United States
Department of
Agriculture

Forest Service

Rio Grande
National Forest

United States
Department of the
Interior

National Park
Service

Great Sand
Dunes National
Park and
Preserve

June 2009

Environmental Assessment for Comment

Baca Mountain Tract and Camino Chamisa Project

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Cover Photo: *Looking east from the Great Sand Dunes National Park Preserve to the Baca Mountain Tract against the Baca Grande subdivision*

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Environmental Assessment for Comment

Baca Mountain Tract and Camino Chamisa Project

April 2009

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This document is available online at:
http://www.fs.fed.us/r2/riogrande/projects

Abstract

This environmental assessment is a cooperative analysis by the Rio Grande National Forest (RGNF) and the Great Sand Dunes National Park and Preserve (GRSA) in evaluating the potential effects of amending the Forest Plan to include the recently acquired Baca Mountain Tract and implementing the GRSA General Management Plan by providing motorized public access across the park to the national forest. It also includes the effects of closely associated projects including road management, parking area, permits, and closures. Four alternatives including the no-action alternative are presented.

Table of Contents

Chapter 1 – Purpose of and Need for Action ... 1
Introduction ... 1
Overview ... 1
Background ... 1
Proposed Action ... 2
Proposed Action ... 3
Purpose of and Need for Action ... 3
Decision Framework ... 4
Area and Scope ... 4
Relationship to Other Acts, Regulations and Plans ... 5
Public Involvement ... 7
Issues ... 10
Key Issues Associated with the Proposed Action ... 10
Concerns Outside the Scope of This Analysis ... 14
Chapter 2 – Alternatives ... 17
Alternative 1 (No Action) ... 17
Alternative 2 (Proposed Action) ... 18
Alternative 3 ... 21
Alternative 4 ... 23
Project Design Criteria Common to All Action Alternatives ... 25
Alternatives Considered but Dropped from Detailed Consideration ... 29
Comparison of Alternatives Summary ... 31
Monitoring ... 46
Future Planning Needs ... 47
Chapter 3 – Affected Environment and Environmental Consequences ... 49
Introduction ... 49
Scope of the Analysis ... 49
Past Actions Affecting the Existing Condition ... 51
Key Issues ... 53
Forest Plan Amendment ... 66
Management Area Prescriptions ... 66
Infrastructure ... 69
Wilderness Evaluation ... 69
Effects to Forest Resources ... 69
Effects on Resources and Elements ... 69
Air ... 69
Aquatic Resources ... 72
Fisheries Resources ... 80
Global Climate Change ... 84
Heritage Resources ... 84
Infrastructure – Roads and Parking Areas ... 93
Lands ... 100
Minerals ... 101
Natural Soundscape ... 103
Night Sky ... 107
Recreation/Visitor Use and Experience ... 108
Scenic Resources ... 121
Social and Economic ... 124

Soils 126
Vegetation 130
Wilderness 141
Wildfire and Fuels 143
Wildlife 148
Cumulative Effects Summary 170
Other Consequences or Effects Considered 179
Preliminary Finding of a Non-significant Change to the Revised Land and Resource Management Plan for the Rio Grande National Forest—NFMA 179
Forest Plan 180
Preliminary Finding of a Non-significant Impact—NEPA 180
GRSA General Management Plan 181
National Park Service Management Policies 2006 181
Chapter 4 – List of Preparers 183
Interdisciplinary Core Team 183
Interdisciplinary Team 183
Appendix A: Response to Public Comment 184
Appendix B: Relationship to Other Acts, Regulations, Policies and Plans 185

List of Tables

Table 2-1. Summary of the alternatives 32
Table 2-2. Summary of key issues by alternative 34
Table 2-3. Summary of comparison of other resource effects by alternative 41
Table 3-1. Proposed management prescription designations and acreage for the Baca Mountain Tract by alternative 67
Table 3-2. The amended Forest-wide management-area prescriptions acres and percent change to the Forest Plan as a result of each alternative 68
Table 3-3. Proposed designated roads in the analysis area by alternative and ownership 95
Table 3-4. Changes to the Forest-wide designated road system miles by alternative 97
Table 3-5. Baca Mountain Tract ROS classifications 115
Table 3-5. Baca Mountain Tract ROS classifications 116
Table 3-6. Effects analysis summary for sensitive plants with potential or known habitat in the Baca Mountain Tract 136
Table 3-7. Sensitive plant effects determination for the Baca Mountain Tract by alternative 136
Table 3-8. Forest Service regional sensitive species with occurrence and general habitat descriptions within the analysis area 152
Table 3-9. Management indicator species for the Rio Grande National Forest with occurrence, and general habitat descriptions within the analysis area 157
Table 3-10. Occurrence, general habitat descriptions, and potential project influence for BCR 16 birds of conservation concern within the analysis area 158
Table 3-11. Sensitive animal species determination summary on the Baca Mountain Tract by alternative 161
Table 3-12. Potential effects on birds of conservation concern within the analysis area by alternative 163

List of Figures

Figure 1-1. Project vicinity map 2
Figure 1-2. General management plan map for the Baca Mountain Tract and Camino Chamisa Project 9
Figure 2-1. Alternative 1 (no action) management prescription map 19

Figure 2-2. Alternative 2 (proposed action) management prescription map 20
Figure 2-3. Alternative 3 management prescription map 22
Figure 2-4. Alternative 4 management prescription map 24
Figure 3-1. Watersheds and stream channels 73
Figure 3-2. Recreation activities on the planning area 114
Figure 3-3. Existing ROS setting in the planning area 114
Figure 3-3. Existing ROS setting in the planning area 115
Figure 3-4. Soil types on the Baca Mountain Tract 127
Figure 3-5. Soil types on the GRSA 128

Chapter 1 – Purpose of and Need for Action

Introduction

This chapter describes the background, the proposed action, the purpose of and need for the action, the decision to be made, the public involvement process, and the issues to be considered in this analysis.

Chapter 1

Introduction	1
Proposed Action	3
Purpose of and Need for Action	3
Decision Framework	4
Area and Scope	4
Relationship to Other Acts, Regulations and Plans	5
Public Involvement	7
Issues	10

Overview

The Rio Grande National Forest (RGNF) and the Great Sand Dunes National Park and Preserve (GRSA) have cooperatively prepared this environmental assessment (EA). The EA assesses the potential effects of amending the 1996 Revised Rio Grande National Forest Land and Resource Management Plan (Forest Plan) to include the recently acquired Baca Mountain Tract. The analysis identifies management area (MA) prescriptions, the designated road system, a wilderness assessment, and a new Forest Plan map showing the changes. It also assesses the effects of projects that are closely interrelated with the Forest Plan amendment, including road management, parking area construction, special use authorizations, and special closures.

The EA also evaluates the potential effects of implementing the GRSA General Management Plan to provide motorized public access across the GRSA to the Baca Mountain Tract on the RGNF.

This EA discloses the environmental impacts of the alternatives and provides the responsible officials from both agencies with the information necessary to make an informed decision. The decisions would be documented in separate decision notices accompanying the final EA after receiving public comment.

Background

The Great Sand Dunes National Park and Preserve Act of 2000 authorized the public purchase of the privately owned Baca Ranch. The Act expanded the former Great Sand Dunes National Monument and authorized it as a national park, added the Baca Mountain Tract (Tract B) to the RGNF, and created the Baca National Wildlife Refuge. The Act also created the Great Sand Dunes National Preserve from wilderness lands formerly managed as part of the RGNF (see Project Vicinity Map, Figure 1-1).

The 2007 GRSA General Management Plan provides direction and guidance for park management. The general management plan provides for public motorized access across the park to the Baca Mountain Tract to be developed through this collaborative analysis.

The Forest Plan provides direction and guidance for management on the RGNF, including management zoning for the Forest in the form of MA prescriptions. The Forest Plan is a dynamic document that can be amended as needed.

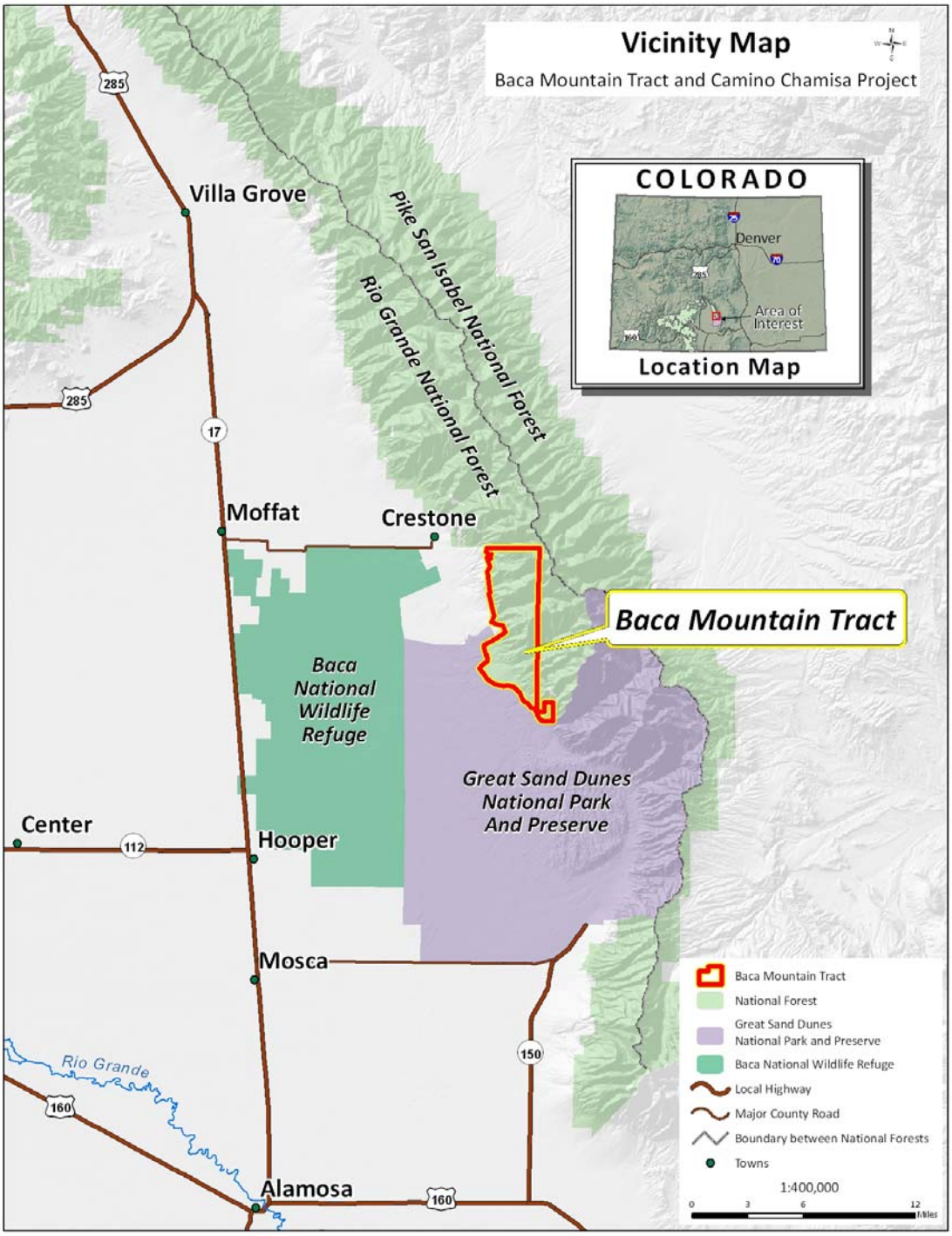


Figure 1-1. Project vicinity map

Proposed Action

The proposed action contains several components for the two agencies.

Forest Service

The proposed action is to amend the Forest Plan by designating MA prescriptions of 5.42 Bighorn Sheep, 5.41 Deer and Elk Winter Range, and 3.1 Special Interest Area for the Baca Mountain Tract, as shown on the Alternative 2 map, Figure 2-2.

The proposed action also designates existing roads on the Baca Mountain Tract shown on the Alternative 2 map (Figure 2-2) as Forest system roads (FSR) FSR 952, FSR 952.1A, FSR 953, FSR 955, and FSR 956.

The proposed action also includes several projects closely interrelated with the Forest Plan amendment including:

- Providing motorized public access across the GRSA by constructing/reconstructing the Camino Chamisa access road between the Camino Real county road and the Liberty Road; and reconstructing Liberty Road from the intersection of Camino Chamisa to the Middle Parking Area, as shown on the Alternative 2 map, Figure 2-2.
- Construction of the Middle Parking Area with an associated gate, toilet, interpretive facilities, and signs.
- Providing Forest Service authorizations for access to the private property inholdings.
- Authorizing the Colorado Division of Water Resources to install a streamflow gage on Deadman Creek and permanently plug an old diversion channel.
- Authorizing Forest Service closures to:
    - Prohibit public motorized travel on the Liberty Road beyond the Middle Parking Area.
    - Prohibit public off-highway vehicle (OHV) use on the Baca Mountain Tract.
    - Prohibit camping within 0.25-mile of the Middle Parking Area.
    - Close the Baca Mountain Tract to livestock grazing.

National Park Service

The proposed action also provides public motorized access across the GRSA to the Baca Mountain Tract on the new Camino Chamisa Road as shown in the Alternative 2 map, Figure 2-2.

Purpose of and Need for Action

The purpose of this action is to bring the Baca Mountain Tract under the direction of the Forest Plan by amendment, and to implement specific projects interrelated with the Forest Plan amendment decision. The purpose is also to provide public motorized access across the GRSA to the Baca Mountain Tract on the national forest.

The need for action is to bring the Baca Mountain Tract under the direction of the Forest Plan as required by the National Forest Management Act (NFMA) and to implement the legislative

intent of the Great Sand Dunes National Park and Preserve Act and the GRSA General Management Plan by designating the means and route of public motorized access.

Decision Framework

The decisions for this project will be made by responsible officials in each agency. The decision will select an alternative or combination of alternatives, and will be documented in a decision notice after public comment.

Forest Service Decision

There are two components to the Forest Service decision. The first would be the decision by the responsible official whether or not to amend the Forest Plan by:

- Identifying MA prescriptions for the Baca Mountain Tract,
- designating system roads on the Baca Mountain Tract,
- making or not making a wilderness area recommendation, and
- creating a new amended Forest Plan map showing changes.

The second component to the decision includes whether or not to implement projects closely associated with the Forest Plan decision including road management, road reconstruction, and parking area construction (with signs and toilet facilities); and whether or not to authorize permits and closures.

The decision will also establish findings on whether this action is a significant change to the Revised Rio Grande National Forest Land and Resource Management Plan and on the significance of this action on the human environment.

Park Service Decision

The decision to be made by the responsible official is whether or not to implement the GRSA General Management Plan to provide public motorized access across the GRSA to the national forest, and if public motorized access is authorized, to select a route and means for access. The decision will also establish findings on the significance of this action on the human environment.

Area and Scope

Forest Service

This proposed Forest Plan amendment and proposed projects on the RGNF apply only to the newly acquired Baca Mountain Tract on the Forest as shown on the Project Vicinity Map, Figure 1-1. The scope of the amendment is limited to designating MA prescriptions for the Baca Mountain Tract. The amendment would not change or create any new goals, objectives, MAs, standards and guidelines (S&Gs), or monitoring in the existing Forest Plan. The scope of the proposed projects is limited to those actions which are closely interrelated to implementation of the Forest Plan amendment.

Park Service

The scope of the project is limited to the route and means of public motorized access across the GRSA to access the Baca Mountain Tract (see Figure 1-1). The project is consistent with the

General Management Plan and does not change it, but focuses only on public motorized access to the Baca Mountain Tract across the GRSA.

Relationship to Other Acts, Regulations and Plans

This project would comply with all applicable Federal and State laws, regulations, orders, and other requirements to ensure the protection of public health, safety, and the environment. The following are the primary laws and management plans which govern this project. Appendix B provides a summary of the other primary environmental requirements and plans which govern the decision.

The Great Sand Dunes National Park and Preserve Act of 2000

The Great Sand Dunes National Park and Preserve Act of 2000 (Act) authorized the public purchase of the privately owned Baca Ranch. The Act expanded the former Great Sand Dunes National Monument and authorized it as a national park, added the Baca Mountain Tract (Tract B) to the RGNF, and created the U.S. Fish and Wildlife Service (USFWS) Baca National Wildlife Refuge. The Act also created the Great Sand Dunes National Preserve from wilderness lands formerly managed as part of the Forest. The Preserve was created to provide public hunting opportunities within the park.

Each of these agencies is tasked with managing their portion of the newly acquired Baca Ranch land under each agency's applicable laws and regulations and management objectives. The Act placed the majority of the Baca Ranch under NPS management with an emphasis on preservation and protection. The USFWS received a large portion of the Baca Ranch to manage specifically for wildlife. The Baca Mountain Tract portion of the Baca Ranch was made part of the RGNF by purchase under the laws governing the Forest Service including NFMA and the Multiple Use Sustained Yield Act. The legislative intent of the Great Sand Dunes National Park and Preserve Act was to provide public motorized access to the Baca Mountain Tract for hunting opportunities.

Both the GRSA and the RGNF are each governed by specific laws and plans which provide for overall management guidance. This project would comply with these plans.

Rio Grande National Forest Plan

The 1996 Revised Land and Resource Management Plan, Rio Grande National Forest, as amended (Forest Plan), provides guidance for all management activities in a sustained multiple-use manner; establishes management standards and guidelines; describes resource management practices, levels of resource production, people-carrying capacities, and the availability and suitability of lands for resource management. Additionally, the Forest Plan provides the framework to guide the daily resource management operations of the RGNF, and subsequent land and resource management decisions made during project planning. The Forest Plan, its record of decision, and 1996 Final Environmental Impact Statement for the Revised Land and Resource Management Plan (FEIS) are incorporated here by reference.

NFMA requires the Baca Mountain Tract to be managed under a forest plan. This project amends the Forest Plan by bringing the Baca Mountain Tract under the direction of the Forest Plan by identifying MA prescriptions, designating the road system, making a wilderness

recommendation, and creating a new Forest Plan map showing changes since 1996. This would be the sixth amendment to the Forest Plan.

NFMA also requires that site-specific project decisions be consistent with the Forest Plan. This EA is also a project-level analysis and evaluates the alternatives conformance with the RGNF Forest Plan and other regulations. All projects occurring on the Baca Mountain Tract would be consistent with the Forest Plan.

GRSA General Management Plan

The GRSA is guided by the 2007 General Management Plan which provides the broad level comprehensive management direction and guidance for the park. The Plan focuses on the purpose, significance, and mission of the park. The general management plan, its record of decision, and 2007 Final Environmental Impact Statement for the General Management Plan are incorporated here by reference.

The projects on GRSA are consistent with the 2007 General Management Plan. The Plan identifies the actions, impacts, and mitigating measures necessary to resolve the issues facing the GRSA. This project implements the general management plan direction (page 64–65) which anticipated and provided for public motorized access to be established across the GRSA to the Baca Mountain Tract through the collaborative process used in this analysis to implement the intent of the Great Sand Dunes National Park and Preserve Act of 2000.

Purpose, Significance, and Mission of the Park

The park purpose describes the specific reason why the park was established, and the significance statements describe the distinctive features that make the park different from any other. Together, purpose and significance lead to a concise statement—the mission of the park. The park mission statement describes conditions that exist when the legislative intent for the park is being met.

Park Purpose

- Preserve spectacular and unique sand dunes and their high elevation watersheds and to perpetuate the entire system for the benefit and enjoyment of present and future generations;
- provide long-term protection of the geological, hydrological, ecological, scenic, scientific, cultural, wilderness, educational, wildlife, and recreational resources of the area, including the sand deposits associated with the dune mass and the ground water system on which the sand dune and wetland systems depend, and the remarkable biodiversity evident in the landscape from the valley floor to the mountain crest;
- provide opportunities for visitors to experience, understand, enjoy, and gain a sense of stewardship for the park's natural and cultural resources; and
- facilitate research to support park management, and to promote scientific knowledge and education.

Park's National Significance

- Contains the tallest dunes in North America and one of the most fragile and complex dune systems in the world.
- Protects a globally significant, water- and wind-driven system, which includes creeks that demonstrate surge flow (a rare hydrologic phenomenon).

- Provides tremendous scenic settings that, for many, provoke strong emotional responses. These settings (including massive dunes surrounded by alpine peaks, a desert valley, creeks flowing on the surface of the sand, pristine mountains, and rural range land) offer spacious relief from urban America, exceptional solitude and quiet, and a remarkably unspoiled day and night sky.
- Hosts a great diversity of plants and animals, including insect species found nowhere else on earth. The system, which spans high desert to alpine life zones, supports rare biological communities that are mostly intact and functional.
- Contains some of the oldest (9,000+ years before present) known archeological sites in America. The dunes have been identified as having special importance by people of various cultures, and the area is recognized for the culturally diverse nature of human use.
- Provides special opportunities for recreation, exploration, and education in the highly resilient dune mass and adjoining creek environments.

Park Mission

The mission of the GRSA is to preserve and protect the Great Sand Dunes and their associated geologic and biologic resources, cultural resources, watersheds, and wilderness values; to promote scientific knowledge; to provide opportunities for visitor understanding, enjoyment, and stewardship; and to ensure the perpetuation of the entire ecosystem for the enjoyment of future generations. See Figure 1-2 for the General Management Plan Map showing the management zones for the analysis area.

Public Involvement

The public has been involved with Federal management of the newly acquired Baca Ranch in several different forums since the year 2000. The public and the Forest Service participated in the development of the GRSA General Management Plan beginning in 2002. Both the RGNF and GRSA participated in the Saguache County North Entrance Study Group facilitated by the Sonoran Institute in 2006, and the subsequent Northern Access Team proceedings in 2006 and 2007. Public comments and products from these public participation efforts are included in the project file.

Because of the interrelated goals and interests of the Forest Service with Saguache County, NPS, USFWS, and Colorado Division of Wildlife (CDOW) in this project; these agencies formally became cooperating agencies in this project. Representatives from these agencies attended the public meetings and the interdisciplinary team meetings.

Scoping for this project began in 2006. Public comment and participation in this project was invited in several ways. The formal public involvement process began with a scoping letter mailing on December 21, 2006, inviting comments. A public notice was published in the Valley Courier on January 30, 2007. The project has been listed in the Forest Service's schedule of proposed actions (SOPA) since April 2007, and on the Park Service's planning environmental public comment (PEPC) since May 2008.

The RGNF and GRSA hosted open house-style public scoping meetings in Crestone, Monte Vista, and Saguache in February 2007, and in Moffat and Alamosa in May 2008. The public meetings included displays and handouts on background information for the amendment and projects. Representatives from the cooperating agencies were available to answer questions.

Presentations have been made to the Crestone Spiritual Alliance, the CDOW Habitat Partnership Program Committee, the Bureau of Land Management Resource Advisory Council, and at Saguache County Board of Commissioners meetings.

Tribal government scoping occurred through letters and publications in the Tribal Consultation Bulletin.

Scoping results were shared with the cooperating agencies and are included in the record. In addition to the scoping described above, the RGNF website at http://www.fs.fed.us/r2/riogrande/projects and the GRSA website at http://www.nps.gov/grsa/ contain information on the project, land management plans, and other planning information available for public review.

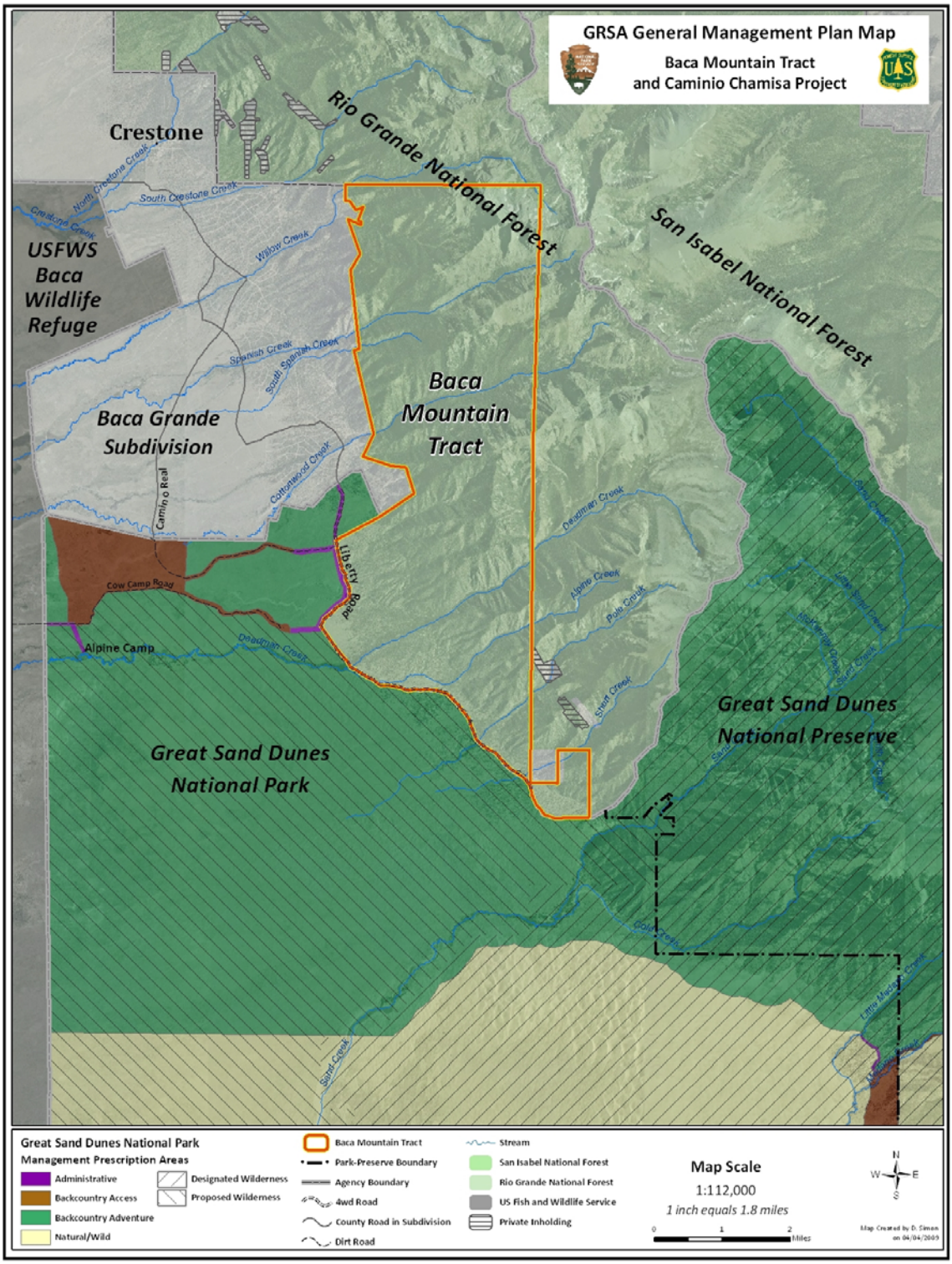


Figure 1-2. General management plan map for the Baca Mountain Tract and Camino Chamisa Project

Issues

The following key issues were identified from comments received during scoping. Note that there is some overlap between the issues. The key issues were then used to develop alternatives. Alternatives were evaluated and compared for their response to the key issues in Chapter 3.

Key Issues Associated with the Proposed Action

Issue 1. Public motorized access to the Baca Mountain Tract

Currently, there is no public motorized access to the Baca Mountain Tract. Public comments were both for and against public motorized access, with most of those desiring access requesting that it be limited in some way.

The Baca Mountain Tract was purchased with public funding authorized through the Great Sand Dunes National Park and Preserve Act of 2000 and designated as part of the RGNF with the legislative intent that it would have motorized access to the public for hunting opportunities and be managed under the multiple-use mandate of the Forest Service. This includes the opportunity for the public to hunt (large and small game), gather antlers, and gather Forest products for personal use. Currently the public can not transport small game, antlers, or Forest products over the GRSA, and can only transport firearms and large game with a permit.

The 2007 GRSA General Management Plan (page 64–65) identified the need for public motorized access to the Baca Mountain Tract and provided for public motorized access across the GRSA to the Baca Mountain Tract via several routes to be analyzed through this collaborative analysis.

Executive Order 13443, Facilitation of Hunting Heritage and Wildlife Conservation, directs Federal land management agencies to facilitate the expansion and enhancement of hunting opportunities for the public consistent with agency missions.

Issue 2. Effects to local communities

The Forest Service and GRSA have worked closely with the adjacent affected communities to identify concerns and opportunities. The effects to local communities include a variety of concerns which could be positive or negative. These include:

- Management flexibility to respond to future community needs.
- Effects to quality and quantity of the community's water supply.
- Wildfire risk to the community and associated fuels management.
- Additional safety egress routes from the Baca Grande subdivision to the south.
- Access to private property inholdings within the Baca Mountain Tract. The Forest Service is required to provide access to the private property inholdings by the Alaska National Interest Lands Conservation Act (ANILCA) of 1980.
- Much of the concern about public motorized access to the Baca Mountain Tract involved the potential for increased traffic on county roads within the Baca Grande subdivision generated from both residents and nonresidents accessing the Baca Mountain Tract.
- Ease of public access to the Baca Mountain Tract for local residents.
- Increased recreation opportunities on the Baca Mountain Tract for the local residents.

- Types of recreation experience opportunities available on the Baca Mountain Tract for residents and changes to those opportunities.
- Reducing parking congestion along Saguache County's Camino Baca Grande Road at the Liberty Gate.
- Visual and sound effects from the project to the Baca Grande subdivision.
- Economic benefits and costs to the local community.
- Sense of place for the local community.

Issue 3. Compatibility with other government agency management objectives

The RGNF recognized early in the project that the management issues involving the former Baca Ranch were so intertwined that there was a need to work closely with the NPS and USFWS. While these agencies have specific management mandates which differ from those of the Forest Service, the Forest's goal is that management of the Baca Mountain Tract to be as compatible as practicable with the other agencies' objectives, within the constraints of the Forest Service's multiple-use mandate. The Forest also recognizes the need to work closely with Saguache County and CDOW because they also have specific interests in management of the Baca Mountain Tract. To formalize the relationship with these agencies, the RGNF, as lead agency, entered into cooperating agency agreements with the GRSA, the USFWS Baca National Wildlife Refuge, CDOW, and Saguache County.

GRSA

GRSA management objectives are defined in the GRSA General Management Plan and in the park's purpose, significance, and mission, discussed previously. The primary emphasis for the GRSA is preservation and protection of the park's resources. GRSA management concerns specific to the Baca Mountain Tract include the GRSA visitor's recreation experience in the park and the spread and control of noxious weeds in the park and adjacent lands. There is no hunting allowed in the park.

USFWS Baca National Wildlife Refuge

The Baca National Wildlife Refuge management objectives are provided in the conceptual management plan. This plan provides a broad overview of the Refuge management and would be in place until a comprehensive conservation plan is completed. The purpose of the Refuge is to restore, enhance, and maintain wetland, upland, riparian, and other habitats for wildlife, plants, and fish species. There is a management emphasis on migratory bird conservation. Management concerns specific to the Baca Mountain Tract are the continuing availability and quality of water coming from the Baca Mountain Tract to supply the important wetlands on the Refuge, the spread and control of noxious weeds, and the high number of elk on the Refuge and surrounding lands. Although the Baca National Wildlife Refuge is separated from the Baca Mountain Tract by the GRSA, the Refuge shares mutual concerns over management of the overall ecosystem of the former Baca Ranch.

Colorado Division of Wildlife

CDOW is responsible for protecting, preserving, and perpetuating all of Colorado's wildlife species and managing wildlife on the Baca Mountain Tract. The agency's interest relates to the proper management of wildlife and the habitat that supports them. The concerns and management objectives specific to the Baca Mountain Tract are primarily related to their ability

to manage big game populations through regulated hunting, animal distribution, and maintenance of wildlife habitat. These are discussed in detail under "Issue 4. Big game management." Executive Order 13443 provides direction on hunting and wildlife conservation. The portions of the Executive order most applicable to the project direct the Forest Service to facilitate the expansion and enhancement of hunting opportunities and the management of game species and their habitat consistent with the Forest Service mission. The Executive order directs the Forest Service to work collaboratively with State governments to manage and conserve game species and their habitats in a manner that respects State management authority over wildlife resources consistent with the Forest Service mission.

Saguache County

The Baca Mountain Tract and the northern potion of the GRSA fall within Saguache County and are immediately adjacent to the Baca Grande subdivision. The only motorized access to the Baca Mountain Tract and the northern portion of the GRSA is on county roads. Saguache County management objectives in this analysis are primarily focused on community planning, public safety, environmental protection, economic development, and providing a safe and efficient county transportation system. Some of these are also discussed under "Issue 2. Effects to local communities."

Issue 4. Big game management

This issue was developed from a variety of public and agency concerns over big game management, which included hunting opportunities, flexibility to manage big game habitats and populations, and the impacts of big game populations on other resources and private property. Although the legislative intent of the Great Sand Dunes National Park and Preserve Act was to provide public motorized access to the Baca Mountain Tract for hunting opportunities, public scoping comments were both for and against hunting.

Executive Order 13443 provides Presidential direction on hunting and wildlife conservation. The portions of the Executive order most applicable to the project direct the Park Service, Forest Service, and other Federal land management agencies to facilitate the expansion and enhancement of hunting opportunities and the management of game species and their habitat. Federal agencies are directed, consistent with agency missions, to:

- Implement actions that expand and enhance hunting opportunities for the public;
- consider the economic and recreational values of hunting in agency actions, as appropriate;
- manage wildlife and wildlife habitats on public lands in a manner that expands and enhances hunting opportunities, including through the use of hunting in wildlife management planning;
- work collaboratively with State governments to manage and conserve game species and their habitats in a manner that respects State management authority over wildlife resources; and
- establish goals, consistent with agency missions, to foster healthy and productive populations of game species and appropriate opportunities for the public to hunt those species.

The Baca Mountain Tract contains important wildlife habitat for big game species such as elk, bighorn sheep, and mule deer. It also supports substantial numbers of elk and bighorn sheep. In general, the Forest Service manages the habitat and CDOW manages the big game populations.

The large numbers of elk on the GRSA provide a valued high quality wildlife viewing experience for park visitors. The elk are not currently habituated to the presence of humans, but could become so in the future. Hunting is not allowed in the GRSA adjacent to the Baca Mountain Tract. The Preserve within the GRSA is the only portion of the park where hunting is allowed.

Currently there is no public motorized access allowed across the GRSA for hunters to access the Baca Mountain Tract. Hunter access is only by foot or horseback. Hunters wishing to hunt on the Baca Mountain Tract must also get a permit to transport firearms and harvested big game across the GRSA.

CDOW, USFWS, and the Forest Service have concerns over the current high numbers of elk in the area. Elk numbers are currently well above CDOW's elk population objectives, which create concerns over species competition and habitat. CDOW would like the management flexibility to reduce the elk numbers and increase the elk distribution through regulated hunting so habitat is not overused. However, hunting success is largely dependent on the public's access to elk which is currently restricted to non-motorized means and requires a special permit to cross the GRSA. Another concern to CDOW is the potential for elk/agriculture conflicts on the east side of the San Luis Valley. The greatest concern is the potential for elk to spread disease into valuable certified disease-free seed potato fields. If these fields become infected, they would loose their certification and value. Elk impacts on commercial hay crops are also of concern. CDOW can be held liable for elk damage to agriculture; the agency currently uses special hunts in an attempt to reduce agricultural damage caused by big game.

The USFWS identified elk as a key issue in the Baca National Wildlife Refuge Conceptual Management Plan and it will likely be a key issue in the future comprehensive management plan.

The Forest Service is also concerned about the effects the substantial numbers of elk are having on mule deer and bighorn sheep, and other resources such as riparian and alpine vegetation, and the heritage sites on the Baca Mountain Tract.

Bighorn sheep are a Forest Service sensitive species. The Sangre de Cristo bighorn sheep herd (S31) is one of Colorado's largest herds. However, this herd has suffered a significant die-off, loosing 50 percent of its population since 2003 (the population is currently estimated at 325). The cause of this decline is unknown. CDOW has management responsibility for the Sangre de Cristo bighorn sheep herd; the Forest Service is responsible for managing the habitat. Maintaining or increasing this bighorn sheep population and its habitat is important to both CDOW and the Forest Service.

Issue 5. Heritage resources

The Baca Mountain Tract contains a rich cultural landscape with unique and remarkable historic and prehistoric archaeological sites. Some of these sites extend onto the GRSA. It also has a high potential for additional sites not yet documented.

Both the Forest Service and GSRA have responsibilities to manage and protect those heritage resources that make this area so unique under the National Historic Preservation Act and the Archaeological Resources Protection Act. The Baca Mountain Tract is unique because it has been under private ownership with little public access until recently, and the heritage resources have been largely protected from vandalism, collection, and looting. The historic town sites of Duncan and Liberty, and the associated mining development, represent one of the most intact

historical sites within the State of Colorado and the Nation. Intermixed with these historic sites are prehistoric sites which are advancing the understanding of prehistoric use and habitation in the San Luis Valley. The heritage importance of this area is just becoming understood, with a great potential to discover additional sites.

The public, Forest Service, GRSA, and State Historic Preservation Office have all expressed concerns for the identification, evaluation, protection, and preservation of these important heritage resources. The sites also have a high potential for interpretation and education.

Concerns Outside the Scope of This Analysis

The scoping comments also included comments and concerns, discussed as follows, that were outside the scope of this analysis.

Expand the Sangre de Cristo Wilderness Area

Some commenters suggested expanding the Sangre de Cristo Wilderness Area. This is outside of the scope of this analysis because only Congress can establish wilderness areas. The Great Sand Dunes National Park and Preserve Act did not establish any additional wilderness.

Stop oil and gas exploration and development

Some commenters suggested preventing oil and gas exploration and development. This is outside of the scope of this analysis because the mineral rights, including oil and gas, under the Baca Mountain Tract remain privately held under a split estate. The three Federal agencies which now manage the former Baca Ranch can not prevent access to those private property rights.

Acquire the mineral estate

Some commenters suggested that the Forest Service acquire the mineral estate. This is outside of the scope of this analysis because the Great Sand Dunes Park and Preserve Act only authorized the purchase of the surface rights and not the oil, gas, and mineral rights under the Baca Ranch. These remain privately held under a split estate. The owners of the mineral estate have not proposed selling the mineral rights and Congress has not appropriated funds to purchase them.

Trespass across private property to reach the Baca Mountain Tract

Several landowners in the Baca Grande subdivision have expressed concerns over trespass that is occurring by people crossing their private property to reach the publicly owned Baca Mountain Tract. These concerns are outside of the scope of this analysis because trespass occurring on private property is a local law enforcement issue. However, the Forest Service has been involved with the private landowners and Saguache County on trespass and access issues and would continue to work with them if public access across the private property becomes available in the future.

Trails

In comments related to the trespass concerns, some commenters expressed a desire for public trails from the Baca Grande subdivision to the Baca Mountain Tract. The Forest Service can only consider new public trails originating from the subdivision if the public is allowed access

on these trails. No trails are currently proposed in this analysis. Additional trails would be considered in a future collaborative interagency recreation plan with public involvement.

No hunting on the Baca Mountain Tract

Some commenters requested a ban or limits to hunting on the Baca Mountain Tract for spiritual, recreational, or safety concerns. This is outside the scope of this analysis because the Forest Service does not have the jurisdictional authority to prevent or regulate hunting on the national forest. It is also Forest Service policy to provide the opportunity for a variety of recreation experiences including wildlife hunting, viewing, and photographing as part of its multiple-use mandate. Hunting is regulated by the State of Colorado through the CDOW. The State has regulations, which are developed with public involvement, that govern hunting and public safety. It is illegal to hunt carelessly or discharge a firearm or release an arrow in a careless manner which endangers human life or property; or to shoot from, across, or on a public road with a firearm, bow, or crossbow. Also, people firing a bow, rifle, handgun or shotgun with a single slug must be at least 50 feet from centerline of the road. Sagauche County also has an ordinance prohibiting hunting on private land within 1 mile of Crestone and the Baca Grande subdivision.

Do not allow public use of the GRSA or Baca Mountain Tract adjacent to the Baca Grande subdivision or the spiritual centers

Some commenters suggested managing portions of the Baca Mountain Tract, especially those areas adjacent to the spiritual centers in the Baca Grande subdivision, as areas where no recreation is allowed to ensure quiet and solitude for their practitioners. These suggestions are outside of the scope of this analysis because they do not comply with the legal management mandates of the GRSA or the national forest for public use. The Great Sand Dunes National Park and Preserve Act designated the Baca Mountain Tract as part of the RGNF. The Forest is managed under a multiple-use mandate where recreation use is one of the primary uses of the national forest system. The Forest Plan does not have a MA prescription that prohibits recreation use.

Create new management area prescriptions

Some commenters suggested new MA prescriptions which do not exist in the Forest Plan. This is outside the scope of this analysis since the scope of the project is limited to incorporating the Baca Mountain Tract into the existing Forest Plan. This amendment does not change any components of the existing Forest Plan including the MA prescriptions. Developing new prescriptions could occur during the Forest Plan revision process.

Chapter 2 – Alternatives

This chapter describes the alternatives, including the proposed action, developed to address the key issues identified in Chapter 1. It also provides a summary of the environmental consequences of the alternatives. Four alternatives were developed—the no-action alternative, and three action alternatives.

Chapter 2

Alternative 1 (No Action)	17
Alternative 2 (Proposed Action)	18
Alternative 3	21
Alternative 4	23
Project Design Criteria Common To All Action Alternatives	25
Alternatives Considered but Dropped from Detailed Consideration	29
Comparison of Alternatives Summary	31
Monitoring	46
Future Planning Needs	47

Alternative 1 (No Action)

A "no action" alternative is a required part of the analysis. Alternative 1 is the no-action alternative and represents the existing condition on the RGNF and GRSA. See Figure 2-1 for the Alternative 1 management prescription map.

Alternative 1 would not amend the Forest Plan. It would not bring the Baca Mountain Tract under Forest Plan management. It would not designate Forest system roads and there would be no parking areas, other projects, or closures.

The alternative would not provide public motorized access to the Baca Mountain Tract; administrative motorized access would continue. Motorized access for authorized owners of the private property inholdings to cross the GRSA on the Liberty Road would continue. The Forest Service would also continue to allow motorized access for the owners of the private property inholdings on existing roads through temporary access authorizations.

Liberty Gate

Alternative 2 (Proposed Action)

Alternative 2 contains both NPS and Forest Service actions as shown on the Alternative 2 management prescription map in Figure 2-2. This alternative would amend the Forest Plan and provide motorized public access across the GRSA to the Middle Parking Area on the Baca Mountain Tract.

Forest Service

Alternative 2 would amend the Forest Plan by bringing the Baca Mountain Tract under the management direction of the Forest Plan, designate Forest system roads, and propose several projects on the Baca Mountain Tract which are interrelated to the Forest Plan amendment.

Under Alternative 2, the Baca Mountain Tract would be managed under the MA prescriptions of 5.42 Bighorn Sheep, 5.41 Deer and Elk Winter Range, and 3.1 Special Interest Area as shown in the Alternative 2 management prescription map, Figure 2-2. A special interest area management plan would be developed in concert with the GRSA to address research needs, interpretation, education, and management and protection of cultural resources within the Baca Mountain Tract.

Five existing roads shown in Figure 2-2 would be designated as high clearance maintenance level (ML) II Forest system roads (FSR). These are FSR 952, FSR 952.1A, FSR 953, FSR 955, and FSR 956. All other existing routes would be restored through natural processes unless they were found in the future to be causing unacceptable environmental damage and needed treatment.

Projects interrelated with the Forest Plan amendment would include:

- Minor reconstruction of approximately 0.2 miles of the Liberty Road on the Baca Mountain Tract from the intersection of Camino Chamisa to the Middle Parking Area.
- Minor maintenance and reconstruction on the other Forest system roads to improve drainage and stream crossings to reduce sedimentation and erosion impacts, and to avoid impacts to historic/cultural sites.
- Construction of the 15-vehicle Middle Parking Area with the associated gate, toilet, signs, and interpretive facilities.
- Forest Service Closures:
  - The Baca Mountain Tract would be closed to public motorized access except for a short section of the Liberty Road from the proposed Camino Chamisa intersection to the Middle Parking Area gate.
  - No OHV use on the Baca Mountain Tract would be allowed.
  - No camping within 0.25 mile of the Middle Parking Area would be allowed.
  - No livestock grazing on the Baca Mountain Tract would be authorized.
- Providing long-term authorizations for access to private property inholdings.
- Authorizing the Colorado Division of Water Resources to install and operate a stream-flow gage on Deadman Creek to measure water flow and permanently plug an associated old diversion channel.
- Restoration activities including noxious weed control, trash removal, and removal of items and infrastructure left over from the Baca Ranch operations determined to not be of historic value, such as plastic irrigation pipe, and fencing. Undesignated roads and two-tracts would be restored through natural revegetation.

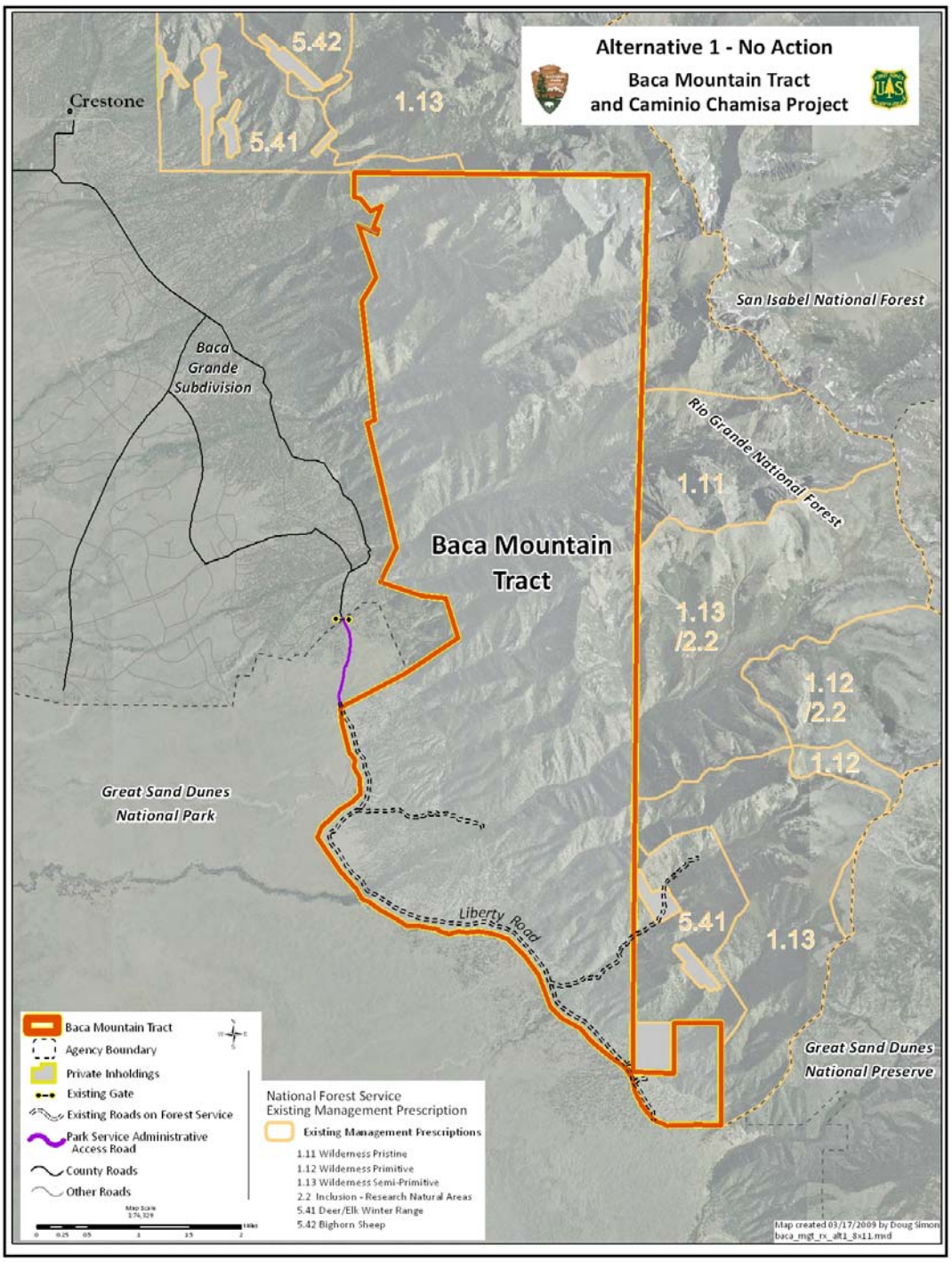


Figure 2-1. Alternative 1 (no action) management prescription map

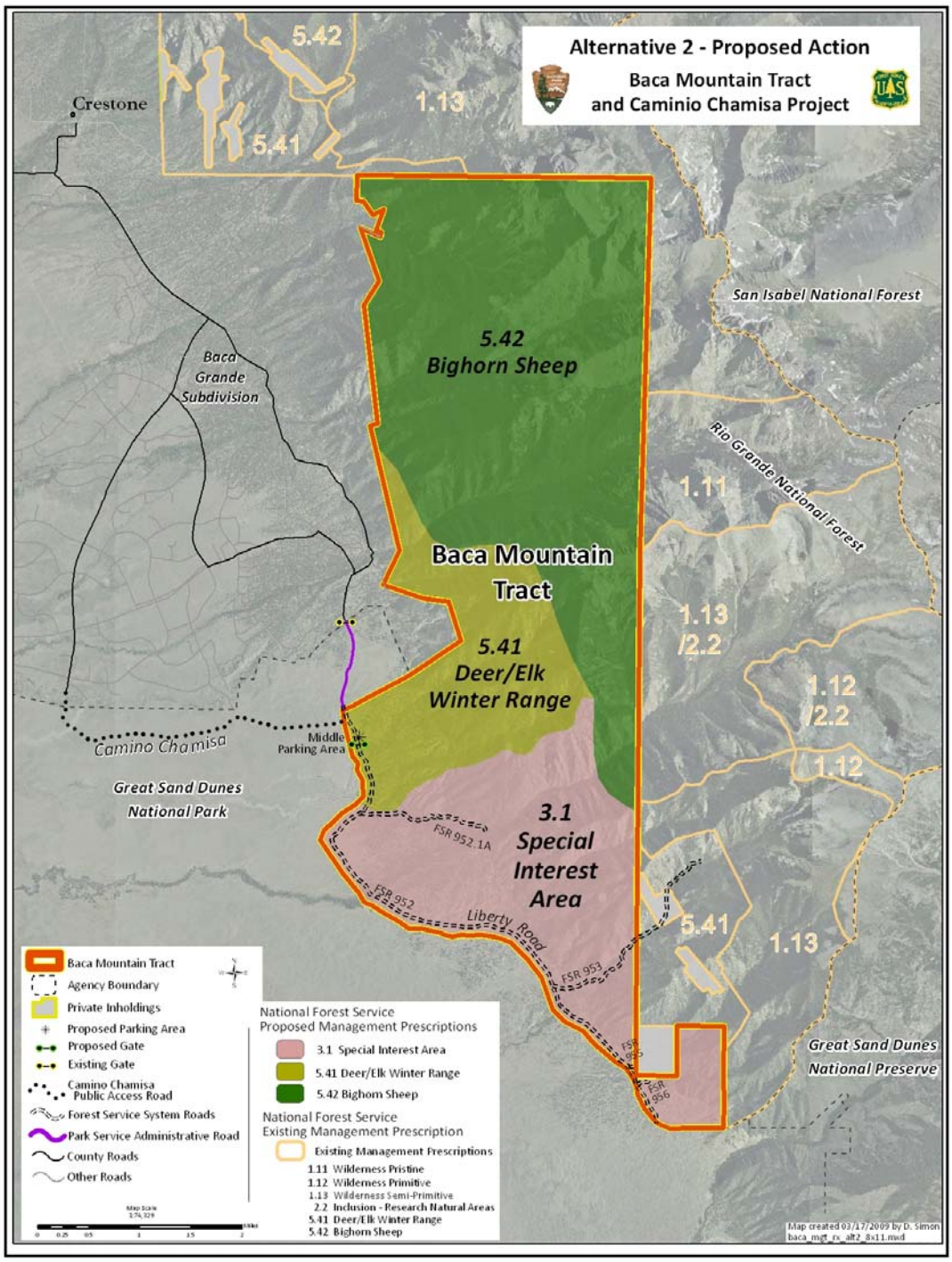


Figure 2-2. Alternative 2 (proposed action) management prescription map

National Park Service

Alternative 2 would provide public motorized access across the GRSA on the Camino Chamisa to the Liberty Road intersection on the Baca Mountain Tract as shown in Figure 2.2. The approximately 3-mile long Camino Chamisa includes about 1.1 miles of new road construction and 1.9 miles of reconstruction of an old ranch two-track route. The Camino Chamisa would be managed as a primitive unpaved access road. The Liberty Road would continue to provide foot and horse access for the public and administrative motorized access to the GRSA.

This alternative would allow the vehicular transport of firearms, lawfully taken wildlife, and lawfully collected Forest products for personal use from the Baca Mountain Tract across the GRSA on the Camino Chamisa as specified in the Superintendent's Compendium.

Alternative 3

Alternative 3 contains both NPS and Forest Service actions as shown in Figure 2-3. This alternative would amend the Forest Plan. However, this alternative would not provide motorized public access across the GRSA to the Baca Mountain Tract.

Forest Service

Alternative 3 would amend the Forest Plan by bringing the Baca Mountain Tract under the management direction of the Forest Plan, designates Forest system roads, and proposes several projects on the Baca Mountain Tract which are interrelated to the Forest Plan amendment.

Under Alternative 3, the entire Baca Mountain Tract would be managed under the MA prescription of 3.3 Backcountry as shown in the Alternative 3 management prescription map, Figure 2-3.

Only the three existing roads shown in Figure 2-3, which provide access to private property inholdings, would be designated as ML II Forest system roads. These are FSR 952, FSR 953, and FSR 955. These roads would be closed to public motorized use. All other existing routes would be restored through natural processes unless they were found in the future to be causing unacceptable environmental damage and needed treatment.

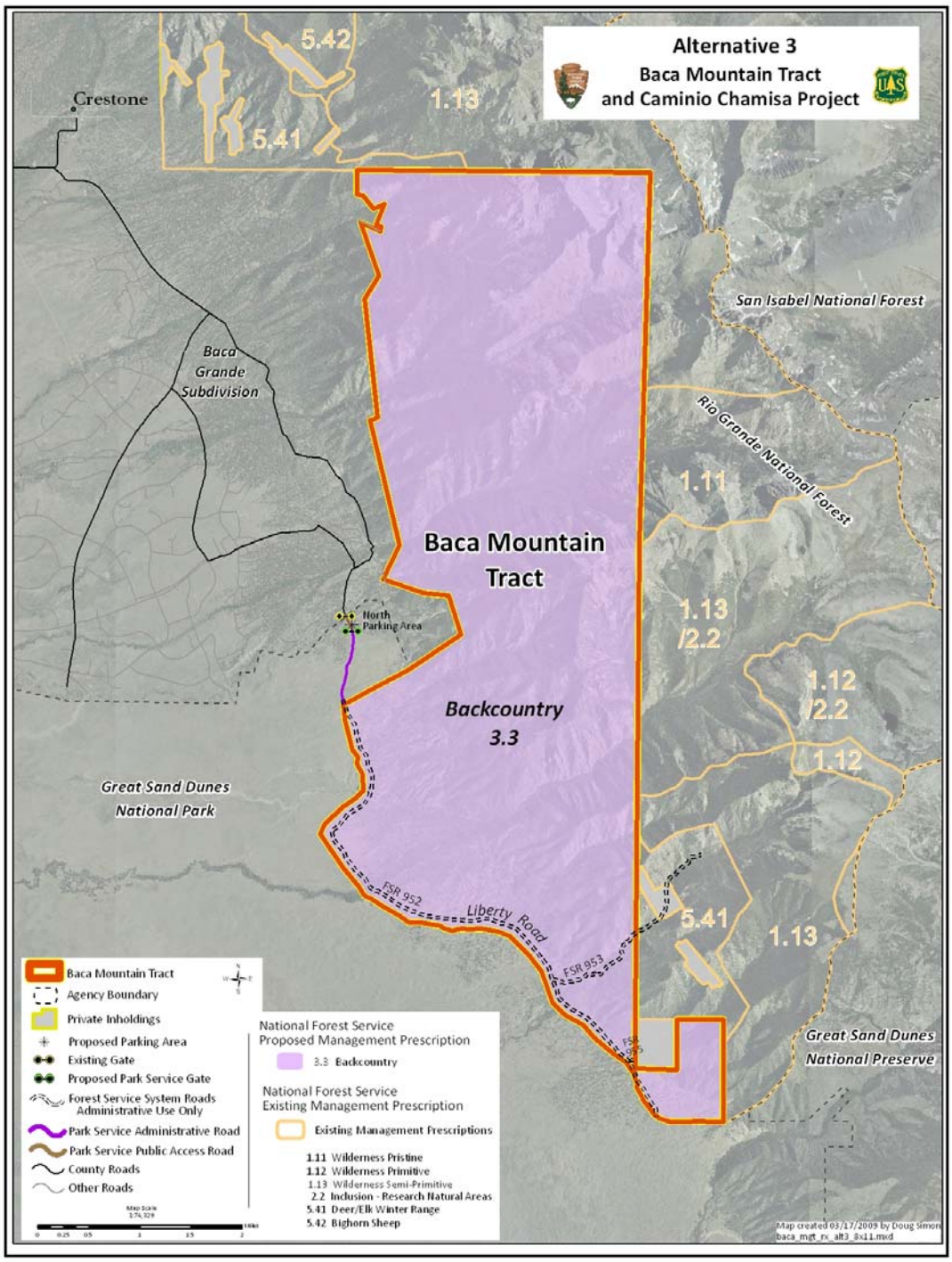


Figure 2-3. Alternative 3 management prescription map

Projects interrelated with the Forest Plan amendment would include:

- Providing long-term authorizations for access to private property inholdings.
- Forest Service Closures:
  - The entire Baca Mountain Tract would be closed to public motorized access.
  - No OHV use on the Baca Mountain Tract would be allowed.
  - No livestock grazing on the Baca Mountain Tract would be authorized.
- Minor maintenance and reconstruction on Forest roads to improve drainage and stream crossings to reduce sedimentation and erosion impacts, and to avoid impacts to historic/cultural sites.
- Restoration activities including noxious weed control, trash removal, and removal of items and infrastructure left over from the Baca Ranch operations determined to not be of historic value, such as plastic irrigation pipe, and fencing. Undesignated roads and two-tracts would be restored through natural re-vegetation.

