and therefore does not provide for protection against catastrophic wildland fire, provisions 1, 2, 3, and 4 of the NEPA goals are not fully realized. Although Alternative A would provide some degree of protection of cultural resources, particularly historic and park structures, this alternative would not result in the same continued level of protection over time. Also, catastrophic wildland fire that would be more likely under Alternative A would endanger the quality of the renewable resources of BLCA and CURE (provision 6).

The environmentally preferable alternative is Alternative B, because this alternative surpasses Alternative A in realizing the full range of national environmental policy goals as stated in §101 of the NEPA, and surpasses Alternative C because of the cross-boundary, broader-scale, more multi-jurisdictional approach . Although Alternative A may achieve greater immediate levels of protection for cultural resources, natural resources, or visitor experiences, Alternative B (1) provides a high level of protection of natural and cultural resources for the long-term; (2) maintains an environment that supports diversity and variety of individual choice; and (3) integrates resource protection with an appropriate range of visitor uses. It fulfills the responsibility of each generation to protect the environment for future generations (provision 1) and the actions included in Alternative B help to better assure safe and productive surroundings (provision 2) and the quality of renewable resources (provision 6).

WHY THE PREFERRED ALTERNATIVE WILL NOT HAVE A SIGNIFICANT EFFECT ON THE HUMAN ENVIRONMENT

As defined in 40 Code of Federal Regulations (CFR) §1508.27, significance is determined by examining the following criteria:

Impacts that may be both beneficial and adverse:

The proposed action would have negligible to minor, short-term adverse impacts on soils, geology, paleontological, and cultural resources, floodplains and wetlands, unique or important vegetation communities, promotion/introduction of non-native species, and socioeconomics, and minor to moderate short-term adverse impacts to air and water quality, recreational resources and visitor experiences, wilderness and soundscapes, energy resources, land use, wildlife species of special concern, and threatened, endangered, or candidate wildlife or plant species.

In the long-term, however, one could anticipate direct or indirect beneficial effects to most all of the impact topics listed above. Soil resources would benefit from WFU and prescribed fire by the reestablishment of a fire-driven nutrient cycle that improves soil chemistry and stability in the long-term. Proper timing of prescribed fire applied will generate some smoke and particulate matter in the short-term, but this fuel reduction effort will help decrease the chance of major or extensive wildland fires that tend to have far more adverse impacts on air quality, recreational resources, and visitor experiences, and socioeconomics. To further minimize impacts on recreation and

visitor experiences, activities will be conducted during off-peak use times under appropriate climatic conditions.

Long-term beneficial effects on vegetation, including unique or important vegetation communities, are expected with the re-introduction of fire to park ecosystems. For many vegetation communities, fire stimulates regeneration, increases species diversity, and can be used to protect mature pinyon-juniper and ponderosa pine forests by thinning understory ladder fuels. Wilderness would benefit in the short and long-term, especially from WFU fires that will allow fire to play its ecological role in driving successional processes in these ecosystems. The long-term benefits to vegetation communities, would, in turn benefit land uses such as grazing in other park areas by increasing the quantity and quality of available forage. These benefits may be passed on to wildlife in the long-term by improving forage for grazing ungulates in particular, and creating a mosaic of habitats for many wildlife species.

Other long-term benefits are anticipated by the proposed action. These beneficial effects could extend to energy resources and other land uses such as private housing development near park boundaries. Fuel reduction activities under powerlines and around infrastructure and houses would help protect these resources from wildland fire damage.

Degree of effect on public health or safety:
Suppression of wildland fire is inherently dangerous. Strict adherence to safety guidelines for fire fighting, equipment and procedures would minimize accidents. All prescribed fire operations would be conducted by red-carded firefighters. Impacts to the public include smoke inhalation, and in severe cases consumption of dwellings and loss of life. Areas of the park may be closed to ensure visitor and employee safety during prescribed fires.

Under the proposed action, over time there would be less chance of extreme or widespread wildfires in the area due to the reduction of fuels in the parks and the use of prescribed fire. This would result in a long-term, indirect, beneficial impact to local and regional health and safety, since the possibility of more severe health and safety impacts due to unplanned fire suppression efforts would be substantially reduced.