National Park Service

Alternative 3 provides public motorized access on the Liberty Road to the North Parking Area on the GRSA as shown in Figure 2-3. This includes minor reconstruction of about 0.2 miles of the Liberty Road as a primitive unpaved access road. The public would not be allowed motorized access on Liberty Road beyond the North Parking Area. There would be no motorized public access across the GRSA to the Baca Mountain Tract.

This alternative would construct the gravel 15-vehicle North Parking Area with the associated gate, toilet, signs, and interpretive facilities on the GRSA. An area within 0.25-mile of the North Parking Area would be closed to camping. The Liberty Road would continue to provide foot and horse access for the public and administrative motorized access to the GRSA beyond the North Parking Area gate.

Alternative 4

Alternative 4 contains both National Park Service and Forest Service actions shown in Figure 2-4. This alternative would amend the Forest Plan and provide motorized public access across the GRSA to the South Parking Area on the Baca Mountain Tract.

Forest Service

Alternative 4 would amend the Forest Plan by bringing the Baca Mountain Tract under the management direction of the Forest Plan, designate Forest system roads, and proposes several projects on the Baca Mountain Tract which are interrelated to the Forest Plan amendment.

Under Alternative 4, the Baca Mountain Tract would be managed under the MA prescriptions of 5.42 Bighorn Sheep and 5.41 Deer Elk Winter Range, as shown in the Alternative 4 management prescription map, Figure 2-4.

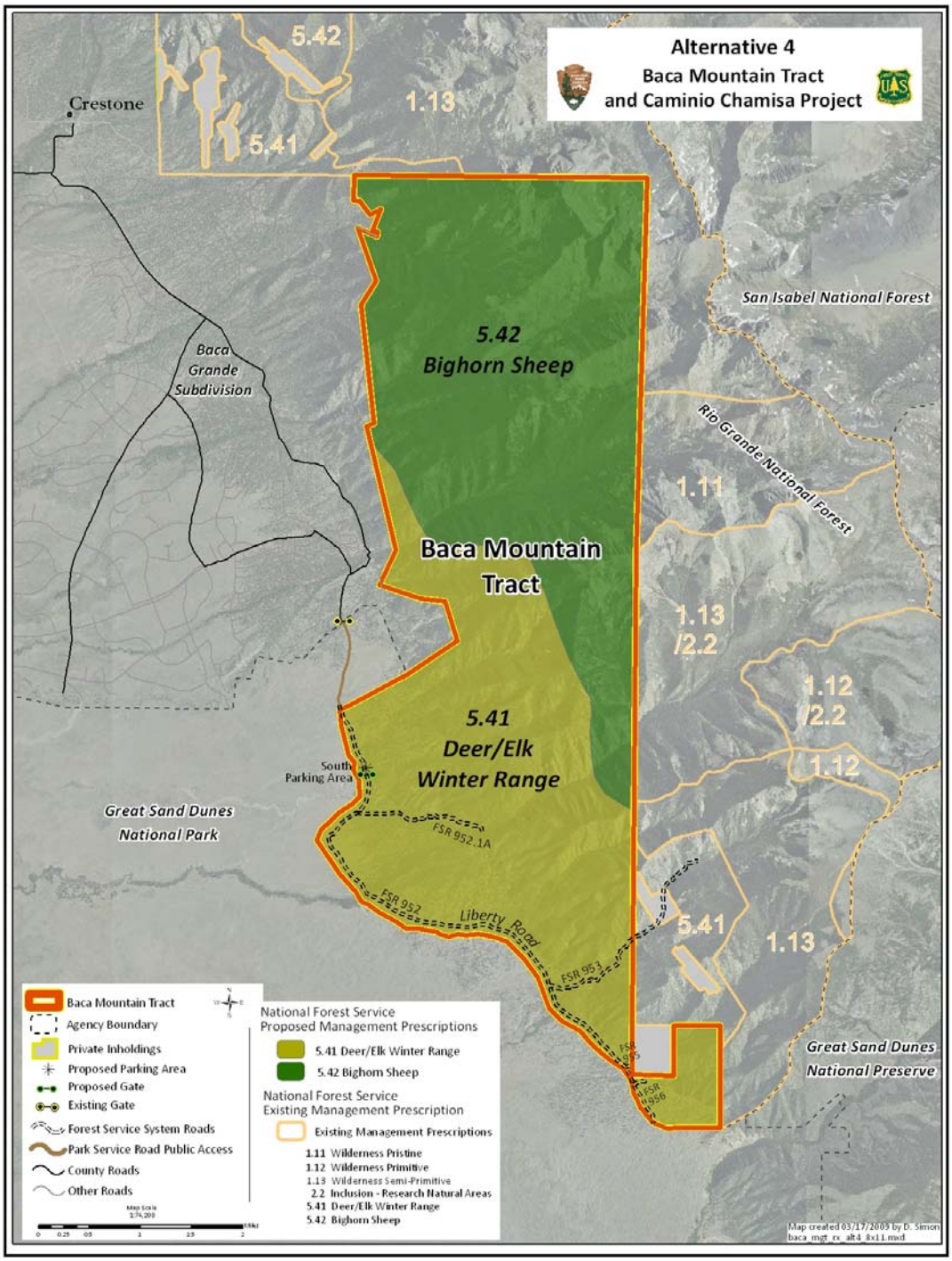


Figure 2-4. Alternative 4 management prescription map

Five existing roads shown in Figure 2-4 would be designated as high clearance ML II Forest system roads (FSR). These are FSR 952, FSR 952.1A, FSR 953, FSR 955 and FSR 956. All other existing routes would be restored through natural processes unless they were found in the future to be causing unacceptable environmental damage and needed treatment.

Projects interrelated to the Forest Plan amendment would include:

- Minor reconstruction of approximately 2.1 miles of the Liberty Road from the Baca Mountain Tract boundary to the South Parking Area.
- Minor maintenance and reconstruction on the other Forest system roads to improve drainage and stream crossings to reduce sedimentation and erosion impacts, and to avoid impacts to historic/cultural sites.
- Construction of the new 15-vehicle South Parking Area with the associated gate, toilet, signs, and interpretive facilities.
- Forest Service closures:
    - The Baca Mountain Tract would be closed to public motorized access except for the portion of the Liberty Road north of the South Parking Area gate. The Liberty Road beyond the South Parking Area gate would continue to provide foot and horse access for the public and administrative motorized access.
    - No OHV use on the Baca Mountain Tract would be allowed.
    - No camping within 0.25-mile of the South Parking Area would be allowed.
    - No livestock grazing on the Baca Mountain Tract would be authorized.
- Providing long-term authorizations for access to private property inholdings.
- Authorizing the Colorado Division of Water Resources to install and operate a streamflow gage on Deadman Creek to measure water flow and permanently plug an associated old diversion channel.
- Restoration activities including noxious weed control, trash removal, and removal of items and infrastructure left over from the Baca Ranch operations determined to not be of historic value, such as plastic irrigation pipe, and fencing. Undesignated roads and two-tracts would be restored through natural revegetation.

National Park Service

Alternative 4 would provide public motorized access across the GRSA on the existing Liberty Road to the new South Parking Area on the Baca Mountain Tract as shown in Figure 2-4. This would include minor reconstruction of approximately 0.7 miles of the Liberty Road on the GRSA. The Liberty Road would remain a primitive road.

This alternative would allow the vehicular transport of firearms, lawfully taken wildlife, and lawfully collected Forest products for personal use from the Baca Mountain Tract across the GRSA on the Camino Chamisa as specified in the Superintendent's Compendium.

Project Design Criteria Common to All Action Alternatives

The Forest Service and NPS use many measures to reduce or prevent negative impacts to the environment in planning and implementing management activities. The following project design

criteria are conservation measures which would avoid, minimize, or mitigate potential impacts to resources in the proposed project area. They have been incorporated into each action alternative and considered in the effects analysis. These design criteria, commonly applied locally and nationally in Forest Service or NPS projects, are known to be effective in mitigating environmental impacts. When implemented, they are expected to significantly reduce environmental impacts.

The management direction prescribed in the GRSA General Management Plan and Superintendent's Compendium are incorporated here by reference and apply to activities on the GRSA.

The Forest Plan's Forest-wide and MA standards and guidelines (S&Gs) are incorporated here by reference and apply to all activities on the Baca Mountain Tract. These are required to make the alternatives consistent with the Forest Plan.

Forest Plan Standards and Guidelines

Forest Plan S&Gs of specific interest in management of the Baca Mountain Tract include:

- Ensure bat access for resident populations when closing mines for safety reasons
- Control non-native and noxious plants throughout the Forest
- Camping is limited to 14 days within any one location within a 30-day period
- Parking area facilities would be accessible to people with disabilities within the limits of the site characteristics
- No recreation livestock within 100 feet of a stream or lake except for watering and through travel; no tethering of recreation livestock within riparian areas
- No camping within 100 feet of a stream
- All activities must comply with the provisions in the National Historic Preservation Act, the Native American Grave Protection and Repatriation Act, and the Archeological Resource Protection Act to protect heritage resource values
- Only certified weed-free hay and straw can be used

Closures Included in All Action Alternatives

Specific closures are included in all action alternatives to address concerns and minimize resource impacts. These are:

- Closing the road system to public motorized public travel beyond the gate at each proposed parking area. Primarily intended to minimize impacts to heritage resources, the closure would also reduce impacts to wildlife and provide more opportunities for a semi-primitive recreation experience.
- Closing the Baca Mountain Tract to public OHV use. This would minimize impacts to heritage resources, soils, vegetation, and water quality. The closure would also reduce illegal OHV use and provide more opportunities for non-motorized recreation experience; it would also reduce the need for additional parking space for OHV trailers.
- Closing the area within 0.25-mile of the parking area proposed in each alternative to camping. This is intended to minimize the impacts of concentrated camping and to minimize the sound and visual impacts of camping on the Baca Grande subdivision and other users. It would also reduce the amount of illegal occupancy on the national forest.

- Closing the Baca Mountain Tract to livestock grazing other than recreational livestock. The grazing closure would make the Baca Mountain Tract compatible with the adjacent national forest management which has been administratively closed to livestock grazing. The closure would also reduce potential conflicts between livestock grazing and recreation and wildlife uses; it would reduce livestock grazing impacts to the Baca Grande subdivision and the GRSA.

Additional Design Criteria Under All Action Alternatives

Additional design criteria applicable to all action alternatives are described below:

- Road design, construction, and maintenance would comply with Forest Service and NPS standard specifications for a high-clearance vehicle road. The design vehicle is high-clearance vehicle pulling a medium-size horse trailer.
- Road designs required by Saguache County at the Camino Real/Camino Chamisa intersection and the Camino Baca Grande/Liberty Road intersection would be met. This mitigation is needed to provide traffic safety and road design compatibility between County and GRSA roads.
- Traffic control measures such as signs, flagmen, and construction area markings would be used on Saguache County roads as required by the county. This mitigation is needed for public and worker safety.
- Visual mitigation of the parking area to meet scenic integrity objectives includes the use of earth-tone colors and nonreflective surfaces, and revegetation with grasses, trees, and shrubs to provide screening and a more natural setting. All built environment and image guidelines would be met to mitigate visual impacts.
- Construction activities would be restricted to daylight hours on weekdays to minimize impacts to Baca Grande subdivision residents and recreationists using the GRSA and Baca Mountain Tract.
- Construction workers and supervisors would be informed about the special sensitivity of GRSA's values and regulations.
- To reduce noise and emissions, construction equipment would not be permitted to idle for long periods of time.
- All construction activities would include dust-control measures.
- To minimize possible petrochemical leaks from construction equipment, the contractor would regularly monitor and check construction equipment to identify and repair any leaks.
- Road fill, road base material, and all organic material used for rehabilitation would be certified weed-free.
- All construction vehicles would be washed before entering public land to reduce the spread of noxious weeds. All construction equipment would be washed before use in streams and waterways to reduce the spread of noxious aquatic organisms.
- All construction vehicle movement would be restricted to road corridors, designated access, contractor-acquired access, or public roads. This mitigation is needed to avoid unnecessary soil disturbance and increased sediment transfer.
- All construction, reconstruction, and maintenance activities must comply with the Soil and Watershed Conservation Handbook (FSH 2509.25) and NPS policies. These best

management practices (BMPs) are to be used, where applicable, to prevent stormwater discharge impacts.

- Road maintenance shall be done in a manner so as not to increase the width of the constructed road surface.
- Other mitigation measures may be used during the implementation of the project through a variety of Federal, State, and local permits.
- All lands administered by the Federal government are subject to protections under the National Historic Preservation Act, the Archaeological Resources Protection Act, and the Native American Graves Protection and Repatriation Act. All Native American human remains and associated funerary objects are protected under a multi-tribal and interagency memorandum of understanding.
- As part of the RGNF wildfire management program, develop a wildfire management plan for the Baca Mountain Tract that specifically addresses effects to the cultural resources, especially wooden structures, from high intensity burns, erosion and suppression activities, and effects from and on the Baca Grande subdivision.
- Elimination of erosion problem caused by old irrigation infrastructure on FSR 953.
- Installation of water bars on an old ranch two-track located north of Pole Creek to protect heritage resources threatened by erosion.
- Place traffic barriers next to the Duncan Cabin on the Liberty Road protect the structure from motor vehicles.
- Place heritage protection signs in the parking area and at Duncan and Liberty to aid in education and enforcement of the Archaeological Resources Protection Act.
- All contractors and subcontractors would be informed of the penalties for illegally collecting artifacts or intentionally damaging paleontological materials, archeological sites, or historic properties. Contractors and subcontractors would also be instructed on procedures to follow in case previously unknown paleontological or archeological resources are uncovered during construction.
- Authorizations for access to private property inholdings would include discovery and education stipulations and include prohibitions on private road maintenance without the prior approval of the Forest Service to protect the heritage resources.
- A site-specific biological assessment/biological evaluation would be required for any new proposed action where threatened, endangered, or sensitive species may be affected.
- Disturbance areas would be surveyed for active bird nests prior to construction, if activities are scheduled between May and July. If an active nest is discovered, ground-disturbing activities would be delayed until the young birds have fledged.
- Inventory and treatment of noxious weeds would comply with the GRSA's and RGNF's invasive species action plans or equivalent document in force at the time.

- Seek cooperative agreement between the Federal agencies managing the former Baca Ranch to continue cultural resource inventories of the area in compliance with the Archaeological Resources Protection Act.

- Seek a cooperative agreement between the Federal agencies managing the former Baca Ranch for law enforcement to protect cultural resources.

- Continue cultural survey efforts for evidence of the east fork of the north branch of the Old Spanish Trail in the analysis area and support the ongoing interagency Old Spanish Historic Trail Comprehensive Management Plan Environmental Impact Statement.

- All parking areas would include interpretation of the history and natural ecosystems in the former Baca Ranch, including the Old Spanish Trail.

- Develop a flexible wildfire management plan for the Baca Mountain Tract with a specific emphasis on community protection and protection of cultural resources, especially wooden structures, from high intensity burns, erosion, and suppression activities.

- The NPS and Forest Service strive to construct facilities with sustainable designs and systems to minimize potential environmental impacts. To the extent possible, the design and management of the facilities will emphasize environmental sensitivity in construction, use of nontoxic materials, resource conservation, recycling, and integration of visitors with natural and cultural settings. In order to reduce energy costs, eliminates waste, and conserves energy resources, energy-efficient and cost-effective technology will be incorporated into the design and acquisition of the facilities and transportation systems.

Alternatives Considered but Dropped from Detailed Consideration

The public proposed several alternatives and ideas to include in alternatives during scoping. Some of these ideas were included in one or more of the action alternatives. Others were considered, but dropped from detailed consideration as discussed below.

Open All Roads on the Baca Mountain Tract to Public Motorized Use Alternative

Some commenters suggested opening all the roads on the Baca Mountain Tract to public motorized use. This was considered, but dropped from detailed consideration for several reasons.

Allowing unrestricted public motorized use on the Baca Mountain Tract roads was considered incompatible with the adjacent GRSA management objectives. Unrestricted motorized use could bring vehicles into close proximity to the Great Sand Dunes Wilderness Area and into the heart of the GRSA Backcountry Adventure Zone which is designated as proposed wilderness in the general management plan. Motorized use is not compatible with these wilderness management objectives and would lead to the need for increased law enforcement to protect those areas.

Most of the documented heritage sites on the Baca Mountain Tract are found along the southern reaches of the Liberty Road. The historical mining district sites are in remarkably good condition when compared to other similar historic sites in Colorado, primarily because public access was very limited while it was private property. By allowing unrestricted public motorized access, a spectrum of heritage sites would be more subject to theft and vandalism, which has occurred at other historic sites with motorized access.

Allowing unrestricted public motorized access on all of the roads within the Baca Mountain Tract could also lead to increased resource damage to vegetation, and soil disturbance because the soils are sandy and the vegetative cover is sparse and, hence, readily susceptible to disturbance.

Cow Camp Access Road

The Cow Camp Road was proposed as a possible motorized public access road through the GRSA to the Baca Mountain Tract in the general management plan. This alternative was considered, but dropped from detailed consideration after additional field review found that the Camino Chamisa Road which parallels the Cow Camp Road could use an existing two-tract and would cause less environmental impact while still providing public motorized access to the Baca Mountain Tract. The Cow Camp Road would have caused more impact by bringing public motorized use to the boundary of the proposed wilderness area and closer to Deadman Creek and elk congregation areas.

Recommended Wilderness Alternative

Some commenters suggested managing the Baca Mountain Tract or portions of it as a recommended wilderness area. This alternative was considered, but dropped from detailed consideration based on a wilderness evaluation conducted as part of the Forest Plan amendment. While the eastern portions of the Baca Mountain Tract have the capability of a potential wilderness, the Tract does not meet the availability requirements for a wilderness recommendation. This is because the Baca Mountain Tract is encumbered with a split estate status where the mineral rights are still privately owned. Since the Forest Service can not prevent access to and the development of those mineral rights which are incompatible uses that would negatively affect wilderness character and potential, a wilderness recommendation is not compatible with the split estate.

Research Natural Area Alternative

Some commenters suggested managing portions of the Baca Mountain Tract as a research natural area (RNA). This was considered, but dropped from further consideration based on the results of an RNA evaluation conducted as part of the Forest Plan amendment. RNAs are intended to be representative of relatively pristine natural areas and relatively free of major disturbances by humans, such as livestock grazing or timber cutting, for the past 50 years. The Baca Mountain Tract was part of the Baca Ranch which was intensively managed from about 1870 to 2004. Currently, the area has obvious and extensive evidence of site alteration including tree cutting, constructed roads, mining activity, water diversion/conveyance structures and measuring flumes, alien plant species, heavy equipment earth work (constructed roads and earth impoundments), and livestock management facilities (barbed wire fences and other livestock-related facilities). Collectively, these represent alteration of the natural environment and create a prominent departure from pristine conditions. Overall, these conditions do not meet the selection criteria in FSM 4063.2 for RNAs. More importantly, the Baca Mountain Tract is encumbered with a split estate status where the mineral rights are privately owned. The goal of RNA designation is to select representative areas in a pristine condition. Since the Forest Service cannot prevent access or prevent the development of those private mineral rights, a RNA designation is not compatible with the split estate ownership.

The RGNF conducted an extensive public involvement process and analysis for the establishment of a RNA network as part of the Forest Plan revision. Six RNAs were established

to form a deliberate and strategic RNA network on the Forest to represent the ecosystems and life zones from foothills to alpine in both the Sangre de Cristo and San Juan Mountains. The Forest Plan did not identify additional needs in the RNA network.

Special Cultural and Spiritual Interest Area Alternative

The Spiritual Centers are a key component of the Baca Grande community where solitude and quiet are valued. Some commenters suggested managing portions of the Baca Mountain Tract adjacent to the Baca Mountain Tract as Cultural and Spiritual Special Interest Areas. This was considered but dropped from detailed consideration. While the Forest Plan provides a MA prescription 3.1 for designation of Special Interest Areas, this prescription is designated to manage and protect a specific area with unusual botanical, geological, or historical values. This does not extend to designation of special interest area for personal religious or spiritual beliefs. A special interest area, such as the one proposed in Alternative 2, has unique historic values based on the presence of prehistoric or historic heritage sites evaluated as significant and eligible to the National Register of Historic Places. The spiritual centers in the Baca Grande subdivision are a relatively recent development, beginning in1979.

There are ample opportunities to find solitude and quiet for spiritual or recreational purposes on the RGNF, although these opportunities may not occur in close proximity to the more urban Baca Grande subdivision. The MA prescriptions proposed in the alternatives all provide opportunities for solitude and quiet on most of the Baca Mountain Tract. If management activities allowable under any of the MA prescriptions would occur in the future, they would be of relatively low intensity and short duration and would be done for the long-term sustainability and health of the Forest ecosystem which is now valued and enjoyed by the spiritual centers and others. There would be no expected long-term degradation of opportunities for solitude and quiet. Any future projects would also require additional analysis with additional public participation.

Comparison of Alternatives Summary

This section provides a summary of the differences between the alternatives and how they respond to the key issues. Table 2-1 provides a summary display of the components in each alternative. Table 2-2 provides a comparison summary of the differences between alternatives on the key issues. Table 2-3 provides a comparison summary of the effects to resources by alternative. A more detailed discussion of the effects of the alternatives is presented in Chapter 3.

Table 2-1. Summary of the alternatives

Component	Alternative 1 (No Action)	Alternative 2	Alternative 3	Alternative 4
Meets Purpose and Need to Bring the Mountain Tract Under Forest Plan Management Direction	No	Yes	Yes	Yes
Management Area Prescriptions – Forest Service	None	Yes	Yes	Yes
3.1 Special Interest Area (acres)	0	3,900	0	0
3.3 Backcountry (acres)	0	0	13,400	0
5.41 Deer/Elk Winter Range (acres)	0	2,500	0	6,400
5.42 Bighorn Sheep (acres)	0	7,000	0	7,400
Total Acres of Disturbance All Ownerships	0	8.8	1.1	4.5
Total acres of disturbance on GRSA	0	7.3	1.1	1.8
Total acres of disturbance on USFS	0	1.1	0	2.7
Total acres of disturbance on Saguache County	0	0.4	0	0
Roads				
Saguache County				
Camino Real extension (new road miles)	0	0.15 miles	0	0
GRSA				
Total miles of existing road in analysis area (Liberty Road)	0.73 miles	0.73 miles	0.73 miles	0.73 miles
Total miles of new road in analysis area	0	3.03 miles (Camino Chamisa)	0	0
Total miles of road open to motorized public use on GRSA	0	3.03 (Camino Chamisa)	0.2 (Liberty Road)	0.73 (Liberty Road)
USFS				
Total miles of designated Forest system roads on Baca Mountain Tract	0	10.5	8.89	10.5
FSR 952 (Liberty Road) existing miles	0	6.53	6.53	6.53
FSR 952.1A existing miles	0	1.45	0	1.45
FSR 953 existing miles	0	2.29	2.29	2.29

Component	Alternative 1 (No Action)	Alternative 2	Alternative 3	Alternative 4
FSR 955 existing miles	0	0.07	0.07	0.07
FSR 956 existing miles	0	0.15	0	0.15
Total miles of designated Forest system road on Baca Mountain Tract open to public motorized use	0	0.21	0	0.52
Total Roads – All Ownerships				
Total miles of road in analysis area	0.73	14.41	9.62	11.23
Parking Area				
New Parking Area	None	Middle Parking Area on Baca Mountain Tract	North Parking Area on GRSA	South Parking Area on Baca Mountain Tract
Forest Service Special Use Authorizations				
Special Use permit to Colorado Division of Water Resources for water gaging station construction and use	No	Yes	No	Yes
Long-term authorizations for access to private property inholdings	No	Yes	Yes	Yes
Forest Service Closures				
Motorized travel closures	No Closures	Closed to public motorized travel past Middle Parking Area	Closed to public motorized travel past North Parking Area	Closed to public motorized travel past South Parking Area
Closed to OHV use	No Closures	Yes	Yes	Yes
Closed to livestock grazing	No Closures	Yes	Yes	Yes
Closed to camping	No Closures	Closed to camping within 0.25-mile of Middle Parking Area	Closed to camping within 0.25-mile of North Parking Area	Closed to camping within 0.25-mile of South Parking Area

Table 2-2. Summary of key issues by alternative

Key Issue	Alternative 1 (No Action)	Alternative 2	Alternative 3	Alternative 4
Issue 1. Public Motorized Access to the Baca Mountain Tract				
Motorized hunting access to Baca Mountain Tract	Does not provide for public motorized public access.	Provides for limited public motorized public access; closed beyond Middle Parking Area.	Does not provide for public motorized access.	Provides for limited public motorized access; closed beyond South Parking Area.
Issue 2. Effects to Local Communities				
Management flexibility for Forest Service to respond to future community fire suppression, fuel treatment, water, and recreation needs	None.	High.	Constrained.	High.
Means of public access to the Baca Mountain Tract	Foot and horse only.	Yes; limited motorized access.	Foot and horse only.	Yes; limited motorized access.
Access to private property inholdings	Yes; but only through temporary authorizations.	Yes; under a long-term authorization.	Yes; under a long-term authorization.	Yes; under a long-term authorization.
Traffic routes within the Baca Grande subdivision to access public lands	Camino Baca Grande access route; does not address Saguache County's preference for traffic route through the subdivision.	Camino Real access route; this alternative addresses Saguache County's preferred access route.	Camino Baca Grande access route; does not address Saguache County's preference for traffic route through the subdivision.	Camino Baca Grande access route; does not address Saguache County's preference for traffic route through the subdivision.
Parking impacts to the Baca Grande subdivision related to public land access	No change; all parking occurs on the subdivision.	Parking impacts are reduced; parking occurs on the Baca Mountain Tract.	Parking impacts are eliminated; parking occurs on the GRSA.	Parking impacts are eliminated; parking occurs on the Baca Mountain Tract.
Number of safety escape routes from Baca Grande subdivision to the south	One location.	Two locations.	One location.	One location.
Reduces parking congestion at the County's Liberty Gate parking area	No.	Yes; some parking may still continue for hikers on Liberty Road.	Yes.	Yes.

Key Issue	Alternative 1 (No Action)	Alternative 2	Alternative 3	Alternative 4
Visual effects to the Baca Grande subdivision	No effects.	Camino Chamisa is somewhat visible, but would not dominate the landscape. It lies 0.25 mile from the subdivision boundary, but is screened by greenbelt for most of its length. The Middle Parking Area is visible, 1.3 miles distant from subdivision, but would not dominate the landscape. Designed to blend with the characteristic landscape.	Somewhat visible, especially to nearby residents, but would not dominate the landscape. North Parking Area lies 0.2 mile from subdivision, but is partially screened by vegetation. Designed to blend with the characteristic landscape.	South Parking Area lies 1.6 miles from subdivision and is screened by topography and vegetation. Designed to blend with the characteristic landscape.
Noise effects to the Baca Grande subdivision	Noise from vehicles, horse trailers, people, pets, and livestock at the county's Liberty Gate parking area would continue and adversely impact nearby residents.	Minimal. Noise is expected to be within background noise from subdivision. Noise from construction would be evident, but of short duration. Long-term effects are evident, but minor and seasonal. Noise from vehicle use on Camino Chamisa, 0.25-mile away, would be muted, but noticeable. Noise from Middle Parking Area 1.3 miles away, is minimal.	Minor. Noise is expected to be well within background noise from subdivision. Noise from construction would be evident, but of short duration. Long-term effects are evident, but minor and seasonal. Noise from vehicle use of Liberty Road would be noticeable to nearby residents. Noise from Northern Parking Area would be muted, but noticeable to nearby residents because of the close proximately (0.2 miles) to the subdivision.	Minimal. Noise is expected to be within background noise from subdivision. Noise from construction would be evident, but short term. Long-term impacts are evident, but minor and seasonal. Noise from vehicle use of Liberty Road would be noticeable to nearby residents. Noise from Southern Parking Area should not be noticeable because it is 1.6 mile distant and screened by vegetation and topography.
Sense of place	No Change.	Very limited, if any change depending on an individual's perspective. Historical and cultural elements and scenic landscape setting would not change. More convenient access would enable more people to experience the Baca Mountain Tract.	Minimal change; historical and cultural elements and landscape scenic setting would not change.	Very limited, if any change depending on an individual's perspective. Historical and cultural elements and scenic landscape setting would not change. More convenient access would enable more people to experience the Baca Mountain Tract.

Key Issue	Alternative 1 (No Action)	Alternative 2	Alternative 3	Alternative 4
Wildfire management on the Baca Mountain Tract to reduce the wildfire threat to the Baca Grande subdivision	Not all response options are available. Resource benefits are not considered.	All management options available. Camino Chamisa provides additional ingress/egress for firefighters and escape route for community, and serves as a containment feature.	All management options available.	All management options available.
Fuels management on the Baca Mountain Tract to reduce the wildfire threat to the Baca Grande subdivision	No fuels treatments allowed.	Allows fuels management to reduce risk.	Allows fuels management to reduce risk. Some constraints on tree cutting in MA prescription 3.3 Backcountry.	Allows fuels management to reduce risk.
Economic benefits	No change.	Minor short-term benefits from construction, non-resident visitor use expected to be very low resulting in very limited economic benefit from non-resident visitors.	Minimal short-term benefits from construction, non-resident visitor use expected to be very low resulting in very limited economic benefit from non-resident visitors.	Minor short-term benefits from construction, non-resident visitor use expected to be very low resulting in very limited economic benefit from non-resident visitors.
Recreation opportunities for residents on GRSA	Backcountry adventure.	Backcountry access and backcountry adventure.	Backcountry adventure.	Backcountry access and backcountry adventure.
Recreation opportunities for residents on Baca Mountain Tract	No change from current opportunities; no recreation management.	Provides for expanded recreation opportunities and experiences. More convenient access for horse riding, walking, or hunting activities. Provides flexibility for future recreation management for trails and other compatible recreation uses.	No change from current opportunities. Limited future recreation management for trails and other compatible recreation uses.	Provides for expanded recreation opportunities and experiences. More convenient access for horse riding, walking or hunting activities. Provides flexibility for future recreation management for trails and other compatible recreation uses.
Water quantity and quality from Baca Mountain Tract available for community use	No effect.	Beneficial effect. All activities come under Forest Plan S&Gs and BMPs. Quality maintained to meet State use classifications. Timing and duration of streamflows not affected.	Beneficial effect. All activities come under Forest Plan S&Gs and BMPs. Quality maintained to meet State use classifications. Timing and duration of streamflows not affected.	Beneficial effect. All activities come under Forest Plan S&Gs and BMPs. Quality maintained to meet State use classifications. Timing and duration of streamflows not affected.

Key Issue	Alternative 1 (No Action)	Alternative 2	Alternative 3	Alternative 4
Management flexibility for Forest Service to respond to future water measurement and infrastructure needs of the community	None.	Yes.	Future water projects would be discouraged.	Yes.
Issue 3. Compatibility with Other Government Agency Management Objectives				
GRSA				
General management plan	Yes.	Yes.	Yes.	Yes.
Management objectives for Backcountry Access	Yes.	Would require education and enforcement.	Would require education and enforcement.	Would require education and enforcement.
Management objectives for Backcountry Adventure	Yes.	Would require education and enforcement.	Would require education and enforcement.	Would require education and enforcement.
Provides public motorized access on the GRSA to Baca Mountain Tract	No.	Yes.	No.	Yes.
Scenic objectives	Yes.	Yes; alterations would blend with natural landscape.	Yes; alterations would blend with natural landscape.	Yes; alterations would blend with natural landscape.
Archeological and cultural management objectives	Yes.	Most compatible; the Duncan/Liberty Special Interest Area would result in increased emphasis with a comprehensive inter-agency heritage resource plan for the protection, restoration, and interpretation of the heritage resources for both agencies.	Yes, primarily protection.	Yes, primarily protection.
Integrated pest management plan	Yes.	Yes.	Yes.	Yes.
Night sky objectives	Yes.	Yes.	Yes.	Yes.
Greater Sand Dunes Interagency Fire Management Plan	Yes.	Yes.	Yes.	Yes.

Key Issue	Alternative 1 (No Action)	Alternative 2	Alternative 3	Alternative 4
USFWS				
Conceptual management plan	Yes.	Yes.	Yes.	Yes.
With noxious weeds management objectives	Yes.	Yes; allows management to reduce risk.	Yes; allows management to reduce risk.	Yes; allows management to reduce risk.
With water management objectives	Yes.	Yes.	No.	Yes.
CDOW				
Game Management Unit (GMU) Plan	Less supportive; limited hunter access; no Forest Service management emphasis for deer/elk or bighorn sheep habitat.	Supportive; all management tools available; Forest Service management emphasis for deer/elk or bighorn sheep habitat.	Less supportive, limited hunter access; no Forest Service management emphasis for deer/elk or bighorn sheep habitat.	Supportive; all management tools available; Forest Service management emphasis for deer/elk or bighorn sheep habitat.
Saguache County				
Compatible with Northern Saguache County Fire Protection District and Kundalini Fire Department fire and fuels management plans	Not fully compatible. Fire response is compatible; but inability to do fuel treatment projects would not be compatible.	Fully compatible.	Fully compatible.	Fully compatible.
Number of safety escape routes from Baca Grande subdivision to the south	1	2	1	1
Traffic routes on County roads within the Baca Grande subdivision to access public lands	Camino Baca Grande access route; does not address Saguache County's preference for traffic route through the subdivision.	Camino Real access route; this alternative addresses Saguache County's preferred access route.	Camino Baca Grande access route; does not address Saguache County's preference for traffic route through the subdivision.	Camino Baca Grande access route; does not address Saguache County's preference for traffic route through the subdivision.
Forest Service				
Forest Plan	No.	Yes.	Yes.	Yes.
With noxious weeds management objectives	No.	Yes; allows management to reduce risk.	Yes; allows management to reduce risk.	Yes; allows management to reduce risk.

Key Issue	Alternative 1 (No Action)	Alternative 2	Alternative 3	Alternative 4
Issue 4. Big Game Management				
GRSA	Follow NPS regulations for transport of firearms and game retrieval.	Follow NPS regulations for transport of firearms and game retrieval.	Follow NPS regulations for transport of firearms and game retrieval.	Follow NPS regulations for transport of firearms and game retrieval.
Provides CDOW game management flexibility to manage elk through regulated hunting	Most limiting.	Yes; provides more management flexibility across the landscape.	Limited.	Yes; provides more management flexibility across the landscape.
Motorized hunter access to facilitate game management objectives	Hunters have no motorized access to Baca Mountain Tract for hunting opportunities; access by foot and horse only. Transport of firearms and game across GRSA by permit.	Hunters have motorized access to Baca Mountain Tract for hunting opportunities; vehicle use and transport of firearms, game, and Forest products regulated through GRSA Superintendent's Compendium.	Hunters have no motorized access to Baca Mountain Tract for hunting opportunities; travel by foot and horse only. Transport of firearms and game across GRSA by permit.	Hunters have motorized access to Baca Mountain Tract for hunting opportunities; vehicle use and transport of firearms, game, and Forest products regulated through GRSA Superintendent's Compendium.
Ability to disperse elk	Limited.	Increased.	Limited.	Increased.
Ability to control elk numbers	Limited.	Increased.	Limited.	Increased.
Wildlife improvements	No.	Yes; encouraged.	Limited.	Yes; encouraged.
Management for bighorn sheep habitat	None.	Provides specific 5.42 management emphasis for bighorn sheep habitat.	No specific management emphasis for bighorn sheep habitat.	Provides specific 5.42 management emphasis for bighorn sheep habitat.
Management for deer and elk habitat	None.	Provides specific 5.41 management emphasis for deer/elk habitat.	No specific management emphasis for deer/elk habitat.	Provides specific 5.41 management emphasis for deer/elk habitat.
Issue 5. Heritage Resources				
Cultural Resource Management	Limited to protection.	Designates historical Duncan/Liberty Special Interest Area.	Limited to protection; no special interest area.	Limited to protection; no special interest area.
Cultural sites protected by law and regulation	Yes.	Yes.	Yes.	Yes.

Key Issue	Alternative 1 (No Action)	Alternative 2	Alternative 3	Alternative 4
Consistent with Native American Graves Protection and Repatriation Act MOU	Yes.	Yes.	Yes.	Yes.
Establishes historical Duncan/Liberty Special Interest Area with management emphasis on protection, research, restoration, and interpretation of heritage resources	No.	Yes.	No.	No.
Area of potential impacts due to inadvertent discovery of sites during ground disturbing activities	None, no disturbance.	8.8 acres of disturbance.	1.1 acres of disturbance.	4.5 acres of disturbance.

Table 2-3. Summary of comparison of other resource effects by alternative

Resource	Alternative 1 (No Action)	Alternative 2	Alternative 3	Alternative 4
Air				
National Ambient Air Quality Standards	In compliance.	In compliance.	In compliance.	In compliance.
Fuels				
Prescribed fire treatments on the Baca Mountain Tract	No acres available for treatment. No prescribed fire allowed.	All acres available for treatment, requires more complex design criteria for projects within Duncan/Liberty Special Interest Area.	All acres available for treatment, requires more complex design criteria to protect heritage sites.	All acres available for treatment, requires more complex design criteria to protect heritage sites.
Mechanical fuel treatments on the Baca Mountain Tract	No projects, no acres available for treatment.	All acres available for treatment, requires more complex design criteria for projects within Duncan/Liberty Special Interest Area.	All acres available for treatment, requires more complex design criteria to protect heritage sites. Significant constraints placed on tree cutting in 3.3 Backcountry.	All acres available for treatment, requires more complex design criteria to protect heritage sites.
Compatibility with Kundalini and North Saguache County fire district plans	Not fully compatible. Fire response is compatible; inability to do fuel treatment would not be compatible.	Fully compatible.	Fully compatible.	Fully compatible.
Heritage				
Discussed in Table 2.2 under Issue 5 Heritage Resources				
Infrastructure				
Roads discussed in Table 2.1				
Parking Areas discussed in Table 2.1				
Total estimated cost of road and parking area	None.	$811,000	$156,000	$366,000
Minerals				

Subsurface ownership on Baca Mountain Tract and GRSA	Split estate; mineral rights privately owned.	Split estate; mineral rights privately owned.	Split estate; mineral rights privately owned.	Split estate; mineral rights privately owned.
Surface management on Baca Mountain Tract	The Forest Service can not prevent access to and the development of privately owned mineral rights. Development must be negotiated with private owner.	The Forest Service can not prevent access to and the development of privately owned mineral rights. Development must be negotiated with private owner.	The Forest Service can not prevent access to and the development of privately owned mineral rights. Development must be negotiated with private owner.	The Forest Service can not prevent access to and the development of privately owned mineral rights. Development must be negotiated with private owner.
Surface management on GRSA	Governed under NPS protocols.	Governed under NPS protocols.	Governed under NPS protocols.	Governed under NPS protocols.
Oil and Gas				
Subsurface ownership on Baca Mountain Tract and GRSA	Split estate; oil/gas rights privately owned.	Split estate; oil/gas rights privately owned.	Split estate; oil/gas rights privately owned.	Split Estate; oil/gas rights privately owned.
Surface management on Baca Mountain Tract	The Forest Service can not prevent access to and the development of privately owned mineral rights. Development must be negotiated with private owner.	The Forest Service can not prevent access to and the development of privately owned mineral rights. Development must be negotiated with private owner.	The Forest Service can not prevent access to and the development of privately owned mineral rights. Development must be negotiated with private owner.	The Forest Service can not prevent access to and the development of privately owned mineral rights. Development must be negotiated with private owner.
Oil and gas potential on Baca Mountain Tract	No currently recognized potential.	No currently recognized potential.	No currently recognized potential.	No currently recognized potential.
GRSA oil and gas management	Governed under NPS protocols.	Governed under NPS protocols.	Governed under NPS protocols.	Governed under NPS protocols.
Plants				
Threatened and endangered (T&E) species determination	No Effect.	No Effect.	No Effect.	No Effect.
Forest Service Sensitive species determination	No Impact.	No Impact.	No Impact.	No Impact.
Noxious weeds risk	Very low.	Low with mitigation.	Very low with mitigation.	Low with mitigation.
Recreation				

Recreation opportunities on Baca Mountain Tract	Does not provide recreation management or allow for expanded recreation opportunities and experiences in the future. There is no convenient access for recreationists.	Provides for expanded recreation opportunities and experiences, including scenic driving with more convenient access for horse riding, walking, or hunting activities. Provides flexibility for future recreation management for trails and other compatible recreation uses.	Does not provide convenient access for horse riding, walking, or hunting activities. Motorized public access for a wide range of recreation opportunities or limits recreation opportunities and experiences in the future.	Provides for expanded recreation opportunities and experiences. More convenient access for horse riding, walking, or hunting activities. Provides flexibility for future recreation management for trails and other compatible recreation uses.
Forest Service recreation opportunity spectrum (ROS)	No change from existing, semi-primitive non-motorized, and roaded-natural opportunities.	No change from existing, semi-primitive non-motorized, and roaded-natural opportunities.	No change from existing, semi-primitive non-motorized, and roaded-natural opportunities.	No change from existing, semi-primitive non-motorized, and roaded-natural opportunities.
Forest Service recreation closures	None.	Yes; closures for motorized use, OHVs, and camping.	Yes; closures for motorized use and OHVs.	Yes; closures for motorized use, OHVs, and camping.
GRSA recreation opportunity	Backcountry adventure.	Backcountry adventure and backcountry access.	Backcountry adventure and backcountry access.	Backcountry adventure and backcountry access.
Scenery Management				
Visual effects	No effects.	Camino Chamisa is somewhat visible, but would not dominate the landscape, 0.25-mile distant from the subdivision, but screened by green belt much of its length. Middle Parking Area is visible, but would not dominate the landscape, 1.3 miles distant from the subdivision and designed to blend with the characteristic landscape.	Somewhat visible, especially to nearby residents, but would not dominate the landscape. North Parking Area lies 0.2 miles from subdivision, but partially screened by vegetation and designed to blend with the characteristic landscape.	South Parking Area, 1.6 miles distant from subdivision is screened by topography and vegetation and would not dominate the landscape. Designed to blend with the characteristic landscape.
Soils				

Effects to soils	No effect.	Amendment provides beneficial effect. All activities come under Forest Plan S&Gs and BMPs. Projects could result in very minor erosion and sedimentation impacts minimized through appropriate BMPs and design criteria.	Amendment provides beneficial effect. All activities come under Forest Plan S&Gs and BMPs. Projects could result in very minor erosion and sedimentation impacts minimized through appropriate BMPs and design criteria.	Amendment provides beneficial effect. All activities come under Forest Plan S&Gs and BMPs. Projects could result in very minor erosion and sedimentation impacts minimized through appropriate BMPs and design criteria.
Water				
Water quantity	No effect.	No effect to timing and duration of streamflows.	No effect to timing and duration of streamflows.	No effect to timing and duration of streamflows.
Water quality	No effect.	Amendment provides beneficial effect. All activities come under Forest Plan S&Gs and BMPs. Quality maintained to meet State use classifications. Projects could result in very minor sedimentation impacts minimized through appropriate BMPs and design criteria.	Amendment provides beneficial effect. All activities come under Forest Plan S&Gs and BMPs. Quality maintained to meet State use classifications. Projects could result in very minor sedimentation impacts minimized through appropriate BMPs and design criteria.	Amendment provides beneficial effect. All activities come under Forest Plan S&Gs and BMPs. Quality maintained to meet State use classifications. Projects could result in very minor sedimentation impacts minimized through appropriate BMPs and design criteria.
Stream gage installation (Deadman Creek)	None.	One.	None.	One.
Wildfire				
Management flexibility to use all response options available (perimeter control/suppression, confine/contain and/or wildfire use for resource benefits on all parts of a wildfire on the Baca Mountain Tract)	Not all response options are available. Resource benefits are not considered.	Full spectrum of response options are available. Requires more complex design criteria for projects within Duncan/Liberty Special Interest Area to protect heritage sites.	Full spectrum of response options are available. Requires more complex mitigation to protect specific heritage sites.	Full spectrum of response options are available. Requires more complex mitigation to protect specific heritage sites.
Wildlife				
Threatened and Endangered (T&E) species determination	No Effect.	No Effect.	No Effect.	No Effect.

Forest Service sensitive species determination	No Impact to May Impact Individuals. No loss of viability.	No Impact to May Impact Individuals. No loss of viability.	No Impact to May Impact Individuals. No loss of viability.	No Impact to May Impact Individuals. No loss of viability.
Forest Service management indicator species	No direct impact. Would not adversely affect species viability.	Minimal impacts. Would not adversely affect species viability.	Minimal impacts. Would not adversely affect species viability.	Minimal impacts. Would not adversely affect species viability.
Migratory birds	No direct impact.	Minimal impacts. Consistent with Forest Plan S&Gs.	Minimal impacts. Consistent with Forest Plan S&Gs.	Minimal impacts. Consistent with Forest Plan S&Gs.
Bighorn sheep	No management.	Designates 5.42 Management-Area Prescription with specific management emphasis for the maintenance and improvement bighorn sheep habitat to ensure viability. Contributes to the Forest strategy for bighorn sheep viability.	No specific management emphasis for maintenance and improvement bighorn sheep habitat.	Designates 5.42 MA prescription with specific management emphasis for the maintenance and improvement bighorn sheep habitat to ensure viability. Contributes to the Forest strategy for bighorn sheep viability.
Deer and elk	No management.	Designates 5.41 MA prescription with specific management emphasis for deer and elk winter range habitat.	No specific management emphasis for deer and elk winter range habitat.	Designates 5.41 MA prescription with specific management emphasis for deer and elk winter range habitat.

Monitoring

Monitoring and evaluation are used by the Forest Service to determine need for change under adaptive management. Monitoring is at both the Forest Plan and project level. The Baca Mountain Tract would be included as part of the Forest Plan Monitoring and Evaluation Strategy, incorporated here by reference. The following project-specific monitoring items also apply to all action alternatives.

Heritage

Heritage sites would be monitored for impacts from human disturbance, elk trampling, and natural erosion as part of the Forest heritage monitoring program required under Section 106 of the National Historic Preservation Act. Additional cultural resource inventories would occur. Section 14 of the Archaeological Resources Protection Act requires Federal agencies to inventory cultural resources on lands likely to contain the most scientifically valuable archaeological resources. Monitoring and inventories would be conducted cooperatively with the GRSA.

Traffic

Vehicle traffic use levels on the GRSA and Baca Mountain Tract roads and parking area would be monitored to determine actual use levels and trends. The results would be shared with Saguache County, and assessed with any traffic monitoring conducted by the county as needed.

Recreation Use

Recreation use levels on the GRSA and Baca Mountain Tract would be monitored for numbers of visitors and types and location of activities. These would be included with ongoing visitor use monitoring and wilderness monitoring conducted by the GRSA and RGNF. Recreation use and impacts around the parking area, Deadman Creek, and the mountaineering routes would be emphasized.

Riparian Areas

Riparian areas, especially along Deadman Creek, would be periodically monitored cooperatively with GRSA for proper functioning condition to determine riparian and stream health impacts from elk and recreation as part of the Forest Plan Monitoring and Evaluation Strategy.

Elk

The elk population and its effects on Forest vegetation, riparian areas, and cultural resources would be monitored in coordination with CDOW, the Baca National Wildlife Refuge, and GRSA. Elk impacts have been a concern prior to this project and there are several ongoing studies and monitoring efforts to assess the elk population and impacts. This monitoring would be done in conjunction with the existing studies where applicable. CDOW does annual population and habitat monitoring as part of game management unit planning. The U.S. Geological Survey, in cooperation with the GRSA, is conducting an ongoing long-term study on elk and bison grazing in the Great Sand Dunes lands complex which includes the GRSA, Baca Mountain Tract, and adjacent lands. The Forest is currently monitoring elk willow use in upper Deadman Creek in concert with CDOW's Habitat Partnership Program. This is an expansion of the monitoring of willow use done by the U.S. Geologic Survey along Cottonwood and Deadman Creeks. The condition of riparian areas would be monitored and assessed for elk

browsing and bank trampling. Elk are also monitored as a management indicator species (MIS) in Forest Plan monitoring.

Vesper Sparrow

Vesper sparrow and its habitat would be monitored for impacts from elk as part of the Forest Plan MIS monitoring.

Bighorn Sheep

Rocky Mountain bighorn sheep numbers and their habitat on the Baca Mountain Tract would be monitored for disease and effects from recreation use and elk and mountain goat interactions, in conjunction with CDOW. CDOW does annual monitoring of bighorn sheep populations and habitats as part of the Colorado Bighorn Sheep Management Plan. This includes monitoring of populations, health conditions, and mountain goat interactions.

Weeds

To ensure that project design criteria are effective and that noxious weed infestations are identified and treated, periodic site inspections during construction activities and recreation livestock use would be done as part of normal Federal lands administration. Noxious weed surveys and treatments would be done as part of the RGNF's and GRSA's noxious weed management programs. These actions would include close collaboration with the each agency and include cooperation with Saguache County and the Baca National Wildlife Refuge.

Deadman Creek Research Natural Area

The Deadman Creek Research Natural Area adjacent to the Baca Mountain Tract would continue to be monitored for potential affects from elk and recreation use coming from the Baca Mountain Tract as part of Forest Plan monitoring of RNAs.

Future Planning Needs

This analysis identified the need for additional planning in several resource areas beyond the scope of this project. Future planning efforts are needed for further assessment and management of specific resources in and adjacent to the Baca Mountain Tract; these are discussed as follows.

Heritage Resource Management Plan

A comprehensive interagency heritage resource plan would be developed jointly by the RGNF and the GRSA for the protection, restoration, and interpretation of the heritage resources on both the GRSA and Baca Mountain Tract. This plan would include a living history component to capture the knowledge and experience of people who have lived and worked these lands before that opportunity is lost.

Recreation Plan

A comprehensive landscape-scale interagency recreation plan is needed for the former Baca Ranch and the adjacent public lands. This plan would be developed collaboratively by the Rio Grande National Forest, Pike San Isabel National Forest, GRSA, and Baca National Wildlife Refuge with input from CDOW. This plan would include assessments of backcountry recreation, recreation in wilderness areas, mountaineering, recreation effects on bighorn sheep, hunting, commercial permits, existing and new trails, loop trails, camping, and other recreation issues.

The plan would address and develop the interpretive opportunities for all three agencies for the historic and ecological aspects of the former Baca Ranch lands and the Old Spanish Trail.

A moratorium is currently in place on commercial outfitter/guide permits on both the GRSA and Baca Mountain Tract until this plan is completed.

Watershed Plan

The USFWS received the water rights previously owned by the Baca Ranch. A comprehensive landscape-scale interagency watershed(s) plan would be developed by the Baca National Wildlife Refuge, Rio Grande National Forest, and GRSA with input from Saguache County, Crestone, and the Baca Grande subdivision to address agency water management, domestic water supply issues, and ecological concerns. Community source water protection plans would be considered in this watershed plan. As part of the 1996 Amendment to the Safe Drinking Water Act, States were directed to develop a Source Water Assessment and Protection Program. Lands within the Baca Amendment are within source areas identified during implementation of this program. Colorado Department of Health and Environment encourages public water systems to include the Forest Service in these source water planning efforts. Currently, the Colorado Department of Health and Environment and the Forest Service are working on a memorandum of understanding regarding Forest participation in these source water protection plans.

U.S. Fish and Wildlife Service Baca National Wildlife Refuge Comprehensive Conservation Plan

The Baca National Wildlife Refuge is currently being managed under an interim conceptual management plan. A comprehensive conservation plan would be developed beginning in 2011. The GRSA, Saguache County, and the RGNF would participate as cooperating agencies with the USFWS in the development of that plan. The plan would address public motorized and non-motorized access on the Refuge, including an assessment of the need or opportunity to avoid public access on county roads through the Baca Grande subdivision to access the GRSA and the Baca Mountain Tract.

Chapter 3 – Affected Environment and Environmental Consequences

Introduction

This chapter summarizes the existing affected environment and environmental consequences of each alternative (described in Chapter 2) on the key issues and affected resources. The direct, indirect, and cumulative effects are displayed by three actions: (1) Forest Plan amendment, (2) Forest Service projects, and (3) National Park Service projects. The information presented in this chapter is based on the best information currently available. Additional detailed analysis is included in the project record.

Chapter 3

Introduction	49
Scope of the Analysis	49
Past Actions Affecting the Existing Condition	51
Key Issues	53
Forest Plan Amendment	66
Effects on Resources and Elements	69
Cumulative Effects Summary	170
Other Consequences or Effects Considered	179

Scope of the Analysis

The effects analysis evaluates the direct, indirect, and cumulative effects for each resource and key issue that might reasonably be expected from each alternative. Cumulative effects consider the effects of past, present, and reasonably foreseeable future actions. The scope of the analysis is framed by both time period and spatial context. The timeframe of the analysis extends from the period of Euro-American settlement (approximately 1870) to one decade into the future. The spatial context of the analysis is the Baca Mountain Tract including the immediate surrounding lands of the northern portions of the Great Sand Dunes National Park and Preserve and the Baca National Wildlife Refuge and the nearby private lands in the Baca Grande subdivision and vicinity and the inholdings as shown in Figure 2.1.

The analysis area for the Forest Plan amendment is the boundary of the Baca Mountain Tract. For the Forest Service projects, the analysis area is the areas of ground disturbance within the Baca Mountain Tract that might result from the action alternatives. Specifically, this includes the proposed South and Middle Parking Areas and the segment of the Liberty Road from the National Forest boundary to the proposed terminus of the South Parking Area, the existing road system, and the proposed stream gage installation on Deadman Creek. For NPS projects, the analysis area is the areas of ground disturbance within the GRSA backcountry access zone along the northern boundary of the park that might result from the action alternatives. Specifically, this includes the proposed Camino Chamisa and the North Parking Area.

Cumulative effects consider the effects of past, present, and foreseeable future actions. For this analysis, the past actions begin from the period of Euro-American settlement (approximately 1870) and future actions extend one decade into the future. The area of cumulative analysis is the Baca Mountain Tract, and the immediate surrounding land ownerships of the GRSA, the Baca National Wildlife Refuge, and the nearby private lands including the private inholdings and the Baca Grande subdivision.

Resource impacts for this project have been identified on the basis of Federal laws, regulations, and orders; policies including the 2006 Management Policies; and professional knowledge of

resources in the study area. In this chapter impacts are described in terms of context, intensity, and duration. The context or extent of the impact is described as localized or widespread. The duration of impacts is described as short term, ranging from days to 3 years in duration, or long term, extending up to 20 years or longer. The intensity and type of impact is described as negligible, minor, or moderate, and as beneficial or adverse. Where the intensity of an impact could be described quantitatively, numerical data is presented; however, most impact analyses are qualitative and use best professional judgment in making the assessment. The impacts are assessed against the existing setting or baseline conditions (i.e., affected environment) within the project area.

A general description of the potential resource impact definitions follows:

- Type describes the classification of the impact as either beneficial or adverse, direct or indirect:
    - Beneficial: A positive change in the condition or appearance of the resource or a change that moves the resource toward a desired condition.
    - Adverse: A change that moves the resource away from a desired condition or detracts from its appearance or condition.
    - Direct: An effect that is caused by an action and occurs in the same time and place.
    - Indirect: An effect that is caused by an action, but is later in time or farther removed in distance, but is still reasonably foreseeable.
- Context describes the area or location in which the impact will occur. Effects can be site specific, local, regional, or even broader.
- Duration describes the length of time an effect will occur, either short term or long term:
    - Short-term impacts generally last only during construction, and the resources resume their pre-construction conditions following construction.
    - Long-term impacts last beyond the construction period, and the resources may not resume their pre-construction conditions for a longer period of time following construction.
- Intensity describes the degree, level, or strength of an impact. For this analysis, intensity has been categorized into negligible, minor, and moderate.

Some impact topics are not evaluated in detail because they do not exist in the analysis area, or they would not be affected by the proposal, or the likelihood of impacts are not reasonably expected, or through the application of mitigation measures, there would be no measurable effects from the proposal.

If there are no effects or no measurable effects, there would either be no contribution towards cumulative effects or the contribution would be low.

Past Actions Affecting the Existing Condition

From approximately 1870 to 2004, the Baca Mountain Tract and the northern portions of the GRSA were part of the Baca Ranch. The Baca Ranch was originally part of the Luis Maria Baca No. 4 Grant. These lands have been intensively used for domestic livestock production since at least the time of Euro-American settlement. In addition to ranching, some homesteading of adjacent lands occurred. There was intensive hard-rock mining and milling activity during a gold rush on the Baca Mountain Tract at the turn of the 19th century. During the gold rush, there were several towns along the Liberty Road with a population estimated at close to 10,000 people. Ranching, settlement, and mining led to a network of roads, mines, ore mills, lumber mills, a railroad, timber harvest, water developments and diversions, livestock watering facilities, and historic structures in the area that are still evident today. Streams and water have been diverted from their natural courses to suit human needs. Timber has been harvested throughout the area for lumber, fencing, and fuel. The Liberty Road is part of the historical access on the former ranch property and it provides access to private inholdings adjacent to the Baca Mountain Tract.

The northern portion of the Luis Maria Baca No. 4 Grant (now adjacent to the GRSA and the Baca Mountain Tract) was subdivided in the 1960s to create the Baca Grande subdivision. This 15,000-acre subdivision is an urban community consisting of 4,551 lots at full development. The community consists primarily of individual homes, but also has commercial areas, at least 16 spiritual centers, recreation areas, greenbelts and conservation zones, and community infrastructure facilities. The residents of this urban area have impacted the former Baca Ranch area primarily by recreation and meditative use, with some impacts from homeless camps. These impacts are relatively minor, but noticeable and include vegetation trampling, user-created trails, litter, human waste, pets, campsites, wildlife disturbance and displacement, and hunting. More recently, mountaineers crossing the Baca Grande to access the high peaks have caused minor impacts associated with hiking and camping.

The development of the Baca Grande subdivision with its associated population has produced and would continue to produce adverse cumulative impacts to many natural resources. These are common from a development of this size in a previously undeveloped area and are similar to those found in most urban communities.

The development of this community has had direct impacts on the subdivision lands themselves and to a lesser degree on the adjacent lands which are now under Federal management. It is not possible to construct and operate a community of this size and not cause adverse environmental impacts. Land has been disturbed and forever changed: hydrologic functions have been altered; animal and vegetation habitats and communities have been disturbed; and many types of pollution (water, air, noise, light, etc.) have occurred.

Hydrology has been altered by the urban development primarily through changes in water flow and from increased pollutants in water runoff. Water used in the community is partly consumed and partly returned to the hydrologic system. The development of the Baca Grande subdivision has removed vegetation that slows and intercepts and filters moisture. The ground surface has been impacted and made more impervious through compaction, loss of litter layers, and resurfacing. This change in ground surface reduces the amount of precipitation that percolates into ground water and increases the volume of water that runs off. Pollutants originate from wastewater treatments, which often do not remove all contaminants, from sewage treatment malfunctions, illegal dumping, and from stormwater runoff. As precipitation runs over roof tops,

lawns, parking lots, and other facilities, the stormwater picks up a variety of natural and human-made contaminants and pollutants that are carried downstream. Urban runoff contains increased nutrients, such as nitrogen and phosphorus compounds, hydrocarbons, bacteria, viruses and other microbes, heavy metals, and pesticides. These contaminants make their way into the streams and groundwater.

Habitats on Federal land adjacent to the Baca Grande subdivision are affected to some extent by community activities. There are adverse effects to vegetation communities resulting from trampling and overuse, from unintended discharges/runoff (e.g., from roads and other impermeable surfaces, snow storage/plowing, pet waste, chemical spills, equestrian facilities, wastewater effluent, etc.), and from the introduction and spread of weeds. Illegal marijuana plantations have been planted in the area. Trampling and overuse effects are more concentrated immediately around the subdivision and along volunteer trails, and quickly attenuate with increasing distance. Pollutants affecting aquatic and riparian vegetation could extend farther offsite, with effects becoming diluted with increasing distance and water volume. Weeds may be introduced and spread, degrading the quality of some of the vegetation communities.

The subdivision impacts the local wildlife community, concentrated primarily on the private land and extending, at a lower intensity and frequency, to the adjacent Federal lands. Native habitats in impact areas have been converted to more urban values. Most wildlife within construction impact areas (e.g., building footprints, parking areas, roads, equestrian facilities, etc.) has been displaced as the former habitat values of those areas are lost or altered. Some less mobile wildlife (e.g., small mammals and nestling birds) are killed by development activities. Forest interior species have been permanently displaced from impact areas, while more adaptable edge species occupy the new habitats. Year-round human use decreases habitat effectiveness for almost all species in and adjacent to development areas. Nuisance species (raccoons, skunks, bears, foxes, jays, etc.) have increased in abundance and interact with other components of the surrounding wildlife community. Stray and feral pets kill some vulnerable wildlife species and decrease the habitat effectiveness of others. Development has changed elk and mule deer use and habitat effectiveness. The subdivision development has also resulted in greater vehicle use on local roads and highways resulting in an increase in the number and frequency of road-killed wildlife, and decreased habitat effectiveness and reduced habitat connectivity.

The Baca Grande subdivision has local, short- and long-term impacts to air quality. These impacts are considered to be within air quality standards. Air quality is affected by vehicle and equipment emissions, heating combustion emissions, and dust emissions from a variety of sources. These emissions consist of fine particulates, ozone precursors, carbon monoxide, and particulate matter, as well as toxic air contaminants. These pollutants, depending on their level and the wind direction, can add to the cumulative effects on the Sangre de Cristo Wilderness which is located about 2 miles east of the subdivision.

The human presence in the landscape affects the surrounding landscape character and scenic resource of the Federal lands. Subdivision has permanently altered the characteristic natural-appearing landscape to an urban landscape affecting the scenic resource on the adjacent Federal lands. Some components of the subdivision, such as the stupas, are created to be visually dominant. The subdivision has also permanently increased background noise and light pollution which extends to the adjacent Federal lands. The presence of the population and the urban setting creates a rural to roaded-modified recreation opportunity on the Federal lands immediately adjacent to the subdivision. The opportunity to experience solitude and isolation

from the sights, sounds, evidence, and presence of humans is greatly diminished with limited opportunity to have a primitive unconfined recreation experience.

Key Issues

The following addresses how each alternative responds to the key issues identified in Chapter 1.

Issue 1. Public motorized access to the Baca Mountain Tract

Currently, there is no public motorized access to the Baca Mountain Tract. Public comments were both for and against public motorized access, with most of those desiring access requesting that it be limited in some way.

The Baca Mountain Tract was purchased with public funding authorized through the Great Sand Dunes National Park and Preserve Act of 2000 and designated as part of the RGNF with the legislative intent that it would have motorized access to the public for hunting opportunities and be managed under the multiple use mandate of the Forest Service. This includes the opportunity for the public to hunt both large and small game, gather antlers, and gather Forest products for personal use. Currently the public can not transport small game, antlers, or Forest products over the GRSA and can only transport firearms and large game with a permit.

The 2007 GRSA General Management Plan (page 64–65) identified the need for public motorized access to the Baca Mountain Tract and provides for public motorized access across the GRSA to the Baca Mountain Tract through several routes to be analyzed through this collaborative analysis.

Executive Order 13443 directs Federal land management agencies to facilitate the expansion and enhancement of hunting opportunities for the public consistent with agency missions.

Two alternatives do not provide public motorized access to the Baca Mountain Tract. Two other alternatives provide limited public motorized access to the Baca Mountain Tract, but by different routes.

Alternative 1 (No Action)

Alternative 1 does not provide for public motorized public access to the Baca Mountain Tract. It is the current situation where the public parks on the Baca Grande Road at the Liberty Gate and must access the Baca Mountain Tract by foot or horseback across the GRSA. The Baca Mountain Tract boundary is 0.75-mile south on the Liberty Road. This alternative does not meet the legislative intent of the Great Sand Dunes National Park and Preserve Act (see Figure 2-1).

Alternative 2

Alternative 2 provides for public motorized public access to the Baca Mountain Tract across the GRSA on the new Camino Chamisa Road, then on the existing Liberty Road to the Middle Parking Area (see Figure 2-2). The Liberty Road is closed to public motorized access beyond Middle Parking Area gate.

Alternative 3

Alternative 3 does not provide for public motorized public access to the Baca Mountain Tract. It provides a new North Parking Area on the GRSA approximately 0.2 mile from the Baca Grande subdivision property line (see Figure 2-3). The public must access the Baca Mountain Tract by

foot or horseback across the GRSA. The Baca Mountain Tract boundary is 0.75-mile south on the Liberty Road. This alternative does not meet the legislative intent of the Great Sand Dunes National Park and Preserve Act.

Alternative 4

Alternative 4 provides for public motorized public access to the Baca Mountain Tract across the GRSA on the existing Liberty Road to the South Parking Area (see Figure 2-4). The Liberty Road is closed to public motorized access beyond South Parking Area gate.

Issue 2. Effects to local communities

The RGNF and GRSA have worked closely with the adjacent affected communities to identify concerns and opportunities. The effects to local communities include a variety of concerns which can be considered as positive or negative effects.

Management flexibility to respond to future community needs

The local communities are constantly changing and growing. There is a desire from some in the communities that the Forest Service has management flexibility within the Forest Plan to respond to future community needs for wildfire suppression, fuel treatments to reduce wildfire risk, and community water and recreation needs. Alternative 1 provides no management and no future management flexibility. Alternative 3 provides limited management flexibility in that the 3.3 Backcountry MA prescription discourages management activities. These areas are managed as natural areas with little evidence of humans. Trails and facilities are discouraged and would be constructed for site protection. Alternatives 2 and 4 provide flexible management direction in 3.1 Special Interest Area, 5.41 Deer/Elk Winter Range, and 5.42 Bighorn Sheep MA prescriptions which allow a broader spectrum of activities within the constraints of the emphasis for each prescription.

Effects to the quality and quantity of the communities' water supply

Water is very important to the communities, as it is elsewhere in the San Luis Valley. All surface water and most ground water originates on the Baca Mountain Tract and flows down to the communities. Alternative 1 would have no effect on water quality or quantity and would provide no management flexibility for the Forest Service to be able to respond to future water measurement and infrastructure needs of the community. Alternative 3 provides a beneficial effect because all activities would come under Forest Plan S&Gs and BMPs. Water quality would be maintained to meet State use classifications and the timing and duration of streamflows would not be affected. However, any future water projects would be discouraged in the 3.3 Backcountry MA prescription. Both Alternative 2 and 4 would provide beneficial effects because all activities would come under Forest Plan S&Gs and BMPs. Water quality would be maintained to meet State use classifications and the timing and duration of streamflows would not be affected. These alternatives would provide management flexibility for the Forest Service to respond to future water measurement and infrastructure needs of the community.

Wildfire risk to the community and associated fuels management

The wildfire risk to these communities is extreme due to fuel loading, climate, and topography. While the Baca Grande subdivision has taken some steps to reduce fire risk, it shares a long boundary with the Baca Mountain Tract and has limited emergency escape routes. Alternative 1 allows for all wildfire management options, but it does not allow fuel treatments. It provides one high clearance emergency escape route for the subdivision on the Liberty Road. Alternative 2

allows for all wildfire management options and allows fuels management to reduce wildfire risk. It provides two high clearance emergency escape routes for the subdivision on Camino Chamisa and on the Liberty Road. Camino Chamisa also provides an additional ingress/egress route for firefighters, and serves as a strategic wildfire containment feature. Alternative 3 allows for all wildfire management options and provides one high-clearance emergency escape route for the subdivision on the Liberty Road. It allows some fuels management to reduce risk, but the 3.3 Backcountry MA prescription limits tree cutting. Alternative 4 allows for all wildfire management options and allows fuels management to reduce wildfire risk. It provides one high-clearance emergency escape route for the subdivision on the Liberty Road.

Access to private property inholdings within the Baca Mountain Tract

There are three private property inholdings on the National Forest which are accessed by the Liberty Road. The Forest Service is required to provide access to the private inholdings under provisions in the Alaska National Interest Lands Conservation Act (ANILCA) of 1980. Alternative 1 would provide temporary access authorizations; Alternatives 2, 3, and 4 would provide long-term access authorizations.

Traffic routes within the Baca Grande subdivision to access public lands

Some residents of the Baca Grande subdivision expressed concern that there would be an unacceptable increase in traffic, with its associated noise and dust, on county roads within the subdivision as a result of motorized public access to the Baca Mountain Tract. The routes through the subdivision to the Liberty Gate are paved now except for the last (0.9) mile of Camino Baca Grande, greatly reducing noise and dust from traffic. The county also constructed a temporary parking area along Camino Baca Grande at the Liberty Gate for visitors entering the GRSA. The GRSA 2006 Transportation Data Collection paper found that recreational traffic accessing the GRSA conservatively made up only 1 percent of the traffic entering the subdivision on weekdays and only 2 percent on weekends. The great majority of recreation visitors coming to the Crestone area are going to the trailheads of North Crestone Creek and Willow Creek trailheads on the RGNF. Traffic is expected to increase in the Baca Grande subdivision. However, the majority of the traffic increase is expected to be generated by residential growth and spiritual retreat visits in the area.

In 2006, Saguache County initiated a collaborative public process, the North Entrance Study Group, to identify access routes through the Baca Grande subdivision to access the GRSA and Baca Mountain Tract. Saguache County then followed up with a 2007 traffic impact analysis which focused on four routes. The Saguache County commissioners identified Route D (County Road T to Camino Real on the easements crossing the Baca National Wildlife Refuge to Camino Chamisa) as the long-term route with Route C (County Road T to Camino Baca Grande to Camino Real to Camino Chamisa) as the short-term road until Route D can be built.

GRSA trail registrations indicate that over the course of a year, 59 percent of the people accessing the GRSA on Liberty Road were local residents while 41 percent were thought to be non-residents. Many of the non-residents were guests of the residents. The non-resident use increases during hunting season. Use levels on the Liberty Road accessing the GRSA tend to be low with a general downward trend since 2007. There is minimal use of the Camino Real gate to GRSA and almost all of that use is from residents.

Alternative 1 continues the use of the Camino Baca Grande route through the subdivision and the County's Liberty Gate parking area to access the GRSA. There is no public motorized access to GRSA or the Baca Mountain Tract. This route affects the traffic and residents of the Chalets

portion of the subdivision. Parking at the Liberty Gate would continue to effect adjacent residents. This alternative does not address Saguache County's preference for Camino Real to serve as the access route through the subdivision. Traffic levels to the Liberty Gate parking area are expected to continue to be minor. Increases in traffic are expected to occur in direct correlation to the subdivision growth rates.

Alternative 2 builds Camino Chamisa off of the end of Camino Real to provide public motorized access to the Baca Mountain Tract. This route would change the traffic patterns used to access the Federal lands and would affect the traffic and residents of the Grants portion of the subdivision. Vehicle parking would be well away from the subdivision on the Baca Mountain Tract at the small 15-vehicle Middle Parking Area 1.3 miles away. This alternative complies with Saguache County's preference for Camino Real to serve as the access route through the subdivision. Traffic levels to the Middle Parking Area are expected to be minor. Increases in traffic are expected to occur in direct correlation to the subdivision growth rates.

Alternative 3 continues the use of the Camino Baca Grande route through the subdivision. There is no public motorized access to the Baca Mountain Tract. This route affects the traffic and residents of the Chalets portion of the subdivision. Vehicle parking would be moved onto the GRSA 0.2 miles from the Liberty Gate at the 15-vehicle North Parking Area. Parking would no longer directly affect adjacent residents. This alternative does not address Saguache County's preference for Camino Real to serve as the access route through the subdivision. Traffic levels to the North Parking Area are expected to be minor. Increases in traffic are expected to occur in direct correlation to the subdivision growth rates.

Alternative 4 continues the use of the Camino Baca Grande route through the subdivision and provides public motorized access to the Baca Mountain Tract. This route affects the traffic and residents of the Chalets portion of the subdivision. Vehicle parking would be well away from the subdivision on the Baca Mountain Tract at the small 15-vehicle Middle Parking Area 1.6 miles away. This alternative does not address Saguache County's preference for Camino Real to serve as the access route through the subdivision. Traffic levels to the South Parking Area are expected to be minor. Increases in traffic are expected to occur in direct correlation to the subdivision growth rates.

Recreation opportunities for residents

The Federal lands adjacent to the Baca Grande subdivision provide an important recreation resource for local residents. The residents enjoy non-hunting recreation on the GRSA and both hunting and non-hunting recreation on the Baca Mountain Tract. Some local residents feel that big game hunting strongly detracts from the quality of their recreation experience. While hunting is outside the scope of this analysis, big game hunting is a permitted recreation activity on the national forest in all alternatives. Hunting activity is generally only allowed during the fall hunting seasons specified by the State, which occurs on and off from late August through mid-November. Most recreation use on the Baca Mountain Tract occurs during the summer months outside of hunting seasons. During the majority of the year, hunting is not an allowed recreation activity which could adversely affect other non-hunting recreationists. Currently there is no public motorized access to the GRSA and Baca Mountain Tract from the subdivision. Access is restricted to hiking and horseback riding. Recreation opportunities on the GRSA are those associated with backcountry adventure. The Forest Service uses the recreation opportunity spectrum (ROS) to define recreation opportunities. The Baca Mountain Tract provides ROS primitive, semi-primitive non-motorized, and semi-primitive motorized experiences. In this case the word "motorized" in ROS indicates the presence of roads on the Baca Mountain Tract and

not the use of motor vehicles. While the Baca Mountain Tract provides a range of recreation experiences, the lack of convenient access limits the opportunity for most residents to recreate on the Baca Mountain Tract.

Alternative 1 provides no change from the existing recreation opportunities. Hiking is the primary activity. There is limited recreation opportunity on the Baca Mountain Tract for most residents since there is no convenient motorized access. GRSA backcountry adventure recreation opportunities are available to residents.

Alternative 2 provides more convenient motorized access to the Baca Mountain Tract for a broader group of residents with varying physical abilities. It provides expanded recreation opportunities including scenic driving, and more convenience for horse riding, walking or hunting activities. It also provides flexibility for future recreation management of trails and other compatible recreation uses. Primitive, semi-primitive non-motorized, and semi-primitive motorized experiences are available on the Baca Mountain Tract. GRSA backcountry access and backcountry adventure recreation opportunities are available to residents.

Alternative 3 does not provide motorized access to the Baca Mountain Tract. There is limited recreation opportunity on the Baca Mountain Tract for most residents since there is no convenient motorized access for horse riding, walking, or hunting activities. The 3.3 Backcountry MA prescription limits recreation opportunities in the future. Primitive, semi-primitive non-motorized, and semi-primitive motorized experiences are available on the Baca Mountain Tract. GRSA backcountry access and backcountry adventure recreation opportunities are available to residents.

Alternative 4 provides more convenient motorized access to the Baca Mountain Tract for a broader group of residents with varying physical abilities. It provides expanded recreation opportunities including scenic driving, and more convenience for horse riding, walking, or hunting activities. It also provides flexibility for future recreation management for trails and other compatible recreation uses. Primitive, semi-primitive non-motorized, and semi-primitive motorized experiences are available on the Baca Mountain Tract. GRSA backcountry access and backcountry adventure recreation opportunities are available to residents.

Sound

Alternative 1 would have no additional effects from noise on the Baca Grande subdivision beyond existing sound levels.

Alternative 2 would have very minor noise effects to the community. Any noise generated from Federal lands is expected to be well within background noise from subdivision. Noise from construction would be evidentm, but of short duration. Long-term noise impacts would be evident, but minor and seasonal. Noise from vehicle use of the Camino Chamisa would be noticeable to nearby residents. Noise from vehicle use on Camino Chamisa may be noticeable, but limited because Camino Chamisa parallels the subdivision boundary approximately 0.25-mile away. Any noise from the Middle Parking Area should be minimal, because it would be 1.3 miles away from the subdivision.

Alternative 3 would have very minor noise effects to the community. Any noise generated from Federal lands is expected to be well within background noise from subdivision. Noise from construction would be evident, but of short duration. Long-term noise impacts from project would be evident, but minor and seasonal. Noise from vehicle use of the Liberty Road would be noticeable to nearby residents. Noise from the North Parking Area may be noticeable to nearby

residents because of the close proximately (0.2 miles) to the subdivision, but should be muted by vegetative screening.

Alternative 4 would have very minor noise effects to the community. Any noise generated from Federal lands is expected to be well within background noise from subdivision. Noise from construction would be evident, but of short duration. Long-term noise impacts would be evident, but minor and seasonal. Noise from vehicle use of the Liberty Road would be noticeable to nearby residents. Any noise from the South Parking Area should be minimal due to the 1.6-mile distance to the subdivision.

Visual

Alternative 1 would have no visual effects to the Baca Grande subdivision.

Alternative 2 would have minor visual effects to the community. Camino Chamisa is somewhat visible in the foreground, approximately 0.25 mile from the subdivision boundary and partially screened by the greenbelt for most of its length. It would be designed to blend with the natural landscape as much as possible. It would not dominate the viewshed because of the flat topography and vegetative screening. The Middle Parking Area would be visible in the middleground, 1.3 miles from the subdivision, but would not dominate the viewshed because of the viewing distance and it would be designed to blend with the natural landscape.

Alternative 3 would have minor visual effects and be somewhat visible to nearby residents. The North Parking Area lies in the foreground, 0.2 miles from subdivision, but it is partially screened by vegetation and would be designed to blend with the natural landscape.

Alternative 4 would have no effect to the subdivision. The South Parking Area is in the middleground, 1.6 miles from subdivision, and is not visible from the subdivision due to topography and vegetative screening. It would be designed to blend with the natural landscape.

Sense of place

The scenic, cultural, social, and biophysical characteristics of a landscape, and psychological influences (memory, choice, perception, imagination, and emotion) help form the “sense of place” in which people live and interact. People’s sense of place is directly tied to the characteristics of an area and experiences associated with it that invoke a special feeling of attachment. A variety of images may be attached to a place. The residents of Crestone and Baca Grande subdivision have a strong sense of place about their community and its setting in the landscape.

Residents who visit the GRSA or Baca Mountain Tract have expectations about what they may see or experience. This helps build a mental picture of a particular area. Certain images such as romanticism, emotionalism, and knowledge are attached to features of a place. The landscape surrounding the Baca Grande subdivision has an identifiable image to most residents. Changes in access can affect these special places or change their biophysical setting, affecting people’s sense of place and what they value or desire in an area. Motorized public access road to the Baca Mountain Tract may facilitate some local people’s enjoyment of the area by providing for driving comfort, the amount and type of use, and any number of aesthetic attributes visible alongside the road. In contrast, motorized public access may deter from characteristics that are highly valued for some local people’s enjoyment and appreciation of an area. The effects to sense of place are unique to each individual.

Alternative 1 would have no effect on local resident's current sense of place.

Alternative 2 could result in a change to a specific individual's sense of place, but overall there would be very limited change expected. The historical and cultural elements and scenic landscape setting would remain the same. More convenient access would enable more people to experience the Baca Mountain Tract.

Alternative 3 is expected to result in little to no change to affect a sense of place. The North Parking Area moves vehicle parking 0.2 miles to the south on the existing Liberty Road, but does not cause any change to the historical and cultural elements and scenic landscape setting. Fewer residents would be able to experience the Baca Mountain Tract.

Alternative 4 could result in a change to a specific individual's sense of place, but overall there would be very limited change expected. The historical and cultural elements and scenic landscape setting would remain the same. More convenient access would enable more people to experience the Baca Mountain Tract.

Economic effects

Alternative 1 would create no additional economic benefits to the local economy.

The economic benefits from all the action alternatives are expected to be very minor because of the minor nature of the project. There would likely be a short-term economic benefit to the local communities from construction activities, but this would depend to some degree on from whom and where the construction contracts were obtained whether all the benefits would stay in the local economy. There would be some minor local economic gain from construction spending. The action alternatives are not expected to result in the Baca Mountain Tract becoming a primary destination for non-resident recreation visitors, although some non-residents may visit the north part of the GRSA or the Baca Mountain Tract as part of their visit to Crestone or the Baca Grande subdivision. Little local economic gain is expected from non-residents directly due to the project. The recreation opportunities provided by the action alternatives are expected to be used primarily by local residents who would not bring additional economic gain to the community due to the project.

Issue 3. Compatibility with other government agency management

The RGNF recognized early in the analysis that the management issues involving the former Baca Ranch were so intertwined that there was a need to work closely with the GRSA and USFWS. While these agencies have specific management mandates that differ from those of the Forest Service, the Forest wants management of the Baca Mountain Tract to be as compatible as practicable with the other agencies' objectives, within the constraints of the Forest Service's multiple-use mandate. The Forest also recognizes the need to work closely with Saguache County and CDOW because they also have specific interests in management of the Baca Mountain Tract. To formalize the relationship with these agencies, the RGNF, as lead agency, entered into cooperating agency agreements with the GRSA, the USFWS Baca National Wildlife Refuge, CDOW, and Saguache County.

GRSA

The primary emphasis for the GRSA is preservation and protection of the park's resources. GRSA management objectives are defined in the GRSA General Management Plan and in the park's purpose, significance, and mission discussed previously. The general management plan

identified two access routes to be addressed in this analysis and established two management zones which would be affected, backcountry access, and backcountry adventure. GRSA management concerns specific to the Baca Mountain Tract include the GRSA visitor's recreation experience, scenic impacts, wildfire, heritage resources, and the spread and control of noxious weeds in the park and adjacent lands.

Alternative 1 is compatible with the general management plan, which anticipates public motorized access across the GRSA to the Baca Mountain Tract, but does not require it. While this alternative does not establish management direction for the Baca Mountain Tract along with its beneficial environmental protections, it does not compromise any component of the general management plan.

Alternative 2 is compatible with the general management plan because it implements the Camino Chamisa backcountry access and is compatible with backcountry adventure. It would require additional education and enforcement of park policies and regulations. Scenic objectives would be met because alterations would blend with the natural landscape. Interagency heritage resource management would be greatly enhanced in this alternative with the designation of the historical Duncan/Liberty Special Interest Area. This could result in a comprehensive interagency heritage resource plan for the protection, restoration, and interpretation of the heritage resources on the old Baca Ranch for both agencies. The alternative is compatible with the interagency fire plan.

Alternative 3 is compatible with the general management plan, which anticipates public motorized access across the GRSA to the Baca Mountain Tract, but does not require it. Alternative 3 implements backcountry access on the Liberty Road and is compatible with backcountry adventure. It would require additional education and enforcement of park policies and regulations. Scenic objectives would be met because alterations would blend with the natural landscape.

Alternative 4 is compatible with the general management plan because it implements the Liberty Road backcountry access and is compatible with backcountry adventure. It would require additional education and enforcement of park policies and regulations. Scenic objectives would be met because alterations would blend with the natural landscape. Heritage resources on the old Baca Ranch would be protected, with less emphasis on interpretation and restoration. The alternative is compatible with the interagency fire plan.

USFWS Wildlife Service Baca National Wildlife Refuge

The Baca National Wildlife Refuge management objectives are provided in the conceptual management plan. This plan provides a broad overview of the Refuge management and would be in place until a comprehensive conservation plan is completed. The purpose of the Refuge is to restore, enhance, and maintain wetland, upland, riparian, and other habitats for wildlife, plants, and fish species. There is a management emphasis on migratory bird conservation. Management concerns specific to the Baca Mountain Tract are the continuing availability and quality of water coming from the Baca Mountain Tract to supply the important wetlands on the Refuge, the spread and control of noxious weeds, and the high number of elk on the Refuge and surrounding lands. Although the Baca National Wildlife Refuge is separated from the Baca Mountain Tract by the GRSA, the Refuge shares mutual concerns over management of the overall ecosystem of the former Baca Ranch.

Alternative 1 is compatible with the conceptual management plan. While this alternative does not establish management direction for the Baca Mountain Tract along with its beneficial environmental protections, it does not compromise any component of the conceptual management plan. It does not provide specific direction for water or noxious weeds management.

Alternative 2 is compatible with the conceptual management plan. It allows management to reduce the risk of noxious weeds and provides water flow monitoring to provide a better understanding of the hydrologic systems feeding the Refuge.

Alternative 3 is compatible with the conceptual management plan. It allows management to reduce the risk of noxious weeds. It does not provide water flow monitoring to provide a better understanding of the hydrologic systems feeding the Refuge, which may hinder future water management decisions.

Alternative 4 is compatible with the conceptual management plan. It allows management to reduce the risk of noxious weeds and provides water flow monitoring to provide a better understanding of the hydrologic systems feeding the Refuge.

Colorado Division of Wildlife

CDOW is responsible for protecting, preserving, and perpetuating all of the State's wildlife species, which includes the wildlife on the Baca Mountain Tract. The agency's interest relates to the active management of wildlife populations and the habitat that supports them. The concerns and management objectives specific to the Baca Mountain Tract are primarily related to CDOW's ability to manage big game populations through regulated hunting, animal distribution, and maintenance of wildlife habitat. These are discussed in detail under "Issue 4. Big game management." CDOW's Bighorn Sheep Management Plan goal is to maintain or increase the size of existing herds and populations and protect or improve bighorn sheep habitats and work with the Forest Service and NPS to improve habitats.

Alternative 1 does not establish management direction for the Baca Mountain Tract along with its beneficial environmental protections. The alternative is less supportive of CDOW big game management objectives because hunter access is limited. There is no specific Forest Service management emphasis for deer/elk or bighorn sheep habitats. There are no management measures in place to protect water quality and potential habitat for Rio Grande cutthroat trout.

Alternative 2 establishes management direction for the Baca Mountain Tract along with its beneficial environmental protections. The alternative is supportive of CDOW's big game management objectives by providing CDOW with all its management options because it provides hunter access. The alternative also provides specific Forest Service management emphasis for deer/elk and bighorn sheep habitats. This is fully consistent with CDOW's Bighorn Sheep Management Plan. It also provides management measures to protect water quality and potential habitat for Rio Grande cutthroat trout, which is compatible with CDOW's cutthroat trout management goals.

Alternative 3 establishes management direction for the Baca Mountain Tract along with its beneficial environmental protections. The alternative is less supportive of CDOW's management objectives because hunter access is limited. There is no specific Forest Service management emphasis for deer/elk or bighorn sheep habitats which is not supportive of CDOW's Bighorn Sheep Management Plan . This alternative does provides management

measures to protect water quality and potential habitat for Rio Grande cutthroat trout, which is compatible with CDOW's cutthroat trout management goals.

Alternative 4 establishes management direction for the Baca Mountain Tract along with its beneficial environmental protections. The alternative is supportive of CDOW's big game management objectives by providing CDOW with all its management options because it provides hunter access. The alternative also provides specific Forest Service management emphasis for deer/elk and bighorn sheep habitats. This is fully consistent with CDOW's Bighorn Sheep Management Plan. It also provides management measures to protect water quality and potential habitat for Rio Grande cutthroat trout, which is compatible with CDOW's cutthroat trout management goals.

Saguache County

The Baca Mountain Tract and the northern potion of the GRSA fall within Saguache County and share a boundary with the Baca Grande subdivision. Currently, the only public motorized access to the northern portion of the GRSA is on county roads within the Baca Grande subdivision. Saguache County's management interests in this analysis are primarily focused on community planning, public safety, environmental protection, economic development, and providing a safe and efficient county transportation system. Saguache County supports motorized public access to the Baca Mountain Tract, but they are concerned about traffic patterns within the Baca Grande subdivision. In 2006, Saguache County initiated a collaborative public process, the North Entrance Study Group, to identify access routes through the Baca Grande subdivision to access the GRSA and Baca Mountain Tract. Saguache County then followed up with a 2007 traffic impact analysis which proposed four routes. The Saguache County commissioners identified Route D (County Road T to Camino Real on the easements crossing the Baca National Wildlife Refuge to Camino Chamisa) as the long-term route with Route C (County Road T to Camino Baca Grande to Camino Real to Camino Chamisa) as the short-term road until Route D can be built.

The county also supports additional emergency escape routes for the residents of the subdivision. These are also discussed under "Issue 2. Effects to local communities."

Alternative 1 is the current situation where the public drives through the subdivision on county roads and parks at the county parking area on the Baca Grande Road at the Liberty Gate to access public lands. This alternative does not address Saguache County's preference for Camino Real to serve as the primary access route through the subdivision. It provides one high clearance emergency escape route for the subdivision on the Liberty Road.

Alternative 2 builds Camino Chamisa off of the end of Camino Real to provide public motorized access to Federal lands. This alternative addresses Saguache County's preference for Camino Real to serve as the primary access route through the subdivision. It would provide two high clearance emergency escape routes for the subdivision; on Liberty Road and on Camino Chamisa.

Alternative 3 continues the use of the Camino Baca Grande route through the subdivision, but vehicle parking would be moved onto the GRSA. This alternative does not address Saguache County's preference for Camino Real to serve as the access route through the subdivision. Alternative 3 provides one high clearance emergency escape route for the subdivision on the Liberty Road.

Alternative 4 continues the use of the Camino Baca Grande route through the subdivision, but vehicle parking would be moved onto the Baca Mountain Tract. This alternative does not address Saguache County's preference for Camino Real to serve as the access route through the subdivision. Alternative 4 provides one high clearance emergency escape route for the subdivision on the Liberty Road.

Issue 4. Big game management

This issue was developed from a variety of public and agency concerns over big game management which included hunting opportunities, flexibility to manage big game habitats and populations, and the impacts of big game populations on private property and other resources. The legislative intent of the Great Sand Dunes National Park and Preserve Act was to provide public motorized access to the Baca Mountain Tract for hunting opportunities. Public scoping comments were both for and against hunting.

Executive Order 13443 provides Presidential direction on hunting and wildlife conservation to the Federal land management agencies. The portions of the Executive order most applicable to the project direct the NPS, Forest Service, and other Federal land management agencies to facilitate the expansion and enhancement of hunting opportunities and the management of game species and their habitat. Federal agencies are directed, consistent with agency missions, to implement actions that expand and enhance hunting opportunities for the public; consider the economic and recreational values of hunting in agency actions, as appropriate; manage wildlife and wildlife habitats on public lands in a manner that expands and enhances hunting opportunities, including through the use of hunting in wildlife management planning; work collaboratively with State governments to manage and conserve game species and their habitats in a manner that respects State management authority over wildlife resources; establish goals, consistent with agency missions, to foster healthy and productive populations of game species and appropriate opportunities for the public to hunt those species.

The Baca Mountain Tract contains important habitat for big game species such as elk, bighorn sheep, and mule deer which support substantial populations of elk and bighorn sheep. The Forest Service manages the habitat and CDOW is responsible for managing the big game populations.

The large numbers of elk on the GRSA provide a valued high quality wildlife viewing experience for park visitors. The elk are not currently habituated to the presence of humans, but may become so in the future. The Preserve within the GRSA is the only portion of the park where hunting is allowed. No hunting is allowed in the GRSA adjacent to the Baca Mountain Tract.

There are habituated elk and mule deer in the Baca Grande subdivision.

CDOW, USFWS, and the Forest Service have concerns over the current high numbers of elk in the area. Elk numbers are currently well above CDOW's elk population objectives, which create concerns over species competition and habitat. CDOW wants the management flexibility to reduce the elk numbers and increase the distribution through regulated hunting to prevent overuse of habitat. However, hunting success is largely dependent on the public's access to elk which is currently restricted to non-motorized means and requires a special permit to cross the GRSA. Another concern to CDOW is the potential for elk and agriculture conflicts on the east side of the San Luis Valley. The greatest concern is the potential for elk to spread disease into certified disease-free seed potato fields. If these valuable fields become infected, they would

loose their certification and value. Elk impacts on commercial hay crops are also of concern. CDOW can be held liable for elk damage to agriculture.

Currently there is no public motorized access allowed across the GRSA for hunters to access the Baca Mountain Tract. Hunter access is only by foot or horseback. Hunters wishing to hunt on the Baca Mountain Tract must also get a permit to transport firearms and harvested big game across the GRSA.

The Forest Service is also concerned that the substantial numbers of elk may be having an adverse affect on mule deer and bighorn sheep and other resources such as riparian and alpine vegetation, and the heritage sites on the Baca Mountain Tract. Mule deer are not common in the analysis area and CDOW's mule deer population objectives are not being met. The cause for this is not known but the high numbers of elk are thought to be a contributing factor.

Bighorn sheep are a Forest Service sensitive species. The Sangre de Cristo (S9) bighorn sheep herd is a Tier 1 supplemented herd, and one of Colorado's largest herds uses the analysis area. This herd has suffered a significant die-off, losing 50 percent of its population since 2003, and is currently estimated at 325 sheep. The cause of this decline is unknown. CDOW manages the bighorn sheep herds through their Colorado Bighorn Sheep Management Plan. The Sangre de Cristo bighorn sheep herd will be managed through a specific bighorn sheep data analysis unit (DAU) plan. The Forest Service is responsible for managing the bighorn sheep habitat. Maintaining or increasing this bighorn sheep population and protecting its habitat is important to both CDOW and the Forest Service.

Alternative 1 does not provide management direction and resource protection for the Baca Mountain Tract. There would be no habitat improvements. This alternative provides the least flexibility for CDOW big game management through regulated hunting. Hunters do not have motorized access to the Baca Mountain Tract. There is limited opportunity to disperse elk, control numbers, or reduce the potential for game damage. There is no specific management emphasis for deer, elk, or bighorn sheep habitats.

Alternative 2 provides management direction and resource protection to the Baca Mountain Tract. Hunters would have motorized access to Baca Mountain Tract for hunting opportunities which provides CDOW with more management flexibility to disperse elk, control numbers, and reduce the potential for game damage through regulated hunting. This alternative also would provide specific management emphasis for bighorn sheep and deer/elk winter range habitat and allows habitat improvements.

Alternative 3 provides management direction and resource protection to the Baca Mountain Tract. Hunters would not have motorized access to Baca Mountain Tract for hunting opportunities which would limit CDOW's management flexibility to disperse elk, control numbers, and reduce the potential for game damage through regulated hunting. This alternative would not provide management emphasis for bighorn sheep and deer/elk winter range habitat.

Alternative 4 provides management direction and resource protection to the Baca Mountain Tract. Hunters would have motorized access to Baca Mountain Tract for hunting opportunities which would provide CDOW with more management flexibility to disperse elk, control numbers, and reduce the potential for game damage through regulated hunting. This alternative would provide specific management emphasis for bighorn sheep and deer/elk winter range habitat and allows for habitat improvements.

Issue 5. Heritage resources

The Baca Mountain Tract contains a rich cultural landscape with unique and remarkable historic and prehistoric archaeological sites. It also has a high potential for additional undocumented sites. These sites extend onto the GRSA.

Both the Forest Service and GSRA have responsibilities to manage and protect those heritage resources that make this area so unique under the National Historic Preservation Act, Archaeological Resources Protection Act, and the Native American Graves Protection and Repatriation Act. All Native American human remains and associated funerary objects in the San Luis Valley are protected under a multi-tribal and interagency San Luis Valley Native American Graves Protection and Repatriation Act Memorandum of Understanding.

The Forest Service, GRSA, State Historic Preservation Office, and public have expressed concerns for the identification, evaluation, protection, and preservation of these important heritage resources. The sites also have a high potential for interpretation and education.

The Baca Mountain Tract is unique because it has been under private ownership with little public access until recently, and the heritage resources have been largely protected from vandalism, collection, and looting. The historic townsites of Duncan and Liberty and the associated mining development represent one of the most intact historical sites within the state of Colorado and the Nation. Intermixed with these historic sites are prehistoric sites which are advancing the understanding of prehistoric use and habitation in the area. The heritage importance of this area is just becoming understood, with a great potential to discover additional sites.

The Archaeological Resources Protection Act requires Federal agencies to inventory cultural resources on lands likely to contain the most scientifically valuable archaeological resources. The prehistoric and historic archaeological resources within the Baca Mountain Tract fall within this category. The National Historic Preservation Act directs Federal agencies to establish and maintain preservation programs which ensure, among other things, “that historic properties under the jurisdiction or control of the agency are identified, evaluated, and nominated to the National Register of Historic Places.” The Forest Service and the Great Sand Dunes National Park and Preserve have cooperatively conducted cultural resource inventories on the Baca Mountain Tract and the GRSA. No historic sites will be affected.

Congress added the Old Spanish Historic Trail to the National Trails System in 2008. This trail represents a historic Spanish trade route which extends from Santa Fe, New Mexico, to Los Angeles, California. The east fork of the northern branch of this historic route is thought to have traversed the former Baca Ranch somewhere between the wetlands to the west and the Sangre de Cristo Mountain Range to the east. No traces of the route within the analysis area have been identified to date, but the GRSA and the San Luis Valley Public Lands Center continue to survey for evidence of the trail. The agencies will continue to work with the NPS and BLM on the management plan for this historic trail. The Baca Mountain Tract and Camino Chamisa Project provides for excellent interpretive opportunities for this historic trail.

The no-action alternative provides the minimal protection required by the National Historic Preservation Act, Archaeological Resources Protection Act, and the Native American Graves Protection and Repatriation Act, but it does not provide management direction to protect the cultural heritage resources on the Baca Mountain Tract.

All of the action alternatives account for the significance of heritage resources within the Baca Mountain Tract and provide additional management actions to protect them. All the action alternatives limit public motorized access, and close the Baca Mountain Tract to permitted livestock grazing and OHV use to reduce the risks to surface and buried cultural sites from trampling, compaction, soil erosion, and illegal off-road motorized activities.

Alternative 2 provides specific management direction and emphasis for the heritage resources by designating the historic Liberty-Duncan 3.1 Special Interest Area MA prescription. The Liberty-Duncan Special Interest Area would emphasize the management and protection of the historic and cultural values of this area over other uses. The RGNF and GRSA would jointly develop a heritage resource management plan for this area in the future which would address further research, protection, and preservation of the heritage sites, and interpretation and educational opportunities. Although the 8.8 acres of disturbed area in this alternative have been surveyed for heritage site and none were found, there is still potential risk of impacts to buried or undiscovered heritage resources during ground-disturbing activities.

In Alternative 3, there is no specific management emphasis for heritage resources beyond the required regulatory and Forest Plan protection measures. There is no historic 3.1 Special Interest Area MA prescription designation. Although the 1.1 acres of disturbed area in this alternative have been surveyed for heritage site and none were found, there is still risk of impacts due to inadvertent discovery of sites during ground disturbing activities.

In Alternative 4, there is no specific management emphasis for heritage resources beyond the required regulatory and Forest Plan protection measures. There is no historic 3.1 Special Interest Area MA prescription designation. Although the 4.5 acres of disturbed area in this alternative have been surveyed for heritage site and none were found, there is still risk of impacts due to inadvertent discovery of sites during ground disturbing activities.

Forest Plan Amendment

The scope of the proposed amendment is limited to incorporating the Baca Mountain Tract into the Forest Plan by identifying MA prescriptions, designating the Forest road system, and making a wilderness recommendation for the Baca Mountain Tract. Each action alternative proposes a specific MA prescription and designated road system for the Baca Mountain Tract.

The Forest Plan goals, objectives, and desired conditions, Forest-wide objectives, management direction, land suitability, MA prescriptions, Forest-wide and MA-specific S&Gs, Forest monitoring plan, and recommendations to Congress are not changed by this amendment.

Management Area Prescriptions

The RGNF is managed under a set of MA prescriptions in the Forest Plan, each of which provides a specific management emphasis. Each prescription includes a setting, desired conditions, and the S&Gs that apply to management occurring within that prescription. The MA prescriptions are described in Chapter IV of the Forest Plan.

The Baca Mountain Tract needs to be placed under this management scenario in the Forest Plan. Each action alternative provides a different set of MA prescriptions for the Baca Mountain Tract. The basis for these prescriptions is the direction in CFR 254.3 (f) which provides that newly acquired land should be managed the same as the adjacent National Forest lands, which in this

case is under the 5.41 Deer and Elk Winter Range and the 5.42 Bighorn Sheep MA prescription. The 3.1 Special Interest Area and 3.3 Backcountry MA prescriptions were added in some alternatives to respond to comments and concerns. Specific direction for each MA prescription is provided in the Forest Plan at 3.1 Special Interest Area MA prescription (page IV-15), 3.3 Backcountry MA prescription (page IV-16), 5.41 Deer and Elk Winter Range MA prescription (page IV-29), and 5.42 Bighorn Sheep MA prescription (page IV-30).

Table 3-1 displays the proposed MA prescription designations and acreage on the Baca Mountain Tract for each alternative. Table 3-2 shows the change to the Forest-wide Forest Plan MA prescription acres and the percent change as a result of each alternative.

Table 3-1. Proposed management prescription designations and acreage for the Baca Mountain Tract by alternative

Alternative	Management Area Prescription			
	3.1 Special Interest Area Acres	3.3 Backcountry Acres	5.41 Deer and Elk Winter Range Acres	5.42 Bighorn Sheep Habitat Acres
Alternative 1	0	0	0	0
Alternative 2	3,900	0	2,500	7,000
Alternative 3	0	13,400	0	0
Alternative 4	0	0	6,400	7,000
Total Baca Mountain Tract Acreage Under Management	0	13,400	13,400	13,400

Table 3-2. The amended Forest-wide management-area prescriptions acres and percent change to the Forest Plan as a result of each alternative

		Management Area Prescription							
		3.1 Special Interest Area		3.3 Backcountry		5.41 Deer and Elk Winter Range		5.42 Bighorn Sheep Habitat	
Alternative		**Current Acres**	**New Acres**	**Current Acres**	**New Acres**	**Current Acres**	**New Acres**	**Current Acres**	**New Acres**
Alternative 1	Forest Plan Acres	31,950	31,950	463,470	463,470	189,090	189,090	68,450	68,450
	% change	0%		0%		0%		0%	
Alternative 2	Forest Plan Acres	31,950	35,850	463,470	463,470	189,090	191590	68,450	75,450
	% change	+12.2%		0%		+1.3%		+10.2%	
Alternative 3	Forest Plan Acres	31,950	31,950	463,470	476,870	189,090	189,090	68,450	68,450
	% change	0%		2.9%		0%		0%	
Alternative 4	Forest Plan Acres	31950	31,950	463,470	463,470	189,090	195,490	68,450	75,450
	% change	0%		0%		+2.9%		+10.2%	

Infrastructure

Forest System Roads

The Forest Plan amendment also designates the Forest system roads on the Baca Mountain Tract that would become part of the national Forest system road network on the Forest. All other existing roads and routes on the Baca Mountain Tract that are not designated as Forest system roads would be decommissioned and restored to natural vegetative conditions. All road maintenance and reconstruction on the Baca Mountain Tract would be done to minimize adverse environmental impacts. These Forest system roads are discussed in the "Infrastructure – Roads and Parking Areas" section of this chapter.

Wilderness Evaluation

A wilderness evaluation of the Baca Mountain Tract was conducted as part of the amendment and is included in the record. No wilderness is proposed for recommendation to Congress for the following reasons.

The Baca Mountain Tract does not meet the eligibility requirements for a wilderness recommendation because the Baca Mountain Tract is encumbered with a split estate status where the mineral rights are still privately owned. The Great Sand Dunes National Park and Preserve Act did not authorize the acquisition of the mineral rights of the Baca Ranch. The Forest Service can not prevent access to and the development of those mineral resources and can not prevent those incompatible access and development uses that would negatively affect wilderness character and potential.

Effects to Forest Resources

The Forest Plan amendment is an administrative action which, like the Forest Plan, has no effect on the environment by itself. It is a permissive document which permits projects in the future which may have effects. Effects to Forest resources are also discussed in each resource section.

There would be no effect on any Forest resources or elements due to any of the alternatives beyond those already anticipated and disclosed in the Forest Plan and its FEIS, although Alternative 1 does not comply with the National Forest Management Act which requires that national Forest system lands be under the management direction of a Forest Plan. All the action alternatives provide a direct benefit to the Forest resources because the amendment brings all activities under the resource protection measures and requirements provided in the Forest Plan. Alternative 1 does not provide these resource protection measures.

Effects on Resources and Elements

Air

Scope of the Analysis

The scope of this analysis focuses on the effects to the air quality within the analysis area that might be reasonably expected from each alternative.

Existing Condition

The Clean Air Act, as amended, was established to promote the public health and welfare by protecting and enhancing the Nation's air quality. The Federal agencies are required to meet all State, Federal, and local air pollution standards. The Federal land management agencies have an affirmative responsibility to protect air quality values from adverse air pollution impacts. The act establishes specific programs that provide special protection for air resources and air quality related values associated with NPS units. Section 118 of the Clean Air Act requires a park unit to meet all Federal, State, and local air pollution standards. The Clean Air Act mandates different levels of protection and designates areas as being in class I, II, or III areas, by specifying the amount of pollution allowed in them. Class I areas are pristine and little pollution is allowed. The State of Colorado air quality regulations allow the Forest Service to protect values in class II wilderness areas equivalently with protections required for class I areas.

Sources of air pollution with the analysis area include agricultural operations, automobiles, campfires, wildfires, space and water heating equipment, fuel storage, and wood burning stoves. Windy weather increases airborne particulates and decreases visibility, especially in the spring.

Air quality on the RGNF is good for all air pollutants. On the Forest, the Sangre de Cristo Wilderness and the Baca Mountain Tract are within designated class II areas. Despite sources of air pollution, air quality within the analysis area has historically been excellent and has attained State and Federal ambient air quality standards.

The Sand Dunes Wilderness Area within the GRSA is in a class I air quality area and the remainder of GRSA is within a class II air quality area. The GRSA has consistently attained State and Federal ambient air quality standards (Fire Management Plan Environmental Assessment 2005). However, visual quality is often affected by particulates in the air.

Effects of the action alternatives to air quality would come from dust plumes from vehicles traversing on roads within the Baca Tract and GRSA. Any increase in smoke from campfires due to increased use would be negligible on a regional scale. Other impacts on regional or local air quality from the alternatives would be negligible.

Direct, Indirect, and Cumulative Effects

Alternative 1 (No Action)

Alternative 1 does not propose any management direction. Current activities would continue. There would be no public motorized access to the GRSA or Baca Mountain Tract. Air quality would remain high in the analysis area. However, without management options with regard to fuels reduction, the risk of a more intense wildfire, if one should occur, is somewhat higher. This would result in temporary increases in air pollution from smoke and particulates.

Effects Common to All Action Alternatives

Construction activities such as hauling materials and operating heavy equipment could result in temporary increases of vehicle exhaust, emissions, and fugitive dust in the general project area. Any exhaust, emissions, and fugitive dust generated from construction activities would be temporary and localized and would likely dissipate rapidly because air stagnation in the analysis area is rare. Overall, the project could result in a negligible degradation of local air quality, and such effects would be temporary, lasting only as long as construction.

An increase in motorized vehicle traffic would occur on GRSA and RGNF roads to designated parking areas. Small increases in vehicle dust would occur from this traffic, but impacts would be temporary and localized.

The class I and II air quality designations in the analysis area would not be affected by the proposal. Because the class I and II air quality designations would not be affected, and there would be only negligible impacts to air quality, there would be no unacceptable impacts and the proposed activities would be consistent with §1.4.7.1 of NPS Management Policies 2006.

Alternative 2

Direct and Indirect Effects

Forest Plan Amendment. Alternative 2 would amend the Forest Plan and provide management direction and environmental protection not currently in place for the air resource.

Forest Service Projects. Alternative 2 would disturb approximately 8.8 acres of land; 0.4 acres in Saguache County, 7.3 acres on the GRSA, and 1.1 acres on the Baca Mountain Tract. Very temporary and minor impacts to air quality would result from this activity and resulting traffic in future years.

National Park Service Projects. The majority of new disturbance (5.3 acres) from this alternative is from construction and reconstruction of an old two-track for the Camino Chamisa on the GRSA. Very temporary and minor impacts to air quality would result from this activity and resulting traffic in future years.

Alternative 3

Direct and Indirect Effects

Forest Plan Amendment. Alternative 3 would amend the Forest Plan and provide management direction and environmental protection not currently in place for the air resource.

Designated Forest roads would be limited to those going to authorized private land holdings. This would result in 8.9 miles of system road as compared to 10.5 in Alternative 2. Air quality impacts would remain minimal as discussed under Alternative 2.

Forest Service Projects. Alternative 3 would not disturb any acres on the Baca Mountain Tract. Air quality would not be impacted. The Liberty Road on the Baca Mountain Tract would not be improved and occasional dust would be generated by vehicle traffic. Air quality would remain good.

National Park Service Projects. Alternative 3 would create approximately 1.1 acres of soil disturbance on the GRSA from 0.2 miles of Liberty Road reconstruction and the construction of the North Parking Area. Only very minor impacts to air quality are expected during and after construction.

Alternative 4

Direct and Indirect Effects

Forest Plan Amendment. Alternative 4 would amend the Forest Plan and provide management direction and environmental protection not currently in place for the air resource.

Forest Service Projects. Alternative 4 would create approximately 4.5 acres of soil disturbance; 1.79 acres on the GRSA, and 2.11 acres on the Baca Mountain Tract. Very temporary and minor impacts to air quality would result from this activity and resulting traffic in future years.

Park Service Projects. This alternative reconstructs 0.73 miles of Liberty Road on GRSA, which could result in 1.79 acres of ground disturbance. Very temporary and minor impacts to air quality would result from this activity and resulting traffic in future years.

Cumulative Effects

Sources of air pollution from the surrounding area (i.e., motorized vehicles, space and water heating equipment, fuel storage, campfires, wildfires, wood burning stoves, dust, future oil and gas development and production, fuels treatments on GRSA and Baca Grande subdivision, and agriculture activities) would be expected to impact air quality at times. During springtime high wind events, clean-tilled agricultural fields often diminished air quality and visibility due to severe wind erosion. Future growth of the Baca Grande subdivision, Crestone, and the San Luis Valley would be expected to contribute negatively to air quality. Potential oil and gas activities could also cause impacts to air quality.

Under Alternative 1, the air quality of the analysis area would be expected to remain in excellent condition. This alternative does not propose any activities that would be expected to measurably and negatively affect air quality. Effects from current activities in the Baca Mountain Tract would likely be negligible. Overall, cumulative effects from past, present, and reasonably foreseeable actions would be expected to be minor and to be addressed under the authority of the Clean Air Act.

Under the action alternatives, the air quality of the analysis area would be expected to remain in excellent condition. These alternatives are permissive to fuels treatments that could impact air quality for short periods of time. However, any future fuels treatments would be evaluated under separate site-specific NEPA analysis and conducted under conditions to disperse smoke and minimize impacts to surrounding communities. Overall, cumulative effects from past, present, and reasonably foreseeable actions would be expected to be minor and to be addressed under the authority of the Clean Air Act.

Aquatic Resources

Scope of the Analysis

The scope of this analysis focuses on the possible impacts to watersheds and the aquatic environment that might be reasonably expected from each alternative. A detailed analysis would be documented in a watershed report included in the final project record. Also see the “Fisheries Resources” section. The analysis area is shown in Figure 3-1.

The scope of this analysis is the Forest Plan amendment and the closely interrelated projects on the Baca Mountain Tract and GRSA which address the possible impacts to watersheds and the aquatic environment that might be reasonably expected from each alternative.

Existing Condition

The analysis area lies within three USGS numbered watersheds, #130100030501 (44,655 acres; Spanish Creek), #130100030502 (40,013 acres; Cottonwood and Deadman Creeks), and #130100030606 (19,245 acres; Pole Creek). Stream channels in Figure 3-1 include all streams

on U.S. Geological Survey Quad maps plus all additional channels that can be recognized from topography at 1:24,000 scale. Riparian areas and aquatic life are associated with the main streams shown. Precipitation within these watersheds varies from about 12 to 40 inches, with more at higher mountain elevations.

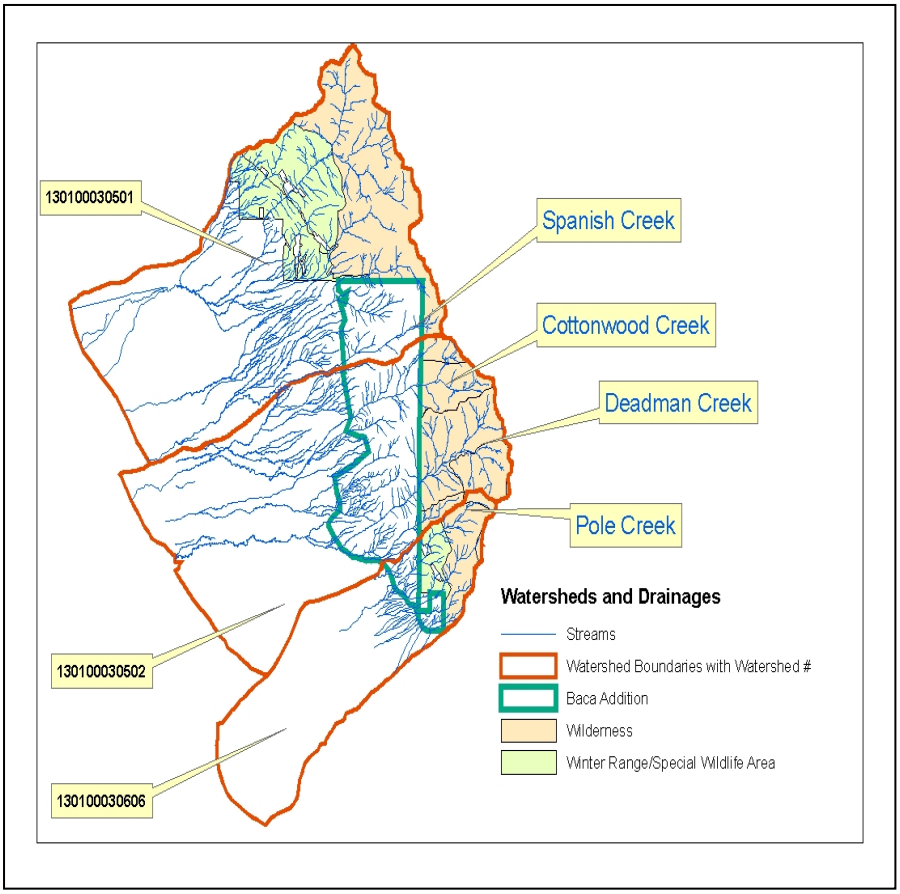


Figure 3-1. Watersheds and stream channels

Some of the lower watershed areas are privately owned and most disturbances are related to roads and residential areas in the town of Crestone and the Baca Grande subdivision. Other known watershed disturbances include timber harvest areas and outdoor recreation sites, and the historic mining and milling activity which occurred in Spanish, Pole, Cottonwood, Short, and Deadman drainages. Stream conditions have been observed throughout the analysis area and existing stream conditions show cumulative effects of all past and current watershed impacts.

A coarse watershed assessment was conducted which showed that current total disturbance levels are very low and fall below concern levels in all three sixth-level watersheds. Stream channels on selected reaches within main drainages on the Baca Mountain Tract were surveyed for stream type, morphology, chemistry, and overall stream health. The national forest land adjacent to the Baca Tract has low to no levels of surface disturbance. Streams within watersheds #130100030501, #130100030502, and #130100030606 are in robust stream health. Sediment sources associated with current system roads or other surface disturbances are minor. Where the Liberty Road crosses perennial streams including Deadman, Pole, and Short Creeks, impacts are currently minor and would not be expected to increase. Stream banks are stable, with healthy

riparian vegetation in proper functioning condition along intermittent and perennial stream reaches.

Water quality in streams within the analysis area is generally excellent due to low disturbance levels in upper watershed areas. The State of Colorado has jurisdictional authority over water quality and the Colorado Water Quality Commission sets water quality standards. The State has designated use classifications for these waters as Aquatic Life Cold 1, Water Supply, Recreation, and Agriculture. In their most recent 2008 assessment, the Water Quality Control Division found that these streams were fully supporting in all their classified uses with no violations of standards for these uses.

The RGNF ensures that State water quality standards are maintained in Forest streams by implementing the protection measures and requirements in the Forest Plan standards and guidelines and the Watershed Conservation Practices Handbook. However, water consumers should note that management practices on Forest lands should not be relied on to provide potable drinking water. While the surface waters flowing from the Baca Mountain Tract and other areas of the Forest support their uses, they often have natural water quality concerns such as coliform and other biological contaminants due to wildlife and other natural sources. Recreationists can also contaminate water with human, pet, and domestic livestock waste. Municipalities and other users are responsible for providing adequate and appropriate water treatment.