The actions involved with the use of prescribed fire and manual fuel reduction would involve more controlled conditions and pre-planning for the protection of health and safety, as well as appropriate notification and permitting prior to taking action. Also, prescribed fires and fuel reduction activities would be planned for seasons of low visitor use whenever possible. All prescribed fires will have an updated approved prescribed fire plan that contains measures to provide for public and firefighter safety. In addition, prescribed fire notices in local newspapers, brochures for the public and phone calls to adjacent landowners will advise them of burn times and precautions that may be taken. Therefore, the potential for adverse impacts related to fire control efforts, setting of fires for prescribed burns and slash pile burns, smoke release, and use of chainsaws and equipment for thinning and limbing would be less, resulting in negligible or minor, adverse, short-term impacts. These impacts are often very localized, with few off-site adverse health and safety concerns to nearby residents.

In conclusion, the action would provide long-term, moderately beneficial impacts resulting from the increased protection from extreme wildfire, which can create situations with higher

health and safety risks. It would also result in more localized, negligible to minor, short-term adverse impacts from the prescribed fire and fuels reduction activities.

Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas:

As described in the EA, no major adverse impacts or impairment to natural or cultural resources were identified for the proposed action. There are no prime farmlands, wild and scenic rivers, or ecologically critical areas affected. Historic and cultural resources have been identified within the parks and mitigation related to fire management activities is outlined in the EA. This mitigation includes the use of pre-planned prescribed fire and other fuel reduction treatments in areas where cultural resources exist to protect them from large, uncontrollable wildland fires burning under extreme weather conditions. Other mitigation measures include minimizing ground disturbance and the use of retardants, and assigning a Resource Advisor to every fire. Wetlands have also been identified in the parks and mitigation measures outlined in the EA. These mitigation measures include protecting water quality and wetlands and floodplains by establishing buffers around wetlands that limit the use of retardants and foams, and restrictions on fueling and placing slash near wetlands.

Degree to which effects on the quality of the human environment are likely to be highly controversial:

As indicated in the EA, there are no highly controversial effects due to the proposed action. In fact, there would be less chance of extreme wildfires in the area due to the reduction in fuels and the use of prescribed fire within the parks. This would result in a long-term, indirect, beneficial impact to visitor use and enjoyment, since the possibility of larger scale destruction of natural and cultural resources would be substantially lessened, as would generation of noise, smoke, odors, and reduced visibility. Avoiding wildfire damage and the resultant disruption to visitors, especially during the high tourist season, would increase the beneficial impacts of this alternative.

Prescribed fires and manual/mechanical thinning would generally be undertaken in certain limited locations during the pre- and post-visitor use seasons when fire danger is lower and fewer visitors are present. Also, prescribed fire would be done when climatic conditions are appropriate to ensure that smoke would not interfere with visitors at the park or cause major indirect adverse impacts to viewsheds. More frequent instances of visitor use restrictions and disturbance may occur due to smoke and odor, and noise from equipment, vehicles, and chainsaws during these activities. However, these impacts would be very short-term and localized. Therefore, these activities would have negligible to minor short-term adverse impacts on visitor use and experience.

Implementation of the proposed action would result in minor to moderate and mostly short-term adverse impacts during the periods of fuels reduction and prescribed fire activities that would require restrictions on park use. However, long-term beneficial impacts would result from the increased protection from extensive wildfires and the resultant improved landscape scene.

Degree to which the possible effects on the quality of the human environment are highly uncertain or involve unique or unknown risks:
As previously described, the action would provide long-term, moderately beneficial impacts to public health and safety resulting from the increased protection from extreme wildfire. It would also result in more localized, negligible to minor, short-term adverse impacts from the prescribed fire and fuels reduction activities. Mitigating measures, such as timing of activities and smoke management will reduce the effects to public safety. Therefore, there were no highly uncertain, unique or unknown risks identified.

Degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration:
Director's Order #18: Wildland Fire Management states that, "Each park with vegetation capable of burning will prepare a fire management plan to guide a fire management program that is responsive to the park's natural and cultural resource objectives and to safety considerations for park visitors, employees and developed facilities." The proposed action follows the policy and guidelines outlined in the Director's Order and corresponding reference manual. Because this action is mandated by the above policy and is consistent with current policies and guidelines, actions for this project will not set any NPS precedent.

Whether the action is related to other actions with individually insignificant but cumulatively significant impacts:
As previously described, impacts of the proposed action were to soils, geology, paleontological, and cultural resources, floodplains and wetlands, unique or important vegetation communities, promotion/introduction of non-native species, socioeconomics, air and water quality, recreational resources and visitor experiences, wilderness and soundscapes, energy resources, land use, wildlife species of special concern, and threatened, endangered, or candidate wildlife or plant species.

By conducting fire management activities during appropriate times, such as off-peak use and pre- or post-visitor use season, and during appropriate climatic conditions, some effects to air quality recreational resources and visitor experience were mitigated and no significant cumulative effects were identified. In addition to the minor adverse, short-term impacts on soils, vegetation, and wildlife resources, long-term beneficial impacts will also occur. Mitigation measures, such as leaving a mosaic of vegetation to stabilize soils, rehabilitating areas to pre-fire conditions, using minimum impact suppression tactics guidelines, and favoring wet-line line methods over the use of handlines or heavy equipment, will reduce adverse impacts and no significant cumulative effects on soils will occur. Careful planning of fires and continued consultation with the tribes and SHPO, and the decreased potential for intense wildfires will minimize impacts to cultural resources. Conducting prescribed fires and mechanical hazard fuel reduction activities during appropriate seasons to minimize impacts on breeding animals will help mitigate impacts to wildlife resources. Leaving a mosaic pattern on the landscape will also mitigate impacts. The proposed action will lead to an increase in habitat and plant species diversity, and increased nutritional quality and quantity of forage as indicated in the EA. No significant cumulative impacts on natural or cultural resources, or other impact topics were identified in the EA.

Degree to which the action may adversely affect districts, sites, highways, structures, or objects listed on the National Register of Historic Places or may cause loss of destruction of significant scientific, cultural, or historic resources:
All cultural sites within the parks are protected by federal legislation (Antiquities Act of 1906, 1979 Archeological Resources Protection Act, Executive Order 11593) and Section 110 of the National Historic Preservation Act. The management of cultural resources is guided by NPS-28: Cultural Resource Management Guideline. Many scientific, cultural, prehistoric, and historic resources have been identified through various surveys conducted in the parks.

WFU and prescribed fires burning under moderate fire weather conditions would have negligible to minor impacts on cultural resources, but would reduce fuel mass and continuity across the landscape. The short-term impact would be more frequent fires than have been seen in BLCA and CURE during the past century, but negligible to minor damage to cultural resources resulting from these fires. The long-term beneficial impact would be a reduced hazard of large, severe, uncontrollable fires damaging cultural resources during extreme fire weather conditions.

Compliance with §106 of the National Historic Preservation Act was completed when no further comments were received from SHPO during the 30-day public review period.

Degree to which the action may adversely affect an endangered or threatened species or its critical habitat:
Impacts of prescribed and/or WFU fires and fuel reduction efforts on endangered and threatened species were extensively analyzed in the Biological Assessment (BA) completed in May 2006. Species considered include the Uncompahgre fritillary butterfly, clay-loving wild-buckwheat, humpback chub, bonytail chub, Colorado pikeminnow, razorback sucker, bald eagle, Mexican spotted owl, Canada lynx, Uintah Basin hookless cactus, and the yellow-billed cuckoo. In addition, impacts to the Gunnison sage-grouse, a species of special concern in the region, also were analyzed in the BA. Effect determinations for the species analyzed ranged from “no effect” to “likely to adversely effect” with mitigation efforts decreasing adverse impacts on especially the 4 fish species. Impacts to the 4 endangered fish species have been thoroughly analyzed in the 1994 USFWS “Programmatic Biological Opinion for Minor Water Depletions in the Upper Colorado River Basin in Colorado”.

Compliance with Section 7 of the Endangered Species Act was completed in July 2006 after concurrence with the Biological Assessment was received from the USFWS.