Water Rights/Water Use

The town of Crestone has water rights and obtains its drinking water from four wells within the town limits. Several residences have their own wells.

The USFWS acquired the water rights of the former Baca Ranch as a result of the Great Sand Dunes National Park and Preserve Act. These include North and South Crestone, Spanish, Willow, Cottonwood, and Deadman Creeks. The Baca Grande subdivision currently obtains its water supply from one well. Other wells and an infiltration gallery in Cottonwood Creek have been used in the past. Two spiritual centers obtain their water supply from Spanish Creek. All these supply intakes are located downstream from the Baca Mountain Tract.

Instream flow water rights for RGNF uses were adjudicated in 2001 for area creeks including North Crestone and South Crestone Creeks and several streams that flow through the Baca Mountain Tract including Willow, Cottonwood, and Deadman Creeks.

Water rights held by the United States on the GRSA include ground water from several specific wells, undeveloped ground water to meet future needs, Denton Spring, and instream flow for several streams. The reserved rights for minimum stream flows include Medano, Sand, Mosca, Little Medano, Cold, Buck, Garden and Castle Creeks. In addition, drainages of Horse and Sawmill Canyons, Morris Gulch, and one unnamed drainage also have these instream rights.

A court ruling in August 2008 entitles the NPS to an absolute water right to appropriate in-place ground water. The water right entitles the NPS to specific water levels along its boundary. Ten monitoring wells will be installed to measure ground water levels and assist the Division of Water Resources Engineer in administration of this water right. Six of these wells are located on the west boundary of the GRSA adjacent to the Baca National Wildlife Refuge and two wells are on the northwest boundary of the park adjacent to the Baca Grande subdivision within the analysis area. This water right is meant to maintain ground water levels, surface water levels, and stream flows on, across, and under the park to accomplish the purposes of the park and protect park resources and park uses.

Deadman Creek

Several artesian wells located on GRSA lands that were part of the Baca Ranch would be capped in the near future. The wells were not permitted and capping would establish a more natural habitat on these park lands.

Direct, Indirect, and Cumulative Effects

This effects section is a summary from a detailed aquatic resource report included in the planning record.

Alternative 1 (No Action)

Alternative 1 does not propose any management direction and does not provide environmental protection for the aquatic resource. Current activities would continue. There would be no public motorized access to the GRSA or Baca Mountain Tract.

Alternative 1 does not propose any projects on the GRSA or the Baca Mountain Tract and there would be no ground-disturbing activities, so no effects are expected to watersheds and the aquatic environment. Other ongoing activities such as existing recreational hiking and horseback riding, wildfire suppression and fire use, and motorized use of the portion of the Liberty Road for administrative purposes and to access private inholdings, would not have a measurable effect on watersheds and the aquatic environment because the current activities are occurring at low levels with little disturbance.

Fire suppression may, in the short term, preserve the existing vegetative condition of the watersheds. But, in the long term, using only a fire suppression strategy may create undesirable fuel buildups and put the Baca Mountain Tract and surrounding areas at greater risk of wildfire. Catastrophic landscape wildfire could remove the vegetation and change soil characteristics resulting in adverse affects to the water quality and flow conditions.

Under this alternative, watersheds, stream channels, and riparian areas would be left in their existing condition and only natural effects to aquatic ecosystem and special area concerns would

occur. Overall direct, indirect, and cumulative effects from reasonably foreseeable activities would be expected to be negligible under this alternative.

Effects Common to All Action Alternatives

Overall, the effects to watersheds and the aquatic environment are expected to be negligible for Baca Mountain Tract and GRSA under all alternatives. None of the alternatives would be expected to result in measurable direct, indirect, or cumulative effects to watershed resources or stream and riparian health.

The Clean Water Act requires that chemical, physical, and biological integrity of all waters, stream channels, and wetlands be protected. NPS policies, Forest Plan standards and guidelines, and the Water Conservation Practices Handbook provide that protection for all action alternatives. By implementing these protection measures, impacts to streams and aquatic habitat are expected to be minimal. No alternative is expected to have any effect on the chemical quality of water.

There is very minor ground disturbance under any action alternatives and the closures and restrictions would minimize any effect to water quality. All action alternatives close the Baca Mountain Tract to OHVs, livestock grazing, and public motorized travel beyond the parking areas which should reduce impacts to water quality. This should reduce soil erosion from activities. Administrative use, including that required for private landowner access, would continue on the Liberty Road and other designated system roads, would be minor and not expected to increase beyond current levels.

Existing recreation use is expected to continue and the alternatives may result in a slight increase due to the increased convenience in access to the Baca Mountain Tract. While the roads and parking area are not located near any active streams or riparian areas, dispersed recreation use would be the one potential source of water contamination, mainly due to human, recreational livestock, and canine fecal matter. However, in this analysis area, recreation impacts would be limited to dispersed recreation activities, because no trails or developed campsites are proposed in watersheds that provide domestic water supplies. Some dispersed recreation use occurs in the drainages upstream from the Baca Grande subdivision which could have a negative effect on water quality. Wildlife also provides a natural source of fecal matter which, along with other natural sources of contamination, would continue to affect water quality in these watersheds. The action alternatives propose no activities and are also not expected to cause an increase in recreation use in these watersheds. The effects of dispersed recreation use on water quality are expected to be limited because of the low anticipated use levels and the project design criteria, and Forest Plan standards and guidelines restricting camping and recreational livestock in riparian areas would reduce impacts to water quality and the aquatic and riparian resources.

The watersheds within the Baca Mountain Tract are at high risk of catastrophic wildfire due to heavy fuels conditions. A large scale wildfire would likely cause severe impacts to the watersheds. The proper function of the watershed could be impaired due to lack of vegetation and the resulting impacts to water quality from heavy sedimentation and changes in stream morphology.

There also is the associated risk that a wildfire could have adverse effects on the water quality of the domestic water supplies or the maintenance of these systems, including a risk to water quality posed by erosion following such a fire disturbance event. The effects of wildland fire on water supplies include: changes in erosion hazard and erosion rates, debris and mud-flow

hazards, the ability of channels to handle sediment, and the formation of water-repellent soil layers. In some watersheds, wildland fire may also mobilize substances toxic to human health, such as mercury, lead, arsenic, cadmium, and other metals. These materials may have entered the watershed from natural sources, abandoned or active mines, or through atmospheric deposition. After a fire, these materials may be dissolved in water or adsorbed or attached to inorganic and organic particles, making the materials more mobile than before the fire.

The risk of impacts to watersheds from wildfire could be reduced with fuel management projects. The Forest Plan amendment in all action alternatives would allow fuels reduction projects to occur in the future.

Alternative 2

Direct and Indirect Effects

Forest Plan Amendment. Alternative 2 would amend the Forest Plan and provide management direction and environmental protection not currently in place for watersheds and the aquatic resource.

Forest Service Projects. Alternative 2 would disturb approximately 8.8 acres of land; 0.4 acres in Saguache County, 7.3 acres on the GRSA, and 1.1 acres on the Baca Mountain Tract. The limited disturbance area is not expected to result in any measurable impacts to the aquatic resource.

No aquatic resources or riparian vegetation would be impacted. Reconstruction of the existing Liberty Road on Forest land to the new Middle Parking Area would result in a small (0.53 acres) additional surface disturbance. Minor maintenance and reconstruction of 10.5 miles of existing class 2 designated road system would improve road surface and drainage and reduce erosion. The proposed Middle Parking Area occurs on a gentle slope and there are no streams or riparian areas. During high runoff events, some diversion of water and local erosion could occur requiring minor road maintenance.

A new gaging station would be placed approximately 100 yards below an existing historical diversion point on Deadman Creek. During placement of the flume and instrument enclosure, a minor amount of sediment may temporarily enter the creek. A small amount of borrow material from near this site would also be required. It is anticipated that the existing gage would be used temporarily to collect data that can be compared to the new station information. Associated with this construction, the old diversion channel would be “plugged” so that it would not conduct flow during high runoff events in Deadman Creek, and an old flume on the diversion may be removed. Impacts to stream health would be temporary and minimal. There would be long term benefits to the watershed because this gaging station would add to the information used to make future Forest Service, NPS, and U.S. Fish and Wildlife Service water management decisions.

With the implementation of the project design criteria and the provisions in the Watershed Conservation Practices Handbook, on this small area of disturbance, this alternative is not expected to result in any measurable impacts to the water resource. Sediment sources associated with current roads or other surface disturbances could cause some minor localized impact, but overall watershed health would be minimally affected by these actions.

National Park Service Projects. No aquatic resources or riparian vegetation would be impacted. The majority of new disturbance (5.3 acres) from this alternative is from construction and reconstruction of an old two-track for the Camino Chamisa on the GRSA. The analysis area

on the GRSA does not contain surface waters, and is mostly dry, except for periodic runoff during storm events. The proposed road only crosses ephemeral drainages, and no riparian vegetation is present. Only very minor impacts to watershed resources or hydrologic function are expected.

With the implementation of the project design criteria and the provisions in the Watershed Practices Handbook, on this small area of disturbance, this alternative is not expected to result in any measurable impacts to the water resource. Water quality, water quantity, and drinking water are not expected to be affected by the project. Sediment sources associated with current roads or other surface disturbances could cause some minor localized impact, but overall watershed health would be minimally affected by these actions. These negligible effects would not result in any unacceptable impacts and the activities would be consistent with §1.4.7.1 of NPS Management Policies 2006.

No wetlands are located in the analysis area; therefore, a statement of findings for wetlands will not be prepared. Because there are no impacts to wetlands, there would be no unacceptable impacts to wetlands and the proposed activities are consistent with §1.4.7.1 of NPS Management Policies 2006 and Director's Order 77-1 Wetlands Protection.

Alternative 3

Direct and Indirect Effects

Forest Plan Amendment. Alternative 3 would amend the Forest Plan and provide management direction and environmental protection not currently in place for watersheds and the aquatic resource. Designated Forest roads would be limited to those going to authorized private land holdings. This would result in 8.9 miles of system road as compared to 10.5 in Alternative 2. Watershed impacts would remain minimal as discussed in Alternative 2.

Forest Service Projects. Alternative 3 would not disturb any acres on the Baca Mountain Tract. No aquatic resources or riparian vegetation would be impacted. The Liberty Road on the Baca Mountain Tract would not be improved and any occasional erosional problems caused by high runoff events would occur. Stream and watershed health would remain robust.

National Park Service Projects. Alternative 3 would create approximately 1.1 acres of soil disturbance on the GRSA from 0.2 miles of Liberty Road reconstruction and the construction of the North Parking Area. The North Parking Area occurs on a gentle slope and no streams or riparian areas would be affected. During high runoff events, some diversion of water and local erosion could occur requiring minor road maintenance. Only very minor impacts to watershed resources or hydrologic function are expected.

With the implementation of the project design criteria and the provisions in the Watershed Conservation Practices Handbook, on this small area of disturbance, this alternative is not expected to result in any measurable impacts to the water resource. Water quality, water quantity, and drinking water are not expected to be affected by the project. Sediment sources associated with current roads or other surface disturbances could cause some minor localized impact but overall watershed health would be minimally affected by these actions. These negligible effects would not result in any unacceptable impacts and the activities would be consistent with §1.4.7.1 of NPS Management Policies 2006.

No wetlands are located in the analysis area; therefore, a statement of findings for wetlands will not be prepared. Because there are no impacts to wetlands, there would be no unacceptable

impacts to wetlands and the proposed activities are consistent with §1.4.7.1 of NPS Management Policies 2006 and Director's Order 77-1 Wetlands Protection.

Alternative 4

Direct and Indirect Effects

Forest Plan Amendment. Alternative 2 would amend the Forest Plan and provide management direction and environmental protection not currently in place for watersheds and the aquatic resource.

Forest Service Projects. Alternative 4 would create approximately 4.5 acres of soil disturbance; 1.79 acres on the GRSA, and 2.11 acres on the Baca Mountain Tract. The reconstruction of 0.21 miles of Liberty Road and the construction of the South Parking Area on the Baca Mountain Tract would improve road surface and drainage and reduce erosion. All activities would occur on gentle slopes. The limited disturbance area is not expected to result in any measurable impacts to the aquatic resource. No aquatic resources or riparian vegetation would be impacted.

Minor maintenance and reconstruction of 10.5 miles of existing class 2 designated road system would improve road surface and drainage and reduce erosion. The proposed parking lot location has moderate slope; drainage features are limited. During high runoff events, some diversion of water and local erosion may occur, and could require road maintenance.

A new gaging station would be placed approximately 100 yards below an existing historical diversion point on Deadman Creek. During placement of the flume and instrument enclosure, a minor amount of sediment may enter the creek, but this would be temporary. A small amount of borrow material from near this site would also be required. It is anticipated that the existing gage would be used temporarily to collect data that can be compared to the new station information. Associated with this construction, the old diversion channel would be "plugged" so that it would not conduct flow during high runoff events in Deadman Creek, and an old flume on the diversion may be removed. Impacts to stream health would be temporary and minimal. There would be long-term benefits to the watershed because this gaging station would add to the information used to make future Forest Service, NPS, and USFWS water management decisions.

With the implementation of the project design criteria and the provisions in the Watershed Practices Handbook, on this small area of disturbance, this alternative is not expected to result in any measurable impacts to the water resource. Sediment sources associated with current roads or other surface disturbances could cause some minor localized impact, but overall watershed health would be minimally affected by these actions.

National Park Service Projects. This alternative reconstructs 0.73 miles of Liberty Road on GRSA, which could result in 1.79 acres of ground disturbance, but would improve road surface and drainage and reduce erosion. All activities would occur on mild slopes. The limited disturbance area is not expected to result in any measurable impacts to the aquatic resource.

With the implementation of the project design criteria and the provisions in the Watershed Practices Handbook, on this small area of disturbance, this alternative is not expected to result in any measurable impacts to the water resource. Sediment sources associated with current roads or other surface disturbances could cause some minor localized impact, but overall watershed health would be minimally affected by these actions.

Cumulative Effects

Development of the privately owned mineral estate is possible under all alternatives, but there are no plans from which to base an effects analysis at this time. However, if the privately owned mineral estate on the Baca Mountain Tract were to be developed for hard-rock mining or oil and gas drilling, there would be potential for disturbance and impacts to the aquatic resource. The Forest Service can not prevent access to and the development of privately owned mineral rights; the specific development would have to be negotiated with the private owner. If such activities are proposed by the mineral estate owner in the future, surface management would be negotiated to minimize any impact to watershed resources, including water quality. Again, because there are no plans to develop the privately owned mineral estate at this time, it is not possible to quantitatively assess the impacts of this activity without site-specific information. In general, the watersheds would be protected through State and Federal water quality standards.

Under Alternative 1, aquatic ecosystems, stream channels, riparian areas, and watersheds would be left in good to robust existing condition and primarily only natural effects to aquatic ecosystems would occur. Effects from current activities would likely be minor. Cumulative effects from past, present, and reasonably foreseeable actions would be expected to be negligible.

The minor effect of the action alternatives, in conjunction with the effects of other projects, is expected to be minimal. Potential impacts to watershed resources and water quality would be minimized by implementation of Forest Plan standards and guidelines. Improving existing roads should reduce overall erosion and sedimentation. Installation of the stream gage station (under Alternatives 2 and 4) would only have minimal and temporary effect to Deadman Creek and provide long-term benefits. Cumulative effects from past, present, and reasonably foreseeable actions would be expected to be negligible.

Fisheries Resources

Scope of the Analysis

This section discusses the fishery environment associated with the analysis area on the Baca Mountain Tract and GRSA, and is based on the best available science. The analysis area lies within three sixth-level watersheds and includes five perennial streams: Spanish Creek, Cottonwood Creek, Deadman Creek, Pole Creek, and Short Creek. Fish species of concern are also discussed in the wildlife section.

Past Actions that Have Affected the Existing Condition

The most significant activity that has affected the fishery resource in the analysis area is the introduction of non-native trout into the major perennial streams. These streams are within the historical range of Rio Grande cutthroat trout, but no native trout were observed during stream sampling. Brook trout is currently the most common species.

The Baca Mountain Tract was once a working cattle ranch, but long-term livestock grazing does not appear to have greatly impacted the riparian areas or stream habitat. There is very limited motorized access adjacent to or crossing the streams. Only Deadman Creek, Pole Creek, and Short Creek have roads associated with them, but there are no noticeable significant impacts from these roads. There is a diversion structure and gage station on Deadman Creek that

probably affected stream flows and habitat, but the stream has adjusted well and there are no noticeable effects from these structures on the existing trout population.

Other known watershed disturbances include timber harvest, dispersed camping, and historic mining activities in Spanish, Pole, Cottonwood, Short, and Deadman drainages. These activities may have contributed to increased angler activity for sport and sustenance in the past and contributed to the over-harvest of native trout which resulted in the eventual stocking of non-native trout.

Existing Condition

All streams within the analysis area are on the Baca Mountain Tract. The affected area of the GRSA contains no live streams or fish habitat. Streams within the analysis area are generally in robust stream health. Sediment sources associated with current system roads or other surface disturbances are minor. Stream banks are stable, with healthy riparian vegetation in proper functioning condition. Of the four perennial streams that support a fishery, Deadman Creek provides the best trout habitat.

Self-sustaining populations of non-native trout are found in four of the perennial streams. Deadman Creek supports a very good population of non-native brook trout with multiple age classes. Rainbow trout and a single “cutbow” were also collected in Deadman Creek. Only brook trout were noted in Pole Creek and brook trout have been reported in Cottonwood and Spanish Creeks. No fish were observed in Short Creek.

Rio Grande cutthroat trout recreation populations are found in lakes at the very upper end of Deadman Creek and Cottonwood Creek, upstream of the analysis area. These lakes were historically stocked with Snake River cutthroat trout, Yellowstone cutthroat trout, and Pikes Peak cutthroat trout, but today they are maintained by periodic CDOW stockings of only Rio Grande cutthroat trout. Although these lakes are outside the analysis area, cutthroat trout could move downstream from the lakes into suitable stream habitat within the analysis area.

Direct, Indirect, and Cumulative Effects

Effects Common to All Alternatives

Currently, the streams and riparian areas within the project area are in good to robust condition and any specific fish habitat concerns within the analysis area tend to be site specific and not an overall threat to the trout populations throughout the drainages. None of the alternatives would be expected to result in significant direct, indirect, or cumulative effects to fishery resources.

Forest management activities can contribute to the impact and spread of aquatic diseases and invasive species by conducting activities within streams that increases stream sediment which creates habitat for many hosts and vectors; and by direct transfer of spores and species in mud and water that may be on vehicles, equipment, and angler’s gear that have crossed or been used in infected waters. Some riparian zones within the analysis area receive recreational use such as hiking, camping, horseback riding, fishing, and very limited vehicle crossings. High levels of these activities can lead to loss of riparian vegetation, soil compaction, and stream bank degradation resulting in increased sedimentation and loss of riparian cover which can degrade fish habitat. Increased numbers of anglers in the area could impact the current fish populations if they do not comply with current harvest limits. In all action alternatives, the Forest Plan camping and recreational livestock restrictions within 100 feet of streams and within riparian areas will minimize the effects on the streams and aquatic habitats.

Public access into the area is restricted to foot or horseback. There would be no public motorized travel beyond the parking areas, no OHV use allowed, and no permitted livestock grazing. Some specific popular dispersed camping sites may experience increased use and associated impacts such as soil compaction and alteration of riparian vegetation. But these impacts to streams and aquatic habitat are expected to be minimal with implementation of the closures, project design criteria, Forest Plan standards and guidelines, and Watershed Conservation Practices Handbook Management measures. By following these criteria, no alternatives are expected to impact the viability of the trout populations within the analysis area.

Alternative 1 (No Action)

This alternative proposes no new management actions or surface disturbances on the Forest. Watersheds, stream channels, and riparian areas would be left in their existing condition. The alternative does not provide management direction or environmental protections. Limited administrative use of the existing roads would continue and any drainage problems would be left until they can be dealt with through normal maintenance operations. Under this alternative, natural effects to aquatic systems would occur. No public vehicle access to the streams would occur, although increased recreational use in riparian areas by hikers and anglers could result in changes in fish populations if angler use greatly increases.

Alternative 2

Direct and Indirect Effects

This alternative provides Forest Plan management direction and environmental protection for the Baca Mountain Tract. This alternative proposes 3.4 miles of road construction and reconstruction; construction and use of the new Middle Parking Area; removal of an old stream diversion structure and construction of a new stream gaging station. Alternative 2 would result in 8.83 acres of ground disturbance. Public motorized access would only be allowed to the Middle Parking Area.

The road work and new parking area is well outside of the stream water influence zones and would not have any effect on stream habitat or fish populations. The existing Liberty Road crosses Deadman, Pole, and Short Creeks, but use of this road beyond the parking area is limited to administrative use and special use authorizations for private property access only. The current impacts from the stream crossings are minor and no additional increases in impacts are expected. Public vehicular access to these streams would not occur, but increased recreational use in riparian areas by hikers and anglers could result in changes in riparian condition and fish populations if hiker/angler use significantly increases.

The removal of a diversion and construction of a new stream gaging station would result in some minor ground disturbances and changes in stream habitat in the immediate area of the structures. The new gaging station would be placed approximately 100 yards below an existing historical diversion point on Deadman Creek. During placement of the flume and instrument enclosure, a minor amount of sediment may temporarily enter the creek. A small amount of borrow material from near this site would also be required. Associated with this construction, the old diversion channel would be plugged so that it would not conduct flow during high runoff events, and an old flume on the diversion may be removed. These activities may result in a temporary increase in sedimentation and changes in habitat characteristics, but the habitat would readjust to the alterations with no long-term impacts expected. These activities should have no long-term impact to the existing trout population.

Impacts to trout populations and stream health should be minimal with full implementation of the project design criteria, Forest Plan standards and guidelines, and Watershed Conservation Practices Handbook.

Alternative 3

Direct and Indirect Effects

This alternative provides Forest Plan management direction and environmental protection for the Baca Mountain Tract. The effects of this alternative are similar to Alternative 2, although there is no road construction and only 0.2 miles of reconstruction. The North Parking Area is the same size, but in a different location and would have similar impacts, and there would be no authorization for the removal of stream diversion or construction of the stream gage. Alternative 3 would result in 1.1 acres of ground disturbance. There would not be any road or parking area impacts to the fisheries because these areas are well outside of the water influence zones and the existing stream gages and structures would be left in place. Public vehicular access to these streams would not occur, but increased recreational use in riparian areas by hikers and anglers could result in changes in riparian condition and fish populations if hiker/angler use significantly increases.

This alternative would cause less surface disturbance than Alternative 2 because there is less road disturbance and there would be no disturbance associated with the stream gage. All surface disturbances are well outside of the water influence zone and there would be no stream impacts except for those associated with dispersed recreation.

Impacts to trout populations and stream health should be very minimal with full implementation of the project design criteria, Forest Plan standards and guidelines, and Watershed Conservation Practices Handbook.

Alternative 4

Direct and Indirect Effects

This alternative provides Forest Plan management direction and environmental protection for the Baca Mountain Tract. Alternative 4 would result in 4.5 acres of ground disturbance. The effects of this alternative are similar to Alternative 2 because the stream gage removal and construction would be authorized and all road work and parking areas are well outside of the water influence zones.

The removal and construction of a new stream gage would result in some limited ground disturbances and changes in stream habitat with the effects being the same as noted in Alternative 2. Impacts to trout populations and stream health should be very minimal with full implementation of the project design criteria, Forest Plan standards and guidelines, and Watershed Conservation Practices Handbook.

Cumulative Effects

Aquatic ecosystems, stream channels, riparian areas, and watersheds would be maintained in their good to robust existing condition and none of the proposed activities in the action alternatives would be expected to result in measurable effects to watershed resources or stream and riparian health. Trout population viability (including aquatic MIS) would be maintained regardless of alternative. Cumulative effects from past, present, and reasonably foreseeable

actions would be expected to be negligible. Also refer to the cumulative effects analysis for the previous “Aquatics Resources” section.

Global Climate Change

Scope of the Analysis

Global climate change is an important emerging concern worldwide. However, there is no established scientific methodology to measure the effects of small-scale projects such as the Baca Mountain Tract/Camino Chamisa Project on global climate. This analysis addresses global climate change in two ways: (1) effects of climate change on a proposed project, and (2) effects of a proposed project on climate change. Each of these is discussed below relative to the proposed amendment and to the proposed project actions.

Direct, Indirect, and Cumulative Effects

1. Effects of climate change on a proposed project

Forest Plan Amendment. There are no effects from climate change at a local or global scale on the proposed Forest Plan amendment under any alternative, including the no-action alternative. This is because the Forest Plan amendment is strictly an administrative action to bring the Baca Mountain Tract under the management direction of the RGNF Forest Plan. However, in general, the permissive actions under the Forest Plan would be expected to promote more vigorous vegetation resulting in more resilience to possible climate stresses.

Forest Service and National Park Service Projects. There are no measurable effects of climate change on any Forest Service or NPS project proposed in any of the action alternatives. Any differences between alternatives (including no action) would be negligible at a global scale.

2. Effects of proposed project on climate change

Forest Plan Amendment. The proposed Forest Plan amendment is simply an administrative action to bring the Baca Mountain Tract under the direction of the RGNF Forest Plan. The Forest Plan itself would have no effect on climate change. Generally, the permissive actions under the Forest Plan would not be expected to contribute meaningful amounts to green house gas emissions and carbon sequestration. Any differences between alternatives (including no action) would be negligible at a global scale.

Forest Service and National Park Service Projects. The proposed Forest Service and NPS projects are very limited in size and scope and would not create any measurable effects to climate change. Although it may be technically possible to quantify the projects direct effects on carbon sequestration and green house gas emissions, it would be extremely expensive and there is no certainty about the actual intensity of the effects from individual projects on global climate change. Any differences between alternatives, including the no-action alternative, would be negligible at a global scale.

Heritage Resources

Scope of the Analysis

The scope of this analysis focuses on the possible impacts to heritage resources that might be reasonably expected from each alternative. A detailed analysis would be documented in a

heritage resource report included in the project record. The analysis area includes the Baca Mountain Tract and the affected area along the northern boundary of the GRSA. The analysis for heritage resources is drawn from a summation of archival records, site visits, and a limited cultural resource inventory conducted by the GRSA. This resource is also discusses in the “Issue 5: Heritage Resources” section at the beginning of this chapter.

In addition to the National Historic Preservation Act and the National Park Service 2006 Management Policies, the National Park Service’s Director’s Order-28B Archeology affirms a long-term commitment to the appropriate investigation, documentation, preservation, interpretation, and protection of archeological resources inside units of the National Park System. As one of the principal stewards of America's heritage, the NPS is charged with the preservation of the commemorative, educational, scientific, and traditional cultural values of archeological resources for the benefit and enjoyment of present and future generations. Archeological resources are nonrenewable and irreplaceable, so it is important that all management decisions and activities throughout the National Park System reflect a commitment to the conservation of archeological resources as elements of our national heritage.

Existing Condition

Past actions include thousands of years of use and occupation by humans within and around the Baca Mountain Tract. This human activity has left markers that, as a whole, make up a unique cultural landscape that includes prehistoric sites that date from the middle to late Archaic (5000–1450 Before Present [BP]) to later Ute occupation (1300–1881 AD) which is represented by culturally peeled trees and various artifacts. While no Paleoindian presence (11500–7450 BP) has been identified and recorded within the Baca Mountain Tract, several, including the Stewart’s Cattleguard Folsom Site (10900–10200 BP) have been identified in the vicinity.

Historic use is thought to begin at the Old Spanish Trail around 1831. According to the national historic trail designation by the NPS, a segment of the east fork of the north branch of the Old Spanish Trail is thought to have passed somewhere through the southwestern portion of the analysis area crossing Alpine, Deadman, and Cedar Canyon Creeks. Begun as a horse and burro pack route that connected Santa Fe and Los Angeles, the trail’s use as a travel corridor later diminished to local use by 1850. While no evidence has been documented to date, there are reports of artifacts from this era recovered from the Baca Ranch.

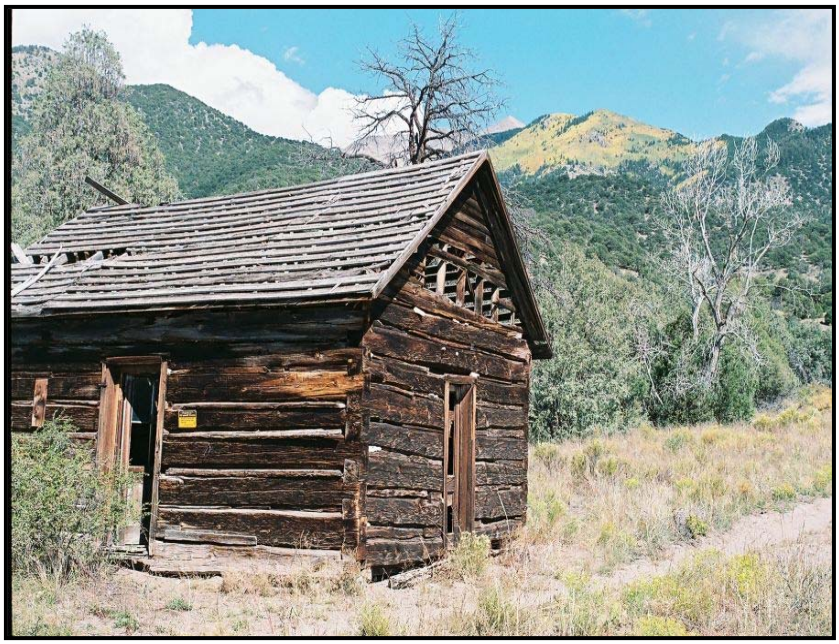
The Baca Mountain Tract was originally a small portion of the much larger Luis Maria Baca No. 4 Grant. The Grant was approximately 12.5 miles on each side (roughly 100,000 acres) and was part of a compensation package given by the United States in 1860 to the heirs of Luis Maria Cabeza de Vaca (anglicized as Baca). The Grant was one of five parcels given to the heirs in compensation for a grant previously owned by Cabeza de Vaca near Las Vegas, New Mexico. The Grant has a rich history of ownership and the ranch was well known for its cattle production. Domestic livestock intensively used these lands since at least the time of Euro-American settlement—considered roughly 1870 in the San Luis Valley.

Additional historic occupation occurred during the mining boom from the mid-1870s to 1904. This was when the gold mining town sites of Duncan and Liberty and other settlements were occupied. Prior to 2004, the analysis area was part of a working livestock ranch that dates back to at least the latter half of the 19th century. As a result, historic ranching infrastructure and timber harvest is also visible on the landscape.

Livestock ranching and hard-rock mining led to a network of roads in the area that are still evident today. Interestingly, the town of Duncan lay within the boundaries of the Baca Grant No. 4 and the townspeople were considered trespassers. In 1897 the United States Supreme Court ruled in favor of the Grant owner and the inhabitants of Duncan and the town of Cottonwood were evicted in 1900. Many of the evicted built a new camp, which later became the town of Liberty, just outside the Grant boundary.

The fact that the Baca Mountain Tract has remained in private hands until very recently has created a fairly unique situation where heritage resources have been largely protected from vandalism, collection, and looting by the public. However, townspeople of the Duncan town site, local ranchers, public given permission to access private land, and private inholding owners have found and collected artifacts from the prehistoric and historic sites. However, there is no evidence that the Duncan town site has been illegally excavated, resulting in one of the most intact banks of cultural deposits representing its historic time frame within the State of Colorado and the Nation.

The National Historic Preservation Act directs Federal agencies to establish and maintain preservation programs which ensure, among other things, that historic properties under the jurisdiction or control of the agency are identified, evaluated, and nominated to the National Register of Historic Places. GRSA conducted cultural resource inventories in portions of the former Baca Ranch which included surveys in the Baca Mountain Tract. While the many sites which were found provide a preliminary understanding and framework from which to successfully manage cultural resources within the analysis area, a large data gap still exists in terms of the scope of heritage resources and their significance. The potential for prehistoric and historic sites in the area is high as indicated by the preliminary cultural resource surveys. While the potential for prehistoric sites is generally limited in the steep rugged terrain, it is extremely high in the more gently sloping areas near permanent water sources. Recent excavations of some of the prehistoric sites have yielded results that may change the understanding of prehistoric use



Historic cabin at the Duncan townsite

and habitation in the area. It is very likely that additional undocumented sites within the analysis area have the potential to do the same.

There are a series historic mine sites (adits, shafts, and pits) and associated mining infrastructure on Pole Creek and Milwaukee Hill above the Town of Duncan. Mines on Pole Creek include the Esther, Dexter, Golden Gate, and Milwaukee Hill mines. The Golden Treasures Mill site is located below the Pole Creek Cabin site. The Nora B, Raven, Hannah, and Dephos mining claims were located in the area of the Golden Treasure Mill. The Ray and the Garfield were the primary mills located up Pole Creek, each having a 20-ton daily capacity. None of the mining infrastructure, including several historic structures in the vicinity of Liberty, has yet to be officially documented. Historic structures within the portion of the Liberty town site on the Baca Mountain Tract include two standing structures, cabin remains and associated out buildings, rock foundations, mining infrastructure north of Short Creek, an access road, fencing, and a corral. The Pole Creek Cabin was recently documented as an historic structure and was evaluated as not eligible to the National Register of Historic Places. The cabin has been illegally occupied in the recent past. The cabin has been suggested as a potential future recreational rental cabin.

A 2008 amendment to the National Trails System Act added the Old Spanish Historic Trail to the national trail system as a historic trail. This trail represents a historic Spanish trade route which extends from Santa Fe, New Mexico, to Los Angeles, California. An east fork of the northern branch of this historic route is thought to have traversed the Baca Ranch somewhere between the wetlands to the west and the Sangre de Cristo Mountain Range to the east. No traces of the route within the analysis area have been identified to date, but the GRSA and the San Luis Valley Public Lands Center will continue to survey for evidence of the trail. The Old Spanish Historic Trail represents more than just historic artifacts and places. It also represents a period in history and the analysis area provides an excellent opportunity to experience the relatively intact landscape through which the traders passed. A management plan for the entire trail is currently being developed by the Bureau of Land Management and the NPS and is expected to be completed in 2011.

Wind and sand are possibly the greatest sources of impact on the heritage resources within the Baca Mountain Tract. While they can successfully protect buried cultural resources in the low acidity environment in a remarkable state of preservation, they also create challenges in interpreting the sites. Windblown sand constantly covers, exposes, and recovers sites mixing the cultural horizons. Artifacts can appear on a single cultural horizon when they might actually represent thousands of years of human occupation.

Some remnants of the ranching operations also are impacting heritage resources. An abandoned water diversion once used to water livestock is causing erosion within the historic Duncan town site. The erosion is undermining the physical integrity of that segment of the historic road, while also impacting associated historic features and buried cultural deposits. Continued erosion may make the road impassable, and careless road maintenance could potentially impact the historic road itself and associated historic features and buried cultural deposits. Removal of the infrastructure and subsequent stream bank improvement would protect the heritage resources.

Ranching infrastructure such as fencing and water structures and buried pipelines have potentially impacted buried cultural deposits. There is evidence that trampling by livestock and elk have impacted heritage resources. The cumulative impact of the historic cattle grazing on heritage sites over time is likely, but unknown. More recently, there is evidence of heavy trampling by elk in riparian corridors where the large herds congregate. The elk are causing major disturbance to terrace sediments in some places. Because the elk congregate in many of

the same areas with water sources that contain a high archaeological site probability, it is likely that this elk trampling is impacting the cultural resources in this area. An ongoing study on elk in the area is being currently conducted by the NPS and may be of use in determining the potential impacts to archaeological sites from elk congregation.

As mentioned above, a network of roads cross the analysis area and are a part of the historic cultural landscape. The Liberty Road and other roads were used as historic access routes to the Duncan and Liberty town sites and the mining activities in the Baca Mountain Tract. While these roads have likely impacted buried prehistoric cultural deposits and contexts, they themselves also constitute significant historic linear features. Some of these roads continue to be used to access the private inholdings. The Liberty Road comes close to the Duncan Cabin, which is the one well-preserved wooden structure remaining in the Duncan town site. The Liberty Road's proximity to the cabin puts the cabin at risk of damage.

Direct, Indirect, and Cumulative Effects

Alternative 1 (No Action)

Alternative 1 does not propose any management direction and does not provide environmental protection for heritage resources beyond those provided by the National Historic Preservation Act, Archaeological Resources Protection Act, and the Native American Graves Protection and Repatriation Act. Current activities would continue. This alternative proposes no new management actions and there would be no new ground disturbance.

Since this alternative causes no ground-disturbing activities, the potential for inadvertent discoveries of and damage and destruction to buried cultural deposits and aboriginal human remains would decrease. However, by not amending the Forest Plan and not designating Forest system roads, especially for accessing the private inholding through the Duncan town site, the potential for direct effects to heritage resources increases through the use of a spider web of undesignated roads. Driving off the road or modifying or improving the historic road could adversely impact the adjacent historic features and the integrity of the historic road itself. There would be no public motorized access to the Baca Mountain Tract which could lessen the potential impacts to cultural resources by humans because of the long distance to travel by foot or horseback from the Liberty Gate.

Recreation use would continue under this alternative. This recreation use could result in unintentional impacts from trampling or intentional acts of vandalism or illegal excavation to heritage resources.

This alternative does not allow for erosion control measures on the roads within the Duncan town site which would result in further risk of further degradation of buried cultural deposits and the historic roads. This alternative allows for wildfire suppression, but no fuels treatments to protect historic sites.

Under this alternative there would be no emphasis on management of heritage sites beyond the protection required by law and regulation. The cultural values that make this area unique would not be managed, and therefore, potentially lost before the development of better research methods. Loss of heritage resources could then precipitate the loss of knowledge and understanding of these resources and the loss of interpretive opportunities. Because there would be no new inventories of heritage resources, there could be an increase in the risk of damage from natural weathering and erosion, fires, and other ongoing processes, exposure to natural

forces, or vandalism or illegal excavation of unknown heritage sites. This alternative could result in the loss of important archaeology sites or site components if these sites are not documented and monitored.

Effects Common to All Action Alternatives

All action alternatives would amend the Forest Plan and provide management direction and greater emphasis for environmental protection for heritage resources. Both the Forest Service and GSRA have responsibilities to manage and protect these heritage resources that make this area so unique under the National Historic Preservation Act, Archaeological Resources Protection Act, and the Native American Graves Protection and Repatriation Act. All Native American human remains and associated funerary objects in the San Luis Valley are protected under a multi-tribal and interagency San Luis Valley Native American Graves Protection and Repatriation Act Memorandum of Understanding.

The proposed road and parking area locations were all surveyed and no archeological sites were identified in the immediate project areas. Therefore, the proposed project areas are not expected to contain archeological deposits; however, appropriate steps would be taken to protect any archeological resources inadvertently discovered during construction. Because the proposed activities will not disturb any known archeological sites, the affect of the activities on archeological resources is expected to be negligible. The negligible impacts would not result in any unacceptable impacts to archeological resources and the proposed activities would be consistent with §1.4.7.1 of NPS Management Policies 2006.

All of the action alternatives account for the significance of heritage resources within the Baca Mountain Tract and provide additional management actions to protect them. All the action alternatives limit public motorized access, and close the Baca Mountain Tract to permitted livestock grazing and OHV use to reduce the risks to surface and buried cultural sites from trampling, compaction, soil erosion, and illegal off-road motorized activities.

All action alternatives do not allow public motorized access beyond the parking areas. Only administrative use and private inholding access would be allowed beyond the parking areas. The action alternatives also close the Baca Mountain Tract to OHVs. These closures greatly reduce the risks to surface and buried cultural manifestations from illegal off-road motorized activities and illegal collecting activities because of the long distance to travel by foot or horseback from the parking area gates.

Recreation use would continue under this alternative. This recreation use could result in unintentional impacts from trampling or intentional acts of vandalism or illegal excavation to heritage resources.

The Baca Mountain Tract would be closed to livestock grazing under all action alternatives. This would greatly reduce trampling, compaction, and soil erosion impacts to surface and buried cultural resources from livestock grazing.

All action alternatives would designate Forest system roads which would then be maintained under the Forest road maintenance program. The designation and maintenance of Forest Service Road (FSR) 953 through the historic Duncan town site would greatly benefit the heritage resources by eliminating the use of other roads within the town site, thereby decreasing the potential for impacts to buried cultural deposits. FSR 953 follows the historic access through the town site to the mining infrastructure in the upper Pole Creek drainage, and road designation would aid in maintaining the road's historic integrity. Project design criteria for this and other

roads would not allow private in-holders to modify these roads. Liberty Road (FSR 952) would be designated away from the Duncan Cabin and protective barriers would be placed to prevent vehicle damage to the cabin.

All action alternatives could be expected to result in a minor increase in recreation use over current levels. There are no anticipated differences in recreation use levels between the alternatives. This recreation use could result in unintentional impacts from trampling or intentional acts of vandalism or illegal excavation to heritage resources.

Effects from wildfire to historic wooden structures associated with mining, ranching, and settlement could be catastrophic. All action alternatives provide the full spectrum of response options to fight wildfire. All areas are available for fuels treatments with complex design criteria to protect specific heritage sites.

All action alternatives provide educational and interpretive opportunities for the Old Spanish Trail. The Old Spanish Trail represents a period in history and the analysis area provides an excellent opportunity to experience the relatively intact landscape through which the traders passed.

Ethnographic Resources. National Park Service's Director's Order-28 Cultural Resource Management defines ethnographic resources as any site, structure, object, landscape, or natural resource feature assigned traditional legendary, religious, subsistence, or other significance in the cultural system of a group traditionally associated with it. According to DO-28 and Executive Order 13007 on sacred sites, the NPS should try to preserve and protect ethnographic resources.

In consultation with Native American tribes, ethnographic resources are not known to exist in the analysis area. Native American tribes traditionally associated with the area were apprised of the proposed project. While there are confirmed tribal cultural affiliations with the general area, no impacts to significant ethnographic resources are expected from this project. Such negligible impacts would not result in any unacceptable impacts and the proposed activities would be consistent with §1.4.7.1 of NPS Management Policies 2006.

Cultural Landscapes. According to the National Park Service's Director's Order-28 Cultural Resource Management Guideline, a cultural landscape is a reflection of human adaptation and use of natural resources, and is often expressed in the way land is organized and divided, patterns of settlement, land use, systems of circulation, and the types of structures that are built. Although a cultural landscape inventory has not been conducted for the GRSA, the Camino Chamisa and North Parking Area are not likely to contribute to or impact the general cultural landscape at the north end of the Park. Since this infrastructure is not likely to contribute to effect the cultural landscape, no unacceptable impacts would occur and the proposed activities are consistent with §1.4.7.1 of NPS Management Policies 2006.

Museum Collections. According to Director's Order-24 Museum Collections, the NPS requires the consideration of impacts on museum collections (historic artifacts, natural specimens, and archival and manuscript material), and provides further policy guidance, standards, and requirements for preserving, protecting, documenting, and providing access to, and use of, NPS museum collections. No specimens are located in the analysis and there would be no affects to any collections therefore, there would be no unacceptable impacts and the proposed activities would be consistent with §1.4.7.1 of NPS Management Policies 2006.

Alternative 2

Alternative 2 would amend the Forest Plan and provide management direction and environmental protection not currently in place for heritage resources. This alternative designates the Liberty/Duncan Historic 3.1 Special Interest Management-Area Prescription to the southern third of the Baca Mountain Tract. The 3,900-acre Liberty-Duncan Special Interest Area would emphasize the management and protection of the historic and cultural values of this area over other uses. The RGNF and GRSA would jointly develop a heritage resource management plan for this area in the future which would address further research, protection, and preservation and management of the heritage sites, and interpretation and educational opportunities.

The effects of designating the Liberty-Duncan Special Interest Area are largely positive. The designation would allow for management that would maintain the values that make the Liberty-Duncan Special Interest Area unique. This management would include further heritage resource inventories and research within the area which would greatly enhance the knowledge and understanding of these resources. Appropriate interpretation of the heritage resources could reduce the potential direct and indirect effects from humans to heritage resources by educating the public about the historical significance of the area; thereby encouraging stewardship of the resource. Conversely, the establishment of the Liberty-Duncan Special Interest Area could potentially increase visitor use, and by extension, potential vandalism to significant historic properties. Interpretation could also alert collectors to the existence of a site, therefore leaving it more vulnerable to vandalism. An educational program combined with law enforcement would reduce these impacts.

Alternative 2 would result in approximately 8.8 acres of ground disturbance; 0.4 acres in Saguache County, 7.3 acres on the GRSA, and 1.1 acres on the Baca Mountain Tract. Cultural resource inventories have been completed for all areas of proposed ground disturbance and Colorado SHPO concurrence received. No heritage resources were identified or recorded during these inventories, so no direct effects to heritage resources are expected in these areas. However, there is still potential risk of impacts to buried or undiscovered heritage resources during ground-disturbing activities.

Alternative 2 also provides motorized public access to the Middle Parking Area on the Baca Mountain Tract which is about 1.3 miles closer to the significant cultural resources in the southern portions of the Baca Mountain Tract than the current Liberty Gate access point. This could potentially result in increased impacts to both known and unknown heritage resources from recreation use and vandalism. However, the roads beyond the parking area are closed to public motorized travel and still require travel by foot or horseback.

Future fuels treatments and wildfire mitigations would be required in the Duncan/Liberty Special Interest Area to protect the heritage resources, which would also require much more complex design criteria and expense.

Alternative 2 provides an excellent educational and interpretive opportunity for the Old Spanish Trail. The Middle Parking Area provides expansive views to the south and west of a relatively intact landscape through which the traders once passed on the Trail.

Alternative 3

Alternative 3 would amend the Forest Plan and provide management direction and environmental protection not currently in place for heritage resources. This alternative does not designate a historic 3.1 Special Interest MA Prescription to manage heritage sites. Cultural sites would still be protected under law and regulation, but there would be no special management emphasis for heritage resources fewer inventories would likely occur resulting in an increased potential for unknown heritage sites to be damaged and/or exposed by naturally occurring forces or by vandalism.

Alternative 3 would result in approximately 1.1 acres of ground disturbance on the GRSA. There would be no disturbance on the Baca Mountain Tract. Cultural resource inventories have been completed for all areas of proposed ground disturbance on the GRSA and Baca Mountain Tract. No heritage resources were identified or recorded during these inventories, so no direct effects to heritage resources is expected. However, there is still potential risk of impacts to buried or undiscovered heritage resources during ground-disturbing activities.

Alternative 3 provides motorized public access to the North Parking Area on the GRSA, but does not provide public motorized access to the Baca Mountain Tract. This access is only 0.2 miles closer to the significant cultural resources in the southern portions of the Baca Mountain Tract than the current Liberty Gate access point and would result in similar impacts from recreation use as in Alternative 1.

In this alternative, all acres are available for fire suppression and fuels treatment, but there are significant constraints on tree cutting in the 3.3 Backcountry MA Prescription which could limit the effectiveness of these activities to protect heritage sites.

Alternative 3 provides a more limited educational and interpretive opportunity for the Old Spanish Trail. The North Parking Area does not provide the expansive views to the south and west of the landscape through which the traders once passed on the Trail, which the Middle and South Parking Areas provide.

Alternative 4

Alternative 4 would amend the Forest Plan and provide management direction and environmental protection not currently in place for heritage resources. This alternative does not designate a historic 3.1 Special Interest MA Prescription to manage heritage sites. Cultural sites would still be protected under law and regulation, but there would be no special management emphasis for heritage resources. Fewer inventories would likely occur resulting in an increased potential for unknown heritage sites to be damaged and/or exposed by naturally occurring forces or by vandalism.

Alternative 4 would result in approximately 4.5 acres of ground disturbance; 1.8 acres on the GRSA, and 2.7 acres on the Baca Mountain Tract. Cultural resource inventories have been completed for all areas of proposed ground disturbance. No heritage resources were identified or recorded during these inventories, so no direct effects to heritage resources are expected. However, there is still potential risk of impacts to buried or undiscovered heritage resources during ground-disturbing activities. The potential is decreased under this alternative; however, because there is almost half the anticipated ground disturbance as proposed in Alternative 2.

Alternative 4 also provides motorized public access to the South Parking Area on the Baca Mountain Tract which is 1.62 miles closer to the significant cultural resources in the southern

portions of the Baca Mountain Tract than the current Liberty Gate access point. This could potentially result in increased impacts to both known and unknown heritage resources from recreation use and vandalism. However, the roads beyond the parking area are closed to public motorized travel and still require lengthy travel by foot or horseback.

Alternative 4 provides an excellent educational and interpretive opportunity for the Old Spanish Trail. The South Parking Area provides expansive views to the south and west of a relatively intact landscape through which the traders once passed on the Old Spanish Trail.

Cumulative Effects

Anticipated cumulative effects to heritage resources include the continuing impacts to heritage resources within and beyond the analysis area from ongoing natural processes such as weathering, erosion, and wildfires. There is also the ongoing risk of human use resulting in unintentional impacts from trampling and erosion, or intentional acts of vandalism, collection and looting. These can negatively impact the resource itself, but also result in a loss of the knowledge, understanding, and interpretive value these resources could provide.

Under Alternative 1, no management direction or environmental protection is provided leaving heritage resources somewhat more vulnerable to intentional or unintentional impact. Fuels treatments are not allowed which could leave combustible heritage resources more vulnerable under this alternative. However, the overall risk to heritage resources is expected to be relatively low from current activities and actions anticipated in the foreseeable future. Cumulative effects from past, present, and reasonably foreseeable actions over the next 10 years would be expected to be minor.

Under the action alternatives, management direction and emphasis for environmental protection are provided. These alternatives would limit public motorized access, and close the Baca Mountain Tract to permitted livestock grazing and OHV use to reduce risks to heritage resources. Recreation use may slightly increase under these alternatives and could result in a small increase in unintentional impacts from trampling or intentional acts of vandalism or illegal excavation to heritage resources. However, these effects are not expected to be significantly elevated. These alternatives provide a full spectrum of fire and fuels treatment in order to protect historic wooden structures. A heritage resource management plan would be developed to better coordinate inventory, monitoring, and mitigation actions between the Forest Service and the GRSA. Cumulative effects from past, present, and reasonably foreseeable actions would be expected to be minor.

Infrastructure – Roads and Parking Areas

Scope of the Analysis

The scope of this analysis focuses on the possible impacts to the transportation system within the analysis area that might be reasonably expected from each alternative. For the Forest Service, the scope of this analysis is to establish the minimum Forest transportation system and maintenance levels necessary to manage the Baca Mountain Tract and any projects-related roads or parking areas. For the NPS, the scope of this analysis is the construction, reconstruction, and maintenance of roads and parking facilities within the backcountry access zone identified in the GRSA General Management Plan.

Existing Condition

Prior to 2004, the project area was part of a working livestock ranch dating back to at least the latter half of the 19th century. Livestock ranching and mining led to a network of roads in the area still evident today. The Liberty Road is part of the historical access on the former ranch property and it provides access to private inholdings on the RGNF.

Forest Service. The Baca Mountain Tract contains a multitude of roads and two-track routes developed to access the historic townsites along the Liberty Road and private inholdings and for mining, timber harvest, and ranching purposes. There are five existing routes shown on Figure 2-2 that are currently used; these are:

FSR 952—Also known as the Liberty Road, it is the main road in the analysis area. The road is a historic postal road that follows the base of the Sangre de Cristo Mountain Range, linking the towns of Crestone, Duncan, and Liberty, and extends on to Sand Creek. It is the primary access route to all the private inholdings. Currently there is no public motorized use on the Liberty Road. Access is blocked at the Liberty Gate at the GRSA and Baca Grande subdivision boundary. Motorized use is allowed for administrative purposes by the NPS, Forest Service, and CDOW, and by the private property owners to access their property. It is currently a narrow single-lane high-clearance road constructed of native material (primarily sand) which extends from County Road Camino Baca Grande at the Liberty gate south across the GRSA and the Baca Mountain Tract. Approximately 0.73 miles occur on the GRSA and 6.53 miles on the Baca Mountain Tract (for a total of 7.26 miles). The Liberty Road deteriorates into a two-track route past the Baca Mountain Tract boundary onto the GRSA where it is used for administrative access by the NPS.

FSR 952.1A—This is an existing rough, narrow, single-lane high-clearance road constructed of native material which leaves the Liberty Road to go up the Deadman Creek drainage for approximately 1.46 miles. The old roadbed extends farther up Deadman Creek, but is no longer passable. The road was most recently used to develop and maintain water diversion structures for the Baca Ranch. It would access the proposed stream gage on Deadman Creek.

FSR 953—This is an existing rough, narrow, single-lane high-clearance road constructed of native material which leaves the Liberty Road to follow the Pole Creek drainage for approximately 2.29 miles. It accesses the Pole Creek private inholding and continues on to access two historic cabins on the RGNF. The old roadbed extends farther up Pole Creek, but it no longer passable. Motorized use is allowed for administrative purposes by the NPS, Forest Service, CDOW, and by the private property owners to access their property.

FSR 955—This is an existing approximately 400 feet (0.07 mile) long, single-lane high-clearance road constructed of native material which connects the Liberty Road to the private Liberty Townsite inholding. Motorized use is allowed for administrative purposes by the NPS, Forest Service, CDOW, and the private property owners to access their property.

FSR 956—This is an existing approximately 800 feet (0.16 mile) long, single-lane high-clearance road constructed of native sandy material which leaves the Liberty Road and accesses historical ranch buildings and a meadow. Motorized use is allowed for administrative purposes by the NPS, Forest Service, and CDOW.

National Park Service. There are several two-track primitive ranch roads and the northern 0.73 miles of the Liberty Road on the GRSA within the analysis area. The two-track roads are used for administrative purposes. The Liberty Road is the primary road on the GRSA within the analysis area. It is currently a narrow, single-lane high-clearance road constructed of native material (primarily sand) with some gravel base and drainage structure improvements. This portion of the Liberty Road extends from County Road Camino Baca Grande at the Liberty Gate south across the GRSA for approximately 0.73 miles to the Baca Mountain Tract boundary. Currently there is no public motorized use on the Liberty Road. Motorized access to the Liberty Road is blocked at the Liberty Gate at the GRSA and Baca Grande subdivision boundary. This road is currently the only access to the private inholdings. Motorized use is allowed for administrative purposes by the NPS, Forest Service, and CDOW, and by the private property owners to access their private inholdings. Saguache County maintains the small temporary Liberty Gate parking area along Camino Baca Grande on the subdivision side of the Liberty Gate.

Direct, Indirect, and Cumulative Effects

Alternative 1 (No Action)

Alternative 1 does not propose any management direction for roads or facilities. There would no new roads or parking areas. There would be no public motorized access to the GRSA or Baca Mountain Tract. Existing administrative use and access to the private property inholdings would continue. There would be no cost associated with road construction/reconstruction or parking area construction under this alternative.

Effects Common to All Action Alternatives

The effects from all action alternatives are expected to be minor.

Forest Service. All action alternatives amend the Forest Plan and designate the Forest system roads on the Baca Mountain Tract that would become part of the national forest system road network on the Forest (see Table 3-3). All routes and two-tracks on the Baca Mountain Tract not designated as Forest system roads would be restored through natural processes unless they are found in the future to be causing unacceptable environmental damage and needed treatment. All road maintenance and reconstruction on the Baca Mountain Tract would comply with the design criteria and Watershed Conservation Practices Handbook to minimize adverse environmental impacts. The Baca Mountain Tract would be closed to OHV use.

National Park Service. The Liberty Road would continue to provide motorized administrative access and access to private inholdings in all alternatives.

Table 3-3. Proposed designated roads in the analysis area by alternative and ownership

	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Saguache County Road				
Camino Real extension (new road miles)	0	0.15	0	0
GRSA Road System				
Total miles of existing road in analysis area (Liberty Road)	0.73	0.73	0.73	0.73
Total miles of new road in analysis area	0	3.03 (Camino Chamisa)	0	0

Total miles of road open to motorized public use on GRSA	0	3.03 (Camino Chamisa)	0.2 (Liberty Road)	0.73 (Liberty Road)
Forest Road System				
Current miles of designated Forest system roads	0	0	0	0
Current miles of road open to public motorized use	0	0	0	0
Current miles of road open to administrative use only	10.5	10.5	10.5	10.5
Proposed number of designated Forest system roads	0	5	3	5
Proposed miles of designated Forest system road	0	10.5	8.9	10.5
FSR 952 (Liberty Road) existing miles	0	6.53	6.53	6.53
FSR 952.1A existing miles	0	1.45	0	1.45
FSR 953 existing miles	0	2.29	2.29	2.29
FSR 955 existing miles	0	0.07	0.07	0.07
FSR 956 existing miles	0	0.15	0	0.15
Proposed miles of road available for public motorized use	0	0.2 (Liberty Road)	0	0.5 (Liberty Road)
Total Roads – All Ownerships				
Total miles of road in analysis area	0.73	14.41	9.62	11.23
Parking Area				
New Parking Area	None; existing Liberty Gate parking area on county	Middle Parking Area on Baca Mountain Tract	North Parking Area on GRSA	South Parking Area on Baca Mountain Tract

Table 3-4. Changes to the Forest-wide designated road system miles by alternative

Alternative	Proposed Designated Forest System Road Miles on Baca Mountain Tract	Approximate Current Forest-wide Designated Forest System Road Miles (2009 INFRA Database)	Resulting Forest-wide Designated Road System Miles
Alternative 1	0	2,214	2,214
Alternative 2	10.5	2,214	2,225
Alternative 3	8.9	2,214	2,223
Alternative 4	10.5	2,214	2,225

Alternative 2

Forest Plan Amendment. Alternative 2 would amend the Forest Plan by designating five Forest system roads within the Baca Mountain Tract and provide management direction not currently in place for roads. The five proposed designated Forest system roads (Figure 2-2) would be designated as high clearance maintenance level (ML) II Forest system roads (FSR). These are FSR 952, FSR 952.1A, FSR 953, FSR 955, and FSR 956. The miles of road and miles available for public motorized use are shown in Table 3-3. The effects of these FSR designations to the Forest-wide road system are shown in Table 3-4.

Forest Service Projects.

- Minor reconstruction of approximately 0.2 miles of the Liberty Road on the Baca Mountain Tract from the intersection of Camino Chamisa to the Middle Parking Area.
- Minor maintenance and reconstruction on the other Forest system roads to improve drainage and stream crossings to reduce sedimentation and erosion impacts, and to avoid impacts to historic/cultural sites.
- Construction of the 15-vehicle Middle Parking Area with the associated gate, toilet, signs, and interpretive facilities.
- The Baca Mountain Tract would be closed to public motorized access except for a short section of the Liberty Road from the proposed Camino Chamisa intersection to the Middle Parking Area gate.

National Park Service Projects. Alternative 2 would provide public motorized access across the GRSA on the Camino Chamisa to the Liberty Road intersection on the Baca Mountain Tract as shown in Figure 2.2. The approximately 3-mile long Camino Chamisa includes about 1.1 miles of new road construction and 1.9 miles of reconstruction of an old ranch two-track route. The Camino Chamisa would be managed as a primitive access road. The Liberty Road would continue to provide foot and horse access for the public and administrative motorized access to the GRSA. The miles of road and miles available for public motorized use are shown in Table 3-4. This alternative would require construction of 0.15 miles of County Road to extend the Camino Real to the GRSA boundary and connect with the Camino Chamisa. The total estimated cost of the Camino Chamisa road construction/reconstruction, Liberty Road reconstruction, and the construction of the Middle Parking Area in this alternative is $811,000.

Middle Parking Area site

Alternative 3

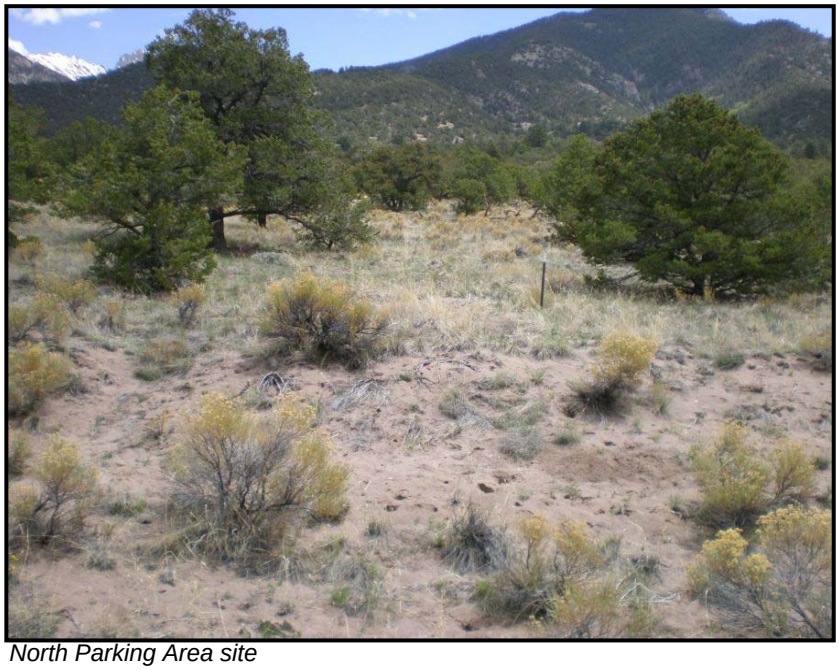
Forest Service Plan Amendment. Alternative 3 would amend the Forest Plan by designating three Forest system roads within the Baca Mountain Tract and provide management direction for roads not currently in place. Only the three existing roads shown in Figure 2-3, which provide access to private property inholdings, would be designated as high clearance ML II Forest system roads. These are FSR 952, FSR 953, and FSR 955. The miles of road and miles available for public motorized use are shown in Table 3-3. The effects of these FSR designations to the Forest-wide road system are shown in Table 3-4.

Forest Service Projects. Under this alternative, the entire Baca Mountain Tract would be closed to public motorized access. There would be minor maintenance and reconstruction on the Forest system roads to improve drainage and stream crossings to reduce sedimentation and erosion impacts, and to avoid impacts to historic/cultural sites.

National Park Service. Alternative 3 provides public motorized access on the Liberty Road to the North Parking Area on the GRSA as shown in Figure 2-3. This includes minor reconstruction of about 0.2 miles of the Liberty Road as a primitive access road. The public would not be allowed motorized access on Liberty Road beyond the North Parking Area. There would be no motorized public access across the GRSA to the Baca Mountain Tract. The miles of road and miles available for public motorized use are shown in Table 3-4.

This alternative would construct the 15-vehicle North Parking Area with the associated gate, toilet, signs, and interpretive facilities on the GRSA. The Liberty Road would continue to provide foot and horse access for the public and administrative motorized access to the GRSA beyond the North Parking Area gate.

The total estimated cost of the Liberty Road reconstruction and the construction of the North Parking Area in this alternative is $158,000.



North Parking Area site

Alternative 4

Forest Service Plan Amendment. Alternative 4 would amend the Forest Plan by designating five Forest system roads within the Baca Mountain Tract and provide management direction not currently in place for roads. The five proposed designated Forest system roads (Figure 2-2) would be designated as high clearance ML II Forest system roads. These are FSR 952, FSR 952.1A, FSR 953, FSR 955 and FSR 956. The miles of road and miles available for public motorized use are shown in Table 3-3. The effects of these FSR designations to the Forest-wide road system are shown in Table 3-4.

Forest Service Projects. Projects interrelated to the Forest Plan amendment would include:

- Minor reconstruction of approximately 2.1 miles of the Liberty Road from the Baca Mountain Tract boundary to the South Parking Area.
- Minor maintenance and reconstruction on the other Forest system roads to improve drainage and stream crossings to reduce sedimentation and erosion impacts, and to avoid impacts to historic/cultural sites.
- Construction of the new 15-vehicle South Parking Area with the associated gate, toilet, signs, and interpretive facilities.
- The Baca Mountain Tract would be closed to public motorized access except for the portion of the Liberty Road north of the South Parking Area gate. The Liberty Road beyond the South Parking Area gate would continue to provide foot and horse access for the public and administrative motorized access.

South Parking Area site

National Park Service. Alternative 4 would provide public motorized access across the GRSA on the existing Liberty Road to the new South Parking Area on the Baca Mountain Tract as shown in Figure 2-4. This would include minor reconstruction of approximately 0.7 miles of the Liberty Road on the GRSA. The miles of road and miles available for public motorized use are shown in Table 3-4. The Liberty Road would remain a primitive road with administrative motorized use.

The total estimated cost of the Liberty Road reconstruction and the construction of the South Parking Area in this alternative is $366,000.

Cumulative Effects

The minor effects of these action alternatives in conjunction with the effects of other projects is expected to be minimal. There is no additional road construction expected within the analysis area. The Baca Grande subdivision road system is in place. There may be improvements and additional paving in the future. Saguache County infrastructure would likely change with the needs of the Baca Grande subdivision and the town of Crestone over time. The Baca National Wildlife Refuge is currently being managed under an interim conceptual management plan. A comprehensive conservation plan for the Baca National Wildlife Refuge would be developed beginning in 2011. The plan would address public motorized and non-motorized access on the Refuge, including an assessment of the need or opportunity to avoid public access on county roads through the Baca Grande subdivision to access the GRSA and the Baca Mountain Tract. Depending on the outcome of that plan, there could be additional roading in the area. Overall, cumulative effects from past, present, and reasonably foreseeable actions over the next 10 years would be expected to be minor.

Lands

There are three parcels of private property inholdings within the RGNF adjacent to the Baca Mountain Tract (see Figure 2-1) These were formerly accessed through the Baca Ranch and now are accessed through the GRSA and Baca Mountain Tract. Two inholdings have existing road

access on former ranch roads. The third inholding is accessible only by foot or horseback from the Liberty Road. These three private inholdings are in the Forest acquisition plan.

Forest Service

ANILCA (Alaska National Interest Lands Conservation Act) requires the Forest to provide reasonable access across the Baca Mountain Tract to private property inholdings. The no-action alternative would continue existing Forest Service management which is to provide short-term access authorizations.

All action alternatives would provide long-term access authorizations to the private inholdings under the provisions of ANILCA. Design criteria listed in Chapter 2 would apply. The Pole Creek inholding would be provided motorized access on FSR 952 and FSR 953. The Liberty town site inholding would be provided motorized access on FSR 952 and FSR 955. The Short Creek inholding would provide motorized access only on FSR 952 (Liberty Road) and then non-motorized access from the Liberty Road to the private property.

Alternative 2 and Alternative 4 would provide an authorization to the Colorado Division of Water Resources to install and operate a stream-flow gage on Deadman Creek to measure water flow (Alternatives 1 and 3 would not). The environmental effects of this gage are presented in the “Aquatic Resources” section of this chapter.

National Park Service

The NPS has existing authorizations which allow access across the GRSA on the Liberty Road to the private property inholdings. The no-action alternative and the action alternatives do not affect these authorizations, therefore they would continue.

Minerals

Scope of the Analysis

The scope of this analysis focuses on the effects to the mineral resources within the analysis area that might be reasonably expected from each alternative.

Existing Condition

The project area is located along the western slope of the Sangre de Cristo Range. This mountain range consists predominantly of uplifted and exposed metamorphic and sedimentary rocks which have been folded and faulted. Glacial and alluvial deposits cover the lower slopes of the range. The Rio Grande Rift fault runs through the analysis area paralleling the base of the Sangre de Cristo Range.

Gold and silver deposits within and near the Baca Mountain Tract were reported to be mined by Spanish explorers. However, most of the recorded gold and silver production within the project area occurred between 1889 and 1904 in the Crestone and Liberty mining districts. The majority of mining activity in the analysis area occurred along Pole, Short, and Sand Creeks.

Past mining activities have left numerous abandoned mine sites throughout the project area along with associated historic milling sites and infrastructure. The abandoned mining-related features such as shafts, adits, and prospects pits are still being inventoried and assessed. The settlements of Crestone, Cottonwood, Duncan, and Liberty were built during the mining boom.

Historic milling site

The Great Sand Dunes Park and Preserve Act only authorized the purchase of the surface rights of the Baca Ranch and did not purchase the mineral property. Therefore, the current minerals ownership for the entire project area is a split estate, with the Federal government owning only the surface rights and the mineral rights owned by a private company. There have been exploratory activities for oil and gas, including two exploration wells, on the former Baca Ranch. These two wells are now on the GRSA and accessed by the Lexam Road. No additional exploration or production activities for oil or gas have been requested or undertaken to date on the GRSA. Currently there is an exploratory drilling proposal for two oil and gas exploration wells on the Baca National Wildlife Refuge.

The oil and gas potential of the area directly north of the project area is thought to be low and the area directly east of the project area has no currently recognized potential. The northern most part of the Baca Mountain Tract has a low oil and gas potential, with the remaining portion of the tract with no currently recognized potential. Therefore, the oil and gas potential of the overall Baca Mountain Tract is determined to be low to no currently recognized potential.

A northwest-trending mineralized zone follows most of the faulted west side of the Sangre de Cristo Range north of the Great Sand Dunes National Park and Preserve. Gold occurs throughout this zone, but the relative abundance of other metals along the zone varies. While the mining boom was based on the discovery of commercial quantities of metals, it was short-lived. The area is currently considered to have a moderate potential for mineral development.

Direct, Indirect, and Cumulative Effects

Alternative 1 (No Action)

Alternative 1 does not propose any management direction and does not provide any guidance or environmental protection for the privately owned mineral estate. The Federal agencies must comply with the mineral rights as written in the title and cannot prohibit development of the private mineral estate under this or any of the other alternatives.

Effects Common to All Action Alternatives

There are no differences between the action alternatives for the development of the privately owned mineral estate. All action alternatives would amend the Forest Plan and provide management direction and the negotiation of environmental protection for all mineral development, including oil and gas, which are not currently in place.

Because the mineral estate is privately owned, the Federal agencies have to comply with the mineral rights as written in the title and can not prohibit development of the mineral resources. Any development of the private mineral estate on the GRSA would be governed under NPS protocols. Under Forest Plan direction on the Baca Mountain Tract, the action alternatives would require that surface management for any minerals development be negotiated with the owner of the private mineral estate to be as close as possible to the standards used for Federal mineral development. Currently, there are no proposals to develop the privately owned mineral resources within the analysis area. Any future mineral development would have to be addressed in a site-specific analysis.

Cumulative Effects

Abandoned mines and adits with safety hazards would be mitigated in the near future through the abandoned mines program. Bat-friendly closures would be used when appropriate.

Numerous oil and gas parcels have been nominated for leasing in the surrounding area. To date no parcels have been leased. Leasing is an administrative action which by itself causes no environmental impacts. However, leased areas could be proposed for exploratory drilling in the future. These proposals would require site-specific analysis with public involvement.

There has been exploration activities for oil and gas on the former Baca Ranch. An analysis is currently ongoing for exploration drilling on the split estate on Baca National Wildlife Refuge. It is expected that exploration drilling would occur. It is unknown whether the results of the exploratory drilling would result in production drilling, but if production drilling would occur, it is likely to result in impacts to the environment. Development of these mineral rights would likely result in localized effects to the surface resources.

Two exploration wells were recently drilled on the Baca Ranch on what is now the GRSA and accessed by the Lexam Road. No production activities for oil or gas have been requested or undertaken to date on the GRSA.

Natural Soundscape

Scope of the Analysis

The scope of this analysis focuses on the effects to the natural soundscape within the analysis area that might be reasonably expected from each alternative.

Existing Condition

In accordance with 2006 Management Policies and Director’s Order-47 Sound Preservation and Noise Management, an important component of the NPS’s mission is the preservation of natural soundscapes associated with national park units.

NPS policy is to preserve, to the greatest extent possible, the natural soundscapes of parks and to restore to the natural condition wherever possible those park soundscapes that have become

degraded by unnatural sounds (noise), and would protect natural soundscapes from unacceptable impacts. Noise is to be managed at the appropriate levels for visitor uses at specific sites.

Natural soundscapes exist in the absence of human-caused sound. The natural ambient soundscape is the aggregate of all the natural sounds that occur in park units, together with the physical capacity for transmitting natural sounds. Natural sounds occur within and beyond the range of sounds that humans can perceive and can be transmitted through air, water, or solid materials. The frequencies, magnitudes, and durations of human-caused sound considered acceptable varies among NPS units as well as potentially throughout each park unit, being generally greater in developed areas and less in undeveloped areas.

Park natural soundscape resources encompass all the natural sounds that occur in parks, including the physical capacity for transmitting those natural sounds and the interrelationships among park natural sounds of different frequencies and volumes. Some natural sounds in the natural soundscape are also part of the biological or other physical resource components of the park.

The GRSA has monitored the natural ambient sound level, which is the environment of sound that exists in the absence of human-caused noise, to establish the baseline condition. The baseline condition is the standard against which current conditions in a soundscape are measured and evaluated. An acoustic monitoring system was placed in the GRSA near the Baca National Wildlife Refuge from September 24 to October 10, 2008, to characterize the current existing ambient sound levels and calculate natural ambient sound levels. The monitoring system collected continuous digital recordings and measured sound levels in decibels. This monitoring effort found that the acoustical environment in Great Sand Dunes National Park and Preserve ranks as one of the quietest locations ever monitored by the NPS's Natural Sounds Program. The only human caused noise came from the frequent aircraft flying high over the analysis area. Acoustical environments which have ambient noise levels that are this low are not only rare, but also vulnerable to noise impacts from a variety of noise sources.

The frequencies, magnitudes, and durations of acceptable levels of unnatural sound vary throughout the GRSA and are generally greatest next to the Baca Grande subdivision. The subdivision generates an increased background noise from the normal human activities associated with a community. The loudest sources of this noise are from vehicles and machinery. There is a minor amount of noise generated from the motorized administrative use and access to the private inholdings in the analysis area. This noise is periodic, of short duration, and dispersed across the long distances. The motorized noise in the southern portions of the analysis area is absorbed by trees and vegetation. The current non-motorized dispersed recreation use creates a minimal amount of vocal noise. The existing Liberty Gate parking area creates a concentrated source of noise from vehicles, horse trailers, livestock, and people preparing to enter the GRSA on the Liberty Road which affects local residences.

Direct, Indirect, and Cumulative Effects

Alternative 1 (No Action)

Alternative 1 would continue to generate noise levels at the existing condition. GRSA noise management provisions would continue. The Liberty Gate parking area would continue to create a concentrated source of noise from vehicles, horse trailers, livestock, and people preparing to enter the GRSA on the Liberty Road, which would affect nearby residences.

Alternative 2

GRSA noise management provisions would continue under this alternative. The closure of the majority of the Baca Mountain Tract to public motorized use and closing the parking area to overnight camping is expected to keep noise to minimal levels. Alternative 2 is expected to generate minimal additional noise above ambient levels. The noise is expected to be within background noise emanating from subdivision. The primary source of noise would be from motorized vehicles accessing the Middle Parking Area on the Camino Chamisa. The long-term effects of noise would be evident, but minor, of short duration, and seasonal in nature with most noise generated during the summer months. Noise from vehicle use on Camino Chamisa, 0.25-mile from the subdivision, would be muted, but noticeable to the subdivision residents. Noise from the Middle Parking Area, 1.3 miles from the subdivision, would be minimal. There would also be a minimal amount of noise generated from the motorized administrative use and access to the private inholdings in the analysis area beyond the Middle Parking Area gate. This noise is periodic, of short duration, and dispersed across the long distances. The motorized noise in the southern portions of the analysis area would be absorbed by trees and vegetation.

Noise from construction activities would be evident, but of short duration. No noise from construction would be generated during weekends or holidays when recreation use is the greatest. Any sounds generated from construction would be temporary, lasting only as long as the construction activity is generating the sounds, and would have a negligible to minor adverse impact on visitors. The non-motorized dispersed recreation use would create a minimal amount of vocal noise.

The Liberty Gate parking area would continue to create concentrated source of noise from vehicles, horse trailers, livestock, and people preparing to enter the GRSA on the Liberty Road which affects local residences, but the level of noise is expected to be less than current levels.

The negligible or minor impacts would not result in any unacceptable impacts to the natural soundscape and the proposed activities are consistent with §1.4.7.1 of NPS Management Policies 2006.

Alternative 3

GRSA noise management provisions would continue under this alternative. There would be minimal additional noise from this alternative. The analysis area beyond the North Parking Area gate would be closed to motorized use, eliminating most noise. Alternative 3 is expected to generate minimal additional noise above ambient levels generated from the subdivision. The primary source of noise would be from motorized vehicles accessing the North Parking Area. The long-term effects of noise would be evident, but minor, of short duration, and seasonal in nature with most noise generated during the summer months. Noise from the North Parking Area, 0.2 miles from the subdivision, would be noticeable, but minor and muted by trees and vegetation. Closing the parking area to overnight camping would also reduce noise levels. There would also be a minimal amount of noise generated from the motorized administrative use and access to the private inholdings in the analysis area beyond the North Parking Area gate. This noise is periodic, of short duration, and dispersed across the long distances. The motorized noise in the southern portions of the analysis area would be absorbed by trees and vegetation.

Noise from construction activities would be evident, but of short duration. No noise from construction would be generated during weekends or holidays when recreation use is the greatest. Any sounds generated from construction would be temporary, lasting only as long as the construction activity is generating the sounds, and would have a negligible to minor adverse

impact on visitors. The non-motorized dispersed recreation use would create a minimal amount of vocal noise.

This alternative would reduce or eliminate the noise generated from the existing Liberty Gate parking area because people would park at the North Parking Area. Noise from vehicle use of Liberty Road would be noticeable to nearby residents. Noise from Northern Parking Area would be muted, but noticeable to nearby residents because of the close proximately (0.2 miles) to the subdivision.

The negligible or minor impacts would not result in any unacceptable impacts to the natural soundscape and the proposed activities are consistent with §1.4.7.1 of NPS Management Policies 2006.

Alternative 4

GRSA noise management provisions would continue under this alternative. The closure of the majority of the Baca Mountain Tract to public motorized use and closing the parking area to overnight camping is expected to keep noise levels minimal. Alternative 4 is expected to generate minimal additional noise above ambient levels emanating from the subdivision. The primary source of noise would be from motorized vehicles accessing the South Parking Area on the Liberty Road. The long-term effects of noise would be evident, but minor, of short duration, and seasonal in nature with most noise generated during the summer months. There would also be a minimal amount of noise generated from the motorized administrative use and access to the private inholdings in the analysis area beyond the South Parking Area gate. This noise is periodic, of short duration, and dispersed across the long distances. The motorized noise in the southern portions of the analysis area would be absorbed by trees and vegetation.

Noise from construction activities would be evident, but of short duration. No noise from construction would be generated during weekends or holidays when recreation use is the greatest. Any sounds generated from construction would be temporary, lasting only as long as the construction activity is generating the sounds, and would have a negligible to minor adverse impact on visitors. The non-motorized dispersed recreation use would create a minimal amount of vocal noise.

This alternative would reduce or eliminate the noise generated from the existing Liberty Gate parking area because people would park at the South Parking Area. Noise from vehicle use of Liberty Road would be noticeable to nearby residents. Noise from Southern Parking Area should not be noticeable because it is 1.6 miles from the subdivision and screened by vegetation and topography.

The negligible or minor impacts would not result in any unacceptable impacts to the natural soundscape and the proposed activities are consistent with §1.4.7.1 of NPS Management Policies 2006.

Cumulative Effects

Natural soundscape conditions would receive management direction under the GRSA General Management Plan. Closing the majority of the Baca Mountain Tract to public motorized use and closing the parking areas to overnight camping would be expected to reduce noise levels. The action alternatives would be expected to generate negligible additional noise above ambient levels. Negligible amounts of noise would be created from dispersed camping activities. Noise in the Baca Mountain Tract is expected to be substantially subordinate to those emanating from

the adjacent Baca Grande subdivision. Population growth of the Baca Grande subdivision, Crestone, and the San Luis Valley would contribute increasing noise pollution over time. Oil and gas exploration and development would also contribute to noise pollution. Periodic aircraft over-flights would be expected to continue as well. Overall, cumulative effects from past, present, and reasonably foreseeable actions over the next 10 years would be expected to be minor.

Night Sky

Scope of the Analysis

The scope of this analysis focuses on the effects to the night sky within the analysis area that might be reasonably expected from each alternative.

Existing Condition

In accordance with 2006 Management Policies, the NPS strives to preserve natural ambient lightscapes, which are natural resources and values that exist in the absence of human-caused light. The ambient light has a direct effect on the night sky. Commercial, residential, and agricultural development in the San Luis Valley can introduce light into otherwise naturally dark areas of the GRSA, but the generally rural and undeveloped landscape surrounding the analysis area does not degrade the night sky. There are no permanent light sources within the analysis area on the GRSA, Baca Mountain Tract, or the Baca National Wildlife Refuge. While the adjacent Baca Grande subdivision produces some light, it is minimized through development guidelines. There are aircraft flying high over the analysis area frequently at night which produce unnatural strobing colored light, but it is low intensity and short duration. Light-emitting unidentified flying objects are frequently reported in the area.

Because there are few light sources, the night sky quality over the majority of the analysis area is high and there are excellent opportunities to see the stars, moon, and planets on clear nights. In 2006, the GRSA conducted Night Sky Quality Monitoring in the park and found that the opportunity for night sky viewing was excellent, as was transparency. The early evening sky looks very dark except for light domes from Alamosa, Denver, Colorado Springs, and a broad glow toward the west that seems to parallel Highway 160/285 (headlights). Later in the evening the sky in the east brightens considerably, the sky in the north brightens slightly, and distant cities seem brighter behind the mountains. The light domes are not bright, but extend upward to 15 degrees (Alamosa and the band of light to the west). Glare from farm lights is the most obtrusive and interferes with night vision.

There will be no light sources constructed along the access roads or at the parking areas. Administrative and private inholding motor vehicle use at night could be a temporary source of light, although night traffic should be very minor. Occasional public motor vehicle use at night to access the parking areas could also be a temporary source of light, but, again, this would be minor. The parking areas would be closed to camping which is expected to eliminate much of the night time motor vehicle use and more long-term sources of light from camping.

Night Sky from the GRSA

The minor amount and extent of light from visitor use would have negligible effects on the existing outside lighting or natural night sky of the area. These negligible impacts would not result in any unacceptable impacts and the proposed activities would be consistent with §1.4.7.1 of NPS Management Policies 2006.

Direct, Indirect, and Cumulative Effects

Alternative 1 (No Action)

Alternative 1 does not propose any management activities which would affect night sky. The existing night sky condition would continue.

Effects Common to All Action Alternatives

The action alternatives would produce no measurable effects to the existing night sky condition. The alternatives propose no source of light within the analysis area. The main sources of light within the analysis area would be from dispersed camping. Almost all the recreation activity occurs during the daylight hours. The minor levels of overnight camping occur in the forested and mountain areas where light is dispersed by vegetation and topography. Overnight camping produces minor very low intensity light from lanterns and campfires. All the action alternatives have closed the parking areas to overnight camping which is expected to reduce night use and diminish any concentrated source of light. Very little vehicle traffic is expected at night because the parking areas are closed to camping.

Only the very north end of the analysis area next to the subdivision would allow any public motorized use, so only a very small portion of the area would be affected by headlights. There could be a minor light emission from vehicle headlights, but this is expected to be minor and of short duration and occur within the light zone of the subdivision.

Cumulative Effects

The cumulative effects to night sky are minimal. Impacts from this project are minimized by implementation of the alternatives, the design criteria, and complying with the direction in the GRSA General Management Plan. Cumulatively there could be degradation to the night sky quality from continued growth and development in the Baca Grande subdivision, Crestone, and the San Luis Valley. Future oil and gas drilling near the analysis area would likely be a source of noticeable light, but this would be of relatively short duration until drilling was completed.

Recreation/Visitor Use and Experience

Scope of the Analysis

The scope of this analysis focuses on the possible recreation use and effects that might be reasonably expected from each alternative. This analysis considers the recreation management system, travel management, facilities, and recreation uses and patterns for the analysis area.

Existing Condition

GRSA

The enjoyment of park resources and values by people is part of the fundamental purpose of all park units. The NPS is committed to providing appropriate, high quality opportunities for visitors to enjoy the parks, and will maintain within the parks an atmosphere that is open, inviting, and accessible to every segment of society. Further, the NPS provides opportunities that are uniquely suited and appropriate to the superlative natural and cultural resources found in the parks. Scenic views and visual resources are highly valued and the NPS strives to protect them.

The GRSA manages its parks to provide the public with a variety of recreation opportunities. It uses management zones to define the specific visitor opportunities and management approaches to be achieved and maintained in each area of the park.

The GRSA General Management Plan designates two management zones in the analysis area; backcountry access, and backcountry Adventure. These management zones provide the management direction for recreation management on the GRSA portion of the analysis area (refer back to Figure 1-2, GRSA General Management Plan Map).

The majority of use on GSRA in the analysis area is day use by local residents. The primary recreation activities on the GRSA in the analysis area are hiking, visiting the crater site, and some minor equestrian use. Little camping or picnicking occurs. Hunting is not allowed on the GRSA, but wildlife viewing is popular.

Because the Baca Mountain Tract is the main destination for the majority of visitors entering the analysis area through the Liberty Gate, visitors currently hike or ride stock across the GSRA to access the Baca Mountain Tract. A small percentage of the public entering this area go out on the GRSA sand sheet.

The GRSA currently has two public access routes into the park from the north; the Liberty Gate and the Camino Real Gate. The primary public access point is the Liberty Gate which is on the existing Liberty Road at the GRSA boundary with the Baca Grande subdivision (see above photo). There is a temporary toilet, sign board, and trail register at this gate. There is also a small Saguache County parking area at the end of the Baca Grande Road at the Liberty Gate. Public motorized use and wheeled conveyances on the Liberty Road are not allowed beyond the Liberty Gate, access is limited to foot and horseback.

The second access point is a gate at the end of Camino Real at the GRSA boundary with the Baca Grande subdivision. This is a primitive site with only a registration and no designated trails. Only foot travel is permitted beyond this gate.

The only practical way for the public to access the Baca Mountain Tract is to cross the GRSA. Park rules and regulations apply when in the GRSA, even when just crossing to reach the Baca Mountain Tract. At this time, visitors must obtain a permit from the NPS to transport firearms, bows, and knives for hunting big game or transport legally taken big game to or from the Baca Mountain Tract. Transporting firearms for other than big game hunting purposes, harvested small game, weapons, antlers or other Forest products legally gathered from the Baca Mountain Tract for personal use are not permitted.

The Liberty Road is a primitive road which also serves as the only developed trail on the north end of the GRSA. The Liberty Road begins at the GRSA boundary with the Baca Grande subdivision and transits the GRSA for 0.75 mile to the Baca Mountain Tract boundary, then continues for another 6.5 miles across the Baca Mountain Tract before entering the GRSA again and continuing south to the sand dunes. The Liberty Road defines the boundary between the Baca Mountain Tract and GRSA for most of its length and provides access to the GRSA Backcountry Adventure Management Zone.

There are no reliable recreation use numbers available for the analysis area. Therefore, this analysis used the limited information available from a variety of sources to estimate use. These are the General Management Plan, 2006 GRSA Transportation Data Collection paper, trail registrations, counters, observations and visitor contacts, and professional judgment. Recreation and vehicle use will be monitored in the future to develop better information.

According to the 2006 GRSA Transportation Data Collection paper, recreational traffic makes up only 1 percent of the traffic entering the Baca Grande subdivision on Camino Baca Grande on weekdays and only 2 percent on weekends. The traffic study also found that recreational traffic accessing Rio Grande National Forest trailheads north of Crestone makes up 8 percent of the traffic on County Road T west of Camino Baca Grande on weekdays and 10 percent on weekends.

This indicates that the analysis area is not a key destination point for non-residents visiting the Crestone area. Trail registers and visitor contacts also suggest that most non-resident visitors are not specifically coming to recreate in the analysis area, but have come to the Crestone area for other reasons; many are visiting residents of the subdivision.

In 2006 the GRSA collected pedestrian trail counter data at both the Liberty Gate and Camino Real Gate. The data indicates that more people enter at the Liberty Gate than the Camino Real Gate, use is higher on weekends, and use increases during hunting season. The counter data is consistent with registration sheets.

The Liberty Gate registration data gathered between 2006 to 2008 indicate approximately 141 parties are entering public lands through the Liberty Gate annually. The data shows, of the people entering through the Liberty Gate, 77 percent are participating in day use activities and 23 percent are participating in overnight recreation.

The average group size of day use visitors entering through the Liberty Gate is 2.1 people per group; these groups stay an average of 4.5 hours. Approximately 59 percent are from the local community, 13 percent are from the San Luis Valley, 17 percent are from somewhere else in Colorado, 9 percent are from another State, and 2 percent did not comment. Eighty-six percent of the day use visitors are entering on foot, 4 percent on horseback, 2 percent are skiing, less than 1 percent snowshoe, and 7 percent did not comment. About 26 percent of day use visitors list a destination of Deadman Creek. A large percentage of visitors did not list a destination. Other destinations (less than 5 percent) include the Crater; Duncan, Liberty; the Sand Dunes; and Cedar, Pole, and Sand Creeks.

The average party size of overnight visitors is 2.3 people per group; these groups stay an average of 4 days. Approximately 18 percent are from the local community, 15 percent are from the San Luis Valley, 40 percent are from somewhere else in Colorado and 9 percent are from another State. Approximately 75 percent of these groups enter on foot and 25 percent enter on horseback. The destination for 50 percent of overnight visitors is Deadman Creek. A large

percentage of visitors did not list a destination. Other destinations with 5 percent or less visitor use include Duncan; Liberty; Sand Dunes; and Pole, Sand, Alpine, and Cedar Creeks.

Camino Real registration data gathered between 2006 to 2008 indicate approximately 22 parties are entering public lands through the Camino Real entrance annually. At Camino Real Gate, 99 percent is day use and 1 percent is overnight use. In 2006, 2007, and 2008, only one overnight visitor entered through Camino Real Gate. The remaining visitors who entered through the Camino Real were day use visitors. These visitors stayed an average of 2.9 hours and had an average party size of 1.8 people. About 82 percent of these visitors are from the local community, 7 percent are from the San Luis Valley, 8 percent are from Colorado, 2 percent are from another State, and 1 percent did not comment. Most visitors did not specify a destination.

The registration data shows spike in use occurred in 2007 and declined in 2008 by over 50 percent from 248 visits in 2007 to 104 visits in 2008. This could be due to lack of participation in registration, declining economic conditions, or the novelty of the area has faded.

Recreation livestock use is highest during the fall big game hunting season. Overnight use with horses increased from 2007 to 2008 because the GRSA began allowing horses use through the Liberty Gate in late summer 2007. Prior to that, stock access was allowed from the south through Cold Creek. Most of the stock use occurs during the fall hunting season and many hunters did not know the gate was available for the 2007 hunting season.

Registration data indicates that use increases during the September, October, and November. These months coincide with the CDOW fall big game hunting season. The Baca Mountain Tract is a very difficult area to hunt. This area is self-limiting for elk hunters because the area is relatively small and can only support a few hunters. Elk hunters have limited success because elk move onto the GRSA for refuge after the first shots of a season are fired. Use levels for hunting have peaked and are expected to decrease. Hunters are learning that success rates are low after archery and muzzle loader seasons.

Liberty Road looking south towards GRSA

Forest Service

Visitors on the Baca Mountain Track are experiencing recreation opportunities such as enjoying outdoor physical activity; short-term and long-term solitude; spiritual meditation; challenge and adventure wildlife and scenery viewing; and enjoying natural surroundings. Primary activities associated with these experiences area mountaineering, hiking, hunting, backpacking, camping and equestrian use. These experiences and activities have personal, community, and environmental/cultural benefits. Personal benefits include improved mental and physical health, higher satisfaction with life, and greater cultivation of an outdoor-oriented lifestyle. Community benefits include a greater understanding and respect for public land, heightened sense of community, and greater sense of place. Environmental/cultural benefits include greater environmental awareness, increased environmental stewardship, and greater aesthetic appreciation.

Hunting is a popular recreation use on national forests. Hunting activities and game management are regulated by the CDOW. Hunting opportunities currently are limited on the Baca Mountain Tract because there is no motorized access across the GRSA. At this time, visitors must obtain a permit from the NPS to transport firearms, bows, and knives for hunting big game or transport legally taken big game to or from the Baca Mountain Tract.

Collecting antlers and other Forest products and small game hunting are popular activities on the Forest and are allowed on the Baca Mountain Tract. However, transporting firearms for other than big game hunting purposes, harvested small game, weapons, antlers or other Forest products legally gathered from the Baca Mountain Tract for personal use can not currently be transported across the GRSA from or to the Baca Mountain Tract.

The great majority of current recreation use on the Baca Mountain Tract is related to mountaineering and occurs in a small area in the northeast corner of the analysis area with the 14,000 foot peaks. These area includes Kit Carson and Challenger peaks and the trails leading to Crestone Peak and Crestone Needle. The activities that take place in these areas are mountaineering and overnight backpacking. Mountaineers access Kit Carson and Challenger peaks from the Willow Lake Trail just north of the analysis area. Crestone peak and Crestone Needle are outside the analysis area, but they receive more use than Kit Carson and Challenger peaks. Currently, the only designated public access to Crestone Peak and Crestone Needle is through the San Isabel National Forest near Colony Lakes. Kit Carson and Challenger Peaks are accessed by Willow Lake Trail No. 835. The area along the trail to Willow Lake/Kit Carson/Challenger is heavily used. Most overnight camping associated with Kit Carson and Challenger Peaks occurs outside the analysis area at Willow Lake. According to trailhead registration sheets at Willow Creek Trailhead, Kit Carson and Challenger Peaks receive approximately 1,500 to 2,000 visits annually, an increase of 300 percent over the past 10 years. This use is expected to grow.

While there are routes along Cottonwood and Spanish Creeks on the Baca Mountain Tract that lead to Crestone Peak and Crestone Needle, these routes are not accessible to the public because there is no public access across the private property in the Baca Grande subdivision. In the past, some landowners permitted individuals to cross private property, but access is now closed to the general public. Illegal trespass across private property to reach the Baca Mountain Tract is ongoing. Some dispersed camping occurs along Spanish and Cottonwood Creeks.

There are no designated trails within the Baca Mountain Tract. Currently the only routes in the analysis area are associated with existing roads. There are also social trails in areas more frequented by recreation users.

The Liberty Road is the primary access route through the lower elevations of the Baca Mountain Tract. Relatively minor recreation use occurs along the Liberty Road compared to the high elevation mountaineering use. The Liberty Road serves as a hiking/stock trail for most users. Overnight use and stock use increase during the hunting season along the Liberty Road. The majority of camping occurs along Deadman Creek with some camping at Pole Creek and Liberty.

Lower Deadman Creek is a destination for many visitors using the Liberty Gate, and especially for overnight camping use. Deadman Creek is 3.3 miles from the Liberty Gate. Hikers and equestrians find the Liberty Road challenging due to soft sandy soils. Currently there are three known dispersed camping sites along lower Deadman Creek within the analysis area.

In 1944 a stock dispersal trail was built along Deadman Creek. Between 1958 and 1970 the Deadman Creek Stock Dispersal Trail became a recreation trail to Deadman Lakes with public access permitted by the Baca Ranch. Public access was allowed until the late 1980s when it was revoked and the trail was abandoned. Hearty backpackers still try to find their way along the stream to the lakes, but many are not successful due to steep terrain and down trees in the narrow canyon. Trails are not allowed in the Deadman Creek Research Natural Area which lies to the east of the Baca Mountain Tract.

Pole Creek Trail, a National Forest System Trail in the 1970s, went from the end of the Pole Creek Road to Pole Lake. Records show that visitors accessing national forest lands could access this trails with permission from Baca Ranch until sometime in the late 1980s when permission was revoked and the trail was abandoned. This area is a destination for some hearty backpackers and stock users, but is not as popular as Deadman Creek and Deadman Lakes.

A large meadow with a historic cabin is on the Baca Mountain Tract near the Liberty town site. It is a dispersed campsite for some stock users, but is not the most desirable location because there is no water source there. Current recreation activities on the Baca Mountain Tract are shown in Figure 3-2.

Recreation Opportunity Spectrum (ROS). The Forest Service seeks to provide a range of opportunities for different types of recreation experiences. The agency uses the recreational opportunity spectrum (ROS) system to both define and manage recreation. The ROS is an inventory tool used to describe the physical, social, and managerial components that affect the kind of experience Forest visitors may expect. ROS are also used to maintain or attain a defined range of recreation opportunities. The Forest Plan MA prescriptions each provide a maximum ROS.

The ROS classifications relevant to the Baca Mountain Tract are shown in Table 3-5. The existing mapped ROS classifications are displayed in Figure 3-3. Roaded-natural ROS occurs along the existing roads and semi-primitive non-motorized ROS occurs in the rest of the Baca Mountain Tract.

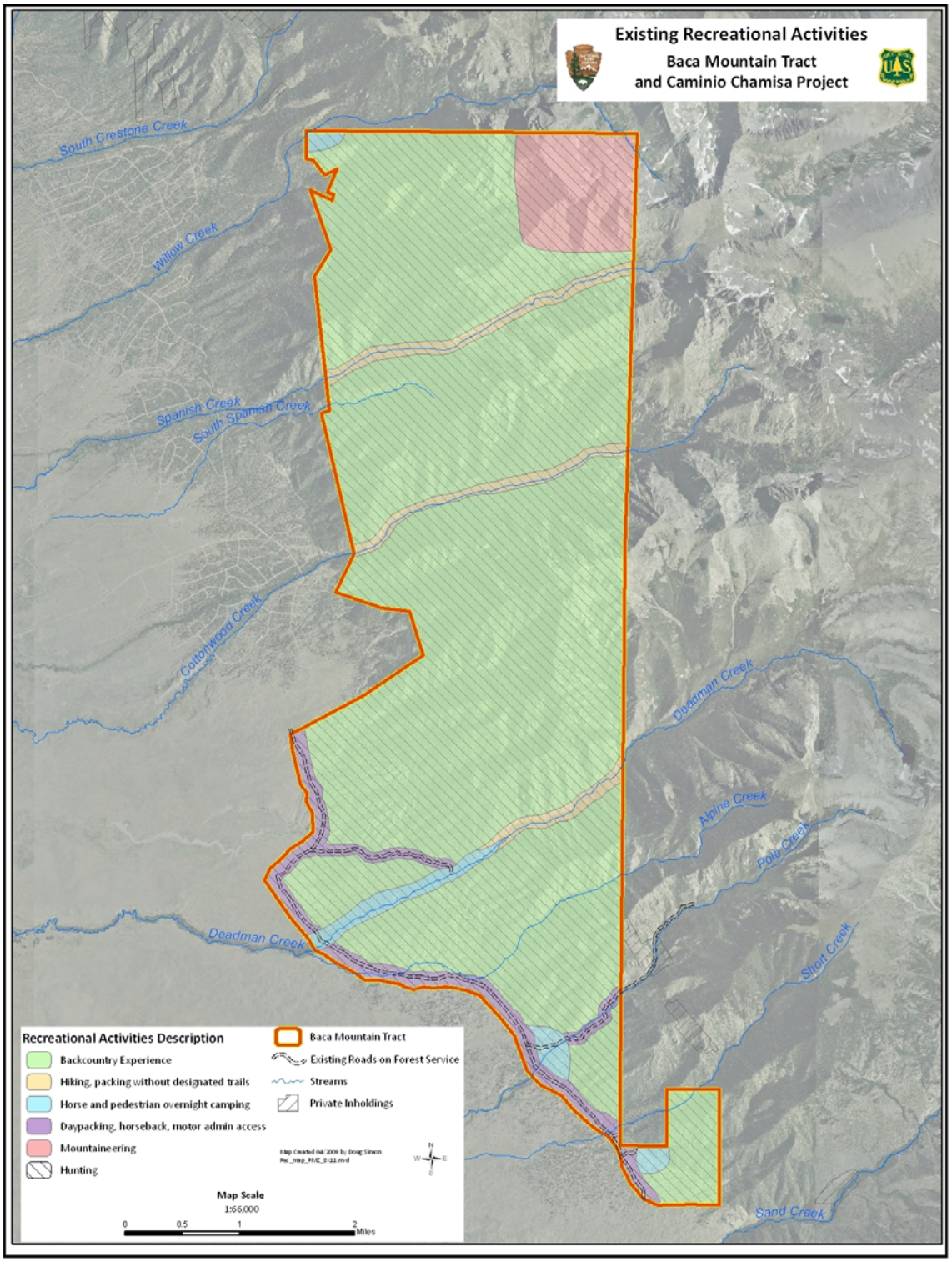


Figure 3-2. Recreation activities on the planning area

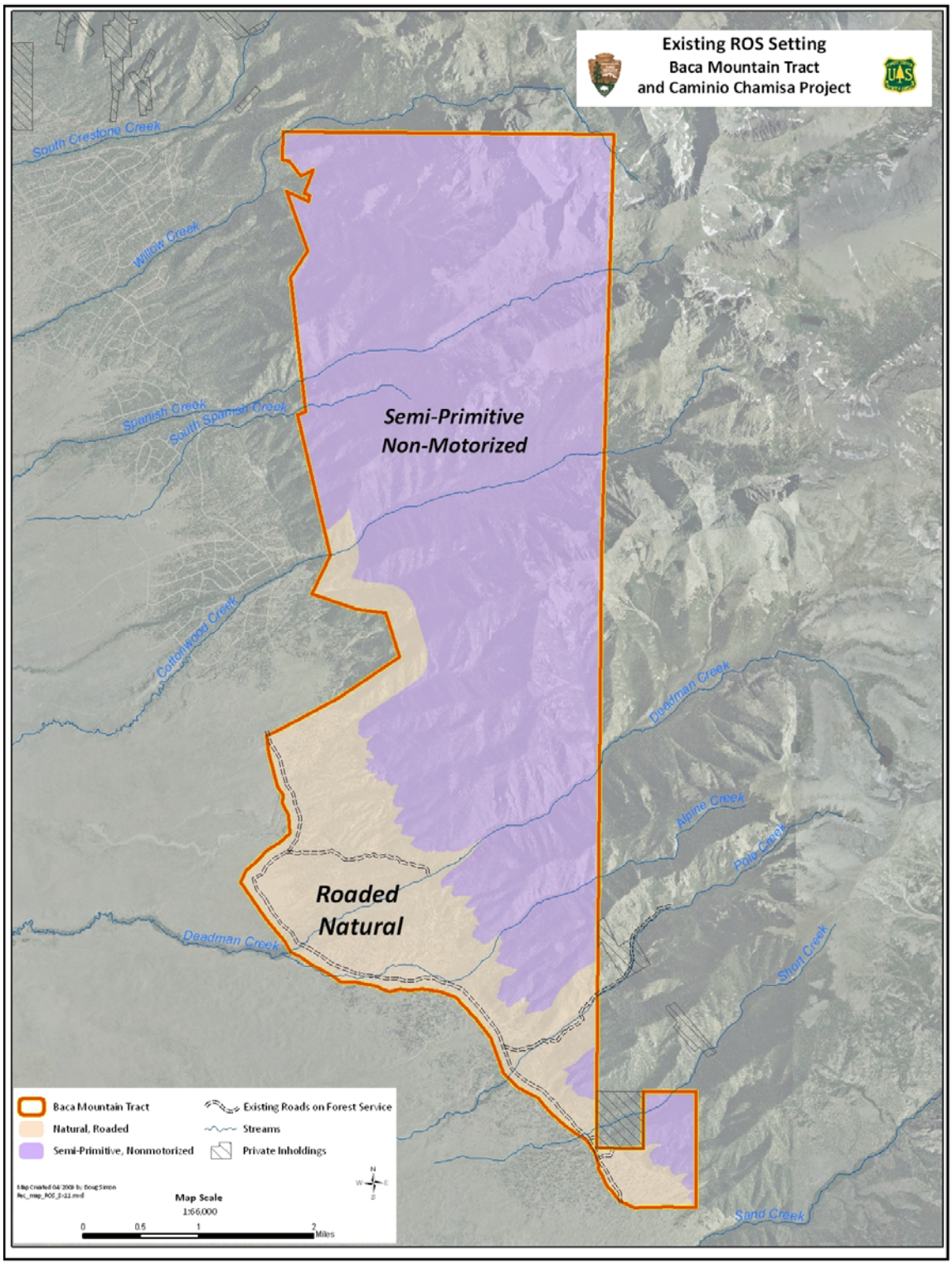


Figure 3-3. Existing ROS setting in the planning area

Table 3-5. Baca Mountain Tract ROS classifications

ROS Class	Setting	Experience
Semi-Primitive Non-Motorized	Area is characterized by a predominately natural-appearing environment of moderate to large size. Interaction between users is low, but there is often evidence of other users. The area is managed with minimum and subtle onsite controls. Motorized use is not permitted.	High, but not extremely high probability of experiencing isolation from the sights and sounds of humans. Independence, closeness to nature, tranquility, and self-reliance through the application of woodsman and outdoor skills in an environment that offers challenge and risk.
Roaded-Natural	Area is characterized by predominantly natural-appearing environments with moderate evidences of the sights and sounds of man. Such evidences usually harmonize with the natural environment Interaction between users may be low to moderate, but with evidence of other users prevalent. Resource modification and utilization practices are evident, but harmonize with the natural environment. Motorized use may be experienced.	Moderate probability of experiencing isolation from the sites and sounds of humans. Independence, closeness to nature, tranquility, and self-reliance through the application of woodsman and outdoor skills in an environment that offers challenge and risk. Opportunities to have a high degree of interaction with the natural environment. Motorized equipment may be encountered.

Direct, Indirect, and Cumulative Effects

Alternative 1 (No Action)

Forest Plan Amendment. Alternative 1 would not bring the Baca Mountain Tract under Forest Plan management or provide any recreation management. Current recreation activities would continue and there would be no change to the existing condition. The inventoried ROS classifications would remain the same.

Forest Service Projects. There would be no designated Forest system roads, parking areas, other recreation projects. There would be no motorized public access to the Baca Mountain Tract. Foot and horseback access would continue by Forest Service Trail 865 (Willow Lake Trail) to the northeastern portion of the Baca Mountain Tract and by the Liberty Road or Cold Creek Trail to the southern portions of the Baca Mountain Tract.

National Park Service Projects. This alternative continues the existing management on the GRSA. There would be no new management actions or recreation projects. The analysis area on the GRSA would be managed for the backcountry adventure visitor's experience.

No changes in recreation activities would be expected. There would be no public motorized access to the GRSA. The Liberty Gate entrance point would remain and parking would continue at the County's Camino Baca Grande parking area.

The Liberty Gate parking area would continue to negatively impact nearby subdivision residents by creating traffic, parking congestion, overnight camping, noise, litter, manure, and human waste. These impacts increase during the hunting season when horse trailers fill the parking lot and adjacent roads.

Permits for transport of firearms and big game to and from the Baca Mountain Tract across the GRSA would be required. Transport of weapons for small game hunting, antlers, or other Forest products for personal use obtained from the Baca Mountain Tract would not be permitted.

Effects Common to All Action Alternatives

Overall, the effects to recreation are expected to be minor and generally positive under all alternatives.

Under all alternatives, a moratorium is currently in place on commercial outfitter/guide permits on both the GRSA and Baca Mountain Tract until a comprehensive landscape-scale interagency recreation plan is completed.

Forest Service. Recreation use resulting from the action alternatives are expected to cause minor effects. Recreation use is likely to create social trails and dispersed camping sites with minor localized soil compaction, fire rings, and vegetation trampling.

All action alternatives would provide more convenient recreation access to public lands, but would not allow public motorized access beyond the parking areas. The action alternatives would close the area within 0.25 mile of all proposed parking areas to camping and close the entire Baca Mountain Tract to OHV use. The camping closure would minimize the effect of human impacts to the parking areas, reduce noise, reduce parking congestion, and prevent people from illegally living on Federal lands. The limited public motorized access, camping closure, and OHV closure would also maintain the current quiet use recreation experiences on the majority of the Baca Mountain Tract. It would also make recreation experiences more compatible with the adjacent GRSA Backcountry Wilderness Management Zone and the Sangre de Cristo Wilderness Area. Visitors would still occasionally encounter private inholding and administrative motorized vehicles use along the designated Forest system roads beyond the parking area gates.

All action alternatives would construct a small 15-vehicle parking area which can accommodate horse trailers vehicles. All parking areas would include a gate, vault toilet, signs, and interpretive facilities. A vault toilet will reduce public health issues and reduce human waste impacts to the resource. A gate will eliminate motorized encroachment by the public past the parking area. Interpretive facilities and signs will educate the public and instill environmental/cultural awareness and public stewardship. Signing will also help inform visitors of the different regulations governing the GSRA and RGNF. All action alternatives would prohibit recreational livestock within 100 feet of a stream, except for watering and through travel, recreation livestock tethering within any riparian area, and camping within 100 feet of a stream within the Baca Mountain Tract. This would protect the riparian resources and maintain a pleasant recreation setting.

Recreation opportunities would remain the same in all action alternatives. None of the action alternatives would change the ROS classification on the Baca Mountain Tract from the existing recreation opportunities of semi-primitive non-motorized and roaded natural. There would continue to be 10,200 acres in semi-primitive non-motorized ROS and 3,200 acres in roaded-natural ROS.

It is not possible to accurately predict recreation use levels for the action alternatives; therefore, several different sources of information were used to estimate future use levels. It is also expected that increases in use would differ between the mountaineering and the Liberty Road portions of the analysis area.

Use is expected to continue to increase in the northeast portion of the Baca Mountain Tract where the majority of use is mountaineering. The current 1,500 to 2,000 visits annually are expected to increase at least at the rate of population growth along the Front Range. The most recent 2005 Forest Service National Visitor Use Monitoring survey projected a 25 percent visitor use increase to the RGNF over the next 20 years, mainly due to population growth nationwide.

The action alternatives would result in only a minor increase in visitor use over current levels in the rest of the Baca Mountain Tract. This increase would result from more convenient access to the public lands. There would be no difference in use levels between the alternatives due to the different access routes or parking area locations. The parking areas are all on the Liberty Road within 1.5 miles of each other. The expected increase in use would be primarily from local residents; the increase in use would be at the same rate as the growth of the subdivision.

The number of visitors hunting on the Baca Mountain Tract is also considered to be self limiting because the area is relatively small and can not successfully support large numbers of hunters. Other reasons for this area being self limiting are: (1) Big game move onto the national park for refuge after the first few shots of a hunting season are fired; (2) hunters are learning that success rates are low once archery and muzzle loader seasons are over; (3) sandy soil makes packing out an elk or deer on foot difficult; and (4) elk that do not move onto the GSRA are moving to unreachable areas higher in the Sangre de Cristo Mountains due to hunting pressure. It is unlikely that visitor use during fall big game hunting seasons would increase over current use levels under CDOW's current elk hunting management. Hunting use may even decline due to poor hunter success and elk movement.

While the GRSA receives about 291,000 visitors annually, almost all these visitors remain in the southern portions of the GRSA and do not visit the analysis area. The trend for GRSA visitors is slightly downward. Visitors to the north end of the GRSA and the analysis area are quite different from visitors to the rest of the park. Use in the analysis area is predominantly by local residents of the subdivision and to a lesser degree, residents of the San Luis Valley, with only a minor portion coming from outside the San Luis Valley. Unless an unpredicted influx of front range or out-of-State visitors begins using this portion of the analysis area, use levels are predicted to increase at the same rate as the population increases in the Baca Grande subdivision and/or the San Luis Valley.

All action alternatives limit the parking area to 15 vehicles to reduce the number of people entering through the Liberty Road area. Fifteen vehicles with an average group size of 2.2 could bring approximately 33 people maximum a day to this area, which is far less than current use.

Alternative 2

Forest Plan Amendment. Alternative 2 would amend the Forest Plan and provide recreation management currently not in place. This alternative would provide three MA prescriptions, 3.1 Special Interest Area, 5.41 Deer/Elk Winter Range, and 5.42 Bighorn Sheep. The 3.1 Special Interest Area MA Prescription allows a maximum ROS of semi-primitive motorized while the 5.41 Deer/Elk Winter Range and 5.42 Bighorn Sheep MA prescriptions allow a maximum ROS of roaded-natural. The existing ROS would not change.

The MA prescription 5.42 Bighorn Sheep discourages new travel routes across any lambing grounds and recreation activities that disturb bighorn sheep. These restrictions on recreation use could have a minor adverse effect on existing and future use in and around 14,000-foot peaks. Social trailing to common mountaineering routes is often a cause for alpine vegetation

degradation. Designating one route through these areas and closing social routes would reduce impacts to alpine resources. However, some of the existing social routes occur in lambing areas. This alternative may preclude future trails in these areas.

The MA prescription 5.41 Deer and Elk Winter Range provides for certain recreation closures during critical times of the year if necessary. While no closures are anticipated at this time, portions of the Baca Mountain Tract could be closed to recreation use if it was causing unacceptable adverse effects to wildlife. These closures could reduce recreational opportunities in the area.

The MA prescription 3.1 Special Interest Area provides special emphasis for the protection, inventory, and interpretation of heritage resources in the area. This alternative provides a positive effect on recreation experiences by providing the most opportunities for historical interpretation and education.

Forest Service Projects. This alternative provides public motorized access to the new Middle Parking Area with its associated gate, toilet, signs, and interpretive facilities. It allows for historic, cultural, and environmental interpretive and educational opportunities. The Middle Parking Area would provide a convenient trail head for the visitors using Liberty Road. Deadman Creek is 2 miles from the parking area on Liberty Road. This parking area could also serve as a future trailhead for a trail to Crestone Peak and Crestone Needle, thereby potentially reducing the trespass across private property to reach the Baca Mountain Tract.

National Park Service. This alternative would provide public motorized vehicle access across the GRSA to the Baca Mountain Tract on the Camino Chamisa. This would change the expected recreation experience along the access road corridor from back country adventure to backcountry access. It allows for historic, cultural, and environmental interpretive and educational opportunities.

The construction of the Camino Chamisa would change the experience and view of a relatively unbroken landscape to the south. However, it would provide an opportunity for interpretation and education of the Old Spanish Trail. It would also provide scenic opportunities to view the dramatic mountain front landscape, to view wildlife on the GRSA, and to allow people to experience the sand sheet.

Some impacts would continue, but at a reduced level, at the existing Liberty Gate parking area because the Liberty Road would continue to be a foot and horse trail onto the GRSA. Some local residents may resist making the longer drive to the Camino Chamisa and Middle Parking Area and continue to use the closer Liberty Gate access. Nearby residents to the Liberty Gate parking area would continue to be adversely affected by traffic, parking congestion, noise, and litter.

This alternative would allow the vehicular transport of firearms, lawfully taken wildlife, and lawfully collected Forest products for personal use from the Baca Mountain Tract across the GRSA on the Camino Chamisa under conditions specified in the Superintendent's Compendium.

Alternative 3

Forest Plan Amendment. Alternative 3 would amend the Forest Plan and provide recreation management which is currently not in place. This alternative would provide a 3.3 Backcountry MA prescription which allows a maximum ROS of semi-primitive motorized. The inventoried ROS would not change. The 3.3 Backcountry MA prescription discourages development of

recreation facilities. The Baca Mountain Tract would be managed as a natural area with little evidence of humans. Trails and other recreation facilities would be discouraged and would be constructed only for site protection. Opportunities for interpretation would be limited. It would provide backcountry recreation opportunities for those seeking backcountry solitude, but would limit recreation opportunities for other visitors.

Forest Service Projects. This alternative does not provide public motorized access to the Baca Mountain Tract. Access would be by foot or horseback on the Liberty Road. There would be no parking area on the Baca Mountain Tract. This alternative would not allow a future trail to Crestone Peak and Crestone Needle and would likely increase trespass issues on private property related to Cottonwood Creek.

National Park Service Projects. This alternative provides public motorized access to the new North Parking Area with its associated gate, toilet, signs, and interpretive facilities. The North Parking Area would provide a trail head for the visitors using the Liberty Road. It allows for historic, cultural, and environmental interpretive and educational opportunities on the GRSA.

This alternative does not provide public motorized access to Baca Mountain Tract. The Baca Mountain Tract is 0.5 miles from the North Parking Area on the Liberty Road and would be accessed by foot or horseback. This parking area is the farthest distance, 3.1 miles, from Deadman Creek on the Liberty Road.

Alternative 3 would move visitor parking from the existing Liberty Gate parking area to the North Parking Area on the GRSA. This would reduce the impacts from the existing Liberty Gate parking area on nearby residents.

Permits for transport of firearms and big game to and from the Baca Mountain Tract across the GRSA would continue to be required. Transport of weapons for small game hunting, antlers, or other Forest products for personal use obtained from the Baca Mountain Tract would not be permitted.