Whether the action threatens a violation of Federal, State, or local environmental protection laws:
The proposed action violates no federal, state, or local environmental protection laws.

Impairment:

In addition to reviewing the list of significance criteria, the NPS determined that implementation of the preferred alternative will not constitute an impairment of resources and values at BLCA and CURE. This conclusion is based on a thorough analysis of the impacts described in the environmental assessment/assessment of effect, the agency comments received, and the professional judgment of the decision-maker in accordance with the National Park Service's *Management Policies, 2001*. As described in the EA, implementation of the preferred alternative will not result in major, adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing proclamation of BLCA and CURE; (2) key to the natural or cultural integrity of BLCA and CURE or to opportunities for enjoyment of the park; or (3) identified as a goal in the parks' general management plan or other relevant NPS planning documents.

PUBLIC INVOLVEMENT

The environmental assessment was made available for public review and comment during a 30-day period ending January 25, 2005. A total of 2 responses were received during the public comment period. One comment was received from Senator Salazar's office. One response was received from a government agency (U.S. Forest Service).

The Forest Service, Gunnison Ranger District, in an e-mail dated January 13, 2005, informed us that no fire use can take place on Forest Service (FS) lands until the Forest Plan is done. Once the Forest Plan is completed, the FS plans to address boundaries and projects with partners in their revised Fire Management Action Plan. The comment also pointed out that the EA did not address the ponderosa pine communities in the parks (e.g., Soap Creek, and east to Red Creek) that could benefit from prescribed fire. To address the FS comments, text has been added to the Affected Environment and Environmental Consequences sections in the EA and the FS was sent a response via e-mail. The specific text addition and e-mail response are presented on the attached errata sheet. This text change did not necessitate a change in the considered alternatives, the findings or the conclusions in the EA.

Senator Salazar's office, in an e-mail dated January 20, 2005, expressed interest in fire management as an issue due to Senator Salazar's memberships on the Senate Committee on Energy and Natural Resources and the National Parks Sub-committee. The e-mail asked 3 questions to which the NPS responded with a return e-mail. The first question asked if we had received numerous comments on the issue during this comment period or during the public scoping, and if so, were they positive or negative. This question was answered with excerpts from the Consultation/Coordination section of the EA. The second question asked if there was any controversy with the preferred alternative and the third question asked if we were happy with the EA as written. The answers to all 3 questions are included in the attached errata sheet. No changes were made in the considered alternatives, the findings or the conclusions in the EA.

CONCLUSION

The preferred alternative does not constitute an action that normally requires preparation of an environmental impact statement (EIS). The preferred alternative will not have a significant effect on the human environment. Negative environmental impacts that could occur are minor or moderate in intensity. There are no significant adverse impacts on public health, public safety, threatened or endangered species, historic properties either listed in or eligible for listing in the National Register of Historic Places, or other unique characteristics of the region. No highly uncertain or controversial impacts, unique or unknown risks, significant cumulative effects, or elements of precedence were identified. Implementation of the action will not violate any federal, state, or local environmental protection law.

Based on the foregoing, it has been determined that an EIS is not required for this project and thus will not be prepared.

Approved: _____

Director, Intermountain Region Date

Errata
Fire Management Plan
Environmental Assessment/Assessment of Effect
Black Canyon of the Gunnison National Park
Curecanti National Recreation Area

The following are the NPS's responses to substantive comments on the BLCA and CURE FMP EA. The "Responses to Comments" section addresses those comments that warranted clarification or explanation. The "Changes in the Environmental Assessment Text" section presents direct changes in the text of the EA. In clarifying and editing the text of the EA, the NPS was not compelled either to (1) modify a considered alternative or to (2) evaluate a new alternative to meet the purpose and need. Additionally, the text clarifications and edits did not warrant a revision to the effects analysis for the alternatives. The combination of the EA and this errata form the complete and final record on which the FONSI is based.