Alternative 4

Forest Plan Amendment. Alternative 4 would amend the Forest Plan and provide recreation management, which is currently not in place. This alternative would provide two MA prescriptions, 5.41 Deer/Elk Winter Range and 5.42 Bighorn Sheep. The 5.41 Deer/Elk Winter Range and 5.42 Bighorn Sheep prescriptions allow a maximum ROS of roaded-natural. The existing ROS would not change.

The MA prescription 5.42 Bighorn Sheep discourages new travel routes across any lambing grounds and recreation activities that disturb bighorn sheep. These restrictions on recreation use could have a minor adverse effect on existing and future use in and around 14,000 foot peaks as well as areas surrounding these peaks. Social trailing to common mountaineering routes is often a cause for alpine vegetation degradation. Designating one route through these areas and closing social routes would reduce impacts to alpine resources. However, some of the existing social routes occur in lambing areas. This alternative may preclude future trails in these areas.

The MA prescription 5.41 Deer and Elk Winter Range provides for certain recreation closures during critical times of the year if necessary. While no closures are anticipated at this time, portions of the Baca Mountain Tract could be closed to recreation use if it was causing unacceptable adverse effects to wildlife. These closures could reduce recreational opportunities in the area.

Forest Service Projects. This alternative provides public motorized access to the new Middle Parking Area with its associated gate, toilet, signs, and interpretive facilities. It allows for historic, cultural, and environmental interpretive and educational opportunities. The Middle Parking Area would provide a convenient trail head for the visitors using the Liberty Road. This alternative provides public motorized access to the new South Parking Area with its associated gate, toilet, signs, and interpretive facilities. It allows for historic, cultural, and environmental interpretive and educational opportunities. The South Parking Area would provide a convenient trailhead for the visitors using the Liberty Road, a 1.7 mile hike to Deadman Creek. This parking area could also serve as a future trailhead for a trail to Crestone Peak and Crestone Needle, thereby potentially reducing the trespass across private property to reach the Baca Mountain Tract. However, it would be the least desirable because of the longer distance to Cottonwood Creek.

National Park Service Projects. Alternative 4 would provide public motorized vehicle access on the Liberty Road to the South Parking Area on the Baca Mountain Tract. This would change the expected recreation experience along the access road corridor from back country adventure to backcountry access. It allows for historic, cultural, and environmental interpretive and educational opportunities.

Alternative 4 would move visitor parking from the existing Liberty Gate parking area to the South Parking Area. This would reduce the impacts from the existing Liberty Gate parking area on nearby residents.

This alternative would allow the vehicular transport of firearms, lawfully taken wildlife, and lawfully collected Forest products for personal use from the Baca Mountain Tract across the GRSA on the Camino Chamisa under conditions specified in the Superintendent's Compendium.

Cumulative Effects

All action alternatives would amend the Forest Plan and provide recreation management direction for the Baca Mountain Tract (Alternative 1 would not do this). Regardless of the alternative, there would likely be a gradual increase in visitor use in the analysis area tied to general population growth, including growth in the Baca Grande subdivision, Crestone, and the San Luis Valley. The action alternatives have different land use allocations that lead to only minor expected effects to recreation. The South Colony Basin decision of August 30, 2007, on the east side of the Sangre de Cristo Mountains pulled back the South Colony jeep road by 2.5 miles, but this is not expected to notably change visitor use patterns on the Baca Mountain Tract or the 14,000-foot peaks above the analysis area. A recreation management plan is expected in the foreseeable future which would be designed to coordinate Forest Service, GRSA, Baca National Wildlife Refuge, and public recreation needs for the area. Recreation use (associated with wildlife) would also be addressed in the future Baca National Wildlife Refuge Comprehensive Conservation Management Plan. Cumulative effects from past, present, and reasonably foreseeable actions would be expected to be minor.

Scenic Resources

Scope of the Analysis

The scope of this analysis focuses on the effects to the scenic resources within the analysis area that might be reasonably expected from each alternative.

Existing Condition

In general, scenery is the combination of visual, auditory (noise), and holistic features (such as "sense of place", landscape character, viewer's feelings and attachment) that give character to the landscape. Scenic resources are an integral part of both agencies' land management.

Preserving scenic interests was one of the primary reasons for establishing the GRSA and continues to be management focus in the general management plan.

Lands administered by the Forest Service are managed in order to achieve a specific level of visual or scenic quality through the scenery management system. The existing scenic integrity (current inventoried scenic condition of the landscape) is considered "high" where it appears unaltered. Human influence is present, but it blends in with the landscape character and the predominant landscape appears intact.

Views within the analysis area are inspiring. The Baca Mountain Tract and the Sangre de Cristo Mountain Range dramatically rise from the valley floor. Views from the grass and shrubland lower elevations of the analysis area offer an immense panoramic. Views to the south include the north side of the massive dune field backed by alpine peaks. Views from the higher elevations offer even more expansive vistas of the entire San Luis valley and portions of New Mexico.

The human presence in the landscape affects the surrounding landscape character and scenic resource of the Federal lands. Views to the west and north include rural agricultural lands and low-density residential development. The Baca Grande subdivision to the north provides a heavily altered viewshed. Features in the subdivision are noticeable, but somewhat screened by vegetation. Some features, such as the stupas and ziggurat, are created to be visually dominant.

There are human developments evident in the analysis area landscape associated with historical mining and ranching, but they do not dominate the landscape. These have become an element of the characteristic landscape because they are considered part of the essential landscape character that contributes to the sense of place.

The area of potential effect for scenic resources includes lands directly adjacent to the analysis area, as well as all lands that have visibility to the project area and associated changes to the scenic quality of the area. The key viewing locations are the Camino Chamisa and the parking areas. Landscape visibility is a function of many interconnected considerations including the context of viewers, duration of view, degree of discernible detail, seasonal variations, and number of viewers. The analysis area falls into all distance zones including immediate foreground (0 to 300 feet), foreground (300 feet to 0.5 mile), middleground (0.5 to 4 miles), and background (4 miles to horizon). The distance zones, along with the ability of the landscape to absorb deviations and the form, line, color, pattern, and texture of human activities all affect the characteristic landscape.

Direct, Indirect, and Cumulative Effects

Alternative 1 (No Action)

Alternative 1 would not bring the Baca Mountain Tract under Forest Plan management or provide any scenic resource management. Alternative 1 would have no visual effects to the existing condition. The use of the Liberty Gate parking area would continue to have a visual impact on nearby residences.

Alternative 2

Forest Plan Amendment. Alternative 2 would amend the Forest Plan and provide scenic resource management currently not in place. This alternative would provide three MA prescriptions, 3.1 Special Interest Area, 5.41 Deer/Elk Winter Range, and 5.42 Bighorn Sheep. Activities in these MA prescriptions would meet the adopted scenic integrity objective.

Forest Service Projects. Alternative 2 would have minor visual effects and would cause minimal change to the scenic landscape setting. The Middle Parking Area would be the most visible of the parking areas because it is not screened by vegetation or topography. It would be visible in the middleground, 1.3 miles from the subdivision, but would not dominate the viewshed because of the viewing distance. It would be designed to blend with the natural landscape to minimize the visual impacts. This alternative would provide more convenient access to the public and would enable more people to experience the scenic views of the analysis area.

National Park Service Projects. Alternative 2 would cause minimal change to the scenic landscape setting. The Camino Chamisa is located within the backcountry access zone paralleling the GRSA boundary to avoid visually impacting the park's relatively unbroken expansive landscape to the south. Alternative 2 would have minor visual effects to the community. Camino Chamisa is somewhat visible in the foreground, approximately 0.25 mile from the subdivision boundary, but partially screened by the greenbelt for most of its length. It would be designed to blend with the natural landscape as much as possible, and would not dominate the viewshed because of the flat topography and vegetative screening.

The Camino Chamisa likely transects the route of the Old Spanish Trail somewhere along its length. This modern feature could detract from a visitor's experience of envisioning the unaltered landscape that existed at the time of the trails use. However, the road would also provide an excellent opportunity to interpret the trail, which is one of the purposes of the trail designation.

Alternative 3

Forest Plan Amendment. This alternative would place the Baca Mountain Tract under the 3.3 Backcounty MA prescription where the landscape is managed to be predominately natural appearing and relatively undisturbed by humans. The inventoried scenic integrity objective would be achieved. Alternative 3 would have no activities on the Baca Mountain Tract and no effect on the scenic resource.

National Park Service Projects. Of the action alternatives, Alternative 3 would cause the least amount of change to the scenic landscape setting. However, this alternative would not provide more convenient access to the public and would not enable more people to experience the scenic views of the analysis area. The North Parking Area lies in the foreground, 0.2 miles from subdivision, but it is partially screened by vegetation and would be designed to blend with the natural landscape. It would have minor visual effects and be somewhat visible to nearby residents.

Alternative 4

Forest Plan Amendment. Alternative 4 would amend the Forest Plan and provide scenic resource management not currently in place. This alternative would provide two MA prescriptions, 5.41 Deer/Elk Winter Range and 5.42 Bighorn Sheep. Activities in these prescriptions would meet the adopted scenic integrity objective.

Forest Service Projects. Alternative 4 would cause minimal change to the scenic landscape setting, and would have minor visual effects. The South Parking Area is in the middleground, 1.6 miles from subdivision, and is not visible from the subdivision. It would be designed to blend with the natural landscape to minimize the visual impacts. The South Parking Area would be the least visible of the parking areas because it is screened by vegetation or topography. This alternative would provide more convenient access to the public and would enable more people to experience the scenic views of the analysis area. This parking area location provides an excellent opportunity to interpret the Old Spanish Trail because it provides views of the vast, relatively unaltered landscape through which the trail route traversed.

National Park Service Projects. Of the action alternatives, Alternative 4 would have the least visual impact to the GRSA because there would be no road or parking area construction on the park. The South Parking Area is located on the Baca Mountain Tract where it is screened by vegetation or topography.

Cumulative Effects

The alternatives would have minimal cumulative effects to the scenic resource. Potential impacts would be minimized by the alternatives and design criteria. The minor effects of these action alternatives, in conjunction with the effects of other activities, is expected to be minimal. Continuing population growth and development in the San Luis Valley is expected over time which could be expected to affect the background views from the analysis area. Additional development of the Baca Grande subdivision is expected and this could have a minor effect on the foreground and middleground views from the analysis area, but the impacts are uncertain without knowing site-specific development information. Several exploration wells were drilled on the former Baca Ranch. The visual impacts of these wells were short term and minor. Two exploration wells are currently being analyzed on the Baca National Wildlife Refuge. These would also have a short-term impact on the scenic resource. Additional exploration drilling on the split estate is considered probable under all alternatives. A large portion of the north end of the San Luis Valley has also been nominated for leasing. If these nominations resulted in active leases, there would be an impact to the scenic resource, but there are no plans from which to base an effects analysis at this time. If the privately owned mineral estate on the Baca Mountain Tract, the GRSA, or the Baca National Wildlife Refuge were to be developed for hard-rock mining or oil and gas drilling, there is a potential for impacts to the scenic resource for a lengthy period of time.

Social and Economic

Scope of the Analysis

The scope of this analysis focuses on the possible social and economic effects of the project in the analysis area and surrounding communities.

Existing Condition

The social and economic makeup of the surrounding region is described in the Final Environmental Impact Statement for the Revised Forest Plan (pages 3-445 to 3-469) and in the GRSA General Management Plan Final Environmental Impact Statement (pages 146 to 158 and 242 to 246. They are not repeated here for the sake of brevity.

Sense of Place

The scenic, cultural, social, and biophysical characteristics of a landscape, and psychological influences (memory, choice, perception, imagination, and emotion) help form the "sense of place" in which people live and interact. People's sense of place is directly tied to the characteristics of an area and experiences associated with this area that invoke a special feeling of attachment. A variety of images may be attached to a place. The residents of Crestone and Baca Grande subdivision have a strong sense of place about their community and its setting in the landscape.

Visitors to the GRSA or Baca Mountain Tract have expectations about what they may see or experience. This helps build a mental picture of a particular area. Certain images such as romanticism, emotionalism, and knowledge are attached to features of a place. The landscape surrounding the Baca Grande subdivision has an identifiable image to most residents and visitors. Changes in access can affect these special places or change their biophysical setting, affecting people's sense of place and what they value or desire in an area. Motorized public access road to the Baca Mountain Tract may facilitate some local people's enjoyment of the area by providing for driving comfort, the amount and type of use, and any number of aesthetic attributes visible alongside the road. In contrast, motorized public access may deter from characteristics that are highly valued for some local people's enjoyment and appreciation of an area. The effects to sense of place are unique to each individual.

Direct, Indirect, and Cumulative Effects

Alternative 1 (No Action)

Alternative 1 would have no cost and would create no additional economic benefits to the local economy. It would not change the existing social condition. Alternative 1 would have no effect on a visitor's current sense of place.

Effects Common to All Action Alternatives

The proposed action would neither change local and regional land use nor appreciably impact local businesses or other agencies. Implementation of the proposed activities could provide a negligible beneficial impact to the economies of nearby communities, as well as Saugache and Alamosa Counties, due to minimal increases in employment opportunities for the construction workforce and revenues for local businesses and governments generated from these additional construction activities and workers. Any increase in workforce and revenue, however, would be temporary and negligible, lasting only as long as construction.

The economic benefits from all the action alternatives are expected to be negligible because of the minor nature of the project. There would be some minor local economic gain from construction spending. There would likely be a short-term economic benefit to the local communities from construction activities, but the degree of benefit would depend on who obtained the construction contracts and where the contractor was from.

Local communities can benefit from non-resident visitors because they spend money on fuel, supplies, and lodging, and pay taxes. However, none of the action alternatives are expected to result in the analysis area becoming a primary destination for non-resident recreation visitors. Some non-residents may visit the north part of the GRSA or the Baca Mountain Tract as part of their visit to Crestone or the Baca Grande subdivision, but few are expected to come explicitly to recreate in the analysis area.. Little local economic gain is expected from non-residents directly

due to the project. The recreation opportunities provided by the action alternatives are expected to be used primarily by local residents who would not bring additional economic gain to the community due to the project.

Alternative 2

Alternative 2 could result in a change to a specific individual's sense of place, but overall there would be very limited change expected. The historical and cultural elements and scenic landscape setting would remain the same. More convenient access would enable more people to experience the Baca Mountain Tract.

The total estimated cost of the Camino Chamisa road construction/reconstruction, Liberty Road reconstruction, and the construction of the Middle Parking Area in this alternative is $811,000.

Alternative 3

Alternative 3 is expected to result in little to no change to affect a sense of place. The North Parking Area moves vehicle parking 0.2 miles to the south on the existing Liberty Road, but does not cause any change to the historical and cultural elements and scenic landscape setting. Fewer residents would be able to experience the Baca Mountain Tract.

The total estimated cost of the Liberty Road reconstruction and the construction of the North Parking Area in Alternative 3 is $156,000.

Alternative 4

Alternative 4 could result in a change to a specific individual's sense of place, but overall there would be very limited change expected. The historical and cultural elements and scenic landscape setting would remain the same. More convenient access would enable more people to experience the Baca Mountain Tract.

The total estimated cost of the Liberty Road reconstruction and the construction of the South Parking Area in Alternative 4 is $366,000.

Soils

Scope of the Analysis

The scope of this analysis focuses on the possible impacts to soils within the analysis area that might be reasonably expected from each alternative.

Existing Condition

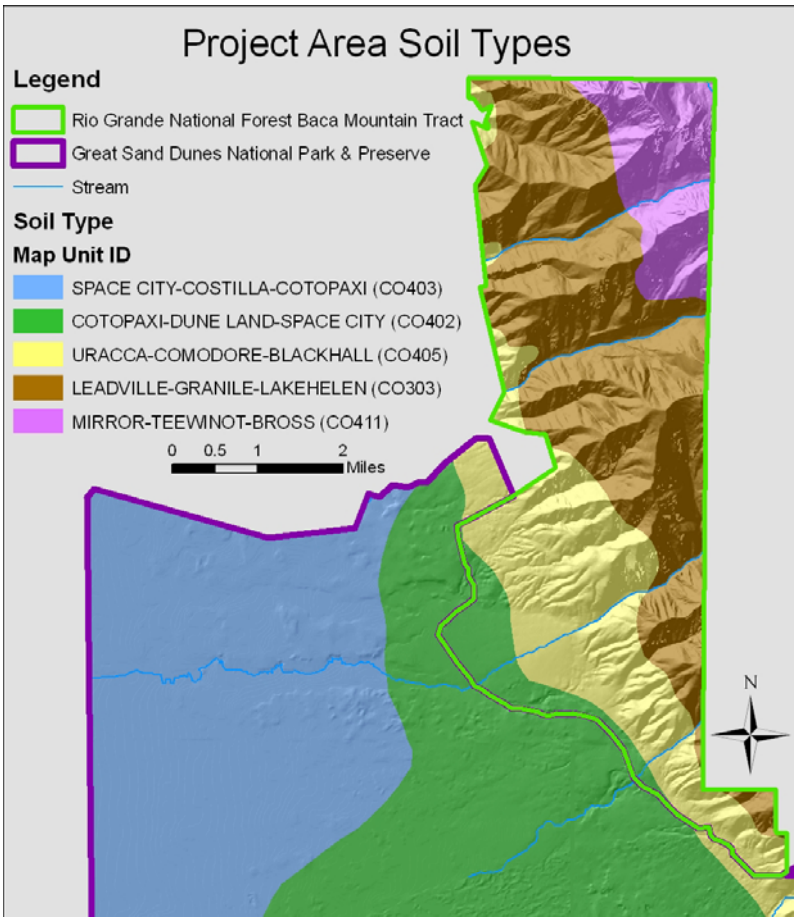
According to the NPS's 2006 Management Policies, the NPS will preserve and protect geologic resources and features from adverse effects of human activity, while allowing natural processes to continue. These policies also state that the NPS will strive to understand and preserve the soil resources of park units and to prevent, to the extent possible, the unnatural erosion, physical removal, or contamination of the soil, or its contamination of other resources.

The soils of the Baca Mountain Tract are affected by two main geologic processes. In the steep mountain portion, soils are developed in bedrock, which are eroded as rains create runoff and wash materials downslope. In the gentle sloping lands at the base of the mountains, winds tend to deposit sandy materials creating deep sandy soils. Each of the various soil types has their unique potentials and limitations (also see the "Minerals" section in this chapter.

Past actions are discussed in detail at the beginning of this chapter. Specific past actions that have had an effect on soils are the livestock grazing and timber harvest associated with the former Baca Ranch operations that date back to at least the latter half of the 19th century. These activities changed vegetation and had effects on soil erosion and compaction. Hard-rock mining and milling has also disturbed and compacted soils. Livestock ranching and mining led to a network of roads which can cause sedimentation impacts.

Soil map units are shown in Figure 3-4 and Figure 3-5. The existing Liberty Road, the proposed Camino Chamisa, and the proposed parking areas all occur on the Cotopaxi Sand soil type. These soils are characterized by loose materials, lack of clay to bind soils, and poor trafficability. They perform poorly for a developed surface and would require textiles, gravel, or other hardening to bind the loose soils together. The first 0.5 mile of the Liberty Road has been hardened by gravel base.

Figure 3-4. Soil types on the Baca Mountain Tract



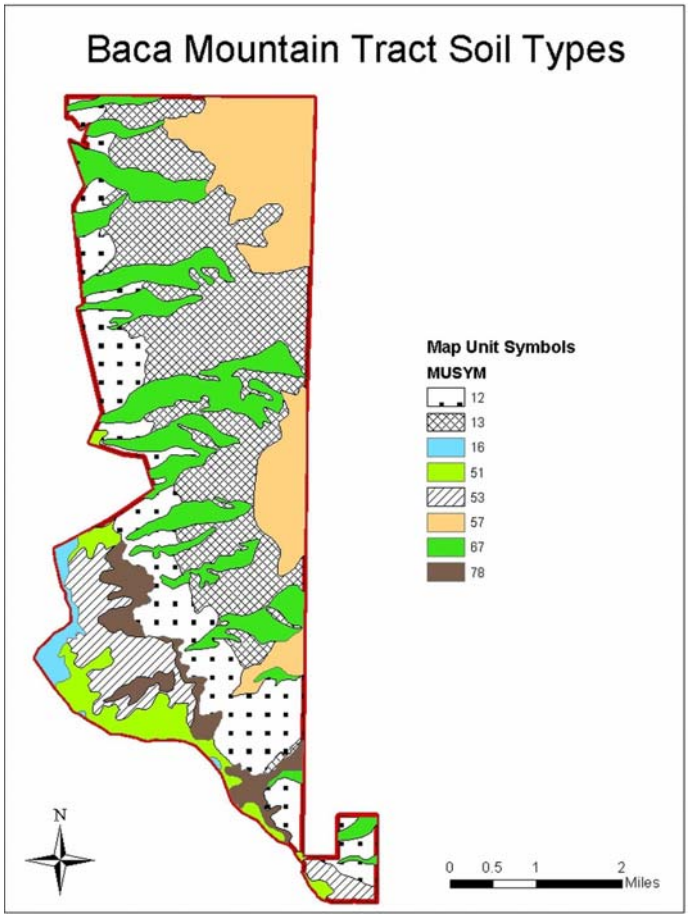


Figure 3-5. Soil types on the GRSA

Direct, Indirect, and Cumulative Effects

Alternative 1 (No Action)

Alternative 1 does not propose any management direction and does not provide environmental protection for soils. Current activities would continue; there would be no projects to disturb the ground or effect the soils. Non-motorized recreation use and administrative motorized use of existing roads would continue, with no new disturbances. Localized road erosion caused by runoff events would continue.

Alternative 2

Alternative 2 would amend the Forest Plan and provide management direction and environmental protection not currently in place for soils.

Alternative 2 would create approximately 8.8 acres of soil disturbance; 0.4 acres on Saguache County land, 7.3 acres on the GRSA, and 1.1 acres on the Baca Mountain Tract. The construction/reconstruction of 0.15 miles of road on Saguache County, 3.03 miles on GRSA, and 0.21 miles and the construction of the Middle Parking Area on the Baca Mountain Tract would improve road surface and drainage and reduce erosion. All activities would occur on mild slopes. All developed surfaces would be hardened with geotextile fabric, gravel, and binder as necessary. A construction of a new gaging station and plugging of an old diversion channel on Deadman Creek would result in a very minor disturbance area of alluvial deposits. Maintenance

on existing roads would improve drainage and lessen erosion where flow is concentrated. The closure of the Baca Mountain Tract to OHVs should prevent soil erosion from the use of these machines.

With the implementation of the project design criteria and the provisions in the Watershed Conservation Practices Handbook, on this small area of disturbance, this alternative is not expected to result in any measurable impacts to soils. Sediment sources associated with current roads or other surface disturbances do cause some minor localized impact, but overall soil health would be minimally affected by these actions.

The proposed construction/reconstruction of the Camino Chamisa would be in an area of the GRSA that does not contain significant topographic or geologic features. Further, portions of the Camino Chamisa use an existing ranch two-track road which was previously disturbed by past construction and ranch use. Only very minor modifications of the gentle topography would be required to construct a level road surface which would have a negligible to minor effect to the topography of this area. The road construction/reconstruction would also require some minor excavation, which would displace and disturb soils, in the footprint of the road.

Given that there are no significant topographic or geologic features in the project area, and that the area has been previously disturbed, the proposed actions would result in negligible to minor adverse effects to topography, geology, and soils. Further, such minor or negligible impacts would not result in any unacceptable impacts; the proposed actions are consistent with §1.4.7.1 of NPS Management Policies 2006.

Alternative 3

Alternative 3 would amend the Forest Plan and provide management direction and environmental protection not currently in place for soils.

Alternative 3 would create approximately 1.1 acres of soil disturbance on the GRSA. The reconstruction of 0.2 miles of Liberty Road and the construction of the North Parking Area would improve road surface and drainage and reduce erosion. All activities would occur on mild slopes. All developed surfaces would be hardened with geotextile fabric, gravel, and binder as necessary. Maintenance on existing roads would improve drainage and lessen erosion where flow is concentrated. The closure of the Baca Mountain Tract to OHVs should prevent soil erosion from the use of these machines.

With the implementation of the project design criteria and the provisions in the Watershed Conservation Practices Handbook, on this small area of disturbance, this alternative is not expected to result in any measurable impacts to soils. Sediment sources associated with current roads or other surface disturbances do cause some minor localized impact, but overall soil health would be minimally affected by these actions. The proposed construction site of the North Parking Area does not contain significant topographic or geologic features. This area is adjacent to the existing Liberty Road which was previously disturbed by past construction and use. Only minor modifications of the gentle topography would be required to construct a relatively level parking area surface which would have a negligible to minor effect to the topography of this area. The parking area construction would also require some minor excavation, which would displace and disturb soils, in the footprint of the parking area.

Given that there are no significant topographic or geologic features in the project area, and that the area has been previously disturbed, the proposed actions would result in negligible to minor effects to topography, geology, and soils. Further, such minor or negligible impacts would not

result in any unacceptable impacts; the proposed actions are consistent with §1.4.7.1 of NPS Management Policies 2006.

Alternative 4

Alternative 4 would amend the Forest Plan and provide management direction and environmental protection not currently in place for soils.

Alternative 4 would create approximately 4.5 acres of soil disturbance; 1.79 acres on the GRSA, and 2.11 acres on the Baca Mountain Tract. The reconstruction of 0.73 miles of Liberty Road on GRSA, and 0.21 miles of Liberty Road and the construction of the South Parking Area on the Baca Mountain Tract would improve road surface and drainage and reduce erosion. All activities would occur on mild slopes. All developed surfaces would be hardened with geotextile fabric, gravel, and binder as necessary. A construction of a new gaging station and plugging of an old diversion channel on Deadman Creek would result in a very minor disturbance area of alluvial deposits. Maintenance on existing roads would improve drainage and lessen erosion where flow is concentrated. The closure of the Baca Mountain Tract to OHVs should prevent soil erosion from the use of these machines.

With the implementation of the project design criteria and the provisions in the Watershed Conservation Practices Handbook, on this small area of disturbance, this alternative is not expected to result in any measurable impacts to soils. Sediment sources associated with current roads or other surface disturbances do cause some minor localized impact but overall soil health would be minimally affected by these actions.

Cumulative Effects

The minor effects of these action alternatives in conjunction with the effects of other projects is expected to be minimal. However, if the privately owned mineral estate on the Baca Mountain Tract were to be developed for hard-rock mining or oil and gas drilling, there likely could be substantial localized disturbance and impacts to soils. The Forest Service can not prevent access to and the development of privately owned mineral rights; the specific development would have to be negotiated with the private owner. Because there are no plans to develop the privately owned mineral estate at this time, it is not possible to quantitatively assess the impacts of this activity without site-specific information. In general, soils are stockpiled during mineral operations and later re-applied when activities are completed. These areas are then revegetated with natural plants. Disturbed areas would be reclaimed to State standards.

Vegetation

Scope of the Analysis

The scope of this analysis focuses on the possible impacts to special-status plants and vegetation that might be reasonably expected from each alternative. A detailed analysis would be documented in a biological assessment/biological evaluation (BA/BE) for plants and in a vegetation report included in the project record. The NPS Environmental Screening Form was completed and is also in the project record.

Forest Service. The scope of this analysis for the Forest Plan amendment and for the projects focuses on the possible impacts to special-status plants and vegetation that might be reasonably expected from each alternative. Special status plants are defined and categorized as: (1) threatened, endangered, and proposed plants designated by the USFWS; (2) Forest Service

Region 2 designated sensitive plants; and (3) Colorado noxious weeds as identified by the Colorado State Department of Agriculture. Vegetation is defined and categorized as: (1) general vegetation, (2) distinctive natural plant communities, and (3) late-successional forests, including old-growth forests.

National Park Service. The NPS strives to maintain all components and processes of naturally evolving park unit ecosystems, including the natural abundance, diversity, and ecological integrity of plants in accordance with the 2006 Management Policies. The scope of the analysis for NPS projects is on special status plants and vegetation that might be reasonably expected from each alternative. Special status plants are defined and categorized as: (1) plant species of special concern including threatened, endangered, and proposed plants designated by the USFWS; and (2) non-native plant species including Colorado noxious weeds as identified by the Colorado State Department of Agriculture. Vegetation is defined and categorized as: (1) general vegetation; (2) unique ecosystems, biosphere reserves, World Heritage Sites; and (3) rare or unusual vegetation (old growth, riparian, and alpine), including distinctive natural plant communities as identified by the Colorado Natural Heritage Program (CNHP).

Existing Condition

The elevation of the Baca Mountain Tract varies from approximately 7,800 to over 14,000 feet. Pinyon-juniper woodland and spruce/fir forests are the dominate cover types. The majority of the higher elevation forests on the Baca Mountain Tract are in a late-successional forest status consisting of relatively large trees with a dense canopy cover. The lower elevations support pinyon-juniper woodland and grasslands cover types. Aspen and narrowleaf cottonwood are generally found along riparian areas.

The existing vegetation condition (composition and structure) is affected to varying degrees by ongoing drought, insects, and disease agents. The recent drought is suspected to have lowered plant vigor and has probably made the vegetation more susceptible to insect and disease. The Forest Service has been conducting annual aerial surveys to track damage to trees. There is notable drought mortality observed on narrowleaf cottonwoods; tent caterpillar mortality on cottonwoods and aspen; western spruce budworm mortality on conifers; *Armillaria* root rot mortality on subalpine fir; and white pine blister rust on limber and bristlecone pines in and adjacent to the Baca Mountain Tract.

The existing vegetation condition in some areas is affected to a noticeable degree by elk on the Baca Mountain Tract. Heavy browsing and high willow mortality is noticeable in some of the higher elevation drainages. Several studies are ongoing on the elk populations and their effect on vegetation.

Wind-blown sand plays a dominant role in shaping the vegetation in this area by burying some plant communities and scouring others. Wind, in combination with livestock grazing, transport and disperse plant seed—including undesirable plants. Roads result in small, linear corridors of disturbed vegetation. Wood products have been removed in the lower elevations of the Baca Mountain Tract.

Special Status Plants. There are currently no occurrences or suspected occurrences of plant species listed by the USFWS as threatened, endangered, or proposed in the Baca Mountain Tract or within the project area on the GRSA. The Baca Mountain Tract does not contain suitable habitat for these species.

Of the Regional 2 sensitive plants, one species, Smith whitlow-grass, is known to occur at 12,000 feet in rocky habitat in the Baca Mountain Tract. Seventeen additional sensitive plant species are suspected to occur due to habitat affinity, but no new occurrences of sensitive plants were found during field investigations. Two species were initially suspected to occur in the project area based on general habitat affinity; Colorado tansy-aster and Degener's beardtongue. However, these species were not found during field surveys.

Noxious weed species, as identified by the Colorado State Department of Agriculture, are of great concern and are known to occur on or adjacent to the Baca Mountain Tract. These include Canada thistle, Russian knapweed, downy brome, hoary cress, bull thistle, field bindweed, Russian olive, leafy spurge, perennial pepperweed, yellow toadflax, salt cedar, and common mullein. Russian thistle, although not considered a noxious weed species, is an invasive alien species common on and adjacent to the Liberty Road. Both the Baca Mountain Tract and the GRSA are at risk of noxious weed spread from adjacent land ownerships and inadvertent exotic plant species spread originating from residential landscaping and gardens of the Baca Grande subdivision.

Typical lower elevation vegetation and topography

Vegetation. The proposed South Parking Area on the Baca Mountain Tract is dominated by small diameter, open-canopy pinyon pine. The understory is dominated by rubber rabbitbrush in the shrub layer and blue grama, needle-and-thread grass, and sand dropseed in the grass layer.

The proposed Middle Parking Area on the Baca Mountain Tract is treeless. The understory is dominated by rubber rabbitbrush in the shrub layer and blue grama, needle-and-thread grass, and sand dropseed in the grass layer.

The proposed North Parking Area on the GRSA is dominated by small diameter, open-canopy pinyon pine. The understory is dominated by rubber rabbitbrush in the shrub layer and blue grama, needle-and-thread grass, and sand dropseed in the grass layer.

The Liberty Road is currently a primitive two-track route. The vegetation adjacent to the existing road within the disturbance area is dominated by rubber rabbitbrush in the shrub layer and blue grama, needle-and-thread grass, and sand dropseed in the grass layer.

The Camino Chamisa route is treeless and is dominated by rubber rabbitbrush in the shrub layer and blue grama, needle-and-thread, and sand dropseed in the grass layer.

There are unique ecosystems on the GRSA; however, there are no occurrences of unique ecosystems, biosphere reserves, or World Heritage Sites within the GRSA Project Area. There also are no rare or unusual vegetation communities such as old growth, riparian, alpine, or CNHP distinctive natural plant communities affected by any proposed activities in the Forest Service or GRSA project areas.

Direct, Indirect, and Cumulative Effects

Overall, expected effects to special status plants and vegetation were found to be minor for both Forest Service and NPS proposed actions. None of the alternatives would be expected to result in significant direct, indirect, or cumulative effects to special-status plants or vegetation.

Effects Common To All Alternatives

Threatened, endangered, and proposed plants designated by the USFWS. There are currently no occurrences or suspected occurrences of plant species listed by the USFWS as threatened, endangered, or proposed nor is there suitable habitat for these species within the areas potentially affected by the actions. There are no direct, indirect, or cumulative effects expected and a “No Effect” determination was made for all alternatives. Because there are no effects, the actions would not result in any unacceptable impacts to vegetation and would be consistent with §1.4.7.1 of NPS Management Policies 2006.

Distinctive natural plant communities. The Forest Service project areas do not contain these natural plant communities identified by the CNHP. Therefore, there are no direct, indirect, or cumulative effects in any alternative.

Late-successional forests, including old-growth forests. The Forest Service project area does not contain these types of forests. Therefore, there are no direct, indirect, or cumulative effects in any alternative.

Unique ecosystems, biosphere reserves, and World Heritage Sites. There are unique ecosystems on the GRSA; however, there are no occurrences of unique ecosystems, biosphere reserves, or World Heritage Sites within the analysis area.

Rare or unusual vegetation (old growth, riparian, and alpine). There are no rare or unusual vegetation communities such as old growth, riparian, alpine, or CNHP distinctive natural plant communities affected by any proposed activities in the Forest Service or GRSA project areas. Therefore there are no effects to these vegetation types in any alternative.

Alternative 1 (No Action)

Forest Plan Amendment. This alternative proposes no management actions on the Baca Mountain Tract. Consequently, there would be no Forest Plan amendment and no allocation of MA prescriptions. This alternative could result in the following likely activities that could have an impact on special status plants and vegetation: (1) existing recreational use, (2) existing motorized use of the roads for administrative purposes and to access inholdings, (3) wildlife

herbivory, (4) wildfire suppression, and (5) development of the privately owned mineral estate. The effects of these possible activities are described for special status plants and vegetation below.

There would be a “No Impact” determination with negligible direct, indirect, or cumulative effects expected on sensitive plants because the current activities are expected to have insignificant effects on sensitive plants.

Noxious weed treatments could not occur under this alternative. The risk of potential expansion of noxious weeds may be slightly lower in this alternative since no new ground-disturbing management actions could occur on the Baca Mountain Tract. Cumulatively, the risk of weed spread still exists from animals and people as seed transport vectors, and from motor vehicles using the road network for administrative use and for access to private inholdings. The Baca Mountain Tract would continue to be at risk of noxious weed spread from adjacent land ownerships and inadvertent exotic plant species spread originating from residential landscaping and gardens of the Baca Grande subdivision.

Current vegetation impacts from recreationists and wildlife herbivory would be expected to have minor localized effects on the general vegetation. No management activities to correct concerns would be allowed under this alternative. Development of the privately owned mineral estate is possible, but there are no firm plans from which to base an effects analysis at this time. For the most part, the general vegetation would be expected to continue to grow, die, and be influenced predominately by natural processes. Overall, direct, indirect, and cumulative effects would be expected to be minor.

Permissible actions would be expected to have insignificant effects on late-successional forests and old growth. Fire suppression may, in the short term, preserve older forests. But, in the long term, using only a fire suppression strategy may create undesirable fuel buildups and put the Baca Mountain Tract and surrounding areas at greater risk of wildfire. No management activities to correct concerns would be allowed under this alternative. However, overall direct, indirect, and cumulative effects would be expected to be minor under this alternative.

Forest Service Projects. This alternative proposes no actions or projects on the Baca Mountain Tract. Consequently, there would be no new ground disturbance which would result in none or negligible effects on special-status plants and vegetation.

The risk of potential expansion of noxious weeds may be slightly lower in this alternative since no new ground-disturbing management actions could occur on the Baca Mountain Tract. Cumulatively, the risk of weed spread still exists from animals and people as seed transport vectors, and from motor vehicles using the road network for administrative use and for access to private inholdings. The Baca Mountain Tract would continue to be at risk of noxious weed spread from adjacent land ownerships and inadvertent exotic plant species spread originating from residential landscaping and gardens of the Baca Grande subdivision. Weed treatments could not occur under this alternative.

There would be no ground disturbance or vegetation disturbance under this alternative. Other ongoing activities would be expected to have insignificant effects on the general vegetation and no effects on late-successional forests and old growth. Therefore, there would be none to negligible direct, indirect, or cumulative effects.

National Park Service Projects. This alternative proposes no new management actions or ground disturbance on the GRSA. Other ongoing processes and activities permitted by the general management plan that could have an impact on special status plants and vegetation are: (1) existing recreational hiking and horseback riding, (2) wildfire suppression and fire use, (3) motorized use of the portion of the Liberty Road on the GRSA for administrative purposes and to access private inholdings, and (4) wildlife herbivory.

The risk of potential expansion of noxious weeds may be slightly lower in this alternative since no new ground disturbance is proposed on the GRSA. However, cumulatively the risk of weed spread still exists from animals and people as seed transport vectors, and for access to private inholdings. The GRSA would continue to be at risk of noxious weed spread from adjacent land ownerships and inadvertent exotic plant species spread originating from residential landscaping and gardens of the Baca Grande subdivision. Weed treatments could occur in this alternative under the GRSA weed treatment program.

There would be no ground disturbance or vegetation disturbance within the GRSA project area under this alternative. Other ongoing activities would be expected to have insignificant effects on the general vegetation. Therefore, there are no direct, indirect, or cumulative effects to vegetation.

Alternative 2

Forest Plan Amendment. This alternative proposes to amend the Forest Plan, allocate MA prescriptions, and implement project-level actions (see Chapter 2). The following actions would be permissive under this alternative: (1) recreational activities; (2) motorized travel on designated roads; (3) vegetation management including cutting, prescribed burning, and wildland fire use to benefit wildlife and the special interest area; (4) development of the privately owned mineral estate; and (5) continued wildlife herbivory. However, this does not necessarily mean every activity that is permissible within a MA prescription would occur.

Permissible activities in the Baca Mountain Tract could have some minor effects on sensitive plants. Table 3-6 displays these species and summarizes expected direct, indirect, and cumulative effects. The determination of effects on sensitive plants for this alternative is shown in Table 3-7.

Table 3-6. Effects analysis summary for sensitive plants with potential or known habitat in the Baca Mountain Tract

Species		Analysis Applicable to Alternatives 2, 3, and 4
Aquilegia chrysantha var. *rydbergii* *Astragalus ripleyi* *Botrychium furcatum* *Cypripedium parviflorum* *Eriophorum altaicum* var. *neogaeum* *Eriophorum chamissonis*	*Eriophorum gracile* *Machaeranthera coloradoensis* *Penstemon degeneri* *Salix arizonica* *Salix candida* *Salix serissima* *Utricularia minor*	There is overlap in the analysis area with potential habitat for these species. *Direct effects* could occur from permissible activities causing plants to be clipped, burned, or trampled. *Indirect effects* could arise from changes in nearby canopy cover of associated vegetation due to direct effects. However, the effects of this are uncertain. *Cumulative effects* tied to other past, present, and foreseeable activities in the analysis area would be expected to be minor.
Draba grayana *Draba smithii* *Gilia sedifolia*	*Neoparrya lithophila* *Ranunculus karelinii (R. gelidus* ssp. *grayi)*	There is overlap in the analysis area with potential habitat for these species. *Direct effects* are expected to be negligible since these species are associated with very rocky habitat not particularly targeted by any permissive activity that would disturb the species or the habitat to an appreciable extent. *Indirect effects* are not expected for these species since there are no proposed triggering actions that would lead to an effect occurring later in time or distance. *Cumulative effects* tied to other past, present, and foreseeable activities in the analysis area would be expected to be negligible.

Table 3-7. Sensitive plant effects determination for the Baca Mountain Tract by alternative

Scientific Name	Determination[1]	
	Alternative 1	Alternatives 2, 3, and 4
Aquilegia chrysantha var. *rydbergii*	NI	MAII
Astragalus ripleyi	NI	MAII
Botrychium furcatum	NI	MAII
Cypripedium parviflorum	NI	MAII
Draba grayana	NI	NI
Draba smithii	NI	NI
Eriophorum altaicum var. *neogaeum*	NI	MAII
Eriophorum chamissonis	NI	MAII
Eriophorum gracile	NI	MAII
Gilia sedifolia	NI	NI
Machaeranthera coloradoensis	NI	MAII
Neoparrya lithophila	NI	NI
Penstemon degeneri	NI	MAII
Ranunculus karelinii (R. gelidus ssp. *grayi)*	NI	NI
Salix arizonica	NI	MAII
Salix candida	NI	MAII
Salix serissima	NI	MAII
Utricularia minor	NI	MAII

[1] NI = No Impact
MAII = may adversely impact individuals, but not likely to result in a loss of viability on the planning area, nor cause a trend to Federal listing or a loss of species viability rangewide.

Canada thistle is known to occur in the Baca Mountain Tract. Known occurrences of invasive plant species also occur on areas adjacent to the Baca Mountain Tract. The risk of potential expansion of noxious weeds may be slightly higher under this alternative than Alternative 1 since this alternative allows for more management activities that could result in ground disturbance. However, the overall risk is expected to be kept low by following the inventory and treatment priorities outlined in the RGNF's Invasive Species Action Plan. Cumulatively, the risk of weed spread still exists from animals and people as seed transport vectors, and from motor vehicles using the road network for administrative use and to access private inholdings under this alternative.

Permissible actions would be expected to have minor effects on the general vegetation. Direct and indirect effects from recreation, use of roads and trails, and permissible vegetation management under the MA prescriptions (including cutting, prescribed burning, and wildland fire use) would be to benefit wildlife and the special interest area. Development of the private mineral estate is possible, but there are no firm plans from which to base an effects analysis at this time. For the most part, the general vegetation would be expected to continue to grow, die, and be influenced predominately by natural processes.

The permissible actions under this alternative would not be expected to negatively affect late-successional forests and old-growth forests. Recreation activities would be expected to minimally influence older forests. Motorized use of existing roads on the Baca Mountain Tract would have no effect on older forests. Vegetation management activities could have some minor effects to older forests, but the Baca Mountain Tract is generally dominated by older forests. Under the Forest Plan, any vegetation treatments proposed in future projects would be specifically evaluated for the possible impact on old growth, including any appropriate mitigation to eliminate or reduce impacts. Therefore, direct, indirect, and cumulative effects would be expected to be minor to insignificant.

Forest Service Projects. This alternative proposes to reconstruct 0.22 miles of the Liberty Road on the Baca Mountain Tract to the newly constructed Middle Parking Area, resulting in approximately 1.13 of ground disturbance. This would allow public motorized access to the new parking area. It would provide a special-use authorization to the Colorado Water Board for the construction and use of a new monitoring gauge on Deadman Creek. It would provide authorizations for private property inholding access. Finally, it would provide for the following Forest Service closures: (a) no public motorized travel past Middle Parking Area, (b) no OHVs, (c) no permitted livestock grazing, and (d) no camping within 0.25 mile of Middle Parking Area.

There are no sensitive plants in the project area. Therefore, there would be no direct, indirect, or cumulative effect expected on these plants.

There are no noxious weeds in the Baca Mountain Tract project area. Therefore, there would be no direct or indirect effect expected on these plants. The risk of potential expansion of noxious weeds may be slightly higher than Alternative 1 since there would be new ground disturbance to a portion of the Liberty Road and a new parking area would be constructed. Allowing public motorized access would be expected to slightly increase the risk of noxious weed spread relative to Alternative 1. Cumulatively, the risk of weed spread would still exist from animals and people as seed transport vectors similar to Alternative 1. The overall risk is expected to be kept low by following the inventory and treatment priorities outlined in the RGNF's Invasive Species Action Plan.

This alternative would result in a very small reduction (1.13 acres) of vegetation, directly affecting a rubber rabbitbrush/blue grama–needle-and-thread plant community. This community is very common below the pinyon pine-juniper zone in the project area and extends across the broad landscape throughout the adjacent GRSA to the west. Cumulatively, this represents an insignificant reduction of this plant community.

National Park Service Projects. This alternative proposes 3.03 miles of construction and reconstruction of the Camino Chamisa across the GRSA to the Liberty Road on the Baca Mountain Tract. Total new disturbance on GRSA lands would be approximately 7.34 acres.

Vegetation would be displaced, disturbed, and/or crushed in the footprint of the Camino Chamisa construction/reconstruction. No trees would be affected. Disturbed areas would be revegetated and rehabilitated following construction; therefore, removal and/or disturbance of vegetation in the project area is expected to result in negligible to minor adverse impacts to vegetation. Further, such minor or negligible impacts would not result in any unacceptable impacts to vegetation; the proposed actions are consistent with §1.4.7.1 of NPS Management Policies 2006.

This is expected to result in the following permissible actions on NPS lands that could have an impact on plants and vegetation: (1) recreational use, (2) wildlife herbivory, (3) public motorized use of a new proposed route on NPS lands (including administrative use and for those exercising pre-existing rights to access private property), and (4) wildfire suppression and fire use. With these permissible actions in mind, effects are described for special-status plants and vegetation below.

There are no known noxious weeds in the GRSA project area; therefore, there would be no direct or indirect effect expected on these plants. The risk of potential expansion of noxious weeds may be somewhat higher than Alternative 1 since there would be new ground disturbance through construction of the Camino Chamisa Road and the extension (800 feet) of the Camino Real across the Baca Grande to the GRSA boundary. Allowing public motorized access would be expected to slightly increase the risk of noxious weed spread relative to Alternative 1. Cumulatively, the risk of weed spread would still exist from animals and people as seed transport vectors similar to Alternative 1. The overall risk is expected to be kept low by following the GRSA weed treatment program.

Permissible actions would be expected to have insignificant effects on the general vegetation. Therefore, there would be only minor direct, indirect, or cumulative effects.

Alternative 3

Forest Plan Amendment. This alternative proposes to amend the Forest Plan, allocate MA prescriptions, and implement project-level actions (see Chapter 2). The following actions would be permissive under this alternative: (1) recreational activities; (2) recreational use of existing routes for non-motorized travel; (3) limited vegetation management (prescribed burning and wildland fire use) to mimic natural disturbance regimes; (4) motorized use of designated roads only for administration and permitted access to private inholdings; (5) development of the privately owned mineral estate; and (6) continued wildlife herbivory. However, this does not necessarily mean every activity permissible within a MA prescription would occur.

The effects expected to special-status plants are expected to be similar to Alternative 2.

Permissible actions would be expected to have minor effects on the general vegetation. Direct and indirect effects from recreation, use of roads and trails, and permissible vegetation

management under the MA prescriptions (including prescribed burning and wildland fire use) would be to benefit natural processes. Development of the privately owned mineral estate is possible, but there are no firm plans from which to base an effects analysis at this time. For the most part, the general vegetation would continue to grow, die, and be influenced predominately by natural processes. Overall, direct, indirect, and cumulative effects would be expected to be insignificant.

The permissible actions under this alternative would not be expected to negatively affect late-successional forests and old-growth forests and effects are expected to be similar to Alternative 2.

Forest Service Projects. This alternative would result in no new ground disturbance on the Baca Mountain Tract. It would provide authorizations for access to private property inholdings. Finally, it provides for the following Forest Service closures: (a) no public motorized travel in the Baca Mountain Tract, (b) no OHVs, and (c) no permitted livestock grazing.

There are no actions proposed in this alternative expected to impact sensitive plants or their habitat. Therefore, there would be no direct, indirect, or cumulative effect expected on these plants.

Effects to noxious weeds would be similar to Alternative 1, except management intervention would be possible under this alternative. Cumulatively, the risk of weed spread would still exist from animals and people as seed transport vectors similar to Alternative 1, but the overall risk is expected to be kept low by following the inventory and treatment priorities outlined in the RGNF's Invasive Species Action Plan.

Effects to vegetation are similar to Alternative 1 because there would be no ground disturbance or vegetation disturbance within the Baca Mountain Tract Project Area under this alternative. Other ongoing activities would be expected to have insignificant effects on the general vegetation. Therefore, there would be no direct, indirect, or cumulative effects to vegetation. There would be no ground disturbance or vegetation disturbance under this alternative. Effects expected to late-successional forests and old growth would be similar to Alternative 1.

National Park Service Projects. This alternative proposes to improve 0.2 mile (0.5 acre) of the existing Liberty Road on the GRSA and to provide public motorized access to the "Option 3" Parking Area (0.6 acre) on the GRSA for a total disturbance area of 1.1 acres.

Vegetation would be displaced, disturbed, and/or crushed in the footprint of the North Parking Area construction. A few pinyon and juniper trees would be affected. Disturbed areas would be revegetated and rehabilitated following construction; therefore, removal and/or disturbance of vegetation in the project area is expected to result in negligible to minor adverse impacts to vegetation. These minor or negligible impacts would not result in any unacceptable impacts to vegetation and the proposed activities are consistent with §1.4.7.1 of NPS Management Policies 2006.

This is expected to result in the following permissible actions on NPS lands that could have an impact on plants and vegetation: (1) recreation use, (2) wildlife herbivory, (3) public motorized use (0.2 mile) of the Liberty Road on NPS lands, (4) administrative use and permitted use of the Liberty Road to access private inholdings, and (5) wildfire suppression and fire use.

There are no noxious weeds in the GRSA project area; therefore, there would be no direct or indirect effect expected on these plants. The risk of potential expansion of noxious weeds may be slightly higher than Alternative 1 since there would be new ground disturbance associated with construction of the Option 3 Parking Area. Allowing public motorized access on the short stretch of the Liberty Road would be expected to slightly increase the risk of noxious weed spread relative to Alternative 1, but less than Alternative 2. Cumulatively, the risk of weed spread would still exist from animals and people as seed transport vectors similar to Alternative 1. The overall risk is expected to be kept low by following the GRSA weed treatment program.

Permissible actions would be expected to have insignificant effects on the general vegetation; therefore, there would be only minor direct, indirect, or cumulative effects.

Alternative 4

Forest Plan Amendment. This alternative proposes to amend the Forest Plan, allocate MA prescriptions, and implement project-level actions (see Chapter 2). The following actions would be permissive under this alternative: (1) recreational activities; (2) motorized travel on designated roads; (3) vegetation management including cutting, prescribed burning, and wildland fire use to benefit wildlife and the special interest area; (4) development of the privately owned mineral estate; and (5) continued wildlife herbivory. However, this does not necessarily mean every activity that is permissible within a MA prescription would occur.

The effects expected to special-status plants are expected to be similar to Alternative 2.

Effects to general vegetation would be expected to be similar to Alternative 2 with the exception that any proposed vegetation management actions would be designed to maintain or improve wildlife habitat. Effects to late-successional forests and old-growth forests would be similar to Alternative 2.

Forest Service Projects. This alternative proposes to reconstruct a portion (0.87 mile) of the Liberty Road on Baca Mountain Tract to the newly constructed South Parking Area. This would allow public motorized access to the new parking area. It would provide a special-use authorization to Colorado Water Board for construction and use of a new monitoring gauge on Deadman Creek. It would provide authorizations for private property inholding access. Finally, it would provide for the following Forest Service closures: (a) no public motorized travel past South Parking Area, (b) no OHVs, (c) no livestock grazing, and (d) no camping within 0.25 mile of South Parking Area. Total new disturbance on the Baca Mountain Tract from Liberty Road reconstruction and the South Parking Area construction would be approximately 2.71 acres.

Effects to special-status plants would be expected to be similar to Alternative 2, except the disturbance area is slightly higher under this alternative. This alternative would result in a very small reduction (2.71 acres) of vegetation. Constructing South Parking Area would affect a pinyon pine/rubber rabbitbrush/blue grama–sand dropseed plant community. This community is common in the project area and it extends along the foothills of the Sangre de Cristo Mountains on NFS lands. Reconstructing the Liberty Road would affect mostly a rubber rabbitbrush/blue grama–needle-and-thread plant community. This community is very common below the pinyon-juniper zone in the project area and extends across the broad landscape throughout the adjacent GRSA to the west. Cumulatively, disturbing these two plant communities represents an insignificant reduction of these types relative to the much larger landscape.

National Park Service Projects. This alternative proposes allowing public motorized access and improving 0.73 mile (1.79 acres) of the existing Liberty Road through the GRSA to the Baca Mountain Tract.

This is expected to result in the following permissible actions on GRSA that could have an impact on plants and vegetation: (1) recreation use, (2) wildlife herbivory, (3) public motorized use of an existing road on NPS lands, and (4) wildfire suppression and fire use.

Effects to noxious weeds would be expected to be similar to Alternative 2, except that the disturbance area is less under this alternative.

Permissible actions would be expected to have insignificant effects on the general vegetation and would be similar to Alternative 2; therefore, there would be only minor direct, indirect, or cumulative effects.

Cumulative Effects

Under alternative 1, vegetation would not be actively managed. For the most part, the general vegetation and late-successional forests would be expected to continue to grow, die, and be influenced predominately by natural processes. Noxious weeds may continue to spread from people and animals as transport vectors, but this is expected to be minor. Weeds may spread from the Baca Grande subdivision to the Baca Mountain Tract and vice versa. Sensitive plant species would not be expected to be negatively affected. Cumulative effects from past, present, and reasonably foreseeable actions over the next 10 years would be expected to be negligible.

Under the action alternatives, vegetation would be managed under the direction of the Forest Plan. Permissible activities and projects would not be expected to have notable effects on the general vegetation, sensitive plants, or late-successional forests. For the most part, the general vegetation would be expected to continue to grow, die, and be influenced predominately by natural processes. Noxious weeds occur in and around the analysis area. The risk of potential expansion of noxious weeds may be slightly higher than Alternative 1 since these alternatives allow for more management activities that could result in some new ground disturbance. Weeds may spread from the Baca Grande subdivision to the Baca Mountain Tract and vice versa. However, the overall risk is expected to be kept low by following the inventory and treatment priorities outlined in the RGNF's Invasive Species Action Plan. Cumulatively, the risk of weed spread still exists from animals and people as seed transport vectors, and from motor vehicles using the road network. Cumulative effects from past, present, and reasonably foreseeable actions would be expected to be negligible.

Wilderness

Scope of the Analysis

The scope of the analysis focuses on the potential effects to the wilderness resource that might be expected from each alternative. The analysis area is the Baca Mountain Tract and GRSA lands adjacent to the Baca Grande subdivision in relation to the wilderness resources within a 100-mile radius of the analysis area. This analysis uses the Wilderness Act of 1964 and the Forest Plan. A wilderness assessment would be included in the project record.

Existing Condition

There are 27 wilderness areas encompassing approximately 2,290,000 acres within 100 miles of the analysis area. The Great Sand Dunes Park and Preserve Act did not create any additional wilderness.

Forest Service. Twenty-two percent of the RGNF lies within wilderness areas. The Forest contains all or portions of four wilderness areas—Weminuche, La Garita, South San Juan, and Sangre de Cristo. Congress designated the Sangre de Cristo Wilderness in 1993; it now encompasses 228,044 acres. The Baca Mountain Tract shares approximately 9 miles of boundary with the Sangre de Cristo Wilderness Area. The Great Sand Dunes Park and Preserve Act created the Great Sand Dunes National Preserve from portions of the Sangre de Cristo Wilderness on the RGNF. The Forest now has approximately 387,360 acres of wilderness area. All wilderness on the Forest is managed under wilderness MA prescriptions to protect wilderness values.

National Park Service. The GRSA includes two existing wilderness areas, the entire 32,643-acre Great Sand Dunes Wilderness Area within the park and 42,941 acres of the Sangre de Cristo Wilderness Area within the Great Sand Dunes National Preserve. These areas are managed under the provisions of the general management plan (see Appendix G of the plan). The general management plan also proposed an additional 53,013 acres for wilderness designation. These areas would be managed for wilderness values until Congress acts on these recommendations.

Direct, Indirect, and Cumulative Effects

Alternative 1 (No Action)

Alternative 1 does not provide any management direction and current activities would continue. The minor impacts from current recreation use, primarily associated with mountaineering, would continue.

Effects Common to All Action Alternatives

None of the action alternatives are expected to result in significant direct, indirect, or cumulative effects to the wilderness resource.

Forest Service. The Great Sand Dunes Park and Preserve Act authorized the purchase of the surface rights, but not the oil, gas, and mineral rights under the Baca Ranch, creating a split estate. While the eastern portions of the Baca Mountain Tract have the capability of a potential wilderness, the Tract does not meet the availability requirements for a wilderness recommendation. This is because the Baca Mountain Tract is encumbered with a split estate status where the mineral rights are still privately owned. The Forest Service cannot prevent access to and the development of those mineral rights, which are incompatible uses that would negatively affect wilderness character and potential. The split estate precludes making a wilderness recommendation to add any portion of the Baca Mountain Tract to the Sangre de Cristo Wilderness at this time.

None of the projects would have any effect on the wilderness. Recreation use coming from the Baca Mountain Tract into the Sangre de Cristo Wilderness Area is expected to continue at low levels. This use could have some minimal impact on wilderness values. These uses are monitored through the Forest’s wilderness program. If unacceptable impacts occur, recreation

use could be restricted. Recreation use in the Sangre de Cristo Wilderness Area would also be assessed in the future comprehensive landscape-scale interagency recreation plan.

National Park Service. There are no effects to wilderness or proposed wilderness on the GRSA from any alternative. The alternatives would not have any adverse affect on the wilderness values for the proposed wilderness identified in the GRSA Management Plan.

Cumulative Effects

There are no known cumulative effects to wilderness. Although there are no current actions, Congress could act on the recommendations for wilderness proposed in the GRSA Management Plan.

Wildfire and Fuels

Scope of the Analysis

The scope of the analysis focuses on the potential effects and ability to respond to wildfire incidents and implement fuels treatments that might be expected from each alternative. The analysis area is the Baca Mountain Tract and GRSA lands adjacent to the Baca Grande subdivision.

Existing Condition

More than 80 percent of wildfires on the west side of the Sangre de Cristo Mountain Range are caused by lightning. Specific past actions in the analysis area that have had an effect on wildfire and fuels are livestock grazing and timber harvest from the Baca Ranch operations that date back to at least the latter half of the 19th century; the development and use associated with the towns of Crestone, Duncan, and Liberty, and the other settlements and homesteads in the area; and the more recent development of the Baca Grande subdivision. The long-term ranching and timber harvest activities created the existing vegetation and fuel conditions. For the most part, fire was suppressed on the Baca Ranch during this time. There is no evidence of past fuel treatment activities within the Baca Mountain Tract, most likely due the remote and rugged terrain on most of the area.

The extensive grazing that occurred on the grass and shrublands in the past may have also impacted the fire regime condition class by limiting the extent (size) of natural fires.

The existing fire and fuels condition consists of a generally west-facing slope which rises in elevation very rapidly, starting with grass/shrub (Landtype Association 12/Fire Regime II) and pinyon/juniper (Landtype Association 6/Fire Regime I and III) rising to mixed conifer pinyon/ponderosa pine/Douglas fir (Landtype Association 5 and 3/Fire Regime I and III) and on to spruce/fir (Landtype Association 1/Fire Regime V and IV). There are some areas that reach timberline and extend into the alpine zone to 14,000 feet (Landtype Association 4/Fire Regime V).

Fire regimes represent broad categories of the frequency, intensity, and extent or size of naturally occurring fires. Fire Regime I is generally considered to have frequent fires (every 1 to 35 years) with low intensity that has minimal impact on the overstory trees. Fire Regime II is fairly specific to brush and grass vegetation where the frequency is similar to Fire Regime I, but the intensity is considered high because the overstory vegetation of brush is usually burned. Fire Regime III frequencies are 35 to 100+ years and the intensity is mixed and variable. Fires

generally burn in a mosaic pattern of low intensity with minimal impact to the overstory trees mixed with areas where the fire moves into the tree crowns and the overstory is burned, although this type of overstory burning is generally less than 75 percent of the whole fire area. Fire Regimes IV and V have timber stand replacement fires. The fire frequency is 35 to 100+ years for Fire Regimes IV and 200+ years for Fire Regimes V.

Each fire regime also has a condition class which describes the existing fuel levels relative to the occurrence which would be expected under natural fire conditions. When an area within a specific fire regime does not experience fire within the frequency that would have occurred naturally, the live vegetation would become denser and the dead fuels would accumulate to levels uncharacteristic of the natural structure. Condition class 1 represents areas where fire or other disturbance has maintained the vegetation and dead fuels within naturally occurring levels. Condition class 2 represents those areas where there is a moderate lack of fire or other disturbance that has allowed increased density of live vegetation and accumulation of the dead fuels. Condition class 3 represents areas where there has been a high departure from the natural frequency of fire disturbance. This lack of fire or other disturbance would allow an increase in vegetation and fuels beyond the natural range of variability. Fires occurring in this condition class would tend to burn with uncharacteristic intensity and severity when compared to the natural range of variability.

Due to the past actions of aggressive fire suppression, grazing, and timber harvest activities, the lower elevation areas of the Baca Mountain Tract in Fire Regimes I and II are outside the natural fire regime, resulting in more areas in condition class 2 and 3.

The development of the Baca Grande subdivision created a wildland urban interface (WUI) where none existed before, along with its risks and management considerations. Local fire departments have responded to most fires with an aggressive initial attack response because their mission is to protect the residents and infrastructure of the subdivision and their concern for the WUI conditions which could develop into catastrophic wildfire. More recently, local fire departments and others have accomplished thinning and prescribed fire fuel treatment activities within the subdivision. Fire and fuel management are currently addressed in the GRSA Interagency Fire Management Plan, the Northern Saguache County and the Kundalini/Baca Fire Department Community Wildfire Protection Plans.

The northern portion of the Baca Mountain Tract shares a boundary with the Baca Grande subdivision. Structures within the subdivision vary in distance from the boundary. Structures on the north end of the subdivision are approximately 1 mile from the boundary and the structures become progressively closer towards the south where some structures lie within 0.25 mile of the boundary in the Cottonwood area. The subdivision also shares a boundary with the GRSA. Structures here are from 0.25 mile to immediately adjacent to the GRSA boundary. The GRSA would be conducting fuel treatment projects along its boundary with the subdivision to reduce the risk to structures.

The southern portion of the Baca Mountain Tract contains numerous historic wooden structures from the mining and homestead era. There also are three private inholdings with structures. One of these private inholdings includes the historic Liberty town site. This area is of special concern for wildfire management. Wildfire could easily destroy these structures.

The upper elevations of the Baca Mountain Tract share a 9-mile border with the Sangre de Cristo Wilderness Area. The wilderness area could be affected by human-caused wildfires originating from the lower elevations.

Under extreme conditions, the watersheds within the Baca Mountain Tract are at high risk of wildfire due to heavy fuels conditions, steep topography, and common windy conditions. A high intensity large scale wildfire could cause severe impacts to watersheds and domestic water supplies.

The fire regimes for the GRSA are discussed in the GRSA Interagency Fire Management Plan.

Direct, Indirect, and Cumulative Effects

Overall, expected effects to fire and fuels management were found to be minor for both Forest Service and NPS proposed actions. None of the alternatives would be expected to result in significant direct, indirect, or cumulative effects to fire and fuels. Alternatives 2 and 4 provided the most flexibility in conducting fuel reduction projects.

Alternative 1 (No Action)

Alternative 1 does not provide any management direction for wildfire actions or fuels treatments. Current activities would continue. The no-action alternative would not allow for any fuel treatment projects designed for ecosystem maintenance/enhancement or those designed to reduce wildfire effects on values at risk, such as federally owned or privately owned improvements and structures.

Under this alternative, all fires regardless of location or cause, would be suppressed. Other management options such as allowing naturally caused lightning fires to burn to provide a resource benefit would not be available. This alternative would result in additional accumulations of live and dead fuels over time. This could add to the conditions that would predispose the area to wildfires that burn with uncharacteristic severity or intensity, when compared to healthy, more resilient ecosystems. The potential increased intensity of the wildfires could create more complex firefighter and public safety issues and limit management options for protecting the values at risk. The potential increased risk of wildfire intensity could also increase the need for firefighting resources and raise suppression costs. Large, high intensity fires are harder to control.

This alternative would not allow fuels treatment projects on the Baca Mountain Tract. This would not be compatible with the GRSA Interagency Fire Management Plan or any fuel treatment/hazard mitigation plans developed by the local community/cooperators. This would compromise the efficiency and effectiveness of those fuel treatment plans and projects.

Effects Common to All Action Alternatives

Direct and Indirect Effects

Forest Service. All of the action alternatives amend the Forest Plan and provide management direction for fuels and wildfire management which is currently not in place. They provide essentially the same management ability to respond to fire incidents and/or implement appropriate fuels treatment. The action alternatives would allow for future fuel treatment projects designed to enhance or maintain ecosystem health, or reduce the potential effects of wildfire on values at risk.

There are multiple purposes for hazardous fuels treatments in the wildland urban interface, one of which is reducing the threat to structures. Fuel treatment projects around and within communities would be performed to reduce fire hazard, thus reducing the potential damage to community resources and to increase the safety for the public and firefighters. Fires burning

through a community could damage and destroy homes and other structures; damage other public and private property such as vehicles, fences, utility poles, and wires; and damage other urban infrastructure.

Additional damage could occur to the urban infrastructure by secondary fire impacts such as erosion and debris flows into ditches, storm drainage systems, and on to roads. Wildland fires in or near communities can also cause loss of habitat, damage to watersheds, negative aesthetic effects, and damage to vegetation.

Fuel treatments near the subdivision would be performed to modify burning conditions to achieve some combination of (a) reducing flammability, (b) reducing fire intensity, (c) reducing the potential for creating firebrands and crown fires, and (d) increasing firefighter safety and effectiveness. The amount of land to be treated to reduce the threat depends on the site-specific current structure of the vegetation, fuel loadings, topographic location, fire regime type, and firefighting concerns such as access.

In order to effectively reduce the threat to the community, which is located in a high fire hazard environment, it would be necessary to treat areas at a range of distances from structures. Treatments at some distance from the Baca Grande subdivision (a few to several miles) could reduce the direct threat to communities by being located in areas where the topography, wind conditions, and fuels between there and the community create the potential for spread to the community, or where a large or intense fire may cause indirect damage to the community.

Treatments near developed portions of the subdivision could reduce the threat to community infrastructure and/or local environmental resources. They could increase the safety of escape routes for residents and access routes for firefighters. Reducing spotting potential and production of fire brands in this zone could reduce the risk to structures.

One objective of some fuel treatment projects is to efficiently and safely treat portions of the landscape to achieve desirable conditions at both specific locations and for the landscape as a whole. Depending on how treatments are placed on the landscape, there could be fire reduction benefits outside the treated areas on the subsequent spread rate, size, and severity of wildfires and on the ease of suppression. The locations of treatments on the landscape could contribute to the development of defensible fuels profiles which rely on strategically located areas where forest canopy and fuels have been modified to affect fire behavior. Defensible fuels profile or fuel breaks could be critical to reducing the threat of crown fires to the Baca Grande subdivision. These would be at points in the landscape where fire control efforts could be conducted safely, decreasing areas of contiguous high hazard fuels; and provide buffers between areas of high and low importance for avoiding high intensity fires. Some landscape settings could be critical to the development of defensible fuels profiles. If some vegetation management tools such as prescribed fire and fuels reduction are limited, some critical landscape settings may not be treated. This lack of treatment could eliminate prescribed fire or compromise firefighter safety through the inability to reduce the wildland fire threat adjacent to the community.

All action alternatives would be equally compatible with the adjoining GRSA Interagency Fire Management Plan and any local community/cooperator plans of Northern Saguache County Fire Protection District and the Baca and Kundalini Fire Departments.

All of the action alternatives provide the full spectrum of response options or appropriate management response for a wildfire. These response options include: perimeter control and

suppression; confine and contain; and/or managing the fire to achieve other resource benefits which may be used on all or parts of a wildfire.

In order to reduce the effects on heritage resources, all wildfire responses would include measures to reduce the direct effects of fire and the indirect effects of erosion resulting from high intensity or severity fires, and any effects associated with fire suppression activities on heritage sites. Any future mechanical and/or prescribed fire fuel treatment projects would also require the appropriate site-specific protection measures to reduce or avoid impacts to any affected heritage resources.

All of the action alternatives could increase the convenience of public access to the Baca Mountain Tract to some degree. This increased public accessibility could result in a slight increase in visitor use over current levels, but there is no expected difference in the recreation use between the alternatives. This slight increase in recreation use is not expected to result in a measurable increase for unplanned human-caused fires in any action alternative.

The MA prescriptions proposed in the action alternatives all allow for fuels reduction treatments in the future. All future fuel treatment activities would comply with Forest Plan standards and guidelines, the Watershed Conservation Practices Handbook, the Forest Fire Management Plan and Forest Service Manuals 5140 and 5150, which would minimize the adverse effects of these activities. Fuel treatment projects must also comply with the MA prescription in which it occurs.

Under Alternative 3, the proposed 3.3 Backcountry MA prescription has additional constraints on tree cutting which could limit the effectiveness of fuel treatments and increase costs.

Areas with a priority for fuel treatments would include the WUI adjacent to the Baca Grande subdivision and the private inholdings and the areas with a concentration of at risk historic structures. The more accessible areas of the Baca Mountain Tract adjacent to the subdivision lie within the WUI and would have the highest priority for fuel treatments. These fuel treatments would be done in cooperation with other Federal agencies and the private landowners to ensure that they are mutually beneficial to reduce fuel loads and fire hazard. The Baca Grande subdivision, the Kundalini Fire Department, and Crestone have worked with the Colorado State Forest Service to complete a community wildfire protection plan (CWPP) which is a key component in this cooperative effort.

Under extreme conditions, the watersheds within the Baca Mountain Tract could be at high risk of wildfire due to heavy fuels. A large-scale wildfire would likely cause severe impacts to the watersheds and domestic water supplies (also see the “Aquatic Resources” section in this chapter). The proper function of the watershed would be impaired due to lack of vegetation and the resulting impacts to water quality from heavy sedimentation and changes in stream morphology. The risk of impacts to watersheds from wildfire could be reduced with fuel management projects.

None of the action alternatives are expected to result in significant direct, indirect, or cumulative effects.

National Park Service. Fire and fuel treatment on the GRSA is conducted under the current GRSA General Management Plan and the Interagency Fire Management Plan. The Interagency Fire Management Plan includes the GRSA, the Baca National Wildlife Refuge, and The Nature Conservancy. The GRSA has an ongoing fuel treatment program along its boundary with the Baca Grande subdivision which is outside the scope of this analysis.

Cumulative Effects

- Fire and fuel treatment on the GRSA is conducted under the current GRSA Interagency Fire Management Plan.
- GRSA is would be conducting fuel treatments along the Baca Grande subdivision boundary during summer of 2009.
- The local communities have plans for fire and fuels management. The Baca Grande subdivision and Kundalini Fire Department have a community wildfire protection plan. The town of Crestone is covered under the Northern Saguache Fire Protection District Community Wildfire Protection Plan. These plans do not currently address the risk of wildland fire to municipal watersheds.

Cumulative Effects

Under alternative 1, the response to any wildfire would be a suppression action and hazardous fuels would not be treated. This alternative would result in additional accumulations of live and dead fuels over time. This could add to the conditions that would predispose the area to wildfires that burn with uncharacteristic severity or intensity. Fire suppression may, in the short term, preserve the existing vegetation condition. However, in the long term, using only a fire suppression strategy may create undesirable fuel buildups and put the Baca Mountain Tract and surrounding areas at greater risk of wildfire. But this scenario is speculative beyond the cumulative effects temporal analysis period of 10 years. Regardless, the Baca Grande subdivision is at risk of wildfire from the Baca Mountain Tract and vice versa since their mutual boundary creates a WUI. Alternative 1 does not address WUI management risks and needs where the subdivision is adjacent to the Baca Mountain Tract. Cumulative effects from past, present, and reasonably foreseeable actions over the next 10 years would be expected to be minor while acknowledging the potential fuel build-up risks over longer periods of time.

All action alternatives would amend the Forest Plan and provide wildfire and fuels management direction for the Baca Mountain Tract. Future fuel treatment projects would be permissible and designed to be compatible with adjacent landowner and jurisdictional authorities. Fuels reduction would benefit the WUI between the Baca Mountain Tract and the Baca Grande subdivision. Fire and fuels treatment is ongoing or planned in the Baca Grande subdivision and Crestone (under Community Wildfire Protection Plans) and on the GRSA (under the GRSA Interagency Fire Management Plan). A predicted slight increase in recreation use of the Baca Mountain Tract is not expected to result in a measurable increase of unplanned human-caused fires. There are minor differences between the action alternatives; Alternative 3 with the proposed 3.3 Backcountry MA prescription has additional constraints on tree cutting which could limit the effectiveness of fuel treatments and increase costs. Overall, cumulative effects from past, present, and reasonably foreseeable actions would be expected to be negligible on fire and fuels.

Wildlife

Scope of the Analysis

According to the NPS's 2006 Management Policies, the NPS strives to maintain all components and processes of naturally evolving park unit ecosystems, including the natural abundance, diversity, and ecological integrity of animals. The Forest Service ensures that species viability is maintained across the Forest.

The scope of this analysis focuses on the possible impacts to special-status wildlife that might be reasonably expected from each alternative. A detailed analysis would be documented in a biological assessment/biological evaluation (BA/BE) for wildlife and in a wildlife report included in the project record. The NPS Environmental Screening Form was completed and is also in the project record.

For most wildlife species, the scope of this analysis is the Baca Mountain Tract and adjacent affected area along the northern boundary of the GRSA. The exception involves the Canada lynx and/or other wide-ranging species that require a larger scale of analyses such as lynx analysis units (LAUs) or big game data analysis units (DAUs) to adequately assess the potential influences of the project alternatives. Also included in this analysis are potential influences from the access routes and proposed parking areas and the associated access and recreational uses.

The scope of this analysis focuses on the potential effects of the project alternatives to five categories of wildlife species: threatened and endangered, sensitive, management indicator species, migratory bird species of concern, and special or unique habitats.

Cumulative effects consider the effects of past, present, and foreseeable future actions on wildlife species. The temporal context for the cumulative effects analysis begins from about 1870 and extends to 2019. The spatial context for most species is the Baca Mountain Tract and the immediate surrounding land including the GRSA, Baca National Wildlife Refuge, and the Baca Grande subdivision and private inholdings. However, wide-ranging and/or migratory species may also require a much larger cumulative effects analysis area. Areas of existing disturbance are also considered under cumulative effects.

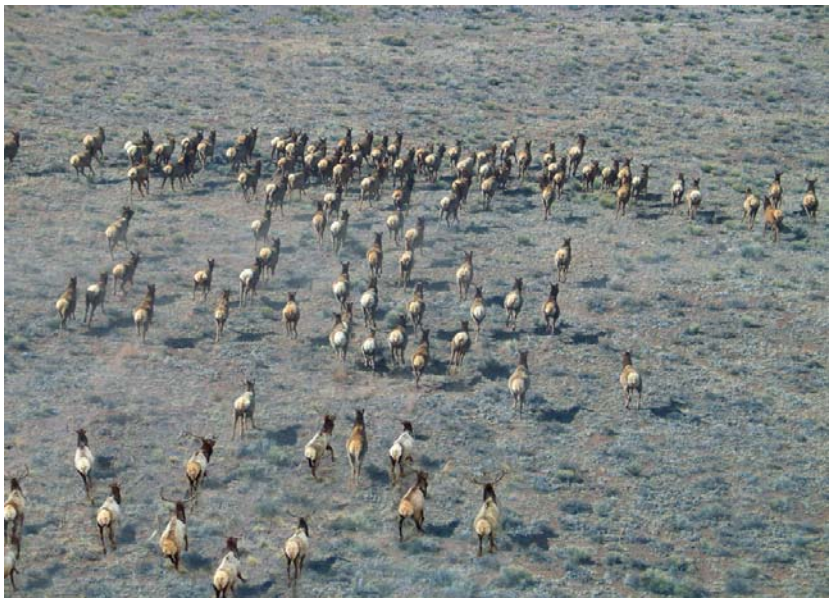
Past Actions that Have Affected the Existing Condition

Past actions have been previously discussed at the beginning of this chapter. Specific past actions that have had an effect on wildlife and wildlife habitats are the livestock grazing and timber harvest from the Baca Ranch operations that date back to at least the latter half of the 19th century. These activities changed vegetation and habitats. In addition to ranching, hard-rock mining was common in the analysis area and has created important bat habitat. Livestock ranching and mining led to a network of roads in the area that are still evident; some are in use today. The Liberty Road is part of the historical access on the former ranch property and it provides access to private inholdings on the Baca Mountain Tract. Roads result in small, linear corridors of disturbed vegetation and can have negative influences on some wildlife species. Recreational use has affected some wildlife species. The bighorn sheep are becoming habituated to human contact and recreation use in proximity to the subdivision has affected habitats and populations.

While Baca Ranch operations had an effect on habitat conditions, the ranch also provided large-scale habitat protection and seclusion habitat for wildlife for over 100 years. Public access and hunting were limited during this period.

Existing Condition

Elevations vary from about 8,000 feet along the foothills of the Sangre de Cristo Mountain Range to over 14,000 feet on Kit Carson Peak, and provide a broad elevational gradient of wildlife habitats. The vegetative conditions of these habitats are described in the “Vegetation” section; fish are discussed in the “Fisheries Resources” section. The riparian ecosystem habitats in the analysis area are relatively small in size, but provide important wildlife habitat for a



Elk herd on the GRSA

number of species. The historic mining activity has resulted in 17 known portals on the Baca Mountain Tract, some of which are important to sensitive bat species.

Baseline information for wildlife species occurrences is somewhat limited because the Baca Ranch was in private ownership until recently. Surveys conducted for this analysis have documented 56 bird species, 17 mammals, 2 amphibians, and 1 reptile species occurring in the analysis area. Biological assessment work on the adjacent private lands by the Colorado Natural Heritage Program documented several additional bird, mammal, amphibian, and reptile species, and it is likely that at least a few of these species also occur on the analysis area. There is extensive wildlife information on the GRSA documented in the GRSA Interagency Wildfire Management Plan and Biological Assessment and in the 2005 GRSA Avian Inventory report incorporated here by reference. Wildlife surveys and analysis by all three Federal agencies would continue.

The existing conditions for the wildlife categories are addressed below.

Threatened and Endangered Wildlife Species. The only federally-listed threatened and endangered species with potential occurrence and habitat in the analysis area is the Canada lynx. Lynx general foraging habitat is mature or late successional spruce-fir forests and aspen/willow/shrub vegetation, while its denning and winter foraging habitat is late-successional forests. To date, no lynx have been found in the analysis area although they may travel through.

The Baca Mountain Tract is part of the Sangre de Cristo North Lynx Analysis Unit. There are approximately 1,900 acres of denning habitat, 1,300 acres of winter habitat, and 1,900 acres of other habitat for a total of 5,100 acres of suitable lynx habitat on the Baca Mountain Tract. The remainder is considered non-habitat that does not support lynx or their primary prey.

Southwest willow flycatcher, bald eagle, Mexican spotted owl, and yellow-billed cuckoo may be found on the GRSA and RGNF, but do not occur in the analysis area. Other species such as the humpback chub and the Uncompahgre fritillary butterfly do not occur in the area.

Forest Service Regional Sensitive Wildlife Species. The Forest Service has a regional sensitive species list used to identify species of concern not categorized as threatened and endangered. Eighteen of these sensitive species have potential habitat and seven of these are known to occur in the analysis area. Table 3-8 displays the sensitive species and their occurrence and general habitats in the analysis area. A brief summary of the existing condition for each sensitive species is described below.

Table 3-8. Forest Service regional sensitive species with occurrence and general habitat descriptions within the analysis area

Sensitive Species	Suitable Habitat Within or Adjacent to the Analysis Area	Species Occurrence Within or Near Analysis Area	Basic Habitat Description
Northern leopard frog *Rana pipiens*	Yes	Yes, found on adjacent Baca Grande subdivision	Mid to low-elevation riparian and wetland areas.
Rio Grande cutthroat trout *Oncorhynchus clarkii virginalis*	Yes	Yes	Streams, rivers, and lakes. Most frequently found in headwaters. Federal candidate for listing under the ESA.
Rio Grande chub *Gila pandora*	Yes	Yes, found on adjacent Baca National Wildlife Refuge	Flowing pools of headwaters, creeks, and small rivers, often near inflow of riffles and in association with cover such as undercut banks and plant debris.
Rio Grande sucker *Catostomus plebeuis*	Yes	Yes, found on adjacent Baca National Wildlife Refuge	Pools, runs, and riffles of small to moderately large streams; usually over gravel and/or cobble.
American peregrine falcon *Falco peregrinus anatum*	Yes	Probable	Cliff habitat over 200 feet high with suitable ledges for nest construction.
American three-toed woodpecker *Picoides tridactylus*	Yes	No	Spruce/fir forests primarily, dependant upon bark beetle populations and diseased trees. Responsive to recently burned areas.
Boreal owl *Aegolius funereus*	Yes	No	Mature spruce/fir and mixed conifer forest with preference for wet areas for foraging.
Brewer's sparrow *Spizella breweri*	Yes	Yes	Strongly associated with sagebrush in areas with scattered shrubs and short grass; to lesser extent in mountain mahogany, rabbit brush, and other lands with shrubs or large openings in pinyon-juniper.
Flammulated owl *Otus flamineolus*	Yes	No	Secondary cavity nesters, prefers open forests for foraging, understory conifers for roosting. Occupies open ponderosa pine or forests with similar features (dry montane conifer or aspen, with dense saplings).
Lewis's woodpecker *Melanerpes lewis*	Yes	No	Open pine forests, burnt-over areas with snags and stumps, riparian and rural cottonwoods, and pinyon-juniper woodlands.
Northern goshawk *Accipter gentiles*	Yes	Probable	Mature forest generalist. On the RGNF, often found in mixed conifer/aspen stands; primarily nests in mature aspen locally.

Olive-sided flycatcher *Contopus cooperi*	Yes	Yes	Mature spruce/fir or mixed-con forests with preference for natural clearings, bogs, streams, and lake shores with snags, wildfire, and logged areas with standing dead trees.
White-tailed ptarmigan *Lagopus leucurus*	Yes	Yes	Alpine tundra, especially in rocky areas with sparse vegetation. Summer habitats include moist, low-growing alpine vegetation. Canopy cover of willow at winter feeding sites preferred.
American marten *Martes americana*	Yes	No	Spruce/fir and mixed conifer forests with complex physical structure including large downed material.
Fringed myotis *Myotis thysanodes*	Yes	No	Desert, grassland, and woodland habitats. Roosts in caves, mines, rock crevices, buildings, and other protected sites.
North American Wolverine *Gulo gulo luscus*	Yes	No	Remote subalpine and spruce/fir forested areas. Overall, this species utilizes a wide range of habitat types as it is very mobile.
Rocky Mountain bighorn sheep *Ovis canadensis canadensis*	Yes	Yes, population supplemented by CDOW in 1945	Rocky cliffs with adequate forage, water, and lambing grounds within mountainous country. Occur in Game Management Units S08 and S09.
Townsend's big-eared bat *Corynorhinus townsendii townsendii*	Yes	Yes	Forages in semi-desert shrublands, pinyon-juniper woodlands and open montane forests. Roosts in caves, mines, and mature forests.

Northern leopard frog: The northern leopard frog has been found within relatively flat riparian habitat on the adjacent Baca Grande subdivision. It is possible that the species may also have suitable habitat within the lower reaches of perennial streams such as Deadman Creek, or in an existing pond system associated with one of the mining portals. Surveys at this pond system also found the first known occurrence of Woodhouse's toad on the RGNF. Concerns with this species are primarily associated with human activities that may influence riparian habitat conditions and/or water quality and quantity. These activities include motorized vehicle use at riparian crossings and recreational activities along riparian areas. There is no potential habitat for the northern leopard frog associated with any of the road construction/reconstruction or parking area construction activities.

Rio Grande cutthroat trout: This species is also discussed in the "Fisheries Resources" section. Native cutthroat occur in the headwaters of Deadman and Cottonwood Creeks. Recent survey efforts failed to detect cutthroat trout in the analysis area, but the species has been found in previous surveys on Deadman Creek in the GRSA. Other non-native trout occur on the Baca Mountain Tract. While streams in the project area are capable of supporting native cutthroat trout, these have been out-competed by introduced non-native trout species. Activities in streams can impact trout habitat.

Rio Grande chub: This species is also discussed in the "Fisheries Resources" section. In 1981, chubs were documented in only 12 streams within the Rio Grande Basin. Since 1992, an additional 5 streams have been stocked bringing the total number of populations within the basin to 17. Three chub populations are known to occur on the RGNF. Recently, a new chub population was documented in Crestone Creek on the Baca National Wildlife Refuge, less than 10 miles from the streams within the analysis area. Surveys conducted within the analysis area failed to find any additional Rio Grande chub populations.

Rio Grande sucker: This species is also discussed in the "Fisheries Resources" section. Rio Grande suckers are known to occur in 11 streams within the Rio Grande Basin in Colorado. Only two of these streams have historic self-sustaining populations; the remaining populations have been reestablished through stockings. Five of the re-established streams are located on the RGNF. Recently, a new sucker population was found in Crestone Creek on the Baca National Wildlife Refuge, less than 10 miles from the streams within the analysis area. Surveys conducted within the analysis area failed to find any additional Rio Grande sucker populations.

American peregrine falcon: Although not documented by current survey efforts, local information suggests that there may be a peregrine falcon aerie in one of the side canyons on the Baca Mountain Tract. This location is several miles from the Liberty Road and any of the proposed parking areas.

American three-toed woodpecker: The occurrence of northern three-toed woodpeckers was not documented during any of the survey efforts. However, these efforts were primarily limited to the mid- and lower-analysis area while most potential habitat exists in the higher elevations where mixed-conifer forests occur. There is no potential habitat for this species near the Liberty Road or any of the parking area options.

Boreal owl: Boreal owls are closely associated with late-successional spruce-fir forests in the analysis area. Although survey efforts have occurred, this species has not been documented in the Sangre de Cristo range. There is no potential habitat for this species near the Liberty Road or any of the proposed parking areas.

Brewer's sparrow: Brewer's sparrow is fairly common in the lower elevations of the analysis area, primarily in association with dense brush cover. This species occurs in rabbitbrush-grassland habitats. There is potential habitat for this species in various locations adjacent to the Liberty Road, but not within any of the proposed parking areas.

Flammulated owl: The flammulated owl breeds in mature ponderosa pine habitat on the RGNF. Approximately 1,000 acres of this potential habitat occurs on the Baca Mountain Tract. Although it has not been found, it is probable that the species is present in the lower elevation pine habitats. Most potential habitat occurs near the south end of the Baca Mountain Tract near the GRSA boundary. There is no potential habitat for this species within any of the proposed parking areas.

Lewis' woodpecker: The Lewis' woodpecker is closely associated with low elevation riparian habitat in the San Luis Valley, particularly late-successional cottonwood stands where nesting occurs. This species has not been found in the analysis area, although good potential habitat occurs along Deadman Creek. There is no potential habitat for this species within any of the proposed parking areas.

Northern goshawk: Nesting habitat for the northern goshawk consists primarily of mature aspen and/or aspen-conifer mixed stands. There is approximately 250 acres of potential nesting habitat for this species on the Baca Mountain Tract. This habitat occurs primarily within riparian corridors in close proximity to perennial streams. The northern goshawk is known to occur on the Baca Mountain Tract and unoccupied nests were located during survey efforts. There is no potential habitat for this species near the Liberty Road or any of the proposed parking areas. However, nesting activities may be influenced by recreational activities.

Olive-sided flycatcher: The olive-sided flycatcher occurs on the Baca Mountain Tract. Most of the suitable habitat for this species occurs at higher elevations in spruce-fir or mixed-conifer forest in close proximity to riparian areas. There is no potential habitat for this species near the Liberty Road or any of the proposed parking areas.

White-tailed ptarmigan: The white-tailed ptarmigan occurs on the Baca Mountain Tract. The ptarmigan is primarily an alpine species and generally occurs above timberline. However, lower elevation riparian habitat may also be sought out during the winter. There is no potential habitat for this species near the Liberty Road or any of the proposed parking areas. Recreational activities are expected to have little impact on ptarmigan.

American marten: The American marten is considered a fairly common species on the RGNF in suitable late-successional spruce-fir and mixed conifer habitat. The presence of this species is suspected, but not yet confirmed on the Baca Mountain Tract. There is approximately 2,000 acres of suitable marten habitat. There is no potential marten habitat near most of the Liberty Road or any of the proposed parking areas.

Fringed myotis: The fringed myotis bat is primarily a cave-dwelling species, but would also use large snags as roosting habitat in lower-elevation ponderosa pine and pinyon-juniper habitat. This species has not yet been detected in the San Luis Valley. It was not detected during bat surveys at the abandoned mine features. There could be potential day roost habitat for the fringed myotis near South Parking Area.

North American wolverine: Wolverines were historically present, but are not known to exist in Colorado any longer. There may be a few individuals in the remote backcountry of the State.

None of the historic sightings of wolverine on the RGNF come from the Sangre de Cristo Range. A small amount of potential wolverine habitat (about 30 acres) occurs on the Baca Mountain Tract. All potential wolverine habitats occur in high elevation alpine areas away from the Liberty Road or any of the proposed parking areas.

Rocky Mountain bighorn sheep: Rocky Mountain bighorn sheep occur primarily at the high elevations in the alpine and subalpine habitats of the Baca Mountain Tract. This species is discussed in more detail in this chapter under "Issue 4: Big Game Management" section.

Townsend's big-eared bat: Historic hard-rock mining created over 17 abandoned mines shafts on the Baca Mountain Tract. Surveys found a large number of Townsend's big-eared bat using two mine complexes as a maternity roost. Four other species of bats were also found at a small pond below one of the mine complexes. This pond habitat is important to bat species and could be adversely impacted by poorly designed reclamation activity. This is the same habitat occupied by the previously mentioned Woodhouse's toad.

Rio Grande National Forest Management Indicator Species. Management indicator species (MIS) are species used by the Forest Service to represent similar species and habitats which respond similarly to management activities. MIS are evaluated in projects as part of Forest Plan monitoring to ensure that wildlife population viability is being maintained across the Forest. The RGNF uses nine MIS. Table 3-9 provides the terrestrial MIS for the RGNF and their occurrence and habitat on the Baca Mountain Tract.

Table 3-9. Management indicator species for the Rio Grande National Forest with occurrence, and general habitat descriptions within the analysis area

Management Indicator Species	Representative Habitat and Land Type Associations (LTAs)	Species Found in Analysis Area	General Habitat Description Within the Baca Mountain Tract
Mule Deer	Forest-wide habitats; all LTAs	Yes	Habitat and populations are present in the analysis area.
Elk	Forest-wide habitats; all terrestrial LTAs	Yes	Habitat and populations are present in the analysis area.
Wilson's Warbler	Riparian-willow habitat; LTA 10	No	Species not detected during surveys, but there are approximately 10 acres of potential habitat. Known to occur in GRSA alpine outside of analysis area.
Lincoln's Sparrow	Riparian-willow habitat; LTA 10	No	Species not detected during surveys, but there are approximately 10 acres of potential habitat. Known to occur in GRSA Preserve outside of analysis area.
Vesper Sparrow	Montane grassland habitat; LTA 8, 9, and 12	Yes	Habitat and populations are present in the analysis area, there are approximately 2,000 acres of potential habitat.
Pygmy Nuthatch	Mature to late successional ponderosa pine; LTA 5	No but likely to occur	Habitat present in the analysis area; there are approximately 1,000 acres of potential habitat. Known to occur in GRSA woodlands outside of analysis area.
Brown Creeper	Mature to late successional spruce/fir and mixed-conifer; LTAs 1, 3, and 13	No	Habitat and populations are present in the analysis area; there are approximately 2,500 acres of potential habitat. Known to occur in GRSA woodlands outside of analysis area.
Hermit Thrush	Mature to late successional spruce/fir and mixed-conifer; LTAs 1, 3, and 13	No	Habitat and populations are present in the analysis area; there are approximately 3,500 acres of potential habitat. Known to occur in GRSA outside of analysis area.
Rio Grande Cutthroat Trout	Streams; LTA 10	Yes	Habitat and populations are present in and adjacent to the analysis area.

The Baca Mountain Tract provides potential habitat for all nine MIS. Surveys have found four species occurring within or adjacent to the analysis area. Pygmy nuthatch is likely to occur.

Mule deer: Mule deer are found throughout the analysis area, but are not common. CDOW population objectives for mule deer populations are not being met. The cause for this is not known but the high numbers of elk are likely a contributing factor. Mule deer use various seasonal habitat types on the Baca Mountain Tract and GRSA. This species is discussed in more detail in this chapter under the "Issue 4: Big Game Management" section.

Rocky Mountain elk: Elk are found in high numbers throughout the analysis area. The elk population is substantially above CDOW population objectives. As with deer, elk use various seasonal habitat types on the Baca Mountain Tract and GRSA. This species is discussed in more detail in this chapter under the "Issue 4: Big Game Management" section.

Vesper sparrow: There are about 1,900 acres of suitable vesper sparrow habitat within the analysis area and the species is commonly found. The habitat could potentially support 190 pairs. The vesper sparrow's grassland habitat occurs along the lower elevations of the analysis area. The birds can be disturbed by activities within the grassland habitat and could be affected by the roads and parking areas. There is also a concern that the high numbers of elk could also be impacting the species and its habitat.

Rio Grande cutthroat trout: Rio Grande cutthroat trout are discussed in the "Fisheries Resources" section of this chapter.

Pygmy nuthatch: There is an estimated 1,000 acres of mature to late successional ponderosa pine potential pygmy nuthatch habitat in the analysis area. No pygmy nuthatch were found during surveys, but the species is likely to occur.

Migratory Bird Species of Conservation Concern. This analysis addresses the USFWS's migratory birds of conservation concern. The analysis area falls within the Southern Rocky Mountains Physiographic Area (Area 62) of the Southern Rockies Colorado Plateau Bird Conservation Region (BCR 16). Table 3-10 identifies the birds of conservation concern in BCR 16 which occur in the analysis area and their habitats.

Table 3-10. Occurrence, general habitat descriptions, and potential project influence for BCR 16 birds of conservation concern within the analysis area

Species	General Habitat	Occurrence in Analysis Area
Golden Eagle	Cliffs/grasslands	Possible
Peregrine Falcon	Cliffs	Possible
Flammulated Owl	Ponderosa pine/snags	Possible
Lewis's Woodpecker	Riparian cottonwood	Possible
Pinyon Jay	Pinyon/Juniper	Yes
Virginia's Warbler	Riparian scrub	Yes

The pinyon jay and Virginia's warbler were the only birds of conservation concern found during surveys on the analysis area. Four other bird species; golden eagle, peregrine falcon, flammulated owl, and Lewis' woodpecker; could occur or have habitat present within the analysis area.

GRSA Species of Management Concern. The GRSA Species of Management Concern is used to identify species of concern not categorized as threatened and endangered. The twelve species on the list are:

- Rio Grande cutthroat trout
- *Amblyderus triplehorni* (endemic beetle)
- *Amblyderus werneri* (endemic beetle)
- Great Sand Dunes tiger beetle (endemic beetle)
- Slender spiderflower (vascular plant associated with wetlands)
- *Copablepharon picta* (endemic moth)
- *Eleodes hirtipennis* (endemic beetle)
- *Proctacanthus* sp. (endemic robber fly)
- Elk
- Bristlecone pine
- Limber pine
- Narrowleaf cottonwood

These species of concern occur in the Park, but only the elk is known to occur in the GRSA portion of the analysis area. Elk is discussed under "Management Indicator Species." Rio Grande cutthroat trout do not occur in the GRSA portion of the analysis area (it is also discussed under "Management Indicator Species" and in the "Fisheries Resources" section.

Special Habitats. Riparian ecosystems and bighorn sheep habitat are considered special habitats in the Baca Mountain Tract. Riparian areas are relatively limited in size in the analysis area, but provide important wildlife habitat for a number of species. Current riparian habitat conditions are considered good to excellent. Riparian areas can be affected by recreational use. There are also concerns over elk impacts and juniper encroachment into some of the Baca Mountain Tract riparian zones.

Bighorn sheep habitat is relatively uncommon on the RGNF and is critical for bighorn sheep viability. This analysis uses CDOW's bighorn sheep habitat mapping which indicates there is approximately 7,000 acres of bighorn sheep habitat at the higher elevations on the Baca Mountain Tract.

Direct, Indirect, and Cumulative Effects

The following provides a summary of the estimated effects of the alternatives on the wildlife species within each species category.

Determination Summary for Federally Listed Threatened and Endangered Species

The threatened and endangered animal species effects are summarized from the detailed biological assessment (BA) for terrestrial and aquatic wildlife species and the NPS environmental screening form that will be included in the final project record. There are no records of Federal threatened or endangered species or state-listed species or designated critical or essential habitat on the GRSA within the proposed project area. No threatened, endangered, or other species of concern are known to occur in the project area.. Of the four federally-listed species associated with the RGNF, only the Canada lynx has suitable or potential habitat on the Baca Mountain Tract. The lynx is not known to occur in the analysis area, but are thought to pass through. None of the alternatives are expected to result in significant direct, indirect, or cumulative effects to federally-listed wildlife species. There is a “No Effect” determination for the lynx and all other threatened and endangered species under all alternatives. Because there are no effects, the actions would not result in any unacceptable impacts to threatened and endangered animal species and would be consistent with. §1.4.7.1 of NPS Management Policies 2006.

Determination Summary for Forest Service Regional Sensitive Species

The effects to Forest Service regional sensitive species are summarized from the detailed BE for terrestrial and aquatic wildlife species that would be included in the project record. Eighteen sensitive species have potential habitat available in the analysis area and seven of these are known to occur in the analysis area. The determination for these sensitive animal species by alternative is described in Table 3-11. There is little difference between the effects of the alternatives on sensitive species because the size and scale of the project is so limited. There is a “No Impact” determination for 16 of the sensitive species under all alternatives. There is a “May Impact” determination for the northern goshawk, but no habitat would be affected under all alternatives. There is a “May Impact” determination in Alternative 3, and a “Beneficial Impact” determination in Alternatives 2 and 4 for bighorn sheep, but no habitat would be affected in any alternative.

Table 3-11. Sensitive animal species determination summary on the Baca Mountain Tract by alternative

Species	Determination [1]			
	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Northern Leopard Frog	No Impact (NI) Habitat Not Affected	NI	NI	NI
Rio Grande Cutthroat Trout	No Impact (NI) Habitat Not Affected	NI	NI	NI
Rio Grande Chub	No Impact (NI) Habitat Not Affected	NI	NI	NI
Rio Grande Sucker	No Impact (NI) Habitat Not Affected	NI	NI	NI
Peregrine Falcon	No Impact (NI) Habitat Not Affected	NI	NI	NI
Three-toed Woodpecker	No Impact (NI) Habitat Not Affected	NI	NI	NI
Boreal Owl	No Impact (NI) Habitat Not Affected	NI	NI	NI
Brewer's Sparrow	No Impact (NI) Habitat Not Affected	NI	NI	NI
Flammulated Owl	No Impact (NI) Habitat Not Affected	NI	NI	NI
Lewis Woodpecker	No Impact (NI) Habitat Not Affected	NI	NI	NI
Northern Goshawk	May Impact (MI) Habitat Not Affected	May Impact (MI) Habitat Not Affected	May Impact (MI) Habitat Not Affected	May Impact (MI) Habitat Not Affected
Olive-sided Flycatcher	No Impact (NI) Habitat Not Affected	NI	NI	NI
White-tailed ptarmigan	No Impact (NI) Habitat Not Affected	NI	NI	NI
American Marten	No Impact (NI) Habitat Not Affected	NI	NI	NI
Fringed Myotis	No Impact (NI) Habitat Not Affected	NI	NI	NI
Wolverine	No Impact (NI) Habitat Not Affected	NI	NI	NI
Rocky Mountain Bighorn Sheep	May Impact (MI) Habitat Not Affected	Beneficial Impact (BI)	May Impact Habitat Not Affected	Beneficial Impact (BI)
Townsend's Big-eared Bat	No Impact (NI) Habitat Not Affected	NI	NI	NI

[1] Definition of Terms:
NI - No Impact: No measurable impact on individuals.
MI - May Impact: May adversely impact individuals, but not likely to result in a loss of viability in the Planning Area, nor cause a trend toward Federal listing.
BI - Beneficial Impact: Beneficial impact anticipated for individuals.

Rio Grande National Forest Management Indicator Species. Four MIS—brown creeper, hermit thrush, pygmy nuthatch, and Rio Grande cutthroat trout—have both habitat and populations that occur in portions of the analysis area. These species habitats would not be affected by any alternative so there would be no measurable effect on these species. The abundance of these species is tied to other factors outside of the analysis area. The Rio Grande cutthroat trout is also discussed in the "Fisheries Resources" section.

The Wilson's warbler and Lincoln's sparrow have not been found in the analysis area, but both species are likely to be present in the riparian cottonwood habitats. However, these habitats would not be directly affected by any of the activities proposed in the action alternatives so there would not be any measurable effects on populations or habitats for these species. All the alternatives would have a similar, negligible influence to habitats from recreation use in the riparian areas. The abundance of these species is tied to other factors outside of the analysis area. Pygmy nuthatch has not been found in the analysis area, but its occurrence is likely. Pygmy nuthatch's ponderosa habitat would not be directly affected by any of the alternatives so there would not be any measurable effects on populations or habitat for these species.

Both vesper sparrow and its grassland habitat occur in portions of the analysis area. Vesper sparrow habitat could be affected by the proposed roads and parking areas in Alternatives 2, 3, and 4.

Mule deer and elk occur in the analysis area and their habitat is widespread. These species could be affected both positively and negatively by the different alternatives. These two species are also discussed in more detail in this chapter in the "Issue 4: Big Game Management" section.

Migratory Bird Species of Conservation Concern. The effects of the alternatives on the migratory bird species of concern are presented in Table 3-12. Some migratory birds may be potential transients of the general area, but the immediate project area contains little to no suitable habitat for migratory birds. The pinyon jay and Virginia's warbler are the two birds of conservation concern species known to occur on the analysis area. The Virginia's warbler riparian habitat would not be directly affected by any action alternative. Pinyon jay habitat is affected by some of the alternatives. There are no known nesting sites in this area, and these lands are not vital for foraging or roosting. Four other species—golden eagle, peregrine falcon, flammulated owl, and Lewis' woodpecker—have not been documented, but habitat exists and they could potentially be present in the analysis area. The action alternatives would not affect the habitat of any of these species.

Construction-related noise could potentially disturb transient bird species, but these adverse impacts would be (1) temporary, lasting only as long as construction, and (2) negligible, because suitable habitat for transient birds is found throughout the region. Recreation activities under any alternative could have a minor effect on individuals during the nesting season. To ensure protection for all of these species and the potential for any other migratory bird species, the project design criteria require a survey for migratory bird nests of any species before disturbance activity can begin. If an active nest is discovered, ground-disturbing activities would be delayed until the young birds have fledged. This should minimize the effects on migratory birds under all the action alternatives. The golden eagle is also protected under the provisions of the Bald and Golden Eagle Protection Act.

Impacts to transient bird species would be temporary and negligible and would not result in any unacceptable impacts. The proposed activities on the GRSA are consistent with §1.4.7.1 of NPS Management Policies 2006.

Table 3-12. Potential effects on birds of conservation concern within the analysis area by alternative

Species	Effect of Alternatives
Golden Eagle	No Effect. No potential nests near any proposed areas of disturbance.
Peregrine Falcon	No Effect. No habitat or known nests near any proposed areas of disturbance. Also evaluated as an R2 sensitive species.
Flammulated Owl	No Effect (Liberty Road or parking area options would not impact ponderosa pine stands). No ponderosa pine stands or habitat or known nests near any proposed areas of disturbance. Also evaluated as a sensitive species.
Lewis's Woodpecker	No known nests near any proposed areas of disturbance. Vehicle use on existing roads would not influence potential habitat. Also evaluated as a sensitive species.
Pinyon Jay	Potential minor effect. North and South Parking Areas would each disturb approximately 0.6 acres of pinyon-juniper habitat.
Virginia's Warbler	No Effect. No habitat or known nests near any proposed areas of disturbance. Vehicle use on existing roads would not influence potential habitat.

Special or Unique Habitats. Current riparian ecosystem habitat conditions are considered good to excellent. Riparian habitats are provided protection by the design criteria, Forest Plan standards and guidelines, and the measures in the Water Conservation Handbook. Effects to riparian areas are discussed in the "Aquatic Resources" and "Fisheries Resources" sections of this chapter.

There would be no affects to bighorn sheep habitat in any alternative. Alternatives 2 and 4 provide specific management emphasis for bighorn sheep habitat. Effects to bighorn sheep are discussed in more detail in the "Issue 4: Big Game Management" section in this chapter.

Alternative 1 (No Action)

Alternative 1 does not propose any management direction and does not provide environmental protection for wildlife species and habitats. Current activities would continue. Because it does not provide public motorized access to the GRSA or Baca Mountain Tract, it provides more habitat security due to minimal human access. But, conversely, it does not provide for visitor use management, habitat improvement or population management opportunities for those species that may benefit from it. The anticipated effects of Alternative 1 on the wildlife species categories addressed in this analysis have been displayed previously in Tables 3-7–3-12. Alternative 1 does not propose any projects and there would be no ground disturbance or effect on any habitats. There would be no effect on vesper sparrow or pinyon jay. It does not provide special protections for riparian areas or bighorn sheep habitat.

Alternative 1 would have no effect on any federally-listed threatened or endangered species (see Table 3-12).

As noted in Table 3-7, there is a "No Impact" (NI) determination for 23 of the sensitive species under this alternative. There is a "May Impact" (MI) determination for the northern goshawk and bighorn sheep, but no habitat would be affected. The "May Impact" determination is due to the potential for existing recreation use to affect these two species. Existing recreation use could potentially disturb a suspected goshawk nest territory in the Deadman Creek drainage during nesting season. Existing recreation use in bighorn sheep habitat in the alpine zone could potentially disturb bighorn sheep, especially during lambing season. All impacts would be limited to individuals of these two species within the analysis area, and are not expected to

influence the Forest-wide population or contribute to a trend towards Federal listing for this species.

There would be no effect to any MIS or any special habitats from this alternative.

Alternative 2

Alternative 2 would amend the Forest Plan and provide management direction and environmental protection for wildlife species and habitats which are not currently in place. This alternative provides two MA prescriptions with specific management emphasis for wildlife. The 2,500 acre 5.41 Deer/Elk Winter Range MA prescription provides a management emphasis for the maintenance and improvement of winter range. The 7,000-acre 5.42 Bighorn Sheep MA prescription provides a management emphasis for the maintenance and improvement of bighorn sheep habitat.

Alternative 2 would disturb approximately 8.8 acres of wildlife habitat; 0.4 acres in Saguache County, 7.3 acres on the GRSA, and 1.1 acres on the Baca Mountain Tract. The limited disturbance area is not expected to result in any measurable impacts to wildlife.

Alternative 2 may result in a minor reduction in habitat security for some species because it would also provide limited public motorized access across the GRSA to the Baca Mountain Tract. However, this is expected to be minor because public motorized travel is not permitted beyond the Middle Parking Area and only the area along the road is affected. This alternative would provide long-term access authorizations for vehicle access to the private inholdings. This use combined with agency administrative use is expected to be minor, but could continue to disturb some wildlife species. The GRSA and Baca Mountain Tract would also be closed to public OHV use which would prevent potential impacts to wildlife and habitat. The alternative could also result in a potential minor increase in human use of the GRSA and Baca Mountain Tract which could impact wildlife and habitats. This alternative also closes the Baca Mountain Tract to livestock grazing which reduces potential competition for forage and interactions between livestock and some wildlife species.

The anticipated effects of Alternative 2 on the wildlife categories addressed in this analysis are displayed above in Tables 3-7–3-12 and discussed below.

Threatened and Endangered Species. Alternative 2 would have no effect on any federally-listed threatened or endangered species (see Table 3-12). While there is potential lynx habitat on the Baca Mountain Tract, it is not affected by any of the activities proposed in Alternative 2, and would, therefore, have no effect on the Canada lynx.

Forest Service Regional Sensitive Species. As noted in Table 3-7, there is a “No Impact” (NI) determination for 23 of the sensitive species under this alternative. There is a “May Impact” (MI) determination for the northern goshawk, but no habitat would be affected. The “May Impact” determination is due to the potential, varying by year and season, for recreation use to disturb a suspected goshawk nest territory in the Deadman Creek drainage during nesting season. All impacts would be limited to individuals within the analysis area and are not expected to influence the Forest-wide population or contribute to a trend towards Federal listing for this species. Survey efforts would continue to locate this or any other goshawk nest in the analysis area.

There is a “Beneficial Impact” (BI) determination for bighorn sheep because this alternative designates the bighorn sheep habitat on the Baca Mountain Tract in 5.42 Bighorn Sheep MA

prescription. Lands within this prescription are specifically managed to maintain and improve bighorn sheep habitat. This includes security considerations for lambing areas.

Rio Grande National Forest Management Indicator Species. Alternative 2 would have no measurable effect on six MIS—brown creeper, hermit thrush, pygmy nuthatch, and Rio Grande cutthroat trout, Wilson's warbler, and Lincoln's sparrow—because these species habitats would not be affected.

Alternative 2 could have minor effects to vesper sparrow habitat due to road construction/reconstruction and construction of the Middle Parking Area. The Middle Parking Area would convert approximately 0.6 acres of suitable vesper sparrow nesting habitat to an unsuitable condition. Road construction/reconstruction activities may disturb or render unsuitable an additional 0.53 acres of habitat on the Baca Mountain Tract and 7.3 acres on the GRSA. Increased vehicle access may provide additional disturbances to birds that attempt to nest in proximity to the roadway. Collectively, these disturbances may influence one to several pairs of vesper sparrow, but have no measurable influence on Forest population or habitat objectives for MIS. It is also likely that future habitat improvements for elk and mule deer winter range emphasized in the 5.41 Deer/Elk Winter Range MA prescription would provide benefits to vesper sparrow if they reduce tree cover and stimulate increased grass cover.

Alternative 2 may result in a minor reduction in habitat security for both elk and mule deer because the road construction/reconstruction and parking area development could result in increased human presence in the Baca Mountain Tract. However, this is expected to be minor because public motorized travel is not permitted beyond the Middle Parking Area and very little area is affected. Alternative 2 provides motorized hunter access to the Baca Mountain Tract which would allow the CDOW more flexibility to manage elk and mule deer populations through regulated hunting resulting in improved habitat conditions and healthier populations for both species. Alternative 2 could benefit mule deer because it would allow CDOW more flexibility to achieve mule deer population objectives. Alternative 2 also benefits elk and deer because it designates about 19 percent of the Baca Mountain Tract as 5.41 Deer/Elk Winter Range MA prescription which is to be managed to maintain and improve winter range habitat. This includes security considerations on winter range areas and habitat improvements.

Migratory Bird Species of Conservation Concern. Alternative 2 is expected to have no impact on any migratory species of conservation concern similar to Alternative 1 because no activities would occur on the habitat of any of these species. Unlike the other action alternatives, Alternative 2 does not include any ground disturbance within or near potential pinyon/juniper habitat for pinyon jays. Recreation activities could have a minor effect on individuals during the nesting season. To ensure protection for all of these species and the potential for any other migratory bird species, the project design criteria require a survey for migratory bird nests of any species before disturbance activity can begin. If an active nest is discovered, ground-disturbing activities would be delayed until the young birds have fledged. This should minimize the effects on migratory birds under all the action alternatives. The golden eagle is also protected under the provisions of the Bald and Golden Eagle Protection Act.

Special Habitats. Alternative 2 would bring the Baca Mountain Tract under the management direction of the Forest Plan which would provide increased protection for special habitats. The riparian ecosystem habitats are provided protection by the Forest Plan standards and guidelines and the measures in the Water Conservation Practices Handbook. This alternative provides additional protection and management emphasis by designating the bighorn sheep habitat on the

Baca Mountain Tract in the 5.42 Bighorn Sheep MA prescription. Lands within this prescription are specifically managed to maintain and improve bighorn sheep habitat.

Alternative 3

Alternative 3 would amend the Forest Plan and provide management direction and environmental protection for wildlife species and habitats not currently in place. Alternative 3 would designate the entire Baca Mountain Tract as 3.3 Backcountry MA prescription. This management prescription emphasizes natural processes with little interference or notable presence of man. This prescription would maintain the existing wildlife habitat, but would not provide specific management emphasis to benefit wildlife habitat.

Alternative 3 would disturb approximately 1.1 acres of wildlife habitat on the GRSA. There would be no disturbance on the Baca Mountain Tract. The limited disturbance area is not expected to measurably impact wildlife.

Alternative 3 may result in very minor reduction in habitat security for some species because it would also provide very limited public motorized access (0.2 miles) on the GRSA. Public motorized travel would not be permitted beyond the North Parking Area. Public access to the Baca Mountain Tract would be only by foot or horseback. The alternative would provide long-term authorizations for vehicle access to owners of the private inholdings. This use combined with agency administrative use is expected to be minor, but could continue to disturb some wildlife species. The alternative is not expected to result in an increase potential minor increase in recreation use of the GRSA or Baca Mountain Tract beyond existing use levels. The Baca Mountain Tract would also be closed to public OHV use which would prevent potential impacts to wildlife and habitat. This alternative also closes the Baca Mountain Tract to livestock grazing which reduces potential competition for forage and interactions between livestock and some wildlife species.

The anticipated effects of Alternative 3 on the wildlife categories addressed in this analysis are displayed above in Tables 3-7–3-12, and are discussed as follows.

Threatened and Endangered Species. Alternative 3 would have no effect on any federally-listed threatened or endangered species (see Table 3-12). While there is potential lynx habitat on the Baca Mountain Tract, is not affected by any of the activities proposed in Alternative 3 and would therefore have no effect on the Canada lynx.

Forest Service Regional Sensitive Species. As noted in Table 3-7, there is a “No Impact” (NI) determination for 23 of the sensitive species under this alternative. There is a “May Impact” (MI) determination for the northern goshawk and bighorn sheep, but no habitat would be affected. The “May Impact” determination is due to the potential for existing recreation use to affect these two species. Existing recreation use could potentially disturb a suspected goshawk nest territory in the Deadman Creek drainage during nesting season. Survey efforts would continue to locate this or any other goshawk nest in the analysis area. Existing recreation use in the alpine could potentially disturb bighorn sheep, especially during lambing season. This alternative does not provide specific management emphasis for bighorn sheep. All impacts would be limited to individuals of these two species within the analysis area and are not expected to influence the Forest-wide population or contribute to a trend towards Federal listing for this species.

Rio Grande National Forest Management Indicator Species. Alternative 3 would have no measurable effect on six MIS—brown creeper, hermit thrush, pygmy nuthatch, Rio Grande

cutthroat trout, Wilson's warbler, and Lincoln's sparrow—because these species habitats would not be affected.

Alternative 3 would have negligible effects to vesper sparrow habitat due to road construction/reconstruction and construction of the Middle Parking Area. The Middle Parking Area would convert approximately 0.6 acres of suitable vesper sparrow nesting habitat to an unsuitable condition and road construction/reconstruction activities may disturb or render unsuitable an additional 0.5 acres of habitat on the GRSA. Increased vehicle access may provide additional disturbances to birds that attempt to nest in proximity to the 0.2 miles of roadway. Collectively, these disturbances may influence one to several pairs of vesper sparrow, but have no measurable influence on Forest population or habitat objectives for MIS.

Alternative 3 may result in additional habitat security for elk and mule deer similar to Alternative 1. However, Alternative 3 may have long-term negative impacts on deer and elk populations because it would be more difficult for CDOW to meet population objectives. It would not provide motorized hunter access to the Baca Mountain Tract which would allow the CDOW more flexibility to manage elk populations through regulated hunting, resulting in improved habitat conditions and healthier populations. This would also allow CDOW more flexibility to increase mule deer numbers to met population objectives. This alternative does not provide specific management emphasis or the potential habitat benefits for elk and mule deer as the other action alternatives because none of the area would be designated as 5.41 Deer/Elk Winter Range MA prescription.