CHANGES IN THE ENVIRONMENTAL ASSESSMENT TEXT

In response to the e-mail received from the U.S. Forest Service on January 13, 2005, the following changes were made:

Affected Environment, Unique or Important Vegetation Communities, Page 49, 3rd paragraph; a 4th sentence was added:

"**Also, ponderosa pine (*Pinus ponderosa*) stands are often found mixed with oak thickets, many of which are considered old growth, especially within the Soap Creek drainage, east to Red Creek in CURE."**

Environmental Consequences, Unique or Important Vegetation Communities, Impacts of Alternative B – Natural Landscape Units, Page 90, 2nd paragraph; inserted as 4th sentence:

"**Manual/mechanical treatments and/or prescribed fire may also reduce the threat to isolated old-growth stands of ponderosa pine by removing young juniper and other brush ladder fuels that have accumulated beneath the trees."**

In addition, a manual hazard fuels reduction and prescribed fire project was added to the 6-Year Fuels Plan to address the ponderosa pine stands in the Soap Creek drainage (EA, Appendix A.)

RESPONSES TO COMMENTS

Public comments were carefully reviewed for substantive comments. Substantive comments are those that challenge the accuracy of analysis; dispute information accuracy; suggest different viable alternatives; provide new information that requires a change in the proposal; or recommendations relevant to the implementation of the proposal.

Although the e-mail received from Senator Salazar's office did not consist of comments per se, we have included our responses to the questions about the EA process below:

Comment: *1. Has your agency received numerous comments on this issue during this comment period or during the public scoping? a. Positive or negative comments?*

Response: This response was taken directly from the EA, Consultation/Coordination section, Page 113, first 3 paragraphs:

In March 2004, the NPS mailed a public scoping brochure (Appendix E) to approximately 600 individuals, organizations, tribes, and government agencies and posted it on the BLCA and CURE websites. The brochure announced the beginning of the scoping process for the Fire Management Plan Environmental Assessment. The public scoping brochure and website requested public participation. This brochure is on file at the NPS Headquarters office in CURE. A press release was sent to the Daily Sentinel in Montrose, Colorado and to the Gunnison County Times in Gunnison, Colorado. The press releases provide information about the project and requested scoping comments. The formal public scoping period was from March 5 to April 5, 2004.

Twenty comment letters were received during the formal public scoping period. Eleven were received from individuals, one from a state agency (Colorado Department of Transportation), two from federal agencies (Bureau of Land Management, Western Area Power Administration), two from county government (Montrose County), one from city government (Town of Hotchkiss), two from a tribe (Southern Ute Tribe), and one from an organization (Gunnison-Crested Butte Tourism Association).

The comments received by the NPS during formal public scoping were related to: (1) impacts to transportation corridors and infrastructure; (2) impacts to vegetation and potential impacts to tree damaging insects; (3) impacts to local emergency services resources, recreation, and socioeconomics; (4) impacts to wildlife and wildlife habitat; (5) impacts of past and present fire suppression practices; (6) impacts to electric power facilities and infrastructure; and (7) the support of "cross-boundary" fire management with adjacent public agency lands.

Comment: *2. Has there been any controversy with the preferred alternative?*

Response: Through our efforts to involve the public as well as other tribal, federal, state, and local agencies, no controversy has been identified.

Comment: *3. Are you happy with the EA as it is today?*

Response: We are happy with the draft environmental assessment (EA). We think that it does a good job of evaluating the potential impacts of the identified fire management alternatives for the parks. We also feel that the positive impacts that would occur through implementation of the preferred alternative full support its selection. While we are happy with the EA, we also look forward to comments from interested public and agencies that may help strengthen the assessment.

In addition to the changes in the EA text that are noted above, we also responded to the U.S. Forest Service comments in an e-mail dated January 26, 2005:

Response: Thank you for taking the time to review and comment on our FMP EA. You're right that we did overlook the ponderosa pine and will be mentioning these stands in both the "Affected Environment and Impact Analysis as Unique or Important Vegetation Communities". With our approved plan, I will be evaluating more areas for mechanical treatments and will take close look at the ponderosas you have mentioned between Soap Creek and Red Creek.

We are also very interested in working with you across boundaries on future projects in these and other areas. Let us know when your planning begins and we would like to be involved.