Migratory Bird Species of Conservation Concern. Alternative 3 would result in a negligible impact on pinyon jay. The proposed North Parking Area would convert approximately 0.6 acres of suitable foraging and potential nesting pinyon/juniper habitat for the pinyon jay into an unsuitable condition. Increased vehicle access may provide additional disturbances to birds that attempt to utilize trees in proximity to the roadway. Collectively, these disturbances could influence a few individuals, but have no measurable influence on the population. To ensure protection for pinyon jay and the other potential migratory bird species, the project design criteria require a survey for migratory bird nests of any species before disturbance activity can begin. If an active nest is discovered, ground-disturbing activities would be delayed until the young birds have fledged. This should minimize the effects on migratory birds in this alternative.

Alternative 3 is not expected to have an impact on any other migratory species of conservation concern because no ground disturbance would occur on habitats of these species. Recreation use could have a minor effect on individuals during the nesting season.

Special Habitats. Alternative 3 would bring the Baca Mountain Tract under the management direction of the Forest Plan which would provide increased protection for special habitats. The riparian ecosystem habitats are provided protection by the Forest Plan standards and guidelines and the measures in the Water Conservation Practices Handbook. This alternative does not provide additional protection and management emphasis by designating the bighorn sheep habitat on the Baca Mountain Tract in the 5.42 Bighorn Sheep MA prescription.

Alternative 4

Alternative 4 is similar to Alternative 2 in that it would amend the Forest Plan and provide management direction and environmental protection not currently in place for wildlife species and habitats. This alternative provides more area in two MA prescriptions with specific

management emphasis for wildlife. The 6,400-acre 5.41 Deer/Elk Winter Range MA prescription provides a management emphasis for the maintenance and improvement of winter range. The 7,000-acre 5.42 Bighorn Sheep MA prescription provides a management emphasis for the maintenance and improvement of bighorn sheep habitat.

Alternative 4 would disturb approximately 4.5 acres of wildlife habitat; 1.8 acres on the GRSA, and 2.7 acres on the Baca Mountain Tract. The limited disturbance area is not expected to result in any measurable impacts to wildlife.

Alternative 4 may result in a minor reduction in habitat security for some species because it would also provide limited public motorized access across the GRSA to the Baca Mountain Tract. However, this is expected to be minor because public motorized travel is not permitted beyond the South Parking Area and only the area along the road is affected. The alternative would provide long-term authorizations for vehicle access to the private inholdings. This use combined with agency administrative is expected to be minor, but could continue to disturb some wildlife species. The Baca Mountain Tract would also be closed to public OHV use which would prevent potential impacts to wildlife and habitat. The alternative could also result in a potential minor increase in human use of the GRSA and Baca Mountain Tract which could impact wildlife and habitats. This alternative also closes the Baca Mountain Tract to livestock grazing which reduces potential competition for forage and interactions between livestock and some wildlife species.

The anticipated effects of Alternative 4 on the wildlife categories addressed in this analysis are displayed above in Tables 3-7–3-12, and are discussed below.

Threatened and Endangered Species. Alternative 4 would have no effect on any federally-listed threatened or endangered species (see Table 3-12). While there is potential lynx habitat on the Baca Mountain Tract, the habitat is not affected by any of the activities proposed in Alternative 4 and would therefore have no effect on the Canada lynx.

Forest Service Regional Sensitive Species. As noted in Table 3-7, there is a “No Impact” (NI) determination for 23 of the sensitive species under this alternative. There is a “May Impact” (MI) determination for the northern goshawk, but no habitat would be affected. The “May Impact” determination is due to the potential, varying by year and season, for recreation use to disturb a suspected goshawk nest territory in the Deadman Creek drainage during nesting season. All impacts would be limited to individuals within the analysis area and are not expected to influence the Forest-wide population or contribute to a trend towards Federal listing for this species. Survey efforts would continue to locate this or any other goshawk nest in the analysis area.

There is a “Beneficial Impact” (BI) determination for bighorn sheep because this alternative designates the bighorn sheep habitat on the Baca Mountain Tract in 5.42 Bighorn Sheep MA prescription. Lands within this prescription are specifically managed to maintain and improve bighorn sheep habitat. This includes security considerations for lambing areas.

Rio Grande National Forest Management Indicator Species. Alternative 4 would have no measurable effect on six MIS—brown creeper, hermit thrush, pygmy nuthatch, Rio Grande cutthroat trout, Wilson’s warbler and Lincoln’s sparrow—because these species’ habitats would not be affected.

Alternative 4 could have minor effects to vesper sparrow habitat due to road reconstruction and construction of the South Parking Area. The South Parking Area would convert approximately 0.6 acres of suitable vesper sparrow nesting habitat to an unsuitable condition. Road reconstruction activities may disturb or render unsuitable an additional 2.11 acres of habitat on the Baca Mountain Tract and 1.79 acres on the GRSA. Increased vehicle access may provide additional disturbances to birds that attempt to nest in proximity to the roadway. Collectively, these disturbances may influence one to several pairs of vesper sparrow, but have no measurable influence on Forest population or habitat objectives for MIS. It is also likely that future habitat improvements for elk and mule deer winter range emphasized in the 5.41 Deer/Elk Winter Range MA prescription would provide benefits to vesper sparrow if they reduce tree cover and stimulate increased grass cover.

Alternative 4 may result in a minor reduction in habitat security for both elk and mule deer because the road construction/reconstruction and parking area development could result in increased human presence in the Baca Mountain Tract. However, this is expected to be minor because public motorized travel is not permitted beyond the South Parking Area and very little area is affected. Alternative 4 could benefit deer and elk in the long term because it provides motorized hunter access to the Baca Mountain Tract which would allow the CDOW more flexibility to manage elk populations through regulated hunting resulting in improved habitat conditions and healthier populations. It would also provide CDOW with more flexibility to increase mule deer numbers to meet population objectives. Alternative 4 also benefits elk and deer because it designates about 48 percent of the Baca Mountain Tract as 5.41 Deer/Elk Winter Range MA prescription, to be managed to maintain and improve winter range habitat. This includes security considerations on winter range areas and habitat improvements.

Migratory Bird Species of Conservation Concern. Alternative 4 is expected to have no impact on any migratory species of conservation concern except for pinyon jay. Approximately 0.6 acres of the potential pinyon/juniper pinyon jay habitat would be affected by the construction of the South Parking Area. Recreation activities could have a minor effect on individuals during the nesting season. To ensure protection for all of these species and the potential for any other migratory bird species, the project design criteria require a survey for migratory bird nests of any species before disturbance activity can begin. If an active nest is discovered, ground-disturbing activities would be delayed until the young birds have fledged. This should minimize the effects on migratory birds under all the action alternatives. The golden eagle is also protected under the provisions of the Bald and Golden Eagle Protection Act.

Special Habitats. Alternative 4 would bring the Baca Mountain Tract under the management direction of the Forest Plan which would provide increased protection for special habitats. The riparian ecosystem habitats are provided protection by the Forest Plan standards and guidelines and the measures in the Water Conservation Practices Handbook. This alternative provides additional protection and management emphasis by designating the bighorn sheep habitat on the Baca Mountain Tract in the 5.42 Bighorn Sheep MA prescription. Lands within this prescription are specifically managed to maintain and improve bighorn sheep habitat.

Cumulative Effects

Over time, the Baca Ranch operations likely had some negative effects on wildlife habitat conditions due to the ranch's primary focus on livestock production. But, the ranch also provided large-scale habitat protection and seclusion habitat for wildlife for over 100 years. Public access and hunting were limited during this period. In the future, the Baca National Wildlife Refuge plans to complete a comprehensive conservation management plan which would

be expected to benefit many species of wildlife. The San Isabel Pinyon/Juniper Thinning Project is proposed north of the analysis area to improve big game winter range and help disperse animals from the GRSA and Baca Mountain Tract. The CDOW would continue to manage for their wildlife population objectives. The CDOW plans to develop a management plan to benefit bighorn sheep in game management units S8 and S9. Negative effects to wildlife would likely continue in and near the Baca Grande subdivision as growth continues over time.

Under Alternative 1, wildlife habitat would not be actively managed. Restricting public motorized access would provide more habitat security due to minimal human access. Conversely, it would not provide for visitor use management, habitat improvement, or facilitate CDOW population management opportunities for those species that might benefit from it. Under Alternative 1, most other resources would be left in their current condition and status. Non-indigenous and undesirable species concerns would not be addressed under this alternative. Diseases, insects, and pests may spread from the Baca Grande subdivision to the Baca Mountain Tract and vice versa. However, overall effects to special status wildlife would be expected to be minor. Cumulative effects from past, present, and reasonably foreseeable actions over the next 10 years would be expected to be minor.

Under the action alternatives, wildlife habitat would receive management direction and emphasis for environmental protection. Big game habitat would receive emphasis (deer and elk winter range and bighorn sheep habitat) under Alternatives 2 and 3; and wildlife would more generally benefit under Alternative 3 (which emphasizes maintaining plant and animal habitats that are shaped primarily through natural processes). Public vehicular access would create some minor disturbance to wildlife. There would be a potential minor increase in human use of the GRSA and Baca Mountain Tract which could impact wildlife and habitats. The area would be closed to OHV use and permitted livestock would not be allowed—reducing potential conflicts and competition with wildlife. Impacts would be expected to be minor on TES, MIS, and migratory bird wildlife. Public motorized access to the Baca Mountain Tract would allow the CDOW more flexibility (better hunter access and dispersal) to manage elk populations through regulated hunting resulting in improved habitat conditions and healthier populations. It would also allow CDOW with more management flexibility to increase mule deer numbers to meet population objectives. Cumulative effects from past, present, and reasonably foreseeable actions would be expected to be minor to mostly beneficial on special status wildlife.

Cumulative Effects Summary

The Council for Environmental Quality (CEQ) defines cumulative impacts as, “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable further actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.” In other words, cumulative effects are the sum total of past, present, and reasonably foreseeable environmental, social, and economic effects of land management activities which, when taken in context of this specific project, affect the conditions and trends of resources and values within the analysis area and adjacent area of influence.

For this analysis, the past actions begin from the period of Euro-American settlement (approximately 1870) and future actions extend one decade into the future. The area of cumulative analysis is the Baca Mountain Tract, including the immediate surrounding land ownerships of the GRSA, the Baca National Wildlife Refuge, and the nearby private lands

(including the private inholdings in the Baca Mountain Tract, the Baca Grande subdivision, and the town of Crestone). The following are the past, present, and reasonably foreseeable actions affecting the RGNF related to the Baca Mountain Tract and the Camino Chamisa project.

Past actions considered were the following:

- Livestock grazing on the former Baca Ranch including associated developments and support infrastructure
- Land use and social changes with the establishment of the town of Crestone and the development and growth of the Baca Grande subdivision including associated infrastructure
- Growth and abandonment of towns/settlements (Liberty, Duncan, Cottonwood, and other settlements and homesteads in the area)
- Hard-rock mining and milling activities and the associated access infrastructure
- Water developments including diversion structures and monitoring facilities
- Timber harvesting and fire wood cutting
- Recreation uses
- Non-indigenous species introductions (plant and animal)
- Exploratory drilling on the Baca Ranch for oil and gas (currently on the GRSA and accessed by the Lexam Road)
- Wildlife population changes

Present actions considered are the following:

- Baca Grande subdivision and residents (individual homes, with commercial areas, at least 16 spiritual centers, recreation areas, RV park, tennis courts, ball fields, and greenbelts and conservation zones, and community infrastructure facilities) and their associated environmental impacts
- Management actions resulting from the GRSA General Management Plan
- Management actions resulting from the Baca National Wildlife Refuge Conceptual Management Plan
- Management actions resulting from Saguache County Zoning and transportation system
- Fire and fuels management plans (GRSA Interagency Fire Management Plan, the Northern Saguache County Plan, and the Kundalini Fire Department Plan)
- CDOW big game management objectives
- Recreation use; meditative use; unauthorized/illegal uses
- Existing infrastructure
- South Colony Lakes recreation management decision
- Closures of abandoned mines for public safety

Future actions considered are the following:

- Oil and gas drilling proposal for two exploration wells on the Baca National Wildlife Refuge
- Additional oil and gas drilling on the Baca National Wildlife Refuge and GRSA
- Oil and gas lease nominations for lands in the general Crestone area
- Possible private mineral estate development

- Continued growth toward full-platted build-out of the Baca Grande subdivision; and continued growth of Crestone
- GRSA to drill ten monitoring wells including two wells in the analysis area to monitor ground water levels to comply with a court order
- Recreation uses; meditative use
- Baca National Wildlife Refuge Comprehensive Conservation Management Plan
- GRSA ungulate management plan
- Old Spanish Trail management plan
- Heritage resources management plan
- Recreation use management plan
- Congressional designation of additional wilderness areas within the GRSA
- Proposed mechanical pinyon/juniper thinning project adjacent to the analysis area including commercial and public firewood cutting
- Agriculture impacts to air quality
- Closures of abandoned mines for public safety
- Future CDOW Bighorn Sheep Data Analysis Unit Management Plan for Game Management Units S8 and S9

The above reasonably foreseeable future actions are not anticipated to affect Alternative 1, although they may require additional analysis and consultations in the future. None of the alternatives are precedent setting. Cumulative effects are summarized by alternative as follows.

Alternative 1 (No Action)

The cumulative effects of Alternative 1 are similar to the direct effects, in that Alternative 1 would not fully allow implementation of the Forest Plan and management on the RGNF would be uncertain over an extended period of time. Since there are no projects, there are no new ground-disturbance activities. As a result, there are generally only minor effects to resources.

This alternative would not provide management direction and it would provide only limited environmental protections. Since this alternative does not amend the Forest Plan, there would be no protection measures and requirements applied to benefit the Baca Mountain Tract lands. Activities would not be directed, controlled, or mitigated by a Forest Plan.

The air quality of the analysis area would be expected to remain in excellent condition. This alternative does not propose any activities that would be expected to measurably and negatively affect air quality. Effects from current activities in the Baca Mountain Tract would likely be negligible. Sources of air pollution from the surrounding area (i.e., motorized vehicles, space and water heating equipment, fuel storage, campfires, wildfires, wood burning stoves, dust, future oil and gas development and production, fuels treatments on GRSA and Baca Grande subdivision, and agriculture activities) would be expected to impact air quality at times. During springtime high wind events, clean-tilled agricultural fields often diminish air quality and visibility due to severe wind erosion. Future growth of the Baca Grande subdivision, Crestone, and the San Luis Valley would be expected to contribute negatively to air quality. Overall, cumulative effects from past, present, and reasonably foreseeable actions would be expected to be minor and to be addressed under the authority of the Clean Air Act.

Aquatic ecosystems, stream channels, riparian areas, and watersheds would be left in good to robust existing condition and primarily only natural effects to aquatic ecosystems would occur.

Effects from current activities would likely be minor. Trout population viability (including aquatic MIS) would be maintained. Cumulative effects from past, present, and reasonably foreseeable actions would be expected to be negligible.

The response to wildfire would be a suppression action. Fire suppression may, in the short term, preserve the existing vegetation condition. In the long term, using only a fire suppression strategy may create undesirable fuel buildups and put the Baca Mountain Tract and surrounding areas at greater risk of wildfire. Landscape-level wildfire could temporarily remove a large area of vegetation cover and create highly erodible soils resulting in adverse affects to water quality, domestic water supplies, and flow conditions. This may result in greater risk to resource degradation in the long run than the action alternatives, but this also becomes relatively speculative beyond the cumulative effects analysis time horizon of 10 years. The Baca Grande subdivision is at risk of wildfire from the Baca Mountain Tract and vice versa since their mutual boundary creates a WUI. Alternative 1 does not address WUI management risks and needs where the subdivision is adjacent to the Baca Mountain Tract. Cumulative effects from past, present, and reasonably foreseeable actions over the next 10 years would be expected to be minor while acknowledging the potential fuel build-up over longer periods of time.

Heritage resource values that are unique to the Baca Mountain Tract would not be documented, managed, protected, monitored, nor interpreted for public benefit. This alternative could potentially result in the loss of important archaeology sites or site components. Heritage resources would continue to be impacted within and beyond the analysis area from ongoing natural processes such as weathering, erosion, and wildfires. There would also be the ongoing potential risk of human use resulting in unintentional impacts from trampling and erosion; or intentional acts of vandalism, collection, and looting. These can negatively impact the resource itself, but also result in a loss of the knowledge and understanding which these resources could provide and their interpretive value. However, the overall risk to heritage resources is relatively low from current activities and actions expected in the foreseeable future. Cumulative effects from past, present, and reasonably foreseeable actions over the next 10 years would be expected to be minor.

Infrastructure would not change in the Baca Mountain Tract under this alternative. The parking facility at the Liberty Gate would continue to be used by the public. Infrastructure in the surrounding area would likely change over time. The Baca Grande subdivision would be expected to continue lot build-out, including the related support infrastructure. Saguache County infrastructure would likely change with the needs of the Baca Grande subdivision and the town of Crestone over time. Implementation of the GRSA General Management Plan and the Baca National Wildlife Refuge future management plan may lead to future infrastructure needs and changes. Overall, cumulative effects from past, present, and reasonably foreseeable actions over the next 10 years would be expected to be minor.

Because the mineral estate is privately owned, the Federal agencies have to comply with the privately owned mineral rights as written in the title and can not prohibit development of the private mineral estate. Surface activities would have to be negotiated with the owner. This could result in possible negative environmental consequences. Management of abandoned mines and exploration holes would be continue for public safety. Cumulative effects from past, present, and reasonably foreseeable actions over the next 10 years would be expected to be minor.

Natural soundscape and night sky conditions would continue as the existing condition on the Baca Mountain Tract. GRSA noise management provisions and ambient light conditions would

continue. The Liberty Gate parking area would continue to create a concentrated source of noise from vehicles, horse trailers, livestock, and people preparing to enter the GRSA on the Liberty Road, which would affect nearby residences. Minor amounts of noise and negligible light would be created from dispersed camping activities. Population growth of the Baca Grande subdivision, Crestone, and the San Luis Valley would contribute increasing noise and ambient light pollution over time. Oil and gas exploration and development would also contribute to noise and ambient light pollution. Periodic aircraft over-flights would be expected to continue as well. Overall, cumulative effects from past, present, and reasonably foreseeable actions over the next 10 years would be expected to be minor.

Soils would be minimally affected under this alternative. Precluding general public motorized access may prevent or reduce environmental impacts to some resource values. Conversely, this alternative does not allow for erosion control measures on the roads where there are identified needs to reduce resource concerns. Cumulative effects from past, present, and reasonably foreseeable actions over the next 10 years would be expected to be negligible.

Vegetation would not be actively managed. For the most part, the general vegetation and late-successional forests would be expected to continue to grow, die, and be influenced predominately by natural processes. Noxious weeds may continue to spread from people and animals as transport vectors, but this is expected to be minor. Weeds may spread from the Baca Grande subdivision to the Baca Mountain Tract and vice versa. Sensitive plant species would not be expected to be negatively affected. Cumulative effects from past, present, and reasonably foreseeable actions over the next 10 years would be expected to be negligible.

Over time, the Baca Ranch operations likely had some negative effects on wildlife habitat conditions due to the ranch's primary focus on livestock production. But, the ranch also provided large-scale habitat protection and seclusion habitat for wildlife for over a hundred years. Public access and hunting were limited during this period. In the future, the Baca National Wildlife Refuge plans to complete a comprehensive conservation management plan which would be expected to benefit many species of wildlife. A pinyon/juniper thinning project is proposed north of the analysis area to improve big game winter range and help disperse animals from the GRSA and Baca Mountain Tract. The CDOW would continue to manage for their wildlife population objectives. However, wildlife habitat would not be actively managed under Alternative 1. Restricting public motorized access would provide more habitat security due to minimal human access. Conversely, it would not provide for visitor use management, habitat improvement, or facilitate CDOW population management opportunities for those species that might benefit from it. Negative effects to wildlife would likely continue in and near the Baca Grande subdivision as lot build-out continues over time. Under this alternative most other resources would be left in their current condition and status. Non-indigenous and undesirable species concerns would not be addressed under any management direction. Diseases, insects, and pests may spread from the Baca Grande subdivision to the Baca Mountain Tract and vice versa. However, overall effects to special status wildlife would be expected to be minor. Cumulative effects from past, present, and reasonably foreseeable actions over the next 10 years would be expected to be minor.

Recreation uses would not directed under any specific management direction now or in the foreseeable future. Recreation uses would not benefit from environmental protections. There would be no general public motorized access to the Baca Mountain Tract. The Liberty Gate entrance point would remain and parking would continue at Saguache County's Baca Grande subdivision parking area. The Liberty Gate parking area would continue to negatively impact

nearby subdivision residents by creating traffic, parking congestion, overnight camping, noise, litter, manure, and human waste. These impacts increase during the hunting season when horse trailers fill the parking area and adjacent subdivision roads. Cumulative effects from past, present, and reasonably foreseeable actions over the next 10 years would be expected to be minor.

In summary, Alternative 1 is not consistent with the Forest Plan and it does not meet the stated purpose of and need for action (see Chapter 1). Alternative 1 does not comply with the National Forest Management Act (NFMA) and it does not satisfy the purpose and need for providing public motorized access across the GRSA to the Baca Mountain Tract. This alternative would be expected to have more minor negative effects than the action alternatives. This is principally tied to not having these lands under the resource protection of the Forest Plan. This alternative also provides only limited environmental protections. Cumulatively, most environmental effects are expected to be minor when considering past, present, and reasonably foreseeable actions affecting the RGNF related to the Baca Mountain Tract and the Camino Chamisa project. Overall, Alternative 1 would be expected to have only minor cumulative effects and they are judged to not be significant.

Effects Common to All Action Alternatives

The action alternatives would provide Forest Plan management direction and environmental protections. The effects of the proposed project disturbance areas are relatively minor for all resource areas primarily due to the limited magnitude and scope of the disturbances.

The air quality of the analysis area would be expected to remain in excellent condition under all action alternatives. These alternatives are permissive to fuels treatments that could impact air quality for short periods of time. However, any future fuels treatments would be evaluated under separate site-specific NEPA analysis and conducted under conditions to disperse smoke and minimize impacts to surrounding communities. Sources of air pollution from the surrounding area (i.e., motorized vehicles, space and water heating equipment, fuel storage, campfires, wildfires, wood burning stoves, dust, future oil and gas development and production, fuels treatments on GRSA and Baca Grande subdivision, and agriculture activities) would be expected to impact air quality at times. During springtime high wind events, clean-tilled agricultural fields often diminish air quality and visibility due to severe wind erosion. Future growth of the Baca Grande subdivision, Crestone, and the San Luis Valley would be expected to contribute negatively to air quality. Overall, cumulative effects from past, present, and reasonably foreseeable actions would be expected to be minor and to be addressed under the authority of the Clean Air Act.

Aquatic ecosystems, stream channels, riparian areas, and watersheds would be maintained in their good to robust existing condition and none of the actions in the action alternatives would be expected to result in measurable direct, indirect, or cumulative effects to watershed resources or stream and riparian health. Trout population viability (including aquatic MIS) would be maintained. Cumulative effects from past, present, and reasonably foreseeable actions would be expected to be negligible.

Wildfire and fuels management would be directed under the Forest Plan in the action alternatives. Future fuel treatment projects would be permissible and they would be designed to enhance or maintain ecosystem health, or reduce the potential effects of wildfire on values at risk. Fire and fuels treatment would be compatible with adjacent landowner and jurisdictional authorities. Fuels reduction would benefit the WUI between the Baca Mountain Tract and the

Baca Grande subdivision. Fire and fuels treatment is ongoing or planned in the Baca Grande subdivision and Crestone (under Community Wildfire Protection Plans) and on the GRSA (under the GRSA Interagency Fire Management Plan). A predicted slight increase in recreation use of the Baca Mountain Tract is not expected to result in a measurable increase of unplanned human-caused fires. There are minor differences between the action alternatives; Alternative 3 with the proposed 3.3 Backcountry MA prescription has additional constraints on tree cutting which could limit the effectiveness of fuel treatments and increase costs. Overall, cumulative effects from past, present, and reasonably foreseeable actions would be expected to be negligible on fire and fuels.

Heritage resources would receive management direction and emphasis for environmental protection under the action alternatives. These alternatives would limit public motorized access, and close the Baca Mountain Tract to permitted livestock grazing and OHV use to reduce the risks to surface and buried cultural sites from trampling, compaction, soil erosion, and illegal off-road motorized activities. Mitigation would reduce or eliminate current risks to heritage resources. Recreation use may slightly increase under these alternatives and could result in a small increase in unintentional impacts from trampling or intentional acts of vandalism or illegal excavation to heritage resources. However, these effects are not expected to be significantly elevated. These alternatives provide a full spectrum of fire and fuels treatment in order to protect historic wooden structures. A heritage resource management plan is planned in the future to better coordinate inventory, monitoring, and mitigation actions between the Forest Service and the GRSA. Cumulative effects from past, present, and reasonably foreseeable actions would be expected to be minor.

Infrastructure would be improved under the action alternatives in the Baca Mountain Tract. The Forest Plan would be amended by designating several Forest system roads within the Baca Mountain Tract and by providing management direction for roads that are not currently in place. Each alternative proposes motorized access to allow the public to get close to (Alternative 3) or into the Baca Mountain Tract (Alternatives 2 and 4). Each alternative proposes a parking area with associated support facilities. New ground disturbance varies by alternative, but is relatively minor in relation to the analysis area. Alternative 2 proposes the most new ground disturbance due to the construction of the Camino Chamisa Road. Infrastructure in the surrounding area would be expected to change over time. The Baca Grande subdivision would be expected to continue lot build-out, including the related support infrastructure. Saguache County infrastructure would likely change with the needs of the Baca Grande subdivision and the town of Crestone over time. Implementation of the GRSA General Management Plan and the Baca National Wildlife Refuge future management plan may lead to future infrastructure needs and changes. Overall, cumulative effects from past, present, and reasonably foreseeable actions over the next 10 years would be expected to be minor.

Mineral resources would receive management direction and the negotiation of environmental protection for mineral development. Numerous oil and gas parcels have been nominated for leasing in the surrounding area. Leased areas could be proposed for exploratory drilling in the future. This could affect the Baca Mountain Tract in the future. Any proposal would require site-specific analysis with public involvement. Development of these mineral rights would likely result in localized effects to the surface resources. Abandoned mines with safety hazards would be mitigated. Cumulative effects from past, present, and reasonably foreseeable actions would be expected to be minor.

Natural soundscape and night sky conditions would receive management direction under the GRSA General Management Plan. Closing the majority of the Baca Mountain Tract to public motorized use and closing the parking areas to overnight camping would be expected to reduce noise levels and ambient light levels. The action alternatives would be expected to generate negligible additional noise and light above ambient levels. Negligible amounts of noise and light would be created from dispersed camping activities. Noise and light in the Baca Mountain Tract are expected to be substantially subordinate to those emanating from the adjacent Baca Grande subdivision. Population growth of the Baca Grande subdivision, Crestone, and the San Luis Valley would contribute increasing noise and ambient light pollution over time. Oil and gas exploration and development would also contribute to noise and ambient light pollution. Periodic aircraft over-flights would be expected to continue as well. Overall, cumulative effects from past, present, and reasonably foreseeable actions over the next 10 years would be expected to be minor.

Soil resources would receive management direction and emphasis for environmental protection under this alternative. The action alternatives are not expected to result in any measurable impacts to soils. Sediment sources associated with current roads or other surface disturbances do cause some minor localized impact, but overall soil health would be minimally affected by these actions. Cumulative effects from past, present, and reasonably foreseeable actions over the next 10 years would be expected to be negligible.

Vegetation would be managed under the Forest Plan in the action alternatives. Permissible activities and projects would not be expected to have notable effects on the general vegetation, sensitive plants, or late-successional forests. For the most part, the general vegetation would be expected to continue to grow, die, and be influenced predominately by natural processes. Noxious weeds occur in and around the analysis area. The risk of potential expansion of noxious weeds may be slightly higher than Alternative 1 since these alternatives allow for more management activities that could result in some new ground disturbance. Weeds may spread from the Baca Grande subdivision to the Baca Mountain Tract and vice versa. However, the overall risk is expected to be kept low by following the inventory and treatment priorities outlined in the RGNF's Invasive Species Action Plan. Cumulatively, the risk of weed spread still exists from animals and people as seed transport vectors, and from motor vehicles using the road network. Cumulative effects from past, present, and reasonably foreseeable actions would be expected to be negligible.

Wildlife habitat would receive management direction and emphasis for environmental protection under the action alternatives. Big game habitat would receive emphasis (deer and elk winter range and bighorn sheep habitat) under Alternatives 2 and 3; and wildlife would more generally benefit under Alternative 3 (which emphasizes maintaining plant and animal habitats that are shaped primarily through natural processes). Public vehicular access would create some minor disturbance to wildlife. There would be a potential minor increase in human use of the GRSA and Baca Mountain Tract which could impact wildlife and habitats. The area would be closed to OHV use and permitted livestock would not be allowed—reducing potential conflicts and competition with wildlife. Impacts would be expected to be minor on TES, MIS, and migratory bird wildlife. Public access to the Baca Mountain Tract allows the CDOW more flexibility to manage elk and mule deer populations through regulated hunting resulting in improved habitat conditions and healthier populations. In the future, the Baca National Wildlife Refuge plans to complete a comprehensive conservation management plan which would be expected to benefit many species of wildlife. The GRSA Ungulate Plan will address ungulate grazing and management on the GRSA. This plan is expected to benefit elk, bison, bighorn sheep, deer and

pronghorn. It may also help resolve other agencies concerns over the high numbers of elk. A pinyon/juniper thinning project is proposed north of the analysis area to improve big game winter range and help disperse animals from the GRSA and Baca Mountain Tract. The CDOW would continue to manage for wildlife population objectives. The CDOW plans to develop a management plan to benefit bighorn sheep in game management units S8 and S9. Negative effects to wildlife would likely continue in and near the Baca Grande subdivision as lot build-out continues over time. Cumulative effects from past, present, and reasonably foreseeable actions would be expected to be minor to mostly beneficial on special status wildlife.

All action alternatives would amend the Forest Plan and provide recreation management direction for the Baca Mountain Tract. These alternatives would provide more convenient recreation access to the public lands, but would not allow public motorized access beyond the parking areas. The action alternatives would close the area within 0.25 mile of all proposed parking areas to camping and close the entire Baca Mountain Tract to OHV use. This would minimize the effect of human impacts to the Baca Grande subdivision (i.e., noise, congestion, waste, etc.) by moving the parking area away from the Liberty Gate. Alternative 4 moves this use the farthest from the Liberty Gate (i.e., the South Parking Area) and Alternative 3 the least (i.e., the North Parking Area). The action alternatives create recreation experiences that are compatible with the adjacent GRSA Backcountry Wilderness Management Zone and the Sangre de Cristo Wilderness Area. Recreation opportunities would remain similar in all action alternatives. There is only a minor increase in visitor use levels expected as a result of the action alternatives; this increase is because access to the public lands would be more convenient. It is not expected that there would be any notable difference in use levels between the action alternatives due to the access route or parking area location. The expected increase in visitor use is predicted to be primarily from local residents. Regardless of the alternative, there would likely be a gradual increase in visitor use in the analysis area tied to general population growth, including growth in the Baca Grande subdivision, Crestone, and the San Luis Valley. The action alternatives have different land use allocations that lead to only minor expected effects to recreation. The South Colony Basin decision of August 30, 2007, on the east side of the Sangre de Cristo Mountains pulled back the South Colony jeep road by 2.5 miles, but this is not expected to notably change visitor use patterns on the Baca Mountain Tract or the 14,000-foot peaks above the analysis area. An interagency recreation management plan is expected in the foreseeable future which would be designed to provide a comprehensive plan for future recreation facilities, uses, and restrictions. Recreation use would also be addressed in the future Baca National Wildlife Refuge Comprehensive Conservation Management Plan. Cumulative effects from past, present, and reasonably foreseeable actions would be expected to be minor.

In summary, the action alternatives are consistent with the Forest Plan and they meet the stated purpose of and need for action (see Chapter 1). These alternatives comply with the National Forest Management Act (NFMA) and they satisfy the purpose and need for providing public motorized access to the Baca Mountain Tract. The action alternatives would be expected to have less negative effects than Alternative 1. This is principally tied to having Baca Mountain Tract lands under the resource protection of the Forest Plan. The action alternatives also provide extensive environmental protections. Cumulatively, most environmental effects are expected to be relatively minor when considering past, present, and reasonably foreseeable actions affecting the RGNF related to the Baca Mountain Tract and the Camino Chamisa project. Overall, these alternatives would be expected to have only minor cumulative effects and they are judged to not be significant.

Other Consequences or Effects Considered

Preliminary Finding of a Non-significant Change to the Revised Land and Resource Management Plan for the Rio Grande National Forest—NFMA

An assessment of the proposed amendment's significance in the context of the larger Forest Plan is a crucial part of this analysis. Significance in this case is defined by the National Forest Management Act (NFMA). The proposed amendment was evaluated to determine whether it constitutes a significant change in the long-term goods, outputs, and services projected by the Forest Plan. Factors considered included timing; scope; changes in goals, objectives, outputs and services; and MA prescriptions.

The timing of this amendment is appropriate. It is necessary to bring the newly acquired Baca Mountain Tract into the Forest Plan in order to effectively manage the Tract. The amendment needs to be addressed now rather than waiting for the next plan revision. The amendment would become effective upon issuance of the decision notice and would apply until changed by subsequent amendment or revision.

The proposed amendment affects only the Baca Mountain Tract. It would have no effect on the long-term relationships among goals and objectives or the levels of goods and services projected by the current Forest Plan. There would be no changes in the anticipated goods and services resulting from implementation of the Forest Plan with this amendment. None of the alternatives would change existing MA prescriptions or alter existing MA boundaries. There would be no changes to suitability or other land classifications.

Chapter 3 of the Forest Plan FEIS provides the outputs and services that were projected during the planning horizon for the Forest Plan. No changes would occur to these projected outputs as a result of implementation of the proposed amendment.

There would be no changes to the Forest-wide desired conditions, Forest-wide objectives, MA direction, or resulting changes to the multiple-use goals and objectives for long-term land and resource management. There would be no changes to the Forest-wide or MA prescription standards and guidelines.

Preliminary Finding and Conclusion

The analysis considered the significance of the proposed Forest Plan Baca Mountain Tract amendment, based on considerations of timing; scope; goals, objectives, and outputs; management prescriptions; and other provisions of NFMA [(36 CFR 219.10(e) and (f)]. The amendment would not change desired conditions and long-term levels of goods and services projected in the Forest Plan. The amendment would not alter current planning direction on why management is needed or what management actions can be taken. Rather, the amendment brings the 13,400 acres of the Baca Mountain Tract under the management direction of the current Forest Plan. Therefore, the preliminary finding is that if any of the action alternatives were selected, these changes would not constitute a significant amendment to the Revised Rio Grande Land and Resource Management Plan.

Forest Plan

NFMA also requires that site-specific project decisions be consistent with the Forest Plan. This EA is also a project-level analysis and evaluates the alternatives conformance with the RGNF Forest Plan and other regulations. All projects occurring on the Baca Mountain Tract would be consistent with the Forest Plan.

Preliminary Finding of a Non-significant Impact—NEPA

The proposed amendment and associated projects were also evaluated to determine whether they constitute a significant impact on the quality of the human environment or whether the environmental impacts would be significant based on their context and intensity as defined by the National Environmental Policy Act (NEPA).

The administrative nature of the plan amendment itself would not result in any anticipated effects that would exceed the level at which a significant effect on the human environment in terms of context or intensity would occur. The projects also would not result in any anticipated effects that would exceed the level at which a significant effect on the human environment in terms of context or intensity would occur.

The proposed projects on the GRSA are implementing the general management plan and the their effects are within those effects disclosed in the GRSA General Management Plan Environmental Impact Statement.

The effects from the proposed amendment and projects are expected to be minor to negligible and would be beneficial to some resources. The effects are not highly uncertain and do not involve unique and unknown risks. The action would not, in relation with other actions, cause cumulatively significant impacts. There would be no effects on public health and safety. There would be no adverse effects on historic or cultural resources, parklands, prime farmland, wetlands, wild and scenic rivers, or ecologically critical areas. There would be no effects on listings or listing eligibility in the National Register of Historic places, and there would not be a loss of significant scientific, cultural, or historical resources.

None of the alternatives would constitute an impairment to the integrity of the GRSA resources or values. None of the alternatives would affect either the short-term or long-term productivity of the RGNF, in terms of sustainability of the resources or outputs associated with them, from the current management direction.

There would be no adverse effects on TES (threatened or endangered or sensitive) species or habitats. The action is in compliance with all Federal, State, and local environmental protection laws. While most aspects of public land management tend to be somewhat controversial, the projects and the proposed amendment to add the Baca Mountain Tract to the Forest Plan are unlikely to be highly controversial. The action would not establish a precedent for future actions with significant effects or represent a decision in principle about future considerations. This decision would cause no irreversible or irretrievable commitment of resources. There are no civil rights issues, and none of the alternatives would have any civil-rights-related effects because this project has no effect on rights protected under civil rights law.

Preliminary Finding and Conclusion

Based on the above considerations, the preliminary finding is that amendment to the Forest Plan and the associated projects on the Forest or the GRSA would not constitute a significant effect on

the human environment if any of the action alternatives were adopted. There are no major effects which would require and EIS.

GRSA General Management Plan

The projects on GRSA are consistent with the 2007 General Management Plan. The general management plan identifies the actions, impacts, and mitigating measures necessary to resolve the issues facing the GRSA. This project implements the general management plan direction (page 64–65) which anticipated and provided for public motorized access to be established across the GRSA to the Baca Mountain Tract through the collaborative process used in this analysis to implement the intent of the Great Sand Dunes National Park and Preserve Act of 2000.

National Park Service Management Policies 2006

The GRSA is managed under the 2006 National Park Service Management Policies. The project is consistent with the goals and objectives of the 2006 National Park Service Management Policies that state that park facilities within park boundaries should be located so as to minimize impacts to park resources. The proposed sites for the access roads and parking area were located to minimize harm to all park resources. The 2006 National Park Service Management Policies are also discussed in the applicable resource sections in Chapter 3.

Appropriate Use. Section 1.5: Appropriate Use of the Parks, directs that the NPS must ensure that park uses would not cause impairment of, or unacceptable impacts on, park resources and values. A new form of park use may be allowed within a park only after a determination has been made in the professional judgment of the park manager that it will not result in unacceptable impacts.

Access roads and parking areas are a common and vital structure in most park units. Proper location, sizing, construction materials and methods would ensure that unacceptable impacts to park resources and values would not occur. The proposed access roads and parking area are consistent with the park's general management plan and other related park plans and are located and designed to ensure that unacceptable impacts to park resources and values would not occur. The NPS finds that construction and use of the access road and parking area is an acceptable and appropriate use at GRSA and can be sustained without causing unacceptable impacts to park resources and values.

Impairment and Conservation of Park Resources and Values. National Park Service's Management Policies, 2006, require analysis of potential effects to determine whether or not actions would impair park resources. The NPS's threshold for impairment is based on major (or significant) effects. This EA identifies less than major effects for all resource topics. Guided by this analysis and professional judgment, there would be no impairment of park resources and values from implementation of any action alternative.

Unacceptable Impacts. Unacceptable impacts are those that fall short of impairment, but are still not acceptable within a particular park's environment. All action alternatives are consistent with the Park's purposes and values. The Park was established for resource protection and visitor enjoyment and both alternatives protect resources to the maximum extent possible and provide opportunities for visitor enjoyment. None of the action alternative impede the attainment of the parks' desired future conditions as this project is consistent with previous planning efforts. The analysis of effects indicated that there are no major adverse effects under

either alternative; effects were analyzed as negligible to minor. Under all action alternatives, visitors continue to have opportunities to enjoy, learn about, or be inspired by park resources and values.

Chapter 4 – List of Preparers

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Appendix A: Response to Public Comment

This appendix, which would appear in the final EA, would contain the public comments received during the 30-day comment period for this EA and the agency responses to those comments.

Appendix B: Relationship to Other Acts, Regulations, Policies and Plans

The Baca Mountain Tract amendment and the associated GRSA and Forest Service projects are in compliance with all applicable Federal and State laws, regulations, orders, plans, and other requirements. The following provides a summary of the primary environmental laws, regulations, policies, and plans which govern the project.

National Environmental Policy Act of 1969 (P.L. 91-190; 31 Stat. 852)

The National Environmental Policy Act (NEPA) requires Federal agencies to use a systematic, interdisciplinary approach which would insure the integrated use of the natural and social sciences in planning and in decision making which may have an impact on man's environment. The Act requires public involvement and documentation in planning. This project is complies with NEPA and the Council of Environmental Quality regulations on implementing NEPA.

National Forest Management Act and the Forest Plan

The Revised Land and Resource Management Plan for Rio Grande National Forest, as amended (Forest Plan) provides guidance for all management activities; establishes management standards and guidelines; describes resource management practices, levels of resource production, people-carrying capacities, and the availability and suitability of lands for resource management. Additionally, the Forest Plan provides the framework to guide the daily resource management operations of the RGNF, and subsequent land and resource management decisions made during project planning.

The National Forest Management Act (NFMA) requires the Baca Mountain Tract to be managed under a Forest Plan. This project amends the Forest Plan by including the Baca Mountain Tract and identifying MA prescriptions, designating the minimum necessary transportation system, making a wilderness area recommendation, and creating a new amended Forest Plan map showing changes since 1996. This would be the sixth amendment to the Forest Plan.

NFMA also requires that site-specific project decisions, resource plans and permits, contracts, and other instruments issued for the use and occupancy of Federal lands be consistent with the Forest Plan. This EA is also a project-level analysis and evaluates the proposed action’s conformance with the RGNF Forest Plan and other regulations.

Multiple-Use Sustained-Yield Act of June 12, 1960

The Multiple-Use Sustained-Yield Act states that it is the policy of Congress that the national forests are established and shall be administered for outdoor recreation, range, timber, watershed, and wildlife and fish purposes, and authorizes and directs the Secretary of Agriculture to develop and administer the renewable surface resources of the national forests for the multiple use and sustained yield of the products and services they provide.

National Park Service Organic Act of 1916, as amended (16 U.S.C. l, 2, 3, and 4)

The National Park Service Organic Act established the NPS and gave it the mission to promote and regulate national parks, monuments, and reservations for the purpose of conserving the scenery, the natural and historic objects, and wildlife within these areas and to provide for the enjoyment of these so they would be unimpaired for the enjoyment of future generations.

National Park Service Management Policies 2006

The GRSA is managed under the 2006 National Park Service Management Policies. The project is consistent with the goals and objectives of the 2006 National Park Service Management Policies that state that park facilities within park boundaries should be located so as to minimize impacts to park resources. The proposed sites for the access roads and parking area were located to minimize harm to all park resources.

Appropriate Use

Section 1.5: Appropriate Use of the Parks, directs that the NPS must ensure that park uses that are allowed would not cause impairment of, or unacceptable impacts on, park resources and values. A new form of park use may be allowed within a park only after a determination has been made in the professional judgment of the park manager that it will not result in unacceptable impacts.

Section 8.1.2: Process for Determining Appropriate Uses, provides evaluation factors for determining appropriate uses. All proposals for park uses are evaluated for: consistency with applicable laws, executive orders, regulations, and policies; consistency with existing plans for public use and resource management; actual and potential effects on park resources and values; total costs to the Service; and whether the public interest will be served.

Park managers must monitor all park uses to prevent unanticipated and unacceptable impacts. If unanticipated and unacceptable impacts emerge, the park manager must engage in a thoughtful, deliberate process to further manage or constrain the use, or discontinue it.

Section 8.2: “To provide for enjoyment of the parks, the NPS will encourage visitor use activities that are appropriate to the purpose for which the park was established, and are inspirational, educational, or healthful, and otherwise appropriate to the park environment; and will foster an understanding of and appreciation for park resources and values, or will promote enjoyment through a direct association with, interaction with, or relation to park resources; and can be sustained without causing unacceptable impacts to park resources and values.”

Access roads and parking areas are a common and vital structure in most park units. Proper location, sizing, construction materials and methods would ensure that unacceptable impacts to park resources and values would not occur. The proposed access roads and parking area are consistent with the park’s general management plan and other related park plans. With this in mind, the NPS finds that construction and use of the access road and parking area is an acceptable and appropriate use at GRSA and can be sustained without causing unacceptable impacts to park resources and values.

Impairment and Conservation of Park Resources and Values

National Park Service's Management Policies, 2006, require analysis of potential effects to determine whether or not actions would impair park resources. The fundamental purpose of the national park system, 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, adversely impacting park resources and values.

However, the laws do 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 park, 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 the responsible NPS manager, would harm the integrity of park resources or values. An impact to any park resource or value may, but does not necessarily, constitute an impairment, but an impact would be more likely to constitute an impairment when there is 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 identified as an objective in the park's general management plan or other relevant NPS planning documents.

Impairment may result from NPS activities in managing the park, visitor activities, or activities undertaken by concessioners, contractors, and others operating in the park. A determination on impairment is made in Chapter 3, "Affected Environment and Environmental Consequences."

In addition to mandating the prevention of impairment, the Organic Act requires that the NPS prioritize conservation over use whenever the two are found to be in conflict. The NPS complies with this mandate by ensuring that a proposed use of the parks will not result in unacceptable impacts to park resources and values. The effects of the project are provided in Chapter 3, "Affected Environment and Environmental Consequences."

Special Status Species

2006 Management Policies and Director's Order-77 Natural Resources Management Guidelines require the NPS to examine the impacts on federal candidate species, as well as state-listed threatened, endangered, candidate, rare, declining, and sensitive species. For the purposes of this analysis, the USFWS and the CDOW were contacted with regards to federally and state listed species to determine those species that could potentially occur on or near the project area. There are no records of federal threatened or endangered species or state-listed species or designated critical or essential habitat on the GRSA within the proposed project area. No threatened, endangered, or other species of concern are known to occur in the project area. Any impacts to migratory bird species would be temporary and negligible and would not result in any unacceptable impacts. Therefore the proposed actions are consistent with §1.4.7.1 of NPS Management Policies 2006. The effects of the project on special status species are provided in the Wildlife and Vegetation sections of Chapter 3, "Affected Environment and Environmental Consequences."

Greater Sand Dunes Interagency Fire Management Plan

This plan is an interagency fire management plan between the NPS, USFWS, and the Nature Conservancy which addresses fire management on the these land ownerships.

Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.)

The Endangered Species Act (ESA) is intended to prevent the further decline of threatened or endangered species and to restore these species and their critical habitats. In compliance with FSM 2670 and the ESA, a biological assessment (BA) would conducted to evaluate the effects to federally listed threatened or endangered and candidate species. If a species or its habitat would be jeopardized by the action, a formal consultation with USFWS or the National Marine Fisheries Service would occur. The analysis indicates that the project would have no adverse affect on any threatened or endangered species.

Migratory Bird Treaty Act of 1918, as amended (16 U.S.C. 703 et seq.)

The Migratory Bird Treaty Act (MBTA), as amended, makes it illegal to take any migratory bird or nest. If any activities would result in a taking of any migratory bird or nest, a migratory bird permit would be required from USFWS (migratory birds are discussed in Chapter 3). There are no adverse effects to migratory birds from this project.

Clean Air Act of 1970, as amended (42 U.S.C. 7401 et seq.)

The Baca Mountain Tract and GRSA fall within a class I area. The CAA defines class I areas as areas of special national or regional, natural, scenic, recreational or historic value for which the regulations provide special protection. The Clean Air Act (CAA) requires Federal land managers of each class I area to protect that area's unique attributes, expressed as air quality related values. All national ambient air quality standards are being met in the project area and in the surrounding area. The State of Colorado has determined these areas are in attainment with the CAA, and therefore, a conformity analysis is not required per U.S.C. 7506. All construction activities would comply with Colorado Air Quality Control Regulations.

Clean Water Act of 1972, as amended (33 U.S.C. 1251 et seq.) and State Requirements

Section 402 of the Clean Water Act, as amended, regulates point source discharges of pollutants into waters of the United States, and specifies that stormwater discharges associated with construction activity be conducted under National Pollutant Discharge Elimination System (NPDES) guidance. To minimize potential erosion impacts from construction of the proposed project, a storm water pollution prevention plan, for stormwater discharges associated with construction activity under the NPDES general permit, would be required. A storm water pollution prevention plan is required by EPA for construction projects (clearing, grading, and excavation) disturbing over 1 acre of land, which is applicable to all alternatives analyzed in this EIS.

Section 404 of the Clean Water Act requires either individual or nationwide permitting through the U.S. Army Corps of Engineers for any fill activities in the waters of the United States. The only project affecting any waters of the United States is the proposed installation of the Deadman

Creek gage station which falls under Nationwide Permit #5 (Scientific Measurement Devices) and notification to the Corps of Engineers is not required.

Section 401 certification is permitted through the Colorado Department of Public Health and Environment, Water Quality Control Division. Under Colorado 401 Certification Regulations, all nationwide permits are certified by State Statute and do not require certification by the WQCD.

Alaska National Interest Lands Conservation Act (ANILCA) and 36 CFR Part 251 Subpart D

The Forest Service is required to provide access to the private inholdings within the Baca Mountain Tract under Section 1323 of the ANILCA (Public Law 96-487). This access is regulated under 36 CFR Part 251, Subpart D, and authorized through a special use authorization.

National Trails System Act

A 2008 amendment to the National Trails System Act added the Old Spanish Historic Trail to the national trail system as a historic trail. This trail represents a historic Spanish trade route which extends from Santa Fe, New Mexico, to Los Angeles, California. A northern branch of this historic route is thought to have traversed the Baca Ranch somewhere between the wetlands to the west and the Sangre de Cristo mountain range to the east. No traces of the route within the analysis area have been identified to date, but the GRSA and the San Luis Valley Public Lands Center would begin more intensive survey work. A management plan for the entire trail is currently being developed by the NPS and is expected to be completed in 2011. The Baca Mountain Tract and Camino Chamisa Project provide excellent interpretive opportunities for this historic route because of the potential for public recreational use and historical interest in the area.

National Historic Preservation Act of 1966, as amended (16 U.S.C. 470 et seq.)

Section 106 of the National Historic Preservation Act (NHPA) of 1966 and its implementing regulations, 36 CFR 800, require all Federal agencies to identify and evaluate historic properties eligible for listing in the National Register of Historic Places and to assess the effects of projects on eligible properties. Section 106 mandates consultation and concurrence with the State and/or Tribal Historic Preservation Officers (SHPO) for Federal actions if the undertaking has the potential to affect a historic property.

This EA includes the identification, evaluation, and determination of effect of the project on historic properties to meet the Section 106 requirements. The Forest Plan includes provisions for protection of all historic properties. Archeological surveys were conducted and no historic properties were identified in any areas of project disturbance; therefore, there would be no adverse effect on archeological resources.

Antiquities Act of 1906 (P.L. 59-209, 34 Stat. 225)

The Antiquities Act provides for protection of historic, prehistoric, and scientific features on Federal lands, with penalties for unauthorized destruction or appropriation of antiquities; authorized the President to proclaim national monuments; authorized scientific investigation of antiquities on Federal lands subject to permit and regulations.

Executive Order 11593, Protection and Enhancement of the Cultural Environment, May 13, 1971 (36 FR 8921)

Executive Order 11593 instructs all Federal agencies to support the preservation of cultural properties; directed them to identify and nominate to the national register cultural properties under their jurisdiction and to "exercise caution . . . to assure that any federally owned property that might qualify for nomination is not inadvertently transferred, sold, demolished, or substantially altered."

Archaeological Resources Protection Act of 1979 (P.L. 96-95; 93 Stat. 712)

The Archaeological Resources Protection Act defines archeological resources as any material remains of past human life or activities that are of archeological interest and at least 100 years old; requires Federal permits for their excavation or removal, and set penalties for violators; provided for preservation and custody of excavated materials, records, and data; provides for confidentiality of archeological site locations; encourages cooperation with other parties to improve protection of archeological resources. The Act was amended in 1988 to require development of plans for surveying public lands for archeological resources and systems for reporting incidents of suspected violations.

Native American Graves Protection and Repatriation Act of 1990 (P.L. 101-601; 104 Stat. 3049)

The Native American Graves Protection and Repatriation Act assigns ownership or control of Native American human remains, funerary objects, sacred objects, and objects of cultural patrimony that are excavated or discovered on Federal lands or tribal lands after passage of the Act to lineal descendants or affiliated Indian tribes or Native Hawaiian organizations; establishes criminal penalties for trafficking in human remains or cultural objects; requires Federal agencies and museums that receive Federal funding to inventory Native American human remains and associated funerary objects in their possession or control, and identify their cultural and geographical affiliations within 5 years, and prepare summaries of information about Native American unassociated funerary objects, sacred objects, or objects of cultural patrimony. This is to provide for repatriation of such items when lineal descendants, Indian tribes, or Native Hawaiian organizations request it.

Regulations Most Pertinent to Cultural Resource Management

The following Code of Regulations (CFRs) are the most pertinent to cultural resource management on the analysis area:

- 36 CFR 63 (NHPA and EO 11593), "Determinations of Eligibility for inclusion in the National Register of Historic Places," establishes process for Federal agencies to obtain determinations of eligibility on properties.
- 36 CFR 68 (NHPA) contains the secretary of the interior's standards for historic preservation projects, including acquisition, protection, stabilization, preservation, rehabilitation, restoration, and reconstruction.
- 36 CFR 79 (NHPA and ARPA), "Curation of Federally Owned and Administered Archeological Collections," provides standards, procedures and guidelines to be followed by Federal agencies in preserving and providing adequate long-term curatorial services for archeological collections of prehistoric and historic artifacts and associated

records that are recovered under Section 110 of the NHPA, the Reservoir Salvage Act, ARPA and the Antiquities Act.

- 36 CFR 800 (NHPA and EO 11593), "Protection of Historic and Cultural Properties," includes regulations of the Advisory Council on Historic Preservation to implement Section 106 of the National Historic Preservation Act as amended and presidential directives issued pursuant thereto.
- 43 CFR 3 (Antiquities Act) establishes procedures to be followed for permitting the excavation or collection of prehistoric and historic objects on Federal lands.
- 43 CFR 7, Subparts A and B (Archaeological Resources Protection Act, as amended), "Protection of Archeological Resources, Uniform Regulations" and "Department of the Interior Supplemental Regulations," provides definitions, standards, and procedures for Federal land managers to protect archeological resources and provides further guidance for Interior bureaus on definitions, permitting procedures, and civil penalty hearings.
- 43 CFR 10 (NAGPRA) establishes a systematic process for determining the rights of lineal descendants, Indian tribes, and Native Hawaiian organizations to certain Native American human remains, funerary objects, sacred objects, and objects of cultural patrimony with which they are affiliated.

Executive Order 13443 - Facilitation of Hunting Heritage and Wildlife Conservation, August 16, 2007 (36 FR 46537)

Executive Order 13443 provides Presidential direction on hunting and wildlife conservation. The portions of the Executive order most applicable to the project direct the NPS, Forest Service, and other Federal land management agencies to facilitate the expansion and enhancement of hunting opportunities and the management of game species and their habitat. Federal agencies are directed, consistent with agency missions, to implement actions that expand and enhance hunting opportunities for the public; consider the economic and recreational values of hunting in agency actions, as appropriate; manage wildlife and wildlife habitats on public lands in a manner that expands and enhances hunting opportunities, including through the use of hunting in wildlife management planning; work collaboratively with State governments to manage and conserve game species and their habitats in a manner that respects State management authority over wildlife resources; establish goals, consistent with agency missions, to foster healthy and productive populations of game species and appropriate opportunities for the public to hunt those species.

Executive Order 13443 – Floodplain Management

Executive Order 11988 Floodplain Management requires all federal agencies to avoid construction within the 100-year floodplain unless no other practicable alternative exists. The NPS under 2006 Management Policies and Director’s Order 77-2 Floodplain Management will strive to preserve floodplain values and minimize hazardous floodplain conditions. According to Director’s Order 77-2 Floodplain Management, certain construction within a 100-year floodplain requires preparation of a statement of findings for floodplains.

The proposed Chamino Chamisa and parking areas are not within a 100-year floodplain; therefore, a statement of findings for floodplains will not be prepared. Since there are no floodplain effects, there are no unacceptable impacts to floodplains and the proposed activities are consistent with §1.4.7.1 of NPS 2006 Management Policies and the Director’s Order 77-2 Floodplain Management.

Farmland Protection Policy Act of 1981

The Farmland Protection Policy Act of 1981, as amended, requires Federal agencies to consider adverse effects to prime and unique farmlands that would result in the conversion of these lands to non-agricultural uses. Prime or unique farmland is classified by the USDA's Natural Resources Conservation Service (NRCS), and is defined as soil that particularly produces general crops such as common foods, forage, fiber, and oil seed; unique farmland produces specialty crops such as fruits, vegetables, and nuts. Te project area does not contain prime or unique farmlands and there would be no effects on prime and unique farmlands.

Environmental Justice

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. Because the GRSA and Baca Mountain Tract and their facilities are available for use by citizens regardless of race or income, and the construction workforces would not be hired based on their race or income, the proposed activities would not have disproportionate health or environmental effects on minorities or low-income populations or communities.

Executive Order 13045 requires Federal agencies to identify and address disproportionately high and adverse human health or environmental effects of federal programs and policies on children. None of the alternatives would have a disproportionate and adverse impact on minority populations, low income populations or communities, or on children.

Indian Trust Resources

Secretarial Order 3175 requires that any anticipated impacts to Indian trust resources from a proposed project or action by the Department of Interior agencies be explicitly addressed in environmental documents. The Federal Indian trust responsibility is a legally enforceable fiduciary obligation on the part of the United States to protect tribal lands, assets, resources, and treaty rights, and it represents a duty to carry out the mandates of federal law with respect to American Indian and Alaska Native tribes.

There are no Indian trust resources at the Great Sand Dunes National Park and Preserve. The lands comprising the GRSA are not held in trust by the Secretary of the Interior for the benefit of Indians due to their status as Indians. Because there are no Indian trust resources, this analysis is in compliance with Secretarial Order 3175.